

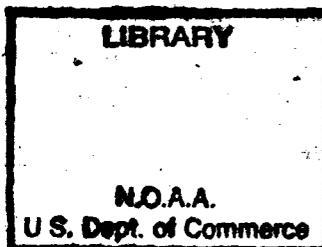


THE ARAB REPUBLIC OF EGYPT

ANNUAL METEOROLOGICAL REPORT

1974

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THE EGYPTIAN METEOROLOGICAL AUTHORITY

CAIRO

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THE EGYPTIAN METEOROLOGICAL AUTHORITY

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PUBLICATIONS OF THE METEOROLOGICAL AUTHORITY OF THE ARAB REPUBLIC OF EGYPT—CAIRO

In fulfilment of its duties, the Egyptian Meteorological Authority issues several reports and publications on weather, climate and agro-meteorology. The principal publications are described on this page.

Orders for publications should be addressed to :

“Chairman of the Board of Directors, Meteorological Authority, Kubri-el-Qubbeh — CAIRO”.

THE MONTHLY WEATHER REPORT

First issued in 1909, the Monthly Weather Report served to give a brief summary of the weather conditions that prevailed over Egypt during the month, with a table showing the mean values for few meteorological elements and their deviations from the normal values. From 1954 to 1957 this report was in a rapid state of development and extension resulting into a voluminous report on January 1958 giving surface, upper air, and agro-meteorological data for Egypt.

As from January 1964, the Monthly Weather Report was pressed to give climatological data for a representative selection of synoptic stations.

THE AGRO-METEOROLOGICAL ABRIDGED MONTHLY REPORT

Gives a review of weather experienced in the agro-meteorological stations of Egypt as well as monthly values of certain elements.

THE ANNUAL REPORT

This report gives annual values and statistics for the various meteorological elements, together with a summary of the weather conditions that prevailed during all months of the year.

CLIMATOLOGICAL NORMALS FOR EGYPT

A voluminous edition was issued in March 1968 which brings normals and mean values up till 1960.

METEOROLOGICAL RESEARCH BULLETIN

First issued in January 1969 on a bi-annual basis. It includes research works carried out by members of staff of “The Meteorological Institute for Research and Training” and the Operational Divisions of the Meteorological Authority.

TECHNICAL NOTES

As from October 1970, the Meteorological Authority started to issue a new series of publications in the form of Technical Notes (non periodical) on subjects related to studies and applications of meteorology in different fields for the benefit of personnel working in these fields.

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FOREWORD

The "Annual Meteorological Report" for Egypt was issued regularly since the year 1900 by the Survey Department at Cairo. The Annual report of the year 1900 contained the daily, monthly and annual values of different meteorological elements at Abbasiya (Cairo) and other few climatological stations in Egypt and Sudan.

With the closing of Abbasiya Observatory as the Principal Meteorological Station in the year 1904 and replacing it by Helwan Observatory, it had been decided starting from the Annual Meteorological Report of 1904 to separate the Annual Meteorological Report into two independent parts, the first of which was dealing with the whole work of Helwan Observatory, while the second part included the daily, monthly and annual values of different meteorological elements at selected climatological and rainfall stations together with the River data.

Starting from the issue of 1941 the Annual Meteorological Report contained no more "daily values" but only monthly and annual values.

As from the issue of 1958 the Annual Meteorological Report took a new form. It started with a general annual review of weather together with twelve monthly summaries of weather conditions in Egypt. In addition, it included a new set of tables giving more detailed surface and upper air climatological data for selected stations. The annual review of Agro-Meteorological Station at Giza ; the monthly and the annual

values of routine observations made at the fields of the station were also included in the Annual Report. This annual review gave a brief summary of the characteristic features of the different meteorological and micro meteorological elements of the year ; more weight was given in this review to elements which are of interest to agriculturists. Moreover, the Annual Meteorological Report specified the different climatic districts in Egypt. It also contained explanatory notes about methods of observations of different meteorological elements ; instruments used in these observations, their exposure and methods of deriving daily, monthly and annual mean values and frequencies of different elements.

As from 1960 tables appearing in the Annual Meteorological Report have been totally revised and some new tables have been introduced to include more detailed climatological data.

As from 1964, the Annual Meteorological Report was again totally revised. The number of meteorological stations appearing in the Report have been concentrated in the main synoptic stations working mostly continuously 24 hours. In addition, climatological data included in the Report will be confined to the annual mean values, annual totals, annual frequencies and annual absolute values. More specific climatological data have to be requested from the Meteorological Authority.

INTRODUCTION AND EXPLANATION OF THE TABLES

For the purpose of this Annual Meteorological Report, the Arab Republic of Egypt is divided into six climatic districts as follows:

Number	District	Number	District
I	Mediterranean Area	IV	Upper Egypt
II	Lower Egypt	V	Western Desert
III	Cairo Area	VI	Red Sea Area

The data included in Tables A1, A2, A3, A4 and A5, are based on surface observations made at a representative selection of the basic network of synoptic stations. The data included in Tables B1, B2, B3 are based on upper air observations. The data included in Tables C1, C2, C3, C4 & C5, are based on observations taken at the Agro-Meteorological stations at Bahtim, Tahrir, Mersa Matruh and Kharga. The observation fields at Mersa Matruh and Kharga are considered for the moment as dry and bare fields. At Bahtim and Tahrir there are grass fields covered with Libia in addition to the dry fields.

The soil characteristics of these fields are:

	M. MATRUH	TAHRIR	BAHTIM	KHARGA
Top soil type . .	Not available at present	Pure sand	Permeable clay	Sandy loam granular Not-compact
Top soil depth .	„	More than 3 metres	More than 1.5 metre	20 cms.
Sub soil type . .	„	Pure sand	Clay loam and loam	Platy clay non-compact
Slope of ground and its direction. .	„	$\frac{1}{4}$ % towards East & North	Flat (0-0.3%)	Flat (0-0.3%)
Level of Water table	„	More than 5 metres	1.0-1.5 met. approximately	More than 5 metres

Except for the wind speed which is expressed in knots, the metric units are used throughout this Report and are as follows:

- The atmospheric pressure is expressed in millibars (one millibar = 1000 dynes per square centimetre = The pressure due to 0.7501 millimetre of mercury at 0°C at latitude 45°).
- Air and soil temperatures in degrees celsius °C,
- Relative humidity %,
- Rainfall in millimetres,
- Snow depth in centimetres,
- Duration of bright sunshine in hours,
- Sky cover in octas,
- Evaporation in millimetres,
- Altitude of pressure surface in geopotential metres,
- Mean wind speed of the whole day, and of the day-time and the night-time intervals in meters per second,
- (Solar+Sky) radiation in gram-calories per centimetre square,
- Vapour Pressure in millimetres.

EXPLANATORY NOTES ON TABLES

SURFACE DATA

TABLE A 1.—Annual mean daily values of the Atmospheric Pressure, Air Temperature, Relative Humidity, Piche Evaporation and Total Bright Sunshine Duration

This table gives the following data :

— The annual mean daily values of the M.S.L. Pressure and their deviations from the corresponding normal values.

— The annual mean values of maximum air temperature (A), minimum air temperature (B) and $\frac{A+B}{2}$ and their deviations from their corresponding normal values.

— The annual mean daily values of dry bulb temperature, wet bulb temperature and relative humidity and their deviations from their corresponding normal values.

— The total actual and the total possible durations of bright sunshine during the year; the percentage of the total actual with respect to the possible duration.

— The annual mean daily values of Piche Evaporation.

The annual mean daily values of the atmospheric pressure, air temperature, relative humidity & Piche evaporation are the arithmetic means of the corresponding monthly mean daily values during the year.

The monthly mean daily value of the atmospheric pressure corrected to Mean Sea Level (M.S.L.) is the arithmetic mean over the month of the corresponding daily hourly values. The atmospheric pressure is measured by mercury barometers installed indoors. The M.S.L. Pressure is the barometer reading corrected for the height of the barometer cistern above or below the Mean Sea Level at the station. Corrections for index, temperature and latitude have been applied to the barometer readings before reduction to M.S.L. In case of stations which do not take some of the synoptic observations, the pressure for these hours is computed from the records of barographs placed indoors at the stations.

The monthly mean values of the maximum (A) and of the minimum (B) air temperatures are the arithmetic means of their corresponding daily values over the month. The maximum (mercury) and the minimum (alcohol) thermometers are freely exposed in the louvred screens with their bulbs at a height of 160 to 170 centimetres above the ground.

The monthly mean values of $\frac{A+B}{2}$, are computed from their corresponding daily calculated values over the month.

The monthly mean daily values of the dry and of the wet bulb air temperatures are the arithmetic means over the month of their corresponding daily hourly values. The dry and wet bulb thermometers used are of the mercury type and freely exposed in sloping double roofed louvred screens with their bulbs at a height 140—150 centimetres above the ground. In case of stations which do not take observations at some synoptic hours, values of the dry and wet bulb temperature for these synoptic hours are extracted from the records of recording dry & wet thermographs placed in the louvred screens at the stations.

The monthly mean daily values of the relative humidity are the arithmetic means of the daily hourly values, which are derived from the dry and wet bulb air temperatures using Jelinek's Psychrometer-Taflen (Leipzig 1911).

The monthly mean daily values of Piche evaporation are the arithmetic means over the month of its daily values. Evaporation measurements are taken once daily at 0600 U.T. and give the evaporation for the previous 24 hours. The evaporation readings are measured by a Piche tube freely exposed in sloping double roofed louvred screens, the evaporation disc has an effective area of 10.1 centimetre square, white in colour and at a height of 140—150 centimetres above the ground.

The annual values of the actual duration and of the possible duration of bright sunshine are the sum of their corresponding monthly values during the year and the monthly values are the sum of the corresponding daily values. In calculating the possible duration of sunshine for a given day, the period of cut off for that day caused by obstacles such as mountains, are eliminated from the possible duration with an ideal flat horizon. In case of stations where the record of a day or more is missing, the total actual duration is given between brackets and a note is added at the end of the table giving the actual number of records (days) used in summing up this total actual. In such cases the corresponding total possible duration is also given in bracket and it is the sum of the annual possible duration of the days of the available records. The duration of bright sunshine is measured by the Campbell-Stokes sunshine recorders which are suitably exposed.

TABLE A 2.—Maximum and Minimum Air Temperatures.

This table gives the following data :

—The extreme values of the maximum and of the minimum air temperatures observed during the year and their dates of occurrences.

—The number of days during the year with maximum air temperatures above and with minimum air temperatures below, specified limits.

—The annual mean daily values of the grass minimum air temperatures and their deviations from the corresponding normal values.

Higher and lower limits of both maximum and minimum air temperatures during the year and their corresponding dates of occurrences are extracted from the daily readings of maximum (mercury) and minimum (alcohol) thermometers. These dates are included for actual occurrences up to three (last three dates) ; when exceeding three, the symbol* is added beside the last three dates.

The number of days during the year with maximum air temperatures above 25°C, 30°C, 35°C, 40°C & 45°C and with minimum air temperatures below 10°C, 5°C, 0°C & — 5°C are included also in this table under separate columns.

The types and exposure of the maximum and of the minimum thermometers are as indicated in notes on table A 1.

The annual mean values of grass minimum temperatures are the arithmetic means over the year of the corresponding monthly mean values. The monthly mean values are the arithmetic means over the month of their corresponding daily values. The grass minimum temperature is measured by an ordinary minimum (alcohol) thermometer suitably exposed in the open air at the station field on a special stand with its bulb at a height of 5 centimetres above ground just touching the grass tops if there is any. Grass minimum thermometer readings are taken daily on a routine base at 0600 U.T.

TABLE A 3.—**Sky Cover & Rainfall**

This table gives the following data :

— The annual mean values of the total sky cover at the principal synoptic hours of observations and of the daily total sky cover.

— The total amount of rainfall during the year and its deviation from the corresponding normal value.

— The maximum of rainfall in one day and its date of occurrence.

— The number of days with amounts of rainfall reaching or exceeding specified limits.

The annual mean values of the total sky cover at the principal synoptic hours (00,06, 12 & 18 U.T.) and of the daily total sky cover are the arithmetic means over the year of the corresponding monthly mean values. The monthly mean values of the total sky cover at the principal hours are computed from their corresponding daily routine values observed during the month. The monthly mean values of the daily total sky cover are arithmetic means over the month of the daily hourly values or of the daily observations taken at the 8 synoptic hours (00, 03, 06, 09, 12, 15, 18 & 21 U. T.). Sky is in octas.

The total annual rainfall is the sum of the total monthly rainfall during the year. The total monthly rainfall is the sum of the daily rainfall during the month. The maximum daily rainfall and the number of days with rain < 0.1 and equal or more than 0.1, 1, 5, 10, 25 & 50 mms. are extracted from the routine daily totals during the year. The rainfall for a given day is the amount of rain which has fallen during the 24 hours commencing at 0600 U.T. of that day ; when the amount of rain which has fallen is not large enough to be measured (less than 0.1 mm.) the term "Trace" is entered as (Tr.). The amount of rainfall measured includes the water equivalent of the rain water which has frozen after falling and the water equivalent of solid precipitation such as hail if any. Dates of maximum rain in 24 hours are included for actual occurrences up to three (last three dates) ; when exceeding three, the symbol* is added besides the last three dates.

The amount of rainfall is normally measured by ordinary rain gauges. Some selected stations are also equipped with a recording type of rain gauge. The rim of both types of rain gauges are at a height of 90—100 cms above the ground.

TABLE A 4.—**Annual Frequency of Occurrence of Miscellaneous Weather Phenomena.**

This table gives the annual number of days of occurrence of rain, snow, ice pellets, hail, frost, thunderstorm, mist, fog, haze, thick haze, dust, or sandrising, dust or sandstorm, gale, clear sky & cloudy sky. Ekcept for rain (see notes on table A 3) the days of occurrence of these weather phenomena are those days during which the phenomenon has occurred at any time between 2200 and 2200 U.T. for stations working 24 hours, but for stations woring less, this table gives the annual frequency of occurrence of these phenomena during hours of observations only.

In compiling this table, the terminology and definitions of these different weather phenomens are as follows .

— A day of rain is the day during which the total amount of rainfall is 0.1 millimetre or more.

— A day of snow is the day during which snow or snow flakes or snow showers is or are observed even if it is or (they are) so small in quantity as to yield no measurable amounts of precipitation in the rain-gauge.

— A day of ice pellets is the day during which ice pellets are observed even if they are so small in quantity as to yield no measurable amounts of precipitation in the rain-gauge.

— A day of hail is the day during which either one or more of the following types of precipitation is or are observed even if they are so small in quantity as to yield no measurable precipitation in the rain-gauge :

- Soft hail
- Small hail
- Hail stone

— A day of frost is the day during which frost is observed at the station.

— A day of thunderstorm is the day during which thunder is heard at the station whether lightning is seen or not. A day on which lightning is seen but thunder is not heard at the station is not counted as a day of thunderstorm.

— A day of mist is the day during which the surface horizontal visibility at the station has deteriorated and became equal to or greater than 1000 metres due to mist.

— A day of fog is the day during which the surface horizontal visibility at the station has deteriorated and fell below 1000 metres due to fog.

— A day of haze is the day during which the horizontal visibility at the station has deteriorated and became equal to or greater than 1000 metres due to haze.

— A day of thick haze is the day during which the horizontal visibility at the station has deteriorated and fell below 1000 metres due to thick haze.

— A day of dust or sandrising is the day during which the horizontal visibility at the station has deteriorated and became equal to or greater than 1000 metres due to dust or sandrising.

— A day of dust or sandstorm is the day during which the horizontal visibility at the station has deteriorated and fell below 1000 metres due to dust or sandstorms.

— A day of gale is the day during which the mean surface wind speed reached or exceeded 34 knots at the station for at least 10 minutes.

— A day of clear sky is the day on which the mean cloud amount at the station is less than $\frac{2}{8}$.

— A day of cloudy sky is the day on which the mean cloud amount at the station is $\frac{6}{8}$ or more.

As regards the last two items above, the mean cloud amount for a day is the mean of the 24 hours, the 8 synoptic hours or the 4 main synoptic hours of cloud observations according to the number of the routine observations taken at the station.

TABLE A 5.—Annual number in hours of occurrences of concurrent surface wind speed and direction recorded within specified ranges.

This table gives the annual number in hours of the following :

— Calm winds.

— Variable winds.

— Unrecorded winds,

— Simultaneous occurrences of surface wind satisfying the specified ranges of speed and direction.

— Occurrences of surface wind satisfying the specified ranges of speed during the month irrespective of their direction,

— Occurrences of surface wind blowing from the specified range of direction during the month irrespective of their speed.

The annual numbers in hours of all elements included in this table are the sum of the corresponding monthly values during the year.

The elements used in preparing this table are the mean hourly values of the surface wind speed and the corresponding mean hourly values of direction taken from the daily records of the surface wind instruments installed at the station. These mean hourly values are extracted for every hour of each day of the year and they refer to a period of 60 minutes centred at the hour.

The number in hours of occurrences of the surface wind falling within the ranges of speed and direction indicated in the table is the number of cases when the mean hourly values of the surface wind as defined have satisfied these ranges.

The number in hours of "variable" winds is the number of cases when the surface wind showed no definite direction over the period of the 60 minutes centred at the hour or when the wind vane was sticking over that period due to the lightness of the wind and not responding to the variation in wind direction ; in such cases the mean wind speed over this period is normally less than 5 knots. The number in hours of "calm" winds is the number of cases where the surface wind has a mean speed of less than one knot over that period, whatever the mean wind direction over the same period is. The number in hours during which the recording instrument failed to record over the whole year is given under a separate column.

The instruments used for recording the surface wind are of the Dines Pressure Tube Anemograph.

This table follows the general lines of Model B of chapter 12 part IV of the WMO Technical Regulations 1959. The ranges of wind speed are (1-10), (11-27), (28-47) knots and 48 knots or more ; the ranges for wind direction are twelve ranges of 30° each, beginning with the range (345°-014°) as being the true north.

UPPER AIR DATA

TABLE B 1.—Annual climatological data of pressure, temperature and dew point at the surface of the station, the standard and the selected pressure surfaces.

The routine upper air observations are taken at 0000 & 1200 UT, a separate table of this type is prepared for each hour.

This table follows the general lines recommended by the Commission for Climatology of the World Meteorological Organisation REC. 34 (CCL. 1), it gives the following data for the hour of observation indicated at the table :

— The number of cases (N) the height of each of the pressure surfaces indicated in the table has been attained during the year, and the number of cases the temperature and dew point at these pressure surfaces have been observed.

— The annual mean values of the atmospheric pressure corrected to the ground level of the station and its highest and lowest values during the year.

— The annual mean values of the air temperature at the surface, the highest and lowest values.

— The annual mean values of dew point at the surface.

— The annual mean, the highest and the lowest values of the altitude of each of the pressure surfaces.

— The annual mean, the highest and the lowest values of air temperature at each of the pressure surfaces.

— The annual mean value of dew point at each of the pressure surfaces.

Mean annual values are computed as the arithmetic mean of the twelve monthly mean values.

The monthly mean values are computed as the arithmetic mean of all daily values. Whenever it is not possible to obtain a complete set of daily values, a useful monthly mean value may be obtained as the mean of available values, taking in consideration ; (a) number of missing observations not more than 10, and (b) there in no continuous period of 5 days without an assigned value.

The instruments used are of the radiosonde modulating frequency recording type ; no corrections for radiation are applied.

The altitudes are given in geopotential metres above mean sea level, temperatures and dew points in degrees celsius.(°C).

TABLE B 2.—Annual mean and extreme values of the freezing level and the tropopause ; the highest wind speed in the upper air.

The routine upper air observations are taken at 0000 & 1200 U.T ; This table is based on wind observations taken by the SCR — 658 or the Metox radiotheodolites working simultaneously with the radiosonde observations. The types of radiosonde instruments used are given in notes to table B₁.

This table gives the following data for each hour of observation :

— The annual mean values of the altitude, pressure and dew point of the freezing level together with the number of observations (N) taken during the year for each element ; the altitudes and months of occurrence, pressures and dew points of the highest and lowest freezing levels observed during the year.

— The annual mean values of altitude, pressure and temperature of the first tropopause together with the number of observations taken during the year for each element, the altitudes and months of occurrences, pressures and temperatures of the highest and lowest first tropopauses observed during the year.

— The direction and speed of the highest wind speed, the altitude, month of occurrence and pressure at which this speed is observed.

The annual mean values of the altitudes of the freezing level and of the first tropopause, and the annual mean values of the pressure and of the dew point or temperature at each of these levels are the arithmetic means of the corresponding monthly mean values. The monthly mean values are the arithmetic means of the corresponding daily values. The first tropopause is determined in accordance with the definition adopted by the Executive Committee of the World Meteorological Organization Resolution 21 (EC-IX).

Altitudes are given in geopotential metres above mean sea level, temperatures and dew points in degrees celsius, direction in degrees east of the true north on the scale (000-360°) and wind speed in Knots.

TABLE B 3— Annual Frequency of Occurrences of Wind Direction within Specified Ranges and The Mean Scalar Wind Speed at The Surface of The Station The Standard and Selected Pressure Suraccs

The routine upper air observations are taken at 0000 and 1200 U.T. A separate talbe of this type is used for each station.

This table, as in the case of table B 1, follows the general lines recommended by the Commission for Climatology of the World Meteorological Organisation Rec.34 (CCL-1) ; the ranges of wind direction used are twelve ranges of 30- each beginning with the range (345° — 014°) as being the true north. This table gives for each hour of observation the following data of wind analysis at the surface, standard pressure surfaces and a number of selected pressure surfaces.

- The number of cases (N) the wind has been observed from the specified ranges of direction.
- The mean scalar speeds (ffm) of winds blowing from the specified ranges of wind direction.
- The number of cases of calm winds.
- The total number of cases (TN) the wind has been observed during the year.
- The mean scalar speeds of winds blowing from all directions.

The mean scalar wind speed (ffm) of winds blowing fro each range of direction at a given pressure surface is the arithmetic mean, of the corresponding monthly mean values of wind speeds. The trm "Calm" is used to denote wind speed of less than one knot.

AGRO-METEOROLOGICAL DATA

Annual Review of Agro-Meteorological Stations.

The annual review includes abridged and summarized report on the characteristic features of the different meteorological and micro-meteorological elements. More weight is given in this review to those elements which are of interest to agriculturists.

TABLE C.1—Annual Mean Air Temperature at 1½ metres above Ground

This table gives the following data :

- The annual mean values of the maximum and of the minimum air temperatures.
- The annual mean values of the day, the night time and the day time of air temperature
- The annual mean values of the duration of air temperatures above specified values.

The annual mean valus of the maximum, minimum ,night-time mean, day-time mean and mean of day of air temperatures are the arithmetic means of its monthly mean values. The monthly mean values of these elements are the arithmetic means of the mean daily values. The mean air temperatures of a day is the mean of the eight values of the dry bulb temperatures occuring at each of the principal and secondary observation hours, the values at 0000, 0300 & 2100 U.T. being extracted from the records of the dry bulb thermometer of a mercury in steel hygrograph except at Mersa Matruh and Kharga where they are obtained from visual readings.

The night-time mean temperature of a day is the mean temperature for the period from sunset of the previous day to sunrise of the same day. The day-time mean temperature refers to the preiod from sunrise to sunset of the same day. Both night-time and day-time mean temperatures are computed from empirical formulae, which may vary from month to month but are common for all stations. These formulae were found by trial comparison with true means of the year 1956. The errors were never permitted to reach a whole degree; and usually stayed equal to or lower than 0.5°C.

The duration of air temperatures above a specified limit of temperature is obtained graphically from the temperature recording charts, daily to the nearest whole hour.

The maximum (mercury), the minimum (alcohol) and the dry bulb (mercury ventilated) thermometers are freely exposed in louvred Stevenson screens of the Egyptian type with their bulbs at a height of 190 - 195 centimetres above ground for the maximum and minimum thermometers, and 170 cms approximately for the dry bulb thermometer ; the recording thermometer used is of the bi-metallic type and is exposed in a similar screen ; the height of the bi-metallic piece is 165 centimetres approximately above the ground.

TABLE C 2.—Annual Extreme values of Maximum and Minimum air temperatures etc 1½ metres above ground, Absolute Minimum air temperature at 5 cms. above ground in different fields.

The extreme values (highest and lowest) of maximum and minimum air temperatures at 1½ meter above ground, and the absolute values (lowest) of minimum air temperatures at 5 cms. above ground in dry fields are extracted from their corresponding daily routine values. Dates of occurrences are included in separate columns beside the corresponding extreme values.

The thermometers used for minimum air temperature at 5 cm. above ground are of the ordinary minimum type (alcohol) with the bulbs screened with small separate screens of horizontal 5 cm. length and 2 cm. diameter metal tubing painted white outside and black inside, and centered on the thermometer bulbs.

TABLE C 3.—Annual values of (Solar + Sky) Radiation, Duration of bright sunshine, Relative humidity, Vapour pressure at 1½ metres above ground, Evaporation and Rainfall.

This table gives the following data :

- The annual mean values of the (solar + sky) radiation.
- The annual total actual and total possible durations of bright sunshine, the percentage of the total actual with respect to the total possible duration.
- The annual mean of the day of relative humidity, and of relative humidity at 1200 U.T. and the lowest value of relative humidity during the year.
- The annual mean of the day of vapour pressure and of vapour pressure at 1200 U.T., the highest and lowest values of vapour pressure during the year.
- The annual mean values of the evaporation taken by the Piche tube and by class "A" evaporation pan.
- The annual total rainfall, and the maximum rainfall in one day during the year.

The annual mean value of the (solar+sky) radiation is the arithmetic mean of the monthly mean values. The monthly mean value is the arithmetic mean of the daily values. The (solar+sky) radiation is obtained, daily from the records of a Robitzsch actinograph ; the Robitzsch values at Bahtim and Tahrir are regularly compared with the records of an Eppley pyrliometer. The sensitive elements of the Robitzsch actinograph and of the Eppley pyrliometer are at 100 cm approximately above the ground.

The annual total actual and total possible duration of bright sunshine is the sum of the corresponding daily values during the year. The types of instruments used for the measurement of the duration of bright sunshine, their exposure and the calculation of the total possible duration values are as given in notes on table A1.

The annual mean relative humidity of the day and at 1200 U.T., mean vapour pressure of the day and at 1200 U.T. and mean evaporation are the arithmetic means of the corresponding monthly mean values. The monthly mean values of these elements are the arithmetic means of the corresponding mean daily values during the month.

The relative humidity and vapour pressure values at a certain hour are derived from the readings of ventilated dry and wet bulb mercury thermometers freely exposed in the screens using the Aspirations Psychrometer Tafeln of the Deutschen Wetterdienst 1955. The height of the bulbs is 170 cms approximately above the ground.

The mean relative humidity or vapour pressure for a given day is the mean of the eight principal and secondary observation values which are extracted from the readings of the dry and wet bulb thermometers, the values at 0000, 0300, and 2100 U.T. being extracted from the records of the mercury in steel hygrograph except at Kharga and M. Matruh where these values are obtained from visual readings of the dry and wet bulb thermometers.

The lowest value of the relative humidity and its date of occurrence are obtained from the records of a hair hygrograph exposed in the screen, the height of the hair is 170 centimeters approximately above the ground.

The absolute maximum and minimum values of vapour pressure during the year are extracted from the values of the eight principal and secondary observations.

Evaporation measurements are taken once daily at 0600 U.T. from a Piche tube and also a class "A" evaporation pan and give the evaporation for the previous 24 hours. The Piche tube is installed in the screen with the dry and wet bulb, maximum and minimum thermometers; the colour and effective area of the evaporation disc are as given in the notes on table A1. The class "A" evaporation pan is of the type recommended by the Commission of Instruments and Methods of Observation of the World Meteorological Organization Rec 42 (CIMO-56); it is of a cylindrical shape, 25.4 centimeters deep, 120.6 centimeters in diameter (inside dimensions). The pans, except at Bahtim, are freely exposed in the open air in the dry field, its rim at a height of 41 cms. above ground, far from obstacles such as buildings or trees. At Bahtim the pan is protected from animals and birds by a cylindrical cover of the same diameter as the pan and 30 cm height, made of metal wire mesh of one cm. side. Reduction of evaporation by 11%, established by systematic study is being allowed for in the data published.

The types of instruments used for measuring the amount of rainfall, their exposure and the evaluations of these amounts are given in the notes on table A 3.

TABLE C 4.—Extreme Soil Temperature at Different Depths in Different Fields.

The highest and lowest values of soil temperatures at the selected depths are extracted from their corresponding daily routine values.

The soil temperature readings are taken in the different fields at the specified depths ranging from 2 cms to 300 cms as indicated in the table. These readings are taken regularly during the period from 0600 to 1800 U.T. according to the following schedule, except at Kharga where the observations are as appropriate but extend in the period between 1800 and 0600 U.T.

- at 0600 U.T. and every three hours for the 2,5 and 10 cms depths.
- at 0600 U.T. and every six hours for the 20 and 50 cms depths.
- at 1200 U.T. for the 100 and 200 cms. depths.
- at 0900 U.T. once every 3 days for the 300 cms depth.

The thermometers used are of the Fuess or the Fridrich type.

TABLE C 5.—Surface Wind

This table gives the following data :

— The annual mean of the day, the night-time and the day-time of wind speeds.

— The annual number of days with surface wind speed at 10 metres reaching or exceeding specified limits for at least 5 minutes ; the highest gust recorded during the year and its date of occurrence.

The annual daily mean, the night-time mean and the day-time mean of the surface wind speeds are the arithmetic means of monthly mean values. The monthly mean values of these elements are the arithmetic means of the mean daily values. The mean wind speed of the day is the mean for the period of 24 hours from 1800 U.T. of the previous day. The night-time mean wind speed is calculated as the mean for the period 1800 U.T. of the previous day to 6000 U.T. of that day. The day-time mean is similarly computed for the period 0600 U.T. to 1800 U.T. of the same day.

The type of the wind instrument used is of the run counter of the Lambrecht type, the cups of which are at $1\frac{1}{2}$ metres above the ground.

The annual number of days with surface wind speed reaching or exceeding specified values of velocities (10, 15, 20, 25, 30, 35 & 40 Knots) for at least 5 minutes at any time between 2200 & 2200 U.T. irrespective of its direction are extracted from the daily routine analysis of the surface wind records during the whole year. The daily records of the Dine Pressure Tube Anemograph are used. The highest gust refers to the highest excursion made by the velocity pen on the records during the whole year. The head of the instrument is at a height of 10 metres above ground level.

LIST OF STATIONS APPEARING IN THE REPORT — SYNOPTIC AND CLIMATOLOGICAL STATIONS
YEAR 1974

District.	Station	Index number I III	Latitude °N	Longitude °N	Elevation of the ground in metres (H or Hs)	Altitude of the station in metres (Hp)	Altitude of the baro meter cistern in metres	Height of wind recording instruments (metres)		Synoptic observations							Hourly observations (11 Half hourly observ. (h (0000-2400)	Upper air observations P (Pilot Balloon) W (Radio Wind) R (Radio Sonde)				Remarks	
								Above building	Above ground	00	03	06	09	12	15	18		21	00	06	12		18
								Mediterranean	Sallum	62 300	31 33	25 11	4.0	6.0	5.2	10.0		14.0	x	x	x		x
	Mersa Matruh (A)	306	31 20	27 13	30.7	30.0	30.0	10.0	17.5	x	x	x	x	x	x	x	x	H	RW	W	RW	W	
	Alexandria . . . (A)	318	31 12	29 57	-3.35	6.78	6.45	10.0	22.08	x	x	x	x	x	x	x	x	H	P	—	P	—	
	Port Said (A)	333	31 17	32 14	1.1	6.1	2.7	—	—	x	x	x	x	x	x	x	x	H	P	—	P	—	
	El Arish	336	31 07	33 45	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
	Ghazza	338	31 30	34 27	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Lower Egypt	Tanta	318	30 47	31 00	7.31	14.85	12.51	10.0	12.0	x	x	x	x	x	x	x	x	H	—	—	—	—	
Cairo Area	Cairo (A)	366	30 08	31 24	111.54	74.5	64.72	—	10.0	x	x	x	x	x	x	x	x	h	—	—	—	—	
	Helwan	378	29 52	31 20	139.26	149.68	140.68	—	10.0	x	x	x	x	x	x	x	x	—	RW	W	RW	W	
Upper Egypt	Fayoum	381	29 18	30 51	23.43	—	—	10.0	13.8	—	—	x	x	x	x	x	—	H	—	—	—	—	
	Minya (A)	337	28 05	30 44	39.0	40.5	44.2	10.0	20.15	x	x	x	x	x	x	x	x	H	P	—	P	—	
	Asayout (A)	333	27 11	31 06	71.08	69.6	69.6	15.0	20.0	x	x	x	x	x	x	x	x	H	—	—	—	—	
	Luxor (A)	405	25 40	32 42	95.0	88.45	88.45	10.0	21.0	x	x	x	x	x	x	x	x	H	—	—	—	—	
	Aswan (A)	414	23 58	32 47	200.0	193.5	198.95	10.0	15.0	x	x	x	x	x	x	x	x	H	RW	W	RW	W	
Western Desert	Siwa	417	29 12	25 29	-15.0	-13.26	-13.26	10.0	14.6	x	x	x	x	x	x	x	x	H	P	—	P	—	
	Bahariya	420	28 20	28 54	128.0	129.5	129.5	—	—	x	x	x	x	x	x	x	x	H	P	—	P	—	
	Farafra	423	27 03	27 58	90.0	92.1	92.1	—	—	—	x	x	x	x	x	x	—	H	—	—	—	—	
	Dakhla	432	25 29	29 00	106.21	111.27	107.75	10.0	14.7	x	x	x	x	x	x	x	x	H	P	—	P	—	
	Kharga	435	25 27	30 32	77.79	72.75	78.68	10.2	14.2	x	x	x	x	x	x	x	x	H	P	—	P	—	
Red Sea	Tor	459	28 14	33 37	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
	Hurghada	462	27 17	33 46	1.0	2.75	2.75	10.0	15.0	x	x	x	x	x	x	x	x	H	—	—	P	—	
	Quseir	465	26 08	34 18	8.7	10.83	10.0	10.0	14.4	x	x	x	x	x	x	x	x	H	—	—	—	—	

GENERAL SUMMARY OF WEATHER CONDITIONS

YEAR 1973

Markedly cold winter with rainfall records in January and December. Changeable weather in Spring with short khamsin heat waves and rain fall records in March. Normal hot weather in Summer. Generally mild Autumn with light rain, intervined by several heat waves.

Winter :

Several cold waves prevailed in succession most of the season. Nevertheless Winter was ended by a markedly warm wave which prevailed during the second half of February. The Most intense cold waves were experienced during the third and fourth week of January. Weather was severely cold at some nights in scattered places in Middle Egypt and Western Desert.

The cold waves were associated with heavy rain, thundery at times over the northern Parts in January. But in February or December, rain-fall was light and subnormal in general apart from few coastal places in north.

It is worthy to mention that rainfall in January attained records for daily amount at Sidi Barrani since 1952 ; for monthly amounts at Sallum, Rosetta, Banha since 1946, 1931, 1912 respectively ; for both daily and monthly amounts at Mersa Matruh and Balteam since 1947, 1961 respectively. In December rainfall daily and monthly amounts attained records at Alexandria (since 1942).

Surface winds were generally light to moderate : W to NW in north and N to NW in south. In association with cold waves

winds were generally S to SW, fresh to strong at times with scattered rising sand and few sandstorms.

Early morning mist developed during several days at scattered places in lower Egypt. Cairo, north of Middle Egypt.

Spring :

Weather was changeable ; it commenced by a cold rainy wave during the first week of March, and was intervined by several Khamsin heat waves, short in general. The hottest waves were experienced during the second, third weeks of April and the third week of May. During the khamsin waves, surface winds were generally S to SW fresh to strong at times with scattered rising sand and few sandstorms.

After passage of khamsin depressions mild periods were enjoyed during which surface winds were generally light to moderate N to NW and early morning low clouds, mist developed over scattered places in lower Egypt, Cairo.

Rainfall was light and subnormal most of the season. During March, rainfall was generally abnormal and attained records for both daily, monthly amounts at Alexandria (since 1942) and at Wadi El Natron (since 1946)

Summer :

Normal weather prevailed, generally mild or humid coastal areas, hot or rather humid in middle parts, extremely hot or dry in the southern parts.

Early morning low clouds, mist developed frequently over scattered places in lower Egypt, Cairo.

Surface winds were generally N to NW, light to moderate but occasionally fresh with light rising sand in desert areas.

Autumn :

Weather was generally mild, intervened by several heat waves the hottest of which

occurred during the second week of September or the third week of October. The season ended with a cold wave during the second half of November.

Rain was reported only in November, and was light or subnormal in general apart from few places on the Mediterranean coast where rainfall amounts were above normal.

Early morning mist or fog developed during several, days over scattered places in Lower Egypt, Cairo.

Surface winds were generally light to moderate NE to NW, freshened during some days with scattered rising sand mainly in desert areas.

SURFACE DATA
Table A1. - ANNUAL VALUES OF THE ATMOSPHERIC PRESSURE, AIR TEMPERATURE,
RELATIVE HUMIDITY, BRIGHT SUNSHINE DURATION & PICHE EVAPORATION
YEAR - 1974

Station	Atmospheric Pressure mbs M.S.L.		Air Temperature °C									Relative Humidity %		Bright Sunshine Duration (Hours)		Piche Evaporation (mms) Mean	
	Mean	D.F. Normal or Average	Maximum		Minimum		A+B 2	Dry Bulb		Wet Bulb		Mean	D.F. Normal or Average	Total Actual	Total Possible		
			A Mean	D.F. Normal or Average	B Mean	D.F. Normal or Average		Mean	D.F. Normal or Average	Mean	D.F. Normal or Average						
Sallum	1014.1	-0.5	24.9	-0.4	16.0	+0.3	20.5	20.1	+0.1	15.6	-0.2	67	+ 8	—	—	—	6.6
Mersa Matruh (A)	1014.4	-0.3	23.6	-0.7	14.7	+0.3	19.1	19.1	-0.1	15.5	-0.2	69	+ 2	3432.7	4442.8	76.0	5.2
Alexandria (A)	1014.2	0.0	25.4	+0.3	15.4	-0.4	20.4	19.8	-0.5	16.4	-0.3	70	+ 2	3343.0	4441.3	75.2	4.0
Port Said (A)	—	—	25.1	+0.4	17.5	-0.8	21.3	20.6	-0.4	17.0	-0.7	68	- 2	3402.1	4441.3	76.6	4.3
El Arish	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ghazza	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Tanta	1013.5	-0.4	27.0	-1.0	12.8	-0.1	19.9	19.2	-0.9	15.4	-0.4	63	+10	3507.5	4441.2	79.0	3.7
Cairo	1014.4	-0.4	27.8	-0.2	16.2	+0.6	22.3	21.6	+0.1	16.0	+0.1	57	+ 7	—	—	—	11.2
Fayoum	—	—	30.0	0.0	14.0	-0.6	22.0	21.6	-0.2	15.7	+0.1	55	+ 5	—	—	—	6.6
Minya (A)	1013.6	+0.3	29.8	-0.2	13.2	+0.1	21.5	21.4	+0.2	15.0	0.0	50	+ 1	3766.0	4437.8	84.9	11.2
Assyout . . . (A)	1013.0	+0.2	30.0	-0.3	15.0	-0.4	22.5	22.3	-0.5	14.4	-0.2	42	+ 5	—	—	—	13.0
Luxor (A)	1011.0	-0.2	33.5	0.0	15.4	-0.2	24.4	24.3	-0.2	15.1	-0.4	37	+ 2	—	—	—	9.6
Aswan (A)	1010.9	0.0	33.8	-0.4	17.8	+0.4	25.8	25.6	-0.4	14.2	+0.1	25	+ 4	—	—	—	21.4
Siwa	1014.2	-0.2	29.1	-0.7	13.9	-0.7	21.5	21.5	-0.2	14.5	+0.4	47	+11	3720.9	4439.6	83.8	11.4
Bahariya	1013.4	-0.5	29.5	-0.1	14.2	+0.5	21.8	21.8	-0.3	13.9	-0.4	40	+ 1	—	—	—	10.1
Farafra	—	—	30.6	+0.5	14.0	+0.5	22.3	22.1	+0.2	13.1	+0.1	34	+ 1	—	—	—	12.3
Dakhla	1013.4	+0.2	31.0	-0.4	12.7	-1.8	21.8	22.0	-0.8	13.1	-0.4	35	+ 6	—	—	—	15.9
Rharga	1012.2	+0.1	32.1	-0.2	16.0	+0.1	24.0	24.5	+0.1	14.0	0.0	32	+ 1	3900.0	4435.8	87.9	13.6
Tor	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hurghada	1011.1	-0.1	27.8	+0.4	18.2	+0.5	23.0	23.1	-0.1	16.7	-0.1	50	+ 1	3740.3	4437.4	84.8	10.1
Quseir	1010.8	-0.5	27.6	-0.7	20.7	0.0	24.2	24.2	-0.1	17.7	0.0	49	0	—	—	—	9.6

**Table A 2.— MAXIMUM AND MINIMUM AIR TEMPERATURES
YEAR — 1974**

Station	Maximum Temperature °C									Grass Min. Temp.		Minimum Temperature °C							
	Highest	Date	Lowest	Date	No. of Days with Max-Temp.					Mean	Dev. From Normal	Highest	Date	Lowest	Date	No. of Days with Min. Temp.			
					>25	>30	>35	>40	>45							<10	<5	<0	<-5
Sallum	42.6	17/6	13.7	23/1	180	12	11	1	0	15.1	—	24.2	20/7	6.2	25/1	33	0	0	0
Merqa Matruh . (A)	39.0	19/5	11.2	20/1	171	28	4	0	0	13.0	—	24.0	10/9	3.8	28/1	60	1	0	0
Alexandria . . (A)	38.5	20/5	13.2	23/1	193	65	6	0	0	13.4	—	24.6	9/8	4.3	2/2	58	1	0	0
Port Said . . . (A)	38.6	26/9	11.6	14/1	189	90	1	0	0	16.8	—	25.3	9/8	6.4	27/1	27	0	0	0
El Arish	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ghazza	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Tanta	40.5	20/5	11.2	17/1	223	164	17	1	0	—	—	22.1	11/9	2.0	4/2	127	20	0	0
Cairo	41.5	9,10/9	11.2	23/1	229	177	62	5	0	—	—	26.4	10/9	4.9	24/1	58	1	0	0
Fayoum	44.5	18/6	13.6	26/1	248	201	119	15	0	11.5	—	23.4	19/6,1/7	-1.2	24/1	107	37	1	0
Minya (A)	43.2	14,16/4	13.8	21/1	247	206	115	18	0	11.7	—	23.6	1/7	-1.0	24/1	125	52	2	0
Assyout (A)	44.6	15/4	12.6	26/1	249	211	124	20	0	12.2	—	28.0	14/4	1.3	24/1	99	17	0	0
Luxor (A)	46.0	18/6	16.4	17/1	210	209	201	77	4	10.5	—	27.2	20/6	0.8	24/1	100	32	0	0
Aswan (A)	46.6	19/6	16.0	18/1	202	245	207	88	4	—	—	29.2	20/6	3.8	18/1	76	4	0	0
Siwa	42.1	14/4	15.3	24/1	237	195	102	9	0	13.0	—	23.5	1/7	0.2	24/1	114	29	0	0
Bahariya	43.1	18/6	13.0	23/1	243	198	113	17	0	13.4	—	24.5	18/6	-1.5	24/1	111	35	1	0
Farafra	44.0	15/4	13.3	24/1	252	213	138	13	0	13.2	—	26.3	19/6	0.7	24/1	113	39	0	0
Dakhla	45.1	17/4	11.1	26/1	260	223	147	31	1	12.4	—	28.1	23/7	-1.7	17/2	134	69	5	0
Kharga	45.1	17/4	14.5	26/1	270	230	172	53	1	14.0	—	30.0	19/6	0.2	18/1	101	41	0	0
Tor	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hurghada	38.2	10/9	15.4	24/1	248	147	16	0	0	—	—	28.8	3,4/8	6.1	24/1	47	0	0	0
Qusier	42.2	14/4	16.3	24/1	245	144	4	1	0	17.1	—	29.8	11/9	12.0	24/1	0	0	0	0

Table A3.—SKY COVER AND RAINFALL

YEAR — 1974

Station	Mean Sky Cover Oct.					Rainfall mms										
	00 U.T.	60 U.T.	12 U.T.	18 U.T.	Dail. Mean	Total Amount	Dev. From Normal	Max. Fal in on day		Number of Days with Amount of Rain						
								Amount	Date	<1.0	≥0.1	≥0.1	≥5.0	≥10	≥25	≥50
Sallum	3.1	1.8	2.6	2.0	2.4	117.9	+ 4.4	33.5	12/1	0	35	18	7	2	1	0
Mer a Matruh (A)	2.0	3.3	2.8	2.3	2.6	206.1	+5.9	34.6	12/1	3	52	28	15	5	1	0
Alexandria (A)	2.9	3.5	3.5	2.9	3.1	405.1	+21.6	54.3	4/12	3	63	38	21	13	4	1
Port Said (A)	—	2.2	1.9	1.4	—	83.6	+11.9	11.6	10/2	0	33	21	4	1	0	0
El Arish	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ghazza	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Tanta	0.9	2.2	2.7	0.8	1.6	86.7	+40.1	10.6	29/1	1	32	21	8	1	0	0
Cairo	1.3	2.5	2.3	1.3	1.8	37.0	+13.0	9.0	14/1	8	24	10	2	0	0	0
Fayoum	—	1.2	1.7	1.0	—	2.0	— 8.7	2.0	1/3	10	1	1	0	0	0	0
Miny (A)	0.7	1.2	1.6	0.8	1.0	1.7	— 2.0	1.0	1/3	6	3	1	0	0	0	0
Assyout (A)	0.4	0.6	0.9	0.6	0.6	Tr.	— 0.5	Tr.	2/1	1	0	0	0	0	0	0
Luxor (A)	0.8	1.2	1.3	1.1	1.1	2.0	+ 1.4	1.6	1/3	2	2	1	0	0	0	0
Aswan (A)	0.4	1.0	1.1	0.8	0.8	0.7	— 0.2	0.7	10/3	1	1	0	0	0	0	0
Siwa	1.6	1.7	2.1	1.4	1.7	29.9	+20.6	25.4	21/11	0	8	3	1	1	1	0
Bahariya	0.6	1.4	1.6	0.8	1.1	1.0	— 2.8	1.0	25/1	13	1	1	0	0	0	0
Farafra	—	0.8	1.2	0.8	—	4.0	+ 1.5	3.2	25/1	6	2	1	0	0	0	0
Dakhla	0.2	0.6	0.9	0.5	0.5	2.5	+ 1.2	1.4	25/1	0	2	2	0	0	0	0
Kharga	0.4	0.8	1.0	0.6	0.7	Tr.	— 1.1	Tr.	26/1	2	0	0	0	0	0	0
Tor	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hurgada	0.7	1.2	1.4	0.9	1.0	3.2	— 0.2	2.0	26/1	5	3	2	0	0	0	0
Qusear	0.6	1.3	1.5	1.0	1.0	3.4	0.0	1.8	16/3	1	3	1	0	0	0	0

Table A 4.—DAYS OF OCCURRENCE OF MISCELLANEOUS WEATHER PHENOMENA.

YEAR 1974

Station	Precipitation				Frost	Thunderstorm	Mist Vis \geq 1000 metres	Fog Vis $<$ 1000 Metres	Haze Vis \geq 1000 Metres	Thick Haze Vis $<$ 1000 Metres	Dust or Sandrising Vis \geq 1000 Metres	Dust or Sandstorm Vis $>$ 1000 Metres	Gale	Clear Sky	Cloudy Sky
	Rain	Snow	Ice, Pellets	Hail											
Sallum	40	0	0	0	0	1	0	0	0	0	12	7	0	170	2
Mersa Matruh (A)	47	0	0	0	0	4	32	3	25	0	74	7	1	157	27
Alexandria (A)	60	0	0	0	0	15	23	14	4	0	16	0	0	124	34
Port Said (A)	31	0	0	0	0	2	1	0	0	0	4	0	0	—	—
E Arish	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ghazza	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Tanta	32	0	0	0	0	0	73	1	6	0	4	0	0	239	9
Cairo (A)	22	0	0	0	0	1	147	15	70	0	58	5	0	219	6
Fayoum	1	0	0	0	0	0	5	1	1	0	6	0	0	—	—
Minya (A)	3	0	0	0	0	0	78	1	44	0	44	1	1	284	4
Assyout (A)	0	0	0	0	0	0	4	0	3	0	19	1	0	315	7
Luxor (A)	2	0	0	0	0	0	2	0	150	4	68	6	1	288	12
Aswan (A)	1	0	0	0	0	0	0	0	40	3	88	19	2	302	1
Siwa	9	0	0	0	0	2	3	0	3	0	89	3	0	229	15
Bahariya	1	0	0	0	0	0	2	1	0	0	14	1	0	281	3
Farafra	2	0	0	0	0	1	1	0	13	0	26	4	0	—	—
Dakhla	2	0	0	0	0	0	0	0	3	1	60	0	0	331	1
Kharga	0	0	0	0	0	0	0	0	4	0	41	0	0	318	5
Tor	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hurghada	3	0	0	0	0	1	0	0	5	0	67	2	0	283	10
Quseir	2	0	0	0	0	0	0	0	4	0	7	0	0	290	9

TABLE A 5.—NUMBER IN HOURS OF OCCURRENCES OF CONCURRENT SURFACE WIND SPEED AND DIRECTION RECORDED WITHIN SPECIFIED RANGES

YEAR 1974

Station	Calm (hours)	Variable (hours)	Unrecorded (hours)	Wind speed in knots	Number in hours of occurrences of wind blowing from the ranges of directions indicated												All directions
					345	015	045	075	105	135	165	195	225	255	285	315	
					/	/	/	/	/	/	/	/	/	/	/	/	
					014	044	074	104	134	164	194	224	254	284	314	344	
Sallam	95	34	26	1-10	349	889	753	513	333	134	91	83	158	525	1073	1282	6183
				11-27	21	81	88	64	34	18	30	67	212	536	699	562	2412
				28-47	0	0	0	0	0	0	0	0	1	0	0	3	10
				≥48	0	0	0	0	0	0	0	0	0	0	0	0	0
				All speeds	370	970	841	577	367	152	121	150	371	1067	1772	1847	8605
Mersa Matruh . (A)	243	2	24	1-10	661	349	147	228	282	267	231	357	732	803	405	864	5326
				11-27	183	68	44	148	151	67	39	168	226	246	588	1151	3133
				28-47	0	0	0	0	2	2	9	7	0	1	9	2	32
				≥48	0	0	0	0	0	0	0	0	0	0	0	0	0
				All speeds	844	417	191	376	435	336	333	532	958	1050	1002	2017	8491
Alexandria . . (A)	28	1	6	1-10	880	620	341	290	247	200	303	313	144	259	796	1955	6348
				11-27	137	107	79	44	7	7	11	179	158	182	585	880	2376
				28-47	0	0	0	0	0	1	0	0	0	0	0	0	1
				≥48	0	0	0	0	0	0	0	0	0	0	0	0	0
				All speeds	1017	727	420	334	254	208	314	492	302	441	1381	2835	8725
Tanta	262	47	26	1-10	1081	753	494	319	151	90	181	316	810	808	1179	1141	7374
				11-27	226	56	91	59	24	8	20	15	75	140	121	210	1051
				28-47	0	6	0	0	0	0	0	0	0	0	0	0	0
				≥48	0	0	0	0	0	0	0	0	0	0	0	0	0
				All speeds	1307	809	585	378	175	104	201	376	885	948	1300	1357	8425
Cairo (A)	600	3	39	1-10	771	817	480	249	122	133	326	326	313	712	843	945	6037
				11-27	370	407	148	83	62	38	126	152	144	159	151	241	2081
				28-47	0	0	0	0	0	0	0	0	0	0	0	0	0
				≥48	0	0	0	0	0	0	0	0	0	0	0	0	0
				All speeds	1141	1224	628	332	184	171	452	478	457	871	994	1186	8118
Fayoum	133	50	36	1-10	2483	2364	203	80	77	140	254	397	512	444	317	748	8019
				11-27	76	245	36	0	0	3	20	17	25	38	33	29	522
				28-47	0	0	0	0	0	0	0	0	0	0	0	0	0
				≥48	0	0	0	0	0	0	0	0	0	0	0	0	0
				All speeds	2559	2609	239	80	77	143	274	414	537	482	350	777	8541
Minya (A)	425	10	221	1-10	480	142	46	87	74	101	111	49	94	1196	2015	1488	5883
				11-27	593	123	4	4	18	37	39	35	21	98	280	960	2212
				28-47	0	0	0	0	0	0	3	0	1	3	2	0	9
				≥48	0	0	0	0	0	0	0	0	0	0	0	0	0
				All speeds	1073	265	50	91	92	138	153	54	116	1297	2297	2448	8104
Asyout (A)	150	25	40	1-10	2422	2700	126	44	39	192	424	177	122	174	330	643	6460
				11-27	539	1196	10	1	0	6	10	32	13	28	90	149	2080
				28-47	1	1	0	0	0	0	0	1	2	0	0	0	5
				≥48	0	0	0	0	0	0	0	0	0	0	0	0	0
				All speeds	2962	2957	136	45	39	199	440	210	137	202	426	792	8545
Luxor (A)	1169	3	174	1-10	840	545	249	191	177	206	860	642	413	764	1130	989	6988
				11-27	37	5	13	1	1	4	9	13	8	36	131	168	426
				28-47	0	0	0	0	0	0	0	0	0	0	0	0	0
				≥48	0	0	0	0	0	0	0	0	0	0	0	0	0
				All speeds	877	550	262	192	148	210	875	655	421	800	1267	1157	7414

**Table A 5. (contd.)—NUMBR IN HOURS OF OCCURRENCES OF CONCURRENT SURFACE
WIND SPEED AND DIRECTION RECORDED WITHIN SPECIFIED RANGES
YEAR — 1974**

Station	Calm (hours)	Variable (hours)	Unrecorded (hours)	Wind speed in knots	Number in hours of occurrences of wind blowing from the ranges of directions indication														
					345	015	045	075	105	135	165	195	225	255	285	315	All directions		
					/	/	/	/	/	/	/	/	/	/	/	/			
					014	044	074	104	134	164	194	224	254	284	314	344			
Aswan (A)	98	8	33	1-10	2092	948	142	85	83	80	82	55	75	282	526	1678	6128		
				11-27	675	215	14	3	28	29	21	7	9	71	317	1099	2488		
				28-47	2	0	0	0	0	0	1	0	0	0	0	0	0	2	5
				≥ 48	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
All speeds	2269	1163	156	88	111	109	104	62	84	353	843	2779	8621						
Siwa	414	40	135	1-10	341	816	720	852	601	282	163	147	230	796	937	889	6747		
				11-27	56	204	91	111	142	36	28	27	35	112	284	300	1424		
				28-47	0	0	0	0	0	0	4	0	0	0	0	0	0	0	
				≥ 48	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
All speeds	370	1020	811	963	743	318	189	174	265	908	1221	1189	8171						
Dakhla	56	172	345	1-10	685	389	255	234	165	165	233	240	417	845	1351	192	6905		
				11-27	386	154	11	2	5	8	15	10	19	25	128	509	1272		
				28-47	8	1	0	0	0	0	0	0	0	0	1	0	10		
				≥ 48	0	0	0	0	0	0	0	0	0	0	0	0	0		
All speeds	1079	544	266	236	170	173	248	250	436	870	1480	2435	8187						
Kharga	58	18	216	1-10	2403	860	234	135	123	92	101	59	107	268	495	1436	6373		
				11-27	1437	193	1	6	2	16	11	7	14	36	87	285	2095		
				28-47	0	0	0	0	0	0	0	0	0	0	0	0	0		
				≥ 48	0	0	0	0	0	0	0	0	0	0	0	0	0		
All speeds	3900	1053	235	141	125	108	112	66	121	304	582	1721	8468						
Harghada	133	21	170	1-10	492	317	162	123	123	137	65	61	103	548	1610	502	4243		
				11-27	756	74	7	8	24	24	8	3	10	247	1361	1660	4182		
				28-47	23	0	0	0	0	0	0	0	0	0	4	7	11		
				≥ 48	0	0	0	0	0	0	0	0	0	0	0	0	0		
All speeds	1248	391	169	131	147	161	73	64	113	795	2975	2169	8436						
Quseir	21	20	1376	1-10	863	571	291	140	91	106	134	114	120	516	917	807	4730		
				11-27	929	524	200	49	3	1	6	0	5	117	204	575	2613		
				28-47	0	0	0	0	0	0	0	0	0	0	0	0	0		
				≥ 48	0	0	0	0	0	0	0	0	0	0	0	0	0		
All speeds	1792	1095	491	189	94	107	140	114	125	633	1121	1442	7343						

UPPER AIR CLIMATOLOGICAL DATA

YEAR — 1975

This report does not include the upper air data (Table B₁, Table B₂, & Table B₃) since no observations were taken at the three radiosonde stations during October, November and December 1974.

REVIEW OF AGRO-METEOROLOGICAL STATIONS

MERSA MATRUH—YEAR 1974

For the year as a whole the mean daily air temperature and relative humidity were nearly the same as normal.

The total annual rainfall was 206.1 mm. which is markedly above normal.

Comparing the mean values of elements in the months of the year with the corresponding normal values we find the following :

The mean daily air temperature was above normal in March, April & October ; below normal in November & December ; and nearly the same as normal in other months of the year.

The mean daily relative humidity was markedly above normal in January & March ; and departed slightly from normal in the rest of the year.

The monthly rainfall amount was above normal in January ; February, March, April & December ; below normal in May, June, September October & November.

The mean daily actual sunshine duration was above normal in February, May, June, July & October , below normal in January, April November & December ; and nearly the same as normal in March; August & September.

The mean daily wind speed at 1.5 met. height was higher than the corresponding value of the year 1973 in January & December, lower in February, March & August ; and nearly the same as the year 1973 in other months of the year.

TAHRIR—YEAR 1974

For the year as a whole the mean daily air temperature and relative humidity were nearly the same as normal.

The total annual rainfall was 52.7 mm. against 36.9 mm. for normal.

The characteristic features of the year can be summarized in the following extreme mean values of elements acquired in the months of the year since the year 1961 :

January	: the lowest mean daily air temperature.
March	: the lowest mean pan evaporation.
May	: the lowest mean daily & mean minimum air temperature.
June	: the lowest mean daily pan evaporation.
August	: the lowest mean minimum air temperature.
September & October	: the highest mean maximum air temperature.
December	: the highest mean daily relative humidity.

Comparing the mean values of elements in the months of the year with the corresponding normal values we find the following :

The mean daily air temperature was above normal in October ; below normal in January, February, May, June, August, November & December ; and nearly the same as normal in March, April, July & September

The mean daily relative humidity was above normal in January, March, June & December ; and departed slightly from normal in the rest months of the year.

The monthly rainfall amount was above normal in January, March & December ; below normal in February, April, May, September, October & November.

The mean daily actual sunshine duration was above normal in May, below normal in January and departed slightly from normal otherwise.

The mean daily pan evaporation was below normal in January, March, May, June, August & December; the departures from normal were slight otherwise.

The mean daily wind speed at 1.5 met. height was below normal in March, June, July, August; and the departures from normal were slight in other months of the year.

Bahtim — Year 1974

For the year as a whole the mean daily air temperature and relative humidity were nearly the same as average. The total annual rainfall was 37.9 mm. against 33.7 mm. for average.

The characteristic features of the year can be summarized in the following extreme mean values of elements acquired in the months of the year since the year 1967 :

- January** : the lowest mean daily & mean maximum air temperature; the highest monthly rainfall amount.
- March** : the lowest mean pan evaporation.
- April** : the lowest mean relative humidity, the highest mean pan evaporation.
- May** : the lowest mean minimum air temperature, the highest mean sunshine duration.
- July** : the lowest mean pan evaporation.
- September** : the lowest mean relative humidity.
- October** : the highest mean daily & mean maximum air temperature, the highest mean pan evaporation.
- November** : the highest mean pan evaporation.
- December** : the lowest mean maximum air temperature.

Comparing the mean values of elements in the months of the year with the corresponding average values we find the following :

The mean daily air temperature was above average in April, September & October; below average in January, May, June, August & December; and deviated slightly from average in other months of the year.

The mean daily relative humidity was above average in January & March; below average in April, September; and departed slightly from average otherwise.

The monthly rainfall amount was above average in January & March; below average in April, May & November; and departed slightly from average otherwise.

The mean daily actual sunshine duration was above average in May, November & December; below average in January & April and nearly the same as average in other months of the Year.

The mean daily pan evaporation was above average in April & October; below average in January & March; otherwise the departures from average were slight.

The mean daily wind speed at 1.5 met. height was below average in March, June & July; and departed slightly from average in other months of the year.

Kharga — Year 1974

For the year as a whole the mean daily air temperature and relative humidity were rather normal. No rain was reported apart from trace in January and March.

The characteristic features of the year can be summarized in the following extreme mean values of elements acquired in the months of the year since the year 1964 :

- January** : the lowest mean maximum air temperature, the highest mean relative humidity, the lowest mean sunshine duration, the lowest mean pan evaporation.
- February** : the lowest mean sunshine duration.
- March** : the lowest mean sunshine duration, the lowest mean pan evaporation.
- April** : the highest mean daily, mean minimum & maximum air temperatures.
- October** : the highest mean maximum air temperature.
- December** : the lowest mean daily & mean maximum air temperature, the highest mean relative humidity.

Comparing the mean values of elements in the months of the year with the corresponding average values we find the following:

The mean daily air temperature was above average in March; April & October below average in January, June & December; and nearly the same as average in other months of the year.

The mean daily relative humidity was above average in January & December; and departed slightly from average in the rest of the year.

The mean daily actual sunshine duration was below average in January, February & March and above average otherwise.

The daily pan evaporation was above average in April, October & November, below average in the other months of the year. The departures from normal were generally slight.

The mean daily wind speed at 1.5 met. height was below average in March, June, July, September & October and departed slightly from average in the other months of the year.

**Table C 1.—AIR TEMPERATURE AT 1½ METRES ABOVE GROUND
YEAR — 1974**

STATION	Air Temperature (°C)					Mean Duration in hours of daily air temperature above the following values										
	Mean Max.	Mean Min.	Mean of the day	Night time mean	Day time mean	-5°C	0°C	5°C	10°C	15°C	20°C	25°C	30°C	35°C	40°C	45°C
Mersa Matruh . . .	23.6	14.8	19.3	20.8	17.3	24.0	24.0	24.0	23.2	17.7	10.8	4.3	0.3	0.02	0.0	0.0
Tahrir	29.0	13.0	19.9	16.2	22.9	24.0	24.0	23.7	21.4	17.1	11.6	6.0	2.6	0.3	0.0	0.0
Bahtim	27.5	12.2	19.5	15.7	22.6	24.0	24.0	23.6	21.0	16.6	10.9	5.9	2.6	0.2	0.0	0.0
Kharga	32.1	16.0	24.6	21.5	27.2	24.0	24.0	23.8	22.1	19.4	16.4	12.4	7.3	3.1	0.5	0.0

**Table C 2.—EXTREME VALUES OF AIR TEMPERATURE AT 1½ METRES ABOVE GROUND,
ABSOLUTE MINIMUM AIR TEMPERATURE AT 5cms ABOVE GROUND OVER
DIFFERENT FIELDS.**

YEAR — 1974

STATION	Max. Temp. at 1½ metres (°C)				Min. Temp. at 1½ metres (°C)				Min. Temp. at 5 cms. above			
	Highest		Lowest		Highest		Lowest		Dry soil		Grass	
	Value	Date	Value	Date	Value	Date	Value	Date	Value	Date	Value	Date
Mersa Matruh . . .	38.0	19/5	11.2	20/1	24.0	10/9	3.8	25/1	1.6	25/1	—	—
Tahrir	41.9	9/9	13.4	17/1	23.4	11/9	0.8	3/1	-1.8	3/1	-2.2	24/1
Bahtim	41.5	10/9	11.3	23/1	22.8	11/9	0.2	25/1	-3.0	25/1	-3.8	25/1
Kharga	45.1	17/4	14.5	20/1	30.0	19/6	0.2	18/1	-1.8	18/1	—	—

**Table C 3.—(SOLAR+SKY) RADIATION, DURATION OF BRIGHT SUNSHINE, RELATIVE
HUMIDITY, VAPOUR PRESSURE AT 1½ METRES ABOVE GROUND, EVAPORATION &
RAINFALL**

YEAR — 1974

STATION	(Solar+Sky) Radiation gm. cal/cm²	Duration of Bright Sunshine (hours)			Relative Humidity			Vapour pressure (mms)					Evaporation (mms)		Rainfall (mms)				
		Total Actual monthly	Total Possible monthly	%	Mean of day	1200 U.T.	Lowest	Date	Mean of day	1200 U.T.	Highest	Date	Lowest	Date	Piche	Pan class (A)	Total Amount Monthly	Max. Fall in one day	Date
		M. Matruh	398.9	3432.7	4442.8	76	70	58	13	25/4	12.0	12.4	23.6	9/9	3.7	24.2	5.2	—	206.1
Tahrir . .	479.3	3494.3	4441.7	79	69	44	11	7/4	12.1	11.7	22.8	30/6	3.4	25/2	4.6	6.93	52.7	10.2	4/12
Bahtim . .	483.3	3480.8	4441.3	78	65	40	8	1/5	10.9	10.2	21.9	29/7	3.8	2/5	6.4	7.13	37.9	6.9	15/1
Kharga . .	578.2	3900.0	4435.6	88	34	22	4	13/6	7.2	22	15.9	19/9	1.7	7.4	13.5	13.92	Tr.	Tr.	36/1 15/3

TABLE C 4.— EXTREME SOIL TEMPERATURE AT DIFFERENT DEPTHS (CMS) IN DIFFERENT FIELDS

YEAR 1974

Station	Highest (H) Lowest (L)	Extreme soil temperature (°C) at different depths (cms.) in dry field.								Extreme soil temperature (°C) at different depths (cms.) in grass field.							
		2	5	10	20	50	100	200	300	2	5	10	20	50	100	200	300
M. Matruh . . .	H	44.7	42.2	36.2	31.8	30.2	27.2	25.2	—	—	—	—	—	—	—	—	—
	Date	17/6	17/6	19/7	19/7	1/9	30,31/8	17/10	—	—	—	—	—	—	—	—	—
	L	3.1	3.5	5.6	8.6	12.0	14/3	17.2	—	—	—	—	—	—	—	—	—
	Date	25/1	25/1	25/1	25/1	27.1	30.1	28/2	—	—	—	—	—	—	—	—	—
Tahrir	H	55.0	48.7	43.2	37.5	33.7	31.6	29.4	28.4	33.7	33.4	31.6	29.8	29.4	28.6	27.7	—
	Date	29/6	30/6	30/6	20/7 8/8	22/23/7 9/8	10,11 13/8	31/8*	27,30/9* 4,5/9	3/10	17/7	19/7	21/7	19,21/7 30/6*	9/8	9/8	15,17/8 19/8
	L	3.3	3.7	4.5	8.5	12.4	15.5	18.4	20.3	20.3	6.2	7.1	7.5	9.3	12.0	14.1	16.4
	Date	24/1	24/1	24/1	24/1	24/1	5,6/2 26/14*	10,11 14/2	9,12/3	24.1	24.1	24/1	24/1	24/1	24/1	26 &6/2	11,13 17/2
Bahtim	H	59.4	49.8	41.4	35.8	32.9	30.6	28.4	27.0	39.8	33.2	30.8	29.6	27.8	26.3	24.1	—
	Date	19/7	18/7	20,21/7	1/8	26/8	30/8* 3,4/9	30/9*	11,12/10	28/10	13/8	9.8	4.8	8/9	9,10/8	31/8	23,24/9
	L	4.0	4.7	8.2	12.6	16.8	18.9	2.6	22.7	22.7	5.0	6.4	8.0	9.9	12.8	15.1	18.0
	Date	3/1	25/1	24/1	24/1	28/1	14,15 16/2	16,17 18/3	1,4	24,25/1	24/1	24/1	24/1	24/1	26,27 28/1	9,10/2 11	14,15/3 19/3
Kharga	H	58.6	52.5	47.0	40.4	34.9	33.3	31.2	30.2	—	—	—	—	—	—	—	—
	Date	21/7	21/7	1/7	21/7	24/7	16,31/8	30/9 3,7/10	30/9 29/10	17/11	—	—	—	—	—	—	—
	L	3.8	5.8	7.9	12.8	18.7	21.7	24.5	26.4	—	—	—	—	—	—	—	—
	Date	27/1	27/1	27/1	27/1	27/1	6/2	24/2 4,9/3	19,24 25/3	—	—	—	—	—	—	—	—

* More than three dates.

Table C5—SURFACE WIND

YEAR 1974

STATION	Wind Speed m/sec at 1½ metres			Days with surface wind speed at 10 metres							MaxGust. (10 metres)	
	Mean of the day	Night time mean	Day time mean	≥10 knots	≥15 knots	≥20 knots	≥25 knots	≥30 knots	≥35 knots	≥40 knots	Value knots	Date
Mersa Matruh.	3.6	3.0	4.5	358	275	140	67	20	7	2	51	14/1, 12/4
Tabrir. . . .	1.9	1.3	2.5	351	183	47	12	3	0	0	42	12/4
Bahim	2.0	1.2	2.9	319	168	40	11	1	0	0	37	17/1, 12/4
Kharga. . . .	3.2	2.4	4.0	338	235	86	22	1	0	0	36	11/5, 15/6

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