



**NMRF/OR/04/2024**



सत्यमेव जयते

**OBSERVATION REPORT**

**NCMRWF  
MONTHLY DATA  
MONITORING REPORT**

**April 2024**

\* Permission to quote from this report should be obtained from Head, NCMRWF.

**National Centre for Medium Range Weather Forecasting  
Ministry of Earth Sciences, Government of India  
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# 1. INTRODUCTION

As a monthly publication, the NCMRWF Data Monitoring Report presents a general view of the data availability for the whole month. Data produced by the Global Observation System, transmitted through the Global Telecommunication System (GTS) are received by the India Meteorological Department (IMD) at New Delhi is relayed to the NCMRWF data processing system. This report consists of the results of monitoring of all the data received at NCMRWF within the global data assimilation cycle cut-off period (~4 hours). Besides quantity monitoring, the report also presents results of quality monitoring for the Indian sub-continent (blocks 42 and 43) RSRW Data.

Objective monitoring of the quality of the data (for blocks 42 and 43 only) is undertaken by NCMRWF as a monthly activity. Tables are prepared following the Commission for Basic System (CBS) recommended format so that the monitoring results can be readily compared with those from other meteorological centers. This is an important task, because frequent comparisons of this kind are absolutely necessary for the improvement of the quality of the Tropical data.

Following the established procedure at other major weather forecasting centers, the first guesses produced by the Global Data Assimilation System (GDAS) (NGFS) have been used in determining data quality. This approach assumes a very accurate first guess, which is not necessarily valid in data sparse regions like the tropics and also due to the model systematic errors. As a result the quality monitoring of tropical data is a difficult task and any judgement has to be arrived carefully.

Comments and Suggestions are welcome and should be send to:  
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## 2. NCMRWF MONITORING STATISTICS

Availability (global) and data quality (for WMO blocks 42 and 43 only) are presented in figures and tables, of which only a brief descriptions are given below.

### Data Availability (Monthly average of Global Observations)

Figures 1.1 - 1.7 are global charts for all seven types of observations, received at NCMRWF. Each number is the average for 24 hours, over all observations of the particular type received in a 5-degree box.

Figure	Observation Type	Parameter	Level/Layer
1.1	SYNOP/SHIP	MSL Pressure	Surface
1.2	TEMP	Geo-potential	500 hPa
1.3	TEMP/PILOT	Wind	300 hPa
1.4	AIRCRAFT	Wind	300 to 150 hPa
1.5	Satellite Sounding	Radiance	All
1.6	Atmospheric Motion Vector Wind		400-150 hPa 1000-700 hPa
1.7	BUOY	MSL Pressure	Surface

The monthly mean observed satellite wind (low (700 - 1000 hPa) and (high (150 - 400)) and the wind bias (observation - first guess) are shown in figures 2.1, 2.2, 2.3 and 2.4.

### Data Availability (Number of Daily Reports)

Figures 3.1 - 3.7 are bar diagrams for all seven types of observations received at NCMRWF. Each figure represents number of observations of the particular type for each of the month.

Figure	Observation Type
3.1	SYNOP
3.2	TEMP
3.3	PILOT
3.4	AIRCRAFT
3.5	Satellite Radiance
3.6	AMV Wind
3.7	BUOY

### 3. EXPLANATORY NOTE ON TABLES AND FIGURES

#### General

The material presented in this report is based on the data received by the IMD and relayed to NCMRWF. Analysis is performed for all the four synoptic hours (0000, 0006, 0012 and 0018 z) and, therefore the assimilation cycle of NGFS is run four times to produce the first-guess (six hour forecast) for the analysis step.

#### Data Availability

The average number of reports of each type received per day in a 5-degree square box and rounded off to the nearest integer is indicated for the whole globe (Figures 1.1 - 1.7). Four such numbers are actually displayed inside a 10-degree box for convenience. The integer 0 means that the average number of observations in the smaller box was less than 0.5. If no observations was received at all in the smaller box, then no number is printed for that smaller box.

Bar diagrams for the number of daily reports of a particular type received at NCMRWF are shown in Figures 3.1 to 3.7. This is important in monitoring the steadiness of the reception rate. It can be seen that on some days the number of reports received fall off drastically. In most of the cases they are traced to computer problems at the data reception centre.

Monitoring of Global Radiosonde Reports (Land) is based on the results of quality control steps within NGFS data assimilation cycle.

Table 1 presents the total number of land radiosonde reports received for the month (0000 and 0012 z) (WMO blocks 42 and 43), the number of hydrostatic errors detected in these reports by the CQC and the percent of corrections performed that are confident corrections.

#### Indian Data Frequency

Table 2 shows the number of times an upper air station within WMO blocks 42 or 43 reported in this month. The lists of stations are in accordance with the latest WMO directory. The numbers for 0000, 0006, 0012, and 0018 z are listed in separate columns. All stations that are expected to report are listed including those stations, which never report even once during the whole month. It is seen that there are variations in reporting frequencies.

## Indian Data Quality

Tables 3-10 represent the results of quality monitoring statistics carried out at NCMRWF for the upper air stations under the WMO blocks 42 and 43 only. The conventional procedure is followed, which is that of first computing the normalized magnitude of the observation minus first guess interpolated to the observation point (the residual) and then comparing this value against a preset limit as well as checking the consistency of this value against similar values in the neighbourhood. The rationale of this approach is based on the work of A. Hollingsworth et al., Monthly Weather Review, Vol.114, No.5, May 1986, where the authors demonstrated the ability of modern data assimilation system to monitor the quality of an observational network. However, in the tropics these results have to be accepted with caution for two reasons:

- (1) As mentioned before, the above procedure assumed high quality first guess which is not guaranteed in data sparse area like the tropics.
- (2) Since small scale features like convection play a dominant role in the tropical atmosphere, sometimes there might be mismatch between this scale and that of the first guess which is determined by the forecast model.

Tables 3a and 3b present the number of observations received (count), rejection by the analysis (in percentage), standard deviation, total bias and root mean square error for the 100 hPa geopotential heights for 0000 and 0012 z respectively in units of meter. Tables 4a and 4b are the similar tables for 500 hPa geopotential heights. Tables 5a and 5b present similar results for 100 hPa dry temperatures and tables 6a and 6b present similar results for 500 hPa dry temperatures in units of kelvin. Tables 7a and 7b show similar results for 100 hPa zonal winds, and tables 8a and 8b similar results for 500 hPa zonal winds in units of m/s. Tables 9a and 9b show similar results for 100 hPa meridional winds and tables 10a 10b present similar results for 500 hPa meridional winds in units of m/s.







42809	CALCUTTA/DMDM	27 28	0 27	29 29	0 29
42867	NAGPUR SONEGN	28 28	0 29	30 29	0 30
42874	RAIPUR	26 25	0 0	29 28	0 0
42886	JHARSUGUDA	22 30	0 0	23 30	0 26
42895	BALASORE	0 27	0 0	0 27	0 29
42909	VERAVAL	0 23	0 0	0 26	0 30
42971	BHUBANESWAR	7 25	0 24	0 27	0 29
43003	BOMBAY/SANTCR	20 29	0 28	19 26	0 29
43014	AURNGABAD/AER	28 26	0 28	0 0	0 13
43041	JAGDALPUR	28 27	0 23	2 2	0 25
43049	GOPALPUR	24 26	0 0	0 27	0 29
43063	POONA	26 25	0 0	28 27	0 0
43110	RATNAGIRI	0 0	0 0	0 0	0 0
43128	HYDERABAD AER	29 28	30 29	30 30	30 26
43150	VISHAKHAPATNM	28 27	1 26	0 2	17 17
43185	MACHILIPATNAM	29 29	0 25	29 29	0 29
43192	GOA/PANJIM	0 16	0 0	0 18	0 0
43194	GOA/DABOLIM	0 0	0 0	0 0	0 0
43201	GADAG	26 26	0 0	26 26	28 28
43237	ANANTAPUR	0 0	0 0	0 0	0 0
43279	MADRAS/MINAMB	5 5	0 26	9 10	0 24
43284	MANG/BAJPE	0 0	0 0	0 0	0 0
43285	MANG/PANAMBUR	28 28	0 3	0 25	0 27
43295	BANGALORE	18 19	6 9	4 21	7 8
43311	AMINI DIVI	23 23	0 0	20 21	0 0
43333	PORT BLAIR	0 23	0 15	0 26	0 1
43344	TIRUCHIRAPLLI	0 0	0 0	0 0	0 0
43346	KARAIKAL	27 27	25 27	28 27	0 26
43353	COCHIN/WILING	29 29	0 0	28 28	0 0
43368	CAR NICOBAR	0 0	0 0	0 0	0 0
43369	MINICOY	29 29	0 1	21 20	0 1
43371	TRIVANDRUM	6 27	0 19	11 25	0 20
43373	TRIVANDRUM/TH	0 0	0 0	0 0	0 0

TABLE 3a: NCMRWF RADIOSONDE MONITORING STATISTICS  
FOR WMO BLOCK 42 AND 43 STATIONS ONLY  
100 hPa GEOPOTENTIAL HEIGHT INCREMENTS - 01042024 to 30042024 (00Z )  
UNIT IS GEOPOTENTIAL METERS

STNID	COUNT	%REJC	SD	BIAS	RMS
42027	23	17	373.2	-129.3	394.9
42111	27	3	74.8	13.6	76.0
42182	29	0	13.2	7.6	15.2
42314	19	0	26.3	43.6	50.9
42339	29	0	16.1	20.7	26.2
42348	25	0	14.2	48.7	50.7
42361	27	3	192.6	-23.3	194.0
42399	22	0	33.3	43.5	54.8
42410	18	22	1442.8	-271.9	1468.2
42492	27	0	12.6	7.4	14.6
42623	3	33	875.7	715.0	1130.5
42634	19	0	1128.1	-373.1	1188.1
42647	25	0	17.6	2.4	17.7
42667	10	10	71.1	-15.0	72.7
42701	26	7	100.9	8.2	101.2
42724	27	7	46.6	35.0	58.3
42809	26	0	23.7	11.0	26.1
42867	25	0	17.2	5.9	18.2
42874	20	5	90.3	52.5	104.4
42886	20	5	39.9	30.7	50.3
42971	3	0	4.6	15.3	16.0
43003	15	0	18.0	12.1	21.7
43014	27	0	11.2	5.3	12.4
43041	27	0	15.8	38.0	41.1
43049	22	4	26.9	39.7	48.0
43063	23	13	451.6	-106.5	464.0
43128	22	4	45.7	51.2	68.6
43150	25	0	16.1	2.9	16.3
43185	20	0	15.0	5.0	15.8
43279	2	0	9.5	47.5	48.4
43285	26	0	14.9	9.0	17.4
43295	2	0	8.5	50.5	51.2
43346	24	0	22.1	35.1	41.4
43353	26	0	11.0	24.2	26.6
43369	7	0	15.8	35.7	39.0

TABLE 3b: NCMRWF RADIOSONDE MONITORING STATISTICS  
FOR WMO BLOCK 42 AND 43 STATIONS ONLY  
100 hPa GEOPOTENTIAL HEIGHT INCREMENTS - 01042024 to 30042024 (12Z )  
UNIT IS GEOPOTENTIAL METERS

STNID	COUNT	%REJC	SD	BIAS	RMS
42027	22	0	15.0	56.6	58.5
42056	20	5	96.0	87.7	130.0
42182	21	4	99.7	67.4	120.4
42339	27	3	452.8	171.3	484.1
42348	23	21	244.3	168.3	296.7
42361	28	0	18.8	35.4	40.1
42410	21	0	246.4	154.8	291.0
42647	23	0	296.9	-13.4	297.2
42809	28	0	22.0	15.6	27.0
42867	25	0	20.1	47.2	51.3
42874	17	0	19.0	73.1	75.5
42886	20	0	32.3	46.0	56.2
43003	16	6	131.3	10.6	131.7
43041	2	50	25.0	88.0	91.5
43063	25	8	176.6	-1.6	176.6
43128	25	20	29.4	83.1	88.2
43185	28	3	192.6	88.4	211.9
43279	9	0	20.3	54.0	57.7
43346	26	3	20.5	81.3	83.9
43353	26	0	18.0	68.2	70.5

TABLE 4a: NCMRWF RADIOSONDE MONITORING STATISTICS  
FOR WMO BLOCK 42 AND 43 STATIONS ONLY  
500 hPa GEOPOTENTIAL HEIGHT INCREMENTS - 01042024 to 30042024 (00Z )  
UNIT IS GEOPOTENTIAL METERS

STNID	COUNT	%REJC	SD	BIAS	RMS
42027	23	17	158.7	-30.6	161.7
42111	27	0	19.0	-1.4	19.1
42182	29	0	5.4	0.1	5.4
42314	18	0	6.7	6.3	9.2
42339	29	0	18.2	19.4	26.6
42348	28	3	16.9	58.1	60.5
42361	27	0	6.4	2.4	6.8
42399	26	0	21.3	12.2	24.5
42410	24	0	18.3	21.6	28.3
42492	27	0	6.5	4.4	7.9
42623	21	9	183.3	58.3	192.4
42634	22	0	6.2	-0.6	6.2
42647	26	0	7.8	2.3	8.1
42667	10	0	87.9	-21.3	90.4
42701	28	7	85.7	-1.6	85.8
42724	27	3	25.6	18.4	31.6
42809	26	0	7.4	2.1	7.7
42867	26	0	10.4	11.4	15.5
42874	24	4	104.6	51.5	116.6
42886	20	5	39.8	15.6	42.7
42971	3	0	5.0	25.3	25.8
43003	16	0	6.4	1.2	6.5
43014	27	0	5.4	6.3	8.3
43041	27	0	16.4	28.8	33.2
43049	22	9	27.5	35.5	44.9
43063	24	8	619.8	-128.2	632.9
43128	23	4	61.2	40.6	73.4
43150	25	0	8.4	7.1	11.0
43185	20	0	6.0	2.8	6.7
43279	2	0	0.5	18.5	18.5
43285	27	3	21.3	15.1	26.2
43295	2	0	17.5	43.5	46.9
43346	24	0	21.6	21.4	30.5
43353	28	0	7.1	20.5	21.7
43369	19	10	23.5	37.8	44.6

TABLE 4b: NCMRWF RADIOSONDE MONITORING STATISTICS  
FOR WMO BLOCK 42 AND 43 STATIONS ONLY  
500 hPa GEOPOTENTIAL HEIGHT INCREMENTS - 01042024 to 30042024 (12Z )  
UNIT IS GEOPOTENTIAL METERS

STNID	COUNT	%REJC	SD	BIAS	RMS
42027	23	0	7.9	23.6	24.9
42056	20	0	22.0	24.1	32.7
42182	21	0	6.8	7.7	10.3
42339	27	3	30.6	47.7	56.6
42348	25	28	33.5	71.4	78.9
42361	28	0	10.9	5.2	12.1
42410	26	0	21.3	40.0	45.3
42647	24	0	9.6	11.7	15.2
42809	27	0	7.9	6.6	10.3
42867	27	0	9.2	18.3	20.5
42874	22	0	19.1	45.5	49.4
42886	20	0	9.1	8.1	12.2
43003	17	5	56.6	-3.9	56.7
43041	2	50	34.5	76.5	83.9
43063	27	11	61.5	-4.6	61.7
43128	27	14	542.1	143.2	560.7
43185	28	0	7.7	13.8	15.8
43279	9	0	7.1	20.2	21.4
43295	1	0	0.0	28.0	28.0
43346	27	0	17.4	40.0	43.6
43353	26	0	6.4	31.9	32.5

TABLE 5a: NCMRWF RADIOSONDE MONITORING STATISTICS  
FOR WMO BLOCK 42 AND 43 STATIONS ONLY  
100 hPa DRY TEMPERATURE INCREMENTS - 01042024 to 30042024 (00Z )  
UNIT IS DEGREE KELVIN

STNID	COUNT	%REJC	SD	BIAS	RMS
42027	23	17	1.3	0.8	1.5
42111	27	3	1.5	1.3	2.0
42182	29	0	1.3	0.2	1.3
42314	19	0	1.7	2.2	2.8
42339	29	0	1.6	0.8	1.8
42348	25	0	1.1	0.2	1.1
42361	27	3	15.6	3.0	15.9
42399	22	0	1.4	0.3	1.4
42410	18	16	31.4	9.6	32.8
42492	27	0	1.0	0.3	1.0
42623	3	66	36.8	50.0	62.1
42634	19	0	23.3	8.1	24.7
42647	25	0	1.2	0.1	1.2
42667	10	10	1.1	-0.0	1.1
42701	25	8	3.8	-1.3	4.1
42724	27	7	1.4	1.3	1.9
42809	26	0	1.0	0.4	1.1
42867	25	0	1.5	0.3	1.5
42874	20	5	1.2	0.1	1.2
42886	20	5	1.1	0.8	1.4
42971	3	0	0.7	-1.1	1.3
43003	15	0	1.2	-0.5	1.3
43014	27	0	1.2	-0.0	1.2
43041	27	0	1.1	0.5	1.2
43049	22	4	1.2	0.7	1.4
43063	23	13	2.3	0.4	2.4
43128	22	4	1.4	1.1	1.8
43150	26	0	0.9	0.2	0.9
43185	20	0	1.4	0.6	1.5
43279	2	0	0.2	0.8	0.8
43285	26	0	0.9	-0.4	1.0
43295	2	0	0.6	0.3	0.7
43346	24	0	1.1	0.7	1.3
43353	26	0	1.3	-0.1	1.3
43369	7	0	0.6	0.2	0.6

TABLE 5b: NCMRWF RADIOSONDE MONITORING STATISTICS  
FOR WMO BLOCK 42 AND 43 STATIONS ONLY  
100 hPa DRY TEMPERATURE INCREMENTS - 01042024 to 30042024 (12Z )  
UNIT IS DEGREE KELVIN

STNID	COUNT	%REJC	SD	BIAS	RMS
42027	22	0	1.1	0.8	1.4
42056	20	5	4.8	2.6	5.5
42182	21	4	6.2	2.5	6.7
42339	27	3	13.8	4.0	14.4
42348	23	21	11.3	3.9	11.9
42361	28	0	1.2	0.9	1.5
42410	21	4	7.7	2.8	8.2
42647	23	0	17.2	4.7	17.8
42809	28	0	1.2	0.9	1.5
42867	25	0	1.1	0.9	1.4
42874	17	0	1.4	1.3	1.9
42886	20	0	1.7	1.4	2.2
43003	16	6	0.9	0.7	1.2
43041	2	50	0.2	1.5	1.6
43063	25	8	1.7	1.3	2.2
43128	25	20	1.5	1.1	1.9
43185	28	3	1.7	1.3	2.1
43279	9	0	0.9	1.0	1.4
43346	26	3	1.2	1.4	1.8
43353	26	0	1.0	0.6	1.2

TABLE 6a: NCMRWF RADIOSONDE MONITORING STATISTICS  
FOR WMO BLOCK 42 AND 43 STATIONS ONLY  
500 hPa DRY TEMPERATURE INCREMENTS - 01042024 to 30042024 (00Z )  
UNIT IS DEGREE KELVIN

STNID	COUNT	%REJC	SD	BIAS	RMS
42027	23	17	10.0	-3.4	10.6
42111	27	0	0.8	-0.1	0.8
42182	29	0	0.7	0.4	0.8
42314	18	0	1.1	-0.6	1.3
42339	29	0	0.6	-0.2	0.6
42348	28	0	0.8	-0.6	1.0
42361	27	0	0.7	-0.2	0.7
42399	26	0	0.7	0.5	0.9
42410	24	0	0.8	0.3	0.8
42492	27	0	0.8	-0.3	0.8
42623	21	9	1.7	-0.6	1.8
42634	22	0	0.5	-0.1	0.5
42647	26	0	0.6	-0.5	0.8
42667	10	0	0.7	0.6	0.9
42701	28	7	1.0	-0.0	1.0
42724	27	7	1.7	-0.9	1.9
42809	26	0	0.8	-0.8	1.2
42867	26	0	0.8	-0.3	0.9
42874	24	4	0.9	-0.6	1.1
42886	20	5	0.8	-0.5	0.9
42971	3	0	0.6	-1.0	1.1
43003	16	0	0.6	-0.4	0.7
43014	27	0	0.8	-0.5	1.0
43041	27	0	0.9	-0.5	1.0
43049	22	4	0.7	-0.3	0.8
43063	24	8	3.9	-0.2	3.9
43128	23	4	0.9	-0.6	1.1
43150	25	0	0.7	-0.5	0.9
43185	20	0	0.6	-0.7	0.9
43279	2	0	1.2	-0.4	1.3
43285	27	3	0.7	-0.3	0.7
43295	2	0	1.1	-1.3	1.7
43346	24	0	0.7	-0.1	0.7
43353	28	0	0.8	-0.2	0.8
43369	19	10	0.6	-0.3	0.7



TABLE 6b: NCMRWF RADIOSONDE MONITORING STATISTICS  
FOR WMO BLOCK 42 AND 43 STATIONS ONLY  
500 hPa DRY TEMPERATURE INCREMENTS - 01042024 to 30042024 (12Z )  
UNIT IS DEGREE KELVIN

STNID	COUNT	%REJC	SD	BIAS	RMS
42027	23	0	0.9	-0.3	0.9
42056	20	0	0.8	0.2	0.8
42182	21	0	0.8	0.4	0.9
42339	27	3	2.1	0.3	2.2
42348	25	24	1.1	0.2	1.1
42361	28	0	0.7	-0.1	0.7
42410	26	0	1.1	0.4	1.1
42647	24	0	1.0	0.2	1.0
42809	27	0	0.6	-0.6	0.9
42867	27	0	0.8	0.1	0.8
42874	22	0	0.8	-0.1	0.8
42886	20	0	1.1	0.1	1.1
43003	17	5	2.4	-0.7	2.5
43041	2	50	0.2	0.1	0.3
43063	27	11	2.6	-1.0	2.8
43128	27	14	3.7	-0.8	3.8
43185	28	0	0.6	0.1	0.7
43279	9	0	0.7	0.4	0.8
43295	1	0	0.0	0.4	0.4
43346	27	3	3.1	-0.3	3.1
43353	26	0	0.6	0.3	0.7

TABLE 7a: NCMRWF RADIOSONDE MONITORING STATISTICS  
FOR WMO BLOCK 42 AND 43 STATIONS ONLY  
100 hPa ZONAL WIND INCREMENTS - 01042024 to 30042024 (00Z )  
UNIT IS METER/SEC

STNID	COUNT	%REJC	SD	BIAS	RMS
42027	23	0	6.6	-2.4	7.0
42111	27	0	6.5	-0.9	6.5
42182	29	0	4.1	-0.4	4.1
42314	19	0	4.2	-1.6	4.5
42339	29	0	3.8	-1.1	3.9
42348	25	0	3.8	-0.4	3.9
42361	27	0	3.5	0.4	3.5
42399	22	0	3.6	3.4	4.9
42410	18	0	8.0	3.8	8.8
42492	27	0	3.8	0.0	3.8
42623	3	0	12.5	8.3	15.0
42634	19	0	10.4	4.4	11.3
42647	25	0	4.7	-0.1	4.7
42667	10	0	2.9	-6.4	7.0
42701	26	0	3.4	0.6	3.5
42724	27	0	4.0	1.1	4.1
42809	26	0	3.0	-0.1	3.0
42867	25	0	3.0	-1.0	3.2
42874	20	0	3.4	-0.6	3.4
42886	20	0	3.5	-0.1	3.5
42971	3	0	1.1	-1.9	2.2
43003	15	0	3.3	2.6	4.2
43014	27	0	2.9	0.9	3.0
43041	27	0	2.8	0.7	2.9
43049	22	0	3.7	-0.6	3.8
43063	23	0	3.4	0.8	3.5
43128	22	0	2.5	-0.4	2.5
43150	26	0	2.0	0.3	2.0
43185	20	0	2.2	0.0	2.2
43279	2	0	0.0	-1.0	1.0
43285	26	0	2.6	-1.0	2.8
43295	2	0	0.4	-1.5	1.6
43346	24	0	2.5	0.2	2.5
43353	26	0	3.2	-0.9	3.3
43369	7	0	2.4	1.4	2.8

TABLE 7b: NCMRWF RADIOSONDE MONITORING STATISTICS  
FOR WMO BLOCK 42 AND 43 STATIONS ONLY  
100 hPa ZONAL WIND INCREMENTS - 01042024 to 30042024 (12Z )  
UNIT IS METER/SEC

STNID	COUNT	%REJC	SD	BIAS	RMS
42027	22	0	3.8	-0.2	3.8
42056	20	0	4.8	-1.1	5.0
42182	21	0	4.2	-0.8	4.2
42339	27	0	5.2	-2.2	5.6
42348	23	0	4.1	-1.5	4.4
42361	28	0	3.6	0.1	3.6
42410	21	0	7.5	2.7	7.9
42647	23	0	4.0	0.2	4.0
42809	28	0	3.7	-0.7	3.7
42867	25	0	3.3	-0.5	3.3
42874	17	0	3.7	-0.2	3.7
42886	20	0	4.9	-0.8	5.0
43003	16	0	4.8	-1.9	5.2
43041	2	0	1.6	0.8	1.8
43063	25	0	3.3	-2.1	3.9
43128	25	0	3.0	-0.2	3.0
43185	28	0	3.4	0.1	3.4
43279	9	0	3.5	0.3	3.5
43346	26	0	2.8	0.0	2.8
43353	26	0	2.7	-1.1	2.9

TABLE 8a: NCMRWF RADIOSONDE MONITORING STATISTICS  
FOR WMO BLOCK 42 AND 43 STATIONS ONLY  
500 hPa ZONAL WIND INCREMENTS - 01042024 to 30042024 (00Z )  
UNIT IS METER/SEC

STNID	COUNT	%REJC	SD	BIAS	RMS
42027	23	0	5.8	-0.0	5.8
42111	27	0	2.4	0.6	2.5
42182	29	0	2.8	1.4	3.1
42314	18	0	4.6	-0.6	4.6
42339	29	0	2.6	0.4	2.7
42348	28	0	2.3	-0.0	2.3
42361	27	0	2.2	1.2	2.5
42399	26	0	2.5	-0.0	2.5
42410	24	0	4.2	-0.1	4.2
42492	27	0	2.5	0.4	2.5
42623	21	0	4.0	1.1	4.1
42634	22	0	1.9	1.2	2.2
42647	26	0	2.4	0.8	2.5
42667	10	0	1.2	-6.5	6.6
42701	28	0	2.6	-0.5	2.6
42724	27	0	3.2	1.2	3.4
42809	26	0	3.2	1.8	3.7
42867	26	0	2.8	0.9	2.9
42874	24	0	2.2	-0.7	2.3
42886	20	0	2.8	-0.3	2.8
42971	3	0	2.7	0.2	2.7
43003	16	0	2.1	1.5	2.6
43014	27	0	1.8	-0.1	1.8
43041	27	0	3.0	0.5	3.1
43049	22	0	3.0	1.6	3.4
43063	24	0	2.6	0.0	2.6
43128	23	0	2.8	0.5	2.9
43150	25	0	1.9	0.8	2.1
43185	20	0	1.8	0.3	1.9
43279	2	0	0.3	0.7	0.8
43285	27	0	1.8	-0.4	1.8
43295	2	0	0.9	0.9	1.3
43346	24	0	1.8	-0.0	1.8
43353	28	0	1.5	1.9	2.5
43369	19	0	1.6	-0.6	1.7

TABLE 8b: NCMRWF RADIOSONDE MONITORING STATISTICS  
FOR WMO BLOCK 42 AND 43 STATIONS ONLY  
500 hPa ZONAL WIND INCREMENTS - 01042024 to 30042024 (12Z )  
UNIT IS METER/SEC

STNID	COUNT	%REJC	SD	BIAS	RMS
42027	23	0	3.9	0.4	3.9
42056	20	0	4.3	-0.9	4.4
42182	21	0	3.8	0.5	3.8
42339	27	0	1.9	0.5	2.0
42348	25	0	3.5	-0.3	3.5
42361	28	0	3.0	2.0	3.6
42410	26	0	3.0	1.9	3.5
42647	24	0	2.5	1.4	2.9
42809	27	0	3.8	1.4	4.1
42867	27	0	2.2	1.1	2.5
42874	22	0	2.4	0.4	2.4
42886	20	0	3.4	1.9	3.8
43003	17	0	2.3	0.6	2.4
43041	2	0	3.4	-2.3	4.1
43063	27	0	3.2	0.3	3.2
43128	27	0	2.4	0.8	2.5
43185	28	0	1.7	0.1	1.7
43279	9	0	2.5	2.2	3.3
43295	1	0	0.0	0.3	0.3
43346	27	0	1.8	-0.8	2.0
43353	26	0	2.0	2.7	3.4

TABLE 9a: NCMRWF RADIOSONDE MONITORING STATISTICS  
FOR WMO BLOCK 42 AND 43 STATIONS ONLY  
100 hPa MERIDIONAL WIND INCREMENTS - 01042024 to 30042024 (00Z )  
UNIT IS METER/SEC

STNID	COUNT	%REJC	SD	BIAS	RMS
42027	23	0	3.1	0.6	3.1
42111	27	0	3.7	0.2	3.7
42182	29	0	4.8	1.3	5.0
42314	19	0	3.0	-0.5	3.0
42339	29	0	3.9	0.1	3.9
42348	25	0	4.2	2.0	4.7
42361	27	0	4.6	-0.6	4.7
42399	22	0	4.6	-1.8	4.9
42410	18	0	4.5	-2.5	5.2
42492	27	0	4.3	-0.0	4.3
42623	3	0	3.5	-7.2	8.0
42634	19	0	4.6	0.3	4.6
42647	25	0	3.1	0.7	3.2
42667	10	0	2.9	-8.3	8.8
42701	26	0	3.3	1.9	3.8
42724	27	0	5.6	1.1	5.7
42809	26	0	4.2	0.6	4.2
42867	25	0	3.3	0.9	3.5
42874	20	0	3.9	1.2	4.1
42886	20	0	2.8	0.9	2.9
42971	3	0	2.5	0.0	2.5
43003	15	0	3.7	1.3	3.9
43014	27	0	3.2	-0.0	3.2
43041	27	0	3.8	0.2	3.8
43049	22	0	4.2	1.0	4.3
43063	23	0	4.2	-0.7	4.3
43128	22	0	3.5	0.5	3.6
43150	26	0	4.1	1.2	4.2
43185	20	0	2.8	0.4	2.8
43279	2	0	3.0	1.3	3.3
43285	26	0	4.3	1.6	4.6
43295	2	0	1.3	2.6	2.9
43346	24	0	4.0	0.5	4.1
43353	26	0	2.7	-0.6	2.8
43369	7	0	3.4	-1.0	3.5

TABLE 9b: NCMRWF RADIOSONDE MONITORING STATISTICS  
FOR WMO BLOCK 42 AND 43 STATIONS ONLY  
100 hPa MERIDIONAL WIND INCREMENTS - 01042024 to 30042024 (12Z )  
UNIT IS METER/SEC

STNID	COUNT	%REJC	SD	BIAS	RMS
42027	22	0	3.4	0.5	3.4
42056	20	0	4.1	-2.3	4.7
42182	21	0	4.2	2.0	4.7
42339	27	0	4.0	-1.6	4.3
42348	23	0	3.4	-1.0	3.6
42361	28	0	4.1	0.3	4.1
42410	21	0	5.0	-0.9	5.0
42647	23	0	2.8	-0.3	2.9
42809	28	0	3.1	-0.6	3.2
42867	25	0	4.2	1.3	4.4
42874	17	0	3.7	0.7	3.7
42886	20	0	3.0	0.7	3.1
43003	16	0	3.6	0.4	3.6
43041	2	0	0.8	-2.7	2.8
43063	25	0	3.8	-0.4	3.9
43128	25	0	3.1	0.7	3.2
43185	28	0	3.0	-0.8	3.1
43279	9	0	3.1	-0.4	3.2
43346	26	0	3.9	0.2	3.9
43353	26	0	1.6	-0.6	1.8

TABLE 10a: NCMRWF RADIOSONDE MONITORING STATISTICS  
FOR WMO BLOCK 42 AND 43 STATIONS ONLY  
500 hPa MERIDIONAL WIND INCREMENTS - 01042024 to 30042024 (00Z )  
UNIT IS METER/SEC

STNID	COUNT	%REJC	SD	BIAS	RMS
42027	23	0	3.9	0.8	4.0
42111	27	0	1.8	-0.2	1.8
42182	29	0	2.8	0.2	2.8
42314	18	0	3.6	0.0	3.6
42339	29	0	2.5	-0.1	2.5
42348	28	0	2.7	0.4	2.8
42361	27	0	2.5	1.1	2.8
42399	26	0	2.2	0.4	2.2
42410	24	0	2.3	0.7	2.4
42492	27	0	2.5	0.3	2.5
42623	21	0	3.8	0.4	3.8
42634	22	0	2.5	0.5	2.5
42647	26	0	2.1	0.5	2.2
42667	10	0	1.8	-8.3	8.4
42701	28	0	2.9	2.0	3.5
42724	27	0	4.2	-0.0	4.2
42809	26	0	2.6	1.2	2.9
42867	26	0	2.8	0.9	2.9
42874	24	0	2.7	-0.2	2.7
42886	20	0	3.6	1.1	3.7
42971	3	0	2.2	1.6	2.7
43003	16	0	1.9	-0.7	2.0
43014	27	0	1.7	-0.5	1.8
43041	27	0	3.1	0.8	3.2
43049	22	0	2.0	0.6	2.1
43063	24	0	2.0	-0.5	2.0
43128	23	0	2.5	-0.5	2.6
43150	25	0	2.1	1.3	2.5
43185	20	0	2.2	1.0	2.4
43279	2	0	0.7	-0.3	0.8
43285	27	0	2.4	0.0	2.4
43295	2	0	3.6	-0.1	3.6
43346	24	0	2.3	1.0	2.5
43353	28	0	1.4	0.0	1.4
43369	19	0	2.0	-0.5	2.0



TABLE 10b: NCMRWF RADIOSONDE MONITORING STATISTICS  
FOR WMO BLOCK 42 AND 43 STATIONS ONLY  
500 hPa MERIDIONAL WIND INCREMENTS - 01042024 to 30042024 (12Z )  
UNIT IS METER/SEC

STNID	COUNT	%REJC	SD	BIAS	RMS
42027	23	0	4.2	0.3	4.2
42056	20	0	3.2	0.4	3.3
42182	21	0	1.8	0.8	2.0
42339	27	0	2.4	0.4	2.4
42348	25	0	3.5	-0.2	3.5
42361	28	0	2.5	0.8	2.6
42410	26	0	2.4	1.6	2.8
42647	24	0	2.2	0.9	2.4
42809	27	0	3.5	2.8	4.5
42867	27	0	3.1	0.6	3.2
42874	22	0	2.4	0.5	2.5
42886	20	0	2.7	2.1	3.4
43003	17	0	3.8	1.2	3.9
43041	2	0	2.5	2.1	3.3
43063	27	0	2.4	-0.1	2.4
43128	27	0	1.8	0.1	1.8
43185	28	0	2.4	0.1	2.4
43279	9	0	2.6	0.4	2.7
43295	1	0	0.0	3.6	3.6
43346	27	0	2.0	0.6	2.1
43353	26	0	1.6	0.4	1.6

# NCMRWF Monitoring Statistics 01 04 24 TO 30 04 24

Availability - SYNOP/SHIP PRESSURE

Average number of observations in 24 hours - 83641

LAND - WMO REGION I: 4465 II:11216 III: 1575 IV: 4177 V:11585 VI:32059 VII: 574

OCEAN - N. Atlantic: 7812 S. Atlantic: 925 Indian: 2351 Pacific: 6101

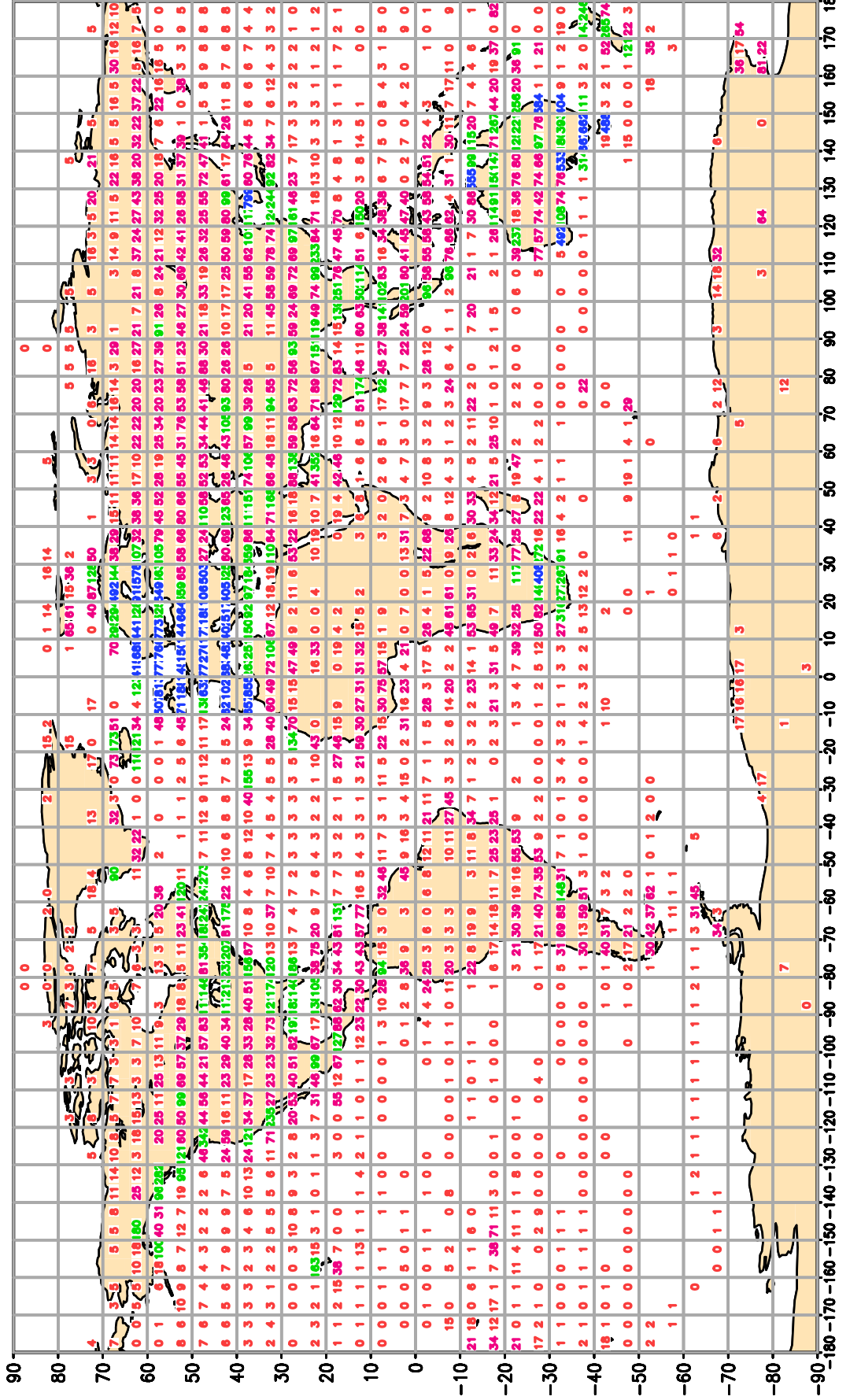


Fig 1.1

# NCMRWF Monitoring Statistics 01 04 24 TO 30 04 24

Availability - TEMP 500 hPa geopotential

Average number of observations in 24 hours - 1015

LAND - WMO REGION I: 25 II: 395 III: 60 IV: 199 V: 117 VI: 158 VII: 12

OCEAN - N. Atlantic: 0 S. Atlantic: 0 Indian: 0 Pacific: 0

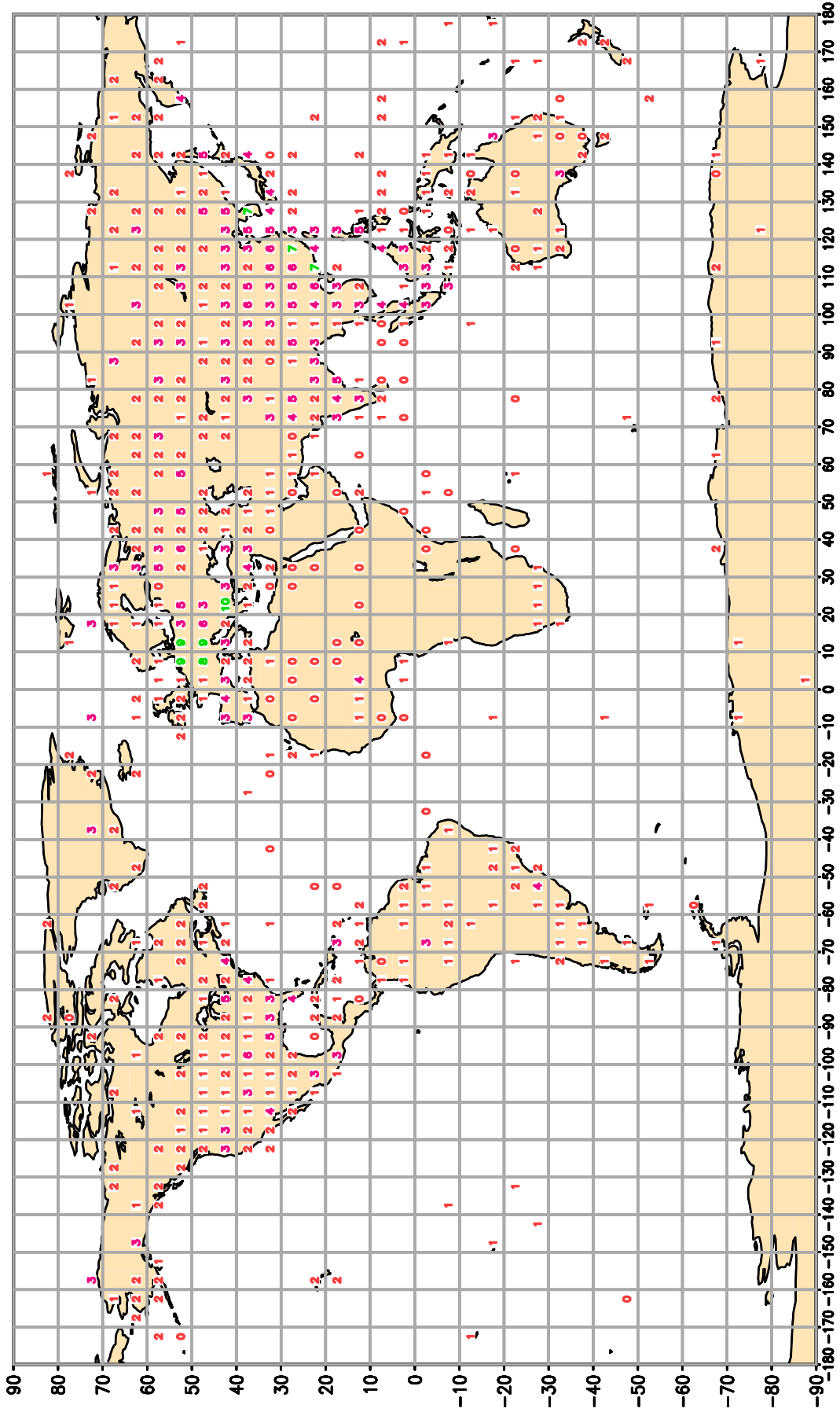


Fig 1.2

# NCMRWF Monitoring Statistics 01 04 24 TO 30 04 24

Availability – TEMP/PILOT 300 hPa wind

Average number of observations in 24 hours – 1261

LAND – WMO REGION I: 44 II: 453 III: 77 IV: 279 V: 194 VI: 160 VII: 12

OCEAN – N. Atlantic: 0 S. Atlantic: 0 Indian: 0 Pacific: 0

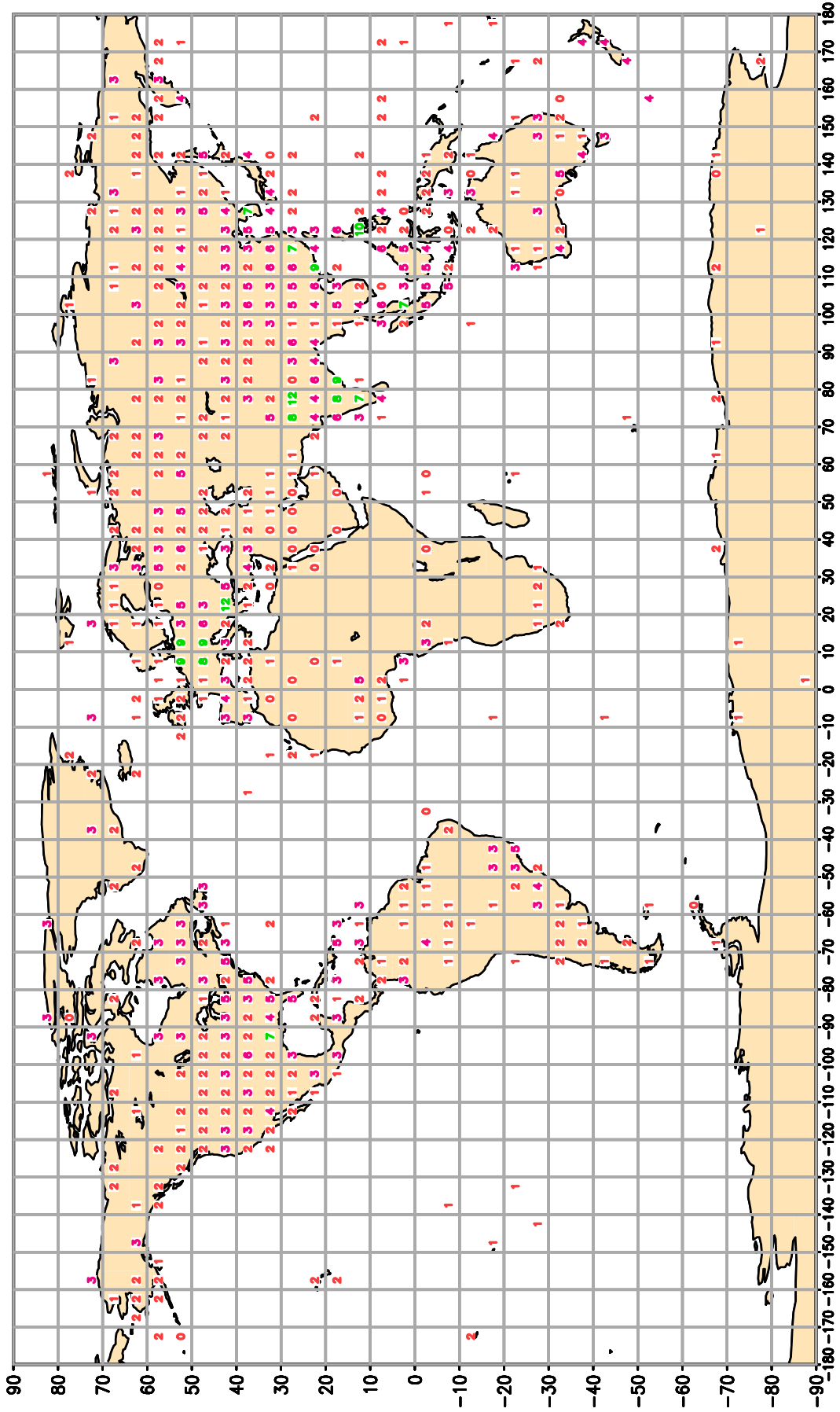


Fig 1.3

# NCMRWF Monitoring Statistics 01 04 24 TO 30 04 24

Availability – AIRCRAFT winds 300–150 hPa

Average number of observations in 24 hours – 140902

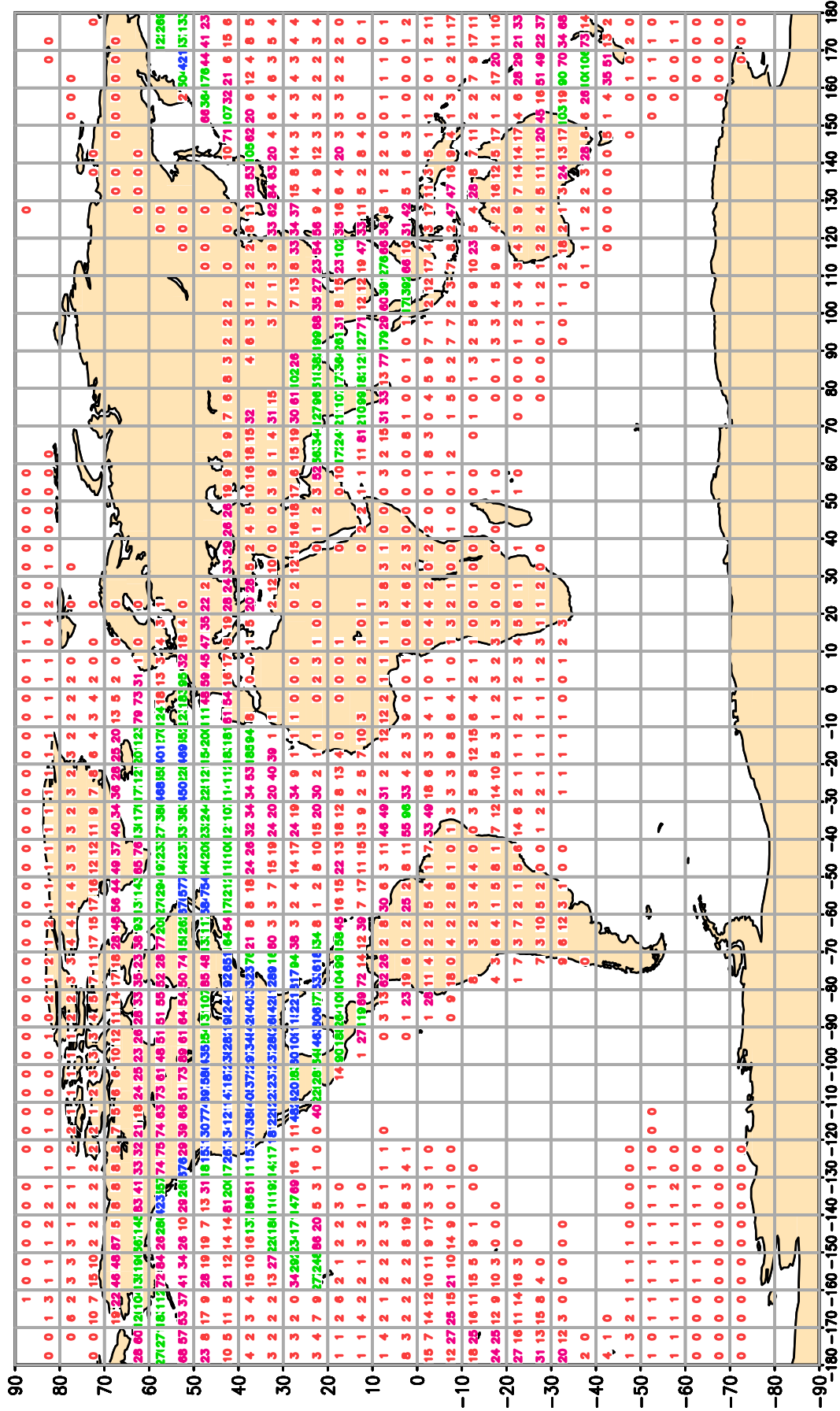


Fig 1.4

NCMRWF Monitoring Statistics 01 04 24 TO 30 04 24  
 Availability - NOAA 18 ATOVS : AMSU-A  
 Average number of observations in 24 hours - 222839

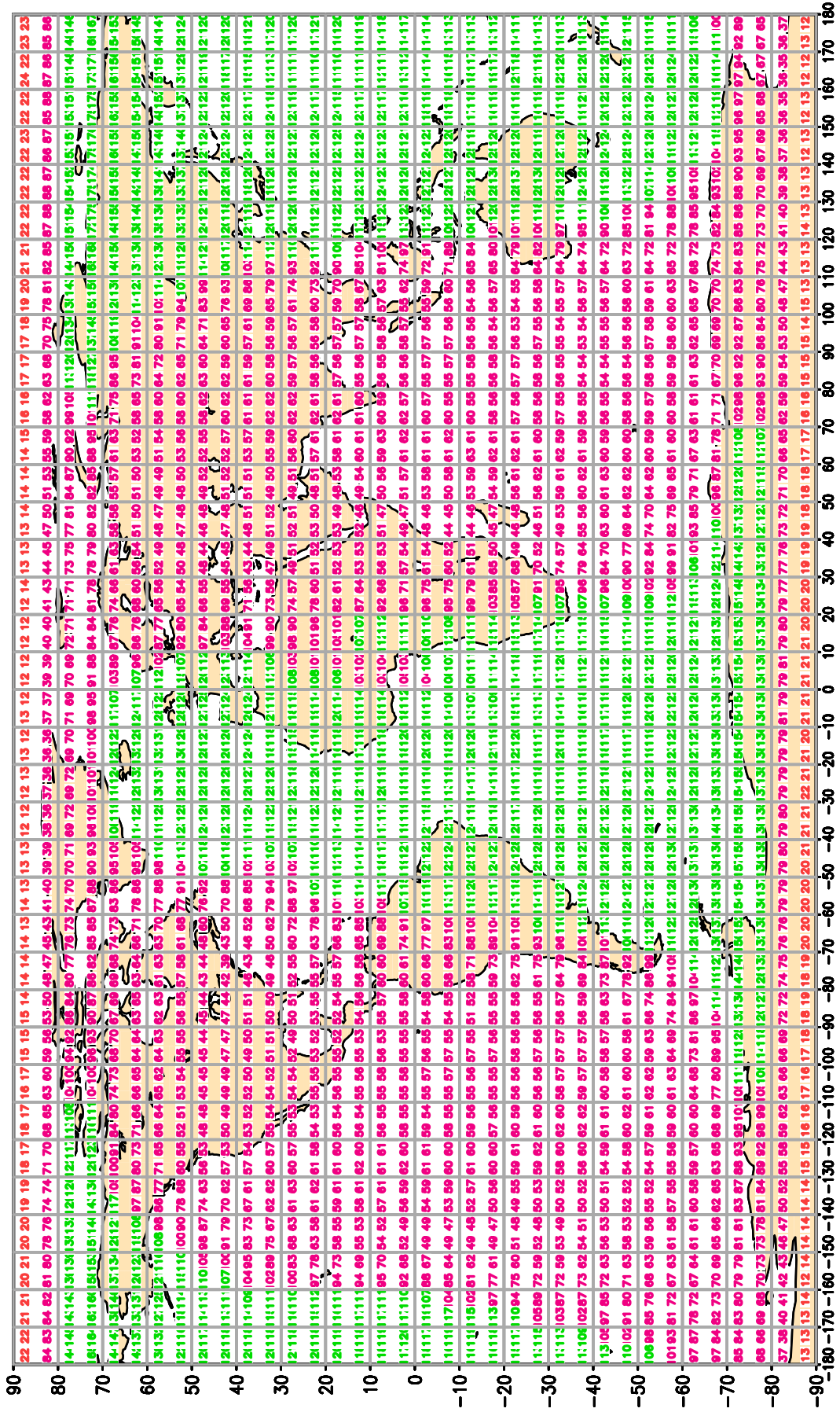


Fig 1.5

# NCMRWF Monitoring Statistics 01 04 24 TO 30 04 24

Availability – AMV winds 400–150 hPa

Average number of observations in 24 hours – 436876

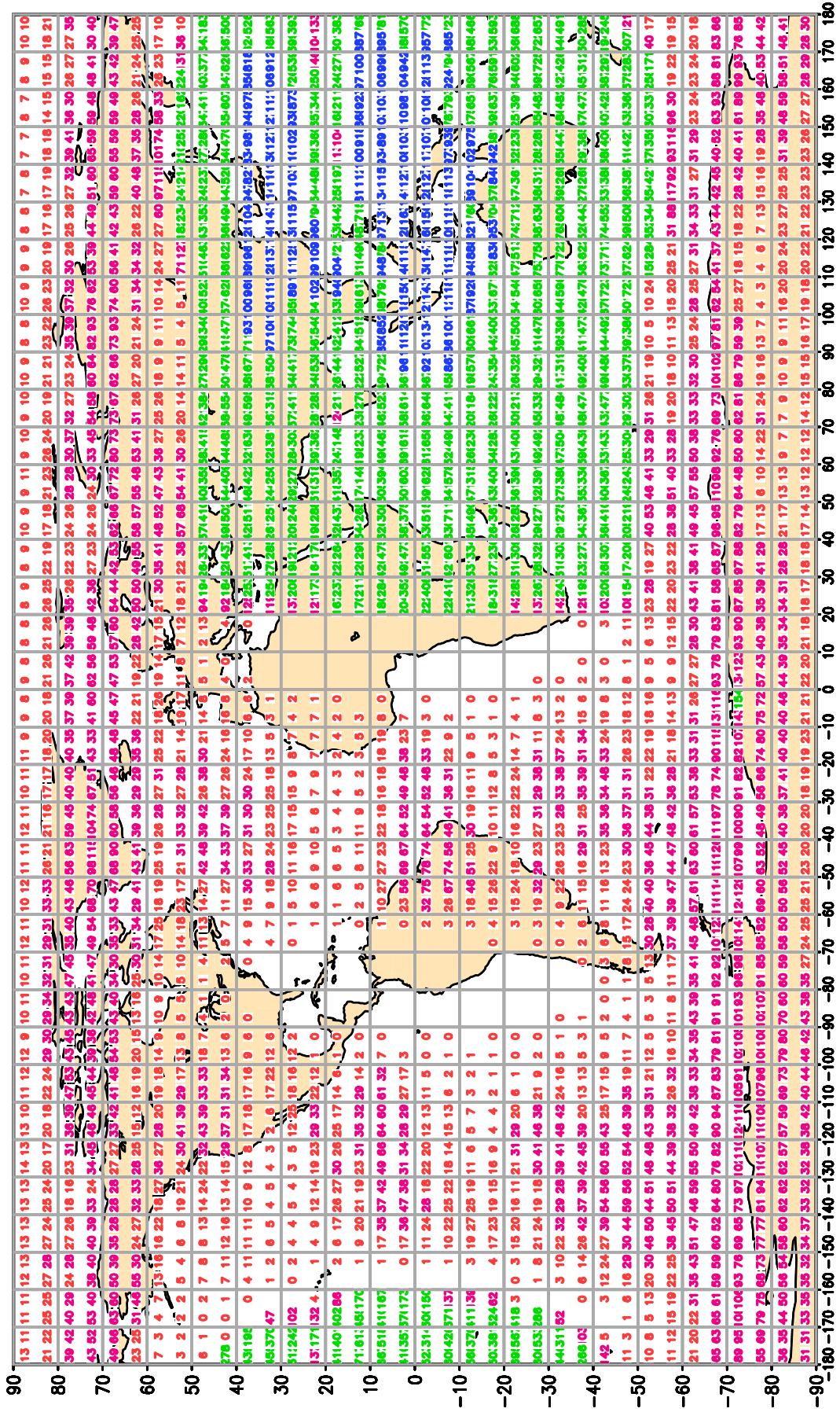


Fig 1.6(a)

NCMRWF Monitoring Statistics 01 04 24 TO 30 04 24  
 Availability - AMV winds 1000-700 hPa  
 Average number of observations in 24 hours - 272687

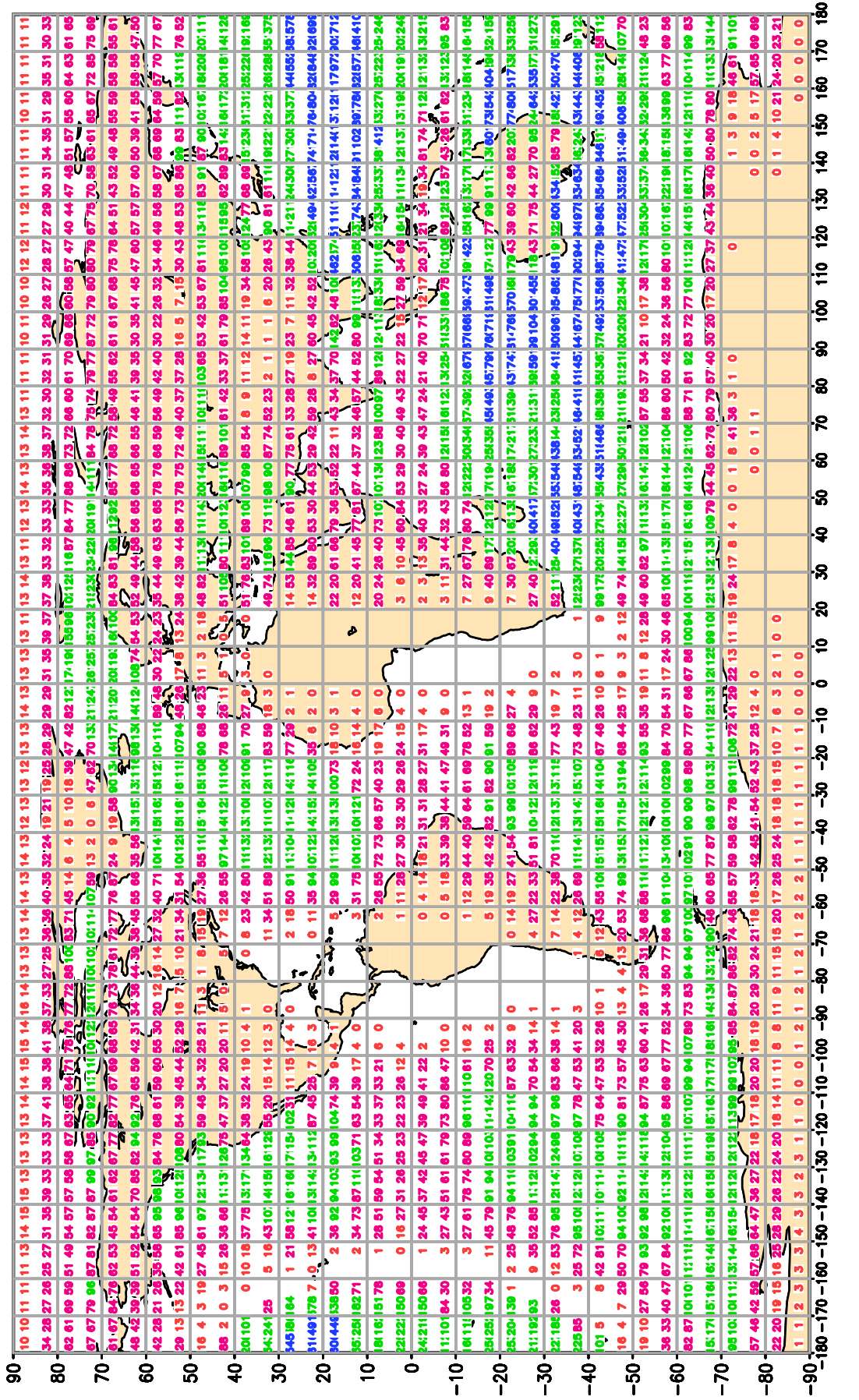


Fig 1.6(b)



# NCMRWF Monitoring Statistics 01 04 24 TO 30 04 24

Availability - BUOY PRESSURE

Average number of observations in 24 hours - 25973

OCEAN - N. Atlantic: 5988 S. Atlantic: 1758 Indian: 2907 Pacific:15006

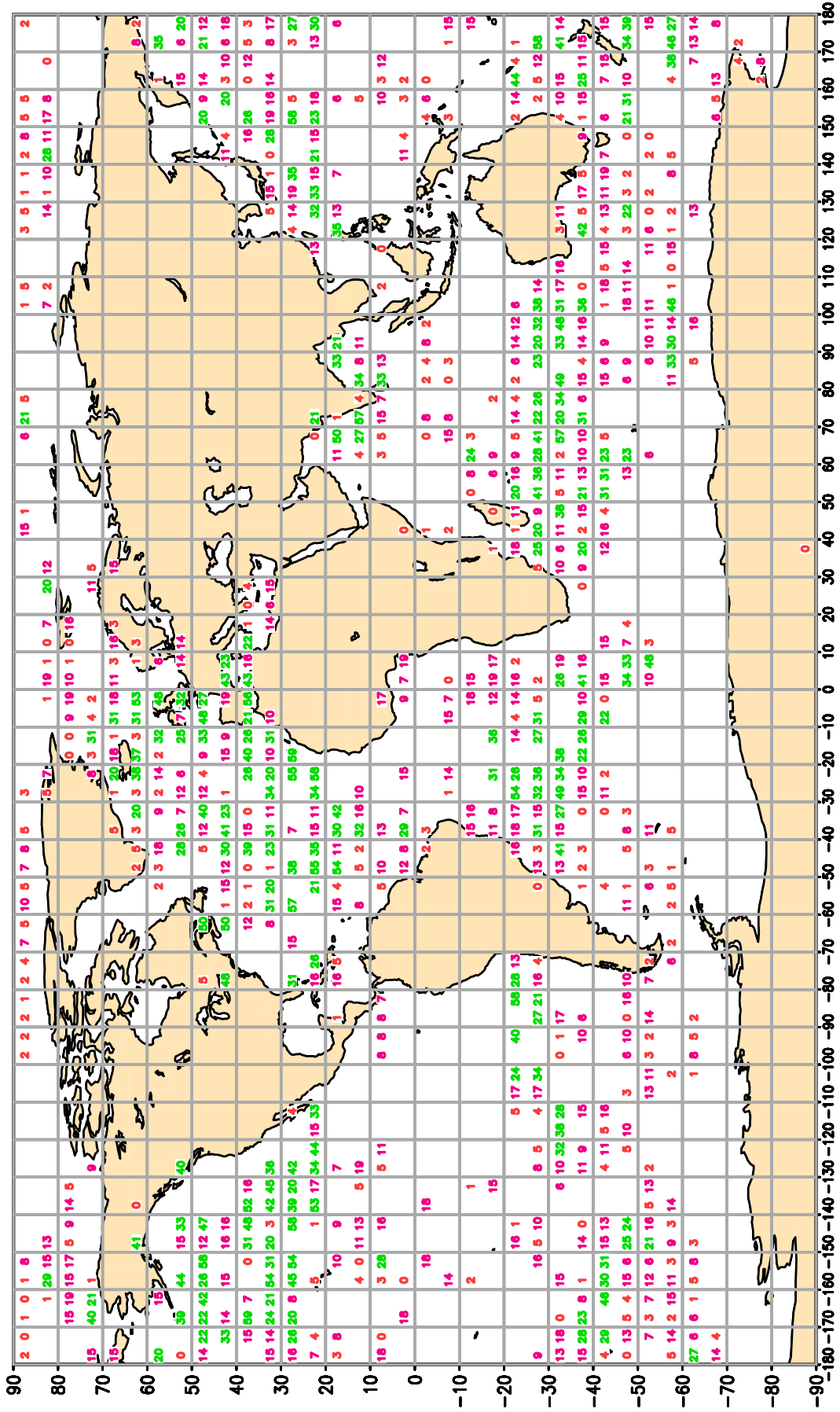


Fig 1.7

# NCMRWF Monitoring Statistics: April 2024

## AMV WINDS: 700 - 1000 hPa

### Mean Observed Wind

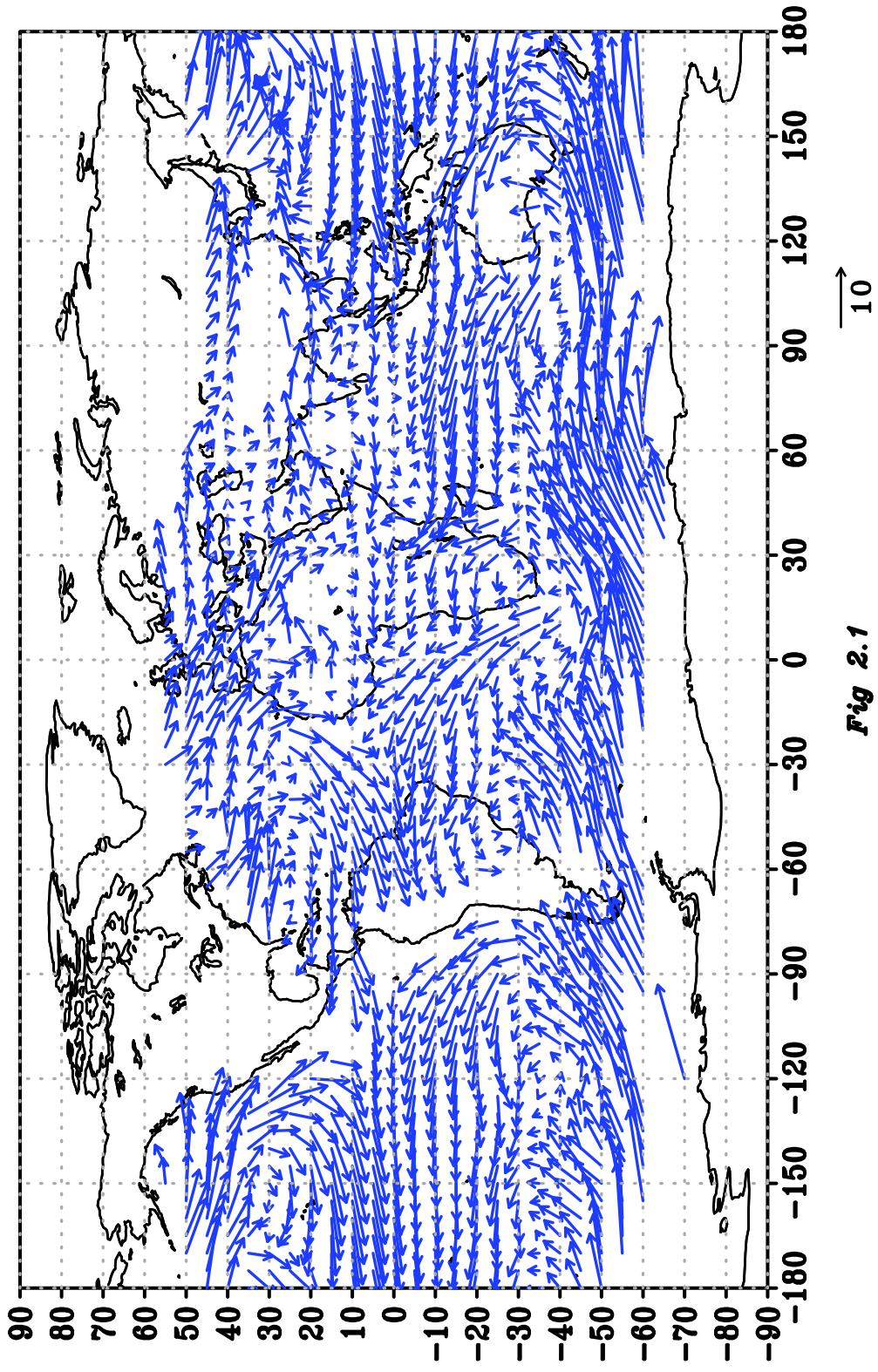


Fig 2.1

# NCMRWF Monitoring Statistics: April 2024

AMV WINDS: 700 - 1000 hPa

WIND BIAS: Observation - First Guess

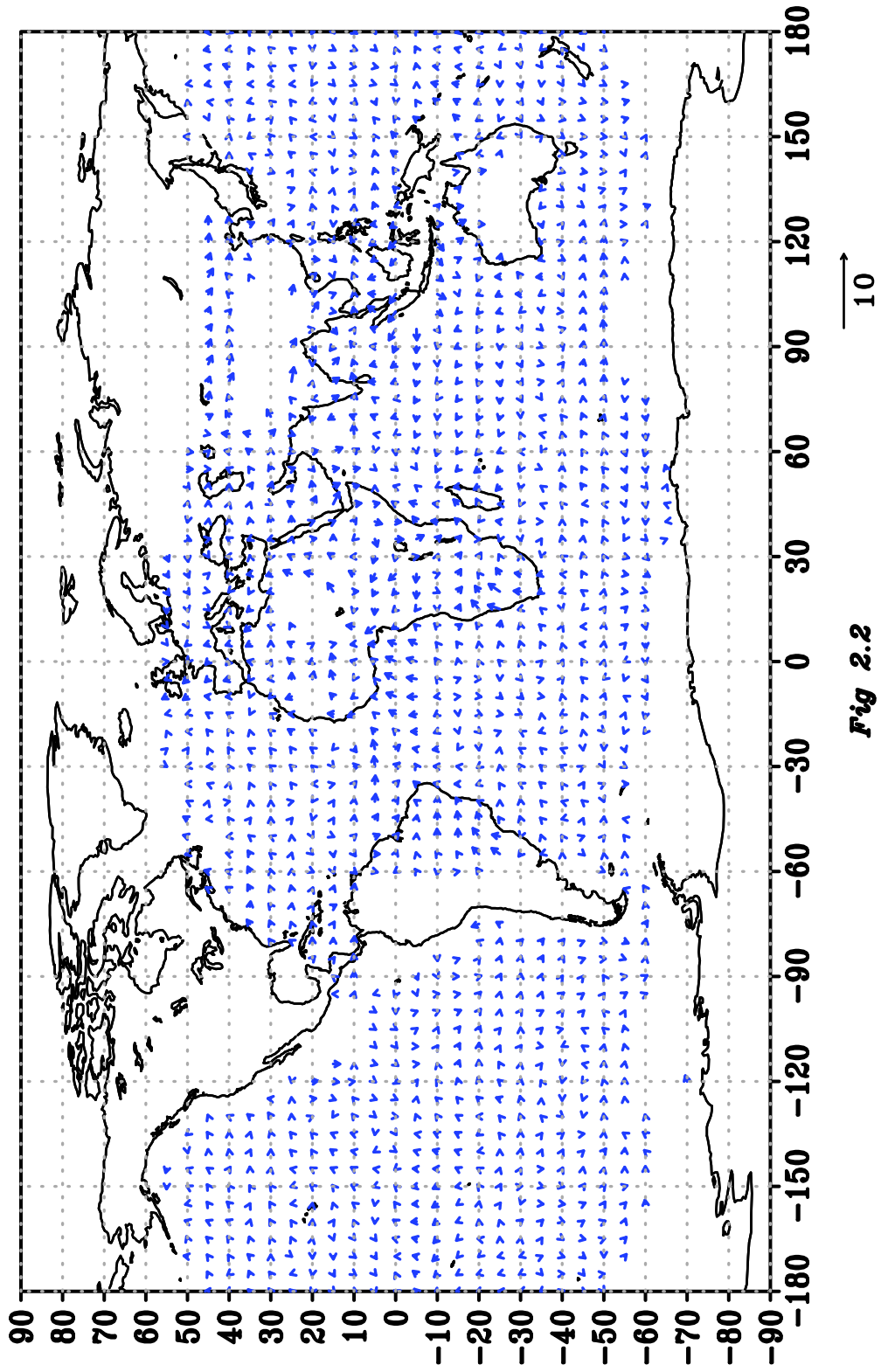


Fig 2.2

# NCMRWF Monitoring Statistics: April 2024

## AMV WINDS: 150 - 400 hPa

### Mean Observed Wind

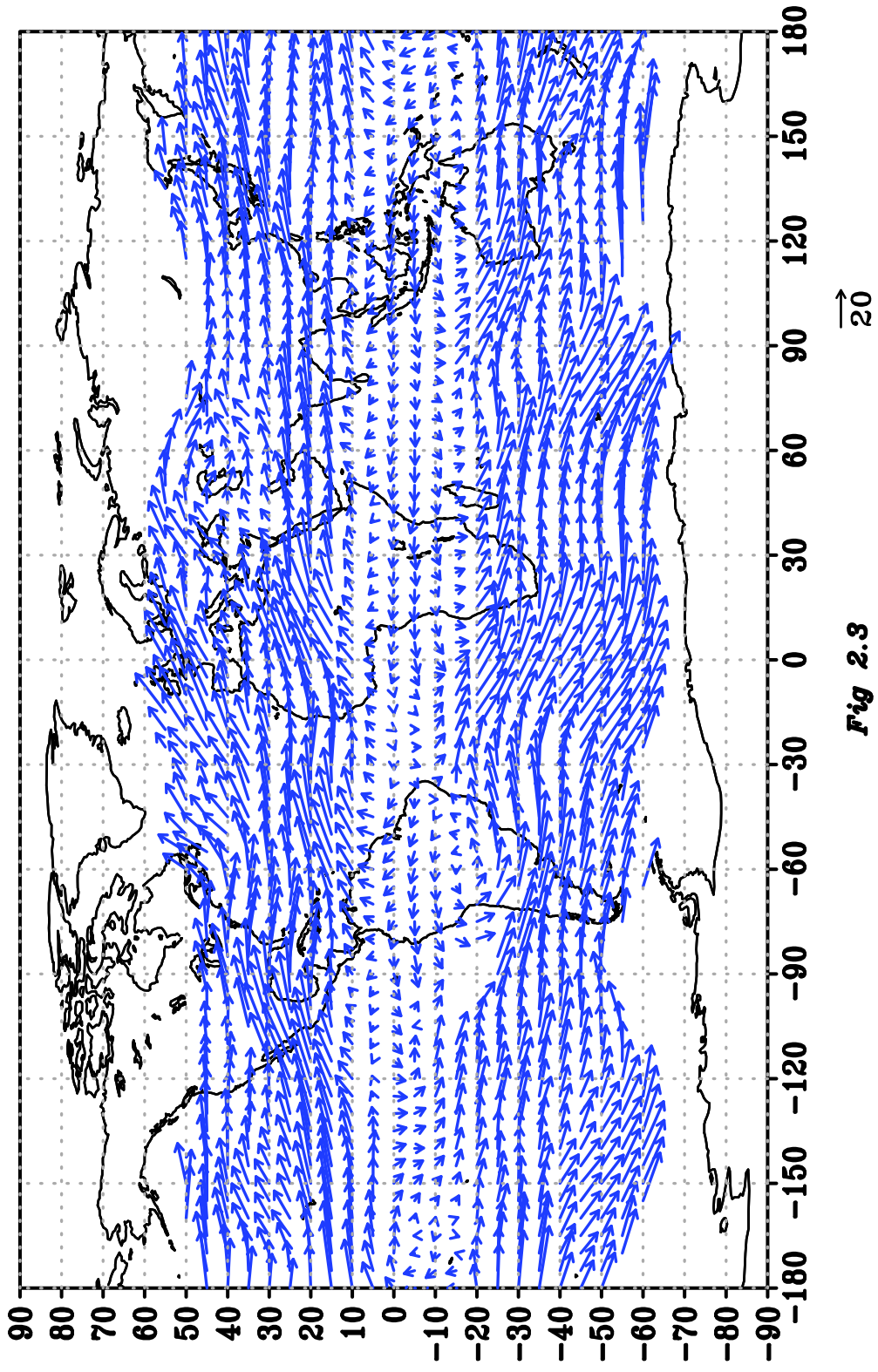
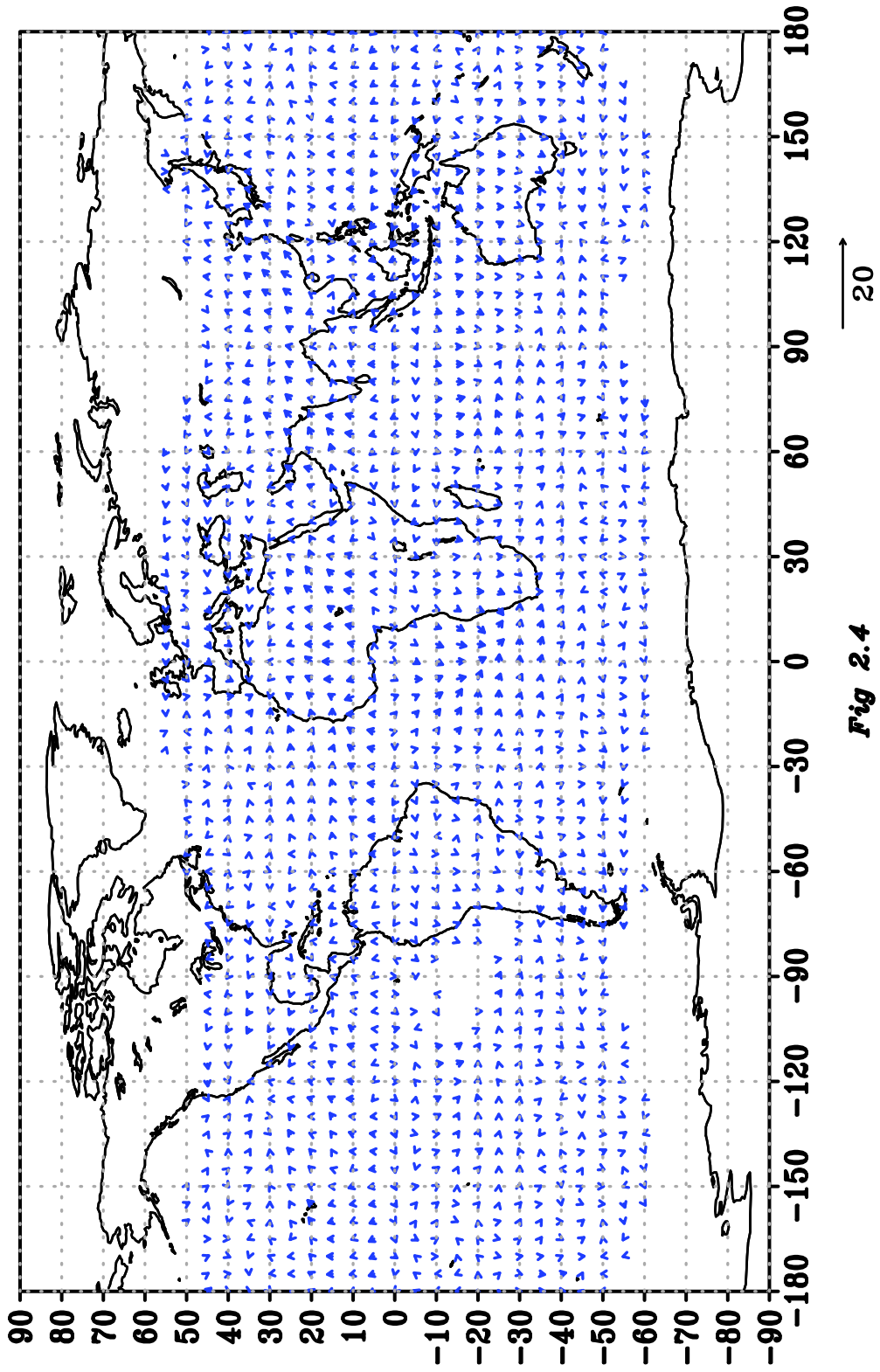


Fig 2.3

# NCMRWF Monitoring Statistics: April 2024

**AMV WINDS: 150 - 400 hPa**

**WIND BIAS: Observation - First Guess**



**Fig 2.4**

