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METEOROLOGICAL OFFICE

FORECASTING TECHNIQUES MEMORANDUM

Nº 18

SOME FURTHER FACILITIES AVAILABLE WITH THE DATA SORTING PROGRAMME

by

D.S.GILL

Met. O.18c

SEPTEMBER 1969

FTM 18

METEOROLOGICAL OFFICE

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G2081/PH/7/69/250

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File with FTM 18

Meteorological Office

Forecasting Techniques Memoranda

Amendment No 1 to FTM 18

p 1, section 2, line 3. Delete "two".

" " Table I. Add the following parametes:

Parameter	Units	Notes
Sea-level pressure	Tenths of a millibar	Three-hourly only
Vapour pressure	Tenths of a millibar	-
State of ground	Code figure	Three-hourly only
Past weather	Code figure	Three-hourly only
Visibility	Metres	-

p 2, section 4, Table II. Add the following parameters:

Surface wind direction — Lower tropopause height

Surface wind speed — Upper tropopause height

Tropopause pressure (upper)

Table II a). Add the following parameter:

Dew-point depression (units - whole degrees C)

Table II b). Add the following parameters:

Wind shear (speed) — Wind shear (direction)

p 4, Annex A. Add the following stations:

Gan	8	1/1/63	
Akrotiri	8	1/7/57	
Malta	24	1/7/57	30/4/58
	8	1/5/58	

p 5, Annex B. Amend the Seychelles entry to:

Seychelles	27/8/63	31/12/64

Add the following stations:

Christmas Island	15/10/56	19/12/59
Gibraltar	1/ 1/56	

/p 3 ....

G.13083/SS/3/71/180

FG4A

p 3 Insert new section:

7. Selected observations print-out program

A program has been written which will print out the hours and dates when the values of weather elements at a station lie within ranges specified by the user. The program does not give frequencies of occurrence, as do the data sorting programs (though the separate occurrences can be added manually) but it is thought that it will be of use in picking out and giving the dates and times of certain special weather conditions, for example fog with moderate south-easterly winds, hourly rainfall above a set value, freezing rain etc., perhaps after one of the data sorting programs has given the frequency of the conditions. Knowing the date of occurrence means that the appropriate Daily Register or synoptic charts can be used to investigate the special conditions more fully.

The program uses up to 5 controlling parameters which have their upper and lower limits set, for example surface wind 1-6 knots, present weather 80-82. Only one range of values for each parameter is allowed per analysis. The values of these controlling parameters and also the values of up to 5 additional (uncontrolled) parameters are printed out for each selected observation. Most of the elements reported on Metform 3257B can be used as parameters. The program can be used at present only with those stations in Annex's A of FTM's 16 and 18 which have 24 observations per day on magnetic tape. Requests for analyses using this program or for further information should be addressed to Met O 18c through the usual channels.

Met O 18c
March 1971

G.13083/SS/3/71/180

Some further facilities available with the Data Sorting Programme

by D. S. GILL

1. Introduction

The basic data sorting programme (DSP) developed in Met O 18c as an aid for outstation investigations has already been described in FTM No. 16. A brief mention was made of further versions of the programme which were being developed. The present memorandum gives details of the extra versions which are now available.

2. Additional parameters

Table II of FTM No. 16 gave details of the parameters used, together with the units in which they were recorded. As a result of the programme being used to meet the requests of outstations two more parameters have been added to the list and these are given in Table I.

TABLE I

Parameter	Units	Notes
Wet bulb temperature	Tenths of degrees C	
Year	Years	Printed as year minus 1900

3. Extra Stations

Originally only UK stations data were available on magnetic tape and a list of stations which were to be made available was given as an Annex in FTM 16. Data from some overseas stations are now being transferred to magnetic tape and a list of these is included at Annex A.

4. Upper Air Data

A version of the programme which will use data from upper air stations has been developed. A list of the upper air parameters currently available for use is given in Table II together with the units used. These upper air parameters can be used either with, or independently of, any surface parameters from any surface station, still subject to a maximum of four parameters. A list of upper air stations whose data have been transferred to magnetic tape is given in Annex B.

/TABLE

TABLE II

PARAMETERS USED IN THE UPPER AIR DATA SORTING PROGRAMME

Parameter	Units	Notes
Tropopause pressure	mb	Pressure of lowest tropopause reported
Tropopause temp.	degrees C	temperature of lowest tropopause reported.
a) At any one pressure level		
Temperature	whole degrees C	
Humidity Mixing Ratio	.01 g/kg	
Wind Direction	tens of degrees	
Wind Speed	knots	
Height	decametres	.5 decametre rounded down
Dew Point	whole degrees C	
Relative Humidity	%	
b) Between two pressure levels		
Lapse Rate	tenths degree C per kilometre	
Thickness	decametres	

5. Relationship incorporating a time interval between parameters

Experience with the original programme has shown that it is sometimes useful in investigations to relate the occurrence or non-occurrence of particular values of a parameter with values of another parameter at a different time of day. An example of this would be the occurrence of fog at 0900 GMT according to wind speed and direction at midnight. A version of the basic programme has been developed which allows the values of one parameter to be specified for a time interval of up to 24 hours after the remaining parameters. In the case of data which are recorded only at 3 hour intervals the time interval specified has, of course, to be a multiple of 3 hours. A further facility available with this version of the programme is that the probability of occurrence of a specified value

/of

of a parameter according to the values of two other parameters can itself be used as a parameter. Thus in the example quoted the probability of fog at 0900 GMT according to the wind direction and speed at midnight could be used as a parameter, and frequency tables of the occurrence of fog at 0900 GMT according to values of this parameter and, say, humidity at midnight could then be produced.

6. Requests for analyses

Any requests for analyses using these new versions of the DSP should be made in format described in FTM No. 16.

Annex A

Overseas surface stations for which data are available for Processing by the DSP

Station Name	Number of observations per day	First Observation	Last Observation
Bahrain	24	1/7/57	
Changi	24	1/7/57	
Gibraltar	24	1/7/57	
Khormaksar	24	1/7/57	31/10/67

Annex B

Upper air stations for which data are available
for Processing by the DSP

Station Name	1st Ascent	Last Ascent
O.W.S. Able	1/1/56	
O.W.S. India	1/1/56	
O.W.S. Juliett	1/1/56	
Aden	1/1/56	31/12/66
Aldergrove	1/1/56	31/ 3/62
Aughton	1/1/56	
Bahrain	1/1/56	
Camborne	1/1/56	
Crawley	1/1/56	
Gan	23/10/59	
Hemsby	1/1/56	
Lerwick	1/1/56	
Leuchars	1/1/56	31/ 9/59
Long Kesh	1/4/62	
Malta	1/1/56	
Nairobi	1/1/56	
Nicosia	1/1/56	
Seychelles	27/6/63	31/12/64
Shanwell	1/10/59	
Stornoway	1/1/56	
Valentia	1/1/56	

FORECASTING TECHNIQUES MEMORANDA

1. **Forecasting precipitation - methods and techniques in use in the Meteorological Office.** By W.D.S. McCaffery and D.S. Gill. 1964.
2. **Surface and 900 mb wind relationships.** By G.A. Howkins, T.N.S. Harrower and D.S. Gill, 1965.
3. **Wet bulb temperatures - a comparison between readings from clean and dirty instruments.** By W.D.S. McCaffery. 1965.
4. **Operational numerical forecasts.** By P. Graystone. 1965.
5. **Temperature and humidity in the lowest 3000 ft - effectiveness of current radio-sonde reporting procedures.** By W.D.S. McCaffery and D.S. Gill. 1965.
6. **Comparison of equivalent headwinds from 300 mb objective numerical forecasts and subjective forecasts.** By G.A. Howkins and I.H. Chuter. 1965.
7. **Forecasting methods and techniques in use at Meteorological Office outstations.** By W.D.S. McCaffery and T.N.S. Harrower. 1965.
8. **Tests of thunderstorm forecasting methods.** By W.E. Saunders. 1965.
9. **Three-parameter atmospheric model used for numerical weather prediction.** By G.A. Bull. 1965.
10. **Objective analysis in the numerical weather forecasting system.** By G.A. Bull. 1966.
11. **Some results from standard-programme tabulations of visibility and height of cloud base.** By J.E. Atkins. 1966.
12. **On sea-breeze forecasting techniques.** Edited by W.D.S. McCaffery. 1966.
13. **Techniques in use at Meteorological Office outstations for forecasting local cooling at night.** By J.E. Atkins. 1966.
14. **Further tests of thunderstorm forecasting methods.** By W.E. Saunders. 1967.
15. **Work on problems in local forecasting.** By W.D.S. McCaffery. 1967.
16. **A data sorting programme for use in local forecast studies.** By D.S. Gill. 1968.
17. **Forecasting the night minimum temperature of a concrete surface in winter.** By C.M. Clark. 1969
18. **Some further facilities available with the data sorting programme.** By D.S. Gill. 1969