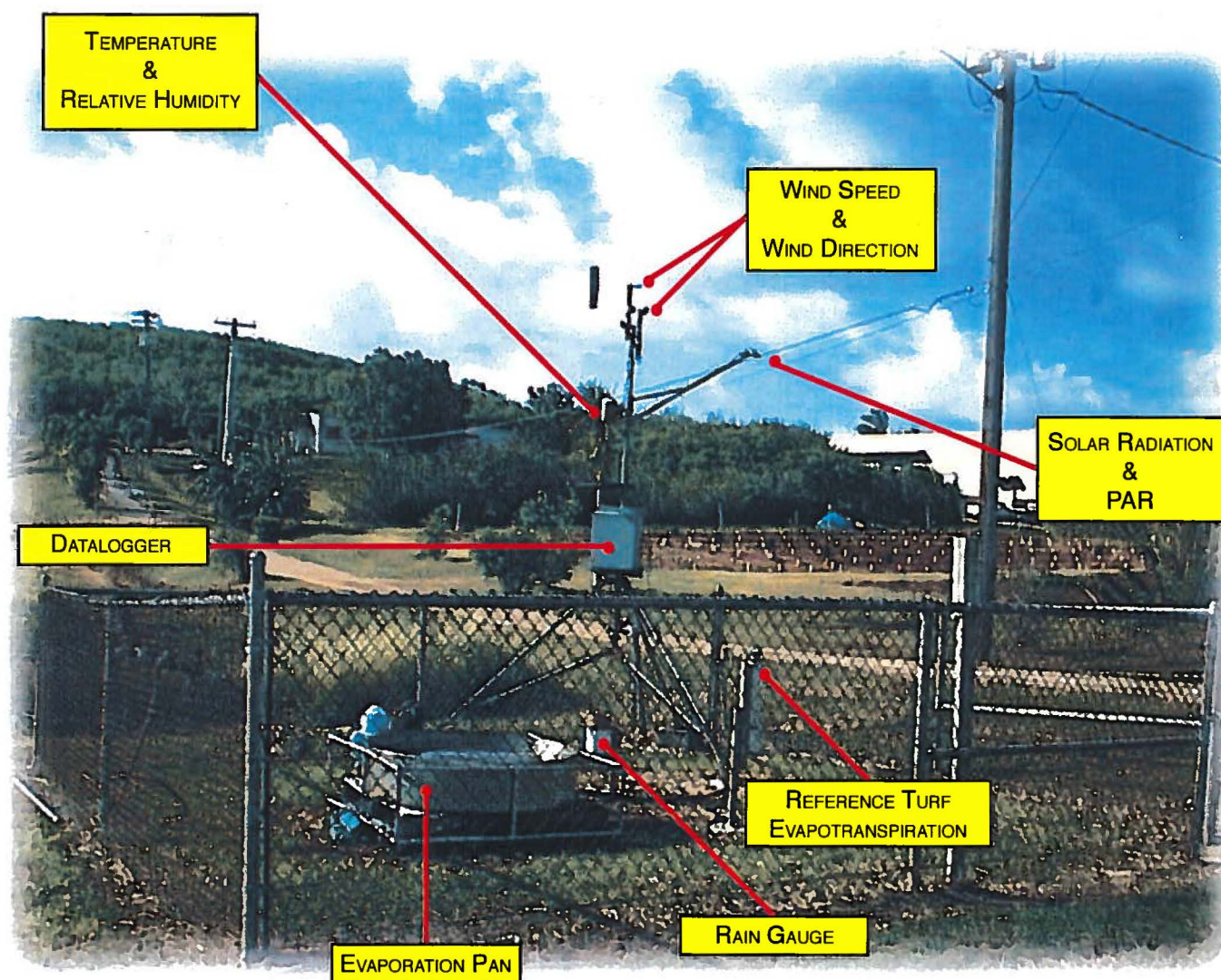


# Guam Agricultural Climatic Data System

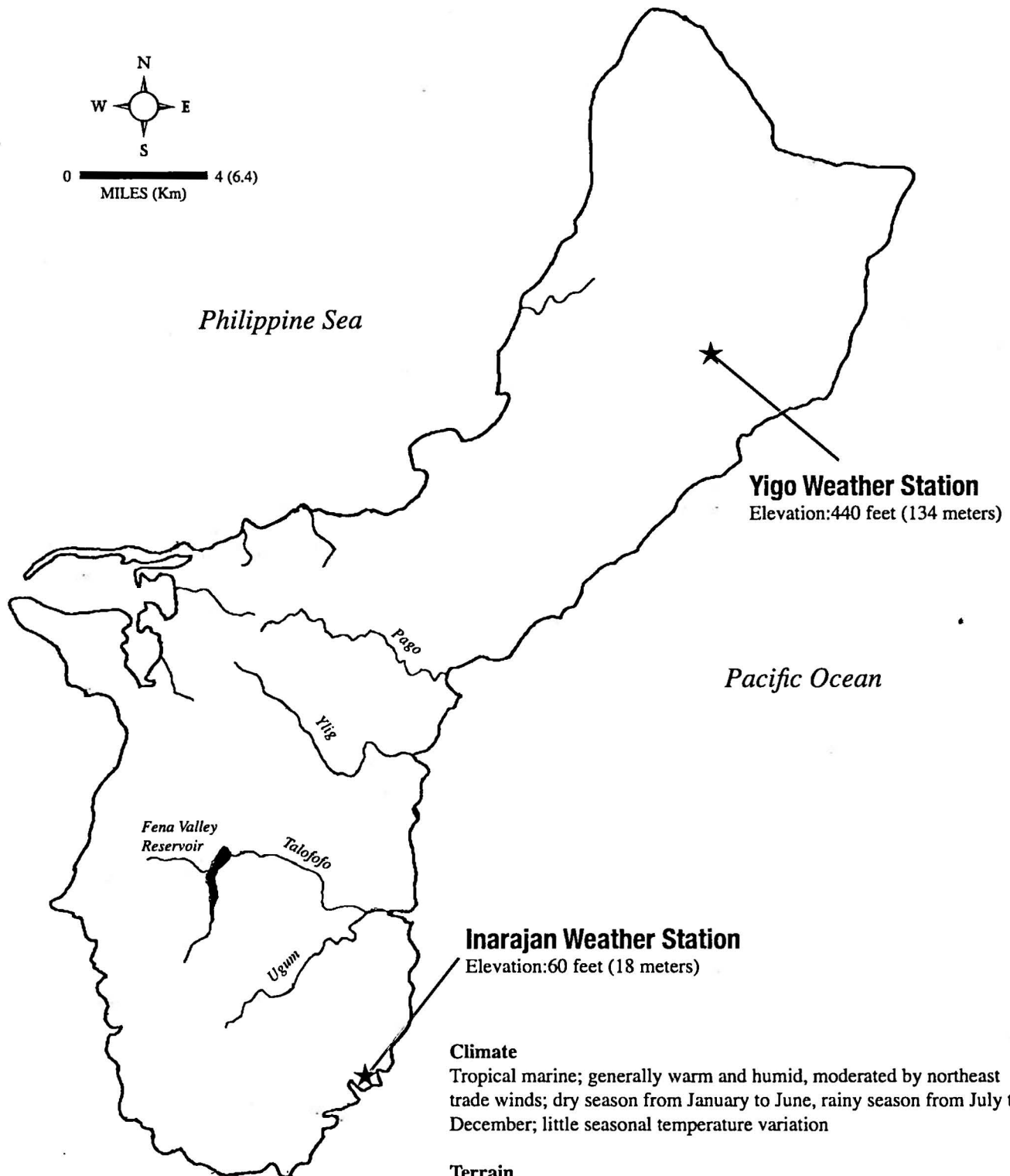
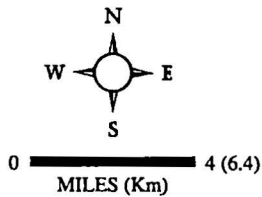
## 2001 Climatic Data and Summaries

Dr. Prem Singh, Roger W. Brown, Frankie Matanane



Agricultural Engineering  
Agricultural Experiment Station  
College of Natural and Applied Sciences  
University of Guam

# Guam Agricultural Weather Stations



**Yigo Weather Station**  
Elevation: 440 feet (134 meters)

**Inarajan Weather Station**  
Elevation: 60 feet (18 meters)

## Climate

Tropical marine; generally warm and humid, moderated by northeast trade winds; dry season from January to June, rainy season from July to December; little seasonal temperature variation

## Terrain

Volcanic origin, surrounded by coral reefs; relatively flat coralline limestone plateau (source of most fresh water), with steep coastal cliffs and narrow coastal plains in north, low hills in center, mountains in south

*Adapted from Wikitravel*

<http://www.wikitravel.org/en/guam>

# University of Guam

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### Acknowledgements

The authors would like to thank the following people for their support of weather station operations and maintenance:

Dr. Lee S. Yudin, Dean CNAS  
Dr. John Brown, Associate Dean CNAS/AES  
Dr. Greg Weicko, Associate Director CNAS/AES (Acting)  
John Borja, Station Manager

**Editorial Assistance** Robert Schlub  
Peggy Denny  
R. Barber Jr.

**AES Technicians** Gil Cruz  
Ken Paulino  
Glenn Meno  
Jesse Manglona  
Norman Santos

**AES Technicians** Rudy Villalon  
Frank Paulino  
Glenn Alianza  
Ray Gumatatao  
Edwin Paulino

## **Guam Agricultural Climatic Data System: 2001 Climatic Data and Summaries**

**\*Dr. Prem Singh, Roger W. Brown, Frankie Matanane**

### **Introduction**

The Agricultural Engineering division of the College of Natural and Applied Sciences at the University of Guam operates and maintains two agricultural weather stations, one located at the Yigo Agricultural Experiment Station and the other at the Inarajan Agricultural Experimental Station. These weather stations collect hourly and daily data on rainfall, wind speed, wind direction, temperature, percent relative humidity, global solar radiation, photosynthetically active radiation (PAR), pan evaporation, and atmometer evaporation for potential use by researchers, extension agents, teachers, farmers, agricultural consultants, water resource managers, and others.

The Guam Agricultural Climatic Data System (GACDS) was developed so that all divisions within the College of Natural and Applied Sciences could obtain climatic data without having to make a special request. These data can be accessed using in-house network shareware. Also, these data are presented in such a way that daily, monthly (to date), and yearly (to date) data for a given weather parameter can be viewed without having to scroll the screen, and therefore can be printed onto a single page. Unlike many weather summaries, daily data for the entire year are included. This is in response to the many requests we received before the creation of the GACDS for data on specific days. Finally, analysis such as number of rain days for the month can be calculated in seconds because of the way these data are formatted. Hourly data, although collected are not included in the GACDS, as this would make the summary too lengthy.

In a few instances data had to be estimated. Where estimates could not be made, a N/A (not available) is placed in the data cell.

### **The GACDS (Guam Agricultural Climatic Data System)**

The system comprises two agricultural weather stations and associated weather data storage, data retrieval, and data discrimination components. Automated weather stations specifically designed to gather weather data pertinent to agriculture are the bases of the system. Data are uploaded to a central location where quality control occurs. Then, data are organized in a spread sheet program. The explanation of this system follows.

### **Datalogger and Sensor Monitoring**

Each weather station has a number of sensors for data collection. Sensor wiring terminates at, and is monitored by, a field datalogger (mini-computer) located at each weather station. Each sensor has its own program, which accommodates the electronic/mechanical features of the particular sensor. The sensor reading is placed in a memory location identified by this program.

### **Data Storage**

Each weather station has a number of sensors for data collection. Sensor wiring terminates at, and is monitored by, a field datalogger (mini-computer) located at each weather station. Each sensor has its own program, which accommodates the electronic/mechanical features of the particular sensor. The sensor reading is placed in a memory location identified by this program.

### **Uploading Data from Weather Station Dataloggers to Centrally Located Computer**

The datalogger is programmable to store sensor readings as desired by the user. Typically, this program summarizes data into hourly and 24 hour averages and/or totals. These data remain in the datalogger until the storage space is full, at which time the oldest data are written over. The weather parameters on which data is stored in our weather stations are given in Table 1.

The dataloggers can be accessed from a computer via a modem link and specialized communication program. Once a communications link is established, the user can monitor current sensor readings and/or upload data from the datalogger. The data collected are from the time of the last data collection, and are placed into a ".dat" ASCII file in comma delineated format.

### **Formatting Data and Updating GACDS**

From the \*.dat file, data is transferred to a spreadsheet program and sorted. Here, data is checked for accuracy. Once the data has been checked, the data is put into a library. From the library file, data is transferred to another preprogrammed spreadsheet, which formats the data into the GACDS format. This spreadsheet is then copied to the in-house shareware network. The GACDS format devotes one page per sensor, which includes the daily readings for the entire year to date. Each of these sensor pages gives the name of the sensor (function of the sensor), the units used, and whether the daily readings are averages or totals. This bulletin also includes yearly graphs of monthly data for each sensor. The GACDS also includes a "Max and Min" sheet, which lists the daily maximum and minimum readings of each sensor, along with time of occurrence, for the entire year to date. For the purpose of this bulletin, the daily maximum and minimum graphs are given without the accompanying daily data table.

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\* Assistant Professor, Research Associate, and Research Technician, respectively. Agricultural Engineering section, Agriculture Experiment Station, College of Natural and Applied Sciences, University of Guam, Mangilao, Guam 96923.

## Degree Days

Cooling and growing degree days were calculated using daily temperature data. Cooling degree days (CDD) are important for determining the amount of energy needed to cool buildings. The following formula was used for calculations:

$$\text{CDD} = 65^{\circ}\text{F} - (T_{\text{Max}} [^{\circ}\text{F}] + T_{\text{Min}} [^{\circ}\text{F}]) / 2$$

where:  $T_{\text{Max}}$  is maximum daily temperature  
 $T_{\text{Min}}$  is minimum daily temperature

Values for Guam are always negative. Positive values would indicate heating degree days.

Growing degree days (GDD) is an important temperature based heat energy index used for correlating crop and insect growth. We use a base of 50°F and 60°F. The following formulas were used for calculations:

$$\text{GDD}_{50} = \{ (T_{\text{Max}} [^{\circ}\text{F}] + T_{\text{Min}} [^{\circ}\text{F}]) / 2 \} - 50^{\circ}\text{F}$$
$$\text{GDD}_{60} = \{ (T_{\text{Max}} [^{\circ}\text{F}] + T_{\text{Min}} [^{\circ}\text{F}]) / 2 \} - 60^{\circ}\text{F}$$

where:  $T_{\text{Max}}$  is maximum daily temperature  
 $T_{\text{Min}}$  is minimum daily temperature

## New for the GACDS 2001 Guide

Comparative monthly total or average graphs for the years 1999, 2000, and 2001 for all sensors.

**Table 1: Daily Weather Data Parameters (Sensors read every 5 seconds)**

### Hourly and 24 hour Output

Average Air Temperature

Average Relative Humidity

Photosynthetically Active Radiation (PAR) Average Flux Density

Global Solar Radiation Average Flux Density

Average Wind Speed

Average Wind Direction

Total Rainfall

Total Antmometer Evaporation (ET Gauge)

Total Pan Evaporation

**Yigo Weather Station**  
**Daily and Monthly Total Rainfall (mm) for Year 2001**

5

| Day              | Jan.         | Feb.         | Mar.         | Apr.         | May          | Jun.          | Jul.          | Aug.          | Sep.          | Oct.          | Nov.          | Dec.          |
|------------------|--------------|--------------|--------------|--------------|--------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| 1                | 2.54         | 2.54         | 2.54         | 0.00         | 0.00         | 2.03          | 4.57          | 0.25          | 10.92         | 0.00          | N/A           | N/A           |
| 2                | 0.25         | 5.59         | 0.00         | 0.00         | 0.00         | 2.54          | 1.02          | 2.03          | 0.51          | 0.00          | N/A           | N/A           |
| 3                | 0.00         | 0.00         | 4.06         | 0.25         | 2.29         | 0.00          | 11.94         | 1.27          | 0.00          | 5.59          | N/A           | N/A           |
| 4                | 0.00         | 0.25         | 0.00         | 1.02         | 0.25         | 0.76          | 5.84          | 12.45         | 1.52          | 1.02          | N/A           | N/A           |
| 5                | 0.00         | 5.59         | 0.00         | 3.56         | 0.00         | 5.59          | 32.77         | 3.05          | 0.25          | 1.78          | N/A           | 6.35          |
| 6                | 9.40         | 3.56         | 0.00         | 2.03         | 1.52         | 38.35         | 4.83          | 0.00          | 0.25          | 24.13         | N/A           | 0.00          |
| 7                | 7.62         | 8.64         | 11.94        | 0.25         | 0.25         | 19.05         | 61.47         | 5.33          | 0.51          | 11.94         | 0.51          | 0.00          |
| 8                | 8.13         | 0.00         | 0.00         | 4.57         | 5.59         | 55.88         | 1.52          | 18.29         | 6.01          | 1.52          | 24.89         | 10.67         |
| 9                | 5.84         | 1.02         | 0.00         | 0.00         | 0.00         | 32.26         | 17.53         | 2.03          | 6.35          | 3.81          | 1.27          | 0.76          |
| 10               | 0.00         | 0.51         | 0.00         | 0.00         | 0.25         | 11.18         | 23.62         | 6.01          | 38.35         | 18.03         | 0.00          | 3.56          |
| 11               | 0.00         | 5.33         | 0.00         | 0.00         | 2.03         | 8.38          | 7.37          | 56.90         | 0.76          | 0.51          | 1.27          | 0.25          |
| 12               | 1.27         | 0.00         | 3.30         | 0.00         | 6.35         | 1.27          | 1.52          | 40.64         | 0.25          | 11.18         | 2.29          | 14.99         |
| 13               | 0.00         | 0.76         | 0.00         | 0.51         | 6.35         | 50.55         | 36.07         | 36.32         | 0.00          | 0.25          | 0.00          | 7.62          |
| 14               | 0.00         | 6.60         | 0.00         | 2.03         | 1.02         | 3.30          | 0.51          | 46.74         | 0.00          | 84.84         | 3.05          | 0.00          |
| 15               | 0.00         | 1.02         | 0.00         | 1.78         | 9.14         | 4.57          | 7.62          | 31.50         | 0.00          | 4.83          | 1.02          | 0.00          |
| 16               | 1.52         | 0.51         | 9.65         | 0.00         | 1.02         | 0.51          | 0.51          | 34.54         | 0.25          | 1.02          | 1.02          | 0.00          |
| 17               | 0.00         | 0.00         | 9.65         | 11.43        | 0.00         | 3.81          | 4.83          | 1.78          | 17.78         | 0.51          | 26.16         | 1.02          |
| 18               | 0.00         | 1.02         | 3.30         | 0.00         | 0.00         | 14.99         | 1.78          | 0.00          | 9.14          | 1.02          | 40.39         | 4.83          |
| 19               | 0.00         | 0.00         | 0.00         | 0.00         | 0.00         | 11.94         | 0.00          | 16.00         | 12.45         | 49.78         | 44.45         | 7.87          |
| 20               | 0.25         | 0.00         | 0.00         | 0.00         | 3.30         | 21.34         | 0.00          | 3.81          | 3.81          | 8.38          | 8.13          | 8.89          |
| 21               | 0.25         | 0.00         | 0.00         | 1.02         | 6.86         | 5.33          | 0.00          | 17.27         | 11.68         | 1.27          | 8.38          | 2.29          |
| 22               | 0.00         | 0.00         | 0.00         | 5.59         | 0.51         | 15.24         | 0.25          | 30.99         | 1.78          | 0.00          | 22.61         | 0.00          |
| 23               | 0.00         | 0.00         | 0.00         | 0.00         | 11.68        | 6.60          | 8.38          | 96.27         | 0.00          | 6.60          | 4.06          | 1.02          |
| 24               | 0.00         | 22.61        | 0.00         | 0.51         | 0.00         | 1.78          | 11.43         | 26.67         | 13.46         | 0.51          | 0.00          | 4.32          |
| 25               | 0.51         | 0.25         | 1.02         | 0.51         | 2.29         | 3.81          | 6.60          | 18.80         | 6.60          | 4.57          | 1.52          | 0.00          |
| 26               | 12.45        | 0.76         | 14.22        | 0.25         | 0.25         | 4.06          | 0.00          | 8.89          | 3.30          | 0.00          | N/A           | 4.06          |
| 27               | 1.02         | 5.59         | 0.00         | 0.00         | 3.05         | 5.08          | 11.94         | 12.45         | 6.35          | N/A           | N/A           | 30.99         |
| 28               | 0.25         | 4.57         | 0.00         | 8.64         | 0.25         | 3.30          | 0.51          | 0.51          | 0.00          | N/A           | N/A           | 24.13         |
| 29               | 0.00         |              | 0.00         | 1.27         | 0.51         | 28.96         | 34.04         | 2.54          | 0.51          | N/A           | N/A           | 0.25          |
| 30               | 11.18        |              | 0.00         | 0.00         | 2.54         | 0.25          | 16.51         | 0.00          | 3.56          | N/A           | N/A           | 1.52          |
| 31               | 2.29         |              | 0.25         |              | 2.54         |               | 4.32          | 6.01          |               | N/A           |               | 9.65          |
| <b>Mo. Total</b> | <b>64.77</b> | <b>76.71</b> | <b>59.94</b> | <b>43.94</b> | <b>64.52</b> | <b>347.98</b> | <b>319.28</b> | <b>549.40</b> | <b>158.50</b> | <b>289.82</b> | <b>301.59</b> | <b>166.52</b> |

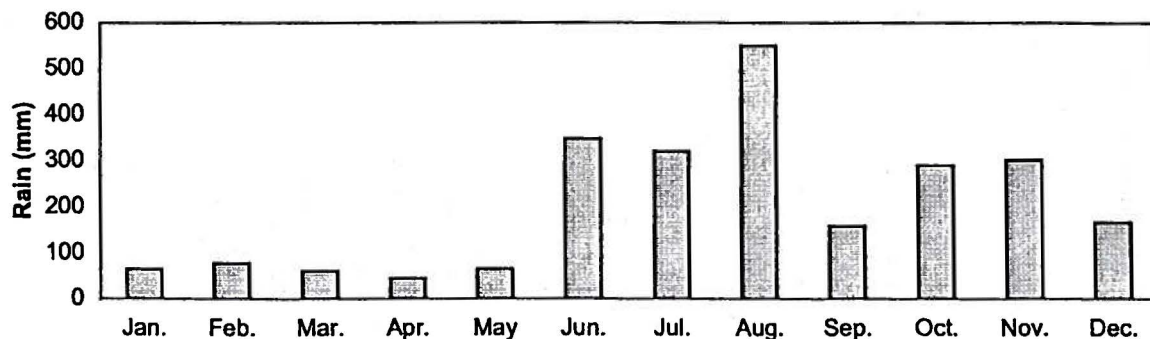


Figure 1: Monthly Total Rainfall

**Yigo Weather Station**  
**Daily and Monthly Average Air Temperature (°C) for Year 2001**

| Day    | Jan.  | Feb.  | Mar.  | Apr.  | May   | Jun.  | Jul.  | Aug.  | Sep.  | Oct.  | Nov.  | Dec.  |
|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 1      | 25.74 | 24.96 | 25.25 | 25.41 | 26.44 | 26.91 | 26.72 | 25.65 | 25.58 | 26.14 | N/A   | N/A   |
| 2      | 25.46 | 24.52 | 25.39 | 25.79 | 26.19 | 26.87 | 26.05 | 26.46 | 25.83 | 26.39 | N/A   | N/A   |
| 3      | 24.71 | 25.01 | 25.13 | 26.01 | 26.47 | 26.83 | 25.83 | 25.41 | 25.74 | 26.00 | N/A   | N/A   |
| 4      | 24.28 | 25.34 | 25.51 | 25.74 | 26.81 | 26.31 | 25.73 | 25.24 | 26.29 | 25.58 | N/A   | N/A   |
| 5      | 23.92 | 24.94 | 25.50 | 25.41 | 26.82 | 26.02 | 25.85 | 26.31 | 25.95 | 26.16 | N/A   | 25.76 |
| 6      | 25.33 | 25.00 | 25.27 | 26.06 | 26.24 | 25.93 | 26.13 | 25.94 | 26.03 | 25.83 | N/A   | 25.40 |
| 7      | 24.47 | 24.69 | 24.45 | 26.11 | 25.48 | 25.78 | 24.78 | 25.98 | 26.47 | 25.36 | 24.94 | 25.62 |
| 8      | 24.16 | 25.23 | 25.24 | 25.79 | 25.69 | 26.49 | 25.61 | 26.15 | 24.18 | 25.29 | 25.21 | 25.01 |
| 9      | 25.18 | 25.09 | 25.22 | 26.27 | 26.36 | 25.45 | 24.81 | 26.56 | 24.07 | 25.87 | 25.78 | 25.91 |
| 10     | 25.65 | 25.55 | 25.30 | 26.14 | 26.60 | 25.88 | 24.38 | 26.38 | 24.22 | 24.76 | 25.67 | 25.45 |
| 11     | 25.80 | 24.79 | 25.34 | 25.76 | 26.42 | 25.87 | 24.47 | 25.22 | 24.62 | 25.16 | 24.84 | 25.61 |
| 12     | 25.20 | 25.44 | 25.01 | 25.17 | 26.25 | 26.18 | 25.48 | 25.02 | 24.61 | 25.77 | 25.57 | 25.53 |
| 13     | 25.44 | 25.29 | 24.85 | 25.91 | 26.17 | 24.49 | 23.88 | 24.50 | 25.56 | 25.72 | 24.96 | 25.43 |
| 14     | 25.58 | 25.16 | 24.86 | 26.11 | 26.79 | 26.18 | 25.11 | 24.47 | 25.46 | 25.49 | 25.12 | 25.77 |
| 15     | 25.14 | 25.30 | 25.56 | 26.21 | 26.37 | 25.59 | 25.68 | 24.83 | 25.45 | 25.92 | 26.28 | 25.40 |
| 16     | 24.84 | 25.26 | 24.53 | 26.25 | 26.63 | 27.05 | 25.89 | 24.77 | 25.76 | 26.97 | 26.28 | 25.72 |
| 17     | 25.57 | 25.31 | 24.59 | 25.27 | 26.53 | 26.86 | 26.13 | 26.45 | 25.19 | 26.83 | 25.70 | 25.29 |
| 18     | 25.17 | 25.34 | 25.33 | 25.77 | 26.40 | 26.31 | 25.88 | 26.94 | 24.73 | 26.96 | 24.75 | 25.69 |
| 19     | 25.53 | 24.98 | 25.39 | 26.49 | 26.53 | 25.80 | 25.73 | 25.76 | 26.29 | 25.71 | 24.17 | 25.58 |
| 20     | 25.48 | 24.98 | 25.46 | 26.43 | 26.27 | 25.76 | 25.49 | 26.02 | 24.06 | 25.84 | 25.57 | 24.97 |
| 21     | 25.76 | 25.47 | 24.95 | 26.33 | 25.86 | 26.09 | 26.73 | 26.67 | 24.62 | 26.52 | 25.98 | 25.40 |
| 22     | 25.69 | 25.50 | 23.94 | 26.17 | 26.72 | 26.11 | 27.37 | 25.41 | 25.41 | 26.15 | 25.91 | 25.22 |
| 23     | 25.31 | 25.18 | 23.87 | 26.34 | 26.38 | 25.36 | 25.59 | 24.21 | 25.66 | 25.90 | 26.66 | 25.01 |
| 24     | 24.95 | 24.51 | 24.99 | 26.51 | 27.06 | 26.99 | 25.45 | 25.41 | 25.00 | 25.48 | 26.91 | 25.20 |
| 25     | 25.16 | 24.97 | 24.31 | 26.68 | 26.29 | 26.53 | 25.77 | 25.87 | 25.15 | 25.49 | 26.37 | 24.64 |
| 26     | 24.98 | 24.92 | 24.73 | 26.60 | 26.38 | 26.39 | 25.84 | 26.05 | 25.16 | 25.25 | N/A   | 24.60 |
| 27     | 25.35 | 25.09 | 24.40 | 26.67 | 26.46 | 26.60 | 25.69 | 24.60 | 25.47 | N/A   | N/A   | 23.56 |
| 28     | 25.62 | 24.83 | 25.47 | 26.07 | 26.47 | 26.85 | 26.16 | 26.70 | 25.34 | N/A   | N/A   | 23.85 |
| 29     | 25.35 |       | 25.38 | 25.92 | 27.07 | 25.42 | 26.11 | 26.51 | 25.76 | N/A   | N/A   | 25.37 |
| 30     | 23.48 |       | 25.73 | 26.55 | 26.62 | 27.53 | 24.71 | 26.58 | 26.17 | N/A   | N/A   | 24.89 |
| 31     | 25.29 |       | 25.58 |       | 26.48 |       | 24.29 | 25.77 |       | N/A   |       | 24.98 |
| Mo.Avg | 25.15 | 25.09 | 25.05 | 26.07 | 26.43 | 26.21 | 25.59 | 25.74 | 25.33 | 25.87 | 25.61 | 25.22 |

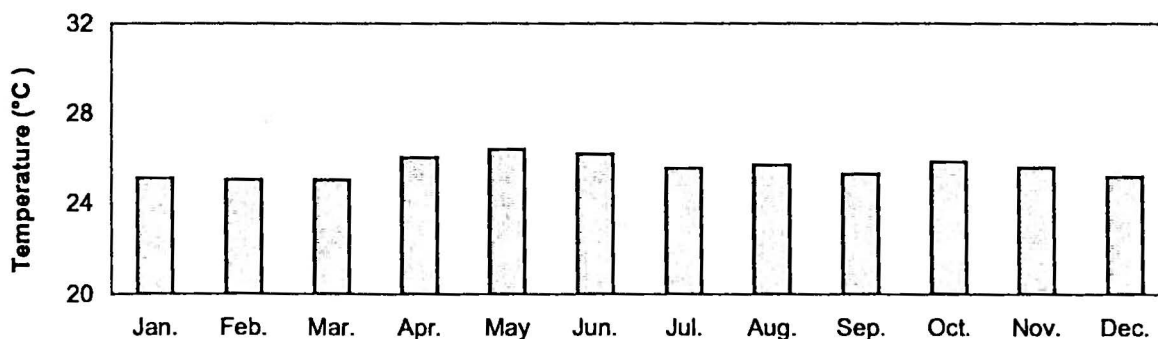


Figure 2: Monthly Average Temperature

**Yigo Weather Station**  
**Daily and Monthly Average Relative Humidity (%) for Year 2001**

7

| Day      | Jan.  | Feb.  | Mar.  | Apr.  | May   | Jun.  | Jul.  | Aug.  | Sep.  | Oct.  | Nov.  | Dec.  |
|----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 1        | 88.26 | 80.69 | 84.29 | 82.75 | 79.83 | 82.56 | 83.56 | 85.76 | 89.06 | 86.63 | N/A   | N/A   |
| 2        | 88.89 | 84.17 | 81.74 | 80.40 | 81.49 | 81.45 | 83.96 | 84.33 | 88.60 | 85.75 | N/A   | N/A   |
| 3        | 88.23 | 79.01 | 82.36 | 80.34 | 82.85 | 83.12 | 84.90 | 90.04 | 88.68 | 88.42 | N/A   | N/A   |
| 4        | 87.70 | 77.42 | 78.66 | 83.85 | 80.21 | 84.90 | 87.74 | 92.87 | 85.76 | 89.99 | N/A   | N/A   |
| 5        | 80.43 | 81.09 | 80.27 | 84.66 | 79.22 | 83.31 | 89.23 | 88.61 | 87.71 | 89.72 | N/A   | 84.82 |
| 6        | 80.56 | 82.42 | 76.51 | 81.21 | 79.28 | 88.37 | 88.40 | 87.30 | 87.98 | 88.67 | N/A   | 75.01 |
| 7        | 85.09 | 88.04 | 83.44 | 78.45 | 78.29 | 89.40 | 93.34 | 87.44 | 87.03 | 90.81 | 89.47 | 80.67 |
| 8        | 88.91 | 81.18 | 79.12 | 82.73 | 80.40 | 85.12 | 85.84 | 89.15 | 92.64 | 91.98 | 94.14 | 83.34 |
| 9        | 80.18 | 81.42 | 79.98 | 79.07 | 76.06 | 89.39 | 90.26 | 84.66 | 92.55 | 89.81 | 88.73 | 82.44 |
| 10       | 74.65 | 75.11 | 75.90 | 78.80 | 75.67 | 87.62 | 91.36 | 87.09 | 92.02 | 93.73 | 87.91 | 85.13 |
| 11       | 82.30 | 82.06 | 75.29 | 76.25 | 79.86 | 86.39 | 91.49 | 91.04 | 89.64 | 89.52 | 90.26 | 85.94 |
| 12       | 87.18 | 79.09 | 79.67 | 77.27 | 81.35 | 86.21 | 88.90 | 93.43 | 89.67 | 87.53 | 87.60 | 87.72 |
| 13       | 82.05 | 80.46 | 79.48 | 77.87 | 83.29 | 92.89 | 91.62 | 94.18 | 88.01 | 84.82 | 85.85 | 78.41 |
| 14       | 83.42 | 86.26 | 80.47 | 80.98 | 81.40 | 85.88 | 87.91 | 94.86 | 85.54 | 94.30 | 88.67 | 73.15 |
| 15       | 79.99 | 84.17 | 74.71 | 82.54 | 83.63 | 90.98 | 87.58 | 91.97 | 85.68 | 91.22 | 82.55 | 70.85 |
| 16       | 81.52 | 77.29 | 89.05 | 77.59 | 81.10 | 81.40 | 88.39 | 91.70 | 88.06 | 84.12 | 82.55 | 70.51 |
| 17       | 76.18 | 77.81 | 90.41 | 80.77 | 78.30 | 83.61 | 87.37 | 84.63 | 90.24 | 82.50 | 87.99 | 78.31 |
| 18       | 82.70 | 79.86 | 85.22 | 80.22 | 78.86 | 84.73 | 87.94 | 84.29 | 90.45 | 82.85 | 92.47 | 84.53 |
| 19       | 78.88 | 76.57 | 81.91 | 79.55 | 76.68 | 87.43 | 84.29 | 89.56 | 86.30 | 87.79 | 96.36 | 84.50 |
| 20       | 77.36 | 75.98 | 81.48 | 77.86 | 87.96 | 89.41 | 84.84 | 88.91 | 95.09 | 85.49 | 91.69 | 86.22 |
| 21       | 78.11 | 78.33 | 80.74 | 80.51 | 88.79 | 88.45 | 82.29 | 87.99 | 87.22 | 82.03 | 88.47 | 83.91 |
| 22       | 80.96 | 79.98 | 81.52 | 83.12 | 84.58 | 87.04 | 81.19 | 93.44 | 85.88 | 81.92 | 87.49 | 85.15 |
| 23       | 79.65 | 77.31 | 81.51 | 79.37 | 85.14 | 88.04 | 87.95 | 95.26 | 86.92 | 86.94 | 87.38 | 86.13 |
| 24       | 79.22 | 83.59 | 80.58 | 79.44 | 82.24 | 81.98 | 86.97 | 91.05 | 90.66 | 84.57 | 84.57 | 86.59 |
| 25       | 77.37 | 82.23 | 82.73 | 79.64 | 83.29 | 87.00 | 88.68 | 90.22 | 88.65 | 84.93 | 88.19 | 85.82 |
| 26       | 82.53 | 83.78 | 83.28 | 80.45 | 82.65 | 86.52 | 84.43 | 86.07 | 87.27 | 86.06 | N/A   | 89.94 |
| 27       | 84.03 | 82.32 | 80.16 | 77.45 | 81.58 | 84.65 | 87.97 | 92.67 | 89.21 | N/A   | N/A   | 93.86 |
| 28       | 82.11 | 83.51 | 79.91 | 81.61 | 81.91 | 83.58 | 86.52 | 84.06 | 87.47 | N/A   | N/A   | 92.60 |
| 29       | 71.94 |       | 80.36 | 82.09 | 80.23 | 90.12 | 87.14 | 86.26 | 87.92 | N/A   | N/A   | 83.74 |
| 30       | 86.77 |       | 81.47 | 79.69 | 83.83 | 81.75 | 88.23 | 86.39 | 87.66 | N/A   | N/A   | 84.13 |
| 31       | 75.43 |       | 81.54 |       | 83.68 |       | 92.16 | 91.30 |       | N/A   |       | 83.33 |
| Mo. Avg. | 81.70 | 80.76 | 81.09 | 80.22 | 81.38 | 86.11 | 87.50 | 89.24 | 88.59 | 87.39 | 88.54 | 83.21 |

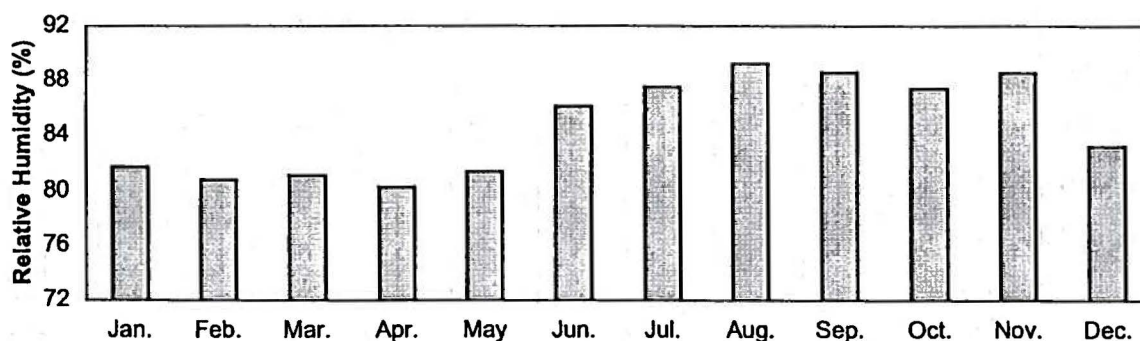


Figure 3: Monthly Average Relative Humidity

**Yigo Weather Station**  
**Photosynthetically Active Radiation (PAR) Average Flux Density ( $\mu\text{mol/s/m}^2$ ) for Year 2001**

| Day     | Jan. | Feb. | Mar. | Apr. | May | Jun. | Jul. | Aug. | Sep. | Oct. | Nov. | Dec. |
|---------|------|------|------|------|-----|------|------|------|------|------|------|------|
| 1       | 316  | 318  | 370  | 360  | 390 | 411  | 263  | 432  | 361  | 362  | N/A  | N/A  |
| 2       | 365  | 265  | 374  | 377  | 370 | 437  | 153  | 354  | 365  | 369  | N/A  | N/A  |
| 3       | 342  | 365  | 403  | 385  | 353 | 395  | 250  | 249  | 341  | 348  | N/A  | N/A  |
| 4       | 251  | 355  | 373  | 391  | 374 | 293  | 279  | 203  | 385  | 315  | N/A  | N/A  |
| 5       | 353  | 345  | 389  | 354  | 354 | 285  | 324  | 399  | 424  | 282  | N/A  | 271  |
| 6       | 315  | 330  | 395  | 391  | 388 | 289  | 311  | 413  | 259  | 380  | N/A  | 347  |
| 7       | 280  | 256  | 321  | 425  | 434 | 245  | 89   | 331  | 365  | 263  | 283  | 268  |
| 8       | 191  | 300  | 420  | 404  | 474 | 319  | 377  | 364  | 178  | 292  | 202  | 209  |
| 9       | 343  | 329  | 333  | 411  | 441 | 255  | 188  | 393  | 189  | 360  | 297  | 297  |
| 10      | 324  | 345  | 395  | 364  | 436 | 316  | 164  | 347  | 232  | 139  | 323  | 273  |
| 11      | 255  | 327  | 399  | 460  | 369 | 364  | 140  | 164  | 243  | 328  | 213  | 279  |
| 12      | 273  | 334  | 385  | 437  | 418 | 382  | 425  | 220  | 328  | 408  | 303  | 286  |
| 13      | 270  | 317  | 417  | 396  | 393 | 130  | 207  | 93   | 440  | 381  | 355  | 249  |
| 14      | 276  | 291  | 387  | 371  | 407 | 337  | 354  | 95   | 431  | 145  | 309  | 267  |
| 15      | 331  | 308  | 420  | 400  | 368 | 200  | 379  | 93   | 290  | 221  | 312  | 322  |
| 16      | 320  | 322  | 264  | 389  | 416 | 392  | 299  | 83   | 359  | 364  | 312  | 313  |
| 17      | 374  | 369  | 345  | 322  | 450 | 419  | 409  | 170  | 272  | 370  | 275  | 282  |
| 18      | 198  | 390  | 348  | 409  | 377 | 342  | 370  | 283  | 100  | 373  | 141  | 301  |
| 19      | 317  | 387  | 392  | 453  | 466 | 151  | 365  | 264  | 359  | 285  | 44   | 278  |
| 20      | 338  | 365  | 385  | 432  | 271 | 238  | 378  | 336  | 90   | 353  | 195  | 258  |
| 21      | 319  | 346  | 410  | 360  | 289 | 365  | 415  | 371  | 286  | 349  | 282  | 303  |
| 22      | 290  | 346  | 446  | 380  | 297 | 377  | 403  | 216  | 342  | 337  | 223  | 264  |
| 23      | 353  | 408  | 415  | 439  | 441 | 315  | 302  | 155  | 408  | 348  | 272  | 204  |
| 24      | 340  | 330  | 367  | 403  | 436 | 402  | 348  | 308  | 238  | 354  | 347  | 283  |
| 25      | 341  | 373  | 229  | 425  | 459 | 373  | 365  | 347  | 349  | 384  | 302  | 330  |
| 26      | 321  | 357  | 424  | 394  | 428 | 416  | 407  | 312  | 256  | 389  | N/A  | 287  |
| 27      | 317  | 407  | 386  | 402  | 398 | 381  | 361  | 180  | 353  | N/A  | N/A  | 175  |
| 28      | 320  | 364  | 385  | 417  | 372 | 234  | 347  | 320  | 294  | N/A  | N/A  | 74   |
| 29      | 370  |      | 365  | 404  | 399 | 254  | 334  | 278  | 288  | N/A  | N/A  | 282  |
| 30      | 228  |      | 349  | 405  | 363 | 377  | 388  | 360  | 394  | N/A  | N/A  | 264  |
| 31      | 390  |      | 390  |      | 286 |      | 263  | 260  |      | N/A  |      | 283  |
| Mo.Avg. | 310  | 341  | 377  | 399  | 391 | 323  | 312  | 271  | 307  | 327  | 263  | 268  |

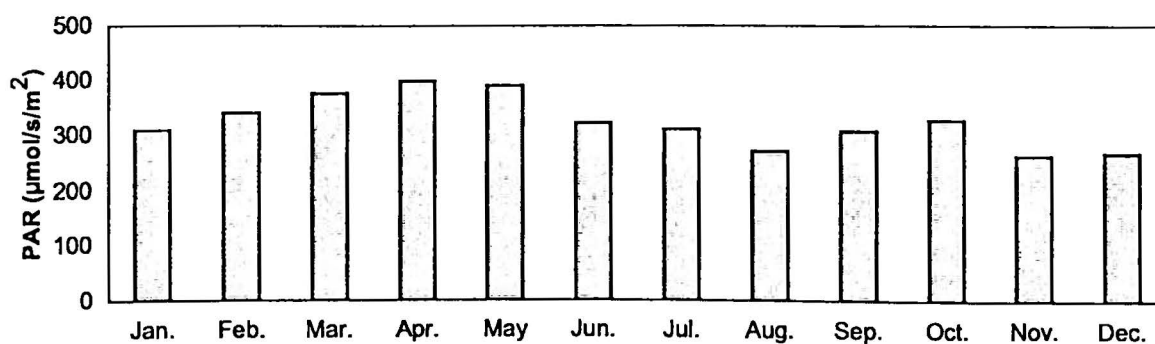


Figure 4: Monthly Average PAR

**Yigo Weather Station**  
**Global Solar Radiation Average Flux Density (W/m<sup>2</sup>) for Year 2001**

91 9

| Day      | Jan. | Feb. | Mar. | Apr. | May | Jun. | Jul. | Aug. | Sep. | Oct. | Nov. | Dec. |
|----------|------|------|------|------|-----|------|------|------|------|------|------|------|
| 1        | 200  | 206  | 242  | 235  | 266 | 282  | 179  | 286  | 228  | 242  | N/A  | N/A  |
| 2        | 235  | 172  | 251  | 255  | 255 | 300  | 100  | 240  | 229  | 249  | N/A  | N/A  |
| 3        | 218  | 242  | 270  | 260  | 240 | 270  | 165  | 165  | 211  | 229  | N/A  | N/A  |
| 4        | 166  | 234  | 252  | 262  | 257 | 200  | 191  | 131  | 239  | 202  | N/A  | N/A  |
| 5        | 231  | 226  | 263  | 235  | 243 | 199  | 220  | 264  | 263  | 181  | N/A  | 176  |
| 6        | 203  | 214  | 267  | 264  | 267 | 198  | 210  | 275  | 155  | 250  | N/A  | 237  |
| 7        | 180  | 164  | 212  | 293  | 299 | 166  | 56   | 216  | 229  | 173  | 194  | 176  |
| 8        | 124  | 195  | 280  | 270  | 324 | 219  | 253  | 243  | 104  | 186  | 131  | 136  |
| 9        | 218  | 214  | 216  | 281  | 305 | 178  | 125  | 267  | 113  | 236  | 194  | 199  |
| 10       | 209  | 225  | 259  | 248  | 302 | 220  | 107  | 232  | 141  | 86   | 217  | 182  |
| 11       | 164  | 214  | 263  | 312  | 250 | 247  | 90   | 105  | 147  | 216  | 140  | 185  |
| 12       | 177  | 217  | 256  | 300  | 285 | 263  | 283  | 144  | 203  | 277  | 206  | 190  |
| 13       | 175  | 205  | 278  | 270  | 265 | 84   | 135  | 56   | 284  | 260  | 247  | 166  |
| 14       | 180  | 188  | 262  | 250  | 279 | 229  | 239  | 57   | 280  | 92   | 209  | 180  |
| 15       | 218  | 197  | 283  | 267  | 252 | 133  | 252  | 57   | 185  | 140  | 211  | 215  |
| 16       | 207  | 206  | 174  | 263  | 287 | 270  | 204  | 50   | 228  | 246  | 211  | 210  |
| 17       | 244  | 243  | 227  | 216  | 311 | 286  | 273  | 109  | 174  | 250  | 181  | 187  |
| 18       | 123  | 257  | 232  | 280  | 260 | 232  | 248  | 180  | 54   | 248  | 87   | 199  |
| 19       | 204  | 258  | 264  | 310  | 321 | 97   | 240  | 173  | 231  | 193  | 22   | 183  |
| 20       | 217  | 245  | 262  | 300  | 178 | 157  | 252  | 224  | 49   | 242  | 123  | 168  |
| 21       | 203  | 228  | 278  | 246  | 193 | 253  | 278  | 248  | 182  | 233  | 185  | 202  |
| 22       | 188  | 232  | 304  | 255  | 198 | 258  | 273  | 136  | 227  | 224  | 145  | 174  |
| 23       | 233  | 273  | 281  | 301  | 296 | 208  | 204  | 97   | 267  | 238  | 181  | 131  |
| 24       | 222  | 216  | 244  | 273  | 298 | 276  | 230  | 199  | 150  | 242  | 234  | 186  |
| 25       | 224  | 248  | 152  | 293  | 312 | 257  | 244  | 223  | 228  | 266  | 202  | 220  |
| 26       | 204  | 232  | 287  | 269  | 294 | 283  | 271  | 204  | 164  | 270  | N/A  | 189  |
| 27       | 201  | 268  | 264  | 276  | 275 | 264  | 237  | 114  | 237  | N/A  | N/A  | 116  |
| 28       | 210  | 242  | 263  | 286  | 255 | 155  | 234  | 212  | 190  | N/A  | N/A  | 43   |
| 29       | 241  |      | 245  | 273  | 278 | 167  | 221  | 184  | 186  | N/A  | N/A  | 185  |
| 30       | 147  |      | 233  | 275  | 246 | 262  | 256  | 241  | 263  | N/A  | N/A  | 173  |
| 1        | 255  |      | 265  |      | 190 |      | 178  | 168  |      | N/A  |      | 188  |
| Mo. Avg. | 201  | 224  | 252  | 271  | 267 | 220  | 208  | 177  | 195  | 218  | 175  | 178  |

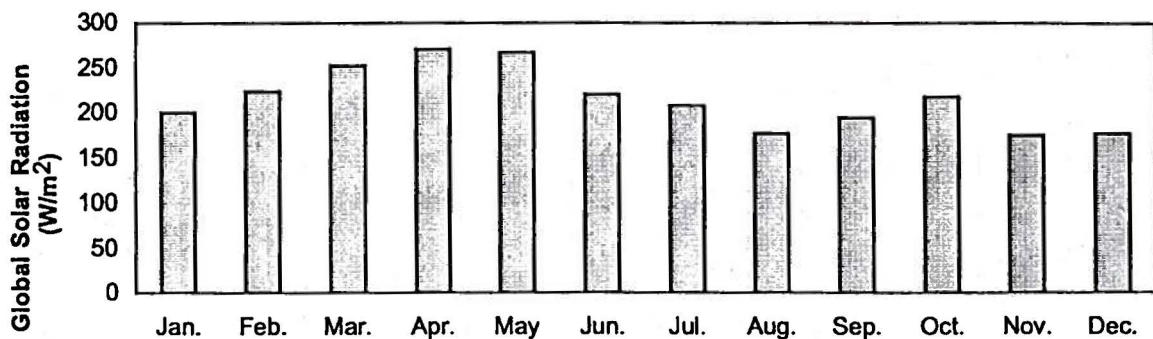


Figure 5: Monthly Average Global Solar Radiation

**Yigo Weather Station**  
**Daily and Monthly Average Wind Speed (m/s) for Year 2001**

| Day      | Jan. | Feb. | Mar. | Apr. | May  | Jun. | Jul. | Aug. | Sep. | Oct. | Nov. | Dec. |
|----------|------|------|------|------|------|------|------|------|------|------|------|------|
| 1        | 2.30 | 3.43 | 4.77 | 2.13 | 2.58 | 1.85 | 4.98 | 1.36 | 1.67 | 1.27 | N/A  | N/A  |
| 2        | 1.16 | 2.72 | 2.79 | 3.06 | 2.24 | 1.78 | 3.40 | 1.55 | 1.63 | 1.40 | N/A  | N/A  |
| 3        | 1.27 | 3.18 | 3.21 | 3.27 | 3.00 | 1.60 | 1.38 | 1.05 | 1.45 | 2.16 | N/A  | N/A  |
| 4        | 1.22 | 3.80 | 4.02 | 2.57 | 3.22 | 1.02 | 1.47 | 1.06 | 1.34 | 1.10 | N/A  | N/A  |
| 5        | 1.85 | 4.22 | 3.15 | 2.37 | 2.63 | 0.66 | 1.84 | 1.64 | 1.69 | 1.01 | N/A  | 2.61 |
| 6        | 3.31 | 4.12 | 3.39 | 3.50 | 2.26 | 0.54 | 2.94 | 1.02 | 1.30 | 1.37 | N/A  | 1.45 |
| 7        | 4.77 | 3.60 | 3.40 | 3.20 | 1.63 | 0.77 | 1.99 | 0.89 | 1.47 | 0.65 | 1.52 | 1.42 |
| 8        | 4.31 | 4.08 | 2.98 | 2.82 | 1.44 | 0.78 | 1.89 | 1.72 | 0.65 | 0.74 | 2.01 | 2.55 |
| 9        | 3.00 | 4.41 | 3.04 | 3.28 | 1.92 | 0.78 | 2.47 | 1.80 | 0.39 | 1.22 | 2.04 | 2.62 |
| 10       | 3.80 | 5.61 | 3.85 | 2.70 | 2.45 | 0.56 | 2.63 | 2.47 | 0.46 | 1.64 | 1.01 | 1.20 |
| 11       | 3.63 | 4.23 | 4.22 | 2.38 | 3.07 | 1.19 | 0.85 | 3.12 | 0.53 | 0.78 | 0.72 | 0.62 |
| 12       | 2.73 | 4.85 | 3.41 | 2.06 | 2.90 | 1.15 | 1.86 | 2.59 | 0.75 | 1.33 | 1.02 | 1.74 |
| 13       | 3.27 | 4.75 | 2.35 | 2.47 | 2.47 | 1.03 | 1.97 | 3.12 | 1.02 | 1.48 | 0.96 | 4.05 |
| 14       | 2.42 | 4.01 | 2.87 | 3.95 | 2.95 | 1.40 | 1.34 | 3.34 | 0.86 | 1.31 | 1.39 | 2.92 |
| 15       | 2.41 | 3.85 | 3.80 | 3.37 | 2.24 | 0.85 | 1.92 | 4.17 | 0.71 | 1.24 | 2.44 | 2.66 |
| 16       | 3.01 | 4.24 | 3.35 | 3.74 | 2.13 | 2.18 | 0.89 | 4.14 | 0.90 | 3.15 | 2.44 | 3.48 |
| 17       | 3.15 | 4.51 | 3.56 | 2.58 | 2.11 | 2.71 | 1.34 | 4.47 | 1.03 | 2.75 | 3.51 | 2.50 |
| 18       | 3.85 | 3.94 | 3.42 | 2.29 | 2.00 | 2.83 | 1.29 | 3.70 | 2.37 | 2.59 | 2.97 | 3.32 |
| 19       | 3.43 | 3.08 | 3.07 | 2.84 | 2.16 | 2.32 | 0.90 | 1.07 | 2.15 | 2.11 | 1.87 | 2.41 |
| 20       | 3.94 | 3.26 | 3.17 | 3.37 | 2.07 | 1.50 | 1.04 | 2.20 | 0.99 | 2.18 | 2.24 | 3.00 |
| 21       | 3.59 | 4.20 | 2.38 | 3.44 | 1.94 | 1.56 | 2.28 | 2.29 | 0.88 | 2.65 | 2.69 | 2.29 |
| 22       | 3.22 | 3.86 | 1.26 | 2.94 | 3.14 | 1.50 | 3.01 | 0.81 | 0.89 | 2.21 | 3.58 | 0.64 |
| 23       | 2.90 | 3.06 | 1.72 | 3.50 | 2.44 | 2.11 | 2.09 | 1.60 | 1.39 | 1.68 | 3.64 | 2.28 |
| 24       | 2.65 | 2.72 | 1.95 | 4.05 | 2.77 | 2.52 | 2.38 | 1.62 | 0.38 | 1.79 | 2.95 | 1.51 |
| 25       | 3.41 | 2.82 | 2.32 | 3.49 | 1.20 | 2.27 | 1.65 | 1.82 | 0.67 | 1.82 | 2.68 | 0.91 |
| 26       | 3.88 | 2.06 | 1.96 | 3.67 | 1.61 | 2.01 | 1.02 | 2.60 | 0.68 | 0.97 | N/A  | 0.51 |
| 27       | 3.24 | 3.47 | 2.14 | 3.40 | 1.51 | 2.49 | 1.22 | 2.38 | 0.90 | N/A  | N/A  | 3.44 |
| 28       | 3.78 | 4.09 | 2.97 | 3.28 | 2.01 | 2.99 | 1.15 | 3.65 | 0.56 | N/A  | N/A  | 2.37 |
| 29       | 3.21 |      | 2.61 | 3.45 | 2.55 | 2.65 | 1.71 | 2.96 | 1.38 | N/A  | N/A  | 2.04 |
| 30       | 2.74 |      | 2.28 | 3.00 | 2.01 | 4.81 | 1.35 | 2.04 | 1.10 | N/A  | N/A  | 1.20 |
| 31       | 4.01 |      | 2.84 |      | 1.80 |      | 0.91 | 0.57 |      | N/A  |      | 1.87 |
| Mo. Avg. | 3.08 | 3.79 | 2.98 | 3.07 | 2.27 | 1.75 | 1.84 | 2.22 | 1.07 | 1.64 | 2.19 | 2.13 |

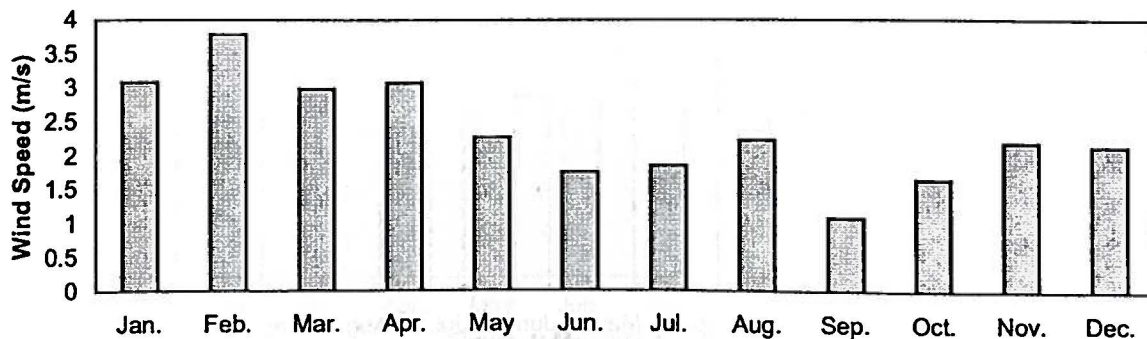


Figure 6: Monthly Average Wind Speed

# Yigo Weather Station

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## Daily and Monthly Average Wind Direction (0-360 Degrees from North) for Year 2001

| Day     | Jan. | Feb. | Mar. | Apr. | May | Jun. | Jul. | Aug. | Sep. | Oct. | Nov. | Dec. |
|---------|------|------|------|------|-----|------|------|------|------|------|------|------|
| 1       | 156  | 62   | 211  | 81   | 185 | 90   | 98   | 97   | 108  | 82   | N/A  | N/A  |
| 2       | 108  | 74   | 183  | 74   | 158 | 84   | 121  | 95   | 147  | 110  | N/A  | N/A  |
| 3       | 96   | 81   | 132  | 98   | 109 | 89   | 127  | 206  | 225  | 174  | N/A  | N/A  |
| 4       | 78   | 64   | 120  | 126  | 113 | 102  | 179  | 190  | 256  | 183  | N/A  | N/A  |
| 5       | 89   | 67   | 146  | 89   | 143 | 162  | 86   | 168  | 263  | 145  | N/A  | 107  |
| 6       | 70   | 67   | 131  | 106  | 118 | 198  | 102  | 126  | 229  | 112  | N/A  | 67   |
| 7       | 83   | 100  | 106  | 103  | 101 | 224  | 164  | 139  | 226  | 161  | 107  | 77   |
| 8       | 100  | 91   | 145  | 101  | 112 | 213  | 258  | 99   | 182  | 126  | 126  | 80   |
| 9       | 119  | 78   | 133  | 93   | 99  | 141  | 266  | 66   | 160  | 120  | 149  | 100  |
| 10      | 75   | 66   | 95   | 105  | 71  | 175  | 277  | 89   | 135  | 167  | 120  | 110  |
| 11      | 51   | 81   | 116  | 112  | 78  | 112  | 214  | 110  | 160  | 142  | 128  | 86   |
| 12      | 104  | 81   | 126  | 81   | 95  | 98   | 183  | 137  | 183  | 106  | 119  | 87   |
| 13      | 87   | 100  | 159  | 88   | 96  | 165  | 195  | 224  | 189  | 94   | 97   | 60   |
| 14      | 61   | 93   | 125  | 70   | 106 | 97   | 194  | 190  | 206  | 92   | 93   | 61   |
| 15      | 78   | 107  | 123  | 78   | 100 | 89   | 279  | 178  | 167  | 92   | 58   | 61   |
| 16      | 61   | 63   | 158  | 100  | 111 | 92   | 139  | 197  | 142  | 74   | 58   | 63   |
| 17      | 63   | 62   | 119  | 90   | 126 | 93   | 126  | 139  | 76   | 70   | 77   | 60   |
| 18      | 59   | 73   | 134  | 109  | 115 | 88   | 133  | 165  | 83   | 77   | 97   | 76   |
| 19      | 67   | 73   | 137  | 105  | 84  | 87   | 116  | 192  | 100  | 73   | 113  | 88   |
| 20      | 57   | 65   | 111  | 97   | 84  | 94   | 141  | 125  | 126  | 80   | 134  | 89   |
| 21      | 72   | 79   | 119  | 82   | 104 | 79   | 107  | 68   | 201  | 59   | 123  | 98   |
| 22      | 60   | 149  | 148  | 102  | 95  | 85   | 93   | 175  | 251  | 57   | 115  | 110  |
| 23      | 54   | 109  | 135  | 111  | 123 | 87   | 154  | 247  | 236  | 93   | 117  | 234  |
| 24      | 67   | 118  | 132  | 73   | 127 | 88   | 134  | 256  | 130  | 180  | 95   | 310  |
| 25      | 67   | 133  | 105  | 109  | 108 | 76   | 113  | 236  | 108  | 260  | 108  | 290  |
| 26      | 86   | 150  | 103  | 86   | 88  | 94   | 102  | 184  | 89   | 219  | N/A  | 111  |
| 27      | 76   | 162  | 118  | 97   | 79  | 67   | 105  | 206  | 174  | N/A  | N/A  | 131  |
| 28      | 71   | 159  | 95   | 124  | 88  | 63   | 76   | 144  | 153  | N/A  | N/A  | 146  |
| 29      | 92   |      | 92   | 153  | 87  | 75   | 160  | 191  | 97   | N/A  | N/A  | 110  |
| 30      | 70   |      | 97   | 147  | 70  | 66   | 138  | 160  | 87   | N/A  | N/A  | 147  |
| 31      | 112  |      | 79   |      | 72  |      | 161  | 142  |      | N/A  |      | 111  |
| Mo.Avg. | 80   | 93   | 127  | 100  | 105 | 109  | 153  | 159  | 163  | 121  | 107  | 113  |

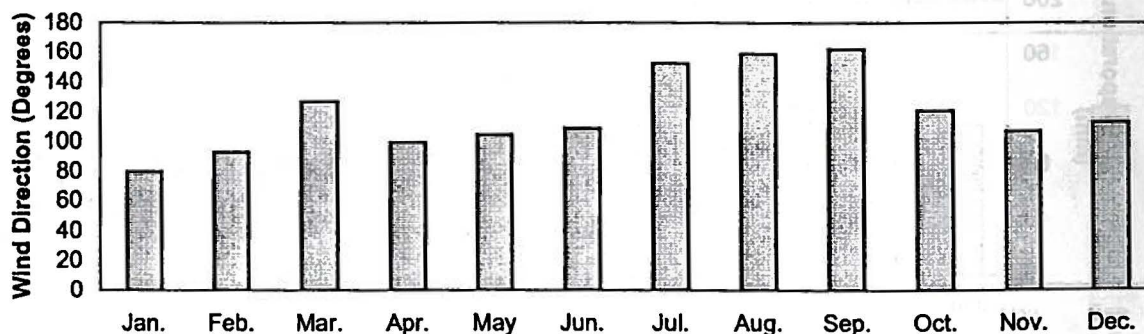


Figure 7: Monthly Average Wind Direction

**Yigo Weather Station**  
**Daily and Monthly Total Atmometer Evaporation (ET Gauge) (mm) for Year 2001**

| Day       | Jan.   | Feb.   | Mar.   | Apr.   | May    | Jun.  | Jul.  | Aug.  | Sep.  | Oct.  | Nov.  | Dec.  |
|-----------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|-------|-------|
| 1         | 3.30   | 3.30   | 2.79   | 4.06   | 4.83   | 4.32  | 2.79  | 4.57  | 2.79  | 4.06  | N/A   | N/A   |
| 2         | 3.81   | 2.03   | 4.32   | 4.32   | 4.57   | 4.83  | 1.78  | 4.06  | 3.05  | 4.57  | N/A   | N/A   |
| 3         | 3.56   | 4.32   | 3.30   | 4.57   | 3.56   | 4.32  | 2.54  | 2.29  | 3.56  | 2.79  | N/A   | N/A   |
| 4         | 2.54   | 4.57   | 5.08   | 3.81   | 4.57   | 3.05  | 2.79  | 1.27  | 4.32  | 2.79  | N/A   | N/A   |
| 5         | 4.06   | 3.30   | 4.57   | 6.35   | 4.83   | 2.54  | 2.54  | 4.06  | 3.81  | 2.54  | N/A   | 1.52  |
| 6         | 4.06   | 3.05   | 4.57   | 4.06   | 4.57   | 1.02  | 2.29  | 4.57  | 2.54  | 3.56  | N/A   | 4.83  |
| 7         | 2.03   | 1.27   | 2.29   | 4.57   | 5.08   | 1.52  | 0.93  | 3.81  | 3.81  | 2.29  | 3.05  | 3.30  |
| 8         | 0.25   | 3.05   | 5.08   | 3.81   | 5.08   | 5.08  | 3.30  | 2.54  | 1.27  | 2.54  | 0.25  | 2.29  |
| 9         | 4.57   | 3.56   | 4.06   | 4.57   | 5.59   | 2.54  | 1.02  | 4.32  | 1.52  | 3.56  | 2.29  | 3.30  |
| 10        | 4.57   | 3.81   | 5.33   | 4.57   | 5.33   | 2.79  | 1.27  | 3.30  | 1.27  | 0.25  | 4.06  | 2.54  |
| 11        | 3.30   | 3.05   | 5.08   | 5.33   | 3.81   | 3.81  | 0.76  | 0.76  | 2.03  | 3.30  | 2.03  | 3.05  |
| 12        | 2.54   | 4.06   | 4.32   | 5.33   | 4.06   | 3.81  | 4.06  | 1.52  | 3.30  | 4.06  | 3.30  | 2.29  |
| 13        | 3.30   | 3.56   | 4.32   | 4.57   | 3.56   | 0.00  | 1.52  | 0.00  | 4.83  | 4.32  | 4.57  | 3.30  |
| 14        | 1.78   | 2.54   | 4.06   | 4.06   | 4.57   | 3.56  | 3.81  | 0.00  | 5.08  | 0.25  | 3.05  | 4.57  |
| 15        | 4.32   | 2.79   | 5.33   | 3.81   | 3.56   | 1.02  | 3.81  | 4.95  | 3.56  | 0.00  | 3.81  | 4.83  |
| 16        | 3.05   | 3.81   | 1.27   | 4.83   | 4.83   | 4.32  | 2.79  | 0.00  | 3.56  | 4.08  | 3.81  | 5.33  |
| 17        | 4.83   | 4.06   | 1.52   | 2.79   | 5.33   | 4.32  | 4.32  | 2.29  | 1.78  | 4.31  | 1.78  | 3.81  |
| 18        | 2.54   | 4.06   | 2.79   | 4.57   | 1.27   | 3.05  | 3.30  | 3.30  | 0.51  | 4.01  | 0.51  | 3.05  |
| 19        | 4.06   | 4.83   | 4.32   | 5.33   | 5.84   | 1.27  | 4.32  | 2.29  | 3.81  | N/A   | 0.00  | 2.29  |
| 20        | 4.32   | 4.57   | 4.57   | 5.33   | 1.52   | 2.29  | 4.32  | 2.79  | 0.00  | N/A   | 0.76  | 2.79  |
| 21        | 4.32   | 4.57   | 4.83   | 2.79   | 2.54   | 3.30  | 4.83  | 3.56  | 2.79  | 4.04  | 2.29  | 2.79  |
| 22        | 3.81   | 4.06   | 4.32   | 4.15   | 3.05   | 2.29  | 4.57  | 1.27  | 3.81  | 3.52  | 2.03  | 3.05  |
| 23        | 4.57   | 5.08   | 4.57   | 4.36   | 3.81   | 2.79  | 2.54  | 0.51  | 4.57  | 2.95  | 2.29  | 1.78  |
| 24        | 4.57   | 3.05   | 4.06   | 4.57   | 5.08   | 4.83  | 2.29  | 2.03  | 1.52  | 3.52  | 4.57  | 2.79  |
| 25        | 4.06   | 4.06   | 2.29   | 5.08   | 4.57   | 3.05  | 2.79  | 3.05  | 3.56  | 4.21  | 3.05  | 3.56  |
| 26        | 3.05   | 3.81   | 4.06   | 4.32   | 4.57   | 1.52  | 4.32  | 3.05  | 2.79  | 3.13  | N/A   | 2.79  |
| 27        | 3.30   | 3.81   | 4.83   | 5.33   | 4.32   | 3.56  | 3.30  | 0.25  | 3.30  | N/A   | N/A   | 0.25  |
| 28        | 4.06   | 3.30   | 4.32   | 4.32   | 4.32   | 2.54  | 3.81  | 3.56  | 3.30  | N/A   | N/A   | 0.00  |
| 29        | 5.33   |        | 4.32   | 4.06   | 4.57   | 1.27  | 3.05  | 2.54  | 2.79  | N/A   | N/A   | 3.30  |
| 30        | 1.27   |        | 4.57   | 4.83   | 3.56   | 4.06  | 3.81  | 4.06  | 3.56  | N/A   | N/A   | 3.05  |
| 31        | 4.32   |        | 4.06   |        | 2.79   |       | 2.29  | 1.78  |       | N/A   |       | 3.30  |
| Mo. Total | 109.47 | 101.35 | 125.22 | 134.50 | 129.54 | 88.65 | 91.86 | 78.36 | 88.39 | 96.69 | 75.00 | 91.57 |

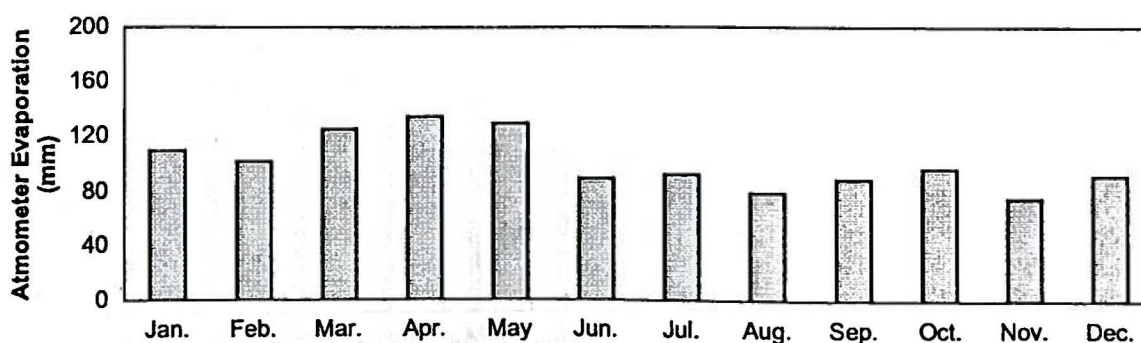
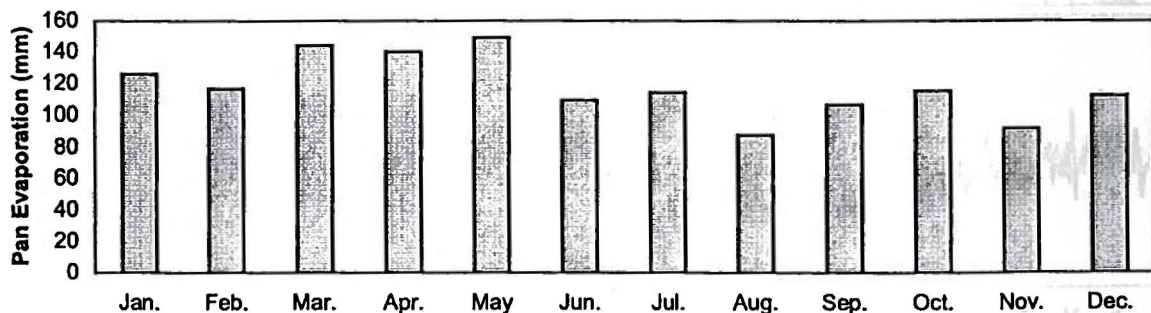


Figure 8: Monthly Total Atmometer Evaporation

**Yigo Weather Station**  
**Daily and Monthly Total Pan Evaporation (mm) for Year 2001**

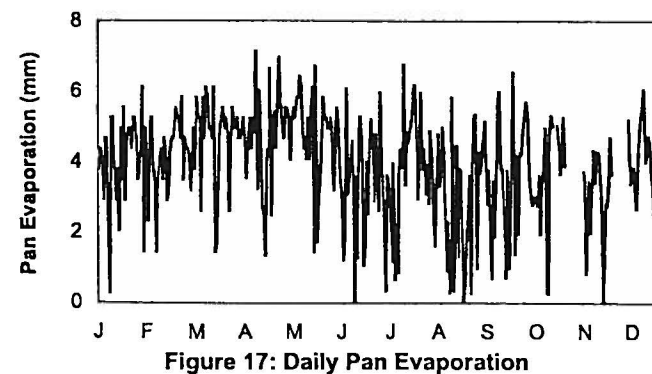
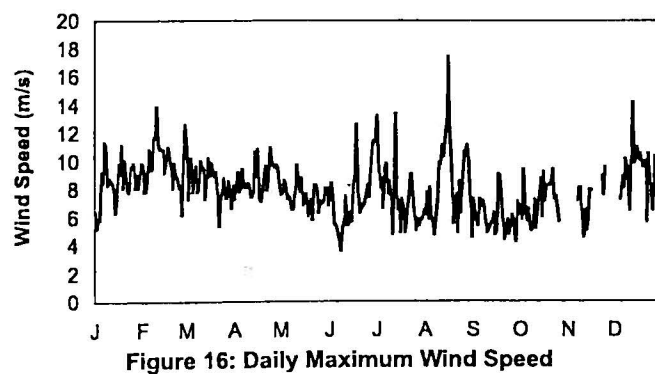
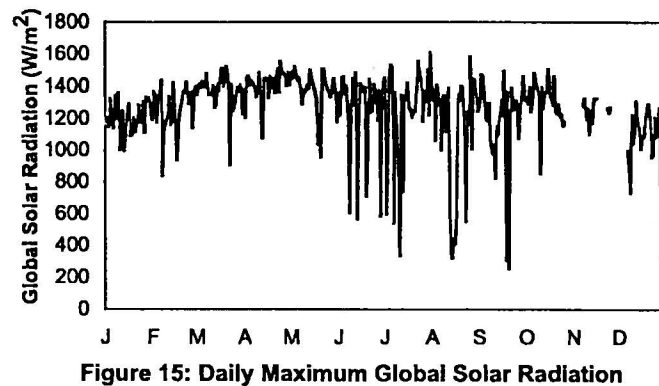
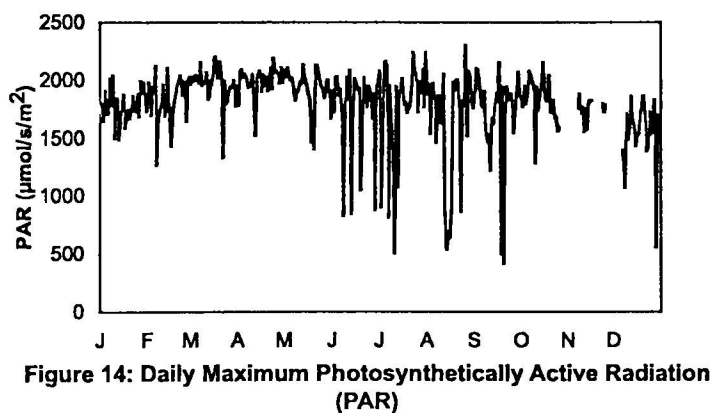
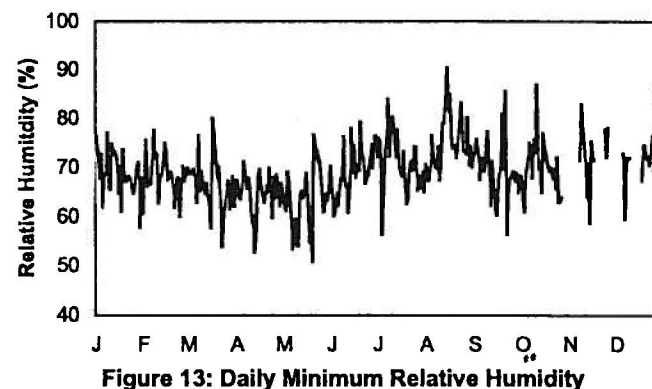
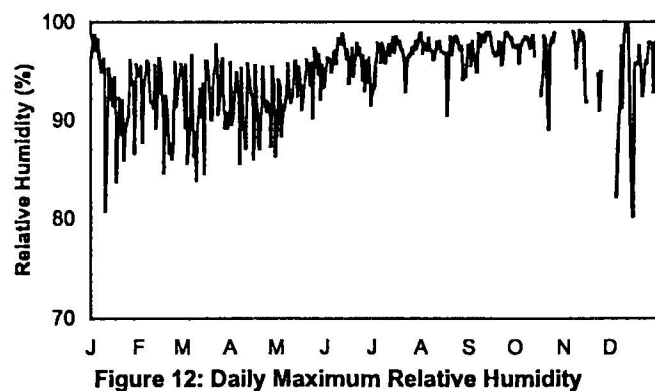
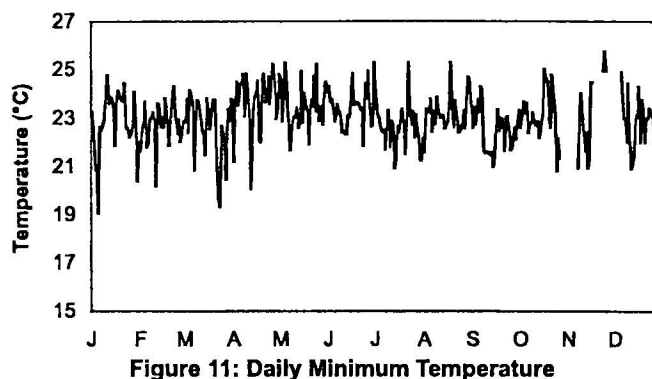
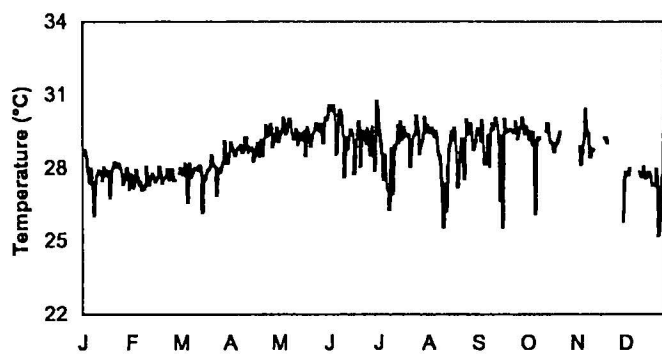
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| Day       | Jan.   | Feb.   | Mar.   | Apr.   | May    | Jun.   | Jul.   | Aug.  | Sep.   | Oct.   | Nov.  | Dec.   |
|-----------|--------|--------|--------|--------|--------|--------|--------|-------|--------|--------|-------|--------|
| 1         | 3.80   | 3.80   | 3.21   | 4.67   | 5.55   | 4.97   | 4.17   | 4.88  | 4.29   | 5.72   | N/A   | N/A    |
| 2         | 4.38   | 2.34   | 4.97   | 4.97   | 5.26   | 5.55   | 2.09   | 4.12  | 3.71   | 5.20   | N/A   | N/A    |
| 3         | 4.09   | 4.97   | 3.80   | 5.26   | 4.09   | 4.97   | 0.35   | 2.46  | 4.42   | 3.64   | N/A   | N/A    |
| 4         | 2.92   | 5.26   | 5.84   | 4.38   | 5.26   | 3.51   | 3.62   | 1.63  | 4.61   | 2.96   | N/A   | N/A    |
| 5         | 4.67   | 3.80   | 5.26   | 3.56   | 5.55   | 3.05   | 3.25   | 3.23  | 5.14   | 2.79   | N/A   | N/A    |
| 6         | 4.67   | 3.51   | 5.26   | 4.67   | 5.26   | 1.22   | 2.63   | 4.80  | 2.82   | 3.02   | N/A   | 5.20   |
| 7         | 2.34   | 1.46   | 2.63   | 5.26   | 5.84   | 1.83   | 1.17   | 3.32  | 3.76   | 3.00   | 3.72  | 3.38   |
| 8         | 0.29   | 3.51   | 5.84   | 4.38   | 5.84   | 6.01   | 3.96   | 3.97  | 1.75   | 2.76   | 0.86  | 3.65   |
| 9         | 5.26   | 4.09   | 4.67   | 5.26   | 6.43   | 3.10   | 0.67   | 4.98  | 0.71   | 3.66   | 2.41  | 3.86   |
| 10        | 5.26   | 4.38   | 6.13   | 4.85   | 6.13   | 3.70   | 1.46   | 4.25  | 3.47   | 1.96   | 3.46  | 3.29   |
| 11        | 3.80   | 3.51   | 5.84   | 7.14   | 4.38   | 4.08   | 0.88   | 0.91  | 1.90   | 3.51   | 2.00  | 2.69   |
| 12        | 2.92   | 4.67   | 4.97   | 3.24   | 4.67   | 4.60   | 4.32   | 2.31  | 3.34   | 3.85   | 3.04  | 3.92   |
| 13        | 3.80   | 4.09   | 4.97   | 6.03   | 4.09   | 0.00   | 4.38   | 0.30  | 5.87   | 4.97   | 4.32  | 4.92   |
| 14        | 2.04   | 2.92   | 4.67   | 5.40   | 5.26   | 3.59   | 3.84   | 0.66  | 6.00   | 0.29   | 3.48  | 5.34   |
| 15        | 4.97   | 3.21   | 6.13   | 2.71   | 4.09   | 1.29   | 6.76   | 6.83  | 3.88   | 0.27   | 4.29  | 6.65   |
| 16        | 3.51   | 4.38   | 1.46   | 2.54   | 5.55   | 4.79   | 3.36   | 0.34  | 3.74   | 4.80   | 4.29  | 6.07   |
| 17        | 5.55   | 4.67   | 1.75   | 1.35   | 6.13   | 5.29   | 4.83   | 1.68  | 1.95   | 5.31   | 4.15  | 4.01   |
| 18        | 2.92   | 4.67   | 3.21   | 4.34   | 1.46   | 4.70   | 4.56   | 4.45  | 0.74   | 5.01   | 3.24  | 4.36   |
| 19        | 4.67   | 5.55   | 4.97   | 4.18   | 6.72   | 1.08   | 4.91   | 1.30  | 3.77   | N/A    | 0.06  | 4.72   |
| 20        | 4.97   | 5.26   | 5.26   | 6.64   | 1.75   | 1.45   | 5.22   | 3.80  | 0.98   | N/A    | 1.32  | 4.43   |
| 21        | 4.97   | 5.26   | 5.55   | 2.51   | 2.92   | 4.02   | 5.97   | 3.72  | 2.44   | 5.05   | 2.79  | 3.46   |
| 22        | 4.38   | 4.67   | 4.97   | 5.19   | 3.51   | 2.54   | 6.17   | 0.02  | 4.67   | 4.40   | 2.78  | 2.55   |
| 23        | 5.26   | 5.84   | 5.26   | 5.45   | 4.38   | 4.65   | 4.70   | 0.61  | 6.54   | 3.68   | 3.35  | 2.58   |
| 24        | 5.26   | 3.51   | 4.67   | 4.43   | 5.84   | 5.21   | 2.98   | 1.79  | 1.39   | 4.40   | 4.70  | 3.25   |
| 25        | 4.67   | 4.67   | 2.63   | 6.01   | 5.26   | 4.42   | 4.14   | 2.56  | 4.19   | 5.26   | 3.67  | 3.73   |
| 26        | 3.51   | 4.38   | 4.67   | 5.18   | 5.26   | 2.90   | 5.98   | 3.62  | 1.99   | 3.91   | N/A   | 2.99   |
| 27        | 3.80   | 4.38   | 5.55   | 5.59   | 4.97   | 4.81   | 3.80   | 0.30  | 4.26   | N/A    | N/A   | 0.24   |
| 28        | 4.67   | 3.80   | 4.97   | 4.97   | 4.97   | 3.37   | 4.38   | 4.00  | 4.22   | N/A    | N/A   | 0.35   |
| 29        | 6.13   |        | 4.97   | 4.67   | 5.26   | 2.63   | 3.01   | 5.17  | 4.97   | N/A    | N/A   | 3.11   |
| 30        | 1.46   |        | 5.26   | 5.55   | 4.09   | 5.98   | 3.94   | 5.35  | 5.44   | N/A    | N/A   | 3.07   |
| 31        | 4.97   |        | 4.67   |        | 3.21   |        | 2.83   | 0.99  |        | N/A    |       | 3.75   |
| Mo. Total | 125.90 | 116.55 | 144.01 | 140.48 | 148.97 | 109.38 | 114.41 | 87.35 | 106.67 | 115.47 | 91.41 | 112.75 |



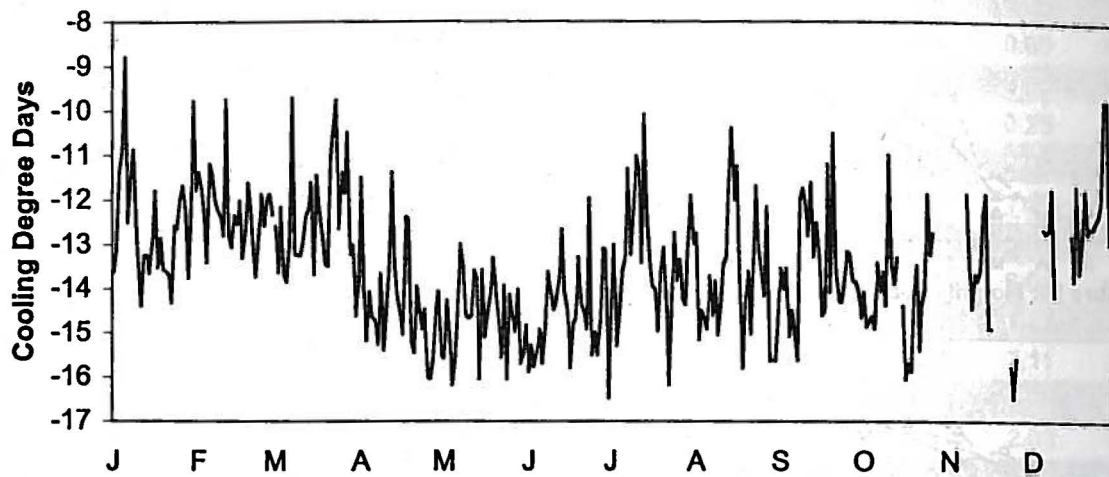
**Figure 9: Monthly Total Pan Evaporation**

**Yigo Weather Station**  
**Daily Maximum and Minimum Graphs for Specified Climatic Parameters**  
**January 2001 through December 2001**

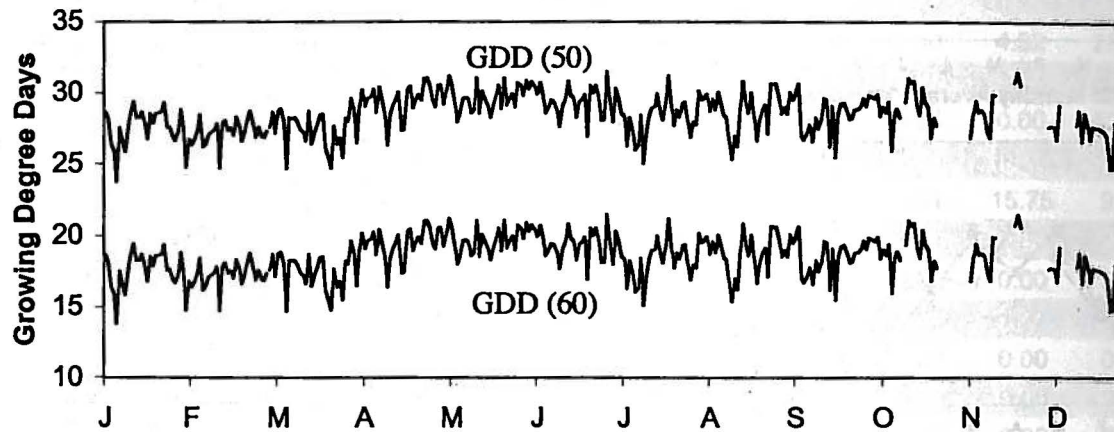


**Yigo Weather Station  
Degree Days Graphics with Tables for Year 2001**

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**Figure 18: Cooling Degree Days**



**Figure 19: Growing Degree Days**

| Degree Days  | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|--------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Cooling      | 389 | 344 | 387 | 430 | 454 | 437 | 413 | 428 | 404 | 436 | 421 | 383 |
| Growing (50) | 854 | 764 | 852 | 880 | 919 | 887 | 878 | 893 | 854 | 901 | 871 | 848 |
| Growing (60) | 544 | 484 | 542 | 580 | 609 | 587 | 568 | 583 | 554 | 591 | 571 | 538 |

# Yigo Weather Station

## Graphs showing year to year variations in weather data for 1999 to 2001

—x— 1999    ---o--- 2000    --Δ-- 2001

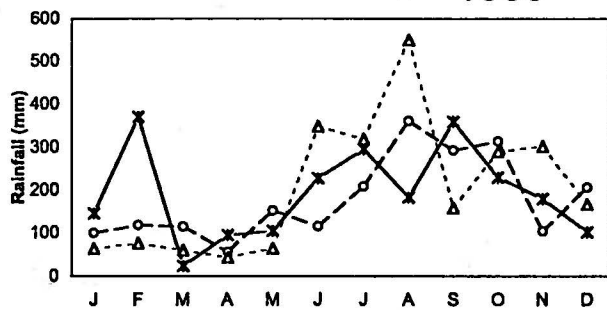


Figure 20: Monthly Total Rainfall

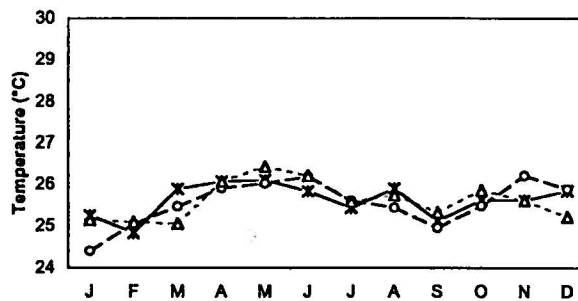


Figure 21: Monthly Average Temperature

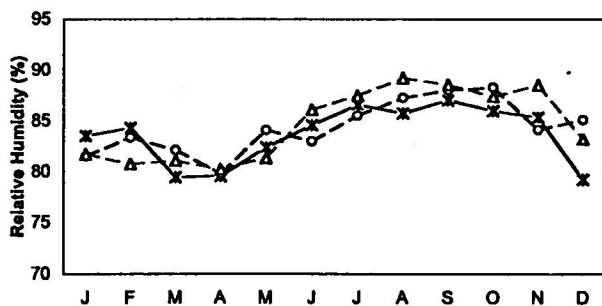


Figure 22: Monthly Average Relative Humidity

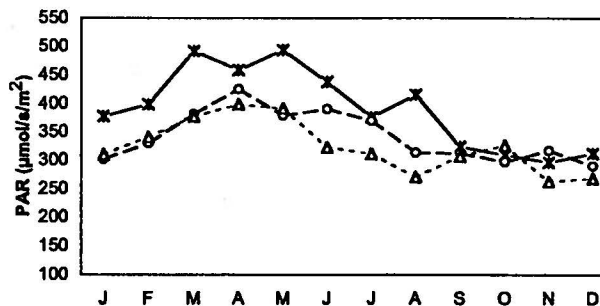


Figure 23: Monthly Average Photosynthetically Active Radiation (PAR)

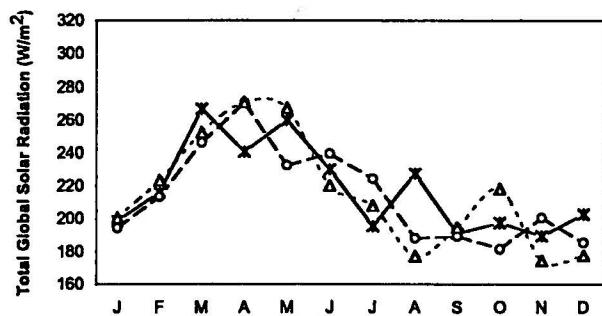


Figure 24: Monthly Average Global Solar Radiation

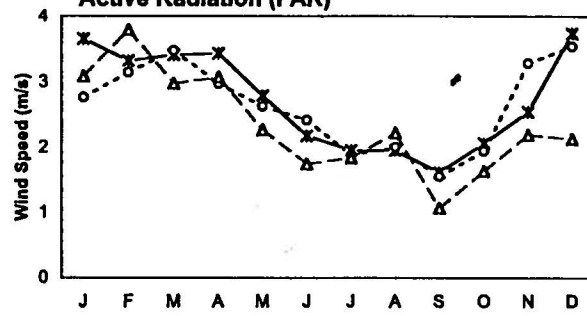


Figure 25: Monthly Average Wind Speed

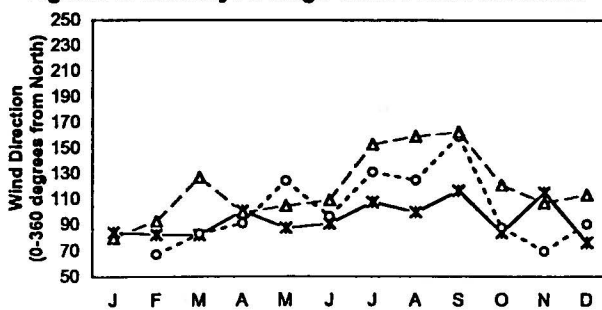


Figure 26: Monthly Average Wind Direction

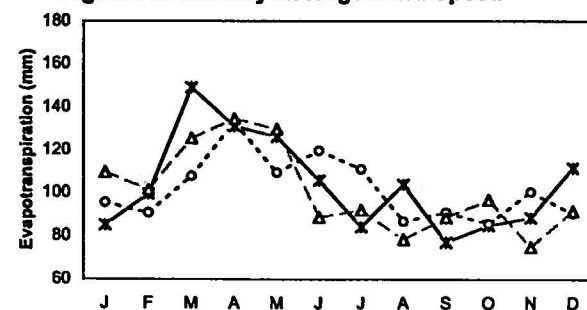


Figure 27: Monthly Total Atmosphere Evaporation (ET Gauge)

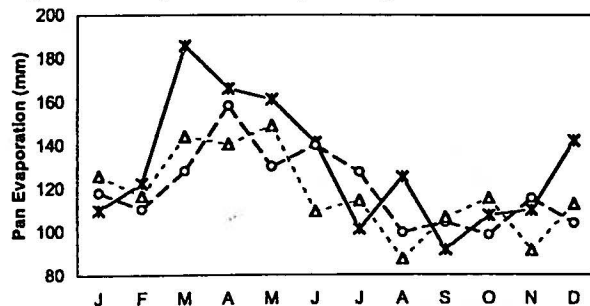


Figure 28: Monthly Total Pan Evaporation

**Inarajan Weather Station**  
**Daily and Monthly Total Rainfall (mm) for Year 2001**

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| Day             | Jan.         | Feb.         | Mar.         | Apr.         | May          | Jun.          | Jul.          | Aug.          | Sep.         | Oct.          | Nov.          | Dec.          |
|-----------------|--------------|--------------|--------------|--------------|--------------|---------------|---------------|---------------|--------------|---------------|---------------|---------------|
| 1               | 2.29         | 0.00         | 1.52         | 0.00         | 0.00         | 0.00          | 4.83          | 0.00          | N/A          | 0.00          | 34.29         | 0.76          |
| 2               | 0.00         | 2.54         | 0.00         | 0.76         | 0.00         | 0.00          | 0.25          | 8.13          | N/A          | 0.00          | 14.22         | 9.14          |
| 3               | 0.00         | 0.00         | 0.51         | 1.27         | 0.00         | 0.00          | 5.59          | 0.25          | N/A          | 3.05          | 12.70         | 0.00          |
| 4               | 0.25         | 0.00         | 0.00         | 0.25         | 0.00         | 8.38          | 9.91          | 4.83          | N/A          | 0.25          | 70.36         | 0.76          |
| 5               | 0.00         | 7.37         | 0.00         | 0.00         | 0.00         | 1.02          | N/A           | 2.79          | N/A          | 2.03          | 2.54          | 1.78          |
| 6               | 0.00         | 0.25         | 0.00         | 0.00         | 0.00         | 10.16         | N/A           | 0.00          | 1.27         | 1.52          | 0.25          | 0.00          |
| 7               | 7.87         | 0.51         | 0.00         | 0.00         | N/A          | 3.50          | N/A           | 2.29          | 2.54         | 8.84          | 0.00          | 0.00          |
| 8               | 17.02        | 0.00         | 0.00         | 1.52         | N/A          | 16.76         | N/A           | 3.56          | 10.16        | 6.01          | 42.42         | 5.33          |
| 9               | 0.76         | 0.76         | 10.41        | 0.00         | N/A          | 0.00          | N/A           | 3.56          | 4.32         | 1.27          | 3.05          | 0.25          |
| 10              | 0.00         | 3.05         | 0.00         | 0.00         | N/A          | 36.32         | N/A           | 5.33          | 0.25         | 7.11          | 0.00          | 1.02          |
| 11              | 0.00         | 6.35         | 0.00         | 0.00         | N/A          | 0.00          | N/A           | 8.64          | 0.00         | 3.05          | 0.00          | 0.00          |
| 12              | 0.25         | 1.52         | 0.00         | 0.00         | 7.37         | N/A           | N/A           | 8.38          | 0.51         | 2.03          | 10.92         | 19.56         |
| 13              | 0.00         | 0.00         | 0.00         | 0.76         | 4.06         | N/A           | N/A           | 7.37          | 0.00         | 0.00          | 0.00          | 4.83          |
| 14              | 0.00         | 2.79         | 0.00         | 12.70        | 0.51         | N/A           | N/A           | 10.41         | 0.00         | 48.77         | 0.00          | 0.00          |
| 15              | 0.00         | 0.00         | 0.00         | 1.27         | 1.78         | 10.41         | N/A           | 54.86         | 0.00         | 0.25          | 0.00          | 0.00          |
| 16              | 0.00         | 0.51         | 1.78         | 0.25         | 0.00         | 15.49         | N/A           | 48.77         | 0.00         | 4.32          | 28.19         | 0.00          |
| 17              | 0.00         | 0.00         | 2.54         | 4.57         | 0.00         | 1.02          | 7.62          | 5.33          | 15.75        | 1.27          | 52.07         | 0.51          |
| 18              | 0.51         | 0.00         | 0.25         | 0.00         | 0.00         | 3.30          | 3.81          | 0.00          | 0.25         | 0.00          | 52.83         | 5.08          |
| 19              | 0.00         | 0.51         | 1.02         | 0.00         | 0.00         | 20.83         | 0.00          | 1.27          | 3.30         | 10.16         | 19.05         | 10.92         |
| 20              | 0.00         | 0.51         | 0.00         | 0.00         | 15.49        | 8.89          | 0.00          | 0.00          | 0.51         | 15.75         | 9.40          | 5.33          |
| 21              | 0.00         | 0.00         | 0.00         | 2.54         | 6.35         | 6.35          | 3.30          | 49.28         | 5.84         | 7.87          | 22.01         | 0.00          |
| 22              | 0.00         | 0.00         | 0.00         | 4.06         | 0.00         | 20.07         | 1.27          | 26.42         | 0.00         | 0.00          | 3.56          | 2.54          |
| 23              | 0.00         | 0.00         | 0.00         | 0.00         | 13.46        | 0.00          | 38.10         | 48.77         | 0.25         | 1.27          | 0.00          | 0.25          |
| 24              | 0.00         | 0.00         | 0.00         | 0.25         | 2.03         | 0.00          | 0.25          | 7.11          | 0.00         | 0.00          | 0.00          | 1.78          |
| 25              | 0.25         | 0.00         | 0.25         | 0.76         | 0.00         | 0.00          | 4.83          | 5.59          | 0.00         | 0.00          | 9.91          | 0.00          |
| 26              | 0.76         | 0.00         | 1.52         | 6.60         | 11.18        | 10.92         | 0.00          | 0.00          | 1.78         | 0.00          | 0.00          | 0.00          |
| 27              | 0.25         | 0.00         | 0.00         | 0.25         | 1.27         | 1.52          | 8.86          | 45.47         | 4.32         | 0.00          | 0.00          | 19.56         |
| 28              | 0.00         | 1.52         | 0.76         | 7.11         | 0.25         | 13.97         | 13.46         | 0.51          | 5.59         | 1.02          | 0.00          | 53.09         |
| 29              | 0.00         |              | 0.00         | 5.08         | 0.00         | 3.30          | 27.43         | 4.83          | 0.00         | 0.00          | 0.00          | 3.30          |
| 30              | 15.24        |              | 0.00         | 0.00         | 0.76         | 2.54          | 36.32         | 1.78          | 0.00         | 0.00          | 0.00          | 2.79          |
| 31              | 1.02         |              | 0.00         |              | 5.59         |               | 2.79          | N/A           |              | 0.00          |               | 26.16         |
| <b>Mo.Total</b> | <b>46.48</b> | <b>28.19</b> | <b>20.57</b> | <b>50.04</b> | <b>83.59</b> | <b>216.40</b> | <b>271.86</b> | <b>377.69</b> | <b>67.97</b> | <b>122.94</b> | <b>387.86</b> | <b>174.75</b> |

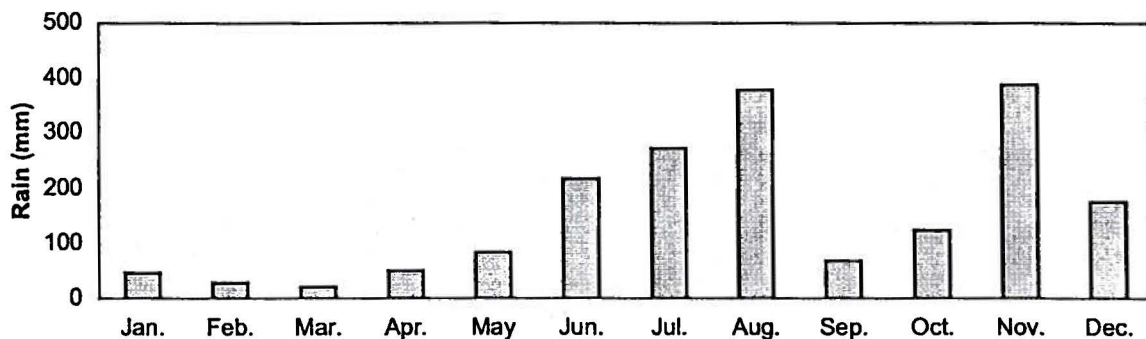


Figure 29: Monthly Total Rainfall

**Inarajan Weather Station**  
**Daily and Monthly Average Air Temperature (°C) for Year 2001**

| Day             | Jan.         | Feb.         | Mar.         | Apr.         | May          | Jun.         | Jul.         | Aug.         | Sep.         | Oct.         | Nov.         | Dec.         |
|-----------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| 1               | 26.63        | 26.82        | 26.17        | 26.11        | 27.26        | 27.83        | 27.32        | 25.99        | 25.93        | 26.87        | N/A          | N/A          |
| 2               | 26.54        | 26.32        | 26.28        | 26.48        | 27.00        | 27.78        | 26.54        | 27.04        | 26.24        | 27.13        | N/A          | N/A          |
| 3               | 26.30        | 26.88        | 26.07        | 26.78        | 27.29        | 27.73        | 26.29        | 25.68        | 26.13        | 26.72        | N/A          | N/A          |
| 4               | 26.16        | 27.24        | 26.37        | 26.43        | 27.64        | 27.10        | 26.17        | 25.47        | 26.80        | 26.26        | N/A          | N/A          |
| 5               | 26.05        | 26.80        | 26.36        | 26.11        | 27.65        | 26.75        | 26.31        | 26.84        | 26.38        | 26.89        | N/A          | 26.62        |
| 6               | 26.50        | 26.86        | 26.18        | 26.74        | 27.05        | 26.64        | 26.63        | 26.38        | 26.48        | 26.54        | N/A          | 26.41        |
| 7               | 26.23        | 26.51        | 25.56        | 26.79        | 26.27        | 26.45        | 25.09        | 26.42        | 27.02        | 26.03        | 25.47        | 26.54        |
| 8               | 26.13        | 27.12        | 26.16        | 26.48        | 26.48        | 27.32        | 26.03        | 26.64        | 24.22        | 25.96        | 25.78        | 26.17        |
| 9               | 26.45        | 26.96        | 26.15        | 26.94        | 27.17        | 26.05        | 25.12        | 27.17        | 24.08        | 26.58        | 26.42        | 26.71        |
| 10              | 26.60        | 27.48        | 26.21        | 26.81        | 27.42        | 26.57        | 24.63        | 26.94        | 24.27        | 25.39        | 26.30        | 26.43        |
| 11              | 26.65        | 26.62        | 26.24        | 26.45        | 27.23        | 26.57        | 24.73        | 25.43        | 24.76        | 25.82        | 25.35        | 26.53        |
| 12              | 26.46        | 27.35        | 25.99        | 25.89        | 27.06        | 26.94        | 25.89        | 25.18        | 24.75        | 26.47        | 26.18        | 26.48        |
| 13              | 26.53        | 27.19        | 25.87        | 26.59        | 26.98        | 24.89        | 24.04        | 24.51        | 25.91        | 26.42        | 25.49        | 26.42        |
| 14              | 26.58        | 27.05        | 25.87        | 26.78        | 27.62        | 26.94        | 25.46        | 24.47        | 25.78        | 26.17        | 25.67        | 26.62        |
| 15              | 26.44        | 27.20        | 26.40        | 26.88        | 27.18        | 26.23        | 26.12        | 24.93        | 25.77        | 26.63        | 27.00        | 26.40        |
| 16              | 26.34        | 27.16        | 25.62        | 26.92        | 27.45        | 28.00        | 26.36        | 24.85        | 26.15        | 27.76        | 27.00        | 26.60        |
| 17              | 26.58        | 27.21        | 25.67        | 25.98        | 27.35        | 27.76        | 26.64        | 27.03        | 25.45        | 27.61        | 26.34        | 26.34        |
| 18              | 26.45        | 27.24        | 26.23        | 26.46        | 27.21        | 27.10        | 26.35        | 27.67        | 24.89        | 27.75        | 25.25        | 26.58        |
| 19              | 26.57        | 26.84        | 26.27        | 27.15        | 27.35        | 26.48        | 26.17        | 26.14        | 26.80        | 26.41        | 24.58        | 26.52        |
| 20              | 26.55        | 26.83        | 26.33        | 27.09        | 27.08        | 26.43        | 25.90        | 26.47        | 24.07        | 26.55        | 26.19        | 26.15        |
| 21              | 26.64        | 27.39        | 25.94        | 27.00        | 26.66        | 26.83        | 27.32        | 27.32        | 24.76        | 27.27        | 26.66        | 26.40        |
| 22              | 26.61        | 27.42        | 25.17        | 26.84        | 27.55        | 26.85        | 28.06        | 25.68        | 25.72        | 26.88        | 26.58        | 26.30        |
| 23              | 26.49        | 27.07        | 25.12        | 27.00        | 27.19        | 25.95        | 26.02        | 24.13        | 26.02        | 26.61        | 27.43        | 26.23        |
| 24              | 26.38        | 26.31        | 25.97        | 27.17        | 27.90        | 27.93        | 25.85        | 25.68        | 25.22        | 26.16        | 27.72        | 26.29        |
| 25              | 26.45        | 26.83        | 25.46        | 27.33        | 27.01        | 27.36        | 26.22        | 26.27        | 25.41        | 26.17        | 27.11        | 25.95        |
| 26              | 26.39        | 26.77        | 25.77        | 27.26        | 27.20        | 27.20        | 26.30        | 26.52        | 25.41        | 25.92        | N/A          | 25.93        |
| 27              | 26.51        | 26.96        | 25.52        | 27.33        | 27.28        | 27.45        | 26.13        | 24.64        | 25.80        | N/A          | N/A          | 25.31        |
| 28              | 26.59        | 26.67        | 26.33        | 26.74        | 27.29        | 27.76        | 26.67        | 27.36        | 25.64        | N/A          | N/A          | 25.48        |
| 29              | 26.51        |              | 26.27        | 26.60        | 27.91        | 26.02        | 26.62        | 27.11        | 26.16        | N/A          | N/A          | 26.38        |
| 30              | 25.91        |              | 26.54        | 27.21        | 27.44        | 28.59        | 25.00        | 27.20        | 26.66        | N/A          | N/A          | 26.10        |
| 31              | 26.49        |              | 26.42        |              | 27.30        |              | 24.52        | 26.15        |              | N/A          |              | 26.15        |
| <b>Mo. Avg.</b> | <b>26.44</b> | <b>26.97</b> | <b>26.02</b> | <b>26.75</b> | <b>27.24</b> | <b>26.98</b> | <b>26.02</b> | <b>26.11</b> | <b>25.62</b> | <b>26.58</b> | <b>26.24</b> | <b>26.30</b> |

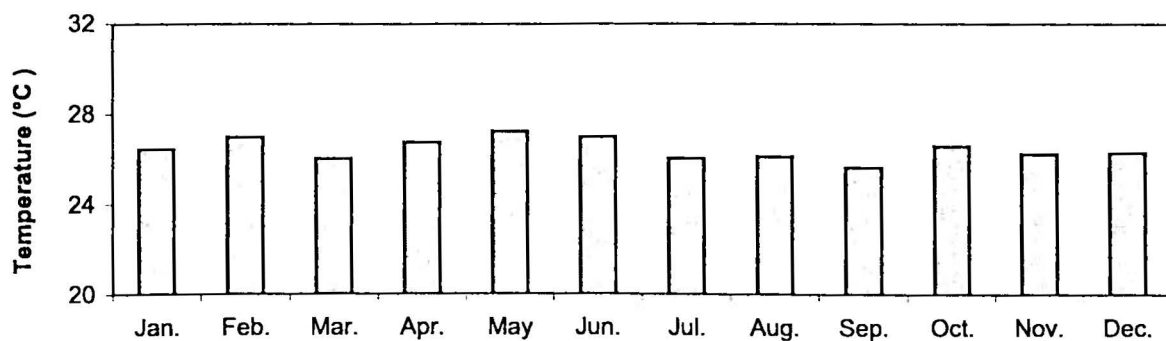


Figure 30: Monthly Average Temperature

**Inarajan Weather Station**  
**Daily and Monthly Average Relative Humidity (%) for Year 2001**

19

| Day             | Jan.         | Feb.         | Mar.         | Apr.         | May          | Jun.         | Jul.         | Aug.         | Sep.         | Oct.         | Nov.         | Dec.         |
|-----------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| 1               | 87.38        | 81.32        | 85.69        | 85.82        | 81.68        | 84.42        | 87.07        | 88.94        | 93.02        | 90.49        | N/A          | N/A          |
| 2               | 87.90        | 84.91        | 83.72        | 83.79        | 83.49        | 83.13        | 87.44        | 86.95        | 92.45        | 89.58        | N/A          | N/A          |
| 3               | 87.35        | 79.67        | 84.20        | 83.74        | 84.9         | 85.07        | 88.33        | 94.96        | 92.55        | 92.36        | N/A          | N/A          |
| 4               | 86.91        | 77.93        | 81.33        | 86.77        | 82.09        | 87.12        | 91.00        | 98.93        | 88.84        | 94.01        | N/A          | N/A          |
| 5               | 80.91        | 81.73        | 82.58        | 87.47        | 81.03        | 85.29        | 92.41        | 92.95        | 91.31        | 93.72        | N/A          | 87.25        |
| 6               | 81.02        | 83.10        | 79.67        | 84.49        | 81.08        | 91.14        | 91.62        | 91.11        | 91.65        | 92.63        | N/A          | 78.40        |
| 7               | 84.75        | 88.91        | 85.03        | 82.10        | 80.01        | 92.32        | 96.28        | 91.31        | 90.45        | 94.86        | 91.53        | 83.51        |
| 8               | 87.91        | 81.82        | 81.69        | 85.80        | 82.31        | 87.37        | 89.21        | 93.70        | 97.56        | 96.08        | 95.87        | 85.91        |
| 9               | 80.70        | 82.07        | 82.36        | 82.63        | 77.59        | 92.32        | 93.38        | 87.40        | 97.45        | 93.81        | 90.84        | 85.10        |
| 10              | 76.13        | 75.55        | 79.20        | 82.40        | 77.17        | 90.27        | 94.42        | 90.81        | 96.77        | 97.91        | 90.08        | 87.53        |
| 11              | 82.45        | 82.73        | 78.73        | 80.20        | 81.71        | 88.84        | 94.53        | 96.36        | 93.76        | 93.51        | 92.27        | 88.26        |
| 12              | 86.48        | 79.66        | 82.11        | 81.09        | 83.34        | 88.63        | 92.09        | 99.72        | 93.79        | 91.43        | 89.80        | 89.87        |
| 13              | 82.24        | 81.08        | 81.97        | 81.61        | 85.44        | 96.36        | 94.66        | 100.76       | 89.16        | 88.60        | 88.16        | 81.47        |
| 14              | 83.37        | 87.07        | 82.74        | 84.29        | 83.39        | 88.26        | 91.16        | 101.72       | 88.56        | 98.50        | 90.79        | 76.72        |
| 15              | 80.54        | 84.91        | 78.27        | 85.64        | 85.80        | 94.15        | 90.85        | 97.67        | 88.75        | 95.29        | 85.10        | 74.66        |
| 16              | 81.80        | 77.80        | 89.39        | 81.36        | 83.06        | 83.08        | 91.62        | 97.29        | 91.76        | 87.87        | 85.10        | 74.35        |
| 17              | 77.39        | 78.34        | 90.44        | 84.11        | 80.03        | 85.63        | 90.65        | 87.36        | 94.52        | 86.18        | 90.15        | 81.38        |
| 18              | 82.78        | 80.46        | 86.42        | 83.63        | 80.63        | 86.93        | 91.19        | 86.88        | 94.78        | 86.54        | 94.32        | 86.99        |
| 19              | 79.62        | 77.05        | 83.85        | 83.05        | 77.18        | 90.04        | 87.75        | 94.28        | 89.53        | 91.71        | 97.93        | 86.96        |
| 20              | 78.37        | 76.45        | 83.52        | 81.59        | 90.51        | 92.33        | 88.27        | 93.36        | 100.66       | 89.31        | 93.59        | 88.51        |
| 21              | 78.98        | 78.88        | 82.95        | 83.89        | 91.41        | 91.22        | 85.87        | 92.08        | 90.69        | 85.69        | 90.60        | 88.43        |
| 22              | 81.35        | 80.58        | 83.55        | 86.14        | 86.83        | 89.60        | 84.83        | 99.73        | 89.00        | 85.57        | 89.69        | 87.54        |
| 23              | 80.26        | 77.82        | 83.54        | 82.90        | 87.44        | 90.75        | 91.20        | 99.95        | 90.32        | 90.82        | 89.59        | 88.43        |
| 24              | 79.91        | 84.31        | 82.82        | 82.95        | 84.30        | 83.75        | 90.28        | 96.37        | 95.05        | 88.34        | 86.97        | 88.85        |
| 25              | 78.38        | 82.90        | 84.48        | 83.13        | 85.44        | 89.55        | 91.89        | 95.21        | 92.50        | 88.72        | 90.34        | 88.15        |
| 26              | 82.64        | 84.51        | 84.91        | 83.83        | 84.74        | 88.99        | 87.89        | 89.38        | 90.75        | 89.90        | N/A          | 91.87        |
| 27              | 83.88        | 83.00        | 82.49        | 81.24        | 83.58        | 86.84        | 91.22        | 98.65        | 93.22        | N/A          | N/A          | 95.40        |
| 28              | 82.29        | 84.23        | 82.30        | 84.83        | 83.94        | 85.60        | 89.86        | 86.56        | 91.01        | N/A          | N/A          | 94.26        |
| 29              | 73.89        |              | 82.65        | 85.25        | 82.12        | 93.16        | 90.44        | 89.65        | 91.57        | N/A          | N/A          | 86.28        |
| 30              | 86.14        |              | 83.51        | 83.18        | 86.02        | 83.48        | 91.47        | 89.83        | 91.25        | N/A          | N/A          | 86.63        |
| 31              | 76.77        |              | 83.56        |              | 85.86        |              | 95.17        | 96.73        |              | N/A          |              | 85.91        |
| <b>Mo. Avg.</b> | <b>81.95</b> | <b>81.39</b> | <b>83.22</b> | <b>83.63</b> | <b>83.36</b> | <b>88.52</b> | <b>90.78</b> | <b>93.84</b> | <b>92.42</b> | <b>91.29</b> | <b>90.67</b> | <b>85.80</b> |

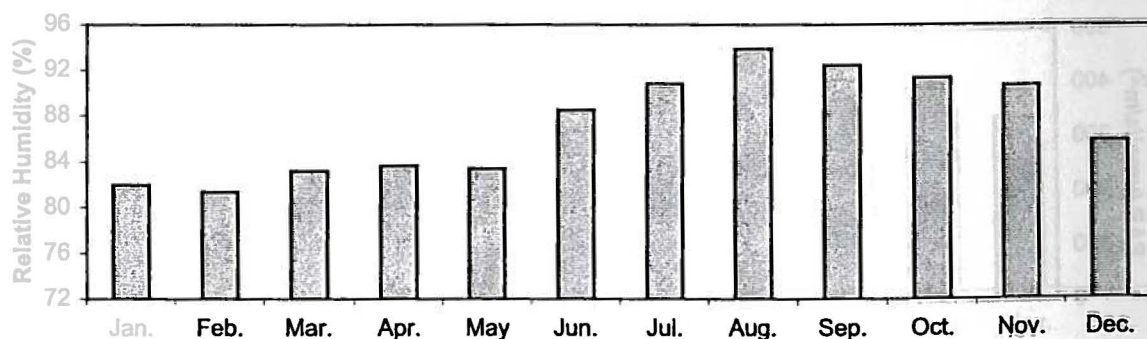


Figure 31: Monthly Average Relative Humidity

**Inarajan Weather Station**  
**Photosynthetically Active Radiation (PAR) Average Flux Density ( $\mu\text{mol/s/m}^2$ ) for Year 2001**

| Day     | Jan.   | Feb.   | Mar.   | Apr.   | May    | Jun.   | Jul.   | Aug.   | Sep.   | Oct.   | Nov.   | Dec.   |
|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 1       | 347.65 | 376.46 | 408.00 | 451.94 | 405.69 | 422.52 | 290.48 | 424.00 | 397.44 | 442.20 | N/A    | N/A    |
| 2       | 403.58 | 327.36 | 412.88 | 461.93 | 380.53 | 451.18 | 194.32 | 346.39 | 401.56 | 451.63 | N/A    | N/A    |
| 3       | 377.15 | 419.39 | 441.45 | 466.24 | 358.04 | 404.28 | 279.34 | 241.20 | 376.67 | 425.98 | N/A    | N/A    |
| 4       | 273.26 | 410.40 | 411.57 | 469.84 | 384.88 | 291.06 | 304.82 | 194.83 | 422.56 | 385.72 | N/A    | N/A    |
| 5       | 389.23 | 401.21 | 428.17 | 448.54 | 360.47 | 282.53 | 344.46 | 391.48 | 463.36 | 345.88 | N/A    | 269.67 |
| 6       | 346.11 | 387.62 | 433.79 | 469.59 | 402.68 | 287.19 | 332.50 | 405.68 | 290.59 | 464.37 | N/A    | 339.14 |
| 7       | 306.99 | 319.10 | 359.16 | 489.64 | 460.69 | 237.76 | 137.54 | 323.14 | 401.62 | 321.67 | 301.97 | 266.81 |
| 8       | 205.27 | 359.39 | 458.90 | 477.15 | 511.10 | 319.86 | 390.90 | 356.25 | 206.34 | 357.13 | 230.29 | 212.64 |
| 9       | 378.57 | 386.37 | 371.31 | 481.37 | 469.62 | 249.25 | 224.60 | 385.35 | 217.51 | 440.50 | 314.00 | 293.47 |
| 10      | 356.52 | 401.36 | 434.19 | 454.36 | 463.21 | 317.30 | 203.87 | 339.52 | 262.80 | 171.82 | 336.88 | 270.79 |
| 11      | 277.65 | 384.55 | 437.76 | 509.66 | 379.41 | 370.00 | 182.44 | 155.55 | 274.41 | 401.14 | 240.33 | 276.94 |
| 12      | 298.42 | 390.85 | 424.00 | 496.09 | 441.33 | 390.61 | 432.80 | 211.90 | 362.67 | 498.62 | 319.33 | 282.79 |
| 13      | 295.00 | 375.37 | 456.18 | 472.94 | 409.51 | 109.59 | 241.39 | 83.81  | 480.61 | 465.66 | 364.95 | 249.13 |
| 14      | 301.96 | 351.69 | 425.96 | 458.27 | 426.74 | 340.67 | 370.71 | 86.22  | 470.59 | 178.93 | 324.48 | 265.54 |
| 15      | 365.03 | 366.89 | 458.76 | 474.83 | 377.04 | 188.99 | 392.67 | 84.46  | 323.04 | 271.76 | 326.69 | 316.17 |
| 16      | 352.03 | 379.72 | 300.58 | 468.82 | 438.56 | 401.60 | 322.04 | 74.67  | 395.35 | 445.25 | 326.69 | 308.00 |
| 17      | 414.07 | 423.49 | 383.06 | 430.24 | 481.21 | 431.46 | 418.99 | 161.65 | 303.89 | 452.28 | 294.09 | 279.70 |
| 18      | 212.64 | 442.59 | 386.49 | 480.43 | 389.36 | 345.69 | 384.88 | 274.60 | 124.35 | 455.53 | 176.93 | 297.30 |
| 19      | 348.35 | 440.50 | 431.23 | 505.72 | 501.28 | 132.87 | 380.65 | 255.57 | 395.64 | 348.76 | 91.18  | 275.76 |
| 20      | 372.54 | 420.21 | 423.82 | 493.58 | 254.73 | 229.52 | 391.54 | 328.64 | 113.95 | 432.28 | 224.15 | 257.14 |
| 21      | 351.29 | 402.54 | 449.16 | 452.22 | 278.10 | 371.55 | 424.30 | 363.70 | 319.29 | 426.84 | 301.05 | 298.68 |
| 22      | 318.14 | 402.34 | 485.34 | 463.45 | 288.03 | 384.43 | 413.56 | 207.73 | 377.85 | 412.11 | 248.57 | 262.76 |
| 23      | 389.68 | 459.25 | 454.14 | 497.18 | 469.52 | 315.20 | 324.71 | 146.16 | 446.83 | 425.80 | 291.88 | 207.39 |
| 24      | 375.37 | 387.54 | 405.03 | 476.77 | 463.16 | 412.65 | 365.62 | 300.49 | 268.58 | 432.97 | 357.56 | 280.05 |
| 25      | 375.92 | 426.80 | 265.40 | 489.20 | 492.58 | 379.94 | 380.57 | 338.88 | 384.69 | 469.31 | 318.62 | 323.75 |
| 26      | 353.13 | 412.27 | 463.29 | 471.67 | 453.76 | 427.97 | 417.58 | 304.48 | 287.86 | 475.69 | N/A    | 283.64 |
| 27      | 348.95 | 458.46 | 425.08 | 476.19 | 415.64 | 388.70 | 376.37 | 172.09 | 389.57 | N/A    | N/A    | 181.06 |
| 28      | 351.73 | 418.92 | 423.36 | 484.66 | 382.21 | 225.76 | 364.13 | 312.58 | 327.32 | N/A    | N/A    | 87.66  |
| 29      | 408.97 |        | 403.86 | 477.50 | 417.23 | 247.20 | 352.75 | 269.75 | 321.68 | N/A    | N/A    | 279.11 |
| 30      | 247.16 |        | 386.91 | 477.62 | 371.14 | 385.07 | 400.84 | 352.06 | 432.21 | N/A    | N/A    | 263.28 |
| 31      | 432.14 |        | 428.60 |        | 274.61 |        | 290.32 | 251.49 |        | N/A    | N/A    | 280.12 |
| Mo.Avg. | 341.11 | 397.59 | 415.40 | 474.25 | 406.52 | 324.68 | 333.28 | 262.72 | 341.36 | 399.99 | 283.67 | 266.98 |

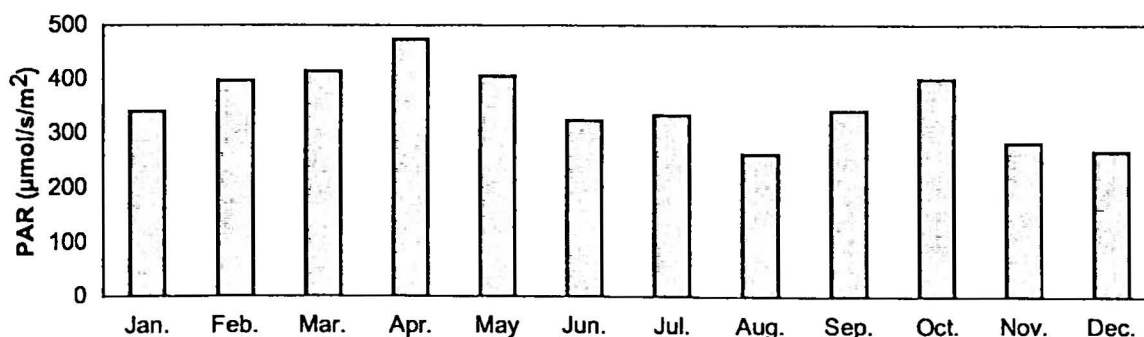


Figure 32: Monthly Average PAR

**Inarajan Weather Station**  
**Global Solar Radiation Average Flux Density (W/m<sup>2</sup>) for Year 2001**

21

| Day      | Jan. | Feb. | Mar. | Apr. | May | Jun. | Jul. | Aug. | Sep. | Oct. | Nov. | Dec. |
|----------|------|------|------|------|-----|------|------|------|------|------|------|------|
| 1        | 219  | 252  | 266  | 252  | 316 | 311  | 217  | 300  | N/A  | 294  | 120  | 216  |
| 2        | 236  | 210  | 303  | 298  | 303 | 309  | 98   | 258  | N/A  | 277  | 175  | 186  |
| 3        | 231  | 26   | 297  | 30   | 279 | 7    | 6    | 12   | N/A  | 148  | 91   | 225  |
| 4        | 195  | 255  | 294  | 297  | 300 | 277  | 222  | 216  | N/A  | 231  | 24   | 228  |
| 5        | 241  | 255  | 288  | 292  | 282 | 209  | N/A  | 308  | N/A  | 231  | 217  | 211  |
| 6        | 206  | 229  | 289  | 309  | 306 | 234  | N/A  | 274  | 250  | 294  | 246  | 244  |
| 7        | 187  | 186  | 238  | 304  | N/A | 224  | N/A  | 242  | 251  | 237  | 267  | 175  |
| 8        | 143  | 234  | 290  | 282  | N/A | 300  | N/A  | 298  | 160  | 266  | 175  | 156  |
| 9        | 244  | 242  | 159  | 312  | N/A | 306  | N/A  | 278  | 191  | 245  | 212  | 212  |
| 10       | 213  | 227  | 294  | 308  | N/A | 176  | N/A  | 203  | 197  | 126  | 241  | 207  |
| 11       | 173  | 216  | 287  | 319  | N/A | 271  | N/A  | 89   | 208  | 235  | 199  | 229  |
| 12       | 198  | 231  | 277  | 315  | 302 | N/A  | N/A  | 160  | 209  | 282  | 203  | 214  |
| 13       | 188  | 188  | 298  | 314  | 300 | N/A  | N/A  | 71   | 258  | 283  | 259  | 188  |
| 14       | 214  | 228  | 290  | 256  | 297 | N/A  | N/A  | 41   | 284  | 79   | 222  | 216  |
| 15       | 250  | 228  | 304  | 290  | 294 | 129  | N/A  | 57   | 300  | 222  | 237  | 226  |
| 16       | 211  | 225  | 225  | 307  | 316 | 261  | N/A  | 49   | 225  | 252  | 194  | 223  |
| 17       | 238  | 260  | 231  | 301  | 328 | 292  | 303  | 119  | 175  | 271  | 164  | 223  |
| 18       | 133  | 270  | 227  | 312  | 318 | 222  | 275  | 206  | 67   | 171  | 27   | 199  |
| 19       | 243  | 268  | 268  | 324  | 326 | 109  | 282  | 244  | 246  | 233  | 172  | 203  |
| 20       | 205  | 282  | 289  | 319  | 207 | 147  | 307  | 261  | 57   | 259  | 157  | 172  |
| 21       | 220  | 241  | 307  | 301  | 179 | 279  | 289  | 274  | 208  | 230  | 190  | 228  |
| 22       | 243  | 265  | 317  | 302  | 213 | 269  | 297  | 184  | 274  | 264  | 214  | 219  |
| 23       | 253  | 281  | 281  | 32   | 242 | 237  | 243  | 110  | 269  | 241  | 233  | 170  |
| 24       | 254  | 270  | 287  | 293  | 305 | 305  | 183  | 219  | 207  | 270  | 237  | 215  |
| 25       | 247  | 273  | 240  | 308  | 317 | 250  | 279  | 224  | 244  | 271  | 239  | 233  |
| 26       | 220  | 243  | 287  | 291  | 312 | 261  | 308  | 242  | 250  | 218  | 238  | 182  |
| 27       | 176  | 283  | 310  | 288  | 274 | 295  | 249  | 100  | 155  | 240  | 223  | 144  |
| 28       | 255  | 270  | 308  | 287  | 265 | 162  | 238  | 232  | 257  | 278  | 240  | 34   |
| 29       | 257  |      | 305  | 288  | 306 | 183  | 287  | 260  | 214  | 273  | 246  | 173  |
| 30       | 158  |      | 244  | 310  | 222 | 294  | 284  | 241  | 287  | 261  | 236  | 160  |
| 31       | 260  |      | 288  |      | 229 |      | 198  | N/A  |      | 278  |      | 185  |
| Mo. Avg. | 217  | 246  | 277  | 300  | 282 | 244  | 249  | 196  | 218  | 241  | 195  | 197  |

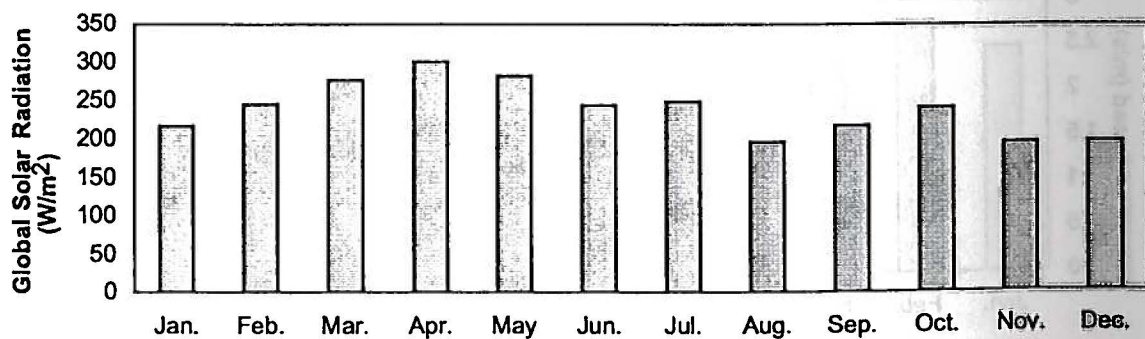


Figure 33: Monthly Average Global Solar Radiation

**Inarajan Weather Station**  
**Daily and Monthly Average Wind Speed (m/s) for Year 2001**

| Day      | Jan. | Feb. | Mar. | Apr. | May  | Jun. | Jul. | Aug. | Sep. | Oct. | Nov. | Dec. |
|----------|------|------|------|------|------|------|------|------|------|------|------|------|
| 1        | 1.04 | 2.71 | 3.52 | 1.65 | 2.53 | 2.03 | 3.48 | 1.01 | N/A  | 1.27 | 1.83 | 2.69 |
| 2        | 0.86 | 2.28 | 2.27 | 2.19 | 2.30 | 1.91 | 1.92 | 1.14 | N/A  | 1.32 | 2.56 | 2.79 |
| 3        | 1.45 | 2.30 | 2.43 | 2.34 | 2.72 | 1.68 | 1.41 | 0.42 | N/A  | 1.01 | 2.75 | 3.03 |
| 4        | 1.55 | 2.84 | 2.75 | 2.08 | 2.55 | 1.28 | 1.54 | 0.66 | N/A  | 0.54 | 1.49 | 3.00 |
| 5        | 1.93 | 2.95 | 2.41 | 2.17 | 2.10 | 1.20 | N/A  | 0.64 | N/A  | 0.63 | 1.58 | 2.62 |
| 6        | 2.56 | 2.90 | 2.53 | 2.62 | 2.52 | 1.32 | N/A  | 0.45 | 1.35 | 1.04 | 0.90 | 2.32 |
| 7        | 3.31 | 2.52 | 2.59 | 2.39 | N/A  | 1.01 | N/A  | 0.56 | 1.27 | 0.83 | 1.81 | 2.38 |
| 8        | 3.13 | 3.02 | 2.34 | 2.48 | N/A  | 1.05 | N/A  | 0.65 | 0.71 | 0.76 | 1.30 | 2.71 |
| 9        | 3.06 | 3.03 | 2.06 | 2.88 | N/A  | 1.05 | N/A  | 1.38 | 0.77 | 0.73 | 0.99 | 2.68 |
| 10       | 3.34 | 3.59 | 2.70 | 2.52 | N/A  | 0.96 | N/A  | 1.50 | 0.62 | 1.16 | 1.00 | 2.17 |
| 11       | 2.73 | 2.89 | 2.87 | 2.22 | N/A  | 1.44 | N/A  | 2.28 | 1.02 | 0.87 | 0.99 | 1.71 |
| 12       | 2.03 | 3.10 | 2.58 | 1.77 | 2.63 | N/A  | N/A  | 1.56 | 0.51 | 1.31 | 0.91 | 2.13 |
| 13       | 3.15 | 3.26 | 2.08 | 2.25 | 2.46 | N/A  | N/A  | 3.01 | 0.76 | 1.49 | 1.18 | 3.49 |
| 14       | 2.26 | 3.71 | 2.31 | 2.70 | 2.45 | N/A  | N/A  | 2.76 | 1.06 | 1.06 | 1.54 | 2.90 |
| 15       | 2.04 | 3.45 | 2.68 | 2.45 | 2.58 | 0.97 | N/A  | 3.65 | 1.33 | 1.28 | 1.89 | 2.92 |
| 16       | 2.57 | 3.41 | 2.47 | 2.67 | 2.46 | 2.01 | N/A  | 3.42 | 1.07 | 2.58 | 2.64 | 3.21 |
| 17       | 2.37 | 3.00 | 2.40 | 2.38 | 2.44 | 2.62 | 0.89 | 3.01 | 0.70 | 2.40 | 1.83 | 2.84 |
| 18       | 2.74 | 2.72 | 2.43 | 2.71 | 2.37 | 2.35 | 0.51 | 2.34 | 1.97 | 2.41 | 1.25 | 2.87 |
| 19       | 2.70 | 2.31 | 2.19 | 2.87 | 2.07 | 1.81 | 0.58 | 1.02 | 1.48 | 1.82 | 0.90 | 2.63 |
| 20       | 2.75 | 2.37 | 2.34 | 2.85 | 1.63 | 1.16 | 1.02 | 1.37 | 0.90 | 1.78 | 1.87 | 2.76 |
| 21       | 3.19 | 2.83 | 2.00 | 2.60 | 1.48 | 1.48 | 1.11 | 1.79 | 1.03 | 2.07 | 2.85 | 2.69 |
| 22       | 2.74 | 2.62 | 1.57 | 2.48 | 2.67 | 1.21 | 2.71 | 0.80 | 0.74 | 1.73 | 2.57 | 1.64 |
| 23       | 2.25 | 2.33 | 1.83 | 2.78 | 1.89 | 1.54 | 0.96 | 0.98 | 1.17 | 1.53 | 2.43 | 2.22 |
| 24       | 2.17 | 2.12 | 1.80 | 2.93 | 1.50 | 1.99 | 0.84 | 1.43 | 0.98 | 1.62 | 1.55 | 2.27 |
| 25       | 2.54 | 2.20 | 2.03 | 2.64 | 1.09 | 1.88 | 0.54 | 1.73 | 1.34 | 1.60 | 0.76 | 1.97 |
| 26       | 2.85 | 1.90 | 1.76 | 2.74 | 1.86 | 1.77 | 0.84 | 2.52 | 1.04 | 1.27 | 1.06 | 1.07 |
| 27       | 2.39 | 2.57 | 2.00 | 2.57 | 1.73 | 2.12 | 0.55 | 2.21 | 0.71 | 1.21 | 1.89 | 2.51 |
| 28       | 2.67 | 2.77 | 2.44 | 2.49 | 1.98 | 2.39 | 0.77 | 2.74 | 1.01 | 1.01 | 2.19 | 2.29 |
| 29       | 2.95 |      | 2.41 | 2.52 | 2.27 | 2.47 | 0.84 | 2.49 | 1.27 | 1.54 | 2.40 | 2.45 |
| 30       | 2.37 |      | 2.12 | 2.37 | 1.96 | 3.43 | 0.66 | 1.81 | 1.11 | 2.08 | 2.43 | 2.37 |
| 31       | 3.16 |      | 2.17 |      | 1.79 |      | 0.46 | N/A  |      | 2.31 |      | 2.56 |
| Mo. Avg. | 2.48 | 2.78 | 2.32 | 2.48 | 2.16 | 1.71 | 1.14 | 1.71 | 1.04 | 1.43 | 1.71 | 2.51 |

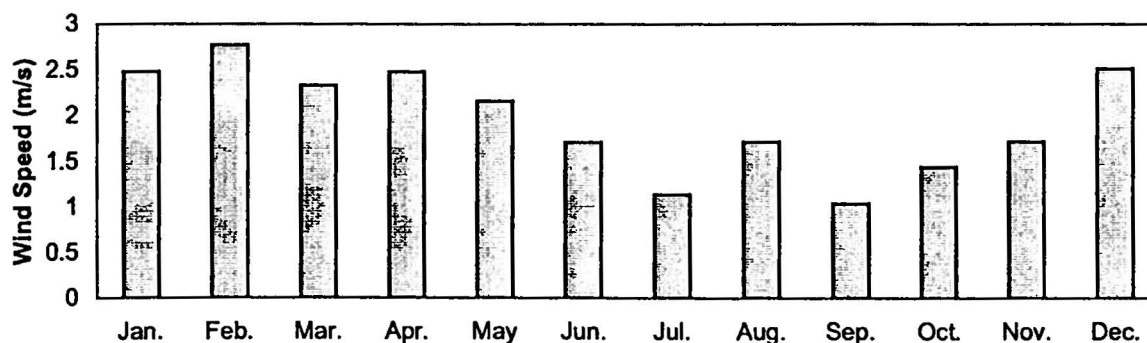


Figure 34: Monthly Average Wind Speed

**Inarajan Weather Station**  
**Daily and Monthly Average Wind Direction (0–360 Degrees from North) for Year 2001**

23

| Day     | Jan. | Feb. | Mar. | Apr. | May | Jun. | Jul. | Aug. | Sep. | Oct. | Nov. | Dec. |
|---------|------|------|------|------|-----|------|------|------|------|------|------|------|
| 1       | 193  | 89   | 88   | 114  | 90  | 87   | 120  | 160  | N/A  | 102  | 140  | 89   |
| 2       | 187  | 90   | 88   | 93   | 87  | 88   | 139  | 141  | N/A  | 190  | 99   | 90   |
| 3       | 171  | 86   | 92   | 89   | 88  | N/A  | 159  | 251  | N/A  | 256  | 90   | 87   |
| 4       | 105  | 88   | 87   | N/A  | 87  | 211  | 240  | 223  | N/A  | 230  | 145  | 90   |
| 5       | 96   | 89   | 89   | N/A  | 85  | 228  | N/A  | 204  | N/A  | 189  | 134  | 96   |
| 6       | 91   | 88   | 90   | N/A  | 90  | 243  | N/A  | 230  | 237  | 186  | 155  | 94   |
| 7       | 89   | 92   | 94   | 87   | N/A | 218  | N/A  | 222  | 238  | 216  | 169  | 95   |
| 8       | 90   | 89   | 91   | N/A  | N/A | 243  | N/A  | 175  | 255  | 205  | 118  | 94   |
| 9       | 91   | 92   | 109  | 86   | N/A | 240  | N/A  | 125  | 245  | 201  | 157  | 92   |
| 10      | 89   | 91   | 90   | 95   | N/A | 258  | N/A  | 127  | 250  | 197  | 175  | 104  |
| 11      | 89   | 99   | 87   | 98   | N/A | 220  | N/A  | 135  | 263  | 216  | 248  | 131  |
| 12      | 97   | 88   | 90   | 129  | 89  | N/A  | N/A  | 173  | 246  | 155  | 205  | 111  |
| 13      | 89   | 88   | 87   | 88   | 89  | N/A  | N/A  | 231  | 251  | 115  | 208  | 98   |
| 14      | 97   | 96   | 90   | 88   | 87  | N/A  | N/A  | 222  | 261  | 217  | 175  | 95   |
| 15      | 98   | 90   | 90   | 74   | 89  | 153  | N/A  | 231  | 218  | 110  | 93   | 100  |
| 16      | 94   | 89   | 94   | N/A  | 86  | 94   | N/A  | 224  | 231  | 93   | 94   | 99   |
| 17      | 92   | 91   | 88   | N/A  | 91  | 97   | 181  | 210  | 176  | 92   | 119  | 110  |
| 18      | 103  | 88   | 88   | 93   | 89  | 119  | 223  | 201  | 133  | 94   | 123  | 97   |
| 19      | 89   | 92   | 90   | 95   | 97  | 113  | 224  | 225  | 155  | 131  | 137  | 108  |
| 20      | 88   | 89   | 91   | 89   | 135 | 127  | 211  | 222  | 221  | 143  | 127  | 109  |
| 21      | 90   | 89   | 94   | 84   | 108 | 121  | 155  | 116  | 221  | 109  | 93   | 92   |
| 22      | 88   | 86   | 193  | 95   | 91  | 145  | 100  | 221  | 239  | 148  | 112  | 141  |
| 23      | 92   | 99   | 126  | 83   | 115 | 155  | 183  | 247  | 246  | 196  | 103  | 278  |
| 24      | 96   | 96   | 92   | 85   | 126 | 96   | 153  | 247  | 256  | 265  | 138  | 290  |
| 25      | 94   | 89   | 91   | 82   | 178 | 87   | 191  | 237  | 241  | 282  | 169  | 294  |
| 26      | 89   | 87   | 99   | 82   | 152 | 106  | 192  | 225  | 222  | 246  | 146  | 196  |
| 27      | 87   | 86   | 89   | 84   | 92  | 109  | 210  | 218  | 204  | 224  | 91   | 147  |
| 28      | 87   | 89   | 89   | 91   | 92  | 92   | 204  | 216  | 250  | 149  | 96   | 124  |
| 29      | 88   |      | 90   | 85   | 83  | 93   | 179  | 224  | 142  | 110  | 91   | 91   |
| 30      | 103  |      | 94   | 85   | 86  | 82   | 187  | 237  | 136  | 90   | 94   | 103  |
| 31      | 88   |      | 90   |      | 99  |      | 255  | N/A  |      | 90   |      | 91   |
| Mo.Avg. | 101  | 90   | 95   | 90   | 100 | 147  | 185  | 204  | 221  | 169  | 135  | 124  |

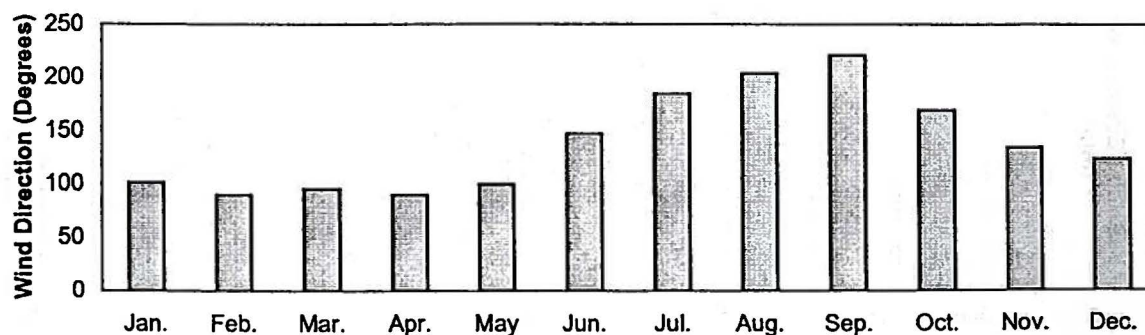


Figure 35: Monthly Average Wind Direction

**Inarajan Weather Station**  
**Daily and Monthly Total Atmometer Evaporation (ET Gauge) (mm) for Year 2001**

| Day       | Jan.   | Feb.   | Mar.   | Apr.   | May    | Jun.   | Jul.   | Aug.  | Sep.   | Oct.   | Nov.  | Dec.   |
|-----------|--------|--------|--------|--------|--------|--------|--------|-------|--------|--------|-------|--------|
| 1         | 2.70   | 4.74   | 5.44   | 4.16   | 6.60   | N/A    | 3.30   | 5.84  | N/A    | 5.84   | 1.52  | 3.81   |
| 2         | 3.13   | 3.07   | 5.61   | 5.33   | 6.01   | N/A    | 2.03   | 4.32  | N/A    | 5.08   | 2.54  | 3.81   |
| 3         | 3.35   | 4.96   | 4.77   | 5.63   | 5.84   | N/A    | 3.05   | 1.78  | N/A    | 2.03   | 0.51  | 4.32   |
| 4         | 3.11   | 4.68   | 5.40   | 5.59   | 6.01   | N/A    | 3.56   | 3.56  | N/A    | 4.06   | 0.25  | 4.32   |
| 5         | 4.66   | 4.47   | 5.03   | 5.59   | 6.01   | N/A    | N/A    | 5.59  | N/A    | 4.32   | 3.81  | 3.56   |
| 6         | 4.01   | 3.95   | 5.73   | 6.60   | 6.60   | N/A    | N/A    | 5.08  | 3.56   | 5.08   | 4.06  | 4.83   |
| 7         | 3.80   | N/A    | 3.53   | 6.35   | N/A    | 4.32   | N/A    | 4.83  | 4.32   | 3.81   | 4.83  | 4.06   |
| 8         | 2.36   | 4.43   | 5.30   | 5.59   | N/A    | 5.59   | N/A    | 5.33  | 1.78   | 4.57   | 2.03  | 3.56   |
| 9         | 4.15   | 3.37   | N/A    | 6.60   | N/A    | 6.01   | N/A    | 4.57  | 3.05   | 4.06   | 2.79  | 4.06   |
| 10        | 4.57   | 5.34   | 5.92   | 6.60   | N/A    | 1.78   | N/A    | 3.05  | 3.30   | 1.52   | 4.83  | 3.56   |
| 11        | 3.30   | 3.13   | 5.53   | 6.86   | N/A    | 5.08   | N/A    | 0.76  | 3.30   | 3.56   | 3.56  | 4.57   |
| 12        | 3.07   | 4.71   | 5.01   | 6.60   | 6.42   | N/A    | N/A    | 2.03  | 3.56   | 4.83   | 3.30  | 3.81   |
| 13        | 3.72   | 3.51   | 5.34   | 6.35   | 5.84   | N/A    | N/A    | 0.25  | 4.83   | 5.84   | 4.83  | 3.56   |
| 14        | 3.26   | 3.15   | 5.38   | 4.06   | 5.59   | N/A    | N/A    | 0.00  | 5.59   | 1.02   | 4.06  | 5.08   |
| 15        | 4.81   | 4.00   | 6.12   | 5.08   | 5.33   | 2.03   | N/A    | 0.00  | 5.84   | 3.56   | 5.08  | 5.59   |
| 16        | 3.88   | 4.28   | 2.79   | 6.35   | 6.86   | 4.83   | N/A    | 0.25  | 4.32   | 3.81   | 2.79  | 5.33   |
| 17        | 4.01   | 5.12   | 2.48   | 5.59   | 6.86   | 5.59   | 5.33   | 2.29  | 2.79   | 5.33   | 1.27  | 4.57   |
| 18        | 2.01   | 4.73   | 4.22   | 6.35   | 6.86   | 3.81   | 4.32   | 4.32  | 1.02   | 2.29   | 0.00  | 3.05   |
| 19        | 4.94   | 4.93   | 4.65   | 6.60   | 7.11   | 1.52   | 5.33   | 4.57  | 4.32   | 3.81   | 2.29  | 3.81   |
| 20        | 4.25   | 4.64   | N/A    | 6.60   | 3.30   | 1.78   | 5.84   | 4.06  | 0.51   | 3.81   | 1.78  | 3.05   |
| 21        | 4.01   | 4.72   | 5.34   | 5.84   | 3.05   | 4.32   | 5.08   | 4.32  | 3.56   | 3.56   | 3.05  | 4.57   |
| 22        | 4.47   | 4.74   | 5.27   | 4.83   | 4.32   | 4.32   | 5.59   | 2.54  | 5.08   | 5.33   | 3.30  | 4.06   |
| 23        | 4.55   | 5.38   | 4.69   | 6.60   | 2.64   | 4.06   | 3.05   | 1.02  | 4.83   | 4.06   | 4.57  | 2.79   |
| 24        | 4.76   | 3.95   | 4.88   | 5.84   | 4.83   | 6.01   | 3.30   | 3.05  | 3.56   | 5.08   | 4.57  | 3.30   |
| 25        | 3.49   | 4.70   | 3.96   | 6.35   | 5.05   | 4.83   | 4.57   | 3.30  | 4.57   | 5.08   | 4.32  | 4.06   |
| 26        | 5.61   | 3.68   | 4.59   | 5.59   | 6.16   | 3.81   | 5.33   | 4.83  | 4.83   | 4.57   | 4.32  | 3.05   |
| 27        | 2.64   | 5.90   | 5.30   | 5.59   | 5.41   | 5.84   | 4.06   | 0.76  | 2.29   | 4.57   | 4.57  | 1.02   |
| 28        | 4.86   | 2.84   | 5.23   | 5.33   | 4.34   | 2.29   | 4.06   | 3.81  | 4.57   | 5.08   | 5.08  | 0.25   |
| 29        | 5.37   |        | 5.92   | 5.08   | 5.30   | 2.79   | 5.08   | 4.32  | 3.56   | 5.33   | 5.33  | 3.05   |
| 30        | 1.68   |        | 4.08   | 6.01   | N/A    | 5.59   | 5.08   | 3.81  | 5.59   | 5.59   | 4.57  | 2.79   |
| 31        | 5.86   |        | 5.16   |        | N/A    |        | 2.79   | N/A   |        | 5.84   |       | 3.81   |
| Mo. Total | 120.42 | 121.47 | 152.61 | 175.64 | 171.30 | 123.37 | 131.79 | 97.38 | 113.39 | 132.33 | 99.82 | 115.06 |

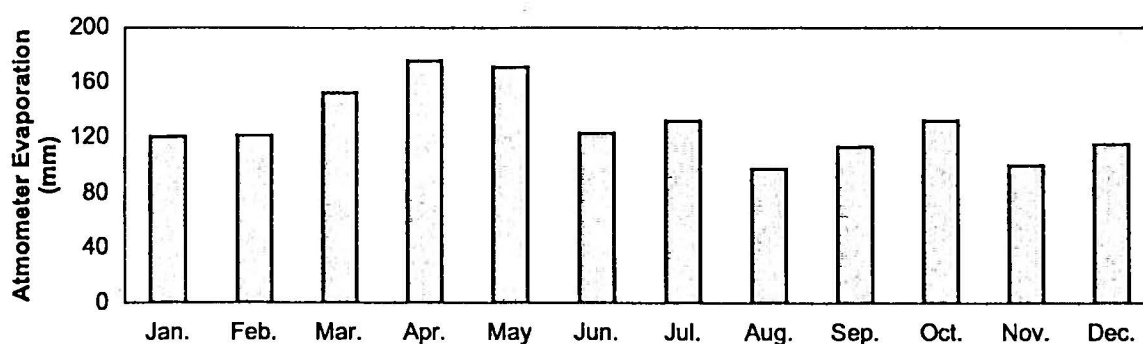


Figure 36: Monthly Total Atmometer Evaporation

**Inarajan Weather Station**  
**Daily and Monthly Total Pan Evaporation (mm) for Year 2001**

25

| Day      | Jan.   | Feb.   | Mar.   | Apr.   | May    | Jun.   | Jul.   | Aug.   | Sep.   | Oct.   | Nov.   | Dec.   |
|----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 1        | 3.18   | 5.58   | 6.40   | 4.90   | 6.95   | N/A    | 3.79   | 6.72   | N/A    | 6.72   | 1.75   | 4.38   |
| 2        | 3.69   | 3.61   | 6.60   | 6.26   | 6.39   | N/A    | 1.77   | 4.97   | N/A    | 5.84   | 2.92   | 4.38   |
| 3        | 3.94   | 5.84   | 5.61   | 6.62   | 5.52   | N/A    | 2.30   | 2.04   | N/A    | 2.34   | 0.58   | 4.97   |
| 4        | 3.65   | 5.50   | 6.36   | 5.54   | 6.80   | N/A    | 3.95   | 4.09   | N/A    | 4.67   | 0.29   | 4.97   |
| 5        | 5.48   | 5.26   | 5.92   | 5.47   | 6.12   | N/A    | N/A    | 6.43   | N/A    | 4.97   | 4.38   | 4.09   |
| 6        | 4.72   | 4.64   | 6.75   | 6.78   | 6.46   | N/A    | N/A    | 5.84   | 4.09   | 5.84   | 4.67   | 5.55   |
| 7        | 4.47   | N/A    | 4.16   | 6.28   | N/A    | 6.66   | N/A    | 5.55   | 4.97   | 4.38   | 5.55   | 4.67   |
| 8        | 2.78   | 5.21   | 6.23   | 5.08   | N/A    | 6.65   | N/A    | 6.13   | 2.04   | 5.26   | 2.34   | 4.09   |
| 9        | 4.89   | 3.97   | N/A    | 6.70   | N/A    | 7.25   | N/A    | 5.26   | 3.51   | 4.67   | 3.21   | 4.67   |
| 10       | 5.38   | 6.28   | 6.96   | 6.57   | N/A    | 2.12   | N/A    | 3.51   | 3.80   | 1.75   | 5.55   | 4.09   |
| 11       | 3.88   | 3.68   | 6.51   | 6.16   | N/A    | 6.05   | N/A    | 0.88   | 3.80   | 4.09   | 4.09   | 5.26   |
| 12       | 3.61   | 5.54   | 6.00   | 5.79   | 7.56   | N/A    | N/A    | 2.34   | 4.09   | 5.55   | 3.80   | 4.38   |
| 13       | 4.38   | 4.13   | 6.28   | 6.62   | 5.80   | N/A    | N/A    | 0.29   | 5.55   | 6.72   | 5.55   | 4.09   |
| 14       | 3.83   | 3.71   | 6.33   | 3.07   | 7.41   | N/A    | N/A    | 0.00   | 6.43   | 1.17   | 4.67   | 5.84   |
| 15       | 6.66   | 4.71   | 7.20   | 5.54   | 6.84   | 2.40   | N/A    | 0.00   | 6.72   | 4.09   | 5.84   | 6.43   |
| 16       | 4.57   | 5.03   | 3.29   | 7.12   | 6.81   | 5.50   | N/A    | 0.29   | 4.97   | 4.38   | 3.21   | 6.13   |
| 17       | 4.72   | 6.03   | 2.91   | 5.69   | 7.50   | 4.64   | 3.74   | 2.74   | 3.21   | 6.13   | 1.46   | 5.26   |
| 18       | 2.36   | 5.56   | 4.96   | 6.71   | 7.18   | 4.71   | 7.02   | 4.97   | 1.17   | 2.63   | 0.00   | 3.51   |
| 19       | 5.82   | 5.81   | 5.47   | 6.65   | 7.93   | 1.44   | 5.25   | 5.26   | 4.97   | 4.53   | 2.63   | 4.38   |
| 20       | 5.00   | 5.46   | N/A    | 6.43   | 2.45   | 0.98   | 5.92   | 4.84   | 0.58   | 4.38   | 2.04   | 3.51   |
| 21       | 4.72   | 5.55   | 6.28   | 6.12   | 3.67   | 5.48   | 4.90   | 6.58   | 4.09   | 4.09   | 3.51   | 5.26   |
| 22       | 5.26   | 5.58   | 6.20   | 4.89   | 4.96   | 4.25   | 6.08   | 2.92   | 5.84   | 6.13   | 3.80   | 4.67   |
| 23       | 5.35   | 6.33   | 5.52   | 7.46   | 3.11   | 4.47   | 2.27   | 1.17   | 5.55   | 4.67   | 5.26   | 3.21   |
| 24       | 5.60   | 4.64   | 5.75   | 5.99   | 5.68   | 6.03   | 2.18   | 3.51   | 4.09   | 5.84   | 5.26   | 3.80   |
| 25       | 4.11   | 5.53   | 4.65   | 6.84   | 5.95   | 4.58   | 4.64   | 3.80   | 5.26   | 5.84   | 4.97   | 4.67   |
| 26       | 6.60   | 4.33   | 5.40   | 6.45   | 7.25   | 3.80   | 5.20   | 5.55   | 5.55   | 5.26   | 4.97   | 3.51   |
| 27       | 3.10   | 6.94   | 6.24   | 5.99   | 6.37   | 6.08   | 3.64   | 0.91   | 2.63   | 6.26   | 5.26   | 1.17   |
| 28       | 5.72   | 3.34   | 6.15   | 5.67   | 5.11   | 2.57   | 4.55   | 4.38   | 5.26   | 5.84   | 5.84   | 0.29   |
| 29       | 6.32   |        | 6.97   | 5.81   | 6.23   | 3.43   | 5.84   | 6.81   | 4.09   | 6.13   | 6.13   | 3.51   |
| 30       | 1.98   |        | 4.80   | 6.23   | N/A    | 6.34   | 5.84   | 3.75   | 6.43   | 6.43   | 5.26   | 3.21   |
| 31       | 6.89   |        | 6.07   |        | N/A    |        | 3.21   | N/A    |        | 6.72   |        | 4.38   |
| Mo. Tot. | 141.67 | 142.90 | 179.54 | 181.43 | 188.63 | 136.30 | 133.97 | 115.23 | 130.39 | 152.34 | 114.80 | 132.32 |

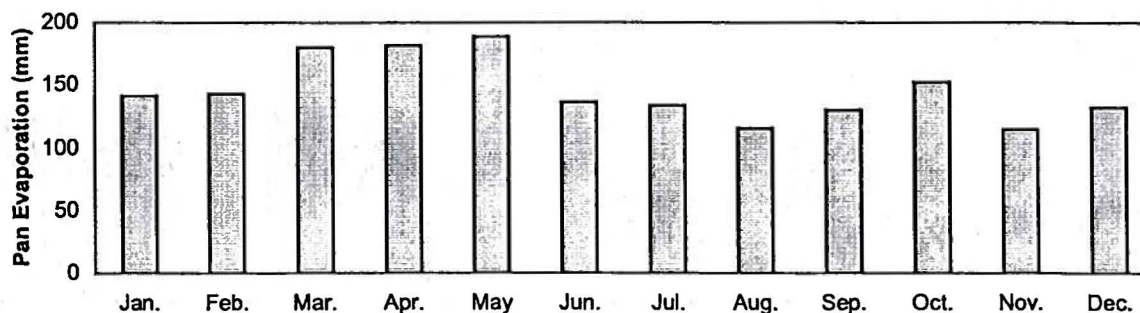


Figure 37: Monthly Total Pan Evaporation

**Inarajan Weather Station**  
**Daily Maximum and Minimum Graphs for Specified Climatic Parameters**  
**January 2001 through December 2001**

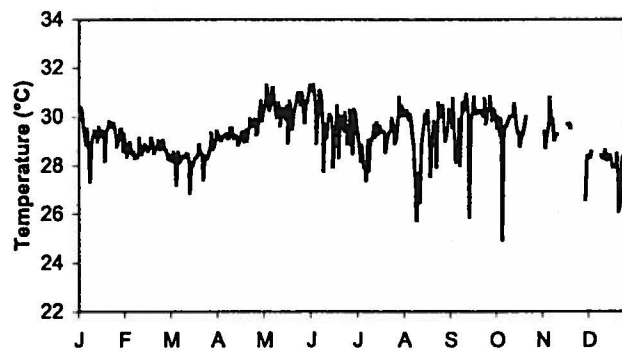


Figure 38: Daily Maximum Temperature

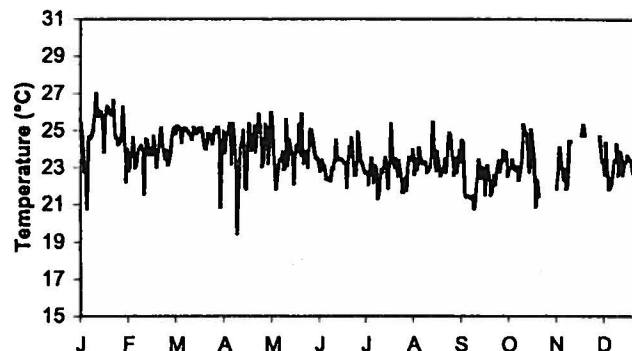


Figure 39: Daily Minimum Temperature

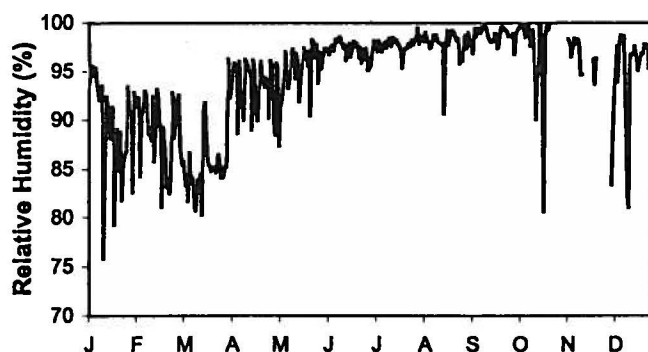


Figure 40: Daily Maximum Relative Humidity

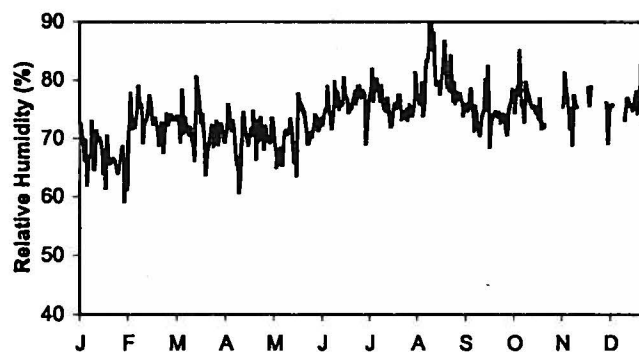


Figure 41: Daily Minimum Relative Humidity

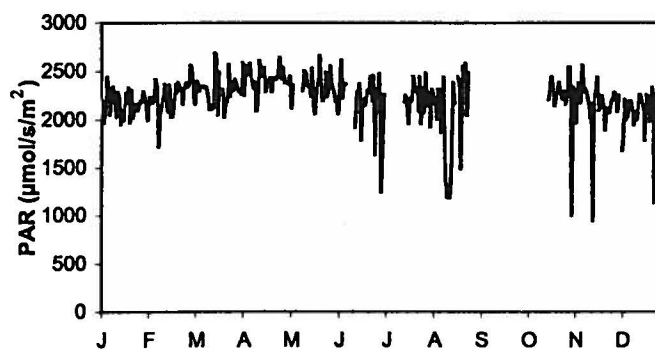


Figure 42: Daily Maximum Photosynthetically Active Radiation (PAR)

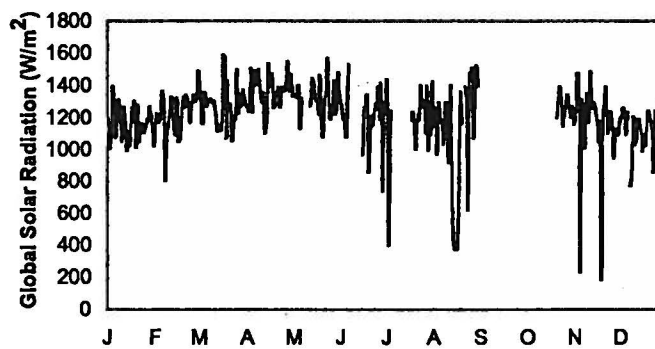


Figure 43: Daily Maximum Global Solar Radiation

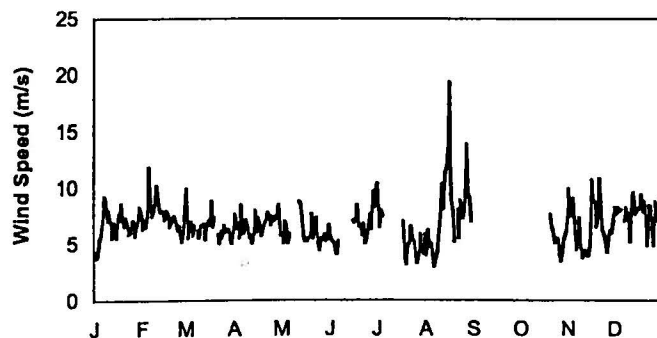


Figure 44: Daily Maximum Wind Speed

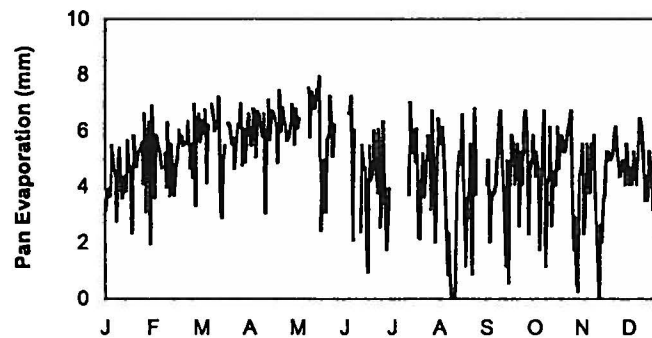
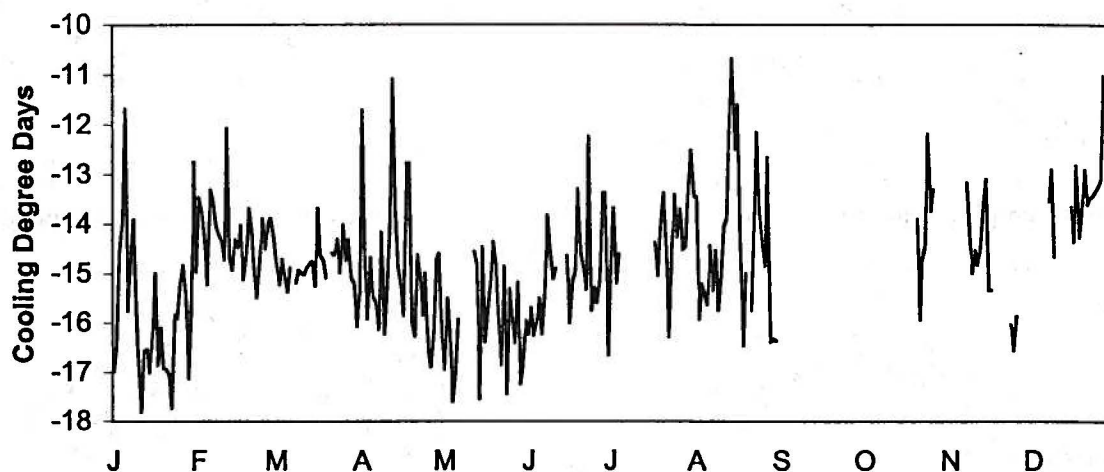


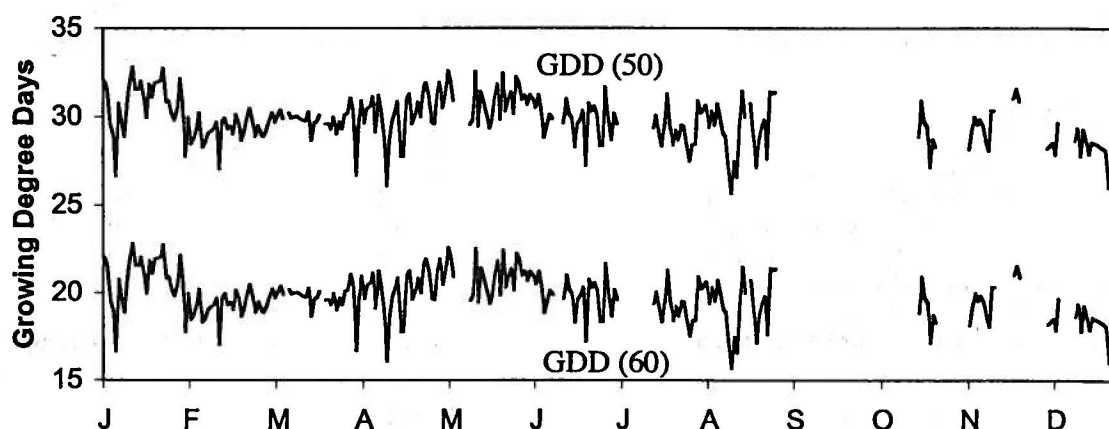
Figure 45: Daily Pan Evaporation

**Inarajan Weather Station  
Degree Days Graphics with Tables for Year 2001**

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**Figure 46: Cooling Degree Days**

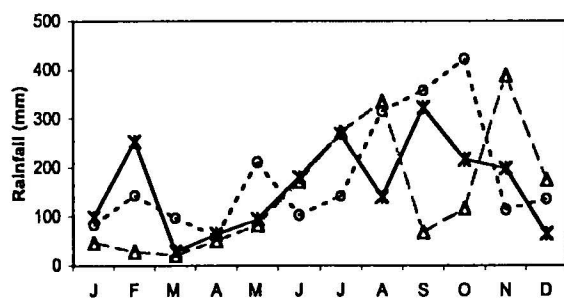


**Figure 47: Growing Degree Days**

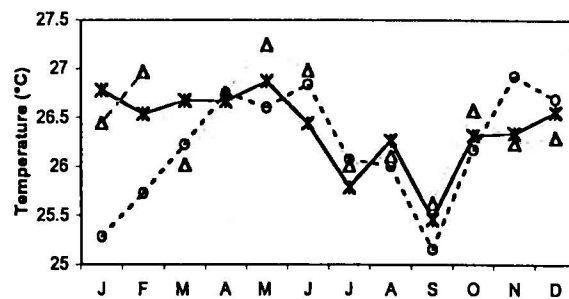
| Degree Days  | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|--------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Cooling      | 488 | 399 | 461 | 449 | 494 | 451 | 439 | 448 | N/A | 435 | 443 | 411 |
| Growing (50) | 953 | 819 | 926 | 899 | 959 | 901 | 904 | 913 | N/A | 900 | 893 | 876 |
| Growing (60) | 643 | 539 | 616 | 599 | 649 | 601 | 594 | 603 | N/A | 590 | 593 | 566 |

# **Inarajan Weather Station** **Graphs showing year to year variations in weather data for 1999 to 2001**

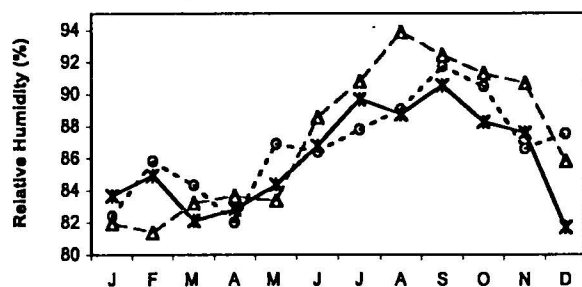
—x— 1999      ---o--- 2000      -Δ- 2001



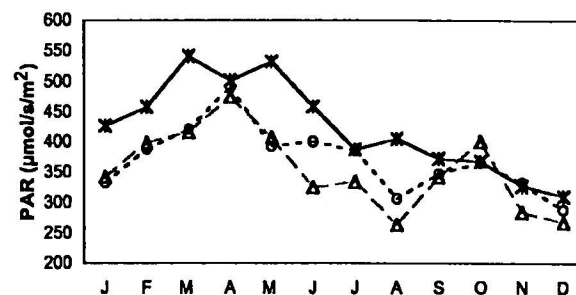
**Figure 48: Monthly Total Rainfall**



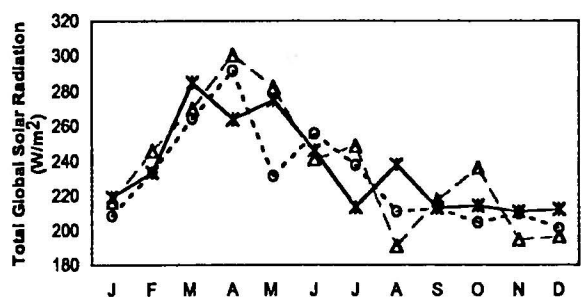
**Figure 49: Monthly Average Temperature**



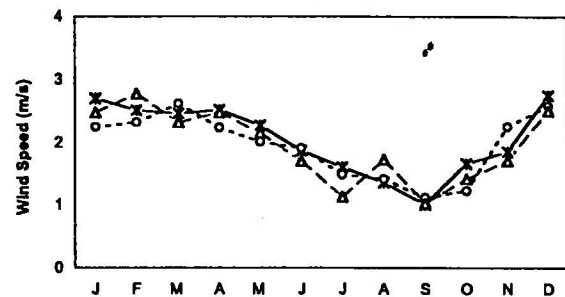
**Figure 50: Monthly Average Relative Humidity**



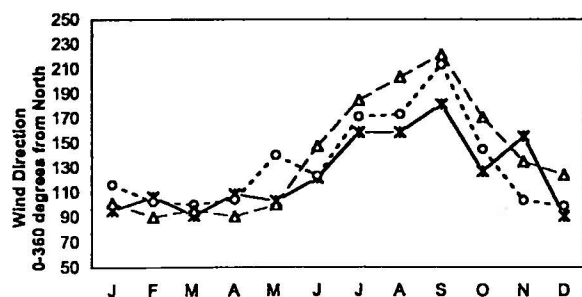
**Figure 51: Monthly Average Photosynthetically Active Radiation (PAR)**



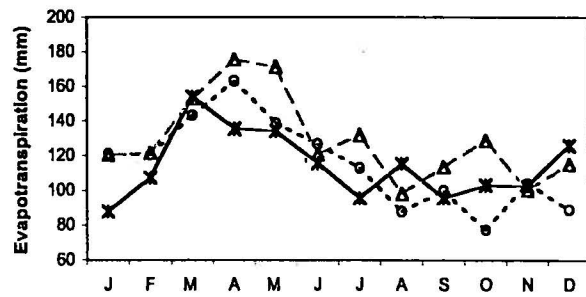
**Figure 52: Monthly Average Global Solar Radiation**



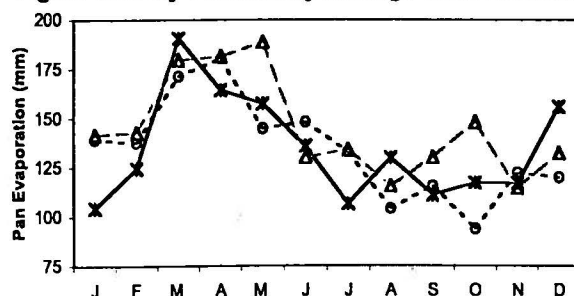
**Figure 53: Monthly Average Wind Speed**



**Figure 54: Monthly Average Wind Direction**



**Figure 55: Monthly Total Atmometer Evaporation (ET Gauge)**



**Figure 56: Monthly Total Pan Evaporation**

Data missing due to sensor or weather station problems that could not be estimated are marked with an "N/A" (not available) in tables and a line discontinuity in graphs. The PAR sensor at Inarajan shows degradation in accuracy over time (see *Figure 51: Monthly Average Photosynthetically Active Radiation[PAR]* on page 28). Monthly averages containing missing data were estimated by taking the average of the available data for that month. Monthly totals containing missing data were estimated by taking the average of the available data times the number of days in the month.

### Events

|                 |   |
|-----------------|---|
| January 1999    | Installed all new sensors at Yigo and Inarajan Weather Stations |
| June 6, 2000    | Changed Total Global Radiation sensor at Inarajan Station       |
| August 30, 2000 | Changed Inarajan Temperature and RH sensor at Inarajan Station  |
| April 5, 2001   | Changed Evaporation Pan sensor at Yigo Station                  |

**Addendum: Corrections to Inarajan Weather Station Data  
for the Year 2000 (Publication 463)**

The Inarajan Weather Station data published in Publication 463 (October 2004) were incorrect due to sensor re-calibration. The addendum that follows contains the corrected data for the indicated sensors:

- Daily and Monthly Average Air Temperature
- Daily and Monthly Average Relative Humidity
- Daily Maximum and Minimum Graphs for Specified Climatic Parameters
- Cooling and Growing Degree Days

## Daily and Monthly Average Air Temperature for Year 2000 (revised)\*

| Day    | Jan.  | Feb.  | Mar.  | Apr.  | May   | Jun.  | Jul.  | Aug.  | Sep.  | Oct.  | Nov.  | Dec.  |
|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 1      | 25.09 | 25.76 | 25.61 | 26.62 | 27.28 | 27.48 | N/A   | 26.02 | 25.18 | 26.46 | 26.82 | 26.61 |
| 2      | 25.76 | 26.28 | 24.92 | 26.28 | 27.39 | 27.13 | N/A   | 25.20 | 24.25 | 26.63 | 26.77 | 26.65 |
| 3      | 26.03 | 25.99 | 26.55 | 26.71 | 27.08 | 27.21 | N/A   | N/A   | 25.39 | 26.21 | 25.95 | 26.81 |
| 4      | 25.55 | 25.70 | 25.74 | 26.78 | 27.46 | 25.91 | N/A   | 26.17 | 25.88 | 26.08 | 26.77 | 26.97 |
| 5      | 25.94 | 24.86 | 26.37 | 26.55 | 27.40 | 26.28 | N/A   | 25.83 | 26.13 | 26.04 | 26.58 | 26.92 |
| 6      | 26.32 | 24.47 | 26.20 | 26.89 | 27.66 | 25.43 | N/A   | 25.77 | 23.40 | 25.49 | 26.79 | 27.17 |
| 7      | 26.38 | 26.18 | 25.84 | 26.70 | 26.15 | 27.45 | N/A   | 25.64 | 22.98 | 24.85 | 26.77 | 27.07 |
| 8      | 26.53 | 25.93 | 25.97 | 26.88 | 26.74 | 27.53 | N/A   | 24.71 | 24.20 | 24.74 | 26.53 | 26.98 |
| 9      | 24.32 | 25.06 | 26.24 | 26.54 | 26.33 | 27.67 | N/A   | 25.35 | 23.88 | 26.21 | 26.78 | 26.97 |
| 10     | 25.92 | 24.80 | 26.25 | 26.84 | 26.22 | 27.63 | N/A   | 25.00 | 23.63 | 26.47 | 27.15 | 26.65 |
| 11     | 25.75 | 25.62 | 26.06 | 25.66 | 25.24 | 27.15 | N/A   | 27.14 | 23.29 | 26.11 | 27.16 | 26.55 |
| 12     | 25.32 | 25.03 | 26.22 | 26.74 | 26.67 | 25.40 | N/A   | 25.54 | 24.57 | 25.06 | 27.30 | 26.55 |
| 13     | 24.64 | 25.66 | 26.02 | 26.80 | 25.99 | 26.66 | N/A   | 26.51 | 24.65 | 26.34 | 26.77 | 26.94 |
| 14     | 26.11 | 25.52 | 26.54 | 26.95 | 23.78 | 27.22 | N/A   | 27.26 | 26.26 | 26.11 | 27.40 | 26.92 |
| 15     | 25.18 | 26.02 | 25.92 | 27.00 | 25.31 | 27.00 | N/A   | 26.92 | 26.30 | 25.04 | 27.37 | 26.57 |
| 16     | 25.71 | 25.72 | 26.21 | 27.12 | 25.27 | 26.82 | N/A   | 26.90 | 26.11 | 26.63 | 27.14 | 26.88 |
| 17     | 24.23 | 25.65 | 26.70 | 26.85 | 26.03 | 26.28 | N/A   | 26.68 | 25.75 | 26.92 | 26.54 | 26.70 |
| 18     | 23.26 | 25.13 | 26.43 | 26.81 | 25.52 | N/A   | N/A   | 24.72 | 26.07 | 26.84 | 26.55 | 26.50 |
| 19     | 23.89 | 26.62 | 26.25 | 26.92 | 26.75 | N/A   | 26.56 | 26.12 | 26.91 | 26.31 | 26.84 | 27.08 |
| 20     | 25.55 | 25.16 | 26.22 | 26.93 | 26.30 | N/A   | 26.23 | 26.97 | 26.23 | 25.69 | 27.18 | 26.67 |
| 21     | 24.08 | 26.24 | 25.91 | 26.06 | 27.21 | N/A   | 24.31 | 26.61 | 26.15 | 25.99 | 27.03 | 26.87 |
| 22     | 24.37 | 25.57 | 26.74 | 25.30 | 27.13 | N/A   | 25.93 | 26.84 | 26.09 | 24.36 | 26.88 | 26.51 |
| 23     | 24.31 | 26.39 | 25.87 | 26.49 | 26.65 | N/A   | 26.03 | 26.69 | 25.06 | 27.46 | 27.17 | 26.31 |
| 24     | 24.62 | 26.47 | 26.61 | 26.49 | 26.65 | N/A   | 24.36 | 26.00 | 25.25 | 26.45 | 27.34 | 26.66 |
| 25     | N/A   | 25.94 | 26.79 | 27.27 | 26.84 | N/A   | 25.15 | 24.65 | 24.83 | 26.63 | 27.35 | 26.23 |
| 26     | N/A   | 26.14 | 26.14 | 27.48 | 27.20 | N/A   | 25.25 | 26.45 | 24.53 | 26.66 | 27.32 | 26.47 |
| 27     | N/A   | 26.51 | 26.32 | 27.28 | 27.32 | N/A   | 26.86 | 27.18 | 24.46 | 26.62 | 27.23 | 26.54 |
| 28     | N/A   | 26.27 | 26.67 | 27.20 | 27.55 | N/A   | 26.84 | 25.16 | 25.58 | 26.61 | 26.64 | 25.95 |
| 29     | 26.03 | 26.46 | 26.58 | 27.01 | 27.50 | N/A   | 26.67 | 25.87 | 26.15 | 26.08 | 26.60 | 26.53 |
| 30     | 25.88 |       | 26.64 | 27.37 | 27.06 | N/A   | 27.86 | 24.82 | 25.56 | 26.98 | 27.05 | 26.48 |
| 31     | 25.90 |       | 26.39 |       | 26.96 |       | 26.91 | 25.45 |       | 27.28 |       | 26.83 |
| Mo.Avg | 25.28 | 25.72 | 26.22 | 26.75 | 26.60 | 26.83 | 26.07 | 26.00 | 25.16 | 26.17 | 26.92 | 26.69 |

\* The revised data is italicized in the table.

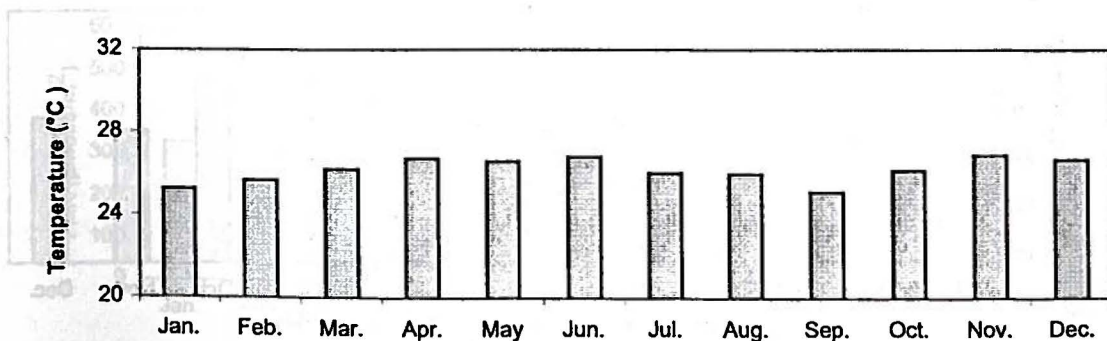


Figure 2: Monthly Average Temperature

**Inarajan Weather Station**  
**Daily and Monthly Average Relative Humidity (%) for Year 2000 (revised)\***

| Day      | Jan.  | Feb.  | Mar.  | Apr.  | May   | Jun.  | Jul.  | Aug.  | Sep.         | Oct.         | Nov.         | Dec.         |
|----------|-------|-------|-------|-------|-------|-------|-------|-------|--------------|--------------|--------------|--------------|
| 1        | 88.45 | 87.21 | 82.15 | 81.76 | 78.60 | 81.62 | N/A   | 85.50 | <i>91.54</i> | <i>90.44</i> | <i>87.49</i> | <i>93.40</i> |
| 2        | 81.93 | 85.57 | 89.12 | 83.36 | 79.96 | 84.73 | N/A   | 91.08 | <i>95.90</i> | <i>90.79</i> | <i>88.50</i> | <i>92.64</i> |
| 3        | 80.61 | 80.62 | 79.84 | 82.61 | 83.08 | 83.53 | N/A   | N/A   | <i>91.71</i> | <i>89.64</i> | <i>92.18</i> | <i>87.46</i> |
| 4        | 79.55 | 80.77 | 88.16 | 82.06 | 82.34 | 89.47 | N/A   | 87.07 | <i>90.76</i> | <i>90.68</i> | <i>88.57</i> | <i>90.78</i> |
| 5        | 78.20 | 85.75 | 82.56 | 83.83 | 84.11 | 88.16 | N/A   | 89.69 | <i>90.77</i> | <i>91.95</i> | <i>89.80</i> | <i>92.31</i> |
| 6        | 82.79 | 96.23 | 82.80 | 81.83 | 83.61 | 92.18 | N/A   | 88.45 | <i>99.93</i> | <i>93.53</i> | <i>88.95</i> | <i>90.11</i> |
| 7        | 84.02 | 89.16 | 85.63 | 84.93 | 90.41 | 85.36 | N/A   | 90.31 | <i>99.99</i> | <i>92.99</i> | <i>82.19</i> | <i>86.56</i> |
| 8        | 84.15 | 88.26 | 85.77 | 81.49 | 88.39 | 85.46 | N/A   | 91.89 | <i>97.07</i> | <i>95.45</i> | <i>86.40</i> | <i>84.06</i> |
| 9        | 90.16 | 89.13 | 86.55 | 82.36 | 89.85 | 84.46 | N/A   | 89.89 | <i>92.88</i> | <i>90.97</i> | <i>89.62</i> | <i>84.43</i> |
| 10       | 86.25 | 88.94 | 81.72 | 82.19 | 90.55 | 84.72 | N/A   | 92.27 | <i>96.53</i> | <i>89.99</i> | <i>85.97</i> | <i>88.99</i> |
| 11       | 86.35 | 88.11 | 84.48 | 89.26 | 94.40 | 84.40 | N/A   | 86.26 | <i>99.32</i> | <i>90.63</i> | <i>84.61</i> | <i>86.68</i> |
| 12       | 87.47 | 92.80 | 86.88 | 82.08 | 88.42 | 94.15 | N/A   | 90.70 | <i>91.91</i> | <i>96.11</i> | <i>84.67</i> | <i>86.54</i> |
| 13       | 89.38 | 89.74 | 86.30 | 80.64 | 92.34 | 87.54 | N/A   | 85.94 | <i>91.38</i> | <i>88.11</i> | <i>88.66</i> | <i>87.21</i> |
| 14       | 77.57 | 89.20 | 83.59 | 79.35 | 99.42 | 85.25 | N/A   | 83.34 | <i>86.42</i> | <i>90.25</i> | <i>80.99</i> | <i>83.81</i> |
| 15       | 79.67 | 86.24 | 90.58 | 79.34 | 93.46 | 85.74 | N/A   | 84.95 | <i>89.03</i> | <i>91.19</i> | <i>86.39</i> | <i>86.41</i> |
| 16       | 75.67 | 85.01 | 88.19 | 80.85 | 94.13 | 85.28 | N/A   | 85.93 | <i>90.00</i> | <i>90.58</i> | <i>86.68</i> | <i>84.49</i> |
| 17       | 78.61 | 85.48 | 82.14 | 83.26 | 90.83 | 86.64 | N/A   | 85.18 | <i>92.11</i> | <i>89.78</i> | <i>89.57</i> | <i>89.92</i> |
| 18       | 82.61 | 90.09 | 85.23 | 80.40 | 91.30 | N/A   | N/A   | 94.05 | <i>90.78</i> | <i>88.74</i> | <i>89.87</i> | <i>88.38</i> |
| 19       | 83.65 | 89.46 | 81.74 | 79.51 | 87.77 | N/A   | 85.37 | 88.31 | <i>87.43</i> | <i>89.65</i> | <i>88.76</i> | <i>84.67</i> |
| 20       | 70.02 | 89.11 | 84.37 | 81.30 | 88.68 | N/A   | 86.26 | 86.12 | <i>90.58</i> | <i>91.11</i> | <i>87.91</i> | <i>87.32</i> |
| 21       | 76.46 | 80.09 | 86.65 | 83.42 | 84.19 | N/A   | 96.06 | 87.98 | <i>87.42</i> | <i>92.40</i> | <i>86.23</i> | <i>82.90</i> |
| 22       | 78.14 | 80.87 | 80.48 | 83.53 | 83.65 | N/A   | 87.81 | 87.47 | <i>82.45</i> | <i>97.36</i> | <i>86.71</i> | <i>89.13</i> |
| 23       | 82.99 | 84.00 | 85.57 | 83.43 | 86.41 | N/A   | 86.84 | 87.49 | <i>86.84</i> | <i>82.58</i> | <i>84.87</i> | <i>89.27</i> |
| 24       | 87.59 | 84.21 | 79.78 | 85.47 | 85.98 | N/A   | 93.37 | 91.01 | <i>87.31</i> | <i>91.35</i> | <i>82.32</i> | <i>86.65</i> |
| 25       | N/A   | 83.48 | 80.27 | 81.92 | 85.04 | N/A   | 90.67 | 95.76 | <i>94.06</i> | <i>89.30</i> | <i>84.44</i> | <i>87.97</i> |
| 26       | N/A   | 80.40 | 84.88 | 79.50 | 83.23 | N/A   | 92.98 | 90.57 | <i>93.53</i> | <i>87.64</i> | <i>82.22</i> | <i>85.27</i> |
| 27       | N/A   | 80.36 | 86.72 | 79.63 | 82.46 | N/A   | 85.22 | 87.81 | <i>94.42</i> | <i>86.89</i> | <i>82.65</i> | <i>84.46</i> |
| 28       | N/A   | 79.83 | 82.82 | 81.14 | 81.36 | N/A   | 85.04 | 92.00 | <i>88.34</i> | <i>88.94</i> | <i>87.93</i> | <i>91.12</i> |
| 29       | 83.72 | 78.21 | 83.24 | 80.54 | 81.73 | N/A   | 87.00 | 88.15 | <i>87.80</i> | <i>93.08</i> | <i>87.17</i> | <i>82.50</i> |
| 30       | 83.85 |       | 82.53 | 78.96 | 82.72 | N/A   | 81.17 | 93.34 | <i>92.68</i> | <i>88.55</i> | <i>85.09</i> | <i>89.59</i> |
| 31       | 84.59 |       | 82.59 |       | 84.10 |       | 83.02 | 92.63 |              | <i>84.20</i> |              | <i>88.19</i> |
| Mo. Avg. | 82.39 | 85.81 | 84.30 | 82.00 | 86.86 | 86.39 | 87.75 | 89.04 | <i>91.70</i> | <i>90.48</i> | <i>86.58</i> | <i>87.52</i> |

\* The revised data is italicized in the table.

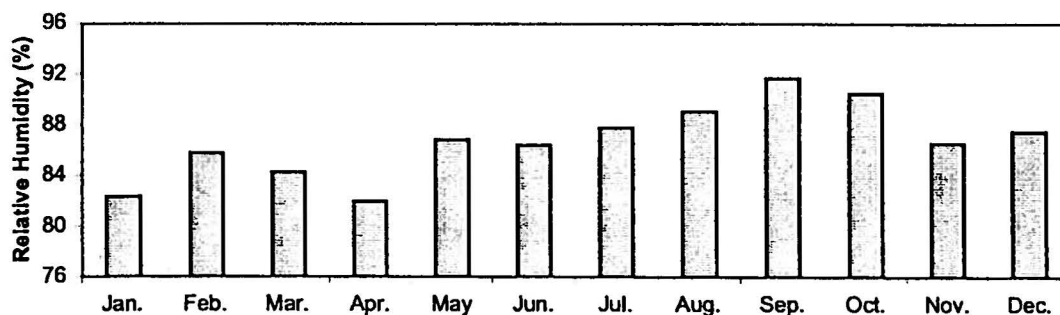


Figure 3: Monthly Average Relative Humidity

Photosynthetically Active Radiation (PAR) Average Flux Density ( $\mu\text{mol/s/m}^2$ ) for Year 2000 (revised)\*

| Day     | Jan.   | Feb.   | Mar.   | Apr.   | May    | Jun.   | Jul.   | Aug.   | Sep.   | Oct.   | Nov.   | Dec.   |
|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 1       | 348.71 | 416.06 | 389.18 | 486.02 | 425.93 | 443.37 | 383.82 | 260.93 | 397.37 | 360.24 | 362.01 | 250.32 |
| 2       | 330.81 | 370.97 | 306.31 | 465.37 | 459.14 | 491.91 | 343.24 | 202.04 | 239.87 | 415.56 | 335.36 | 293.39 |
| 3       | 332.49 | 371.69 | 481.36 | 501.67 | 225.95 | 289.65 | 426.92 | 333.20 | 459.18 | 394.07 | 267.72 | 325.37 |
| 4       | 393.58 | 362.62 | 322.79 | 468.21 | 490.96 | 176.13 | 360.61 | 364.11 | 405.67 | 401.36 | 273.55 | 265.96 |
| 5       | 338.85 | 230.81 | 433.30 | 486.47 | 384.77 | 244.94 | 402.78 | 244.52 | 318.00 | 323.43 | 270.13 | 256.19 |
| 6       | 324.38 | 222.47 | 428.14 | 496.21 | 421.29 | 373.92 | 348.43 | 294.65 | 59.28  | 190.92 | 384.68 | 266.49 |
| 7       | 358.99 | 398.12 | 395.79 | 493.79 | 322.21 | 451.22 | 425.21 | 410.16 | 124.57 | 407.30 | 380.54 | 300.41 |
| 8       | 299.82 | 438.63 | 454.00 | 494.78 | 470.21 | 428.85 | 372.46 | 183.42 | 253.82 | 137.18 | 348.37 | 334.43 |
| 9       | 252.91 | 434.00 | 422.35 | 482.74 | 248.29 | 437.85 | 453.49 | 260.99 | 245.19 | 431.03 | 305.07 | 345.00 |
| 10      | 326.34 | 416.39 | 406.97 | 474.51 | 381.07 | 384.88 | 420.43 | 92.97  | 182.80 | 434.99 | 372.19 | 280.20 |
| 11      | 283.90 | 536.47 | 417.00 | 466.52 | 103.94 | 366.72 | 424.15 | 342.89 | 119.25 | 382.96 | 374.30 | 260.31 |
| 12      | 304.72 | 269.64 | 385.78 | 503.62 | 317.38 | 310.47 | 349.92 | 365.92 | 338.40 | 256.88 | 374.42 | 311.44 |
| 13      | 320.77 | 355.79 | 328.58 | 502.07 | 366.68 | 441.26 | 452.61 | 465.85 | 369.31 | 477.22 | 356.01 | 318.74 |
| 14      | 360.38 | N/A    | 417.32 | 505.00 | 143.76 | 422.26 | 411.72 | 400.92 | 453.67 | 424.16 | 337.78 | 312.30 |
| 15      | 253.47 | N/A    | 338.25 | 481.11 | 272.48 | 422.75 | 279.74 | 349.26 | 386.59 | 235.77 | 338.09 | 261.67 |
| 16      | 396.67 | 273.67 | 347.93 | 495.38 | 260.59 | 457.33 | 311.56 | 416.66 | 462.78 | 427.99 | 323.99 | 280.01 |
| 17      | 367.57 | 406.54 | 426.80 | 453.70 | 505.55 | 418.97 | 456.79 | 253.51 | 379.00 | 399.96 | 356.89 | 296.75 |
| 18      | 333.25 | 219.68 | 434.46 | 499.61 | 431.66 | 276.83 | 390.94 | 146.37 | 416.51 | 454.47 | 320.79 | 185.33 |
| 19      | 360.67 | 317.16 | 438.59 | 500.87 | 453.89 | 460.00 | 426.67 | 445.16 | 489.78 | 360.27 | 335.10 | 309.80 |
| 20      | 363.03 | 434.56 | 500.62 | 475.20 | 516.35 | 359.68 | 353.10 | 360.47 | 482.49 | 342.09 | 341.39 | 275.87 |
| 21      | 335.79 | 430.15 | 472.22 | 514.41 | 419.33 | 412.02 | 185.79 | 332.32 | 427.84 | 475.81 | 338.88 | 327.89 |
| 22      | 422.28 | 494.13 | 461.35 | 525.16 | 456.24 | 442.72 | 472.44 | 301.67 | 530.67 | 84.24  | 338.62 | 249.31 |
| 23      | 340.28 | 420.57 | 423.63 | 471.93 | 440.83 | 459.48 | 495.87 | 374.81 | 434.99 | 471.37 | 346.68 | 302.70 |
| 24      | 247.69 | 453.67 | 501.67 | 487.30 | 405.93 | 423.14 | 250.63 | 268.25 | 417.73 | 384.05 | 352.92 | 308.55 |
| 25      | 300.62 | 421.32 | 417.84 | 486.80 | 432.55 | 428.06 | 307.20 | 163.83 | 342.86 | 276.78 | 249.68 | 286.81 |
| 26      | 370.43 | 431.12 | 387.95 | 497.13 | 485.59 | 305.67 | 336.70 | 412.30 | 254.01 | 464.95 | 274.86 | 292.75 |
| 27      | 337.23 | 448.34 | 447.68 | 516.78 | 492.03 | 436.38 | 401.63 | 303.28 | 272.79 | 427.40 | 378.49 | 303.21 |
| 28      | 324.21 | 447.15 | 457.17 | 475.57 | 480.66 | 448.43 | 422.57 | 251.87 | 405.77 | 398.46 | 283.42 | 248.96 |
| 29      | 345.0  | 7.72   | 503.0  | 499.40 | 424.78 | 521.00 | 437.32 | 471.53 | 422.40 | 211.87 | 309.39 | 309.40 |
| 30      | 315.75 |        | 449.40 | 482.97 | 473.25 | 460.29 | 466.33 | 264.80 | 322.98 | 438.61 | 322.36 | 272.97 |
| 31      | 33 10  |        | 423.92 |        | 435.72 |        | 366.60 | 149.25 |        | 401.17 |        | 286.41 |
| Mo.Avg. | 331.80 | 387.39 | 420.05 | 489.68 | 391.90 | 399.84 | 385.09 | 306.06 | 347.19 | 364.28 | 331.79 | 287.71 |

\* The revised data for the months of January through December 2000 are shown above.

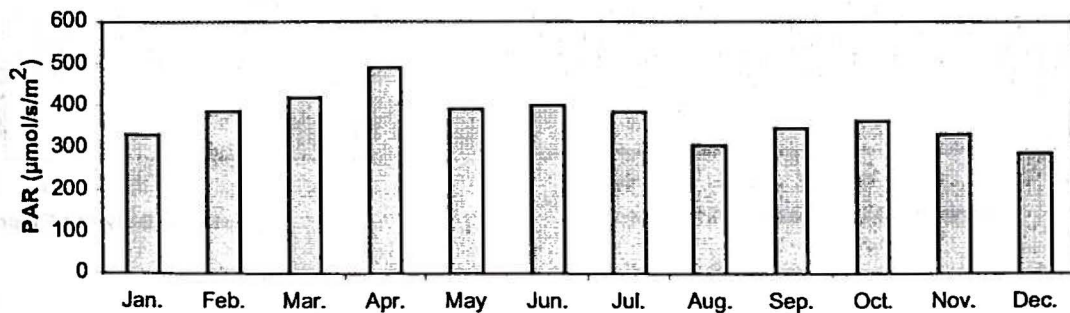
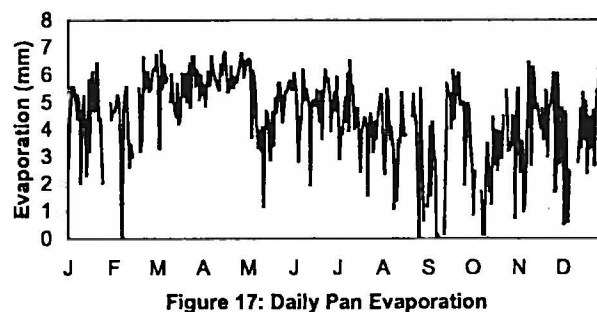
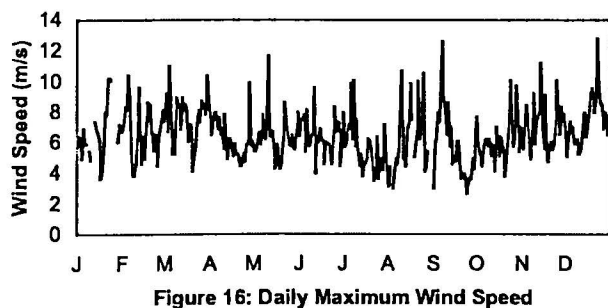
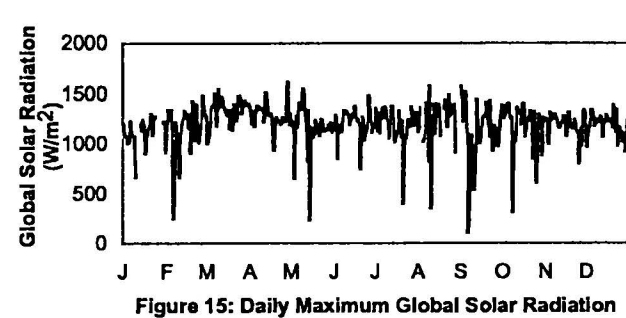
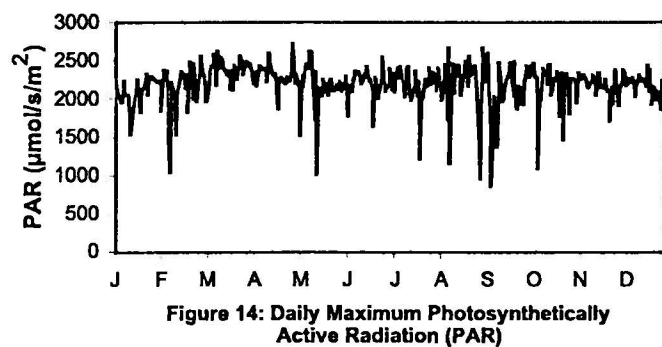
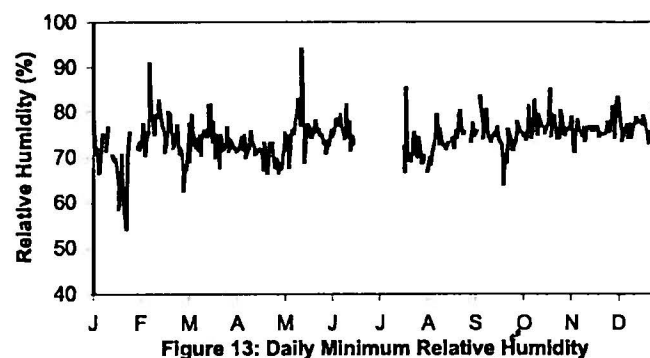
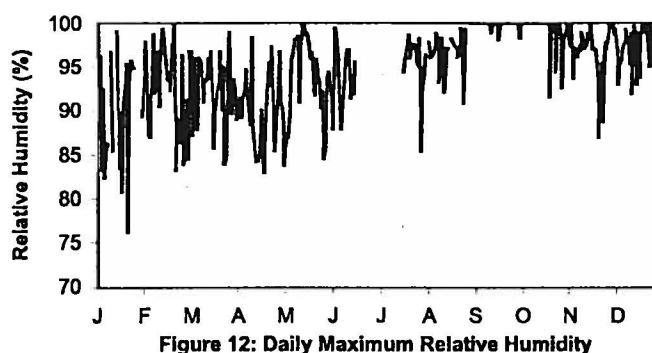
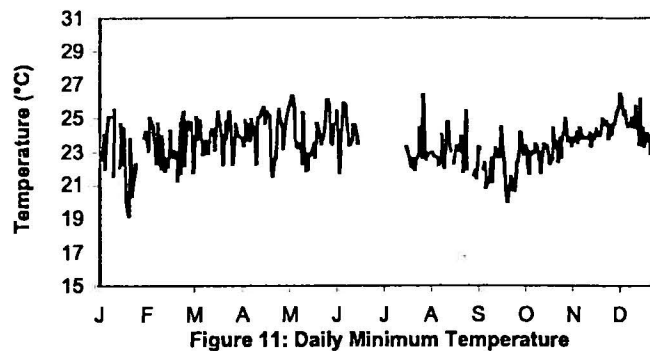
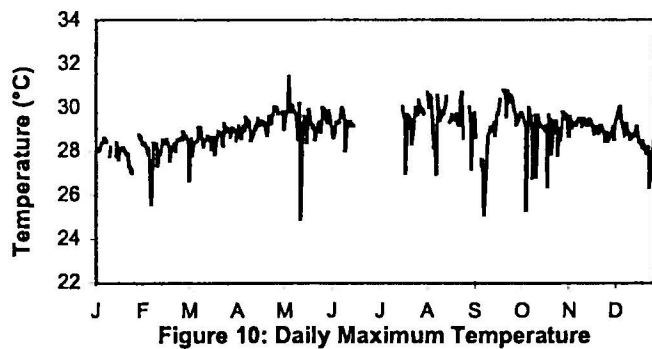


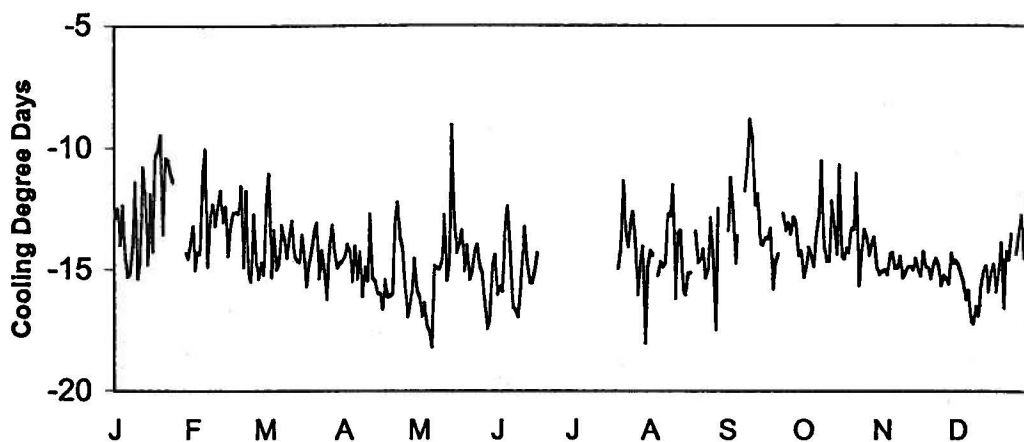
Figure 4: Monthly Average PAR

**Inarajan Weather Station**  
**Daily Maximum and Minimum Graphs for Specified Climatic Parameters**  
**January through December 2000 (revised)**

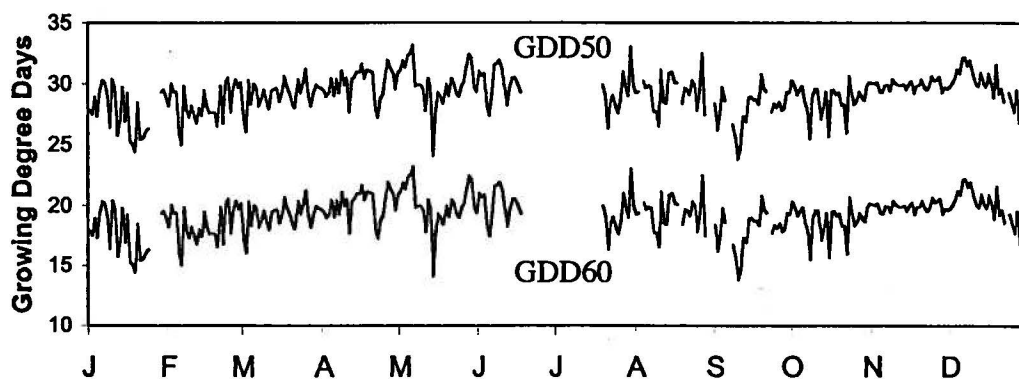


**Inarajan Weather Station**  
**Degree Days Graphs with Tables for 2000 (revised)**

**35**



**Figure 18: Cooling Degree Days**



**Figure 19: Growing Degree Days**

| Degree Days  | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|--------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Cooling      | 396 | 388 | 439 | 452 | 466 | 453 | 441 | 445 | 390 | 428 | 447 | 450 |
| Growing (50) | 861 | 823 | 904 | 902 | 931 | 903 | 906 | 910 | 840 | 893 | 897 | 901 |
| Growing (60) | 551 | 533 | 594 | 602 | 621 | 603 | 596 | 600 | 540 | 583 | 597 | 601 |



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**Funding for this publication has been provided by Hatch-Multistate Research funds under Project number W-1128.**

**Any opinions, findings, conclusions or recommendations expressed in this publication are those of the author(s) and do not necessarily reflect the views of the U.S. Department of Agriculture or the University of Guam.**