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Evaluation of daily evapotranspiration time series for rice fields in Nickerie district

by

A. JETHOE

A thesis submitted to the Anton de Kom University of Suriname, Faculty of Technology, Suriname, in fulfillment of the requirements for the degree of Master of Science (MSc) in Sustainable Management of Natural Resources

Supervisor:

R. Nurmohamed Ph.D.

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Paramaribo, Suriname

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Preface

I chose this topic for my thesis research after considering other topics, because of my background in hydrology, working closely in water management in Nickerie district for one of my previous employers, the ministry of Agriculture Animal Husbandry and Fisheries. I appreciate the hard work and risk that goes into growing rice and would like to add to the sustainable continuation of the rice agriculture industry in Suriname. I am grateful to all those who encouraged to finish my thesis, in the most personally challenging period of my life. I appreciate the guidance and understanding received from R. Nurmohamed, the cooperation of the director of ADRON, N. Gajadin and the information from ADRON's meteorological consultant, E. Zerp.

Contents

List of abbreviations

ADRON	Anne van Dijk Rijst Onderzoeks Centrum Nickerie – Anne van Dijk Rice Research Center Nickerie
AWS 1	ADRON Weather Station 1
AWS 2	ADRON Weather Station 2
PE	performance evaluation
PEC	performance evaluation criteria
ET_c	crop evapotranspiration
K_c	crop coefficient
ET_0	reference crop evaporation
$ET_{c\ adj}$	adjusted crop evapotranspiration
K_s	water stress coefficient
K_{cb}	basal crop coefficient
K_e	soil evaporation coefficient
O_i	observation at t=i
O	average observation
P_i	prediction/ estimation at t=i
P	average prediction/estimation
R^2	coefficient of determination
d	index of agreement
C_n	numerator constant for the reference crop type and time step. For short reference crop and daily time step = 900
C_d	denominator constant for the reference crop type and time step. For short reference crop and daily time step =0.34
$ET_{0\ PM}$	Penman-Monteith reference evaporation
$ET_{0\ FAO\ PM}$	FAO 56 Penman-Monteith reference crop evaporation
$ET_{sz\ ASCE\ PM}$	ASCE standardized reference crop evapotranspiration
$ET_{0\ Har\ 85}$	Hargreaves reference crop evapotranspiration
$ET_{0\ Har-Sam}$	Hargreaves-Samani reference crop evapotranspiration
PET_{Har}	Hargreaves's potential evapotranspiration
$PET_{McG-Bor}$	Mc. Guinness-Bordne's potential evapotranspiration

PET_{Rom}	Romanenko's potential evapotranspiration
PET_{Ham1}	Hammon's 1 potential evapotranspiration
PET_{Ham2}	Hammon's 2 potential evapotranspiration
PET_{Ham3}	Hammon's 3 potential evapotranspiration
$ET_{0\,McC}$	McCloud's equation
$ET_{0\,B-R}$	Baier and Robertson's equation
$ET_{0\,Pap}$	Papadakis equation
$ET_{0\,Mal}$	Malmström's equation
R_a , H_0	extraterrestrial radiation
R_n	average daily net radiation at the crop surface
R_{ns}	net shortwave radiation
R_{nl}	net longwave radiation
λET	evapotranspiration rate
PET	potential evapotranspiration rate
λ	latent heat of evapotranspiration of water
G	soil heat flux
e_s	saturation vapor pressure
e_a	actual vapor pressure
$e^0(T)$	saturation vapor pressure at air temperature T
r_s	surface resistance
r_a	aerodynamic resistance; at crop height of .12 m and standardized height for wind speed
u_2	windspeed at 2 m height
ρ_a	mean air density at constant pressure
c_p	specific heat of the air
P	atmospheric pressure
ε	molecular weight of water vapor/dry air = 0.622
Δ	slope of the saturation vapor pressure temperature relationship
γ	psychrometric constant
DL	day length
SVD^a	saturated vapor density at mean air temperature
RH	relative air humidity
T, T_{mean}, TC	mean daily temperature

T_{max}	maximum daily temperature
T_{min}	minimum daily temperature
T_{dew}	dewpoint temperature
TR or TD	daily temperature range

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Abstract

Evapotranspiration is a parameter required in water management and is an extremely important input for hydrological models. This is relevant for Nickerie district because of the rice industry that requires large scale irrigation and drainage. There is no documented study, that recommends which models estimate the daily time-series of evapotranspiration with acceptable accuracy. The research objective is to evaluate reference crop evapotranspiration and potential evapotranspiration equations to be used in rice field areas in Nickerie district. The evaluation was done by estimating daily reference crop evapotranspiration and daily potential evapotranspiration with thirteen equations and visually and statistically evaluating these to observed daily reference crop evapotranspiration. The purpose was to recommend a method for estimating daily time series reference crop evapotranspiration data in locations and for time periods where there are no observed evapotranspiration data in Nickerie district. The results of this research are that none of the thirteen empirical methods show convincing applicability for the purpose, in their current state. Best results are derived from the FAO Penman Monteith / ASCE Penman Monteith equation, Baier and Robertson's equation and Romanenko's potential evapotranspiration. All three equations need further research, show potential for adjustment to deliver higher accuracy. ET_0 FAO 56 Penman-Monteith/ ET_0 FAO PM 56 ASCE standardized and Romanenko's equation, best follow the peak ET correlation, however, these equations underestimate all the values, including the peaks. The Baier and Robertson's equation shows potential to be used in specific occasions when the extremes are not relevant to the results of modeling output. In case of climate change projections, this is unlikely. Romanenko's equation is especially interesting, because it is temperature based. It requires less input variables than the ASCE standardized reference crop evapotranspiration equation, while resulting in similar output. Because of the potential for application in locations with limited data availability, further research of the Baier and Robertson's and Romanenko's equations can result in concussions about possibilities and limitations of these equations for estimating daily reference crop evapotranspiration time series.

1 Introduction

1.1 Background information

Allen, Pereira, Raes, and Smith (1998) define crop water requirement as the amount of water required to compensate the evapotranspiration loss from the cropped field and irrigation water requirement on the other hand, depends on crop water requirement, effective precipitation, and other water demands and spills (p. 9). This is relevant for Nickerie district because of the rice industry that requires large scale irrigation and drainage. This research deals only with evapotranspiration, to be specific the reference crop evapotranspiration. This concept is further explained in chapter 2.1. Because evapotranspiration is a parameter required in water management, evapotranspiration values are an input for hydrological models. In case of daily timesteps, daily time series of evapotranspiration will increase the quality of output. Such a time series will be easy to assemble, if there are daily observations of evapotranspiration. Meteorological observations however, are not commonly available for all locations in Suriname. To still obtain daily time series of reference crop evapotranspiration, daily time series of weather parameters can be used in evapotranspiration equations.

1.2 Characteristics of Nickerie district

Nickerie district lies in North West of Suriname. According to census 2004 by Algemeen Bureau voor de Statistiek in Suriname (2019), Nickerie district had a population of 36,639 persons and has a total surface area of 5,353 km^2. Naipal and Nurmohamed (2006) show an average rainfall between 1600 mm and 1700 mm for the location of ADROM and an average annual air temperature varying from 26 to 27.7 °C for Suriname. Wildschut and Noordam (1999) explain how the soil in Nickerie district consists of very heavy clays and very rarely sand deposits at the surface or sand admixing in clay and that polders are constructed in these soils. In the polders the main agricultural activity is rice farming. Beleidsnota LVV 2010-2015 (2010) indicates that in the Nickerie district the available production area for rice farming is 43.000 ha and in 2010 rice agriculture had a production value of SRD 320,470,000. Beleidsnota LVV 2010-2015 (2010) continue to stress the importance of this industry by stating that about 80% of all economic activities in Nickerie district are related to it. These agricultural activities require large scale irrigation. According to Ritzema and

Naipal (2013) the main source of the irrigation water is the Nanni Swamp, which is supplemented by the Corantijn River via the Corantijn Canal.

1.3 Problem description

There is no documented study, that recommends which models estimate the daily time-series of Evapotranspiration with acceptable accuracy. The criteria for accuracy are discussed in chapter 3.2. Allen et al. (1998) point out that as result of an Expert Consultation held in May 1990, the FAO Penman-Monteith method was recommended as the standard method for calculating reference crop evapotranspiration (p. 15). The evapotranspiration concepts are further explained in chapter 2.1. In a personal interview, the ex-director of National Meteorological Center, Becker (2018), states that the FAO Penman-Monteith equation is commonly used for calculation of evapotranspiration in Suriname. He warns that it was only recommended for calculation of evapotranspiration values for longer time periods of weeks and months, because of inaccurate estimation of daily solar radiation values. Naipal, Naipal, and Samson (2013a) have measured and evaluated evapotranspiration in the Nani swamp in Nickerie district for a period of June – October 2009 (p. 332). More details on this research are discussed in chapter 2.3 Research in Suriname. There was no research found on evaluation of estimations for full years or any recommendations for a method for estimating daily time series of reference crop evapotranspiration for full years.

1.4 Research objectives

The objective of this research is to evaluate reference crop evapotranspiration and potential evapotranspiration literature equations by comparing these to observations measured by ADRON Weather Stations.

The purpose of this research is to recommend a method for estimating daily time series reference crop evapotranspiration data in locations and for time periods where there are no observed evapotranspiration data in Nickerie. Input for the methods are the weather parameters measured by the same instruments. The research questions are:

1. How do daily estimations obtained by different reference crop evapotranspiration and potential evapotranspiration equations perform, against the daily observations of evapotranspiration in Nickerie district?

2. Is FAO PM the only method applicable for Suriname and how do other methods, perform when used for estimating daily reference crop evapotranspiration or potential evapotranspiration in Nickerie district?
3. Are there other methods besides the FAO PM method that accurately predict the daily time series of reference crop evapotranspiration or potential evapotranspiration and which methods are worth further exploration in future research?

1.5 Research design

The research design employed is as follows:

1. Data preparation: data is prepared for input in evapotranspiration equations. Data with 10-minute interval is formatted to daily average data, trying to obtain complete years.
2. Selection of evapotranspiration equations to be evaluated: the most commonly encountered Evapotranspiration equations found in hydrology research are selected.
3. Estimation of daily time series of reference crop evapotranspiration and potential evapotranspiration with selected equations.
4. Selection of evaluation criteria applicable under the present circumstances.
5. Evaluation of the daily time series estimations obtained by use of the selected methods, against observed daily time series.

1.6 Structure of report

After introduction of the research, in the first chapter, the gap in the research, research objective and research method are presented. A literature study is summarized in chapter 2. Chapter 3 explain the process of research and steps leading to the results. Chapter 4 show the results and discussions of the research. Chapter 5 gives the final conclusions, while chapter 6 finishes this report with a list of referenced literature.

2 Literature review

2.1 The systematic approach of the hydrologic cycle, evaporation, transpiration and related concepts

Chow, Maidment, and Mays (1988) explain how water behaves on a global scale in the hydrologic cycle within 15 km up into the atmosphere and 1 km down into the lithosphere and how hydrologic phenomena are represented as systems (p. 2, p. 4). Just how much percent of water evaporates, is explained in the quotation in the box below. This shows how mayor a role evaporation and evapotranspiration play in the hydrological cycle, because it can give information about ground water recharge, outflow into open water and discharge from open water.

Chow, Maidment, and Mays, (1988) show the relative quantity of water evaporated from earth within the hydrological cycle:

> Although the water content of the surface and atmospheric water systems is relatively small at any given moment, immense quantities of water annually pass through them. The global annual water balance is shown in Table 1.1.1; Fig 1.1.1 shows the major components in units relative to an annual land precipitation volume of 100. It can be seen that evaporation from the land surface consumes 61% of this precipitation, the remaining 39 percent forming runoff the oceans, mostly as surface water. Evaporation from the oceans contributes 90 percent of atmospheric moisture. Analysis of the flow and storage of water in the global water balance provides some insight into the dynamics of the hydrological cycle. (p. 2)

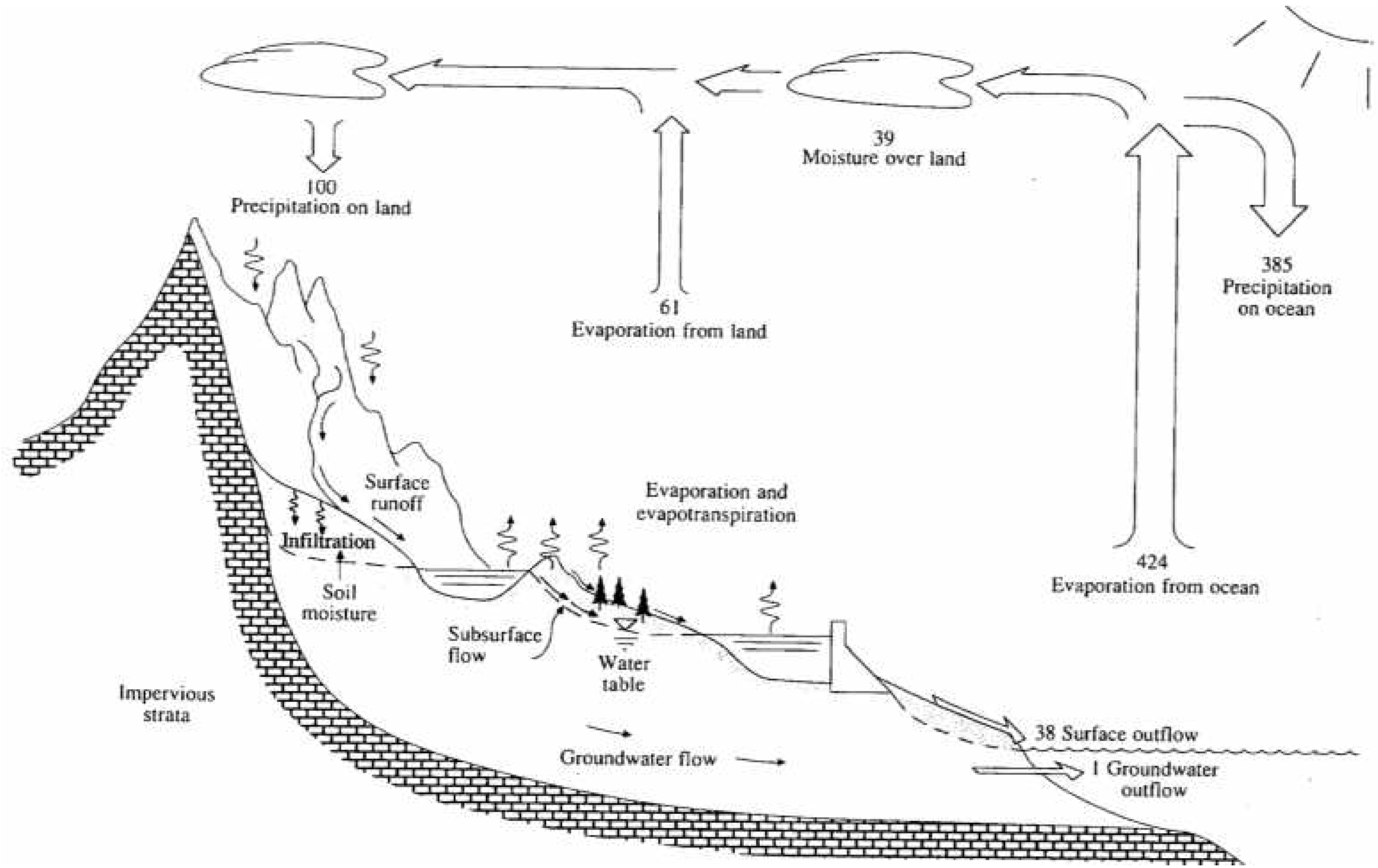

Figure 2-1 Hydrologic cycle with annual average water balance given in units relative to a value of 100 for the rate of precipitation on land. Precipitation on land = 100 units (634100 km3 year-1), evaporation and evapotranspiration from land 61 units, evaporation from ocean = 424 units, surface outflow to ocean = 38 units, groundwater outflow = 1 unit, moisture over land = 39 units. Reprinted from Applied Hydrology (p.3) by V.T. Chow, D.R. Maidment, L.W. Mays 1988, Singapore: McGraw-Hill Book Co. Copyright 1988 McGraw-Hill.

If one looks at evaporation and transpiration on a smaller scale, what is happening on land and in the lower part of the atmosphere, one sees the different factors that come into play. Allen, Pereira, Raes, and Smith (1998) stated, “weather parameters, crop characteristics, management and environmental aspects are factors affecting evaporation and transpiration” (p. 5). They express the evapotranspiration power of the atmosphere, caused by the weather parameters of radiation, air temperature, humidity and wind speed for a standardized vegetated surface, by ET_0 (p. 5). Allen et al. (1998) go on expressing crop evapotranspiration under standard conditions, as ET_c and the effects of environmental and management conditions, in $ET_{c\ adj}$ (p. 5-6). This is a clearer systemic overview of evapotranspiration and allows for more comparisons between different weathers, vegetations and environmental and management conditions than the concept of potential evapotranspiration (PET) as becomes clear from the quotation by Weiß & Menzel (2008).

Weiß & Menzel (2008) distinguish the potential evapotranspiration concepts and relate it to reference crop evapotranspiration:

> In general, the terms potential evaporation and potential evapotranspiration are to be differentiated. The first is a measure for the atmospheric demand, which is solely meteorologically driven under the assumption of unlimited water supply. The latter combines the rate at which water is removed from wet soils with that from plant surfaces under unlimited water supply. Especially for irrigation scheduling, this definition was further specified to refer to a reference surface consisting of a hypothetical grass with specific characteristics, termed reference crop evapotranspiration (Allen et al., 1998; Wright, 1981; Doorenbos and Pruitt, 1977; Penman, 1956). (p. 15)

ET_c is related to K_c and ET_0 as shown in equation (1) and $ET_{c\ adj}$, K_s, K_{cb} , K_e and ET_0 are related as shown in equation (2).

$$ET_c = K_c ET_0 \tag{1}$$

Where ET_c crop evapotranspiration [mm d^{-1}],

K_c crop coefficient [dimensionless],

ET_0 reference crop evaporation [mm d^{-1}],

$$ET_{c\,adj} = (K_s K_{cb} + K_e)ET_0 \qquad (2)$$

Where	$ET_{c\,adj}$	adjusted crop evapotranspiration,
	K_s	water stress coefficient,
	K_{cb}	basal crop coefficient,
	K_e	soil evaporation coefficient

Allen et al. (1998) further note that “the FAO Penman-Monteith method is recommended as the sole method determining ET_0”, continuing with the argument that “the method has been selected because it closely approximated grass ET_0 at the location evaluated, is physically based, and explicitly incorporates both physiological and aerodynamic parameter” (p. 7). Calculation of PET, is not advised by Allen et al. (1998), who in fact say “the use of other denominations such as potential ET is strongly discouraged due to ambiguities in their definitions” (p. 7). In this research though, some methods calculating PET, will still be used to estimate daily time series and compare with the observed data for performance evaluation purposes.

2.2 Research on estimating evapotranspiration rates in wetlands in Suriname

Naipal, Naipal, and Samson (2013b) compared results of hourly predicted ET_0 of the Nani swamp, a wetland in Nickerie district, where the hourly ET_0 was predicted with the ASCE Penman – Monteith, ASCE standardized Penman – Monteith, Makkink, FAO 56 Penman – Monteith, Penman 1948 and Priestley-Taylor equations (p. 336). The study was done using data obtained by observations done, in a 5 month time period, June-October 2009. Naipal et al. (2013b) found a total average value of 4.76 mm day^{-1} and temporal variability caused by shortwave solar radiation (Rs) and cloudiness (n/N). Figure 2-2 shows the results of daily $ET_{0,}$ calculated with the ASCE Penmann-Monteith equation. The obtained $ET_{0,}$ values vary between 2.2 mm day^{-1} and 6.8 mm day^{-1}. (Naipal et al., 2013b) used solar radiation (Rs) and cloudiness (n/N) to compute regression formulas in order to estimate the ET of the Nani swamp eliminating the need for the empirical ET methods. However, this can only be assumed to be applicable in the wetland area of Nani Swamp, since it was not calibrated for other locations.

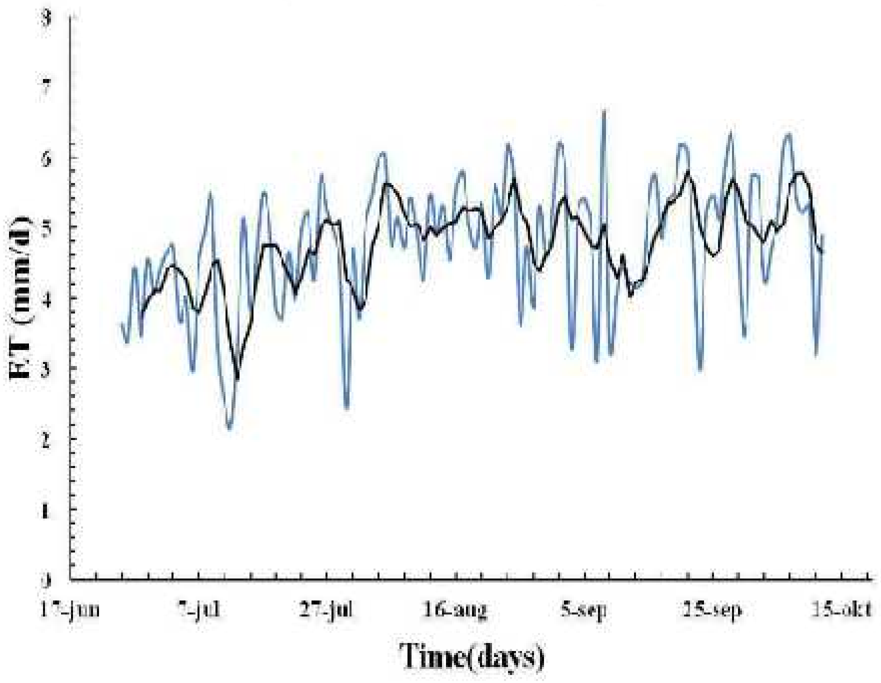

Figure 2-2 Daily ET (blue curve) and the 3-day moving average (black curve) of the Nani Swamp in Nickerie district calculated with the ASCE Penman-Monteith equation for the study period, 25 June - 12 October 2009. Reprinted from "Estimating the evapotranspiration rates of wetlands in Suriname, a case study of the Nani Swamp" by S. Naipal. V. Naipal and R. Samson, 2013, Academic Journal of Suriname 2013, 4, 332-338. Copyright 2013 Academic Journal of Suriname.

3 Materials and Methods

3.1 Set up of the research

The research requires data assessment and preparation, selection of evapotranspiration equations, estimation of daily ET_0 and daily PET, and visual inspection and statistical evaluation of the results. Data assessment is required to review the quality of the data obtained and evaluate the data gaps. Data preparation is the procedure to obtain a consistent data format and the procedure to fill in data gaps. This phase determines the time period for the research based on availability of complete data sets. These steps and the results are discussed in paragraph 3.3. A sample of the resulting data is shown in Appendix A. After data assessment and preparation, a number of evapotranspiration equations are selected. These equations are specified in paragraph 3.4. In MS EXCEL daily ET_0 and PET are estimated for selected time period. The results are visualized and undergo a visual inspection as well as a statistical evaluation. The points of visual inspection and statistical performance evaluation and criteria are selected and discussed in paragraph *3.2.* The resulting graphs can be found in Chapter 4 and Appendix B.

3.2 Graphical and statistical performance evaluation and criteria

Assuming the observations of ET are correct, the models or methods are evaluated by determining how well the estimations resulting from the methods used, perform in evaluations. Evaluation of estimations and predictions against observations are evaluated by statistical and graphical performance measures (PM's) and performance evaluation criteria (PEC) (Moriasi, Gitau, Pai, & Daggupati, 2015, p. 1763). Moriasi et al., (2015) group graphical performance measures into direct and derived methods (p. 1768). For modeling for periods of less than one year, Moriasi et al. (2015) describe the direct method, a time-series plots as an "effective tool", while for periods of more than ten years of daily data, the derived methods of scatterplots and duration curves are advised (p. 1768). For statistical evaluation, Moriasi et al. (2015) recommend performance evaluation criteria for watershed – scale on annual, monthly and daily time scale as well as for field-scale models on monthly time scale (p. 1777). For watershed scale there are recommendations for different output responses, but evapotranspiration was not evaluated by Moriasi et al. (2015) (p. 1777). Therefore, the criteria for flow were used in this research. Because current research area is not defined and delineated according to watershed requirements, the assumed scale is field scale. For field scale, two performance evaluation criteria are recommended by Moriasi et al. (2015), namely equation (3), the coefficient of determination (R^2) and equation (4), the index of agreement (d) (p. 1777). Table 3-1 show the statistical *PEC*. These criteria are however, calibrated for monthly scale. Because the goal is to evaluate daily time series, and no criteria were found for evaluation of daily scale data, the same criteria are applied for evaluation of daily scale data.

Table 3-1 Final performance evaluation criteria and recommended statistical performance measures for field scale models. Adapted from “Hydrologic and Water Quality Models: Performance Measures and Evaluation Criteria” by D. Moriasi, N. Pai, M. Gitau and P. Daggupati, 2015, Transactions of the ASABE, December 2015, p. 1777. Copyright by Transactions of the ASABE, 2015.

PM	Range	Optimal Value	PEC
R^2	0.0 to 1.0	1.0	Monthly $R^2 > 0.85$ very good, $0.75 \leq R^2 \leq 0.85$ good, $0.70 < R^2 < 0.75$ satisfactory, $R^2 \leq 0.70$ not satisfactory
d	0.0 to 1.0	1.0	Monthly $d > 0.90$ very good, $0.85 \leq d \leq 0.90$ good, $0.75 < d < 0.85$ satisfactory, $d \leq 0.75$ not satisfactory

Note. PM = Performance Measure, PEC = Performance Evaluation Criteria. R^2 = Coefficient of determination, d= Index of agreement.

Coefficient of determination (R^2) (Moriasi et al., 2015):

$$R^2 = \frac{\sum_{i=1}^{n} O_i - P \quad P_i - P}{\sqrt{\sum_{i=1}^{n} O_i - O^{\,2}}\ \sqrt{\sum_{i=1}^{n} P_i - P^{\,2}}} \tag{3}$$

Index of agreement (d) (Moriasi et al., 2015):

$$d = 1 - \frac{\sum_{i=1}^{n} O_i - P_i^{\,2}}{\sum_{i=1}^{n} |P_i - O||O_i - O|^{\,2}} \tag{4}$$

Where	O_i	Observation at t=i
	$\bar{O}$	Average observation
	P_i	Prediction / Estimation
	$\bar{P}$	Average prediction/Estimation
	R^2	Coefficient of determination
	d	Index of agreement

3.3 Data assessment and preparation

For this research data from two ADRON weather stations ADRON Weather Station 1 (AWS1) and ADRON Weather Station 2 (AWS 2), time period December 2009 to January 2017, was collected at ADRON. ADRON is located at ADRON-weg no. 45, Europolder-noord, Nickerie district in Suriname. The location on the map is shown in Figure 3-1. The weather instruments are of the brand Davis (Zerp, 2017) and the instruments are set up 1.5 m above ground level (ADRON, 2018). Of the gathered data, only AWS 1 had almost complete yearly data of all the needed parameters. The data of year 2010 was complete and data from march 2011 and part of April 2011 is missing while the rest of the months of 2011 are complete. Wind velocity is one of the required input data. Of the rest of gathered data of AWS 1 and AWS 2 (time period 2012 to 2016), several months were either completely missing or missing wind velocity data. Therefore, observed data for the years 2010 and 2011 are used as input for estimating ET_0 and PET. The data measurements are done in 10-minute intervals, but the required input data was daily average. The data was sorted from yearly to monthly and daily data as needed, reformatted from text to numbers as needed, and averaged to daily average values. Evapotranspiration was calculated in hourly average ET_0 for a grass reference with equation 5 (Davis, 2006, p.17). These hourly values were summed up to obtain total daily evapotranspiration. The measurements were done on 1.5 m above ground level. The FAO Penman-Monteith equation call for measurements done on 2 m above ground level. The assumption is made here that the difference in measurement are not significant for the purposes of performance evaluation and comparison with observed data, because all the input parameters as well as the observed data are measured at same elevation.

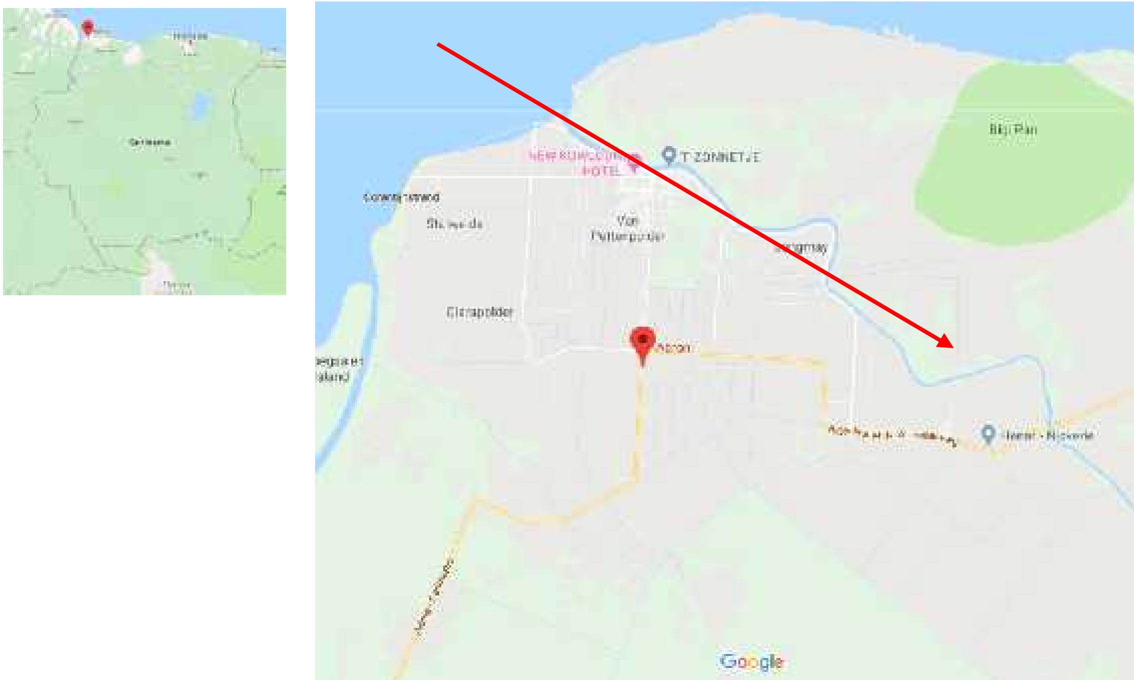

Figure 3-1 SNRI-ADRON is located at ADRON-weg no. 45, Europolder-noord, Nickerie district in Suriname and has 2 weather stations, ADRON weather station 1 and ADRON weather station 2, amidst experimental rice fields. Reprinted from Google Maps by Google. Copywrite Map Data (2018)

The equation used by Davis instruments for calculating ET_0 or potential ET (Davis, 2006):

$$ET_0 = W \cdot \frac{R_n}{\lambda} + (1 - W) \cdot (e_a - e_d) \cdot F \qquad (5)$$

Where	W	weighting factor that expresses the relative contribution of the radiation component
	R_n	average net radiation over the hour as described in the next section [W m^{-1}]
	λ	latent heat of vaporization. Used to convert net radiation in Watts per square meter into the amount of water evaporated [mm]
	e_a	saturation water vapor pressure [kPa]
	e_d	actual water vapor pressure [kPa]
	F	the wind function indicates the amount of energy that the wind contributes towards ET. There are two functions, one for day (solar radiation > 0) and one for night.

There are a range of missing data for input as well as output for march and April 2011. For filling in missing observed data ET, KNMI Climate change atlas predictions are considered.

KNMI Climate Explorer's about tab on the webpage is an application for climate data analysis (KNMI Climate Explorer, 2018b):

> The KNMI Climate Explorer is a web application to analyze climate data statistically. It started in late 1999 as a simple web page to analyze ENSO teleconnections and has grown over the years to more than 10 TB of climate data and dozens of analysis tools. It is now part of the WMO Regional Climate Centre at KNMI, together with ECA&D. (para. 1)

KNMI climate change Atlas page is the interface for one the before mentioned applications specifically for obtaining climate model output (KNMI Climate Explorer, 2018a):

> This page gives the possibility to plot climate model output for a variety or regions, seasons and variables. It is an extension by KNMI of the IPCC WG1 AR5 Annex I "Atlas", which due to the restrictions of the printed page could only show a limited number of plots. The user is strongly advised to read the Introduction to this Annex for further background information. The project was partially funded by the Red Cross / Red Crescent Climate Centre and Dutch Ministry of Infrastructure and Environment, DGMI. (Short introduction under ⓘ)

For obtaining the output, required inputs are type, country, season, dataset, variable, output, scenario's, plot period, anomalies and transparency and appear on the website as show in figure 3-2 (KNMI Climate Explorer, 2018b). More information on each of these can be found under the ⓘ icon in the input table. The model gives predictions for HISTORICAL + RCP 2.6, HISTORICAL + RCP 4.5, HISTORICAL + RCP 6.0, HISTORICAL + RCP 8.5 and HISTORICAL + RCP 4.5/ RCP 6.0/RCP 8.5 scenarios. These scenarios are explained in table 3-2. The smallest scale for time is monthly and the smallest scale for space was country. A daily average value of the four scenarios, RCP 2.6, RCP4.5, RCP6.0 and RCP8.5 scenario's for Suriname, is evaluated against daily average for each month of the observed ET. The resulting daily averages per month are given in table 3-3 and the resulting monthly time series can be found in Appendix B. The graphical representation of this evaluation is visualized in figure 3-3. While the observations show erratic behavior and the modeled results show more fluent seasonal behavior, the resulting average annual value might show small error, but the peaks and lower values don't seem to correlate, especially for the missing period, March 2011. Performing a statistical analysis can quantify this correlation, by calculating the R^2 (equation (3)) and d-values (equation (4)) of the evaluation of the modeled average monthly timeseries against the observed monthly time series as shown in table 3-3. The resulting values are $R^2 = 0.033$, and because $0.033 \leq 0.70$, the result is classified as 'not satisfactory' according to table 3-1. The $d = 0.51$, and because $0.51 \leq 0.75$, the result is also classified as 'not satisfactory'. Because of this, and low graphic correlation, the KNMI Climate Change Atlas predictions cannot be used for the specific purpose of evaluating daily time series of observed data.

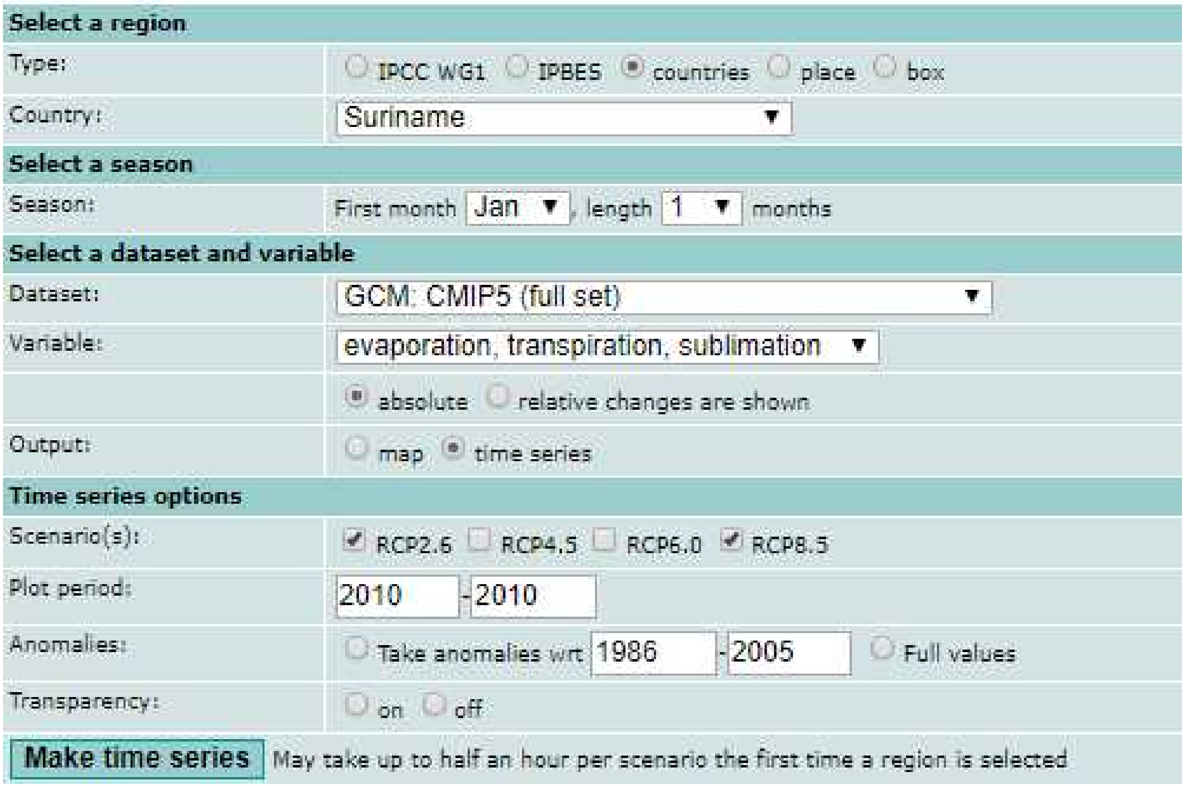

Figure 3-2 Input variables for KNMI Climate Change Atlas predictions. The input criteria are region type, country, season, dataset, variable, output, scenario(s), plot period anomalies and transparency. Reprinted from KNMI Climate Change Atlas, 2018. Copyright by KNMI 2018

Table 3-2 Atlas scenarios as explained by KNMI Climate Change Atlas. The models give output for each of these scenarios. Adapted from KNMI Climate Explorer, 2018. Copyright by KNMI, 2018.

Scenario	**Explanation**
RCP2.6	RCP2.6 describes an all-out effort to limit global warming to below 2°C with emissions decreasing sharply after 2020 and zero from 2080 onward
RCP4.5	RCP4.5 assumes quicker action to limit greenhouse gas emissions with emissions peaking in 2040 and declining strongly until 2080
RCP6.0	RCP6.0 is a stabilization scenario in which emissions rise quickly up to 2060 and then decrease
RCP8.5	RCP8.5 is a business-as-usual scenario with increasing greenhouse gas emissions over time, leading to high greenhouse gas concentration levels

Table 3-3 Daily observed ET [mm day^{-1}] in Nw. Nickerie district at ADRON weather Station 1 and average predicted daily Evaporation, Transpiration and Sublimation [mm day^{-1}] of 4 RCP scenarios. Note: the daily Evaporation, Transpiration and Sublimation column shows average of the predicted values of RCP2.6, RCP4.5, RCP6.0, RCP8.5 scenario's generated by in KNMI Atlas Climate Change Predictions for monthly time periods, from January 2010 to December 2011 for Suriname.

Date	**Daily observed ET [mm day^{-1}]**	**Average predicted daily Evaporation, Transpiration and Sublimation [mm day^{-1}]**
Jan-10	3.88	2.74
Feb-10	3.64	2.60
Mar-10	3.87	2.47
Apr-10	3.44	2.57
May-10	3.26	3.05
Jun-10	3.41	3.52
Jul-10	3.27	3.85
Aug-10	3.36	3.74
Sep-10	3.53	3.14
Oct-10	3.36	2.77
Nov-10	3.16	2.79
Dec-10	3.45	2.88
Jan-11	3.70	2.74
Feb-11	3.37	2.60
Mar-11	n\a	2.48
Apr-11	4.25	2.56
May-11	3.23	3.05
Jun-11	3.30	3.52
Jul-11	3.43	3.85
Aug-11	3.68	3.74
Sep-11	3.59	3.14
Oct-11	3.31	2.76
Nov-11	3.46	2.79
Dec-11	3.37	2.87
Daily Average ET_0	**3.51**	**3.14**

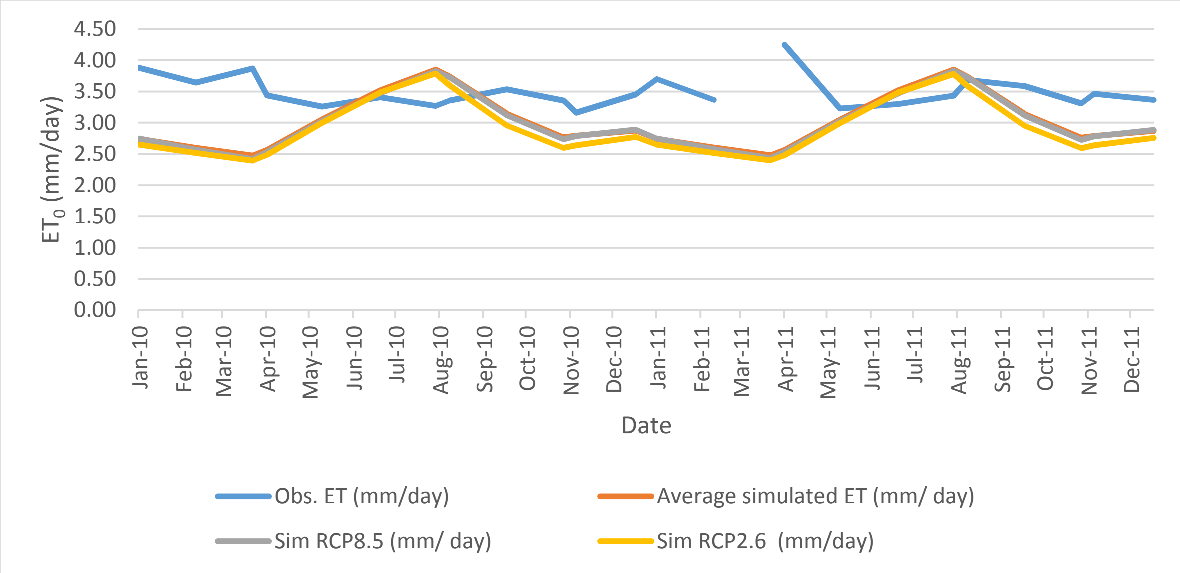

Figure 3-3 Obs. ET is observed daily average ET per month in mm d^{-1} in Nw. Nickerie district at ADRON Weather Station 1. Sim RCP 8.5 is simulated RCP 8.5 daily average ET per month in mm d^{-1} for Suriname. Sim RCP 2.6 is simulated RCP 2.6 daily average ET per month in mm d^{-1} for Suriname. Average simulated ET = average of Sim RCP 2.6, RCP 4.5, RCP 6.5 and RCP 8.5 daily average ET per month in mm d^{-1} for Suriname. All simulated data is obtained by KNMI Climate Change Atlas. RCP is Representative Concentration Pathway. Details of RCP's are described in table 3-2.

3.4 ET_0 and PET calculation equations

Many methods for estimation of PET and ET_0 are found in scientific literature. For determining the applicability, the quality of results obtained from calculation of daily time series of PET or ET_0 using the different methods are evaluated. A number of methods are selected to be evaluated. The observed parameters obtained from AWS1 for the period January 2010 to December 2011, with the exception of March 2010 are direct or indirect input values for these methods. The methods selected for evaluation are listed in this paragraph, table 3-4. in equation (6) to equation (20).

Table 3-4 Reference crop evapotranspiration (ET_0) and equations selected for evaluation against observed ET_0

Name	**Equation**	**Nr.**
Penman-Monteith equation	$ET_{0\,PM} = \dfrac{\Delta\ R_n - G\ + \rho_a c_p \frac{e_s - e_a}{r_a}}{\Delta + \gamma\ \ 1 + \frac{r_s}{r_a}}\ /\lambda$ (R. G. Allen et al., 1998, p. 19)	(6)
FAO 56 Penman-Monteith equation	$ET_{0\,FAO\,PM} = \dfrac{0.408\Delta\ R_n - G\ + \gamma \frac{900}{T + 273} u_2(e_s - e_a)}{\Delta + \gamma(1 + .34u_2)}$ (R. G. Allen et al., 1998, p. 24)	(7)
ASCE standardized FAO 56 equation	$ET_{0\,ASCE\,PM} = \dfrac{0.408\,\Delta\ R_n - G\ + \gamma \frac{C_n}{T + 273} u_2(e_s - e_a)}{\Delta + \gamma(1 + C_d u_2)}$ (Walter et al., 2001, p. 24)	(8)
1985 Hargreaves equation	$ET_{0\,Har\,85} = 0.0023 \times R_a \times\ TC + 17.8\ \times TR^{0.5}$ (Hargreaves, Asce, & Allen, 2003, p.55)	(9)
Hargreaves-Samani equation	$ET_{0\,Har-Sam} = 0.0023\ \ T_{mean} + 17.8\ \times\ T_{max} - T_{min}\ ^{0.5} \times R_a$ (Fernandes, Paiva, & Rotunno Filho, 2012, p. 275)	(10)
McCloud's equation	$ET_{0\,McC} = 0.254 \times 1.07^{1.8 \times T_{mean}}$ (Almorox, Quej, & Martí, 2015, p. 517)	(11)
Baier and Robertson's equation	$ET_{0\,B-R} = 0.09 \times (1.67021 \times T_{max} + 1.68085 \times\ T_{max} - T_{min}\ + 1.129575 \times H_0 - 57.3403)$ (Almorox et al., 2015, p. 517)	(12)
Papadakis equation	$ET_{0\,Pap} = 5.625 \times\ e^o\ T_{max}) - e^o(T_{min} - 2$ (Almorox et al., 2015, p. 517):	(13)
Malmström's equation	$ET_{0\,Mal} = 4.09 \times\ e^o\ T_{mean}$ (Almorox et al., 2015, p. 517):	(14)

Table 3-5 Potential evapotranspiration (PET) equations selected for evaluation against observed ET_0

Name	**Equation**	**Nr.**
Hargreaves's equation	$PET_{Har} = 0.0023 \frac{\bar{R}_a}{\lambda} \times \sqrt{T_{max} - T_{\min}} \times (T_{mean} + 17.8)$ (Xystrakis & Matzarakis, 2011, p. 212)	(15)
Mc. Guinness-Bordne's equation	$PET_{McG-Bor} = \frac{R_a}{\lambda \times \rho} \times \frac{(T_{mean} + 5)}{68}$ (Xystrakis & Matzarakis, 2011, p. 212):	(16)
Romanenko's equation	$PET_{Rom} = 4.5 \times \left(1 + \frac{T_{mean}}{25}\right)^2 \times \left(1 - \frac{e_a}{e_s}\right)$ (Xystrakis & Matzarakis, 2011)	(17)
Hammon's equation 1	$PET_{Ham1} = 0.1651 \times \frac{\overline{DL}}{12} \times \left(\frac{126.7 \times \bar{e}_s}{T_{mean} + 273.3}\right) \times a$ a=1.2 (Xystrakis & Matzarakis, 2011, p.214)	(18)
Hammon's equation 2	$PET_{Ham2} = (DL/12)^2 \times e^{(\frac{T_{mean}}{16})}$ (Xystrakis & Matzarakis, 2011):	(19)
Hammon's equation 3	$PET_{Ham3} = 0.55 \times \left(\frac{DL}{12}\right)^2 \times \frac{SVD^a}{100} \times 25.4$ (Xystrakis & Matzarakis, 2011, p. 214)	(20)

Where C_n the numerator constant for the reference crop type and time step. For short reference crop and daily time step = 900

C_d the denominator constant for the reference crop type and time step. For short reference crop and daily time step =0.34

When inputting the values of C_n and C_d the FAO PM and ASCE PM equations are equal. Therefore, these will be evaluated as one.

When working out the Hargreaves 1985 and the Hargreaves Samani, these two equations are equal. Therefore, these too will be evaluated as one.

Extraterrestrial radiation (R. Allen et al., 1998, p. 47)

$$= \frac{24\ 60}{\pi} G_{sc} d_r [\ \omega_s ET sin\varphi sin\delta\ +\ cos\varphi cos\delta sin\omega_s\ ] \qquad (9)$$

Calculated with online calculator (Saecanet, 2018)

Average daily net radiation at the crop surface (R. G. Allen et al., 1998, p. 53):

$$R_n = R_{ns} - R_{nl} \qquad (10)$$

According to Allen et al. (1998) the Soil heat flux (G) is the energy that is utilized in heating the soil and is positive when soil is warming and negative when soil is cooling and is small compared to R_n (p. 43).

Saturation vapor pressure deficit (R. G. Allen et al., 1998,):

$$\text{Saturation vapor pressure deficit} = e_s - e_a \qquad (11)$$

Actual vapor pressure (R. G. Allen et al., 1998, p. 40):

$$e_a = e^o\ T_{dew} = 0.6108^{\frac{17.27T_{dew}}{T_{dew}+237.3}} \qquad (12)$$

Saturation vapor pressure (R. G. Allen et al., 1998):

$$e_s = \frac{e^o\ T_{max} + e^o\ T_{min}}{2} \qquad (13)$$

Specific heat of the air at constant pressure (R. G. Allen et al., 1998):

$$c_p = \frac{\gamma\, \varepsilon\, \lambda}{P} \qquad (14)$$

Slope of the saturation vapor pressure curve at temperature T (R. G. Allen et al., 1998):

$$\Delta = \frac{4098 \square 0.6108^{\frac{17.27T}{T+237.3}}}{(T + 237.3)^2} \qquad (15)$$

Psychrometric constant (R. G. Allen et al., 1998):

$$\gamma = 0.665 \times 10^{-3}\, P \qquad (16)$$

Saturated vapor density at mean air temperature (Xystrakis & Matzarakis, 2011, p. 213)

$$SVD^{a} = 216.7 \times \frac{e_s}{T} + 273.3 \qquad (17)$$

Daily temperature range (Hargreaves et al., 2003, p. 55) and (Droogers & Allen, 2002, p. 36)

$$TD = TR = T_{max} - T_{min} \qquad (18)$$

Where $ET_{0\,PM}$ Penman-Monteith reference evaporation [mm d^{-1}],

$ET_{0\,FAO\,PM}$ FAO 56 Penman-Monteith reference evaporation [mm d^{-1}],

$ET_{sz\,ASCE\,PM}$ ASCE standardized reference crop evapotranspiration [mm d^{-1}],

$ET_{0\,Har\,85}$ Hargreaves reference crop evapotranspiration [mm d^{-1}],

$ET_{0\,Har-Sam}$ Hargreaves-Samani reference crop evapotranspiration [mm d^{-1}],

PET_{Har} Hargreaves’s potential evapotranspiration [mm d^{-1}],

$PET_{McG-Bor}$ Mc. Guinness-Bordne’s potential evapotranspiration [mm d^{-1}],

PET_{Rom} Romanenko’s potential evapotranspiration [mm d^{-1}],

PET_{Ham1} Hammon’s 1 potential evapotranspiration [mm d^{-1}],

PET_{Ham2} Hammon’s 2 potential evapotranspiration [mm d^{-1}],

PET_{Ham3} Hammon’s 3 potential evapotranspiration [mm d^{-1}],

$ET_{0\,McC}$ McCloud’s equation [mm d^{-1}],

$ET_{0\,B-R}$ Baier and Robertson’s equation [mm d^{-1}],

$ET_{0\,Pap}$ Papadakis equation [mm d^{-1}],

$ET_{0\,Mal}$ Malmström’s equation [mm d^{-1}],

R_a , H_0 extraterrestrial radiation [MJ m-2 day^{-1}],

R_n average daily net radiation at the crop surface [MJ m^{-2} day^{-1} or W/m^2],

R_{ns} net shortwave radiation [MJ m^{-2} day^{-1} or Wm $^{-2}$],

R_{nl} net longwave radiation [MJ m^{-2} day^{-1} or Wm $^{-2}$],

λET evapotranspiration rate [$MJm^{-2}day^{-1}$],

PET potential evapotranspiration rate [$MJm^{-2}day^{-1}$],

λ latent heat of evapotranspiration of water = 2.45 MJ kg^{-1},

G soil heat flux [MJ $m^{-2}day^{-1}$]; the daily soil heat flux is often small relative to Rn and is therefore negligible. (R. G. Allen et al., 1998),

	e_s	saturation vapor pressure [KPa],
Where	e_a	actual vapor pressure [KPa],
	$e^0(T)$	saturation vapor pressure at air temperature T [KPa],
	r_s	surface resistance = 70 s m-^{1},
	r_a	aerodynamic resistance; at crop height of 0.12 m and standardized height for wind speed: r_a=208*u_2^{-1} s m^{-1},
	u_2	windspeed at 2 m height [m s^{-1}],
	ρ_a	mean air density at constant pressure [kPa],
	c_p	specific heat of the air [dimensionless],
	P	atmospheric pressure [kPa],
	ε	molecular weight of water vapor/dry air = 0.622,
	Δ	slope of the saturation vapor pressure temperature relationship [kPa °C $^{-1}$],
	γ	psychrometric constant [kPa °C^{-1}],
	DL	day length [hours],
	SVD^a	saturated Vapor Density at mean air temperature [g m^{-3}],
	RH	relative air humidity [%],
	T, T_{mean}, TC	mean daily temperature [°C],
	T_{max}	maximum daily temperature [°C],
	T_{min}	minimum daily temperature [°C],
	T_{dew}	dewpoint temperature [°C],
	TR or TD	daily temperature range [°C]

4 Results and discussion

Calculations of the estimated daily time series of ET_0 Penman-Monteith, ET_0 FAO 56 Penman-Monteith, ET_0 FAO PM 56 ASCE standardized, ET_0 1985 Hargreaves, ET_0 Hargreaves-Samani, ET_0 McCloud, ET_0 Baier and Robertson, ET_0 Papadakis and ET_0 Malmström, PET Hargreaves, PET Mc. Guinness-Bordne, PET Romanenko, PET Hammon 1, PET Hammon 2 and PET Hammon 3, equations are performed in MS Excel. Results of daily estimated ET_0 and daily estimated PET for January 2010 are shown in table 4-1 and table 4-2. The complete set of results for January 2010 to December 2011 (except for march 2011) are presented in Appendix C. These results are also visualized in time-series plots. The complete set of time-series plots are presented in Appendix D.

Graphs for noteworthy results, are shown in figure 4-1 to figure 4-3. The extracted time period for the equation is June 1st 2011 – September 30, 2011, because this period should be best suited for observing peaks because in includes both part of the big rain season and the big dry season and will allow for evaluation of peaks. Noteworthy time-series plots are those of ET_0 FAO 56 Penman-Monteith/ ET_0 FAO PM 56 ASCE standardized, ET_0 Baier and Robertson and PET Romanenko. ET_0 FAO 56 Penman-Monteith/ ET_0 FAO PM 56 ASCE standardized (figure 4-1), best follows the peak ET correlation, however, it underestimates all the values, including the peaks. ET_0 Baier and Robertson (figure 4-2) and PET Romanenko (figure 4-3) shows best match for linear best fit graph, but does not match the peak ET's. PET Romanenko shows similar behavior to ET_0 FAO 56 Penman-Monteith/ ET_0 FAO PM 56 ASCE standardized, with PET Romanenko being Temperature based and ET_0 FAO 56 Penman-Monteith/ ET_0 FAO PM 56 ASCE standardized being energy based. It would not make sense to evaluate scatterplots for two years, because of the short time period. After visual analysis, statistical analysis can show whether the results of graphical analysis will be confirmed or not.

Table 4-1 Results of daily ET_0 for equations, calculated for location of ADRON in Nickerie district for January 2010.

Date	$ET_{0\ PM}$	$ET_{0\ FAO\ PM}$ / $ET_{0\ ASCE\ PM}$	$ET_{0\ Har\text{-}Sam}$/ $ET_{0\ HAR\ 85}$	$ET_{0\ McC}$	$ET_{0\ B\text{-}R}$	$ET_{0\ Pap}$	$ET_{0\ Mal}$
1/1/2010	0.96	3.20	2.43	6.01	4.18	2.34	13.73
1/2/2010	1.13	3.35	2.23	6.13	4.19	2.32	13.86
1/3/2010	1.01	3.45	2.22	6.04	4.18	2.31	13.77
1/4/2010	0.80	1.63	2.05	5.56	4.07	2.21	13.22
1/5/2010	0.58	1.96	2.01	5.97	4.15	2.27	13.68
1/6/2010	0.80	3.84	2.09	6.61	4.28	2.37	14.37
1/7/2010	0.84	3.37	2.14	6.13	4.19	2.31	13.87
1/8/2010	1.10	3.12	2.24	5.85	4.14	2.28	13.55
1/9/2010	1.12	3.45	1.97	5.98	4.15	2.26	13.69
1/10/2010	1.00	4.24	2.07	6.60	4.28	2.37	14.37
1/11/2010	0.55	2.95	2.18	6.11	4.19	2.31	13.84
1/12/2010	0.93	2.65	2.33	6.07	4.18	2.33	13.80
1/13/2010	1.12	3.05	2.13	6.38	4.24	2.35	14.13
1/14/2010	0.51	2.03	2.06	6.31	4.22	2.32	14.06
1/15/2010	0.71	2.85	2.07	6.51	4.26	2.36	14.27
1/16/2010	0.83	3.30	2.25	6.63	4.29	2.40	14.40
1/17/2010	0.49	1.13	1.94	5.57	4.07	2.19	13.24
1/18/2010	0.78	1.71	2.00	5.91	4.14	2.25	13.62
1/19/2010	1.01	2.67	1.93	6.39	4.23	2.32	14.14
1/20/2010	1.06	2.99	2.03	6.13	4.19	2.29	13.87
1/21/2010	0.74	2.92	2.32	6.10	4.19	2.33	13.83
1/22/2010	0.94	2.43	2.04	5.87	4.13	2.26	13.58
1/23/2010	1.18	2.52	2.01	5.76	4.11	2.23	13.45
1/24/2010	1.01	2.82	1.91	6.00	4.16	2.25	13.72
1/25/2010	1.10	2.70	1.96	6.01	4.16	2.26	13.73
1/26/2010	0.46	1.86	2.19	5.85	4.14	2.28	13.55
1/27/2010	1.19	2.58	2.01	5.70	4.10	2.22	13.38
1/28/2010	1.46	2.48	2.09	5.35	4.02	2.18	12.97
1/29/2010	0.76	1.74	2.13	5.38	4.03	2.19	13.01
1/30/2010	0.63	2.42	2.39	5.79	4.13	2.30	13.48
1/31/2010	0.88	2.24	2.12	5.82	4.12	2.26	13.52

Note. $ET_{0\ PM} = ET_0$ Penman-Monteith , $ET_{0\ FAO\ PM} = ET_0$ FAO 56 Penman-Monteith (mm day^{-1}), $ET_{0\ ASCE\ PM} = ET_0$ FAO PM 56 ASCE standardized (mm day^{-1}), $ET_{0\ Har\text{-}Sam} = ET_0$ Hargreaves-Samani (mm day^{-1}), $ET_{0\ HAR\ 85} = ET_0$ 1985 Hargreaves (mm day^{-1}), $ET_{0\ McC} = ET_0$ McCloud’s (mm day^{-1}), $ET_{0\ B\text{-}R} = ET_0$ Baier and Robertson’s (mm day-1), $ET_{0\ Pap} = ET_0$ Papadakis (mm day^{-1}), $ET_{0\ Mal} = ET_0$ Malmström’s equations (mm day^{-1})

Table 4-2 Results of daily PET for different equations, calculated for location of ADRON in Nickerie district for January 2010.

Date	PET $_{Har}$	PET $_{McG-Bor}$	PET $_{Rom}$	PET $_{Ham\ 1}$	PET $_{Ham\ 2}$	PET $_{Ham\ 3}$
1/1/2010	0.99	0.84	3.22	0.27	4.77	0.32
1/2/2010	0.91	0.85	3.54	0.28	4.82	0.32
1/3/2010	0.91	0.85	3.26	0.27	4.79	0.32
1/4/2010	0.84	0.83	1.44	0.26	4.59	0.31
1/5/2010	0.82	0.84	1.77	0.27	4.76	0.32
1/6/2010	0.85	0.87	3.36	0.29	5.02	0.33
1/7/2010	0.87	0.85	3.33	0.28	4.83	0.32
1/8/2010	0.92	0.84	3.02	0.27	4.72	0.32
1/9/2010	0.80	0.84	3.19	0.27	4.77	0.32
1/10/2010	0.84	0.87	3.88	0.29	5.02	0.33
1/11/2010	0.89	0.85	3.03	0.28	4.83	0.32
1/12/2010	0.95	0.85	2.38	0.27	4.82	0.32
1/13/2010	0.87	0.86	2.86	0.28	4.94	0.33
1/14/2010	0.84	0.86	1.89	0.28	4.92	0.33
1/15/2010	0.85	0.86	2.40	0.28	5.00	0.33
1/16/2010	0.92	0.87	2.92	0.29	5.05	0.34
1/17/2010	0.79	0.82	1.10	0.26	4.62	0.31
1/18/2010	0.81	0.84	1.43	0.27	4.76	0.32
1/19/2010	0.79	0.86	2.28	0.28	4.96	0.33
1/20/2010	0.83	0.85	2.72	0.28	4.86	0.33
1/21/2010	0.95	0.85	2.75	0.28	4.85	0.32
1/22/2010	0.83	0.84	2.18	0.27	4.76	0.32
1/23/2010	0.82	0.83	2.34	0.27	4.71	0.32
1/24/2010	0.78	0.84	2.90	0.27	4.81	0.32
1/25/2010	0.80	0.84	2.36	0.27	4.82	0.32
1/26/2010	0.89	0.84	1.98	0.27	4.76	0.32
1/27/2010	0.82	0.83	2.34	0.27	4.70	0.32
1/28/2010	0.85	0.82	2.25	0.26	4.55	0.31
1/29/2010	0.87	0.82	1.86	0.26	4.57	0.31
1/30/2010	0.98	0.84	2.43	0.27	4.75	0.32
1/31/2010	0.86	0.84	1.79	0.27	4.76	0.32

Note. PET $_{Har}$ = ET_0 1985 Hargreaves (mm day^{-1}), PET $_{McG-Bor}$ = PET Mc. Guinness-Bordne's (mm day-1), PET Rom = PET Romanenko's (mm day^{-1}), PET Ham 1 = PET Hammon's 1 (mm day^{-1}), PET Ham 2 = PET Hammon's 2 (mm day^{-1}), PET Ham 3 = PET Hammon's 3 (mm day^{-1})

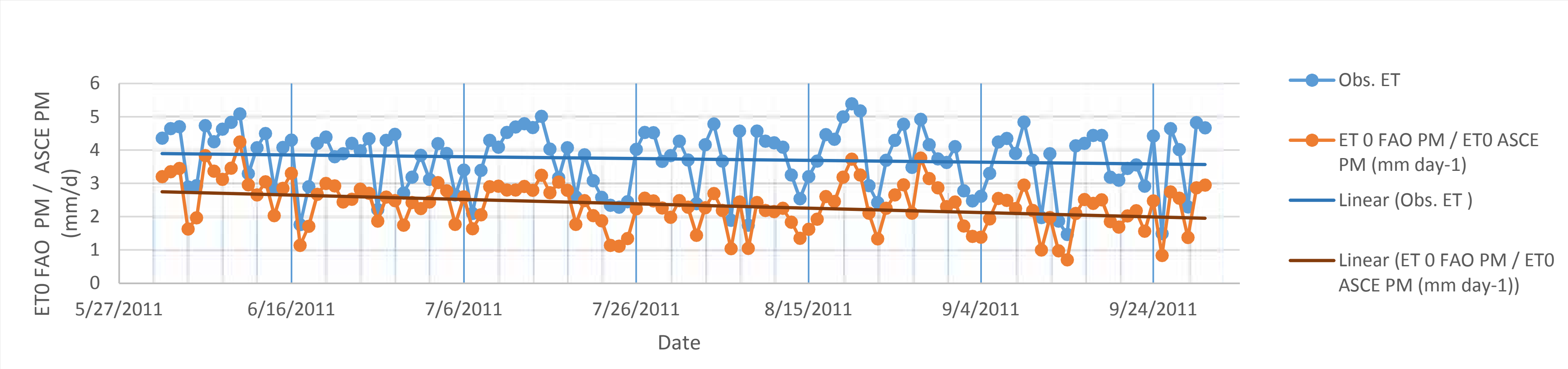

Figure 4-1 Time-series plot of observed ET and estimated $ET_{0\ FAO\ PM}$ / $ET_{0ASCE\ PM}$ (mm/d) for location of ADRON in Nickerie district.

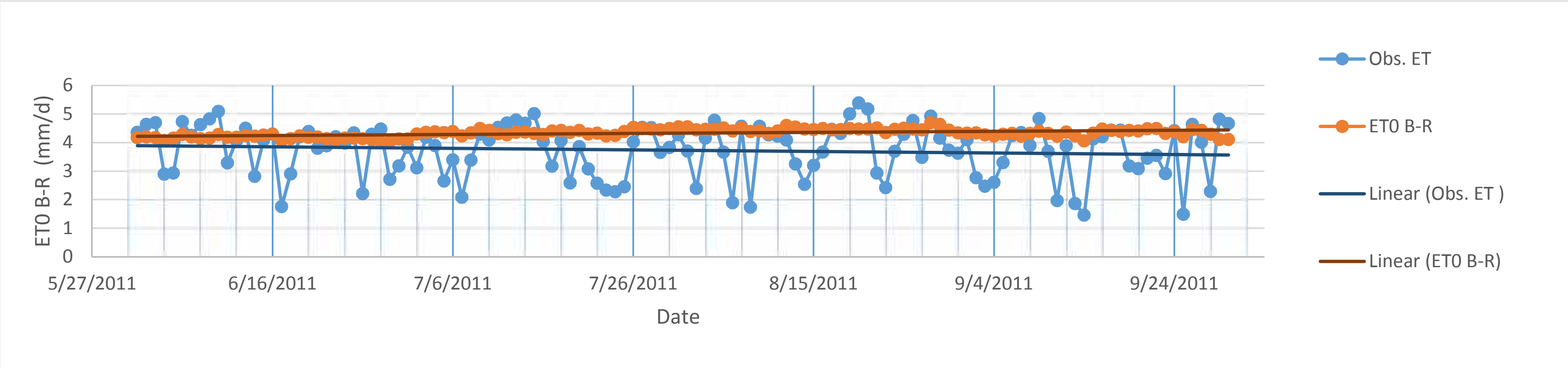

Figure 4-2 Time-series plot of observed ET and estimated $ET_{0\ B\text{-}R}$ (mm d^{-1}) for location of ADRON in Nickerie district.

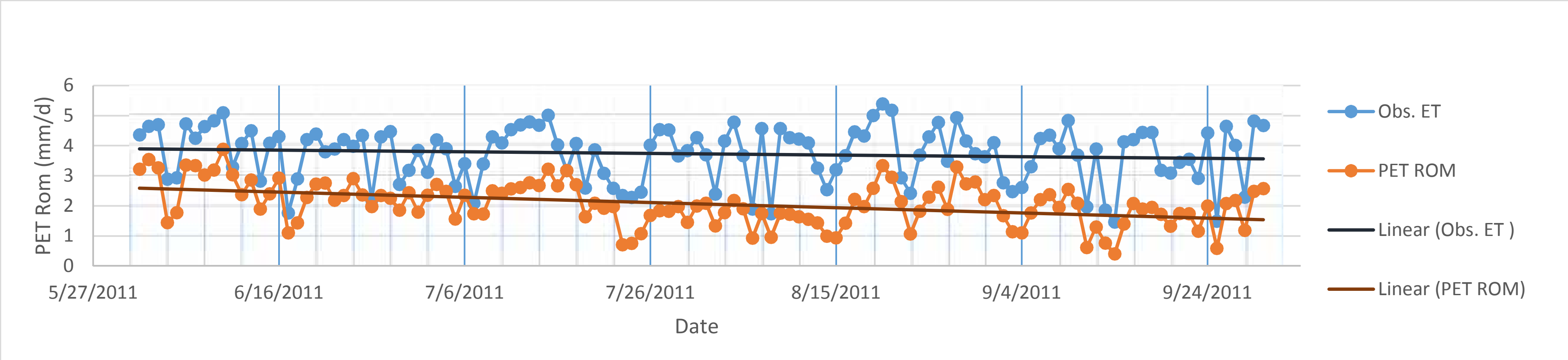

Figure 4-3 Time-series plot of observed ET and estimated PET $_{Rom}$ (mm d^{-1}) for location of ADRON in Nickerie district.

Statistical analysis of the resulting daily time series as explained in paragraph 3.2, requires using the equation (3) and equation (4) for calculating coefficient of determination R^2 and coefficient of agreement d, and evaluating the results of R^2 and d according to table 3-1. The results of R^2 for each of the equations are shown in table 4-3 and the results of d for each of the equations are shown in table 4-4. Looking at the values in Table 4-3 ‘Resulting R^2 values of performance evaluation for field scale and daily time scale’ arranged from largest to smallest, it appears that for each of the results: $R^2 \leq 0.70$. Therefore, all results R^2 for all equations are classified as ‘not satisfactory’. The best d value is for $ET_{0\ B\text{-}R;}$ d =0.7488. Because $0.7488 \leq 0.75$ even for the best value, the classification is ‘not satisfactory’, as well as for the remaining equations. The second-best value for d is for ET_0 FAO 56 Penman-Monteith/ ET_0 FAO PM 56 ASCE standardized: d = 0.6495, and the third best value for d is ET_0 Papadakis. The PET Romanenko, that stood out in graphical evaluation had the 6^{th} best d- value. Albeit, still not satisfactory.

Because of lack of daily scale performance measurement criteria for ET, monthly calibrated evaluation criteria for flow were used to evaluate the daily ET. Of the 13 equations evaluated, based on the assumptions and the results of visual and statistical analysis, none of the methods evaluated perform very good, good or satisfactory. In fact, in statistical analysis, the results of all the equations are consistently classified as ‘not satisfactory’. Even the ET_0 FAO 56 Penman-Monteith/ ET_0 FAO PM 56 ASCE standardized, which is generally recommended and used performs under the standard. There are some equations worth further consideration and discussion.

The first equation worth a closer look is the ASCE standardized reference crop evapotranspiration equation (Walter et al., 2001). Even though it showed best correlation and resulted in amongst the better d-values, the ASCE standardized reference crop evapotranspiration equation underestimates the ET compared to observed ET. An adjusted radiation energy input may result in more accurate values. Another point worth noting, is that the input data was measured at 1.5 m above ground level. This equation however requires wind data measured at 2 m above ground level. A correction of this inconsistency may result in more accurate time series estimations. A third point is that the soil flux was assumed to be negligible for daily time series, which if given a positive value, would further reduce the daily ET_0 values. The ASCE standardized reference crop evapotranspiration equation is recommended for further research and adjustment to the specific weather of Suriname and Nickerie to be calibrated for Nickerie.

The Romanenko's equation (Xystrakis & Matzarakis, 2011) also deserves further discussion, because it's graphical results appear to be somewhat similar to the results of the ASCE standardized reference crop evapotranspiration equation, even though Romanenko's equation is temperature based and needs less input variables. It's estimated daily PET also underestimates the ET values, but correlates with the graph movement of that of the daily observed ET_0. The Romanenko's equation is recommended for further empirical research to be made applicable in Suriname, especially because it needs less input variables than the ASCE standardized reference crop evapotranspiration equation, while giving similar results.

Another temperature-based equation, that shows some potential for application and further research, is the Baier and Robertson's equation. It shows lower error in d-value, however, it has very low correlation with fluctuations and does not estimate maximum and minimum values to satisfaction. The time series used in modeling for monthly or annual time scales as opposed to using a single daily average value for reference crop evapotranspiration, may result in increased quality of output. This needs further research.

Table 4-3 Resulting R^2 values of statistical performance evaluation of estimated ET_0 and PET against observed ET of AWS1 at ADRON in Nickerie district for field scale and daily time scale.

Equation	**R^2 - value**	**Classification**
$ET_{0\ Pap}$	0.035	not satisfactory
$ET_{0\ Mal}$	0.035	not satisfactory
$PET_{McG\text{-}Bor}$	0.035	not satisfactory
PET_{Ham1}	0.035	not satisfactory
$ET_{0\ B\text{-}R}$	0.034	not satisfactory
PET_{Ham3}	0.034	not satisfactory
PET_{Ham2}	0.033	not satisfactory
$ET_{0\ McC}$	0.030	not satisfactory
PET_{Har}	0.028	not satisfactory
$ET_{0\ HAR85}$/ $ET_{0\ Har\text{-}Sam}$	0.028	not satisfactory
$ET_{0\ PM}$	0.013	not satisfactory
$ET_{0\ FAO\ PM}$/$ET_{0\ ACSE\ PM}$	0.011	not satisfactory
	0.006	not satisfactory

Note. ET_0 = Reference crop evapotranspiration, PET = Potential evapotranspiration, R^2 - value = Coefficient of agreement, $ET_{0\ Pap}$ = Papadakis equation [mm d^{-1}], $ET_{0\ Mal}$ Malmström's equation [mm d^{-1}], $PET_{McG\text{-}Bor}$ = Mc. Guinness-Bordne's potential evapotranspiration [mm d^{-1}], PET_{Ham1} = Hammon's 1 potential evapotranspiration [mm d^{-1}],$ET_{0\ B\text{-}R}$ = Baier and Robertson's equation [mm d^{-1}], $ET_{0\ B\text{-}R}$ PET_{Ham3} = Hammon's 3 potential evapotranspiration [mm d^{-1}], PET_{Ham2} = Hammon's 2 potential evapotranspiration [mm d^{-1}], $ET_{0\ McC}$ McCloud's equation mm d^{-1}], PET_{Har} =Hargreaves's potential evapotranspiration [mm d^{-1}], $ET_{0\ HAR85}$ = Hargreaves reference crop evapotranspiration [mm d^{-1}], $ET_{0\ Har\text{-}Sam}$ =Hargreaves-Samani reference crop evapotranspiration [mm d^{-1}], $ET_{0\ PM}$ $ET_{0\ PM}$ = Penman-Monteith reference evaporation [mm d^{-1}], $ET_{0\ FAO\ PM}$ = FAO 56 Penman-Monteith reference evaporation [mm d^{-1}], $ET_{0\ ACSE\ PM}$ = ASCE standardized reference crop evapotranspiration [mm d^{-1}], PET_{Rom} = Romanenko's potential evapotranspiration [mm d^{-1}].

Table 4-4 Resulting d - values of statistical performance evaluation of estimated ET_0 and PET against observed ET of AWS1 at ADRON in Nickerie district for field scale and daily time scale.

Equation	**d-value**	**classification**
$ET_{0\ B\text{-}R}$	0.7488	not satisfactory
$ET_{0\ FAO\ PM}/ET_{0\ ACSE\ PM}$	0.6495	not satisfactory
$ET_{0\ Pap}$	0.6239	not satisfactory
$ET_{0\ HAR85}/\ ET_{0\ Har\text{-}Sam}$	0.5733	not satisfactory
$PET_{\ Ham2}$	0.5469	not satisfactory
$PET_{\ Rom}$	0.5387	not satisfactory
$ET_{0\ PM}$	0.4638	not satisfactory
$ET_{0\ McC}$	0.4159	not satisfactory
$PET_{\ McG\text{-}Bor}$	0.4001	not satisfactory
$PET_{\ Har}$	0.3993	not satisfactory
$PET_{\ Ham3}$	0.3507	not satisfactory
$PET_{\ Ham1}$	0.3457	not satisfactory
$ET_{0\ Mal}$	0.1228	not satisfactory

Note. ET_0 = Reference crop evapotranspiration, PET = Potential evapotranspiration, d- value = coefficient of determination, $ET_{0\ Pap}$ = Papadakis equation [mm d^{-1}], $ET_{0\ Mal}$ Malmström's equation [mm d^{-1}], $PET_{\ McG\text{-}Bor}$ = Mc. Guinness-Bordne's potential evapotranspiration [mm d^{-1}], PET_{Ham1} = Hammon's 1 potential evapotranspiration [mm d^{-1}],$ET_{0\ B\text{-}R}$ = Baier and Robertson's equation [mm d^{-1}], $ET_{0\ B\text{-}R}$ $PET_{\ Ham3}$ = Hammon's 3 potential evapotranspiration [mm d^{-1}], PET_{Ham2} = Hammon's 2 potential evapotranspiration [mm d^{-1}], $ET_{0\ McC}$ McCloud's equation mm d^{-1}], $PET_{\ Har}$ =Hargreaves's potential evapotranspiration [mm d^{-1}], $ET_{0\ HAR85}$ = Hargreaves reference crop evapotranspiration [mm d^{-1}], $ET_{0\ Har\text{-}Sam}$ =Hargreaves-Samani reference crop evapotranspiration [mm d^{-1}], $ET_{0\ PM}$ $ET_{0\ PM}$ = Penman-Monteith reference evaporation [mm d^{-1}], $ET_{0\ FAO\ PM}$ = FAO 56 Penman-Monteith reference evaporation [mm d^{-1}], $ET_{0\ ACSE\ PM}$ = ASCE standardized reference crop evapotranspiration [mm d^{-1}], $PET_{\ Rom}$ = Romanenko's potential evapotranspiration [mm d^{-1}].

5 Summary and conclusion

The research objective was to evaluate reference crop evapotranspiration and potential evapotranspiration equations by comparing these to observations measured by ADRON Weather Stations. The purpose was to recommend a method for estimating daily time series reference crop evapotranspiration data in locations and for time periods where there are no observed evapotranspiration data in Nickerie. The daily time series is necessary for input in hydrological models with daily time series input. The evaluation was done by estimating reference crop evapotranspiration and potential evapotranspiration with thirteen equations and visually and statistically evaluating these to observed reference crop evapotranspiration. The results of this research are that none of the thirteen empirical methods show convincing applicability for the purpose, in their current state. Best results are derived from the FAO Penman Monteith / ASCE Penman Monteith equation, Baier and Robertson's equation and Romanenko's potential evapotranspiration. All three equations show potential for adjustment to deliver higher accuracy need further research.

The input data was measured at 1.5 m above ground level, while FAO Penman Monteith / ASCE Penman Monteith equation requires wind data measured at 2 m above ground level. The Soil flux was assumed to be negligible on daily time scale. The Baier and Robertson's equation shows potential to be used in specific occasions when the extremes are not relevant to the results of modeling output. In case of climate change projections, this is unlikely. But the application and needs further research and improvement. Romanenko's equation is recommended for further empirical research to be made applicable in Suriname, especially because it is temperature based. It requires less input variables than the ASCE standardized reference crop evapotranspiration equation, while resulting in similar output. For now, it remains so that estimates of the FAO Penman Monteith / ASCE Penman Monteith equation and the Baier and Robertson's and Romanenko's equations still show too large margins of error and can therefore not be recommended for estimating or predicting the ET_0 in Nickerie district rice fields without further research or improvement. For estimation purposes it is recommended to improve quality of data gathering and increase spatial distribution of data gathering points, to allow for geostatistical spatial and/or temporal interpolation or extrapolation of the observed data for use in cases where there are no observations available.

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Appendix A

Table A. Sample of the weather daily average of parameters observed at ADRON Weather Station 1 in Nickerie district at 1.5 m above ground level, and input for observations and input for estimation of ET0 and PET. Date in 'MM/DD/YYYY' format, Temp Out = daily Average of atmospheric temperature (°C), Hi Temp = Maximum daily temperature (°C), Low Temp = Minimum Daily Temperature (°C), Out Hum = daily average humidity of the atmosphere (g m-1), Dew Pt. = daily average dewpoint (°C), Wind Speed = daily average windspeed (m s -1), Bar = atmospheric pressure (kPa), Solar Rad. = Average daily net radiation (W m-2 h-1), ET = total daily evapotranspiration (mm day-1).

Date	Temp Out (°C)	Hi Temp (°C)	Low Temp (°C)	Out Hum (g m^{-1})	Dew Pt. (°C)	Wind Speed (m s^{-1})	Bar (kPa)	Solar Rad. (W m^{-2} h^{-1})	ET (mm day^{-1})
1/1/2010	25.98	26.09	25.88	83.28	22.83	2.98	1012.05	212.24	4.36
1/2/2010	26.14	26.22	26.05	81.94	22.65	2.49	1010.59	229.94	4.64
1/3/2010	26.02	26.12	25.94	83.31	22.83	3.39	1010.33	235.88	4.7
1/4/2010	25.33	25.40	25.25	92.20	23.95	2.19	1010.91	160.75	2.89
1/5/2010	25.92	25.99	25.85	90.74	24.24	3.71	1011.01	142.30	2.93
1/6/2010	26.76	26.83	26.68	82.92	23.54	4.96	1011.04	219.65	4.73
1/7/2010	26.14	26.23	26.07	82.63	22.89	3.49	1011.83	197.53	4.25
1/8/2010	25.75	25.85	25.67	84.34	22.79	2.78	1012.09	238.68	4.63
1/9/2010	25.93	26.00	25.87	83.45	22.81	3.28	1011.11	258.83	4.83
1/10/2010	26.74	26.82	26.67	80.29	22.98	4.17	1011.24	250.04	5.09
1/11/2010	26.11	26.20	26.03	84.08	23.18	3.79	1011.90	135.94	3.29
1/12/2010	26.06	26.15	25.96	87.50	23.79	3.22	1012.06	211.27	4.07
1/13/2010	26.47	26.55	26.39	85.45	23.74	2.80	1012.67	236.06	4.5
1/14/2010	26.38	26.46	26.31	90.13	24.62	3.87	1012.26	125.60	2.82

Appendix B

Table B Observed daily ET at AWS1 and KNMI Climate change atlas model predictions for different climate change scenario simulations of daily The Evaporation, Transpiration and Sublimation for each month of January 2010-December 2011 for each of the climate change scenarios.

Date	Obs. ET mm day^{-1}	Sim RCP2.6 mm day^{-1}	Sim RCP4.5 mm day^{-1}	Sim RCP6.0 mm day^{-1}	Sim RCP8.5 mm day^{-1}	Average mm day^{-1}
Jan-10	3.88	2.6458	2.7808	2.7847	2.7434	2.74
Feb-10	3.64	2.5162	2.6274	2.6831	2.566	2.60
Mar-10	3.87	2.3929	2.5084	2.5684	2.4168	2.47
Apr-10	3.44	2.4847	2.6072	2.6394	2.5296	2.57
May-10	3.26	2.9943	3.08	3.106	3.0255	3.05
Jun-10	3.41	3.4846	3.5307	3.5967	3.4725	3.52
Jul-10	3.27	3.7879	3.8609	3.9342	3.827	3.85
Aug-10	3.36	3.5943	3.7947	3.8408	3.7228	3.74
Sep-10	3.53	2.9567	3.2274	3.2722	3.1216	3.14
Oct-10	3.36	2.5955	2.86	2.8802	2.736	2.77
Nov-10	3.16	2.64	2.884	2.8509	2.78	2.79
Dec-10	3.45	2.7733	2.9315	2.9066	2.889	2.88
Jan-11	3.70	2.6463	2.7784	2.7867	2.7456	2.74
Feb-11	3.37	2.52	2.6311	2.6923	2.5762	2.60
Mar-11		2.40	2.5148	2.5808	2.4315	2.48
Apr-11	4.25	2.4807	2.6043	2.6373	2.5339	2.56
May-11	3.23	2.9906	3.0713	3.1046	3.0273	3.05
Jun-11	3.30	3.4845	3.5275	3.5915	3.4702	3.52
Jul-11	3.43	3.7831	3.858	3.9335	3.8308	3.85
Aug-11	3.68	3.5878	3.7867	3.8406	3.7262	3.74
Sep-11	3.59	2.9511	3.2243	3.2643	3.117	3.14
Oct-11	3.31	2.5912	2.8575	2.8757	2.7277	2.76
Nov-11	3.46	2.6357	2.8805	2.8476	2.7814	2.79
Dec-11	3.37	2.758	2.924	2.9019	2.884	2.87
Daily Average	3.51	3.03	3.19	3.22	3.12	3.14

Note. Obs. ET = observed reference crop evapotranspiration for AWS1, Sim RCP2.6 = simulation of daily average ET for each month in scenario RCP2.6, Sim RCP4.5 = simulation of daily average ET for each month in scenario RCP4.5, Sim RCP6.0 = simulation of daily average ET for each month in scenario RCP6.0, Sim RCP8.5 = simulation of daily average ET for each month in scenario RCP8.5.

Appendix C

Table C1 Estimated daily ET_0 Penman-Monteith, ET_0 FAO 56 Penman-Monteith, ET_0 FAO PM 56 ASCE standardized, ET_0 1985 Hargreaves, ET_0 Hargreaves-Samani, ET_0 McCloud's, ET_0 Baier and Robertson's, ET_0 Papadakis and ET_0 Malmström for AWS1 at ADRON in Nickerie district for January 2010-December 2011

Date	$ET_{0\ PM}$	$ET_{0\ FAO\ PM}$ / $ET_{0\ ASCE\ PM}$	$ET_{0\ Har\text{-}Sam}$/ $ET_{0\ HAR\ 85}$	$ET_{0\ McC}$	$ET_{0\ B\text{-}R}$	$ET_{0\ Pap}$	$ET_{0\ Mal}$
1/1/2010	0.96	3.20	2.43	6.01	4.18	2.34	13.73
1/2/2010	1.13	3.35	2.23	6.13	4.19	2.32	13.86
1/3/2010	1.01	3.45	2.22	6.04	4.18	2.31	13.77
1/4/2010	0.80	1.63	2.05	5.56	4.07	2.21	13.22
1/5/2010	0.58	1.96	2.01	5.97	4.15	2.27	13.68
1/6/2010	0.80	3.84	2.09	6.61	4.28	2.37	14.37
1/7/2010	0.84	3.37	2.14	6.13	4.19	2.31	13.87
1/8/2010	1.10	3.12	2.24	5.85	4.14	2.28	13.55
1/9/2010	1.12	3.45	1.97	5.98	4.15	2.26	13.69
1/10/2010	1.00	4.24	2.07	6.60	4.28	2.37	14.37
1/11/2010	0.55	2.95	2.18	6.11	4.19	2.31	13.84
1/12/2010	0.93	2.65	2.33	6.07	4.18	2.33	13.80
1/13/2010	1.12	3.05	2.13	6.38	4.24	2.35	14.13
1/14/2010	0.51	2.03	2.06	6.31	4.22	2.32	14.06
1/15/2010	0.71	2.85	2.07	6.51	4.26	2.36	14.27
1/16/2010	0.83	3.30	2.25	6.63	4.29	2.40	14.40
1/17/2010	0.49	1.13	1.94	5.57	4.07	2.19	13.24
1/18/2010	0.78	1.71	2.00	5.91	4.14	2.25	13.62
1/19/2010	1.01	2.67	1.93	6.39	4.23	2.32	14.14
1/20/2010	1.06	2.99	2.03	6.13	4.19	2.29	13.87
1/21/2010	0.74	2.92	2.32	6.10	4.19	2.33	13.83
1/22/2010	0.94	2.43	2.04	5.87	4.13	2.26	13.58
1/23/2010	1.18	2.52	2.01	5.76	4.11	2.23	13.45
1/24/2010	1.01	2.82	1.91	6.00	4.16	2.25	13.72
1/25/2010	1.10	2.70	1.96	6.01	4.16	2.26	13.73
1/26/2010	0.46	1.86	2.19	5.85	4.14	2.28	13.55
1/27/2010	1.19	2.58	2.01	5.70	4.10	2.22	13.38
1/28/2010	1.46	2.48	2.09	5.35	4.02	2.18	12.97
1/29/2010	0.76	1.74	2.13	5.38	4.03	2.19	13.01
1/30/2010	0.63	2.42	2.39	5.79	4.13	2.30	13.48
1/31/2010	0.88	2.24	2.12	5.82	4.12	2.26	13.52

Note. $ET_{0\ PM}$ = ET_0 Penman-Monteith (mm day^{-1}), $ET_{0\ FAO\ PM}$ = ET_0 FAO 56 Penman-Monteith (mm day^{-1}), $ET_{0\ ASCE\ PM}$ = ET_0 FAO PM 56 ASCE standardized (mm day^{-1}), $ET_{0\ Har\text{-}Sam}$ = ET_0 Hargreaves-Samani (mm day^{-1}), $ET_{0\ HAR\ 85}$ = ET_0 1985 Hargreaves (mm day^{-1}), $ET_{0\ McC}$ = ET_0 McCloud's (mm day^{-1}), $ET_{0\ B\text{-}R}$ = ET_0 Baier and Robertson's (mm day-1), $ET_{0\ Pap}$ = ET_0 Papadakis (mm day^{-1}), $ET_{0\ Mal}$ = ET_0 Malmström's equations (mm day^{-1})

Table C2 Estimated daily PET Hargreaves's, PET Mc. Guinness-Bordne's, PET Romanenko's, PET Hammon's 1, PET Hammon's 2 and PET Hammon's 3 for AWS1 at ADRON in Nickerie district for January 2010 – December 2011

Date	PET $_{Har}$	PET $_{McG-Bor}$	PET $_{Rom}$	PET $_{Ham\ 1}$	PET $_{Ham\ 2}$	PET $_{Ham\ 3}$
1/1/2010	0.99	0.84	3.22	0.27	4.77	0.32
1/2/2010	0.91	0.85	3.54	0.28	4.82	0.32
1/3/2010	0.91	0.85	3.26	0.27	4.79	0.32
1/4/2010	0.84	0.83	1.44	0.26	4.59	0.31
1/5/2010	0.82	0.84	1.77	0.27	4.76	0.32
1/6/2010	0.85	0.87	3.36	0.29	5.02	0.33
1/7/2010	0.87	0.85	3.33	0.28	4.83	0.32
1/8/2010	0.92	0.84	3.02	0.27	4.72	0.32
1/9/2010	0.80	0.84	3.19	0.27	4.77	0.32
1/10/2010	0.84	0.87	3.88	0.29	5.02	0.33
1/11/2010	0.89	0.85	3.03	0.28	4.83	0.32
1/12/2010	0.95	0.85	2.38	0.27	4.82	0.32
1/13/2010	0.87	0.86	2.86	0.28	4.94	0.33
1/14/2010	0.84	0.86	1.89	0.28	4.92	0.33
1/15/2010	0.85	0.86	2.40	0.28	5.00	0.33
1/16/2010	0.92	0.87	2.92	0.29	5.05	0.34
1/17/2010	0.79	0.82	1.10	0.26	4.62	0.31
1/18/2010	0.81	0.84	1.43	0.27	4.76	0.32
1/19/2010	0.79	0.86	2.28	0.28	4.96	0.33
1/20/2010	0.83	0.85	2.72	0.28	4.86	0.33
1/21/2010	0.95	0.85	2.75	0.28	4.85	0.32
1/22/2010	0.83	0.84	2.18	0.27	4.76	0.32
1/23/2010	0.82	0.83	2.34	0.27	4.71	0.32
1/24/2010	0.78	0.84	2.90	0.27	4.81	0.32
1/25/2010	0.80	0.84	2.36	0.27	4.82	0.32
1/26/2010	0.89	0.84	1.98	0.27	4.76	0.32
1/27/2010	0.82	0.83	2.34	0.27	4.70	0.32
1/28/2010	0.85	0.82	2.25	0.26	4.55	0.31
1/29/2010	0.87	0.82	1.86	0.26	4.57	0.31
1/30/2010	0.98	0.84	2.43	0.27	4.75	0.32
1/31/2010	0.86	0.84	1.79	0.27	4.76	0.32

Note. PET $_{Har}$ = ET_0 1985 Hargreaves (mm day^{-1}), PET $_{McG-Bor}$ = PET Mc. Guinness-Bordne's (mm day-1), PET Rom = PET Romanenko's (mm day^{-1}), PET Ham 1 = PET Hammon's 1 (mm day^{-1}), PET Ham 2 = PET Hammon's 2 (mm day^{-1}), PET Ham 3 = PET Hammon's 3 (mm day^{-1})

Table C3 Estimated daily ET_0 Penman-Monteith, ET_0 FAO 56 Penman-Monteith, ET_0 FAO PM 56 ASCE standardized, ET_0 1985 Hargreaves, ET_0 Hargreaves-Samani, ET_0 McCloud's, ET_0 Baier and Robertson's, ET_0 Papadakis and ET_0 Malmström for AWS1 at ADRON in Nickerie district for January 2010-December 2011

Date	$ET_{0\ PM}$	$ET_{0\ FAO\ PM}$ / $ET_{0\ ASCE\ PM}$	$ET_{0\ Har\text{-}Sam}$ / $ET_{0\ HAR\ 85}$	$ET_{0\ McC}$	$ET_{0\ B\text{-}R}$	$ET_{0\ Pap}$	$ET_{0\ Mal}$
2/1/2010	0.57	2.44	2.10	5.77	4.30	2.24	13.46
2/2/2010	0.80	3.02	2.32	6.01	4.36	2.31	13.73
2/3/2010	0.75	2.77	2.34	6.09	4.38	2.33	13.82
2/4/2010	0.55	1.77	2.21	5.99	4.35	2.29	13.70
2/5/2010	0.63	2.59	2.17	6.17	4.39	2.31	13.91
2/6/2010	0.43	1.63	2.17	5.46	4.24	2.20	13.11
2/7/2010	0.73	2.06	1.89	6.00	4.34	2.24	13.72
2/8/2010	0.97	2.90	2.08	6.75	4.49	2.38	14.52
2/9/2010	0.74	2.91	2.13	6.36	4.42	2.33	14.12
2/10/2010	1.16	2.80	2.22	5.79	4.31	2.26	13.48
2/11/2010	1.36	2.80	2.10	5.62	4.27	2.21	13.29
2/12/2010	1.33	2.90	2.47	5.96	4.36	2.33	13.68
2/13/2010	1.44	2.79	2.45	6.04	4.37	2.34	13.77
2/14/2010	1.34	3.24	2.37	5.80	4.32	2.29	13.50
2/15/2010	0.95	2.72	2.41	5.64	4.28	2.27	13.31
2/16/2010	0.59	3.03	2.39	6.26	4.41	2.36	14.00
2/17/2010	1.02	2.79	2.57	6.32	4.43	2.40	14.07
2/18/2010	0.57	1.77	2.23	6.02	4.36	2.30	13.74
2/19/2010	0.86	2.48	1.99	6.39	4.42	2.32	14.14
2/20/2010	0.76	2.03	2.22	5.75	4.30	2.25	13.44
2/21/2010	0.63	1.87	2.28	5.88	4.33	2.28	13.59
2/22/2010	0.75	1.13	2.08	5.46	4.24	2.19	13.11
2/23/2010	0.65	1.11	1.78	5.58	4.25	2.16	13.25
2/24/2010	0.77	1.34	1.90	6.20	4.38	2.28	13.94
2/25/2010	1.13	2.23	2.27	6.96	4.54	2.44	14.74
2/26/2010	1.37	2.55	2.01	6.75	4.49	2.37	14.52
2/27/2010	1.36	2.47	2.11	6.62	4.47	2.36	14.39
2/28/2010	1.00	2.25	2.19	6.49	4.45	2.36	14.25

Note. $ET_{0\ PM}$ = ET_0 Penman-Monteith (mm day^{-1}), $ET_{0\ FAO\ PM}$ = ET_0 FAO 56 Penman-Monteith (mm day^{-1}), $ET_{0\ ASCE\ PM}$ = ET_0 FAO PM 56 ASCE standardized (mm day^{-1}), $ET_{0\ Har\text{-}Sam}$ = ET_0 Hargreaves-Samani (mm day^{-1}), $ET_{0\ HAR\ 85}$ = ET_0 1985 Hargreaves (mm day^{-1}), $ET_{0\ McC}$ = ET_0 McCloud's (mm day^{-1}), $ET_{0\ B\text{-}R}$ = ET_0 Baier and Robertson's (mm day-1), $ET_{0\ Pap}$ = ET_0 Papadakis (mm day^{-1}), $ET_{0\ Mal}$ = ET_0 Malmström's equations (mm day^{-1})

Table C4 Estimated daily PET Hargreaves's, PET Mc. Guinness-Bordne's, PET Romanenko's, PET Hammon's 1, PET Hammon's 2 and PET Hammon's 3 for AWS1 at ADRON in Nickerie district for January 2010 – December 2011

Date	PET $_{Har}$	PET $_{McG-Bor}$	PET $_{Rom}$	PET $_{Ham\ 1}$	PET $_{Ham\ 2}$	PET $_{Ham\ 3}$
2/1/2010	0.86	0.86	2.36	0.27	4.74	0.32
2/2/2010	0.95	0.87	2.71	0.28	4.85	0.32
2/3/2010	0.96	0.88	2.49	0.28	4.89	0.33
2/4/2010	0.90	0.87	1.56	0.28	4.85	0.32
2/5/2010	0.89	0.88	2.35	0.28	4.93	0.33
2/6/2010	0.89	0.85	1.74	0.26	4.63	0.31
2/7/2010	0.77	0.87	1.72	0.28	4.86	0.33
2/8/2010	0.85	0.90	2.50	0.29	5.17	0.34
2/9/2010	0.87	0.89	2.42	0.28	5.02	0.34
2/10/2010	0.91	0.87	2.57	0.27	4.79	0.32
2/11/2010	0.86	0.86	2.61	0.27	4.72	0.32
2/12/2010	1.01	0.87	2.76	0.28	4.87	0.33
2/13/2010	1.00	0.88	2.68	0.28	4.90	0.33
2/14/2010	0.97	0.87	3.22	0.27	4.81	0.32
2/15/2010	0.98	0.86	2.67	0.27	4.74	0.32
2/16/2010	0.97	0.88	3.18	0.28	5.01	0.33
2/17/2010	1.05	0.89	2.71	0.28	5.04	0.34
2/18/2010	0.91	0.87	1.63	0.28	4.91	0.33
2/19/2010	0.81	0.89	2.09	0.29	5.07	0.34
2/20/2010	0.91	0.86	1.92	0.27	4.81	0.32
2/21/2010	0.93	0.87	1.98	0.27	4.87	0.33
2/22/2010	0.85	0.85	0.71	0.27	4.69	0.32
2/23/2010	0.72	0.86	0.75	0.27	4.75	0.32
2/24/2010	0.77	0.88	1.07	0.28	5.02	0.34
2/25/2010	0.93	0.91	1.69	0.30	5.33	0.35
2/26/2010	0.82	0.90	1.83	0.29	5.25	0.35
2/27/2010	0.86	0.90	1.82	0.29	5.20	0.35
2/28/2010	0.89	0.89	1.98	0.29	5.15	0.34

Note. PET $_{Har}$ = ET_0 1985 Hargreaves (mm day^{-1}), PET $_{McG-Bor}$ = PET Mc. Guinness-Bordne's (mm day-1), PET Rom = PET Romanenko's (mm day^{-1}), PET Ham 1 = PET Hammon's 1 (mm day^{-1}), PET Ham 2 = PET Hammon's 2 (mm day^{-1}), PET Ham 3 = PET Hammon's 3 (mm day^{-1})

Table C5 Estimated daily ET_0 Penman-Monteith, ET_0 FAO 56 Penman-Monteith, ET_0 FAO PM 56 ASCE standardized, ET_0 1985 Hargreaves, ET_0 Hargreaves-Samani, ET_0 McCloud's, ET_0 Baier and Robertson's, ET_0 Papadakis and ET_0 Malmström for AWS1 at ADRON in Nickerie district for January 2010-December 2011

Date	$ET_{0\ PM}$	$ET_{0\ FAO\ PM}$ / $ET_{0\ ASCE\ PM}$	$ET_{0\ Har\text{-}Sam}$ / $ET_{0\ HAR\ 85}$	$ET_{0\ McC}$	$ET_{0\ B\text{-}R}$	$ET_{0\ Pap}$	$ET_{0\ Mal}$
3/1/2010	1.18	1.98	2.20	6.41	4.50	2.35	14.17
3/2/2010	1.10	2.48	2.26	6.69	4.55	2.39	14.46
3/3/2010	0.99	2.28	2.41	6.65	4.55	2.41	14.42
3/4/2010	0.55	1.44	2.22	6.14	4.44	2.31	13.87
3/5/2010	1.09	2.26	2.35	6.24	4.47	2.34	13.98
3/6/2010	1.40	2.70	2.26	6.24	4.46	2.33	13.99
3/7/2010	1.01	2.18	2.21	6.48	4.51	2.36	14.24
3/8/2010	0.59	1.03	2.09	5.98	4.41	2.26	13.70
3/9/2010	1.26	2.44	2.22	6.49	4.51	2.36	14.25
3/10/2010	0.44	1.04	2.18	5.85	4.38	2.26	13.55
3/11/2010	1.33	2.42	1.96	6.01	4.41	2.25	13.74
3/12/2010	1.33	2.18	1.94	5.61	4.32	2.19	13.28
3/13/2010	1.19	2.15	2.14	5.99	4.41	2.27	13.70
3/14/2010	1.24	2.25	2.47	6.92	4.60	2.46	14.70
3/15/2010	0.90	1.83	2.19	6.64	4.54	2.38	14.41
3/16/2010	0.84	1.35	2.35	6.26	4.47	2.35	14.01
3/17/2010	1.14	1.62	2.44	6.15	4.45	2.34	13.89
3/18/2010	0.94	1.92	2.18	6.39	4.49	2.34	14.15
3/19/2010	1.15	2.60	2.25	6.15	4.45	2.32	13.88
3/20/2010	1.19	2.45	2.32	6.20	4.46	2.33	13.94
3/21/2010	1.25	3.18	2.23	6.38	4.49	2.35	14.13
3/22/2010	1.38	3.73	2.52	6.24	4.47	2.37	13.99
3/23/2010	1.55	3.25	2.42	6.27	4.47	2.36	14.01
3/24/2010	0.75	2.10	2.23	6.47	4.51	2.36	14.23
3/25/2010	0.70	1.33	2.10	5.71	4.35	2.22	13.39
3/26/2010	0.99	2.25	2.29	6.25	4.47	2.34	14.00
3/27/2010	1.23	2.65	2.63	6.38	4.51	2.41	14.14
3/28/2010	1.36	2.95	2.55	6.22	4.47	2.37	13.96
3/29/2010	0.91	2.10	2.32	6.14	4.45	2.32	13.87
3/30/2010	1.13	3.76	2.48	7.51	4.70	2.54	15.29
3/31/2010	0.83	3.14	2.62	7.11	4.64	2.51	14.89

Note. $ET_{0\ PM}$ = ET_0 Penman-Monteith (mm day^{-1}), $ET_{0\ FAO\ PM}$ = ET_0 FAO 56 Penman-Monteith (mm day^{-1}), $ET_{0\ ASCE\ PM}$ = ET_0 FAO PM 56 ASCE standardized (mm day^{-1}), $ET_{0\ Har\text{-}Sam}$ = ET_0 Hargreaves-Samani (mm day^{-1}), $ET_{0\ HAR\ 85}$ = ET_0 1985 Hargreaves (mm day^{-1}), $ET_{0\ McC}$ = ET_0 McCloud's (mm day^{-1}), $ET_{0\ B\text{-}R}$ = ET_0 Baier and Robertson's (mm day-1), $ET_{0\ Pap}$ = ET_0 Papadakis (mm day^{-1}), $ET_{0\ Mal}$ = ET_0 Malmström's equations (mm day^{-1})

Table C6 Estimated daily PET Hargreaves's, PET Mc. Guinness-Bordne's, PET Romanenko's, PET Hammon's 1, PET Hammon's 2 and PET Hammon's 3 for AWS1 at ADRON in Nickerie district for January 2010 – December 2011

Date	PET $_{Har}$	PET $_{McG\text{-}Bor}$	PET $_{Rom}$	PET $_{Ham\ 1}$	PET $_{Ham\ 2}$	PET $_{Ham\ 3}$
3/1/2010	0.90	0.90	1.45	0.29	5.13	0.34
3/2/2010	0.92	0.91	2.00	0.29	5.24	0.35
3/3/2010	0.98	0.91	2.08	0.29	5.23	0.35
3/4/2010	0.90	0.89	1.33	0.28	5.03	0.34
3/5/2010	0.96	0.89	1.78	0.28	5.07	0.34
3/6/2010	0.92	0.89	2.18	0.28	5.08	0.34
3/7/2010	0.90	0.90	1.90	0.29	5.18	0.35
3/8/2010	0.85	0.88	0.92	0.28	4.98	0.33
3/9/2010	0.91	0.90	1.74	0.29	5.20	0.35
3/10/2010	0.89	0.88	0.96	0.28	4.93	0.33
3/11/2010	0.80	0.88	1.75	0.28	5.01	0.34
3/12/2010	0.79	0.87	1.72	0.27	4.83	0.32
3/13/2010	0.87	0.88	1.63	0.28	5.00	0.33
3/14/2010	1.01	0.92	1.55	0.30	5.39	0.36
3/15/2010	0.89	0.91	1.43	0.29	5.29	0.35
3/16/2010	0.96	0.89	0.99	0.29	5.13	0.34
3/17/2010	1.00	0.89	0.94	0.28	5.09	0.34
3/18/2010	0.89	0.90	1.43	0.29	5.20	0.35
3/19/2010	0.92	0.89	2.21	0.28	5.10	0.34
3/20/2010	0.95	0.89	1.97	0.28	5.13	0.34
3/21/2010	0.91	0.90	2.59	0.29	5.21	0.35
3/22/2010	1.03	0.89	3.33	0.29	5.15	0.34
3/23/2010	0.99	0.89	2.95	0.29	5.17	0.35
3/24/2010	0.91	0.90	2.14	0.29	5.26	0.35
3/25/2010	0.86	0.87	1.06	0.27	4.93	0.33
3/26/2010	0.94	0.89	1.82	0.29	5.18	0.35
3/27/2010	1.07	0.90	2.29	0.29	5.24	0.35
3/28/2010	1.04	0.89	2.62	0.29	5.17	0.35
3/29/2010	0.95	0.89	1.89	0.28	5.14	0.34
3/30/2010	1.01	0.94	3.29	0.31	5.71	0.38
3/31/2010	1.07	0.93	2.73	0.30	5.56	0.37

Note. PET $_{Har}$ = ET_0 1985 Hargreaves (mm day^{-1}), PET $_{McG\text{-}Bor}$ = PET Mc. Guinness-Bordne's (mm day-1), PET Rom = PET Romanenko's (mm day^{-1}), PET Ham 1 = PET Hammon's 1 (mm day^{-1}), PET Ham 2 = PET Hammon's 2 (mm day^{-1}), PET Ham 3 = PET Hammon's 3 (mm day^{-1})

Table C7 Estimated daily ET_0 Penman-Monteith, ET_0 FAO 56 Penman-Monteith, ET_0 FAO PM 56 ASCE standardized, ET_0 1985 Hargreaves, ET_0 Hargreaves-Samani, ET_0 McCloud's, ET_0 Baier and Robertson's, ET_0 Papadakis and ET_0 Malmström for AWS1 at ADRON in Nickerie district for January 2010-December 2011

Date	$ET_{0\ PM}$	$ET_{0\ FAO\ PM}$ / $ET_{0\ ASCE\ PM}$	$ET_{0\ Har\text{-}Sam}$ / $ET_{0\ HAR\ 85}$	$ET_{0\ McC}$	$ET_{0\ B\text{-}R}$	$ET_{0\ Pap}$	$ET_{0\ Mal}$
4/1/2010	0.81	2.86	2.43	6.92	4.43	2.47	14.70
4/2/2010	1.08	2.29	2.11	6.47	4.34	2.35	14.23
4/3/2010	1.22	2.44	2.33	6.39	4.33	2.37	14.14
4/4/2010	0.83	1.72	2.16	6.49	4.34	2.36	14.26
4/5/2010	0.77	1.41	2.12	6.15	4.28	2.30	13.88
4/6/2010	0.78	1.38	1.79	6.00	4.23	2.23	13.72
4/7/2010	0.99	1.93	1.73	6.30	4.29	2.27	14.05
4/8/2010	1.15	2.54	1.96	6.39	4.32	2.32	14.15
4/9/2010	1.31	2.49	2.12	5.90	4.22	2.27	13.61
4/10/2010	1.09	2.24	2.11	6.37	4.32	2.34	14.12
4/11/2010	1.36	2.95	2.05	6.82	4.40	2.39	14.60
4/12/2010	1.04	2.19	2.09	6.40	4.32	2.34	14.16
4/13/2010	0.72	0.99	2.20	5.90	4.23	2.28	13.60
4/14/2010	1.22	1.97	2.02	6.63	4.36	2.36	14.40
4/15/2010	0.64	0.97	1.72	6.01	4.24	2.23	13.73
4/16/2010	0.56	0.70	1.45	5.22	4.06	2.07	12.82
4/17/2010	1.43	2.09	1.92	6.48	4.33	2.32	14.24
4/18/2010	1.43	2.51	2.17	7.24	4.48	2.47	15.03
4/19/2010	1.52	2.40	2.26	6.93	4.43	2.44	14.71
4/20/2010	1.50	2.50	2.04	6.76	4.39	2.38	14.54
4/21/2010	1.15	1.85	2.40	6.93	4.43	2.46	14.71
4/22/2010	1.01	1.69	2.27	6.82	4.41	2.42	14.59
4/23/2010	1.10	2.02	2.33	7.25	4.48	2.50	15.03
4/24/2010	1.01	2.17	2.02	7.36	4.49	2.46	15.14
4/25/2010	0.75	1.56	2.38	6.35	4.32	2.38	14.10
4/26/2010	1.41	2.47	1.91	6.77	4.39	2.36	14.55
4/27/2010	0.50	0.83	1.76	5.87	4.21	2.21	13.58
4/28/2010	1.25	2.74	2.08	7.13	4.46	2.44	14.92
4/29/2010	1.07	2.55	2.28	6.90	4.42	2.44	14.68
4/30/2010	0.73	1.37	2.07	6.22	4.29	2.31	13.96

Note. $ET_{0\ PM}$ = ET_0 Penman-Monteith (mm day^{-1}), $ET_{0\ FAO\ PM}$ = ET_0 FAO 56 Penman-Monteith (mm day^{-1}), $ET_{0\ ASCE\ PM}$ = ET_0 FAO PM 56 ASCE standardized (mm day^{-1}), $ET_{0\ Har\text{-}Sam}$ = ET_0 Hargreaves-Samani (mm day^{-1}), $ET_{0\ HAR\ 85}$ = ET_0 1985 Hargreaves (mm day^{-1}), $ET_{0\ McC}$ = ET_0 McCloud's (mm day^{-1}), $ET_{0\ B\text{-}R}$ = ET_0 Baier and Robertson's (mm day-1), $ET_{0\ Pap}$ = ET_0 Papadakis (mm day^{-1}), $ET_{0\ Mal}$ = ET_0 Malmström's equations (mm day^{-1})

Table C8 Estimated daily PET Hargreaves's, PET Mc. Guinness-Bordne's, PET Romanenko's, PET Hammon's 1, PET Hammon's 2 and PET Hammon's 3 for AWS1 at ADRON in Nickerie district for January 2010 – December 2011

Date	PET_{Har}	$PET_{McG\text{-}Bor}$	PET_{Rom}	$PET_{Ham\ 1}$	$PET_{Ham\ 2}$	$PET_{Ham\ 3}$
4/1/2010	0.99	0.89	2.80	0.30	5.48	0.36
4/2/2010	0.86	0.88	2.20	0.29	5.30	0.35
4/3/2010	0.95	0.87	2.34	0.29	5.27	0.35
4/4/2010	0.88	0.88	1.67	0.29	5.32	0.35
4/5/2010	0.86	0.86	1.14	0.29	5.18	0.35
4/6/2010	0.73	0.86	1.10	0.28	5.12	0.34
4/7/2010	0.71	0.87	1.77	0.29	5.25	0.35
4/8/2010	0.80	0.87	2.20	0.29	5.30	0.35
4/9/2010	0.87	0.85	2.37	0.28	5.09	0.34
4/10/2010	0.86	0.87	1.95	0.29	5.30	0.35
4/11/2010	0.84	0.89	2.54	0.30	5.49	0.37
4/12/2010	0.85	0.88	2.08	0.29	5.32	0.35
4/13/2010	0.90	0.85	0.61	0.28	5.10	0.34
4/14/2010	0.82	0.88	1.30	0.30	5.43	0.36
4/15/2010	0.70	0.86	0.76	0.28	5.16	0.35
4/16/2010	0.59	0.82	0.40	0.27	4.81	0.32
4/17/2010	0.78	0.88	1.40	0.29	5.37	0.36
4/18/2010	0.89	0.90	2.08	0.31	5.70	0.38
4/19/2010	0.92	0.89	1.90	0.30	5.57	0.37
4/20/2010	0.83	0.89	1.94	0.30	5.51	0.37
4/21/2010	0.98	0.89	1.72	0.30	5.58	0.37
4/22/2010	0.93	0.89	1.32	0.30	5.54	0.37
4/23/2010	0.95	0.91	1.74	0.31	5.72	0.38
4/24/2010	0.82	0.91	1.73	0.31	5.77	0.38
4/25/2010	0.97	0.87	1.16	0.29	5.35	0.36
4/26/2010	0.78	0.89	2.00	0.30	5.54	0.37
4/27/2010	0.72	0.85	0.59	0.28	5.15	0.35
4/28/2010	0.85	0.90	2.07	0.31	5.70	0.38
4/29/2010	0.93	0.89	2.18	0.30	5.60	0.37
4/30/2010	0.85	0.87	1.18	0.29	5.32	0.36

Note. PET_{Har} = ET_0 1985 Hargreaves (mm day^{-1}), $PET_{McG\text{-}Bor}$ = PET Mc. Guinness-Bordne's (mm day-1), PET Rom = PET Romanenko's (mm day^{-1}), PET Ham 1 = PET Hammon's 1 (mm day^{-1}), PET Ham 2 = PET Hammon's 2 (mm day^{-1}), PET Ham 3 = PET Hammon's 3 (mm day^{-1})

Table C9 Estimated daily ET_0 Penman-Monteith, ET_0 FAO 56 Penman-Monteith, ET_0 FAO PM 56 ASCE standardized, ET_0 1985 Hargreaves, ET_0 Hargreaves-Samani, ET_0 McCloud's, ET_0 Baier and Robertson's, ET_0 Papadakis and ET_0 Malmström for AWS1 at ADRON in Nickerie district for January 2010-December 2011

Date	$ET_{0\ PM}$	$ET_{0\ FAO\ PM}$ / $ET_{0\ ASCE\ PM}$	$ET_{0\ Har\text{-}Sam}$ / $ET_{0\ HAR\ 85}$	$ET_{0\ McC}$	$ET_{0\ B\text{-}R}$	$ET_{0\ Pap}$	$ET_{0\ Mal}$
5/1/2010	1.42	2.87	1.93	6.83	4.11	2.39	14.61
5/2/2010	1.27	2.94	2.10	6.80	4.10	2.42	14.57
5/3/2010	1.42	2.87	1.91	6.62	4.07	2.36	14.39
5/4/2010	0.86	1.76	1.88	5.92	3.93	2.25	13.63
5/5/2010	0.63	1.11	1.54	5.67	3.87	2.17	13.35
5/6/2010	0.69	1.03	1.77	5.93	3.93	2.23	13.64
5/7/2010	0.66	1.09	2.08	6.24	4.00	2.33	13.99
5/8/2010	1.46	2.48	2.01	7.18	4.17	2.45	14.96
5/9/2010	0.34	0.56	1.54	5.57	3.84	2.15	13.23
5/10/2010	1.07	1.61	1.84	6.18	3.98	2.28	13.92
5/11/2010	1.19	1.63	2.18	6.27	4.01	2.35	14.02
5/12/2010	0.77	1.09	1.90	6.01	3.95	2.27	13.73
5/13/2010	1.12	1.92	1.98	6.69	4.08	2.38	14.46
5/14/2010	1.15	2.41	1.79	7.03	4.14	2.40	14.82
5/15/2010	0.83	1.85	2.03	6.83	4.11	2.41	14.61
5/16/2010	1.32	2.47	2.05	7.02	4.14	2.44	14.81
5/17/2010	0.98	1.52	1.86	6.56	4.05	2.34	14.33
5/18/2010	1.39	2.57	1.87	6.93	4.12	2.39	14.71
5/19/2010	1.19	2.75	1.85	7.54	4.22	2.48	15.32
5/20/2010	0.95	1.67	2.02	6.87	4.12	2.41	14.65
5/21/2010	0.32	0.53	1.59	5.80	3.90	2.19	13.50
5/22/2010	1.32	1.72	1.71	6.41	4.02	2.30	14.16
5/23/2010	1.17	1.79	2.11	6.74	4.09	2.41	14.51
5/24/2010	0.94	1.53	1.62	6.53	4.04	2.30	14.29
5/25/2010	1.10	1.66	2.17	6.56	4.06	2.39	14.33
5/26/2010	1.19	1.98	2.01	6.93	4.13	2.42	14.71
5/27/2010	1.23	1.80	1.83	6.84	4.10	2.38	14.62
5/28/2010	1.00	1.33	1.86	6.41	4.03	2.32	14.17
5/29/2010	1.29	1.73	1.82	6.52	4.04	2.33	14.28
5/30/2010	0.97	1.53	2.09	6.37	4.02	2.35	14.12
5/31/2010	1.40	2.16	1.70	6.63	4.06	2.33	14.40

Note. $ET_{0\ PM}$ = ET_0 Penman-Monteith (mm day^{-1}), $ET_{0\ FAO\ PM}$ = ET_0 FAO 56 Penman-Monteith (mm day^{-1}), $ET_{0\ ASCE\ PM}$ = ET_0 FAO PM 56 ASCE standardized (mm day^{-1}), $ET_{0\ Har\text{-}Sam}$ = ET_0 Hargreaves-Samani (mm day^{-1}), $ET_{0\ HAR\ 85}$ = ET_0 1985 Hargreaves (mm day^{-1}), $ET_{0\ McC}$ = ET_0 McCloud's (mm day^{-1}), $ET_{0\ B\text{-}R}$ = ET_0 Baier and Robertson's (mm day-1), $ET_{0\ Pap}$ = ET_0 Papadakis (mm day^{-1}), $ET_{0\ Mal}$ = ET_0 Malmström's equations (mm day^{-1})

Table C10 Estimated daily PET Hargreaves's, PET Mc. Guinness-Bordne's, PET Romanenko's, PET Hammon's 1, PET Hammon's 2 and PET Hammon's 3 for AWS1 at ADRON in Nickerie district for January 2010 – December 2011

Date	PET $_{Har}$	PET $_{McG-Bor}$	PET $_{Rom}$	PET $_{Ham\ 1}$	PET $_{Ham\ 2}$	PET $_{Ham\ 3}$
5/1/2010	0.79	0.84	2.49	0.30	5.58	0.37
5/2/2010	0.86	0.84	2.57	0.30	5.57	0.37
5/3/2010	0.78	0.83	2.47	0.30	5.50	0.37
5/4/2010	0.77	0.81	1.43	0.28	5.20	0.35
5/5/2010	0.63	0.80	0.96	0.28	5.09	0.34
5/6/2010	0.72	0.81	0.76	0.28	5.21	0.35
5/7/2010	0.85	0.82	0.92	0.29	5.35	0.36
5/8/2010	0.82	0.85	1.99	0.31	5.75	0.38
5/9/2010	0.63	0.79	0.52	0.28	5.05	0.34
5/10/2010	0.75	0.82	1.06	0.29	5.34	0.36
5/11/2010	0.89	0.82	1.30	0.29	5.38	0.36
5/12/2010	0.78	0.81	0.80	0.29	5.27	0.35
5/13/2010	0.81	0.84	1.39	0.30	5.56	0.37
5/14/2010	0.73	0.85	1.82	0.31	5.72	0.38
5/15/2010	0.83	0.84	1.62	0.30	5.63	0.37
5/16/2010	0.84	0.85	1.95	0.31	5.72	0.38
5/17/2010	0.76	0.83	1.28	0.30	5.52	0.37
5/18/2010	0.76	0.84	1.98	0.31	5.68	0.38
5/19/2010	0.76	0.87	2.12	0.32	5.94	0.39
5/20/2010	0.82	0.84	1.34	0.31	5.67	0.38
5/21/2010	0.65	0.80	0.56	0.28	5.20	0.35
5/22/2010	0.70	0.83	1.18	0.30	5.47	0.36
5/23/2010	0.86	0.84	1.20	0.30	5.62	0.37
5/24/2010	0.66	0.83	1.13	0.30	5.53	0.37
5/25/2010	0.88	0.83	1.08	0.30	5.55	0.37
5/26/2010	0.82	0.85	1.33	0.31	5.71	0.38
5/27/2010	0.75	0.84	1.14	0.31	5.67	0.38
5/28/2010	0.76	0.83	0.77	0.30	5.49	0.37
5/29/2010	0.74	0.83	0.96	0.30	5.53	0.37
5/30/2010	0.85	0.82	1.08	0.30	5.47	0.37
5/31/2010	0.69	0.83	1.42	0.30	5.59	0.37

Note. PET $_{Har}$ = ET_0 1985 Hargreaves (mm day^{-1}), PET $_{McG-Bor}$ = PET Mc. Guinness-Bordne's (mm day-1), PET Rom = PET Romanenko's (mm day^{-1}), PET Ham 1 = PET Hammon's 1 (mm day^{-1}), PET Ham 2 = PET Hammon's 2 (mm day^{-1}), PET Ham 3 = PET Hammon's 3 (mm day^{-1})

Table C11 Estimated daily ET_0 Penman-Monteith, ET_0 FAO 56 Penman-Monteith, ET_0 FAO PM 56 ASCE standardized, ET_0 1985 Hargreaves, ET_0 Hargreaves-Samani, ET_0 McCloud's, ET_0 Baier and Robertson's, ET_0 Papadakis and ET_0 Malmström for AWS1 at ADRON in Nickerie district for January 2010-December 2011

Date	$ET_{0\ PM}$	$ET_{0\ FAO\ PM}$ / $ET_{0\ ASCE\ PM}$	$ET_{0\ Har\text{-}Sam}$ / $ET_{0\ HAR\ 85}$	$ET_{0\ McC}$	$ET_{0\ B\text{-}R}$	$ET_{0\ Pap}$	$ET_{0\ Mal}$
6/1/2010	1.31	2.46	1.80	7.10	3.96	2.42	14.88
6/2/2010	1.09	2.35	1.74	7.33	4.00	2.44	15.11
6/3/2010	1.12	1.49	1.88	6.45	3.85	2.34	14.21
6/4/2010	1.16	1.78	2.03	6.76	3.91	2.41	14.53
6/5/2010	1.14	1.89	1.95	6.58	3.88	2.37	14.35
6/6/2010	1.24	1.90	2.10	6.61	3.89	2.40	14.38
6/7/2010	0.82	1.14	1.85	6.20	3.80	2.30	13.94
6/8/2010	0.95	1.54	1.81	6.34	3.83	2.31	14.10
6/9/2010	1.18	1.56	1.87	6.51	3.86	2.35	14.27
6/10/2010	1.20	2.19	1.69	7.04	3.95	2.39	14.82
6/11/2010	1.51	2.46	1.86	7.04	3.96	2.42	14.82
6/12/2010	1.52	2.19	1.88	6.88	3.93	2.40	14.66
6/13/2010	1.32	2.56	2.06	7.13	3.98	2.47	14.91
6/14/2010	1.09	1.85	1.80	6.40	3.84	2.32	14.16
6/15/2010	1.02	1.60	1.94	6.51	3.86	2.36	14.27
6/16/2010	1.26	1.98	1.73	6.58	3.87	2.34	14.35
6/17/2010	1.45	2.43	1.74	7.04	3.95	2.40	14.83
6/18/2010	0.99	1.29	1.98	6.30	3.83	2.34	14.05
6/19/2010	1.40	2.13	1.97	6.95	3.94	2.43	14.74
6/20/2010	1.01	1.61	1.84	6.62	3.88	2.36	14.38
6/21/2010	1.20	1.78	1.67	6.20	3.79	2.27	13.94
6/22/2010	0.74	1.05	1.44	5.78	3.70	2.18	13.47
6/23/2010	1.66	2.48	1.60	6.47	3.85	2.30	14.24
6/24/2010	1.47	2.18	2.00	6.74	3.91	2.40	14.51
6/25/2010	1.43	2.62	1.74	7.04	3.95	2.40	14.82
6/26/2010	1.22	1.75	2.07	6.69	3.90	2.41	14.47
6/27/2010	1.45	1.85	1.83	6.53	3.86	2.34	14.30
6/28/2010	1.22	1.84	1.90	6.47	3.85	2.35	14.23
6/29/2010	0.73	0.91	1.61	5.09	3.55	2.09	12.66
6/30/2010	0.97	1.30	1.78	5.51	3.65	2.18	13.16

Note. $ET_{0\ PM}$ = ET_0 Penman-Monteith (mm day^{-1}), $ET_{0\ FAO\ PM}$ = ET_0 FAO 56 Penman-Monteith (mm day^{-1}), $ET_{0\ ASCE\ PM}$ = ET_0 FAO PM 56 ASCE standardized (mm day^{-1}), $ET_{0\ Har\text{-}Sam}$ = ET_0 Hargreaves-Samani (mm day^{-1}), $ET_{0\ HAR\ 85}$ = ET_0 1985 Hargreaves (mm day^{-1}), $ET_{0\ McC}$ = ET_0 McCloud's (mm day^{-1}), $ET_{0\ B\text{-}R}$ = ET_0 Baier and Robertson's (mm day-1), $ET_{0\ Pap}$ = ET_0 Papadakis (mm day^{-1}), $ET_{0\ Mal}$ = ET_0 Malmström's equations (mm day^{-1})

Table C12 Estimated daily PET Hargreaves's, PET Mc. Guinness-Bordne's, PET Romanenko's, PET Hammon's 1, PET Hammon's 2 and PET Hammon's 3 for AWS1 at ADRON in Nickerie district for January 2010 – December 2011

Date	PET $_{Har}$	PET $_{McG-Bor}$	PET $_{Rom}$	PET $_{Ham\ 1}$	PET $_{Ham\ 2}$	PET $_{Ham\ 3}$
6/1/2010	0.73	0.82	1.79	0.31	5.79	0.38
6/2/2010	0.71	0.83	1.90	0.32	5.89	0.39
6/3/2010	0.77	0.80	1.18	0.30	5.52	0.37
6/4/2010	0.83	0.81	1.33	0.30	5.65	0.38
6/5/2010	0.80	0.80	1.47	0.30	5.58	0.37
6/6/2010	0.86	0.80	1.29	0.30	5.59	0.37
6/7/2010	0.75	0.79	0.82	0.29	5.41	0.36
6/8/2010	0.74	0.79	1.20	0.30	5.48	0.37
6/9/2010	0.76	0.80	1.09	0.30	5.55	0.37
6/10/2010	0.69	0.82	1.81	0.31	5.78	0.38
6/11/2010	0.76	0.82	2.17	0.31	5.78	0.38
6/12/2010	0.77	0.81	1.88	0.31	5.71	0.38
6/13/2010	0.84	0.82	2.11	0.31	5.82	0.39
6/14/2010	0.73	0.80	1.37	0.30	5.51	0.37
6/15/2010	0.79	0.80	1.24	0.30	5.55	0.37
6/16/2010	0.71	0.80	1.61	0.30	5.59	0.37
6/17/2010	0.71	0.82	1.94	0.31	5.78	0.38
6/18/2010	0.81	0.79	0.95	0.30	5.46	0.36
6/19/2010	0.81	0.82	1.46	0.31	5.75	0.38
6/20/2010	0.75	0.81	1.23	0.30	5.60	0.37
6/21/2010	0.68	0.79	1.30	0.29	5.42	0.36
6/22/2010	0.59	0.77	0.92	0.28	5.23	0.35
6/23/2010	0.65	0.80	1.99	0.30	5.54	0.37
6/24/2010	0.82	0.81	1.61	0.30	5.65	0.38
6/25/2010	0.71	0.82	1.94	0.31	5.78	0.38
6/26/2010	0.84	0.81	1.25	0.30	5.64	0.38
6/27/2010	0.75	0.80	0.99	0.30	5.56	0.37
6/28/2010	0.78	0.80	1.17	0.30	5.53	0.37
6/29/2010	0.66	0.74	0.52	0.27	4.89	0.33
6/30/2010	0.73	0.76	0.71	0.28	5.10	0.34

Note. PET $_{Har}$ = ET_0 1985 Hargreaves (mm day^{-1}), PET $_{McG-Bor}$ = PET Mc. Guinness-Bordne's (mm day-1), PET Rom = PET Romanenko's (mm day^{-1}), PET Ham 1 = PET Hammon's 1 (mm day^{-1}), PET Ham 2 = PET Hammon's 2 (mm day^{-1}), PET Ham 3 = PET Hammon's 3 (mm day^{-1})

Table C13 Estimated daily ET_0 Penman-Monteith, ET_0 FAO 56 Penman-Monteith, ET_0 FAO PM 56 ASCE standardized, ET_0 1985 Hargreaves, ET_0 Hargreaves-Samani, ET_0 McCloud's, ET_0 Baier and Robertson's, ET_0 Papadakis and ET_0 Malmström for AWS1 at ADRON in Nickerie district for January 2010-December 2011

Date	$ET_{0\ PM}$	$ET_{0\ FAO\ PM}$ / $ET_{0\ ASCE\ PM}$	$ET_{0\ Har\text{-}Sam}$ / $ET_{0\ HAR\ 85}$	$ET_{0\ McC}$	$ET_{0\ B\text{-}R}$	$ET_{0\ Pap}$	$ET_{0\ Mal}$
7/1/2010	1.33	1.69	1.69	5.96	3.80	2.23	13.68
7/2/2010	1.28	1.73	2.05	6.64	3.95	2.40	14.41
7/3/2010	1.20	1.42	1.71	6.06	3.82	2.25	13.78
7/4/2010	1.20	1.71	2.00	5.90	3.80	2.28	13.60
7/5/2010	1.06	1.40	1.65	5.66	3.74	2.18	13.34
7/6/2010	0.90	1.06	1.54	5.84	3.77	2.20	13.54
7/7/2010	1.48	1.79	1.93	6.08	3.83	2.29	13.81
7/8/2010	1.40	2.03	1.89	6.64	3.94	2.36	14.41
7/9/2010	1.60	2.14	1.66	6.70	3.94	2.34	14.47
7/10/2010	1.11	1.30	1.95	6.38	3.89	2.34	14.13
7/11/2010	1.23	1.54	1.84	6.49	3.91	2.34	14.25
7/12/2010	1.00	1.36	1.69	5.66	3.74	2.19	13.33
7/13/2010	1.27	1.65	1.68	6.29	3.86	2.28	14.04
7/14/2010	0.81	0.90	1.76	5.82	3.77	2.22	13.51
7/15/2010	1.19	1.27	1.91	5.59	3.73	2.21	13.26
7/16/2010	1.28	1.85	1.98	5.80	3.78	2.26	13.50
7/17/2010	1.48	2.14	1.62	6.27	3.86	2.27	14.01
7/18/2010	1.12	1.25	1.71	5.95	3.80	2.24	13.66
7/19/2010	1.44	1.77	1.80	5.99	3.81	2.26	13.70
7/20/2010	1.13	1.30	1.74	5.67	3.74	2.20	13.34
7/21/2010	1.47	1.56	1.73	5.82	3.77	2.22	13.51
7/22/2010	1.47	1.60	1.87	6.08	3.83	2.28	13.80
7/23/2010	1.02	1.13	1.59	5.58	3.72	2.16	13.25
7/24/2010	1.19	1.33	1.98	5.91	3.80	2.27	13.62
7/25/2010	1.73	1.95	1.59	6.12	3.83	2.25	13.86
7/26/2010	0.94	1.29	1.90	5.79	3.77	2.24	13.48
7/27/2010	1.43	1.68	1.93	5.58	3.73	2.21	13.25
7/28/2010	1.20	1.32	1.52	5.45	3.68	2.13	13.09
7/29/2010	1.72	1.88	1.78	6.02	3.82	2.26	13.74
7/30/2010	1.55	1.72	1.95	6.48	3.91	2.35	14.24
7/31/2010	1.31	1.45	1.80	6.15	3.84	2.28	13.88

Note. $ET_{0\ PM}$ = ET_0 Penman-Monteith (mm day^{-1}), $ET_{0\ FAO\ PM}$ = ET_0 FAO 56 Penman-Monteith (mm day^{-1}), $ET_{0\ ASCE\ PM}$ = ET_0 FAO PM 56 ASCE standardized (mm day^{-1}), $ET_{0\ Har\text{-}Sam}$ = ET_0 Hargreaves-Samani (mm day^{-1}), $ET_{0\ HAR\ 85}$ = ET_0 1985 Hargreaves (mm day^{-1}), $ET_{0\ McC}$ = ET_0 McCloud's (mm day^{-1}), $ET_{0\ B\text{-}R}$ = ET_0 Baier and Robertson's (mm day-1), $ET_{0\ Pap}$ = ET_0 Papadakis (mm day^{-1}), $ET_{0\ Mal}$ = ET_0 Malmström's equations (mm day^{-1})

Table C14 Estimated daily PET Hargreaves's, PET Mc. Guinness-Bordne's, PET Romanenko's, PET Hammon's 1, PET Hammon's 2 and PET Hammon's 3 for AWS1 at ADRON in Nickerie district for January 2010 – December 2011

Date	PET $_{Har}$	PET $_{McG-Bor}$	PET $_{Rom}$	PET $_{Ham 1}$	PET $_{Ham 2}$	PET $_{Ham 3}$
7/1/2010	0.69	0.79	0.99	0.29	5.31	0.36
7/2/2010	0.84	0.81	1.15	0.30	5.61	0.37
7/3/2010	0.70	0.79	0.57	0.29	5.35	0.36
7/4/2010	0.82	0.79	0.96	0.29	5.27	0.35
7/5/2010	0.67	0.78	0.81	0.28	5.16	0.35
7/6/2010	0.63	0.78	0.44	0.28	5.24	0.35
7/7/2010	0.79	0.79	0.76	0.29	5.35	0.36
7/8/2010	0.77	0.81	1.12	0.30	5.60	0.37
7/9/2010	0.68	0.81	1.17	0.30	5.62	0.37
7/10/2010	0.80	0.80	0.55	0.30	5.48	0.37
7/11/2010	0.75	0.81	0.89	0.30	5.53	0.37
7/12/2010	0.69	0.78	0.72	0.28	5.15	0.35
7/13/2010	0.69	0.80	0.88	0.29	5.44	0.36
7/14/2010	0.72	0.78	0.31	0.28	5.22	0.35
7/15/2010	0.78	0.77	0.23	0.28	5.11	0.34
7/16/2010	0.81	0.78	1.09	0.28	5.21	0.35
7/17/2010	0.66	0.80	1.33	0.29	5.42	0.36
7/18/2010	0.70	0.79	0.45	0.29	5.27	0.35
7/19/2010	0.74	0.79	0.89	0.29	5.29	0.35
7/20/2010	0.71	0.77	0.44	0.28	5.14	0.35
7/21/2010	0.71	0.78	0.30	0.28	5.21	0.35
7/22/2010	0.76	0.79	0.43	0.29	5.32	0.36
7/23/2010	0.65	0.77	0.35	0.28	5.09	0.34
7/24/2010	0.81	0.78	0.40	0.29	5.24	0.35
7/25/2010	0.65	0.79	0.73	0.29	5.33	0.36
7/26/2010	0.77	0.78	0.77	0.28	5.18	0.35
7/27/2010	0.79	0.77	0.58	0.28	5.08	0.34
7/28/2010	0.62	0.77	0.37	0.27	5.01	0.34
7/29/2010	0.73	0.79	0.55	0.29	5.28	0.35
7/30/2010	0.80	0.81	0.67	0.30	5.48	0.37
7/31/2010	0.73	0.80	0.63	0.29	5.33	0.36

Note. PET $_{Har}$ = ET_0 1985 Hargreaves (mm day^{-1}), PET $_{McG-Bor}$ = PET Mc. Guinness-Bordne's (mm day-1), PET Rom = PET Romanenko's (mm day^{-1}), PET Ham 1 = PET Hammon's 1 (mm day^{-1}), PET Ham 2 = PET Hammon's 2 (mm day^{-1}), PET Ham 3 = PET Hammon's 3 (mm day^{-1})

Table C15 Estimated daily ET_0 Penman-Monteith, ET_0 FAO 56 Penman-Monteith, ET_0 FAO PM 56 ASCE standardized, ET_0 1985 Hargreaves, ET_0 Hargreaves-Samani, ET_0 McCloud's, ET_0 Baier and Robertson's, ET_0 Papadakis and ET_0 Malmström for AWS1 at ADRON in Nickerie district for January 2010-December 2011

Date	$ET_{0\ PM}$	$ET_{0\ FAO\ PM}$ / $ET_{0\ ASCE\ PM}$	$ET_{0\ Har\text{-}Sam}$ / $ET_{0\ HAR\ 85}$	$ET_{0\ McC}$	$ET_{0\ B\text{-}R}$	$ET_{0\ Pap}$	$ET_{0\ Mal}$
8/1/2010	1.32	1.43	1.94	6.12	4.09	2.28	13.85
8/2/2010	1.14	1.36	1.86	5.88	4.04	2.23	13.58
8/3/2010	1.29	1.31	1.94	5.25	3.90	2.15	12.86
8/4/2010	1.41	1.50	1.78	5.94	4.05	2.23	13.65
8/5/2010	1.35	1.45	1.83	6.08	4.08	2.26	13.81
8/6/2010	1.49	1.59	1.73	6.17	4.09	2.26	13.91
8/7/2010	1.38	1.49	1.82	5.67	3.99	2.20	13.34
8/8/2010	1.63	1.73	1.95	6.20	4.11	2.30	13.94
8/9/2010	1.28	1.40	1.71	6.27	4.11	2.27	14.02
8/10/2010	0.90	0.97	1.97	5.88	4.04	2.25	13.58
8/11/2010	1.38	1.44	1.64	5.84	4.02	2.20	13.54
8/12/2010	1.60	2.13	1.94	6.23	4.11	2.30	13.98
8/13/2010	1.46	1.81	1.86	5.86	4.03	2.23	13.56
8/14/2010	1.63	1.82	1.79	5.87	4.03	2.22	13.57
8/15/2010	1.38	1.57	2.05	5.97	4.06	2.28	13.68
8/16/2010	1.59	1.74	2.04	5.84	4.04	2.26	13.54
8/17/2010	1.45	1.46	1.77	5.43	3.94	2.15	13.06
8/18/2010	1.34	1.35	1.87	5.74	4.01	2.22	13.43
8/19/2010	1.09	1.09	2.14	5.46	3.96	2.21	13.11
8/20/2010	1.38	1.67	1.85	5.81	4.02	2.22	13.51
8/21/2010	1.32	1.39	1.73	5.69	4.00	2.19	13.37
8/22/2010	1.53	1.69	1.77	6.04	4.07	2.25	13.77
8/23/2010	1.73	1.88	1.97	6.35	4.14	2.32	14.11
8/24/2010	1.18	1.26	1.98	5.82	4.03	2.24	13.52
8/25/2010	1.60	1.63	2.19	5.84	4.04	2.28	13.54
8/26/2010	1.68	2.00	1.71	6.63	4.18	2.32	14.40
8/27/2010	1.64	1.87	1.75	6.56	4.17	2.32	14.32
8/28/2010	1.53	1.67	1.83	6.89	4.23	2.38	14.67
8/29/2010	1.69	1.78	1.72	6.64	4.18	2.33	14.41
8/30/2010	1.72	1.91	1.71	6.42	4.14	2.29	14.17
8/31/2010	1.64	1.82	1.76	6.33	4.13	2.29	14.08

Note. $ET_{0\ PM}$ = ET_0 Penman-Monteith (mm day^{-1}), $ET_{0\ FAO\ PM}$ = ET_0 FAO 56 Penman-Monteith (mm day^{-1}), $ET_{0\ ASCE\ PM}$ = ET_0 FAO PM 56 ASCE standardized (mm day^{-1}), $ET_{0\ Har\text{-}Sam}$ = ET_0 Hargreaves-Samani (mm day^{-1}), $ET_{0\ HAR\ 85}$ = ET_0 1985 Hargreaves (mm day^{-1}), $ET_{0\ McC}$ = ET_0 McCloud's (mm day^{-1}), $ET_{0\ B\text{-}R}$ = ET_0 Baier and Robertson's (mm day-1), $ET_{0\ Pap}$ = ET_0 Papadakis (mm day^{-1}), $ET_{0\ Mal}$ = ET_0 Malmström's equations (mm day^{-1})

Table C16 Estimated daily PET Hargreaves's, PET Mc. Guinness-Bordne's, PET Romanenko's, PET Hammon's 1, PET Hammon's 2 and PET Hammon's 3 for AWS1 at ADRON in Nickerie district for January 2010 – December 2011

Date	PET $_{Har}$	PET $_{McG-Bor}$	PET $_{Rom}$	PET $_{Ham\ 1}$	PET $_{Ham\ 2}$	PET $_{Ham\ 3}$
8/1/2010	0.79	0.84	0.43	0.29	5.31	0.36
8/2/2010	0.76	0.83	0.52	0.28	5.20	0.35
8/3/2010	0.79	0.80	0.11	0.27	4.90	0.33
8/4/2010	0.72	0.83	0.37	0.28	5.22	0.35
8/5/2010	0.75	0.83	0.45	0.29	5.28	0.35
8/6/2010	0.71	0.84	0.39	0.29	5.32	0.36
8/7/2010	0.74	0.81	0.54	0.28	5.09	0.34
8/8/2010	0.80	0.84	0.74	0.29	5.33	0.36
8/9/2010	0.70	0.84	0.51	0.29	5.35	0.36
8/10/2010	0.80	0.82	0.31	0.28	5.17	0.35
8/11/2010	0.67	0.82	0.32	0.28	5.15	0.35
8/12/2010	0.79	0.84	1.19	0.29	5.32	0.36
8/13/2010	0.76	0.82	1.01	0.28	5.15	0.35
8/14/2010	0.73	0.82	0.71	0.28	5.15	0.35
8/15/2010	0.84	0.83	0.68	0.28	5.19	0.35
8/16/2010	0.83	0.82	0.63	0.28	5.13	0.34
8/17/2010	0.72	0.80	0.31	0.27	4.94	0.33
8/18/2010	0.76	0.82	0.10	0.28	5.08	0.34
8/19/2010	0.88	0.81	0.04	0.27	4.95	0.33
8/20/2010	0.76	0.82	0.68	0.28	5.11	0.34
8/21/2010	0.71	0.82	0.22	0.28	5.05	0.34
8/22/2010	0.72	0.83	0.46	0.29	5.20	0.35
8/23/2010	0.81	0.84	0.47	0.29	5.33	0.36
8/24/2010	0.81	0.82	0.24	0.28	5.09	0.34
8/25/2010	0.89	0.82	0.12	0.28	5.10	0.34
8/26/2010	0.70	0.85	0.74	0.30	5.43	0.36
8/27/2010	0.72	0.85	0.52	0.30	5.40	0.36
8/28/2010	0.75	0.86	0.50	0.30	5.54	0.37
8/29/2010	0.70	0.85	0.31	0.30	5.43	0.36
8/30/2010	0.70	0.85	0.54	0.29	5.33	0.36
8/31/2010	0.72	0.84	0.56	0.29	5.29	0.35

Note. PET $_{Har}$ = ET_0 1985 Hargreaves (mm day^{-1}), PET $_{McG-Bor}$ = PET Mc. Guinness-Bordne's (mm day-1), PET Rom = PET Romanenko's (mm day^{-1}), PET Ham 1 = PET Hammon's 1 (mm day^{-1}), PET Ham 2 = PET Hammon's 2 (mm day^{-1}), PET Ham 3 = PET Hammon's 3 (mm day^{-1})

Table C17 Estimated daily ET_0 Penman-Monteith, ET_0 FAO 56 Penman-Monteith, ET_0 FAO PM 56 ASCE standardized, ET_0 1985 Hargreaves, ET_0 Hargreaves-Samani, ET_0 McCloud's, ET_0 Baier and Robertson's, ET_0 Papadakis and ET_0 Malmström for AWS1 at ADRON in Nickerie district for January 2010-December 2011

Date	$ET_{0\ PM}$	$ET_{0\ FAO\ PM}$ / $ET_{0\ ASCE\ PM}$	$ET_{0\ Har\text{-}Sam}$ / $ET_{0\ HAR\ 85}$	$ET_{0\ McC}$	$ET_{0\ B\text{-}R}$	$ET_{0\ Pap}$	$ET_{0\ Mal}$
9/1/2010	1.68	1.99	1.90	6.39	4.38	2.31	14.14
9/2/2010	1.82	2.09	1.92	6.30	4.36	2.29	14.05
9/3/2010	1.83	1.95	1.91	6.85	4.46	2.37	14.62
9/4/2010	1.36	1.40	2.07	6.04	4.31	2.28	13.76
9/5/2010	1.54	1.58	2.08	6.26	4.36	2.31	14.00
9/6/2010	1.46	1.64	1.99	6.17	4.34	2.29	13.91
9/7/2010	1.62	1.64	2.00	5.95	4.29	2.25	13.66
9/8/2010	0.53	0.53	1.61	5.22	4.12	2.09	12.82
9/9/2010	1.38	1.47	1.77	5.50	4.19	2.15	13.16
9/10/2010	1.48	1.69	2.03	5.90	4.28	2.25	13.61
9/11/2010	1.20	1.24	1.80	5.70	4.24	2.19	13.38
9/12/2010	1.67	1.81	1.74	6.30	4.36	2.27	14.05
9/13/2010	1.71	1.98	1.96	6.59	4.42	2.34	14.36
9/14/2010	1.71	1.85	1.95	6.58	4.42	2.34	14.35
9/15/2010	1.75	1.91	2.11	7.03	4.50	2.43	14.81
9/16/2010	1.62	1.86	1.91	6.99	4.49	2.39	14.77
9/17/2010	1.32	1.52	2.23	6.69	4.44	2.40	14.46
9/18/2010	1.42	1.71	2.15	6.36	4.38	2.34	14.11
9/19/2010	1.36	1.47	2.14	6.13	4.34	2.30	13.87
9/20/2010	1.37	1.42	2.16	5.76	4.26	2.25	13.46
9/21/2010	0.85	0.86	1.84	5.20	4.12	2.11	12.79
9/22/2010	1.52	1.67	1.96	5.89	4.28	2.24	13.59
9/23/2010	1.74	2.13	2.10	6.42	4.39	2.34	14.18
9/24/2010	1.46	1.92	1.91	6.53	4.41	2.33	14.30
9/25/2010	1.50	2.41	2.20	6.73	4.45	2.40	14.51
9/26/2010	1.42	2.13	2.27	6.98	4.50	2.44	14.76
9/27/2010	1.61	2.26	2.09	6.70	4.44	2.38	14.48
9/28/2010	1.59	1.83	2.14	6.33	4.37	2.33	14.09
9/29/2010	1.03	1.21	2.22	6.36	4.38	2.35	14.11
9/30/2010	1.27	1.40	2.04	5.69	4.24	2.22	13.37

Note. $ET_{0\ PM}$ = ET_0 Penman-Monteith (mm day^{-1}), $ET_{0\ FAO\ PM}$ = ET_0 FAO 56 Penman-Monteith (mm day^{-1}), $ET_{0\ ASCE\ PM}$ = ET_0 FAO PM 56 ASCE standardized (mm day^{-1}), $ET_{0\ Har\text{-}Sam}$ = ET_0 Hargreaves-Samani (mm day^{-1}), $ET_{0\ HAR\ 85}$ = ET_0 1985 Hargreaves (mm day^{-1}), $ET_{0\ McC}$ = ET_0 McCloud's (mm day^{-1}), $ET_{0\ B\text{-}R}$ = ET_0 Baier and Robertson's (mm day-1), $ET_{0\ Pap}$ = ET_0 Papadakis (mm day^{-1}), $ET_{0\ Mal}$ = ET_0 Malmström's equations (mm day^{-1})

Table C18 Estimated daily PET Hargreaves's, PET Mc. Guinness-Bordne's, PET Romanenko's, PET Hammon's 1, PET Hammon's 2 and PET Hammon's 3 for AWS1 at ADRON in Nickerie district for January 2010 – December 2011

Date	PET $_{Har}$	PET $_{McG-Bor}$	PET $_{Rom}$	PET $_{Ham\ 1}$	PET $_{Ham\ 2}$	PET $_{Ham\ 3}$
9/1/2010	0.78	0.88	0.81	0.29	5.31	0.35
9/2/2010	0.78	0.88	0.93	0.29	5.26	0.35
9/3/2010	0.78	0.90	0.48	0.30	5.49	0.36
9/4/2010	0.85	0.87	0.17	0.28	5.14	0.34
9/5/2010	0.85	0.88	0.19	0.29	5.23	0.35
9/6/2010	0.81	0.87	0.44	0.29	5.19	0.35
9/7/2010	0.81	0.86	0.12	0.28	5.09	0.34
9/8/2010	0.66	0.83	0.02	0.27	4.76	0.32
9/9/2010	0.72	0.84	0.27	0.27	4.88	0.33
9/10/2010	0.83	0.86	0.59	0.28	5.06	0.34
9/11/2010	0.73	0.85	0.17	0.28	4.96	0.33
9/12/2010	0.71	0.88	0.51	0.29	5.22	0.35
9/13/2010	0.80	0.89	0.77	0.29	5.34	0.36
9/14/2010	0.80	0.89	0.50	0.29	5.33	0.35
9/15/2010	0.86	0.91	0.60	0.30	5.51	0.37
9/16/2010	0.78	0.91	0.66	0.30	5.48	0.36
9/17/2010	0.91	0.90	0.51	0.30	5.36	0.36
9/18/2010	0.88	0.88	0.82	0.29	5.22	0.35
9/19/2010	0.88	0.87	0.48	0.28	5.12	0.34
9/20/2010	0.88	0.86	0.23	0.28	4.95	0.33
9/21/2010	0.75	0.83	0.03	0.26	4.69	0.32
9/22/2010	0.80	0.86	0.46	0.28	5.00	0.33
9/23/2010	0.86	0.89	0.97	0.29	5.22	0.35
9/24/2010	0.78	0.89	0.88	0.29	5.26	0.35
9/25/2010	0.90	0.90	1.69	0.30	5.34	0.36
9/26/2010	0.92	0.91	1.37	0.30	5.43	0.36
9/27/2010	0.85	0.90	1.50	0.29	5.32	0.35
9/28/2010	0.87	0.88	0.73	0.29	5.16	0.34
9/29/2010	0.91	0.88	0.55	0.29	5.16	0.34
9/30/2010	0.83	0.86	0.39	0.27	4.87	0.33

Note. PET $_{Har}$ = ET_0 1985 Hargreaves (mm day^{-1}), PET $_{McG-Bor}$ = PET Mc. Guinness-Bordne's (mm day-1), PET Rom = PET Romanenko's (mm day^{-1}), PET Ham 1 = PET Hammon's 1 (mm day^{-1}), PET Ham 2 = PET Hammon's 2 (mm day^{-1}), PET Ham 3 = PET Hammon's 3 (mm day^{-1})

Table C19 Estimated daily ET_0 Penman-Monteith, ET_0 FAO 56 Penman-Monteith, ET_0 FAO PM 56 ASCE standardized, ET_0 1985 Hargreaves, ET_0 Hargreaves-Samani, ET_0 McCloud's, ET_0 Baier and Robertson's, ET_0 Papadakis and ET_0 Malmström for AWS1 at ADRON in Nickerie district for January 2010-December 2011

Date	$ET_{0\ PM}$	$ET_{0\ FAO\ PM}$/ $ET_{0\ ASCE\ PM}$	$ET_{0\ Har\text{-}Sam}$ / $ET_{0\ HAR\ 85}$	$ET_{0\ McC}$	$ET_{0\ B\text{-}R}$	$ET_{0\ Pap}$	$ET_{0\ Mal}$
10/1/2010	1.38	1.67	2.35	5.80	4.32	2.28	13.49
10/2/2010	1.56	1.96	1.99	6.15	4.38	2.28	13.89
10/3/2010	1.44	1.77	1.94	6.82	4.50	2.37	14.59
10/4/2010	1.36	1.75	2.16	6.84	4.51	2.40	14.61
10/5/2010	1.40	1.89	2.15	6.79	4.50	2.40	14.57
10/6/2010	1.41	2.45	2.39	6.71	4.50	2.42	14.49
10/7/2010	1.48	2.03	2.15	6.77	4.50	2.39	14.55
10/8/2010	0.98	1.31	2.45	6.56	4.47	2.41	14.32
10/9/2010	1.13	1.93	2.40	6.99	4.54	2.46	14.77
10/10/2010	1.08	1.98	2.23	7.10	4.56	2.45	14.88
10/11/2010	0.99	1.42	2.36	6.52	4.46	2.39	14.29
10/12/2010	0.80	0.95	2.48	5.75	4.31	2.29	13.43
10/13/2010	1.09	1.66	2.25	6.45	4.44	2.36	14.21
10/14/2010	1.37	2.23	2.33	6.85	4.52	2.43	14.63
10/15/2010	1.29	2.15	2.40	7.04	4.55	2.47	14.82
10/16/2010	1.23	1.95	2.35	7.00	4.55	2.46	14.78
10/17/2010	1.30	1.86	2.56	6.78	4.51	2.46	14.55
10/18/2010	1.11	1.38	2.37	6.41	4.44	2.38	14.17
10/19/2010	1.07	1.76	2.19	6.73	4.49	2.39	14.50
10/20/2010	1.05	1.63	2.22	6.44	4.44	2.36	14.20
10/21/2010	0.84	1.24	2.42	5.46	4.25	2.24	13.10
10/22/2010	1.49	1.83	1.94	5.79	4.30	2.22	13.49
10/23/2010	1.53	2.05	2.18	6.71	4.49	2.39	14.49
10/24/2010	1.27	1.55	2.42	6.44	4.45	2.39	14.20
10/25/2010	1.23	1.72	2.14	6.59	4.47	2.37	14.36
10/26/2010	1.01	1.35	2.25	5.54	4.26	2.22	13.20
10/27/2010	1.15	1.68	2.12	6.23	4.40	2.31	13.98
10/28/2010	1.30	1.45	2.00	5.91	4.33	2.25	13.62
10/29/2010	0.88	0.99	1.98	6.38	4.42	2.31	14.13
10/30/2010	1.25	2.15	2.25	6.92	4.53	2.43	14.70
10/31/2010	1.37	2.45	2.19	7.30	4.59	2.47	15.08

Note. $ET_{0\ PM}$ = ET_0 Penman-Monteith (mm day^{-1}), $ET_{0\ FAO\ PM}$ = ET_0 FAO 56 Penman-Monteith (mm day^{-1}), $ET_{0\ ASCE\ PM}$ = ET_0 FAO PM 56 ASCE standardized (mm day^{-1}), $ET_{0\ Har\text{-}Sam}$ = ET_0 Hargreaves-Samani (mm day^{-1}), $ET_{0\ HAR\ 85}$ = ET_0 1985 Hargreaves (mm day^{-1}), $ET_{0\ McC}$ = ET_0 McCloud's (mm day^{-1}), $ET_{0\ B\text{-}R}$ = ET_0 Baier and Robertson's (mm day-1), $ET_{0\ Pap}$ = ET_0 Papadakis (mm day^{-1}), $ET_{0\ Mal}$ = ET_0 Malmström's equations (mm day^{-1})

Table C20 Estimated daily PET Hargreaves's, PET Mc. Guinness-Bordne's, PET Romanenko's, PET Hammon's 1, PET Hammon's 2 and PET Hammon's 3 for AWS1 at ADRON in Nickerie district for January 2010 – December 2011

Date	PET $_{Har}$	PET $_{McG-Bor}$	PET $_{Rom}$	PET $_{Ham\ 1}$	PET $_{Ham\ 2}$	PET $_{Ham\ 3}$
10/1/2010	0.96	0.87	0.66	0.28	4.92	0.33
10/2/2010	0.81	0.88	0.94	0.28	5.06	0.34
10/3/2010	0.79	0.91	0.68	0.30	5.33	0.35
10/4/2010	0.88	0.91	0.82	0.30	5.34	0.35
10/5/2010	0.88	0.91	1.09	0.30	5.31	0.35
10/6/2010	0.98	0.90	1.83	0.29	5.28	0.35
10/7/2010	0.88	0.90	1.14	0.29	5.30	0.35
10/8/2010	1.00	0.90	0.80	0.29	5.20	0.35
10/9/2010	0.98	0.91	1.64	0.30	5.37	0.36
10/10/2010	0.91	0.92	1.70	0.30	5.41	0.36
10/11/2010	0.96	0.89	1.10	0.29	5.18	0.35
10/12/2010	1.01	0.86	0.49	0.27	4.85	0.33
10/13/2010	0.92	0.89	1.15	0.29	5.14	0.34
10/14/2010	0.95	0.91	1.80	0.30	5.30	0.35
10/15/2010	0.98	0.92	1.74	0.30	5.36	0.36
10/16/2010	0.96	0.91	1.79	0.30	5.34	0.35
10/17/2010	1.05	0.91	1.42	0.29	5.25	0.35
10/18/2010	0.97	0.89	0.73	0.29	5.10	0.34
10/19/2010	0.89	0.90	1.40	0.29	5.22	0.35
10/20/2010	0.91	0.89	1.12	0.29	5.10	0.34
10/21/2010	0.99	0.85	0.77	0.27	4.68	0.32
10/22/2010	0.79	0.87	0.78	0.27	4.82	0.32
10/23/2010	0.89	0.90	1.22	0.29	5.20	0.35
10/24/2010	0.99	0.90	0.73	0.29	5.09	0.34
10/25/2010	0.87	0.90	1.09	0.29	5.14	0.34
10/26/2010	0.92	0.86	0.94	0.27	4.70	0.32
10/27/2010	0.86	0.89	1.03	0.28	4.99	0.33
10/28/2010	0.81	0.87	0.49	0.27	4.85	0.33
10/29/2010	0.81	0.89	0.43	0.28	5.04	0.34
10/30/2010	0.92	0.91	1.54	0.29	5.25	0.35
10/31/2010	0.89	0.93	2.00	0.30	5.39	0.36

Note. PET $_{Har}$ = ET_0 1985 Hargreaves (mm day^{-1}), PET $_{McG-Bor}$ = PET Mc. Guinness-Bordne's (mm day-1), PET Rom = PET Romanenko's (mm day^{-1}), PET Ham 1 = PET Hammon's 1 (mm day^{-1}), PET Ham 2 = PET Hammon's 2 (mm day^{-1}), PET Ham 3 = PET Hammon's 3 (mm day^{-1})

Table C21 Estimated daily ET_0 Penman-Monteith, ET_0 FAO 56 Penman-Monteith, ET_0 FAO PM 56 ASCE standardized, ET_0 1985 Hargreaves, ET_0 Hargreaves-Samani, ET_0 McCloud's, ET_0 Baier and Robertson's, ET_0 Papadakis and ET_0 Malmström for AWS1 at ADRON in Nickerie district for January 2010-December 2011

Date	$ET_{0\ PM}$	$ET_{0\ FAO\ PM}$ / $ET_{0\ ASCE\ PM}$	$ET_{0\ Har\text{-}Sam}$/ $ET_{0\ HAR\ 85}$	$ET_{0\ McC}$	$ET_{0\ B\text{-}R}$	$ET_{0\ Pap}$	$ET_{0\ Mal}$
1/1/2010	1.11	1.46	2.28	6.66	4.34	2.41	14.43
11/2/2010	1.15	1.51	2.18	6.75	4.36	2.40	14.5
11/3/2010	0.25	0.33	1.44	4.96	3.96	2.03	12.50
11/4/2010	0.98	1.10	1.76	5.14	4.01	2.10	12.73
11/5/2010	0.92	2.10	2.15	6.55	4.32	2.37	14.32
11/6/2010	0.91	1.54	2.29	6.64	4.34	2.41	14.40
11/7/2010	1.30	2.47	2.43	6.91	4.39	2.47	14.69
11/8/2010	1.16	3.12	2.37	6.92	4.39	2.46	14.70
11/9/2010	1.31	2.52	2.34	6.70	4.35	2.42	14.47
11/10/2010	1.15	2.55	2.33	7.53	4.49	2.53	15.31
11/11/2010	1.28	2.71	2.27	7.34	4.46	2.50	15.12
11/12/2010	0.80	0.94	2.41	5.75	4.17	2.29	13.43
11/13/2010	1.00	1.37	2.28	5.92	4.20	2.30	13.64
11/14/2010	1.32	1.99	2.23	6.46	4.30	2.37	14.22
11/15/2010	1.17	2.22	2.47	6.74	4.36	2.45	14.52
11/16/2010	0.98	1.94	2.26	6.54	4.32	2.39	14.31
11/17/2010	0.94	1.84	2.40	6.53	4.32	2.41	14.29
11/18/2010	1.10	1.37	2.31	6.41	4.30	2.38	14.16
11/19/2010	0.71	0.85	1.63	5.07	3.99	2.07	12.64
11/20/2010	1.09	1.65	2.12	5.79	4.17	2.25	13.48
11/21/2010	0.58	0.59	1.90	4.75	3.92	2.05	12.24
11/22/2010	1.38	1.82	1.99	5.84	4.17	2.24	13.54
11/23/2010	1.09	1.31	1.93	5.93	4.19	2.25	13.65
11/24/2010	1.00	1.39	1.86	5.97	4.20	2.24	13.69
11/25/2010	1.20	2.11	2.13	6.73	4.35	2.39	14.50
11/26/2010	1.43	2.75	2.22	7.30	4.45	2.49	15.08
11/27/2010	1.40	2.32	2.04	7.05	4.40	2.42	14.83
11/28/2010	1.46	2.14	2.02	6.57	4.32	2.35	14.34
11/29/2010	1.36	2.10	2.06	6.64	4.33	2.37	14.41
11/30/2010	1.16	1.80	2.18	6.83	4.37	2.42	14.61

Note. $ET_{0\ PM}$ = ET_0 Penman-Monteith (mm day^{-1}), $ET_{0\ FAO\ PM}$ = ET_0 FAO 56 Penman-Monteith (mm day^{-1}), $ET_{0\ ASCE\ PM}$ = ET_0 FAO PM 56 ASCE standardized (mm day^{-1}), $ET_{0\ Har\text{-}Sam}$ = ET_0 Hargreaves-Samani (mm day^{-1}), $ET_{0\ HAR\ 85}$ = ET_0 1985 Hargreaves (mm day^{-1}), $ET_{0\ McC}$ = ET_0 McCloud's (mm day^{-1}), $ET_{0\ B\text{-}R}$ = ET_0 Baier and Robertson's (mm day-1), $ET_{0\ Pap}$ = ET_0 Papadakis (mm day^{-1}), $ET_{0\ Mal}$ = ET_0 Malmström's equations (mm day^{-1})

Table C22 Estimated daily PET Hargreaves's, PET Mc. Guinness-Bordne's, PET Romanenko's, PET Hammon's 1, PET Hammon's 2 and PET Hammon's 3 for AWS1 at ADRON in Nickerie district for January 2010 – December 2011

Date	PET $_{Har}$	PET $_{McG-Bor}$	PET $_{Rom}$	PET $_{Ham 1}$	PET $_{Ham 2}$	PET $_{Ham 3}$
11/1/2010	0.93	0.88	0.91	0.29	5.14	0.34
11/2/2010	0.89	0.88	0.88	0.29	5.17	0.34
11/3/2010	0.59	0.81	0.20	0.25	4.41	0.30
11/4/2010	0.72	0.82	0.36	0.26	4.49	0.30
11/5/2010	0.88	0.87	1.98	0.29	5.08	0.34
11/6/2010	0.94	0.88	1.35	0.29	5.11	0.34
11/7/2010	0.99	0.89	2.39	0.29	5.22	0.35
11/8/2010	0.97	0.89	2.99	0.29	5.21	0.35
11/9/2010	0.96	0.88	2.28	0.29	5.12	0.34
11/10/2010	0.95	0.91	2.57	0.30	5.44	0.36
11/11/2010	0.93	0.90	2.53	0.30	5.36	0.36
11/12/2010	0.99	0.84	0.50	0.27	4.73	0.32
11/13/2010	0.93	0.85	1.35	0.27	4.80	0.32
11/14/2010	0.91	0.87	1.75	0.28	5.01	0.33
11/15/2010	1.01	0.88	2.52	0.29	5.12	0.34
11/16/2010	0.92	0.87	1.80	0.29	5.04	0.34
11/17/2010	0.98	0.87	1.63	0.29	5.03	0.34
11/18/2010	0.94	0.87	0.73	0.28	4.98	0.33
11/19/2010	0.67	0.81	0.36	0.25	4.42	0.30
11/20/2010	0.87	0.84	1.07	0.27	4.72	0.32
11/21/2010	0.78	0.79	0.07	0.25	4.26	0.29
11/22/2010	0.81	0.85	1.11	0.27	4.74	0.32
11/23/2010	0.79	0.85	0.66	0.27	4.77	0.32
11/24/2010	0.76	0.85	0.80	0.27	4.79	0.32
11/25/2010	0.87	0.88	1.41	0.29	5.09	0.34
11/26/2010	0.91	0.90	2.44	0.30	5.30	0.35
11/27/2010	0.83	0.89	1.66	0.29	5.20	0.35
11/28/2010	0.82	0.88	1.41	0.29	5.02	0.33
11/29/2010	0.84	0.88	1.46	0.29	5.04	0.34
11/30/2010	0.89	0.89	1.41	0.29	5.12	0.34

Note. PET $_{Har}$ = ET_0 1985 Hargreaves (mm day^{-1}), PET $_{McG-Bor}$ = PET Mc. Guinness-Bordne's (mm day-1), PET Rom = PET Romanenko's (mm day^{-1}), PET Ham 1 = PET Hammon's 1 (mm day^{-1}), PET Ham 2 = PET Hammon's 2 (mm day^{-1}), PET Ham 3 = PET Hammon's 3 (mm day^{-1})

Table C23 Estimated daily ET_0 Penman-Monteith, ET_0 FAO 56 Penman-Monteith, ET_0 FAO PM 56 ASCE standardized, ET_0 1985 Hargreaves, ET_0 Hargreaves-Samani, ET_0 McCloud's, ET_0 Baier and Robertson's, ET_0 Papadakis and ET_0 Malmström for AWS1 at ADRON in Nickerie district for January 2010-December 2011

Date	$ET_{0\ PM}$	$ET_{0\ FAO\ PM}$ / $ET_{0\ ASCE\ PM}$	$ET_{0\ Har\text{-}Sam}$ / $ET_{0\ HAR\ 85}$	$ET_{0\ McC}$	$ET_{0\ B\text{-}R}$	$ET_{0\ Pap}$	$ET_{0\ Mal}$
12/1/2010	1.19	1.96	1.90	6.85	4.25	2.38	14.63
12/2/2010	1.12	1.99	1.87	6.72	4.22	2.36	14.50
12/3/2010	1.10	2.04	1.85	6.54	4.19	2.33	14.31
12/4/2010	1.19	2.26	1.94	6.47	4.18	2.33	14.24
12/5/2010	0.88	1.50	2.10	6.23	4.14	2.32	13.97
12/6/2010	1.17	1.54	1.89	5.99	4.08	2.26	13.71
12/7/2010	1.02	1.40	1.84	6.29	4.14	2.29	14.03
12/8/2010	1.08	1.56	1.90	6.43	4.17	2.32	14.18
12/9/2010	1.20	1.60	1.92	6.15	4.11	2.28	13.89
12/10/2010	1.19	1.90	1.97	6.59	4.20	2.36	14.36
12/11/2010	1.25	2.26	1.85	6.85	4.24	2.37	14.62
12/12/2010	1.16	2.18	2.00	6.62	4.21	2.36	14.38
12/13/2010	1.06	1.90	2.06	6.42	4.17	2.34	14.18
12/14/2010	1.36	2.41	2.00	6.53	4.19	2.35	14.30
12/15/2010	1.16	1.75	2.14	5.95	4.08	2.29	13.67
12/16/2010	0.82	1.70	1.87	6.20	4.12	2.28	13.94
12/17/2010	0.92	1.97	2.01	6.21	4.13	2.31	13.96
12/18/2010	1.13	1.47	2.03	5.70	4.02	2.23	13.38
12/19/2010	1.29	1.87	2.01	5.63	4.01	2.22	13.30
12/20/2010	1.13	1.62	1.96	5.85	4.05	2.24	13.55
12/21/2010	1.22	1.89	1.93	6.02	4.09	2.27	13.74
12/22/2010	0.91	1.46	1.96	5.49	3.98	2.19	13.14
12/23/2010	0.78	1.01	1.68	5.41	3.95	2.13	13.05
12/24/2010	0.84	1.20	2.06	5.79	4.05	2.25	13.48
12/25/2010	1.01	1.73	1.89	6.20	4.12	2.29	13.94
12/26/2010	0.75	1.60	1.71	6.20	4.12	2.26	13.94
12/27/2010	0.98	2.10	1.90	6.07	4.10	2.27	13.79
12/28/2010	1.06	2.19	1.92	6.02	4.09	2.27	13.75
12/29/2010	0.99	1.49	1.91	5.31	3.93	2.15	12.92
12/30/2010	1.20	1.86	1.90	5.61	4.00	2.20	13.28
12/31/2010	1.13	1.83	1.92	5.65	4.01	2.21	13.32

Note. $ET_{0\ PM}$ = ET_0 Penman-Monteith (mm day^{-1}), $ET_{0\ FAO\ PM}$ = ET_0 FAO 56 Penman-Monteith (mm day^{-1}), $ET_{0\ ASCE\ PM}$ = ET_0 FAO PM 56 ASCE standardized (mm day^{-1}), $ET_{0\ Har\text{-}Sam}$ = ET_0 Hargreaves-Samani (mm day^{-1}), $ET_{0\ HAR\ 85}$ = ET_0 1985 Hargreaves (mm day^{-1}), $ET_{0\ McC}$ = ET_0 McCloud's (mm day^{-1}), $ET_{0\ B\text{-}R}$ = ET_0 Baier and Robertson's (mm day-1), $ET_{0\ Pap}$ = ET_0 Papadakis (mm day^{-1}), $ET_{0\ Mal}$ = ET_0 Malmström's equations (mm day^{-1})

Table C24 Estimated daily PET Hargreaves's, PET Mc. Guinness-Bordne's, PET Romanenko's, PET Hammon's 1, PET Hammon's 2 and PET Hammon's 3 for AWS1 at ADRON in Nickerie district for January 2010 – December 2011

Date	PET $_{Har}$	PET $_{McG-Bor}$	PET $_{Rom}$	PET $_{Ham\ 1}$	PET $_{Ham\ 2}$	PET $_{Ham\ 3}$
12/1/2010	0.78	0.87	1.35	0.29	5.12	0.34
12/2/2010	0.76	0.86	1.38	0.29	5.07	0.34
12/3/2010	0.75	0.86	1.50	0.28	5.00	0.33
12/4/2010	0.79	0.85	1.84	0.28	4.97	0.33
12/5/2010	0.86	0.84	1.03	0.28	4.87	0.33
12/6/2010	0.77	0.83	0.79	0.27	4.77	0.32
12/7/2010	0.75	0.85	0.84	0.28	4.89	0.33
12/8/2010	0.78	0.85	1.06	0.28	4.94	0.33
12/9/2010	0.78	0.84	0.82	0.28	4.83	0.32
12/10/2010	0.80	0.86	1.22	0.28	5.01	0.33
12/11/2010	0.76	0.87	1.61	0.29	5.10	0.34
12/12/2010	0.82	0.86	1.59	0.29	5.01	0.33
12/13/2010	0.84	0.85	1.41	0.28	4.94	0.33
12/14/2010	0.82	0.86	1.84	0.28	4.98	0.33
12/15/2010	0.88	0.83	1.10	0.27	4.75	0.32
12/16/2010	0.76	0.84	1.24	0.28	4.84	0.32
12/17/2010	0.82	0.84	1.71	0.28	4.85	0.32
12/18/2010	0.83	0.82	1.02	0.27	4.64	0.31
12/19/2010	0.82	0.82	1.22	0.26	4.61	0.31
12/20/2010	0.80	0.83	1.05	0.27	4.70	0.32
12/21/2010	0.79	0.83	1.15	0.27	4.77	0.32
12/22/2010	0.80	0.81	0.97	0.26	4.55	0.31
12/23/2010	0.68	0.81	0.52	0.26	4.52	0.30
12/24/2010	0.84	0.83	0.75	0.27	4.68	0.31
12/25/2010	0.77	0.84	1.13	0.28	4.85	0.32
12/26/2010	0.70	0.84	1.31	0.28	4.85	0.32
12/27/2010	0.78	0.84	1.51	0.27	4.79	0.32
12/28/2010	0.78	0.83	1.67	0.27	4.78	0.32
12/29/2010	0.78	0.80	1.10	0.26	4.48	0.30
12/30/2010	0.77	0.82	1.37	0.26	4.61	0.31
12/31/2010	0.78	0.82	1.19	0.27	4.62	0.31

Note. PET $_{Har}$ = ET_0 1985 Hargreaves (mm day^{-1}), PET $_{McG-Bor}$ = PET Mc. Guinness-Bordne's (mm day-1), PET Rom = PET Romanenko's (mm day^{-1}), PET Ham 1 = PET Hammon's 1 (mm day^{-1}), PET Ham 2 = PET Hammon's 2 (mm day^{-1}), PET Ham 3 = PET Hammon's 3 (mm day^{-1})

Table C25 Estimated daily ET_0 Penman-Monteith, ET_0 FAO 56 Penman-Monteith, ET_0 FAO PM 56 ASCE standardized, ET_0 1985 Hargreaves, ET_0 Hargreaves-Samani, ET_0 McCloud's, ET_0 Baier and Robertson's, ET_0 Papadakis and ET_0 Malmström for AWS1 at ADRON in Nickerie district for January 2010-December 2011

Date	$ET_{0\ PM}$	$ET_{0\ FAO\ PM}$ / $ET_{0\ ASCE\ PM}$	$ET_{0\ Har\text{-}Sam}$ / $ET_{0\ HAR\ 85}$	$ET_{0\ McC}$	$ET_{0\ B\text{-}R}$	$ET_{0\ Pap}$	$ET_{0\ Mal}$
1/1/2011	0.92	1.35	1.99	5.62	4.08	2.21	13.29
1/2/2011	1.07	1.66	1.87	5.61	4.07	2.19	13.28
1/3/2011	1.07	1.80	2.07	5.71	4.11	2.24	13.40
1/4/2011	0.74	1.29	1.86	5.63	4.08	2.19	13.30
1/5/2011	0.94	1.38	2.05	5.29	4.01	2.16	12.90
1/6/2011	0.82	1.17	2.07	5.55	4.07	2.21	13.21
1/7/2011	1.11	1.81	1.81	5.90	4.14	2.23	13.61
1/8/2011	1.04	1.67	2.02	5.80	4.12	2.24	13.49
1/9/2011	1.03	1.95	2.01	5.52	4.06	2.19	13.17
1/10/2011	0.94	2.18	2.01	5.60	4.08	2.21	13.26
1/11/2011	1.10	2.05	1.91	5.38	4.02	2.16	13.01
1/12/2011	0.99	2.17	1.85	5.70	4.09	2.20	13.38
1/13/2011	0.74	2.87	2.09	6.55	4.27	2.36	14.32
1/14/2011	0.75	2.57	1.99	6.17	4.20	2.29	13.90
1/15/2011	0.53	2.18	2.08	5.77	4.12	2.25	13.46
1/16/2011	1.10	3.30	1.90	6.15	4.19	2.28	13.89
1/17/2011	1.19	2.78	1.98	5.66	4.09	2.21	13.34
1/18/2011	0.79	2.24	2.22	5.79	4.13	2.27	13.49
1/19/2011	1.15	2.68	2.22	5.86	4.14	2.28	13.57
1/20/2011	1.25	2.72	1.95	5.56	4.07	2.19	13.22
1/21/2011	1.38	2.57	1.98	5.59	4.08	2.20	13.26
1/22/2011	1.13	2.24	1.96	5.28	4.01	2.15	12.90
1/23/2011	1.21	2.43	2.03	5.54	4.06	2.20	13.19
1/24/2011	1.06	2.45	2.08	5.82	4.13	2.25	13.52
1/25/2011	1.15	2.68	1.84	5.79	4.12	2.21	13.49
1/26/2011	1.21	2.48	1.93	5.56	4.07	2.19	13.22
1/27/2011	1.17	2.39	2.04	5.81	4.12	2.25	13.50
1/28/2011	1.22	2.59	1.99	5.86	4.13	2.25	13.56
1/29/2011	0.94	2.48	1.90	6.11	4.18	2.27	13.84
1/30/2011	0.89	2.33	2.30	6.04	4.18	2.32	13.77
1/31/2011	0.84	1.94	2.04	5.51	4.06	2.20	13.17

Note. $ET_{0\ PM}$ = ET_0 Penman-Monteith (mm day^{-1}), $ET_{0\ FAO\ PM}$ = ET_0 FAO 56 Penman-Monteith (mm day^{-1}), $ET_{0\ ASCE\ PM}$ = ET_0 FAO PM 56 ASCE standardized (mm day^{-1}), $ET_{0\ Har\text{-}Sam}$ = ET_0 Hargreaves-Samani (mm day^{-1}), $ET_{0\ HAR\ 85}$ = ET_0 1985 Hargreaves (mm day^{-1}), $ET_{0\ McC}$ = ET_0 McCloud's (mm day^{-1}), $ET_{0\ B\text{-}R}$ = ET_0 Baier and Robertson's (mm day-1), $ET_{0\ Pap}$ = ET_0 Papadakis (mm day^{-1}), $ET_{0\ Mal}$ = ET_0 Malmström's equations (mm day^{-1})

Table C26 Estimated daily PET Hargreaves's, PET Mc. Guinness-Bordne's, PET Romanenko's, PET Hammon's 1, PET Hammon's 2 and PET Hammon's 3 for AWS1 at ADRON in Nickerie district for January 2010 – December 2011

Date	PET_{Har}	$PET_{McG\text{-}Bor}$	PET_{Rom}	$PET_{Ham\ 1}$	$PET_{Ham\ 2}$	$PET_{Ham\ 3}$
1/1/2011	0.81	0.83	0.86	0.26	4.61	0.31
1/2/2011	0.76	0.83	1.12	0.26	4.61	0.31
1/3/2011	0.84	0.84	1.19	0.27	4.65	0.31
1/4/2011	0.76	0.83	1.04	0.27	4.62	0.31
1/5/2011	0.84	0.81	0.76	0.26	4.47	0.30
1/6/2011	0.84	0.83	0.77	0.26	4.59	0.31
1/7/2011	0.74	0.84	1.17	0.27	4.74	0.32
1/8/2011	0.82	0.84	1.22	0.27	4.70	0.32
1/9/2011	0.82	0.82	1.47	0.26	4.58	0.31
1/10/2011	0.82	0.83	1.92	0.26	4.61	0.31
1/11/2011	0.78	0.82	1.57	0.26	4.52	0.30
1/12/2011	0.76	0.83	1.62	0.27	4.66	0.31
1/13/2011	0.85	0.87	2.45	0.28	5.01	0.33
1/14/2011	0.81	0.85	2.25	0.28	4.86	0.33
1/15/2011	0.85	0.84	2.09	0.27	4.70	0.32
1/16/2011	0.77	0.85	2.92	0.28	4.86	0.33
1/17/2011	0.81	0.83	2.49	0.27	4.66	0.31
1/18/2011	0.91	0.84	2.06	0.27	4.71	0.32
1/19/2011	0.91	0.84	2.34	0.27	4.75	0.32
1/20/2011	0.80	0.83	2.61	0.26	4.62	0.31
1/21/2011	0.81	0.83	2.77	0.27	4.64	0.31
1/22/2011	0.80	0.81	2.35	0.26	4.51	0.30
1/23/2011	0.83	0.83	2.19	0.26	4.62	0.31
1/24/2011	0.85	0.84	2.26	0.27	4.74	0.32
1/25/2011	0.75	0.84	2.45	0.27	4.73	0.32
1/26/2011	0.79	0.83	2.34	0.27	4.64	0.31
1/27/2011	0.83	0.84	2.15	0.27	4.75	0.32
1/28/2011	0.81	0.84	2.38	0.27	4.77	0.32
1/29/2011	0.78	0.85	2.25	0.28	4.88	0.33
1/30/2011	0.94	0.84	2.04	0.28	4.85	0.33
1/31/2011	0.83	0.82	1.69	0.26	4.63	0.31

Note. $PET_{Har} = ET_0$ 1985 Hargreaves (mm day^{-1}), $PET_{McG\text{-}Bor}$ = PET Mc. Guinness-Bordne's (mm day-1), PET Rom = PET Romanenko's (mm day^{-1}), PET Ham 1 = PET Hammon's 1 (mm day^{-1}), PET Ham 2 = PET Hammon's 2 (mm day^{-1}), PET Ham 3 = PET Hammon's 3 (mm day^{-1})

Table C27 Estimated daily ET_0 Penman-Monteith, ET_0 FAO 56 Penman-Monteith, ET_0 FAO PM 56 ASCE standardized, ET_0 1985 Hargreaves, ET_0 Hargreaves-Samani, ET_0 McCloud's, ET_0 Baier and Robertson's, ET_0 Papadakis and ET_0 Malmström for AWS1 at ADRON in Nickerie district for January 2010-December 2011

Date	$ET_{0\ PM}$	$ET_{0\ FAO\ PM}$ / $ET_{0\ ASCE\ PM}$	$ET_{0\ Har\text{-}Sam}$ / $ET_{0\ HAR\ 85}$	$ET_{0\ McC}$	$ET_{0\ B\text{-}R}$	$ET_{0\ Pap}$	$ET_{0\ Mal}$
2/1/2011	1.29	2.74	1.98	6.03	4.36	2.26	13.75
2/2/2011	1.39	2.45	1.97	5.80	4.31	2.22	13.50
2/3/2011	0.86	1.98	2.18	5.58	4.27	2.22	13.25
2/4/2011	1.40	2.43	1.88	5.81	4.31	2.21	13.51
2/5/2011	1.41	2.67	2.02	5.91	4.33	2.25	13.62
2/6/2011	0.80	2.04	2.07	5.85	4.32	2.25	13.55
2/7/2011	1.08	3.14	2.11	6.32	4.42	2.32	14.07
2/8/2011	1.12	3.07	2.04	6.17	4.38	2.29	13.91
2/9/2011	0.85	1.61	2.37	5.55	4.27	2.25	13.21
2/10/2011	0.95	1.52	1.92	5.36	4.21	2.15	12.98
2/11/2011	0.49	1.14	1.96	5.36	4.21	2.15	12.99
2/12/2011	0.67	1.37	2.03	5.46	4.24	2.18	13.11
2/13/2011	0.68	1.55	2.12	5.33	4.21	2.17	12.95
2/14/2011	0.93	1.75	1.98	5.26	4.19	2.14	12.87
2/15/2011	1.41	2.15	1.91	5.45	4.23	2.16	13.10
2/16/2011	1.05	1.86	1.96	5.68	4.28	2.21	13.36
2/17/2011	0.92	1.54	1.94	5.44	4.23	2.16	13.08
2/18/2011	0.48	0.81	1.80	5.07	4.14	2.08	12.63
2/19/2011	1.07	1.40	2.09	5.19	4.17	2.14	12.78
2/20/2011	0.60	0.89	1.87	4.99	4.12	2.08	12.53
2/21/2011	0.76	1.33	2.16	5.29	4.20	2.17	12.90
2/22/2011	1.10	1.95	2.01	5.50	4.24	2.18	13.15
2/23/2011	1.27	2.26	1.90	6.26	4.40	2.28	14.01
2/24/2011	1.36	2.18	1.83	5.78	4.30	2.20	13.48
2/25/2011	1.22	2.19	1.79	5.92	4.33	2.22	13.64
2/26/2011	1.16	2.08	1.79	5.69	4.28	2.18	13.37
2/27/2011	1.20	1.80	1.84	5.46	4.23	2.15	13.11
2/28/2011	1.16	1.81	2.15	4.77	4.07	2.08	12.27

Note. $ET_{0\ PM}$ = ET_0 Penman-Monteith (mm day^{-1}), $ET_{0\ FAO\ PM}$ = ET_0 FAO 56 Penman-Monteith (mm day^{-1}), $ET_{0\ ASCE\ PM}$ = ET_0 FAO PM 56 ASCE standardized (mm day^{-1}), $ET_{0\ Har\text{-}Sam}$ = ET_0 Hargreaves-Samani (mm day^{-1}), $ET_{0\ HAR\ 85}$ = ET_0 1985 Hargreaves (mm day^{-1}), $ET_{0\ McC}$ = ET_0 McCloud's (mm day^{-1}), $ET_{0\ B\text{-}R}$ = ET_0 Baier and Robertson's (mm day-1), $ET_{0\ Pap}$ = ET_0 Papadakis (mm day^{-1}), $ET_{0\ Mal}$ = ET_0 Malmström's equations (mm day^{-1})

Table C28 Estimated daily PET Hargreaves's, PET Mc. Guinness-Bordne's, PET Romanenko's, PET Hammon's 1, PET Hammon's 2 and PET Hammon's 3 for AWS1 at ADRON in Nickerie district for January 2010 – December 2011

Date	PET $_{Har}$	PET $_{McG-Bor}$	PET $_{Rom}$	PET $_{Ham 1}$	PET $_{Ham 2}$	PET $_{Ham 3}$
2/1/2011	0.81	0.87	2.34	0.28	4.85	0.32
2/2/2011	0.81	0.86	2.00	0.27	4.76	0.32
2/3/2011	0.89	0.86	2.09	0.27	4.67	0.31
2/4/2011	0.77	0.87	2.38	0.27	4.77	0.32
2/5/2011	0.82	0.87	2.33	0.27	4.82	0.32
2/6/2011	0.85	0.87	1.79	0.27	4.80	0.32
2/7/2011	0.86	0.89	2.68	0.28	5.00	0.33
2/8/2011	0.83	0.88	2.56	0.28	4.94	0.33
2/9/2011	0.97	0.85	1.47	0.27	4.68	0.31
2/10/2011	0.78	0.85	1.31	0.26	4.60	0.31
2/11/2011	0.80	0.85	1.20	0.26	4.60	0.31
2/12/2011	0.83	0.85	1.25	0.26	4.65	0.31
2/13/2011	0.87	0.84	1.35	0.26	4.60	0.31
2/14/2011	0.81	0.84	1.50	0.26	4.57	0.31
2/15/2011	0.78	0.85	1.68	0.26	4.66	0.31
2/16/2011	0.80	0.86	1.56	0.27	4.76	0.32
2/17/2011	0.79	0.85	1.20	0.26	4.66	0.31
2/18/2011	0.73	0.83	0.87	0.26	4.50	0.30
2/19/2011	0.85	0.84	1.01	0.26	4.56	0.31
2/20/2011	0.76	0.83	0.76	0.25	4.47	0.30
2/21/2011	0.88	0.84	0.99	0.26	4.61	0.31
2/22/2011	0.82	0.85	1.57	0.27	4.71	0.32
2/23/2011	0.77	0.89	1.66	0.28	5.04	0.34
2/24/2011	0.75	0.87	1.46	0.27	4.84	0.32
2/25/2011	0.73	0.87	1.55	0.28	4.90	0.33
2/26/2011	0.73	0.86	1.70	0.27	4.81	0.32
2/27/2011	0.75	0.85	1.47	0.27	4.71	0.32
2/28/2011	0.88	0.82	1.24	0.25	4.40	0.30

Note. PET $_{Har =}$ ET_0 1985 Hargreaves (mm day^{-1}), PET $_{McG-Bor}$ = PET Mc. Guinness-Bordne's (mm day-1), PET Rom = PET Romanenko's (mm day^{-1}), PET Ham 1 = PET Hammon's 1 (mm day^{-1}), PET Ham 2 = PET Hammon's 2 (mm day^{-1}), PET Ham 3 = PET Hammon's 3 (mm day^{-1})

Table C29 Estimated daily ET_0 Penman-Monteith, ET_0 FAO 56 Penman-Monteith, ET_0 FAO PM 56 ASCE standardized, ET_0 1985 Hargreaves, ET_0 Hargreaves-Samani, ET_0 McCloud's, ET_0 Baier and Robertson's, ET_0 Papadakis and ET_0 Malmström for AWS1 at ADRON in Nickerie district for January 2010-December 2011

Date	$ET_{0\ PM}$	$ET_{0\ FAO\ PM}$ / $ET_{0\ ASCE\ PM}$	$ET_{0\ Har\text{-}Sam}$ / $ET_{0\ HAR\ 85}$	$ET_{0\ McC}$	$ET_{0\ B\text{-}R}$	$ET_{0\ Pap}$	$ET_{0\ Mal}$
4/7/2011	1.08	2.40	2.14	5.80	4.38	2.25	13.49
4/8/2011	1.63	2.40	2.06	5.28	4.26	2.15	12.89
4/9/2011	1.59	2.47	2.08	5.59	4.33	2.20	13.25
4/10/2011	1.21	2.10	2.40	5.66	4.35	2.26	13.33
4/11/2011	0.75	1.25	2.06	5.13	4.22	2.12	12.71
4/12/2011	1.37	2.45	2.16	5.88	4.39	2.26	13.58
4/13/2011	1.35	2.64	2.24	6.32	4.48	2.34	14.07
4/14/2011	1.34	2.82	2.20	6.31	4.48	2.33	14.06
4/15/2011	1.42	2.78	2.12	6.07	4.43	2.28	13.80
4/16/2011	1.49	2.53	2.16	5.64	4.34	2.22	13.32
4/17/2011	1.49	2.40	2.22	5.76	4.37	2.25	13.45
4/18/2011	1.62	2.46	2.36	5.74	4.37	2.27	13.42
4/19/2011	1.26	2.10	2.12	5.39	4.28	2.18	13.02
4/20/2011	1.40	2.44	2.52	5.78	4.38	2.30	13.47
4/21/2011	1.35	2.64	2.24	6.32	4.48	2.34	14.07
4/22/2011	1.20	2.22	2.27	6.05	4.43	2.30	13.78
4/23/2011	1.48	2.65	2.23	6.05	4.43	2.30	13.77
4/24/2011	1.46	2.54	2.23	5.94	4.41	2.28	13.65
4/25/2011	1.43	2.79	2.26	6.06	4.43	2.30	13.79
4/26/2011	1.08	2.73	2.37	6.27	4.48	2.35	14.02
4/27/2011	1.31	3.45	2.42	6.46	4.52	2.39	14.22
4/28/2011	1.36	2.84	2.30	5.97	4.42	2.29	13.69
4/29/2011	1.10	2.56	2.39	6.05	4.43	2.32	13.77
4/30/2011	1.27	3.31	2.47	6.69	4.56	2.43	14.46

Note. $ET_{0\ PM}$ = ET_0 Penman-Monteith (mm day^{-1}), $ET_{0\ FAO\ PM}$ = ET_0 FAO 56 Penman-Monteith (mm day^{-1}), $ET_{0\ ASCE\ PM}$ = ET_0 FAO PM 56 ASCE standardized (mm day^{-1}), $ET_{0\ Har\text{-}Sam}$ = ET_0 Hargreaves-Samani (mm day^{-1}), $ET_{0\ HAR\ 85}$ = ET_0 1985 Hargreaves (mm day^{-1}), $ET_{0\ McC}$ = ET_0 McCloud's (mm day^{-1}), $ET_{0\ B\text{-}R}$ = ET_0 Baier and Robertson's (mm day-1), $ET_{0\ Pap}$ = ET_0 Papadakis (mm day^{-1}), $ET_{0\ Mal}$ = ET_0 Malmström's equations (mm day^{-1})

Table C30 Estimated daily PET Hargreaves's, PET Mc. Guinness-Bordne's, PET Romanenko's, PET Hammon's 1, PET Hammon's 2 and PET Hammon's 3 for AWS1 at ADRON in Nickerie district for January 2010 – December 2011

Date	PET $_{Har}$	PET $_{McG-Bor}$	PET $_{Rom}$	PET $_{Ham\ 1}$	PET $_{Ham\ 2}$	PET $_{Ham\ 3}$
4/7/2011	0.87	0.88	2.26	0.28	4.99	0.33
4/8/2011	0.84	0.85	2.22	0.27	4.75	0.32
4/9/2011	0.85	0.87	2.05	0.27	4.90	0.33
4/10/2011	0.98	0.87	1.76	0.27	4.94	0.33
4/11/2011	0.84	0.84	1.31	0.26	4.70	0.32
4/12/2011	0.88	0.88	2.08	0.28	5.04	0.34
4/13/2011	0.91	0.90	2.41	0.29	5.24	0.35
4/14/2011	0.90	0.90	2.57	0.29	5.24	0.35
4/15/2011	0.86	0.89	2.55	0.28	5.14	0.34
4/16/2011	0.88	0.87	2.40	0.27	4.96	0.33
4/17/2011	0.91	0.87	2.33	0.28	5.01	0.34
4/18/2011	0.96	0.87	2.48	0.28	5.01	0.34
4/19/2011	0.87	0.86	2.30	0.27	4.85	0.33
4/20/2011	1.03	0.87	2.12	0.28	5.03	0.34
4/21/2011	0.91	0.90	2.41	0.29	5.27	0.35
4/22/2011	0.93	0.89	1.85	0.28	5.16	0.35
4/23/2011	0.91	0.89	2.35	0.28	5.17	0.35
4/24/2011	0.91	0.88	2.26	0.28	5.12	0.34
4/25/2011	0.92	0.89	2.55	0.29	5.18	0.35
4/26/2011	0.97	0.90	2.68	0.29	5.28	0.35
4/27/2011	0.99	0.90	3.25	0.29	5.36	0.36
4/28/2011	0.94	0.88	2.66	0.28	5.15	0.35
4/29/2011	0.97	0.89	2.79	0.29	5.19	0.35
4/30/2011	1.01	0.91	3.18	0.30	5.47	0.36

Note. PET $_{Har}$ = ET_0 1985 Hargreaves (mm day^{-1}), PET $_{McG-Bor}$ = PET Mc. Guinness-Bordne's (mm day-1), PET Rom = PET Romanenko's (mm day^{-1}), PET Ham 1 = PET Hammon's 1 (mm day^{-1}), PET Ham 2 = PET Hammon's 2 (mm day^{-1}), PET Ham 3 = PET Hammon's 3 (mm day^{-1})

Table C31 Estimated daily ET_0 Penman-Monteith, ET_0 FAO 56 Penman-Monteith, ET_0 FAO PM 56 ASCE standardized, ET_0 1985 Hargreaves, ET_0 Hargreaves-Samani, ET_0 McCloud's, ET_0 Baier and Robertson's, ET_0 Papadakis and ET_0 Malmström for AWS1 at ADRON in Nickerie district for January 2010-December 2011

Date	$ET_{0\ PM}$	$ET_{0\ FAO\ PM}$ / $ET_{0\ ASCE\ PM}$	$ET_{0\ Har\text{-}Sam}$ / $ET_{0\ HAR\ 85}$	$ET_{0\ McC}$	$ET_{0\ B\text{-}R}$	$ET_{0\ Pap}$	$ET_{0\ Mal}$
5/1/2011	0.88	3.04	2.70	7.10	4.64	2.53	14.88
5/2/2011	1.07	2.61	2.70	6.55	4.54	2.45	14.31
5/3/2011	0.86	1.77	2.44	6.09	4.45	2.34	13.82
5/4/2011	1.16	2.40	2.27	6.48	4.51	2.37	14.24
5/5/2011	1.03	2.31	2.09	6.84	4.57	2.39	14.61
5/6/2011	0.73	1.51	1.92	5.96	4.40	2.24	13.68
5/7/2011	0.75	1.72	1.88	6.38	4.48	2.30	14.13
5/8/2011	0.73	1.84	2.05	6.51	4.51	2.34	14.27
5/9/2011	0.35	0.98	2.02	5.42	4.29	2.17	13.06
5/10/2011	1.19	2.62	2.12	6.44	4.50	2.34	14.20
5/11/2011	1.19	3.02	2.04	6.77	4.56	2.37	14.54
5/12/2011	1.06	2.35	2.27	6.32	4.32	2.35	14.07
5/13/2011	1.16	2.52	2.13	6.67	4.38	2.38	14.44
5/14/2011	0.80	2.26	2.20	6.70	4.39	2.40	14.47
5/15/2011	1.03	2.59	2.02	6.94	4.42	2.40	14.72
5/16/2011	0.85	1.96	2.01	6.36	4.32	2.32	14.11
5/17/2011	0.91	2.24	2.33	6.64	4.38	2.41	14.41
5/18/2011	0.28	0.83	1.78	4.98	4.01	2.07	12.53
5/19/2011	1.05	2.48	1.91	6.03	4.25	2.25	13.75
5/20/2011	1.01	2.49	2.22	6.63	4.37	2.39	14.40
5/21/2011	0.49	1.39	2.11	5.62	4.17	2.22	13.29
5/22/2011	1.01	1.48	2.24	5.94	4.24	2.29	13.66
5/23/2011	0.94	1.83	2.29	6.37	4.33	2.36	14.13
5/24/2011	1.09	1.82	2.32	6.06	4.27	2.32	13.78
5/25/2011	0.69	1.26	1.96	5.25	4.08	2.14	12.86
5/26/2011	1.34	2.30	1.98	6.08	4.26	2.27	13.80
5/27/2011	1.31	2.46	2.12	6.72	4.39	2.39	14.50
5/28/2011	1.47	2.67	1.85	6.93	4.42	2.38	14.71
5/29/2011	1.08	2.42	2.19	6.53	4.35	2.37	14.30
5/30/2011	1.17	2.26	1.97	6.53	4.35	2.34	14.29
5/31/2011	0.79	1.41	2.12	5.58	4.16	2.22	13.25

Note. $ET_{0\ PM}$ = ET_0 Penman-Monteith (mm day^{-1}), $ET_{0\ FAO\ PM}$ = ET_0 FAO 56 Penman-Monteith (mm day^{-1}), $ET_{0\ ASCE\ PM}$ = ET_0 FAO PM 56 ASCE standardized (mm day^{-1}), $ET_{0\ Har\text{-}Sam}$ = ET_0 Hargreaves-Samani (mm day^{-1}), $ET_{0\ HAR\ 85}$ = ET_0 1985 Hargreaves (mm day^{-1}), $ET_{0\ McC}$ = ET_0 McCloud's (mm day^{-1}), $ET_{0\ B\text{-}R}$ = ET_0 Baier and Robertson's (mm day-1), $ET_{0\ Pap}$ = ET_0 Papadakis (mm day^{-1}), $ET_{0\ Mal}$ = ET_0 Malmström's equations (mm day^{-1})

Table C32 Estimated daily PET Hargreaves's, PET Mc. Guinness-Bordne's, PET Romanenko's, PET Hammon's 1, PET Hammon's 2 and PET Hammon's 3 for AWS1 at ADRON in Nickerie district for January 2010 – December 2011

Date	PET $_{Har}$	PET $_{McG-Bor}$	PET $_{Rom}$	PET $_{Ham\ 1}$	PET $_{Ham\ 2}$	PET $_{Ham\ 3}$
5/1/2011	1.10	0.93	3.10	0.31	5.64	0.37
5/2/2011	1.10	0.91	2.45	0.30	5.42	0.36
5/3/2011	1.00	0.89	1.86	0.29	5.23	0.35
5/4/2011	0.93	0.90	2.15	0.29	5.40	0.36
5/5/2011	0.85	0.92	2.40	0.30	5.56	0.37
5/6/2011	0.78	0.88	1.61	0.28	5.18	0.35
5/7/2011	0.77	0.90	1.92	0.29	5.37	0.36
5/8/2011	0.84	0.91	1.80	0.30	5.43	0.36
5/9/2011	0.82	0.86	1.26	0.27	4.95	0.33
5/10/2011	0.87	0.90	2.22	0.29	5.41	0.36
5/11/2011	0.83	0.92	2.75	0.30	5.55	0.37
5/12/2011	0.93	0.87	1.96	0.29	5.36	0.36
5/13/2011	0.87	0.89	2.55	0.30	5.52	0.37
5/14/2011	0.90	0.89	2.21	0.30	5.53	0.37
5/15/2011	0.82	0.90	2.47	0.31	5.64	0.37
5/16/2011	0.82	0.87	2.13	0.29	5.40	0.36
5/17/2011	0.95	0.88	2.33	0.30	5.52	0.37
5/18/2011	0.72	0.81	1.26	0.26	4.77	0.32
5/19/2011	0.78	0.86	2.13	0.29	5.26	0.35
5/20/2011	0.91	0.88	2.30	0.30	5.53	0.37
5/21/2011	0.86	0.84	1.59	0.28	5.08	0.34
5/22/2011	0.91	0.85	1.81	0.29	5.23	0.35
5/23/2011	0.93	0.87	2.01	0.29	5.43	0.36
5/24/2011	0.95	0.86	1.83	0.29	5.29	0.35
5/25/2011	0.80	0.82	1.35	0.27	4.92	0.33
5/26/2011	0.81	0.86	1.82	0.29	5.30	0.35
5/27/2011	0.86	0.89	2.15	0.30	5.59	0.37
5/28/2011	0.75	0.89	2.06	0.31	5.68	0.38
5/29/2011	0.90	0.88	2.09	0.30	5.51	0.37
5/30/2011	0.80	0.88	1.85	0.30	5.52	0.37
5/31/2011	0.86	0.84	1.43	0.28	5.09	0.34

Note. PET $_{Har}$ = ET_0 1985 Hargreaves (mm day^{-1}), PET $_{McG-Bor}$ = PET Mc. Guinness-Bordne's (mm day-1), PET Rom = PET Romanenko's (mm day^{-1}), PET Ham 1 = PET Hammon's 1 (mm day^{-1}), PET Ham 2 = PET Hammon's 2 (mm day^{-1}), PET Ham 3 = PET Hammon's 3 (mm day^{-1})

Table C33 Estimated daily ET_0 Penman-Monteith, ET_0 FAO 56 Penman-Monteith, ET_0 FAO PM 56 ASCE standardized, ET_0 1985 Hargreaves, ET_0 Hargreaves-Samani, ET_0 McCloud's, ET_0 Baier and Robertson's, ET_0 Papadakis and ET_0 Malmström for AWS1 at ADRON in Nickerie district for January 2010-December 2011

Date	$ET_{0\ PM}$	$ET_{0\ FAO\ PM}$ / $ET_{0\ ASCE\ PM}$	$ET_{0\ Har\text{-}Sam}$ / $ET_{0\ HAR\ 85}$	$ET_{0\ McC}$	$ET_{0\ B\text{-}R}$	$ET_{0\ Pap}$	$ET_{0\ Mal}$
6/1/2011	1.00	1.53	2.12	5.81	4.21	2.25	13.51
6/2/2011	1.18	2.02	2.08	6.19	4.28	2.30	13.92
6/3/2011	0.95	1.59	2.01	5.92	4.23	2.26	13.63
6/4/2011	0.35	0.80	1.44	4.43	3.86	1.93	11.82
6/5/2011	1.64	2.06	1.71	5.64	4.16	2.17	13.32
6/6/2011	1.26	1.95	1.91	6.31	4.30	2.30	14.06
6/7/2011	1.40	2.48	2.09	6.75	4.39	2.39	14.53
6/8/2011	1.15	2.68	2.03	6.91	4.42	2.40	14.69
6/9/2011	1.11	2.07	2.04	6.49	4.34	2.34	14.25
6/10/2011	1.00	2.04	1.86	6.44	4.33	2.31	14.20
6/11/2011	0.85	1.78	2.00	6.01	4.25	2.27	13.74
6/12/2011	1.29	2.68	1.81	6.65	4.07	2.35	14.42
6/13/2011	1.18	2.26	2.22	6.20	4.00	2.35	13.94
6/14/2011	0.92	1.87	1.94	5.92	3.93	2.26	13.63
6/15/2011	0.91	2.14	2.20	6.13	3.98	2.33	13.86
6/16/2011	0.77	1.44	1.89	5.56	3.86	2.20	13.23
6/17/2011	0.55	0.91	1.55	4.84	3.67	2.03	12.35
6/18/2011	1.04	1.40	1.98	5.52	3.85	2.20	13.17
6/19/2011	1.02	1.69	1.83	5.91	3.93	2.24	13.62
6/20/2011	0.92	1.66	1.97	5.80	3.91	2.25	13.50
6/21/2011	1.12	1.69	2.18	5.48	3.85	2.23	13.12
6/22/2011	1.22	2.06	2.04	5.66	3.88	2.23	13.34
6/23/2011	1.17	2.00	2.20	5.88	3.93	2.30	13.59
6/24/2011	1.09	2.08	2.12	5.78	3.91	2.27	13.47
6/25/2011	1.25	2.07	1.60	5.67	3.87	2.17	13.35
6/26/2011	1.19	2.07	1.75	6.25	3.99	2.28	13.99
6/27/2011	1.23	2.36	1.80	6.48	4.04	2.32	14.24
6/28/2011	1.19	1.93	1.83	5.84	3.91	2.23	13.54
6/29/2011	1.20	2.29	1.98	6.22	3.99	2.31	13.96
6/30/2011	1.08	2.04	2.17	6.00	3.96	2.31	13.72

Note. $ET_{0\ PM}$ = ET_0 Penman-Monteith (mm day^{-1}), $ET_{0\ FAO\ PM}$ = ET_0 FAO 56 Penman-Monteith (mm day^{-1}), $ET_{0\ ASCE\ PM}$ = ET_0 FAO PM 56 ASCE standardized (mm day^{-1}), $ET_{0\ Har\text{-}Sam}$ = ET_0 Hargreaves-Samani (mm day^{-1}), $ET_{0\ HAR\ 85}$ = ET_0 1985 Hargreaves (mm day^{-1}), $ET_{0\ McC}$ = ET_0 McCloud's (mm day^{-1}), $ET_{0\ B\text{-}R}$ = ET_0 Baier and Robertson's (mm day-1), $ET_{0\ Pap}$ = ET_0 Papadakis (mm day^{-1}), $ET_{0\ Mal}$ = ET_0 Malmström's equations (mm day^{-1})

Table C34 Estimated daily PET Hargreaves's, PET Mc. Guinness-Bordne's, PET Romanenko's, PET Hammon's 1, PET Hammon's 2 and PET Hammon's 3 for AWS1 at ADRON in Nickerie district for January 2010 – December 2011

Date	PET $_{Har}$	PET $_{McG-Bor}$	PET $_{Rom}$	PET $_{Ham\ 1}$	PET $_{Ham\ 2}$	PET $_{Ham\ 3}$
6/1/2011	0.86	0.85	1.55	0.28	5.20	0.35
6/2/2011	0.85	0.87	1.64	0.29	5.37	0.36
6/3/2011	0.82	0.85	1.63	0.29	5.26	0.35
6/4/2011	0.59	0.78	1.00	0.25	4.53	0.31
6/5/2011	0.70	0.84	1.47	0.28	5.13	0.34
6/6/2011	0.78	0.87	1.62	0.29	5.44	0.36
6/7/2011	0.85	0.89	2.00	0.30	5.63	0.37
6/8/2011	0.83	0.89	2.21	0.31	5.70	0.38
6/9/2011	0.83	0.88	1.85	0.30	5.52	0.37
6/10/2011	0.76	0.87	1.79	0.30	5.50	0.37
6/11/2011	0.82	0.86	1.67	0.29	5.31	0.36
6/12/2011	0.74	0.84	2.28	0.30	5.60	0.37
6/13/2011	0.91	0.82	2.09	0.29	5.40	0.36
6/14/2011	0.79	0.81	1.58	0.29	5.28	0.35
6/15/2011	0.90	0.82	1.91	0.29	5.37	0.36
6/16/2011	0.77	0.79	1.45	0.28	5.12	0.34
6/17/2011	0.63	0.76	1.09	0.26	4.76	0.32
6/18/2011	0.81	0.79	1.28	0.28	5.10	0.34
6/19/2011	0.75	0.81	1.43	0.29	5.28	0.35
6/20/2011	0.80	0.80	1.43	0.28	5.23	0.35
6/21/2011	0.89	0.79	1.38	0.28	5.08	0.34
6/22/2011	0.83	0.80	1.63	0.28	5.17	0.35
6/23/2011	0.90	0.81	1.62	0.29	5.27	0.35
6/24/2011	0.86	0.80	1.74	0.28	5.22	0.35
6/25/2011	0.65	0.80	1.61	0.28	5.17	0.35
6/26/2011	0.71	0.82	1.79	0.29	5.44	0.36
6/27/2011	0.73	0.83	2.01	0.30	5.54	0.37
6/28/2011	0.75	0.80	1.64	0.28	5.25	0.35
6/29/2011	0.81	0.82	2.01	0.29	5.43	0.36
6/30/2011	0.89	0.81	1.78	0.29	5.33	0.36

Note. PET $_{Har}$ = ET_0 1985 Hargreaves (mm day^{-1}), PET $_{McG-Bor}$ = PET Mc. Guinness-Bordne's (mm day-1), PET Rom = PET Romanenko's (mm day^{-1}), PET Ham 1 = PET Hammon's 1 (mm day^{-1}), PET Ham 2 = PET Hammon's 2 (mm day^{-1}), PET Ham 3 = PET Hammon's 3 (mm day^{-1})

Table C35 Estimated daily ET_0 Penman-Monteith, ET_0 FAO 56 Penman-Monteith, ET_0 FAO PM 56 ASCE standardized, ET_0 1985 Hargreaves, ET_0 Hargreaves-Samani, ET_0 McCloud's, ET_0 Baier and Robertson's, ET_0 Papadakis and ET_0 Malmström for AWS1 at ADRON in Nickerie district for January 2010-December 2011

Date	$ET_{0\ PM}$	$ET_{0\ FAO\ PM}$/ $ET_{0\ ASCE\ PM}$	$ET_{0\ Har\text{-}Sam}$/ $ET_{0\ HAR\ 85}$	$ET_{0\ McC}$	$ET_{0\ B\text{-}R}$	$ET_{0\ Pap}$	$ET_{0\ Mal}$
7/1/2011	1.18	2.35	1.95	6.35	4.02	2.33	14.10
7/2/2011	1.36	2.41	1.96	6.39	4.03	2.33	14.15
7/3/2011	1.07	1.88	2.03	5.86	3.92	2.26	13.57
7/4/2011	0.65	1.29	1.93	5.07	3.74	2.12	12.63
7/5/2011	0.77	1.07	1.79	4.41	3.57	1.98	11.79
7/6/2011	1.36	2.25	1.76	5.71	3.88	2.20	13.39
7/7/2011	0.62	1.16	1.67	5.29	3.79	2.12	12.90
7/8/2011	1.39	1.83	2.04	5.30	3.80	2.18	12.91
7/9/2011	1.43	2.43	1.86	6.24	3.99	2.30	13.98
7/10/2011	0.72	1.34	1.67	4.87	3.69	2.05	12.39
7/11/2011	1.24	2.17	1.99	5.48	3.84	2.20	13.13
7/12/2011	1.00	1.65	2.18	5.46	3.66	2.24	13.10
7/13/2011	1.07	1.55	1.93	5.76	3.71	2.24	13.45
7/14/2011	1.36	2.13	1.95	5.94	3.75	2.28	13.65
7/15/2011	1.20	2.02	1.82	5.43	3.64	2.17	13.06
7/16/2011	1.32	2.20	1.80	5.68	3.69	2.21	13.36
7/17/2011	1.45	2.52	1.91	6.01	3.77	2.28	13.74
7/18/2011	1.43	2.06	1.96	5.71	3.71	2.24	13.39
7/19/2011	1.52	2.16	1.99	6.03	3.77	2.30	13.76
7/20/2011	1.35	2.28	1.76	6.56	3.87	2.34	14.33
7/21/2011	1.21	2.14	1.93	6.16	3.80	2.31	13.90
7/22/2011	1.18	1.98	2.27	6.04	3.79	2.35	13.76
7/23/2011	1.26	1.97	1.94	5.36	3.63	2.18	12.99
7/24/2011	1.00	1.52	1.92	5.67	3.70	2.23	13.35
7/25/2011	1.04	1.64	1.85	5.45	3.65	2.18	13.09
7/26/2011	1.42	2.28	1.94	5.75	3.71	2.24	13.44
7/27/2011	1.00	1.96	2.13	6.03	3.78	2.32	13.75
7/28/2011	1.52	2.38	1.81	5.92	3.75	2.25	13.63
7/29/2011	1.16	1.46	2.07	5.35	3.63	2.20	12.98
7/30/2011	1.10	1.69	2.16	5.19	3.60	2.19	12.79
7/31/2011	1.47	1.92	1.68	5.57	3.67	2.18	13.24

Note. $ET_{0\ PM}$ = ET_0 Penman-Monteith (mm day^{-1}), $ET_{0\ FAO\ PM}$ = ET_0 FAO 56 Penman-Monteith (mm day^{-1}), $ET_{0\ ASCE\ PM}$ = ET_0 FAO PM 56 ASCE standardized (mm day^{-1}), $ET_{0\ Har\text{-}Sam}$ = ET_0 Hargreaves-Samani (mm day^{-1}), $ET_{0\ HAR\ 85}$ = ET_0 1985 Hargreaves (mm day^{-1}), $ET_{0\ McC}$ = ET_0 McCloud's (mm day^{-1}), $ET_{0\ B\text{-}R}$ = ET_0 Baier and Robertson's (mm day-1), $ET_{0\ Pap}$ = ET_0 Papadakis (mm day^{-1}), $ET_{0\ Mal}$ = ET_0 Malmström's equations (mm day^{-1})

Table C36 Estimated daily PET Hargreaves's, PET Mc. Guinness-Bordne's, PET Romanenko's, PET Hammon's 1, PET Hammon's 2 and PET Hammon's 3 for AWS1 at ADRON in Nickerie district for January 2010 – December 2011

Date	PET $_{Har}$	PET $_{McG-Bor}$	PET $_{Rom}$	PET $_{Ham\ 1}$	PET $_{Ham\ 2}$	PET $_{Ham\ 3}$
7/1/2011	0.80	0.82	1.96	0.30	5.49	0.37
7/2/2011	0.80	0.83	2.01	0.30	5.50	0.37
7/3/2011	0.83	0.81	1.89	0.29	5.27	0.35
7/4/2011	0.79	0.77	1.33	0.27	4.88	0.33
7/5/2011	0.73	0.74	1.08	0.25	4.55	0.31
7/6/2011	0.72	0.80	1.76	0.28	5.19	0.35
7/7/2011	0.68	0.78	1.44	0.27	4.99	0.34
7/8/2011	0.83	0.78	1.41	0.27	5.00	0.34
7/9/2011	0.76	0.82	1.91	0.29	5.43	0.36
7/10/2011	0.68	0.76	1.18	0.26	4.78	0.32
7/11/2011	0.81	0.79	1.66	0.28	5.08	0.34
7/12/2011	0.89	0.76	1.41	0.28	5.07	0.34
7/13/2011	0.79	0.77	1.43	0.28	5.21	0.35
7/14/2011	0.80	0.78	1.77	0.29	5.29	0.35
7/15/2011	0.74	0.76	1.73	0.28	5.05	0.34
7/16/2011	0.73	0.77	1.82	0.28	5.17	0.35
7/17/2011	0.78	0.78	2.03	0.29	5.32	0.36
7/18/2011	0.80	0.77	1.49	0.28	5.18	0.35
7/19/2011	0.81	0.78	1.71	0.29	5.33	0.36
7/20/2011	0.72	0.80	1.95	0.30	5.56	0.37
7/21/2011	0.79	0.79	1.89	0.29	5.39	0.36
7/22/2011	0.93	0.78	1.74	0.29	5.33	0.36
7/23/2011	0.79	0.75	1.60	0.27	5.01	0.34
7/24/2011	0.78	0.77	1.52	0.28	5.16	0.35
7/25/2011	0.75	0.76	1.49	0.28	5.05	0.34
7/26/2011	0.79	0.77	1.93	0.28	5.19	0.35
7/27/2011	0.87	0.78	1.77	0.29	5.31	0.36
7/28/2011	0.74	0.78	1.94	0.29	5.26	0.35
7/29/2011	0.84	0.76	1.27	0.27	4.99	0.34
7/30/2011	0.88	0.75	1.34	0.27	4.92	0.33
7/31/2011	0.69	0.77	1.43	0.28	5.10	0.34

Note. PET $_{Har}$ = ET_0 1985 Hargreaves (mm day^{-1}), PET $_{McG-Bor}$ = PET Mc. Guinness-Bordne's (mm day-1), PET Rom = PET Romanenko's (mm day^{-1}), PET Ham 1 = PET Hammon's 1 (mm day^{-1}), PET Ham 2 = PET Hammon's 2 (mm day^{-1}), PET Ham 3 = PET Hammon's 3 (mm day^{-1})

Table C37 Estimated daily ET_0 Penman-Monteith, ET_0 FAO 56 Penman-Monteith, ET_0 FAO PM 56 ASCE standardized, ET_0 1985 Hargreaves, ET_0 Hargreaves-Samani, ET_0 McCloud's, ET_0 Baier and Robertson's, ET_0 Papadakis and ET_0 Malmström for AWS1 at ADRON in Nickerie district for January 2010-December 2011

Date	$ET_{0\ PM}$	$ET_{0\ FAO\ PM}$/ $ET_{0\ ASCE\ PM}$	$ET_{0\ Har\text{-}Sam}$/ $ET_{0\ HAR\ 85}$	$ET_{0\ McC}$	$ET_{0\ B\text{-}R}$	$ET_{0\ Pap}$	$ET_{0\ Mal}$
8/1/2011	0.57	1.18	1.63	4.56	3.42	2.00	12.00
8/2/2011	1.44	2.30	1.74	5.51	3.65	2.17	13.16
8/3/2011	1.58	2.36	1.82	6.29	3.82	2.31	14.04
8/4/2011	1.45	2.33	1.99	6.55	3.87	2.37	14.31
8/5/2011	1.58	2.17	1.82	6.63	3.88	2.36	14.40
8/6/2011	1.23	2.23	1.98	6.57	3.88	2.37	14.33
8/7/2011	1.43	2.49	1.80	6.21	3.80	2.29	13.95
8/8/2011	1.53	2.19	1.86	6.31	3.82	2.32	14.06
8/9/2011	1.61	2.35	1.62	6.26	3.81	2.27	14.01
8/10/2011	1.39	2.07	2.04	6.04	3.78	2.31	13.77
8/11/2011	1.62	2.50	1.75	5.87	3.73	2.23	13.57
8/12/2011	1.30	2.12	2.17	6.22	4.12	2.33	13.96
8/13/2011	1.52	2.35	2.07	6.32	4.14	2.33	14.07
8/14/2011	1.39	1.85	2.13	6.15	4.11	2.32	13.89
8/15/2011	1.45	1.99	1.99	5.68	4.00	2.22	13.36
8/16/2011	1.08	1.43	2.01	5.76	4.02	2.24	13.45
8/17/2011	1.55	2.16	1.90	6.03	4.07	2.26	13.75
8/18/2011	1.67	2.12	1.82	6.01	4.07	2.25	13.73
8/19/2011	1.71	2.10	1.83	6.42	4.15	2.31	14.18
8/20/2011	1.63	2.08	2.15	6.13	4.10	2.32	13.87
8/21/2011	0.75	1.11	2.17	4.89	3.83	2.12	12.41
8/22/2011	1.68	1.89	1.98	5.19	3.89	2.14	12.79
8/23/2011	0.94	1.34	2.22	5.02	3.86	2.15	12.57
8/24/2011	1.20	1.60	2.10	4.98	3.85	2.13	12.53
8/25/2011	1.36	1.83	2.11	5.39	3.94	2.19	13.02
8/26/2011	1.21	1.59	2.24	5.30	3.93	2.20	12.91
8/27/2011	1.42	1.86	1.92	5.59	3.98	2.20	13.26
8/28/2011	1.40	2.10	2.02	6.44	4.16	2.34	14.20
8/29/2011	1.70	2.25	1.89	6.48	4.16	2.33	14.25
8/30/2011	1.55	2.25	1.88	6.28	4.12	2.30	14.03
8/31/2011	1.56	2.42	2.05	6.42	4.15	2.34	14.18

Note. $ET_{0\ PM}$ = ET_0 Penman-Monteith (mm day^{-1}), $ET_{0\ FAO\ PM}$ = ET_0 FAO 56 Penman-Monteith (mm day^{-1}), $ET_{0\ ASCE\ PM}$ = ET_0 FAO PM 56 ASCE standardized (mm day^{-1}), $ET_{0\ Har\text{-}Sam}$ = ET_0 Hargreaves-Samani (mm day^{-1}), $ET_{0\ HAR\ 85}$ = ET_0 1985 Hargreaves (mm day^{-1}), $ET_{0\ McC}$ = ET_0 McCloud's (mm day^{-1}), $ET_{0\ B\text{-}R}$ = ET_0 Baier and Robertson's (mm day-1), $ET_{0\ Pap}$ = ET_0 Papadakis (mm day^{-1}), $ET_{0\ Mal}$ = ET_0 Malmström's equations (mm day^{-1})

Table C38 Estimated daily PET Hargreaves's, PET Mc. Guinness-Bordne's, PET Romanenko's, PET Hammon's 1, PET Hammon's 2 and PET Hammon's 3 for AWS1 at ADRON in Nickerie district for January 2010 – December 2011

Date	PET $_{Har}$	PET $_{McG-Bor}$	PET $_{Rom}$	PET $_{Ham 1}$	PET $_{Ham 2}$	PET $_{Ham 3}$
8/1/2011	0.67	0.72	1.15	0.25	4.60	0.31
8/2/2011	0.71	0.76	1.74	0.28	5.06	0.34
8/3/2011	0.74	0.79	1.68	0.29	5.42	0.36
8/4/2011	0.81	0.80	1.91	0.30	5.52	0.37
8/5/2011	0.74	0.80	1.94	0.30	5.56	0.37
8/6/2011	0.81	0.80	1.94	0.30	5.53	0.37
8/7/2011	0.74	0.79	1.92	0.29	5.37	0.36
8/8/2011	0.76	0.79	1.98	0.29	5.41	0.36
8/9/2011	0.66	0.79	2.01	0.29	5.39	0.36
8/10/2011	0.83	0.78	1.69	0.29	5.28	0.35
8/11/2011	0.71	0.78	2.31	0.28	5.20	0.35
8/12/2011	0.89	0.84	1.83	0.29	5.36	0.36
8/13/2011	0.85	0.84	1.91	0.29	5.40	0.36
8/14/2011	0.87	0.84	1.64	0.29	5.32	0.36
8/15/2011	0.81	0.82	1.57	0.28	5.10	0.34
8/16/2011	0.82	0.82	1.27	0.28	5.14	0.34
8/17/2011	0.78	0.83	1.73	0.29	5.25	0.35
8/18/2011	0.74	0.83	1.60	0.29	5.24	0.35
8/19/2011	0.75	0.85	1.68	0.29	5.42	0.36
8/20/2011	0.88	0.84	1.57	0.29	5.29	0.35
8/21/2011	0.89	0.78	1.14	0.26	4.71	0.32
8/22/2011	0.81	0.80	1.10	0.27	4.85	0.33
8/23/2011	0.91	0.79	1.25	0.26	4.76	0.32
8/24/2011	0.86	0.78	1.25	0.26	4.74	0.32
8/25/2011	0.86	0.80	1.35	0.27	4.93	0.33
8/26/2011	0.91	0.80	1.29	0.27	4.89	0.33
8/27/2011	0.79	0.81	1.29	0.28	5.02	0.34
8/28/2011	0.82	0.85	1.67	0.29	5.40	0.36
8/29/2011	0.77	0.85	1.74	0.30	5.41	0.36
8/30/2011	0.77	0.84	1.88	0.29	5.32	0.36
8/31/2011	0.84	0.85	1.96	0.29	5.37	0.36

Note. PET $_{Har}$ = ET_0 1985 Hargreaves (mm day^{-1}), PET $_{McG-Bor}$ = PET Mc. Guinness-Bordne's (mm day-1), PET Rom = PET Romanenko's (mm day^{-1}), PET Ham 1 = PET Hammon's 1 (mm day^{-1}), PET Ham 2 = PET Hammon's 2 (mm day^{-1}), PET Ham 3 = PET Hammon's 3 (mm day^{-1})

Table C39 Estimated daily ET_0 Penman-Monteith, ET_0 FAO 56 Penman-Monteith, ET_0 FAO PM 56 ASCE standardized, ET_0 1985 Hargreaves, ET_0 Hargreaves-Samani, ET_0 McCloud's, ET_0 Baier and Robertson's, ET_0 Papadakis and ET_0 Malmström for AWS1 at ADRON in Nickerie district for January 2010-December 2011

Date	$ET_{0\ PM}$	$ET_{0\ FAO\ PM}$/ $ET_{0\ ASCE\ PM}$	$ET_{0\ Har\text{-}Sam}$/ $ET_{0\ HAR\ 85}$	$ET_{0\ McC}$	$ET_{0\ B\text{-}R}$	$ET_{0\ Pap}$	$ET_{0\ Mal}$
9/1/2011	1.53	2.34	1.92	5.95	4.06	2.26	13.67
9/2/2011	1.48	2.14	1.92	6.11	4.09	2.28	13.84
9/3/2011	1.53	2.23	1.85	5.93	4.05	2.24	13.65
9/4/2011	1.45	1.99	2.04	5.84	4.04	2.26	13.54
9/5/2011	1.43	1.84	1.99	5.59	3.98	2.21	13.26
9/6/2011	1.21	1.81	1.95	6.18	4.10	2.29	13.91
9/7/2011	1.30	2.16	1.93	6.30	4.13	2.31	14.04
9/8/2011	1.56	2.07	1.85	5.89	4.04	2.24	13.60
9/9/2011	1.35	1.95	2.27	5.76	4.03	2.28	13.45
9/10/2011	1.58	2.21	2.00	6.04	4.08	2.28	13.77
9/11/2011	1.41	2.47	1.93	6.47	4.16	2.33	14.23
9/12/2011	1.53	2.09	1.99	6.42	4.39	2.32	14.18
9/13/2011	1.49	2.12	2.04	6.43	4.39	2.33	14.18
9/14/2011	1.40	1.96	2.15	5.70	4.25	2.24	13.39
9/15/2011	1.27	1.62	2.24	5.40	4.19	2.20	13.04
9/16/2011	1.09	1.68	2.07	5.82	4.27	2.24	13.52
9/17/2011	1.29	1.91	2.16	6.16	4.34	2.31	13.89
9/18/2011	1.26	1.69	2.27	6.14	4.34	2.32	13.87
9/19/2011	1.14	1.50	2.20	6.09	4.33	2.30	13.82
9/20/2011	1.33	1.88	2.08	5.91	4.29	2.26	13.61
9/21/2011	1.59	2.20	2.05	6.00	4.31	2.27	13.72
9/22/2011	1.42	1.89	2.08	5.85	4.28	2.25	13.55
9/23/2011	1.30	1.53	2.18	5.85	4.28	2.26	13.55
9/24/2011	1.33	1.91	2.19	6.51	4.41	2.37	14.27
9/25/2011	1.40	2.25	2.11	6.48	4.40	2.35	14.24
9/26/2011	1.51	2.19	2.09	6.46	4.40	2.34	14.22
9/27/2011	1.21	1.56	2.16	6.01	4.31	2.29	13.73
9/28/2011	1.17	1.53	2.32	5.65	4.25	2.26	13.33
9/29/2011	1.55	2.50	2.12	6.40	4.39	2.34	14.15
9/30/2011	1.33	2.66	2.22	6.39	4.39	2.35	14.15

Note. $ET_{0\ PM}$ = ET_0 Penman-Monteith (mm day^{-1}), $ET_{0\ FAO\ PM}$ = ET_0 FAO 56 Penman-Monteith (mm day^{-1}), $ET_{0\ ASCE\ PM}$ = ET_0 FAO PM 56 ASCE standardized (mm day^{-1}), $ET_{0\ Har\text{-}Sam}$ = ET_0 Hargreaves-Samani (mm day^{-1}), $ET_{0\ HAR\ 85}$ = ET_0 1985 Hargreaves (mm day^{-1}), $ET_{0\ McC}$ = ET_0 McCloud's (mm day^{-1}), $ET_{0\ B\text{-}R}$ = ET_0 Baier and Robertson's (mm day-1), $ET_{0\ Pap}$ = ET_0 Papadakis (mm day^{-1}), $ET_{0\ Mal}$ = ET_0 Malmström's equations (mm day^{-1})

Table C40 Estimated daily PET Hargreaves's, PET Mc. Guinness-Bordne's, PET Romanenko's, PET Hammon's 1, PET Hammon's 2 and PET Hammon's 3 for AWS1 at ADRON in Nickerie district for January 2010 – December 2011

Date	PET $_{Har}$	PET $_{McG-Bor}$	PET $_{Rom}$	PET $_{Ham\ 1}$	PET $_{Ham\ 2}$	PET $_{Ham\ 3}$
9/1/2011	0.78	0.83	1.87	0.28	5.16	0.35
9/2/2011	0.78	0.83	1.68	0.29	5.23	0.35
9/3/2011	0.76	0.83	1.74	0.28	5.15	0.34
9/4/2011	0.83	0.82	1.61	0.28	5.10	0.34
9/5/2011	0.81	0.81	1.61	0.28	4.99	0.34
9/6/2011	0.80	0.84	1.53	0.29	5.24	0.35
9/7/2011	0.79	0.84	1.78	0.29	5.29	0.35
9/8/2011	0.75	0.83	1.68	0.28	5.11	0.34
9/9/2011	0.93	0.82	1.95	0.28	5.05	0.34
9/10/2011	0.81	0.83	1.83	0.28	5.17	0.35
9/11/2011	0.79	0.85	2.03	0.29	5.35	0.36
9/12/2011	0.81	0.88	1.70	0.29	5.32	0.36
9/13/2011	0.83	0.88	1.84	0.29	5.32	0.35
9/14/2011	0.88	0.85	1.70	0.28	5.00	0.34
9/15/2011	0.91	0.84	1.36	0.27	4.86	0.33
9/16/2011	0.85	0.86	1.60	0.28	5.04	0.34
9/17/2011	0.88	0.87	1.62	0.29	5.18	0.35
9/18/2011	0.93	0.87	1.61	0.29	5.17	0.35
9/19/2011	0.90	0.87	1.64	0.28	5.15	0.34
9/20/2011	0.85	0.86	1.79	0.28	5.06	0.34
9/21/2011	0.84	0.87	1.91	0.28	5.10	0.34
9/22/2011	0.85	0.86	1.68	0.28	5.03	0.34
9/23/2011	0.89	0.86	1.33	0.28	5.02	0.34
9/24/2011	0.90	0.89	1.76	0.29	5.30	0.35
9/25/2011	0.86	0.89	2.13	0.29	5.29	0.35
9/26/2011	0.85	0.89	1.77	0.29	5.27	0.35
9/27/2011	0.88	0.87	1.46	0.28	5.08	0.34
9/28/2011	0.95	0.85	1.46	0.27	4.91	0.33
9/29/2011	0.86	0.88	2.16	0.29	5.23	0.35
9/30/2011	0.90	0.88	2.30	0.29	5.22	0.35

Note. PET $_{Har}$ = ET_0 1985 Hargreaves (mm day^{-1}), PET $_{McG-Bor}$ = PET Mc. Guinness-Bordne's (mm day-1), PET Rom = PET Romanenko's (mm day^{-1}), PET Ham 1 = PET Hammon's 1 (mm day^{-1}), PET Ham 2 = PET Hammon's 2 (mm day^{-1}), PET Ham 3 = PET Hammon's 3 (mm day^{-1})

Table C41 Estimated daily ET_0 Penman-Monteith, ET_0 FAO 56 Penman-Monteith, ET_0 FAO PM 56 ASCE standardized, ET_0 1985 Hargreaves, ET_0 Hargreaves-Samani, ET_0 McCloud's, ET_0 Baier and Robertson's, ET_0 Papadakis and ET_0 Malmström for AWS1 at ADRON in Nickerie district for January 2010-December 2011

Date	$ET_{0\ PM}$	$ET_{0\ FAO\ PM}$/ $ET_{0\ ASCE\ PM}$	$ET_{0\ Har\text{-}Sam}$/ $ET_{0\ HAR\ 85}$	$ET_{0\ McC}$	$ET_{0\ B\text{-}R}$	$ET_{0\ Pap}$	$ET_{0\ Mal}$
10/1/2011	1.14	1.58	2.76	5.41	4.21	2.30	13.05
10/2/2011	0.92	1.26	2.29	5.13	4.13	2.17	12.71
10/3/2011	0.89	1.38	2.24	5.15	4.13	2.16	12.73
10/4/2011	1.30	1.82	2.15	5.60	4.23	2.22	13.27
10/5/2011	1.07	1.56	2.06	5.52	4.21	2.20	13.18
10/6/2011	1.49	2.82	2.23	6.02	4.32	2.30	13.74
10/7/2011	1.07	1.94	2.40	6.05	4.33	2.33	13.78
10/8/2011	1.62	2.22	2.11	5.62	4.23	2.22	13.29
10/9/2011	1.04	1.40	2.09	6.01	4.31	2.28	13.73
10/10/2011	1.15	2.15	2.04	6.05	4.32	2.27	13.78
10/11/2011	1.42	2.02	2.31	5.82	4.28	2.28	13.52
10/12/2011	1.20	1.76	2.34	5.85	4.33	2.29	13.55
10/13/2011	1.11	1.90	2.35	5.86	4.33	2.29	13.57
10/14/2011	1.25	2.46	2.39	6.40	4.44	2.38	14.15
10/15/2011	1.48	2.64	2.29	6.27	4.41	2.34	14.02
10/16/2011	1.01	2.09	2.41	6.23	4.41	2.36	13.98
10/17/2011	1.48	2.87	2.56	6.69	4.50	2.45	14.46
10/18/2011	1.19	1.80	2.58	5.78	4.32	2.32	13.47
10/19/2011	1.04	1.74	2.44	5.49	4.26	2.25	13.14
10/20/2011	0.74	1.06	2.20	4.81	4.09	2.10	12.32
10/21/2011	0.62	1.24	1.87	4.59	4.02	2.01	12.03
10/22/2011	1.50	1.90	2.01	5.65	4.28	2.21	13.32
10/23/2011	1.18	1.60	2.23	6.16	4.39	2.32	13.90
10/24/2011	0.39	0.73	1.98	4.37	3.96	1.98	11.75
10/25/2011	1.71	2.25	2.04	5.87	4.32	2.24	13.57
10/26/2011	1.53	2.69	2.23	7.07	4.56	2.45	14.85
10/27/2011	1.29	2.10	2.39	6.67	4.49	2.42	14.44
10/28/2011	1.41	2.95	2.27	6.97	4.54	2.44	14.75
10/29/2011	1.12	2.18	2.74	6.23	4.42	2.42	13.97
10/30/2011	1.01	1.59	1.98	5.28	4.19	2.14	12.89
10/31/2011	0.69	1.16	2.35	4.71	4.07	2.10	12.19

Note. $ET_{0\ PM}$ = ET_0 Penman-Monteith (mm day^{-1}), $ET_{0\ FAO\ PM}$ = ET_0 FAO 56 Penman-Monteith (mm day^{-1}), $ET_{0\ ASCE\ PM}$ = ET_0 FAO PM 56 ASCE standardized (mm day^{-1}), $ET_{0\ Har\text{-}Sam}$ = ET_0 Hargreaves-Samani (mm day^{-1}), $ET_{0\ HAR\ 85}$ = ET_0 1985 Hargreaves (mm day^{-1}), $ET_{0\ McC}$ = ET_0 McCloud's (mm day^{-1}), $ET_{0\ B\text{-}R}$ = ET_0 Baier and Robertson's (mm day-1), $ET_{0\ Pap}$ = ET_0 Papadakis (mm day^{-1}), $ET_{0\ Mal}$ = ET_0 Malmström's equations (mm day^{-1})

Table C42 Estimated daily PET Hargreaves's, PET Mc. Guinness-Bordne's, PET Romanenko's, PET Hammon's 1, PET Hammon's 2 and PET Hammon's 3 for AWS1 at ADRON in Nickerie district for January 2010 – December 2011

Date	PET $_{Har}$	PET $_{McG-Bor}$	PET $_{Rom}$	PET $_{Ham\ 1}$	PET $_{Ham\ 2}$	PET $_{Ham\ 3}$
10/1/2011	1.13	0.84	1.36	0.27	4.79	0.32
10/2/2011	0.94	0.83	1.16	0.26	4.66	0.31
10/3/2011	0.91	0.83	1.25	0.26	4.66	0.31
10/4/2011	0.88	0.85	1.39	0.27	4.87	0.33
10/5/2011	0.84	0.85	1.25	0.27	4.83	0.32
10/6/2011	0.91	0.87	2.48	0.28	5.04	0.34
10/7/2011	0.98	0.87	1.79	0.28	5.05	0.34
10/8/2011	0.86	0.85	1.68	0.27	4.85	0.33
10/9/2011	0.85	0.87	1.34	0.28	5.02	0.34
10/10/2011	0.83	0.87	1.88	0.28	5.03	0.34
10/11/2011	0.94	0.86	1.81	0.28	4.93	0.33
10/12/2011	0.96	0.87	1.61	0.28	4.94	0.33
10/13/2011	0.96	0.87	1.75	0.28	4.94	0.33
10/14/2011	0.97	0.89	2.18	0.29	5.16	0.34
10/15/2011	0.93	0.89	2.70	0.28	5.10	0.34
10/16/2011	0.98	0.89	2.09	0.28	5.08	0.34
10/17/2011	1.05	0.91	2.74	0.29	5.27	0.35
10/18/2011	1.05	0.87	1.85	0.27	4.88	0.33
10/19/2011	0.99	0.85	1.76	0.27	4.75	0.32
10/20/2011	0.90	0.82	1.27	0.25	4.44	0.30
10/21/2011	0.76	0.81	1.18	0.25	4.33	0.29
10/22/2011	0.82	0.86	1.59	0.27	4.81	0.32
10/23/2011	0.91	0.88	1.60	0.28	5.02	0.34
10/24/2011	0.81	0.79	0.98	0.24	4.21	0.29
10/25/2011	0.83	0.87	1.68	0.27	4.89	0.33
10/26/2011	0.91	0.92	2.44	0.30	5.38	0.36
10/27/2011	0.98	0.90	1.82	0.29	5.21	0.35
10/28/2011	0.93	0.91	2.75	0.30	5.33	0.35
10/29/2011	1.12	0.88	2.30	0.28	5.02	0.34
10/30/2011	0.81	0.84	1.48	0.26	4.61	0.31
10/31/2011	0.96	0.81	1.23	0.25	4.34	0.29

Note. PET $_{Har}$ = ET_0 1985 Hargreaves (mm day^{-1}), PET $_{McG-Bor}$ = PET Mc. Guinness-Bordne's (mm day-1), PET Rom = PET Romanenko's (mm day^{-1}), PET Ham 1 = PET Hammon's 1 (mm day^{-1}), PET Ham 2 = PET Hammon's 2 (mm day^{-1}), PET Ham 3 = PET Hammon's 3 (mm day^{-1})

Table C43 Estimated daily ET_0 Penman-Monteith, ET_0 FAO 56 Penman-Monteith, ET_0 FAO PM 56 ASCE standardized, ET_0 1985 Hargreaves, ET_0 Hargreaves-Samani, ET_0 McCloud's, ET_0 Baier and Robertson's, ET_0 Papadakis and ET_0 Malmström for AWS1 at ADRON in Nickerie district for January 2010-December 2011

Date	$ET_{0\ PM}$	$ET_{0\ FAO\ PM}$/ $ET_{0\ ASCE\ PM}$	$ET_{0\ Har\text{-}Sam}$/ $ET_{0\ HAR\ 85}$	$ET_{0\ McC}$	$ET_{0\ B\text{-}R}$	$ET_{0\ Pap}$	$ET_{0\ Mal}$
11/1/2011	0.88	1.35	2.01	5.10	4.15	2.12	12.67
11/2/2011	1.06	1.61	2.18	5.94	4.34	2.28	13.65
11/3/2011	1.03	1.63	2.46	5.97	4.36	2.33	13.69
11/4/2011	1.39	2.71	2.20	6.71	4.49	2.39	14.49
11/5/2011	1.40	2.72	2.16	6.93	4.53	2.42	14.71
11/6/2011	1.48	2.97	2.31	7.17	4.58	2.47	14.95
11/7/2011	1.16	2.32	2.45	6.74	4.51	2.44	14.52
11/8/2011	1.00	1.74	2.30	6.26	4.41	2.34	14.00
11/9/2011	1.14	2.09	2.91	6.34	4.45	2.47	14.09
11/10/2011	1.15	2.15	2.06	6.05	4.36	2.27	13.77
11/11/2011	0.92	1.46	2.59	5.43	4.25	2.26	13.07
11/12/2011	1.23	1.95	2.30	5.25	4.06	2.19	12.85
11/13/2011	1.00	1.65	2.08	5.70	4.15	2.23	13.38
11/14/2011	1.49	2.34	2.17	6.28	4.27	2.33	14.03
11/15/2011	1.27	2.03	2.15	6.03	4.22	2.29	13.76
11/16/2011	1.24	2.29	1.99	6.45	4.29	2.33	14.21
11/17/2011	1.19	2.18	2.08	6.52	4.31	2.36	14.28
11/18/2011	1.13	2.12	1.96	6.37	4.28	2.31	14.12
11/19/2011	0.98	1.97	2.04	6.37	4.28	2.33	14.12
11/20/2011	0.94	1.72	2.11	6.17	4.25	2.31	13.91
11/21/2011	0.97	1.68	2.22	5.89	4.19	2.28	13.60
11/22/2011	1.19	2.33	1.84	6.62	4.32	2.33	14.38
11/23/2011	1.27	2.56	2.10	6.67	4.34	2.38	14.44
11/24/2011	0.84	1.39	2.18	5.84	4.18	2.27	13.54
11/25/2011	1.32	1.97	1.96	5.83	4.17	2.24	13.53
11/26/2011	1.13	2.02	2.18	6.04	4.22	2.30	13.76
11/27/2011	1.32	2.33	2.07	6.13	4.24	2.30	13.87
11/28/2011	1.20	2.33	2.05	6.56	4.32	2.36	14.33
11/29/2011	0.82	1.84	2.00	6.57	4.32	2.35	14.34
11/30/2011	1.26	2.26	1.89	6.62	4.33	2.34	14.39

Note. $ET_{0\ PM}$ = ET_0 Penman-Monteith (mm day^{-1}), $ET_{0\ FAO\ PM}$ = ET_0 FAO 56 Penman-Monteith (mm day^{-1}), $ET_{0\ ASCE\ PM}$ = ET_0 FAO PM 56 ASCE standardized (mm day^{-1}), $ET_{0\ Har\text{-}Sam}$ = ET_0 Hargreaves-Samani (mm day^{-1}), $ET_{0\ HAR\ 85}$ = ET_0 1985 Hargreaves (mm day^{-1}), $ET_{0\ McC}$ = ET_0 McCloud's (mm day^{-1}), $ET_{0\ B\text{-}R}$ = ET_0 Baier and Robertson's (mm day-1), $ET_{0\ Pap}$ = ET_0 Papadakis (mm day^{-1}), $ET_{0\ Mal}$ = ET_0 Malmström's equations (mm day^{-1})

Table C44 Estimated daily PET Hargreaves's, PET Mc. Guinness-Bordne's, PET Romanenko's, PET Hammon's 1, PET Hammon's 2 and PET Hammon's 3 for AWS1 at ADRON in Nickerie district for January 2010 – December 2011

Date	PET $_{Har}$	PET $_{McG-Bor}$	PET $_{Rom}$	PET $_{Ham\ 1}$	PET $_{Ham\ 2}$	PET $_{Ham\ 3}$
11/1/2011	0.82	0.83	1.27	0.26	4.52	0.31
11/2/2011	0.89	0.87	1.61	0.28	4.89	0.33
11/3/2011	1.00	0.87	1.62	0.28	4.90	0.33
11/4/2011	0.90	0.90	2.37	0.29	5.19	0.35
11/5/2011	0.88	0.91	2.21	0.30	5.28	0.35
11/6/2011	0.94	0.92	2.63	0.30	5.36	0.36
11/7/2011	1.00	0.91	2.38	0.29	5.19	0.35
11/8/2011	0.94	0.89	1.76	0.28	4.99	0.33
11/9/2011	1.19	0.89	1.98	0.28	5.02	0.34
11/10/2011	0.84	0.88	1.88	0.28	4.90	0.33
11/11/2011	1.06	0.85	1.46	0.26	4.63	0.31
11/12/2011	0.94	0.82	1.62	0.26	4.55	0.31
11/13/2011	0.85	0.84	1.55	0.27	4.74	0.32
11/14/2011	0.89	0.86	1.97	0.28	4.98	0.33
11/15/2011	0.88	0.86	1.81	0.28	4.87	0.33
11/16/2011	0.81	0.87	2.02	0.28	5.04	0.34
11/17/2011	0.85	0.87	2.11	0.29	5.07	0.34
11/18/2011	0.80	0.87	1.90	0.28	5.00	0.33
11/19/2011	0.83	0.87	1.80	0.28	5.00	0.33
11/20/2011	0.86	0.86	1.54	0.28	4.91	0.33
11/21/2011	0.91	0.85	1.46	0.27	4.79	0.32
11/22/2011	0.75	0.88	1.95	0.29	5.09	0.34
11/23/2011	0.86	0.88	2.25	0.29	5.10	0.34
11/24/2011	0.89	0.85	1.42	0.27	4.76	0.32
11/25/2011	0.80	0.85	1.91	0.27	4.76	0.32
11/26/2011	0.89	0.86	1.84	0.28	4.84	0.32
11/27/2011	0.85	0.86	1.75	0.28	4.88	0.33
11/28/2011	0.84	0.88	1.99	0.29	5.04	0.34
11/29/2011	0.82	0.88	1.69	0.29	5.04	0.34
11/30/2011	0.77	0.88	1.84	0.29	5.06	0.34

Note. PET $_{Har}$ = ET_0 1985 Hargreaves (mm day^{-1}), PET $_{McG-Bor}$ = PET Mc. Guinness-Bordne's (mm day-1), PET Rom = PET Romanenko's (mm day^{-1}), PET Ham 1 = PET Hammon's 1 (mm day^{-1}), PET Ham 2 = PET Hammon's 2 (mm day^{-1}), PET Ham 3 = PET Hammon's 3 (mm day^{-1})

Table C45 Estimated daily ET_0 Penman-Monteith, ET_0 FAO 56 Penman-Monteith, ET_0 FAO PM 56 ASCE standardized, ET_0 1985 Hargreaves, ET_0 Hargreaves-Samani, ET_0 McCloud's, ET_0 Baier and Robertson's, ET_0 Papadakis and ET_0 Malmström for AWS1 at ADRON in Nickerie district for January 2010-December 2011

Date	$ET_{0\ PM}$	$ET_{0\ FAO\ PM}$/ $ET_{0\ ASCE\ PM}$	$ET_{0\ Har\text{-}Sam}$/ $ET_{0\ HAR\ 85}$	$ET_{0\ McC}$	$ET_{0\ B\text{-}R}$	$ET_{0\ Pap}$	$ET_{0\ Mal}$
12/1/2011	0.92	2.08	2.06	6.81	4.36	2.39	14.58
12/2/2011	1.08	2.32	2.03	6.55	4.32	2.35	14.31
12/3/2011	1.17	2.46	2.04	6.50	4.31	2.35	14.26
12/4/2011	1.22	2.39	2.07	6.16	4.24	2.30	13.90
12/5/2011	1.13	2.38	2.07	6.11	4.23	2.29	13.84
12/6/2011	1.13	2.33	2.02	6.80	4.36	2.39	14.57
12/7/2011	1.17	2.62	2.01	6.80	4.36	2.38	14.57
12/8/2011	1.37	2.77	2.15	7.00	4.40	2.44	14.78
12/9/2011	0.88	1.66	2.09	6.36	4.28	2.33	14.11
12/10/2011	1.00	1.99	2.04	6.25	4.26	2.31	13.99
12/11/2011	1.11	2.58	2.02	6.70	4.34	2.37	14.47
12/12/2011	0.93	2.09	2.02	6.23	4.14	2.31	13.97
12/13/2011	0.76	1.24	2.14	5.14	3.91	2.16	12.72
12/14/2011	1.09	1.80	2.16	5.68	4.03	2.25	13.36
12/15/2011	0.97	1.65	2.12	6.01	4.10	2.29	13.73
12/16/2011	0.96	2.10	2.04	6.41	4.17	2.34	14.17
12/17/2011	0.94	1.62	2.07	5.99	4.09	2.28	13.71
12/18/2011	1.19	2.14	1.96	6.14	4.12	2.29	13.88
12/19/2011	1.17	2.13	1.88	5.99	4.08	2.25	13.71
12/20/2011	0.94	1.83	2.16	6.05	4.11	2.31	13.77
12/21/2011	0.77	1.35	1.81	5.04	3.87	2.09	12.60
12/22/2011	0.74	1.19	2.17	4.77	3.82	2.10	12.26
12/23/2011	0.96	2.42	1.90	5.62	4.01	2.20	13.29
12/24/2011	1.09	2.51	1.88	6.07	4.10	2.27	13.79
12/25/2011	0.62	1.27	1.99	4.81	3.82	2.08	12.32
12/26/2011	1.14	2.07	1.85	5.82	4.05	2.22	13.52
12/27/2011	0.98	1.86	2.03	6.02	4.10	2.28	13.74
12/28/2011	0.99	2.26	1.99	5.88	4.07	2.25	13.59
12/29/2011	1.12	2.51	1.94	5.58	4.00	2.20	13.25
12/30/2011	1.13	2.35	1.89	5.75	4.03	2.22	13.44
12/31/2011	0.44	1.05	2.13	4.66	3.79	2.07	12.12

Note. $ET_{0\ PM}$ = ET_0 Penman-Monteith (mm day^{-1}), $ET_{0\ FAO\ PM}$ = ET_0 FAO 56 Penman-Monteith (mm day^{-1}), $ET_{0\ ASCE\ PM}$ = ET_0 FAO PM 56 ASCE standardized (mm day^{-1}), $ET_{0\ Har\text{-}Sam}$ = ET_0 Hargreaves-Samani (mm day^{-1}), $ET_{0\ HAR\ 85}$ = ET_0 1985 Hargreaves (mm day^{-1}), $ET_{0\ McC}$ = ET_0 McCloud's (mm day^{-1}), $ET_{0\ B\text{-}R}$ = ET_0 Baier and Robertson's (mm day-1), $ET_{0\ Pap}$ = ET_0 Papadakis (mm day^{-1}), $ET_{0\ Mal}$ = ET_0 Malmström's equations (mm day^{-1})

Table C46 Estimated daily PET Hargreaves's, PET Mc. Guinness-Bordne's, PET Romanenko's, PET Hammon's 1, PET Hammon's 2 and PET Hammon's 3 for AWS1 at ADRON in Nickerie district for January 2010 – December 2011

Date	PET $_{Har}$	PET $_{McG-Bor}$	PET $_{Rom}$	PET $_{Ham\ 1}$	PET $_{Ham\ 2}$	PET $_{Ham\ 3}$
12/1/2011	0.84	0.88	1.91	0.29	5.13	0.34
12/2/2011	0.83	0.88	2.06	0.29	5.03	0.33
12/3/2011	0.83	0.87	2.15	0.28	5.00	0.33
12/4/2011	0.84	0.86	2.29	0.28	4.87	0.33
12/5/2011	0.85	0.86	2.12	0.28	4.84	0.32
12/6/2011	0.82	0.89	2.14	0.29	5.11	0.34
12/7/2011	0.82	0.89	2.26	0.29	5.11	0.34
12/8/2011	0.88	0.89	2.54	0.29	5.19	0.34
12/9/2011	0.85	0.87	2.09	0.28	4.94	0.33
12/10/2011	0.83	0.86	2.06	0.28	4.89	0.33
12/11/2011	0.82	0.88	2.37	0.29	5.06	0.34
12/12/2011	0.82	0.84	2.07	0.28	4.88	0.33
12/13/2011	0.87	0.80	1.30	0.25	4.42	0.30
12/14/2011	0.88	0.82	1.51	0.27	4.65	0.31
12/15/2011	0.86	0.84	1.55	0.27	4.78	0.32
12/16/2011	0.83	0.85	1.86	0.28	4.94	0.33
12/17/2011	0.84	0.83	1.52	0.27	4.77	0.32
12/18/2011	0.80	0.84	1.99	0.28	4.83	0.32
12/19/2011	0.77	0.83	1.82	0.27	4.77	0.32
12/20/2011	0.88	0.84	1.75	0.27	4.79	0.32
12/21/2011	0.74	0.79	1.16	0.25	4.36	0.29
12/22/2011	0.89	0.78	1.01	0.25	4.24	0.29
12/23/2011	0.77	0.82	1.88	0.26	4.61	0.31
12/24/2011	0.77	0.84	2.03	0.27	4.79	0.32
12/25/2011	0.81	0.78	1.09	0.25	4.26	0.29
12/26/2011	0.75	0.83	1.58	0.27	4.69	0.31
12/27/2011	0.83	0.83	1.52	0.27	4.77	0.32
12/28/2011	0.81	0.83	1.94	0.27	4.72	0.32
12/29/2011	0.79	0.81	2.07	0.26	4.59	0.31
12/30/2011	0.77	0.82	1.88	0.27	4.66	0.31
12/31/2011	0.87	0.77	1.07	0.24	4.18	0.28

Note. PET $_{Har\ =}$ ET_0 1985 Hargreaves (mm day^{-1}), PET $_{McG-Bor}$ = PET Mc. Guinness-Bordne's (mm day-1), PET Rom = PET Romanenko's (mm day^{-1}), PET Ham 1 = PET Hammon's 1 (mm day^{-1}), PET Ham 2 = PET Hammon's 2 (mm day^{-1}), PET Ham 3 = PET Hammon's 3 (mm day^{-1})

Appendix D

Observed ET and estimated reference crop evapotranspiration and potential evapotranspiration for ADRON Weather station 1 in Nickerie district.

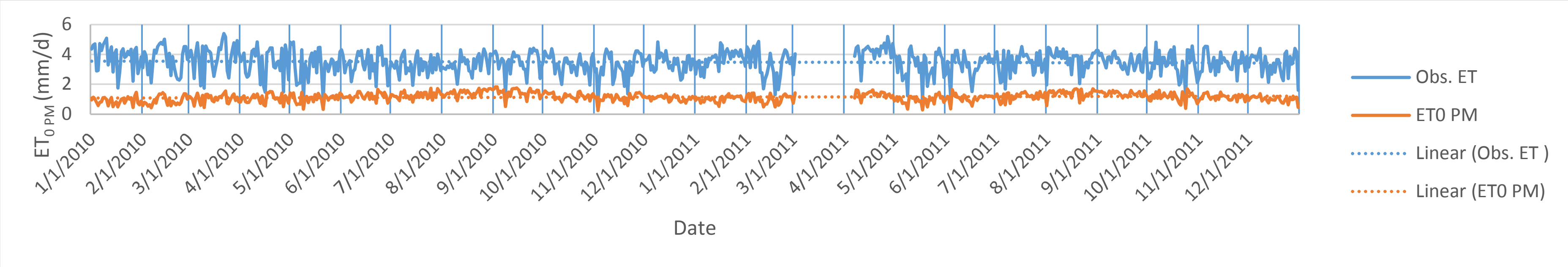

Figure B1 Daily observed ET and daily estimated $ET_{0\ PM}$ plotted against time for AWS1 in Nickerie district January 2010 – December 2011. Obs. ET = Daily observed ET

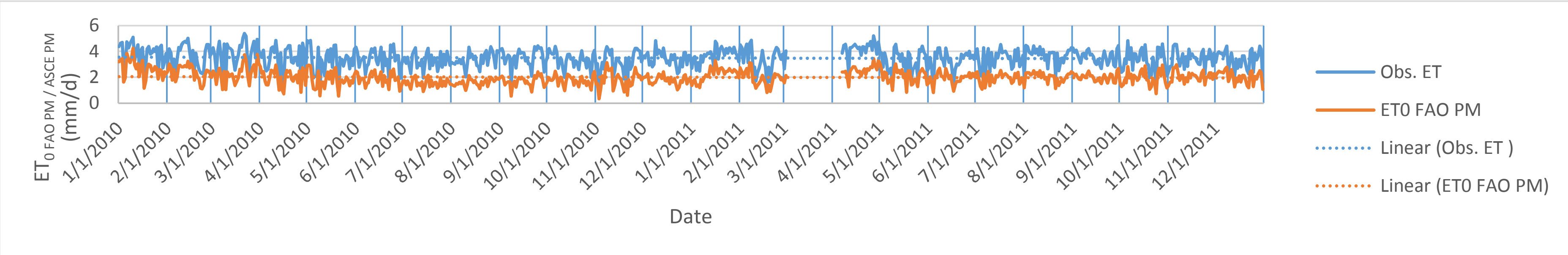

Figure B2 Daily observed ET and daily estimated $ET_{0\ FAO\ PM}$ / $ET_{0\ ASCE\ PM}$ plotted against time for AWS1 in Nickerie district January 2010 – December 2011. Obs. ET = Daily observed ET

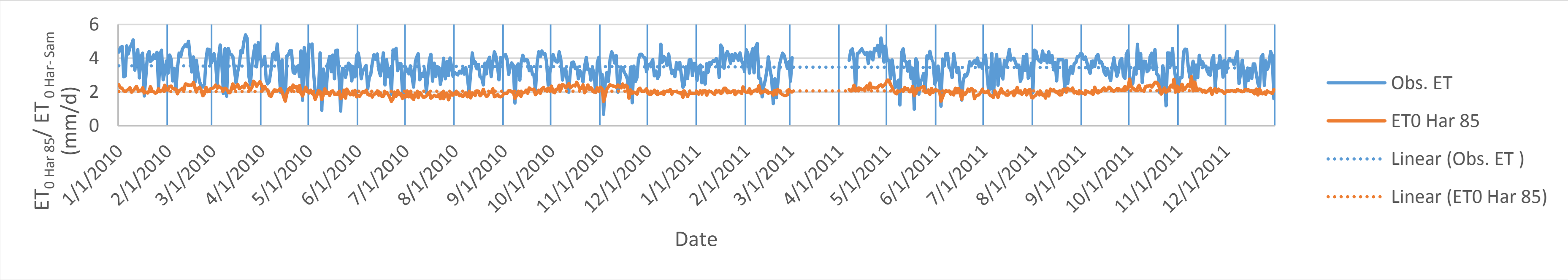

Figure B3 Daily observed ET and daily estimated $ET_{0\ Har\ 85}$ / $ET_{0\ Har\text{-}Sam}$ plotted against time for AWS1 in Nickerie district January 2010 – December 2011. Obs. ET = Daily observed ET

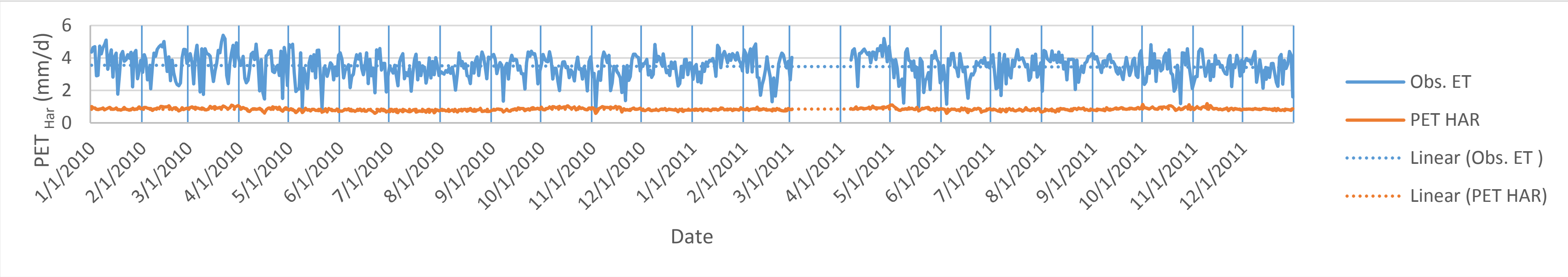

Figure B4 Daily observed ET and daily estimated PET_{Har} for AWS1 in Nickerie district January 2010 – December 2011. Obs. ET = Daily observed ET

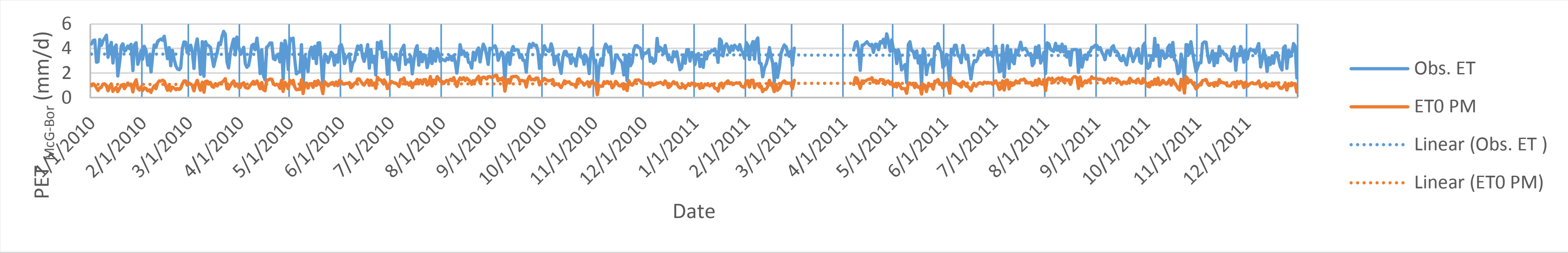

Figure B5 Daily observed ET and daily estimated PET $_{McG-Bor}$ plotted against time for AWS1 in Nickerie district January 2010 – December 2011. Obs. ET = Daily observed ET

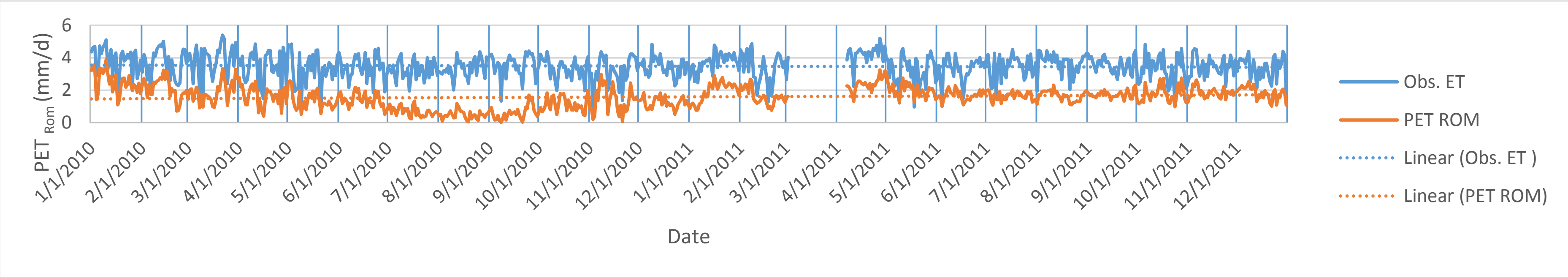

Figure B6 Daily observed ET and daily estimated ET_{Rom} plotted against time for AWS1 in Nickerie district January 2010 – December 2011. Obs. ET = Daily observed ET

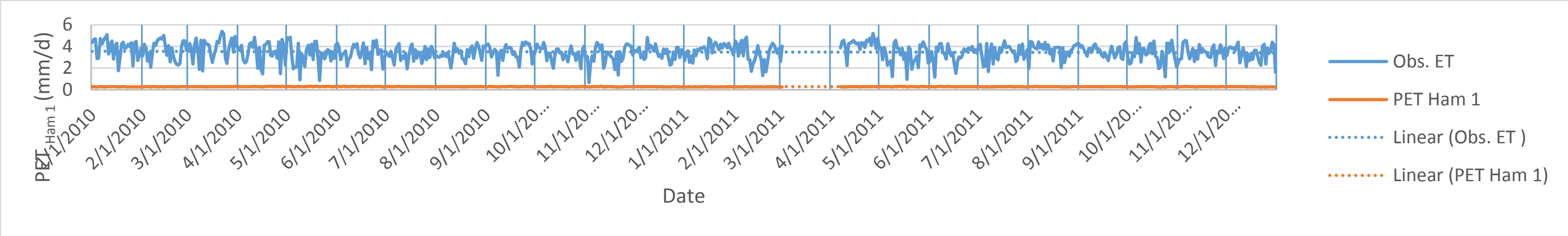

Figure B7 Daily observed ET and daily estimated ET $_{Ham\ 1}$ plotted against time for AWS1 in Nickerie district January 2010 – December 2011. Obs. ET = Daily observed ET

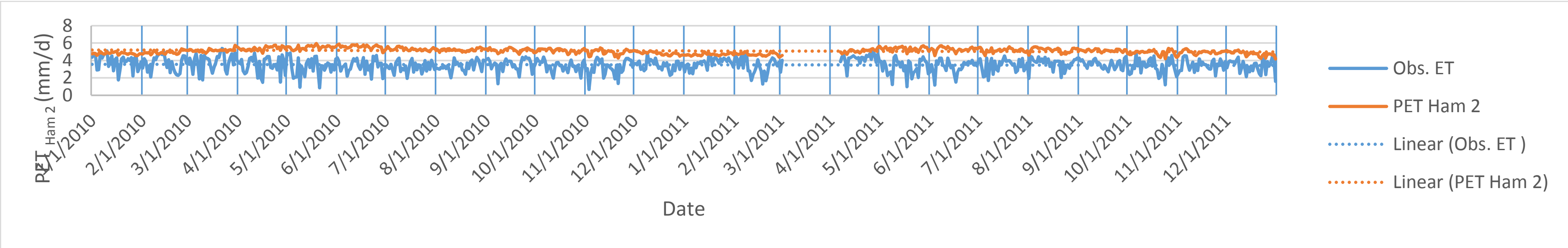

Figure B8 Daily observed ET and daily estimated PET$_{Ham\ 2}$ plotted against time for AWS1 in Nickerie district January 2010 – December 2011. Obs. ET = Daily observed ET

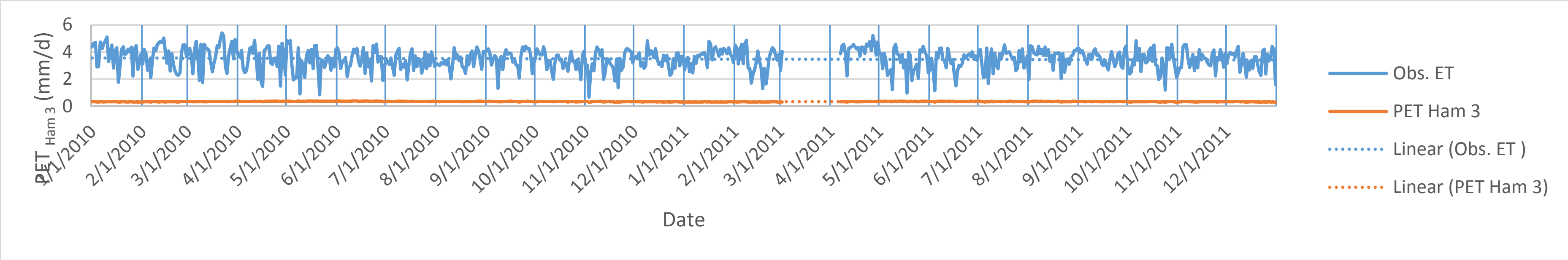

Figure B9 Daily observed ET and daily estimated $ET_{Ham\ 3}$ plotted against time for AWS1 in Nickerie district January 2010 – December 2011. Obs. ET = Daily observed ET

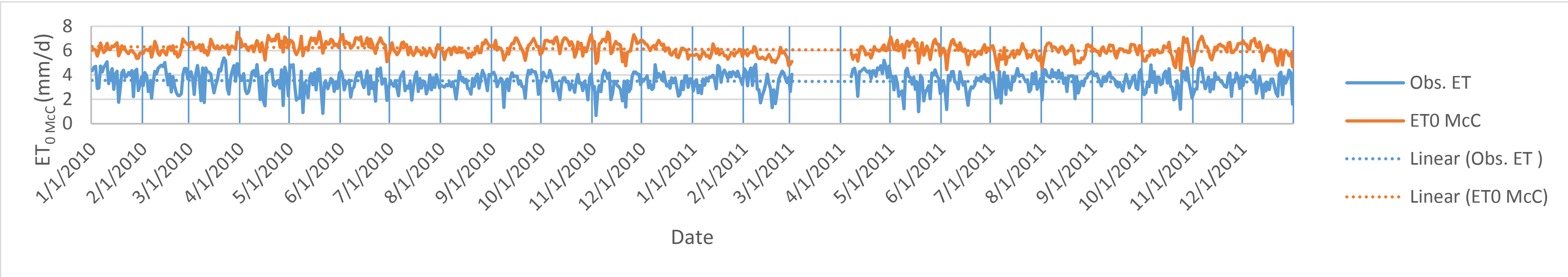

Figure B10 Daily observed ET and daily estimated $ET_{0\ McC}$ plotted against time for AWS1 in Nickerie district January 2010 – December 2011. Obs. ET = Daily observed ET

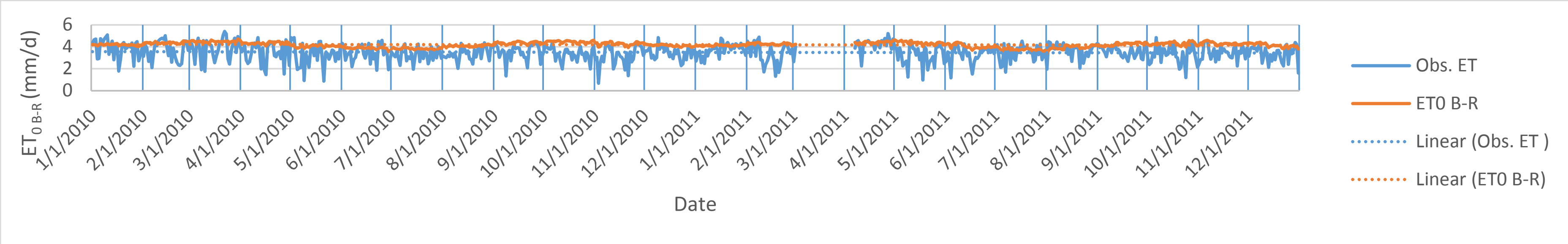

Figure B11 Daily observed ET and daily estimated $ET_{0\ B\text{-}R}$ plotted against time for AWS1 in Nickerie district January 2010 – December 2011. Obs. ET = Daily observed ET

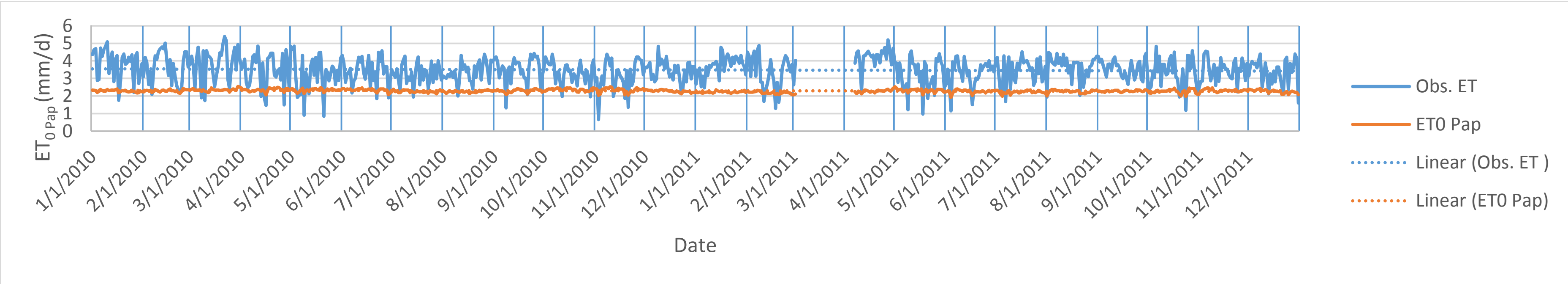

Figure B12 Daily observed ET and daily estimated $ET_{0\ Pap}$ plotted against time for AWS1 in Nickerie district January 2010 – December 2011. Obs. ET = Daily observed ET

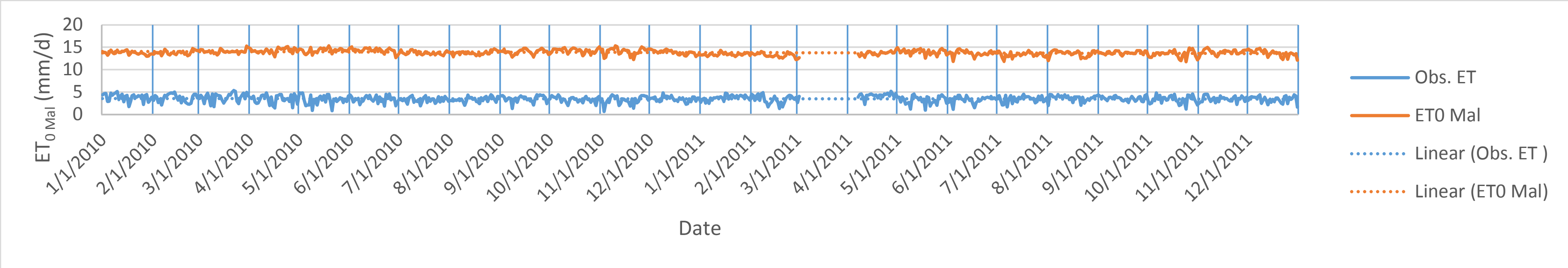

Figure B13 Daily observed ET and daily estimated $ET_{0\ Mal}$ plotted against time for AWS1 in Nickerie district January 2010 – December 2011. Obs. ET = Daily observed ET