



# ECMWF Global Data Monitoring Report

**April 2020**

*This paper has not been published  
and has only a very limited circulation.*

*Permission to quote from it should be  
obtained from the ECMWF.*

**European Centre for Medium-Range Weather Forecasts  
Europäisches Zentrum für mittelfristige Wettervorhersage  
Centre européen pour les prévisions météorologiques à moyen terme**

# Contents

<b>1</b>	<b>Introduction</b>	<b>3</b>
<b>2</b>	<b>Data summary - History of events</b>	<b>4</b>
2.1	Radiosondes . . . . .	4
2.2	Drifting Buoys . . . . .	7
<b>3</b>	<b>Global monitoring statistics</b>	<b>7</b>
3.1	Data Availability . . . . .	7
3.2	Data Quality . . . . .	7
3.2.1	Figure 1 - Availability - SYNOP PRESSURE . . . . .	9
3.2.2	Figure 2 - Availability - DRIFTER PRESSURE . . . . .	10
3.2.3	Figure 3 - Availability - TEMP 500 hPa geopotential . . . . .	11
3.2.4	Figure 4 - Availability - TEMP/PILOT 300 hPa wind . . . . .	12
3.2.5	Figure 5 - Availability - AIRCRAFT winds 300-150 hPa . . . . .	13
3.2.6	Figure 6 - Availability - SATOB winds 400-150 hPa . . . . .	14
3.2.7	Figure 7 - Availability - SATOB winds 1000-700 hPa . . . . .	15
3.2.8	Figure 8 - Availability - NOAA15 ATOVS : AMSU-A . . . . .	16
3.2.9	Figure 9.1 - Availability - NOAA18 ATOVS : AMSU-A . . . . .	17
3.2.10	Figure 9.2 - Availability - AQUA ATOVS : AMSU-A . . . . .	18
3.2.11	Figure 9.3 - Availability - METOP ATOVS : AMSU-A . . . . .	19
3.2.12	Table 1 - Suspect ships and fixed marine platforms: Surface pressure - (hPa) . . . . .	20
3.2.13	Table 2 - Suspect ships and fixed marine platforms: Wind speed (m/s) . . . . .	22
3.2.14	Table 3 - Suspect ships and fixed marine platforms: Wind direction (DEGREES) . . . . .	23
3.2.15	Table 4 - Suspect drifters: Surface pressure (HPA) . . . . .	24
3.2.16	Table 5 - Suspect drifters: Wind speed (m/s) . . . . .	25
3.2.17	Table 6 - Suspect drifters: Wind direction (degrees) . . . . .	26
3.2.18	Table 7 - Suspect radiosondes: Geopotential height (metres) . . . . .	28
3.2.19	Table 8 - Suspect radiosondes: Wind (m/s) . . . . .	29
3.2.20	Table 9 - Suspect radiosondes: Wind direction (degrees) . . . . .	30
3.2.21	Figure 10 - Suspect TEMP observations - geopotential : 00 UTC . . . . .	31
3.2.22	Figure 11 - Suspect TEMP observations - geopotential : 12 UTC . . . . .	32
3.2.23	Figure 12 - Suspect TEMP/PILOT observations - wind : 00 UTC . . . . .	33
3.2.24	Figure 13 - Suspect TEMP/PILOT observations - wind : 12 UTC . . . . .	34
3.2.25	Table 10 - Radiosonde monitoring statistics (SHIPs): Geopotential height (metres) . . . . .	35
3.2.26	Table 11 - Radiosonde monitoring statistics (SHIPs): Wind (m/s) . . . . .	36
3.2.27	Figure 14 - SATOB Winds: 700-1000hPa . . . . .	37
3.2.28	Figure 15 - SATOB Winds: 150- 400hPa . . . . .	38
3.2.29	Figure 16 - SATOB Winds: 700-1000hPa . . . . .	39
3.2.30	Figure 17 - SATOB Winds: 150- 400hPa . . . . .	40
3.2.31	Figure 18 - AIRCRAFT Winds: 150- 300hPa . . . . .	41
3.2.32	Table 12 - Airep Monitoring Statistics For Airline Carriers (Global) . . . . .	42
<b>4</b>	<b>EUCOS Area Monitoring Statistics</b>	<b>46</b>
4.1	Table 13 - Radiosonde Monitoring Statistics (EUCOS): 50 hPa Geopotential height (metres) . . . . .	47
4.2	Table 14 - Radiosonde Monitoring Statistics (EUCOS):50 hPa Wind (m/s) . . . . .	50
4.3	Table 15 - Radiosonde Monitoring Statistics (EUCOS): 100 hPa Geopotential height (metres) . . . . .	53
4.4	Table 16 - Radiosonde Monitoring Statistics (EUCOS): 100 hPa Wind (m/s) . . . . .	56
4.5	Table 17 - Radiosonde Monitoring Statistics (EUCOS): 500 hPa Geopotential height (metres) . . . . .	59
4.6	Table 18 - Radiosonde Monitoring Statistics (EUCOS): 500 hPa Wind (m/s) . . . . .	62
4.7	Table 19 - Radiosonde Monitoring Statistics (EUCOS): 850 hPa Geopotential height (metres) . . . . .	65
4.8	Table 20 - Radiosonde Monitoring Statistics (EUCOS): 850 hPa Wind (m/s) . . . . .	68
4.9	Table 21 - Drifter Monitoring Statistics (EUCOS): Surface pressure (hpa) . . . . .	71
4.10	Table 22 - Drifter Monitoring Statistics (EUCOS): Wind speed (m/s) . . . . .	80
4.11	Table 23 - Drifter Monitoring Statistics (EUCOS): Wind direction . . . . .	84
4.12	Table 24 - List of Assimilated BUFR Encoded Radiosonde Stations . . . . .	88
4.13	Table 25 - List of BUFR Encoded Radiosonde Stations with no TAC Counterpart . . . . .	89

<b>5 Annex - Explanations of figures and tables</b>	<b>90</b>
5.1 General . . . . .	90
5.2 Data Availability . . . . .	90
5.3 Data Quality . . . . .	90

### Summary of Revisions (in reverse order)

- Revision 28 (June 15) - Monitoring of SYNOP and SYNOP-SHIPs now includes BUFR encoded observations for those which were assimilated as well as for those without TAC counterpart.
- Revision 27 (Feb 15) - Selection criteria for SHIPs are modified as per SOT-7/Doc.9.1.1. Different criteria applied to Manual and Automatic SHIPs.
- Revision 26 (Dec 14) - Coverage chart for ATOVS AMSU-A for Noaa\_16 removed
- Revision 25 (Mar 13) - Monitoring of Radiosondes and ASAPs now includes BUFR encoded observations for those which were assimilated as well as for those without TAC counterpart. Tables 24 and 25 are also added to show the identifiers of these BUFR observations separately.
- Revision 24 (Aug 06) - North Atlantic Monitoring statistics replaced by EUCOS Area Monitoring Statistics (tables 13 to 23). Airep tables removed from this section.
- Revision 23 (Dec 00) - Coverage charts for Noaa\_14 MSU replaced by ATOVS AMSU-A for Noaa\_16.
- Revision 22 (Aug 99) - Coverage charts for TOVS thickness 300-100 hPa replaced by (A)TOVS AMSU-A and MSU (Noaa\_15 and Noaa\_14).
- Revision 21 (May 99) - Monitoring statistics ceased for Noaa\_11 as satellite is no more available.
- Revision 20 (Sep 98) - Changes to tables and annex to remove all mention about data usage. Two more levels (50 and 850 hPa) added to the COSNA statistics for Sondes.
- Revision 19 (Jul 98) - From June 29th, 1998 ECMWF model assimilates temperature data instead of geopotential from radiosondes. As a consequence the number of used geopotential data drops to zero in tables 7, 10, 13 and 15.
- Revision 18 (Apr 98) - Changes to tables and annex to introduce the usage of accepted numbers and observations instead of percentage of rejection.

## 1 Introduction

The ECMWF global data monitoring report is a monthly publication intended to give an overview of the availability and quality of observations from the Global Observing System within the World Weather Watch of the World Meteorological Organisation. It should be recognised that the statistics given in this report refer to data as received at ECMWF in time for the appropriate analysis. The annex of the report gives further explanations of the methods applied to compile the statistics and on the reference used to establish the quality of observations.

The information presented on data quality is based on differences between observations and the values of the most recent ECMWF forecast ("first guess") of the same parameter. Depending on the time of the observation, the forecast range is between 9 and 15 hours. It should be recognised that although the quality of the first-guess is of a generally high standard this is only true to a limited extent in certain areas, such as the tropics and data-sparse areas of both northern and southern hemispheres. The data quality results should therefore be used with care when assessing the absolute quality of a particular observing platform. Other indicators such as long-term trends of station performance, particularly in comparison with nearby stations, can be more useful in this respect.

The global monitoring results presented in this report are meant to serve a wider meteorological community as well as to support special WMO programmes such as TOGA and EUCOS. The contents of the report may therefore be adapted for special requirements as necessary.

As recommended at the ninth session of the Commission for Basic Systems at Geneva 1988, lead centres have been appointed for each main type of observation which should liaise with the participating centres and co-ordinate all the results, inform the WMO Secretariat immediately of obvious problems, and produce every six months a consolidated list of observations of that particular type believed to be of low quality. The presently nominated centres are: RSMC Exeter for marine surface observations; RSMC ECMWF for radiosonde and pilot observations; WMC Washington for aircraft and satellite observations.

ECMWF produces this monthly report as part of its routine monitoring activity in order to facilitate the exchange of monitoring information. Tables are presented according to the CBS recommended standards for the exchange of monitoring results. Copies of the report will be provided to major GDPS centres participating in data monitoring activities as initiated and recommended at the ninth session of the Commission for Basic Systems in Geneva 1988, and to the WMO Secretariat and the International TOGA office in Geneva.

Any comments on the contents and the format of the report are welcome and should be addressed to:

ECMWF  
Attn. Head of Evaluation Section  
Shinfield Park  
Reading, Berkshire, RG2 9AX  
United Kingdom

## **2 Data summary - History of events**

### **2.1 Radiosondes**

The following is a list of land-based stations showing a change in reporting frequency (of 500 hPa geopotential) of at least 10 observations compared with the average over the previous 3 months. The number of reports received at ECMWF for the current and previous month is shown in addition to the observation time.

Ident	Time	Mar	Apr	Ident	Time	Mar	Apr
01004	(00)	31	4	03238	(12)	6	30
02591	(00)	12	0	03354	(12)	6	30
02591	(12)	11	0	03559	(12)	0	28
03005	(00)	27	0	03882	(12)	6	30
03743	(12)	16	0	03918	(12)	7	30
04360	(00)	29	13	04417	(00)	18	29
04360	(12)	30	13	06260	(12)	15	30
06458	(00)	25	0	08508	(00)	0	22
10304	(12)	15	0	16144	(12)	5	29
12982	(00)	29	1	17130	(12)	9	28
12982	(12)	28	0	17281	(00)	5	24
13275	(00)	33	0	23205	(00)	1	20
25428	(00)	29	17	23472	(00)	1	13
29839	(00)	24	1	23472	(12)	1	15
29839	(12)	22	1	23884	(00)	2	18
40265	(00)	16	0	26038	(12)	0	15
42056	(00)	25	0	29612	(00)	0	16
42299	(00)	20	0	29612	(12)	7	30
42314	(00)	24	0	29698	(00)	4	27
42361	(00)	17	0	29698	(12)	5	26
42369	(00)	28	10	33008	(00)	0	30
42399	(00)	25	0	33041	(00)	0	30
42492	(00)	17	0	47909	(00)	1	22
42623	(00)	17	0	60630	(00)	0	11
42647	(00)	31	11	60656	(00)	0	12
42701	(00)	29	18	62306	(12)	0	22
42706	(00)	31	0	62378	(12)	0	17
43014	(00)	24	0	62414	(12)	7	19
43041	(00)	24	0	63985	(12)	15	29
43049	(00)	22	0	72797	(00)	4	19
43063	(00)	25	0	72797	(12)	12	32
43086	(00)	19	0	78897	(00)	0	27
43110	(00)	30	0	91610	(00)	4	27
43128	(00)	18	0	95282	(00)	0	22
43185	(00)	29	0	-	-	-	-
43192	(00)	31	1	-	-	-	-
43243	(00)	20	0	-	-	-	-
43295	(00)	28	0	-	-	-	-
43311	(00)	30	0	-	-	-	-
43333	(00)	23	1	-	-	-	-
43346	(00)	29	0	-	-	-	-
43353	(00)	28	0	-	-	-	-
47580	(00)	32	0	-	-	-	-
47580	(12)	31	0	-	-	-	-
48565	(00)	31	8	-	-	-	-
48568	(00)	31	10	-	-	-	-
60096	(12)	22	9	-	-	-	-
60571	(00)	31	18	-	-	-	-
60630	(12)	32	6	-	-	-	-
60656	(12)	27	5	-	-	-	-
60680	(00)	29	18	-	-	-	-
60760	(00)	13	0	-	-	-	-
61660	(00)	28	12	-	-	-	-
61660	(12)	28	9	-	-	-	-
63741	(00)	25	11	-	-	-	-
64400	(12)	13	0	-	-	-	-
65548	(12)	26	11	-	-	-	-
65578	(00)	30	14	-	-	-	-
65578	(12)	27	16	-	-	-	-
68424	(00)	28	12	-	-	-	-

70326	(00)	32	12	-	-	-	-
70326	(12)	30	13	-	-	-	-
74646	(00)	31	2	-	-	-	-
74646	(12)	30	2	-	-	-	-
78384	(00)	26	1	-	-	-	-
78486	(00)	20	0	-	-	-	-
80001	(00)	18	0	-	-	-	-
80259	(12)	17	0	-	-	-	-
80398	(12)	14	0	-	-	-	-
82022	(00)	31	1	-	-	-	-
82965	(12)	29	0	-	-	-	-
83525	(12)	27	14	-	-	-	-
83899	(00)	22	6	-	-	-	-
83899	(12)	23	6	-	-	-	-
83971	(00)	31	17	-	-	-	-
83971	(12)	31	17	-	-	-	-
85469	(00)	15	4	-	-	-	-
86218	(12)	17	0	-	-	-	-
87623	(12)	31	15	-	-	-	-
87715	(12)	28	14	-	-	-	-
93997	(00)	26	0	-	-	-	-
94461	(00)	27	0	-	-	-	-
94461	(12)	25	0	-	-	-	-
94995	(00)	31	15	-	-	-	-
97502	(00)	22	0	-	-	-	-
98223	(12)	29	8	-	-	-	-
98328	(00)	15	0	-	-	-	-
98328	(12)	19	0	-	-	-	-
98433	(12)	18	7	-	-	-	-
98444	(12)	17	0	-	-	-	-
98618	(00)	31	8	-	-	-	-
98646	(00)	30	7	-	-	-	-

## 2.2 Drifting Buoys

Surface pressure observations from **1898** drifting buoys were received during the month.

## 3 Global monitoring statistics

The following figures and tables provide information on both the availability and quality of various data types as received at ECMWF during the month. A brief description of each figure/table is given below. For a full explanation please refer to the Annex.

### 3.1 Data Availability

Figures 1-9 are global charts for each data type showing the average number of observations received in 24 hours in 5 degree boxes. The average daily number of observations (global) is also displayed with a breakdown, where appropriate, for each WMO region (figures 1, 3 and 4) and Ocean (figures 1-4).

Fig	Observation Type	Parameter	Level/Layer
1	SYNOP/SHIP	MSL Pressure	Surface
2	DRIFTER	MSL Pressure	Surface
3	TEMP	Geopotential	500 hPa
4	TEMP/PILOT	Wind	300 hPa
5	AIRCRAFT (AIREP/AMDAR etc.)	Wind	300-150 hPa
6	SATOB	Wind	400-150 hPa
7	SATOB	Wind	1000-700 hPa
9	TOVS (120 km) - NOAA14	Thickness	300-100 hPa

(Figure 1 includes data from fixed marine platforms e.g. moored buoys.)

### 3.2 Data Quality

Tables 1-8 contain lists of suspect stations in the format according to Recommendation 3 CBS-Ext(85).

Tab	Observation Type	Parameter	Level/Layer
1	SHIP	MSL Pressure	Surface
2	SHIP	Wind Speed	Surface
3	SHIP	Wind Direction	Surface
4	DRIFTER	MSL Pressure	Surface
5	DRIFTER	Wind Speed	Surface
6	DRIFTER	Wind Direction	Surface
7	TEMP	Geopotential	1000- 30 hPa
8	TEMP/PILOT	Wind	1000-100 hPa
9	TEMP/PILOT	Wind Direction	500-150 hPa

(SHIP tables include data from fixed marine platforms e.g. moored buoys.)

Figures 10-13 show the locations of suspect stations given in tables 7 and 8.

Fig	Observation Type	Parameter	Observation Time
10	TEMP	Geopotential	00 UTC
11	TEMP	Geopotential	12 UTC
12	TEMP/PILOT	Wind	00 UTC
13	TEMP/PILOT	Wind	12 UTC

Tables 10 and 11 provide quality statistics for all TEMPSHIPS and PILOTSHIPS received during the month.



Tab	Parameter	Observation Time
10	Geopotential	00 and 12 UTC
11	Wind	00 and 12 UTC

Figures 14-18 show global charts of SATOB and aircraft wind statistics in the form of wind vectors averaged over 5 degree boxes.

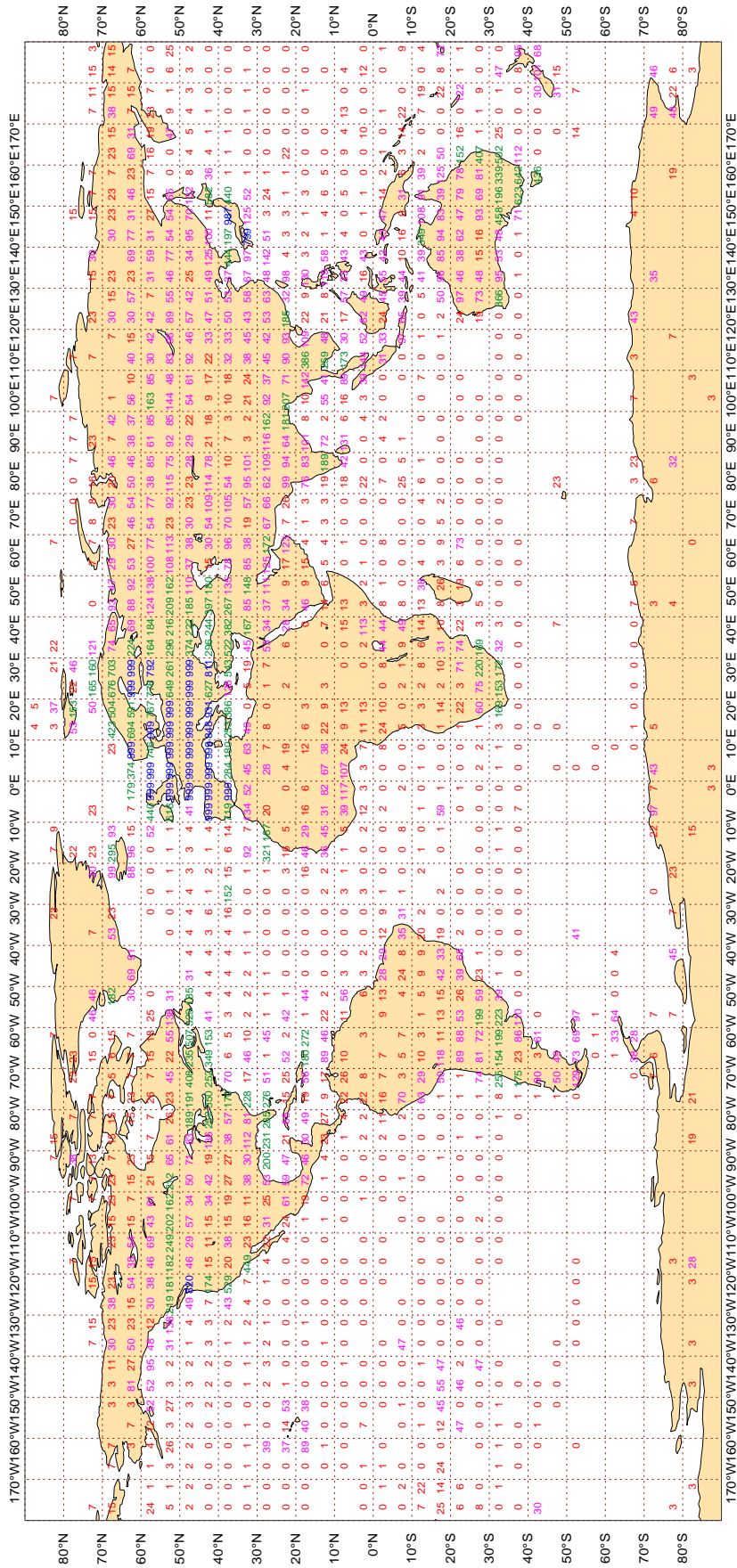
Fig	Parameter	Level/Layer
14	SATOB - Mean observed wind	1000-700 hPa
15	SATOB - Mean observed wind	400-150 hPa
16	SATOB - Mean observed minus first-guess wind	1000-700 hPa
17	SATOB - Mean observed minus first-guess wind	400-150 hPa
18	AIRCRAFT WIND - Mean observed minus first-guess	300-150 hPa

Table 12 provides quality statistics of aircraft wind observations stratified by airline carrier.

3.2.1 Figure 1 - Availability - SYNOP PRESSURE

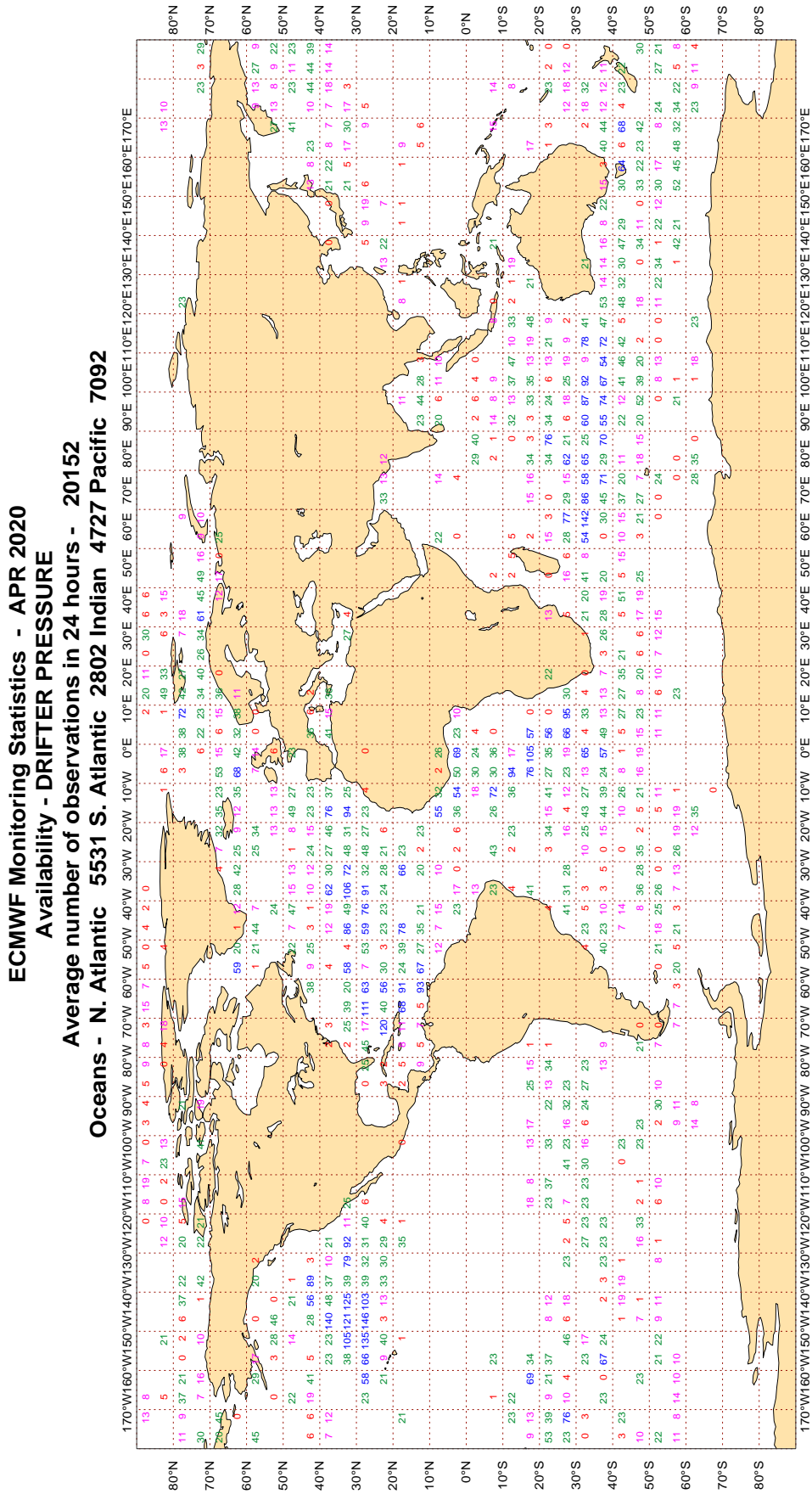
Figure 1

ECMWF Monitoring Statistics - APR 2020  
 Availability - SYNOP/SHIP (manual, auto) pressure  
 Average number of observations in 24 hours - 118112  
 LAND - WMO Region I: 4261 II:16732 III: 3771 IV: 7033  
 Region V: 9487 VI:63138 Antarctic: 944  
 Oceans - N. Atlantic 6905 S. Atlantic 167 Indian 585 Pacific 5088



### 3.2.2 Figure 2 - Availability - DRIFTER PRESSURE

Figure 2



3.2.3 Figure 3 - Availability - TEMP 500 hPa geopotential

Figure 3

ECMWF Monitoring Statistics - APR 2020

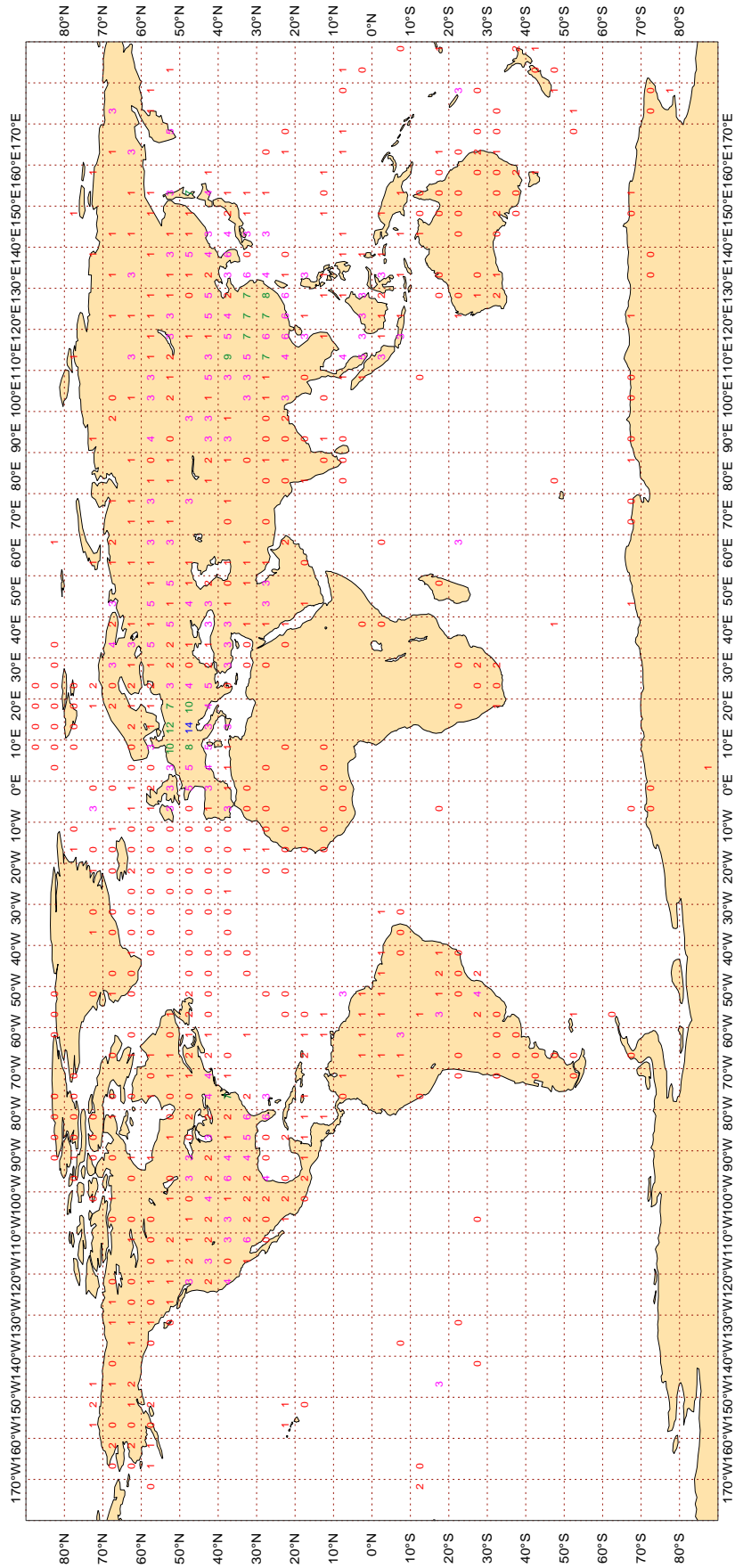
Availability - TEMP 500 hPa Geopotential

Average number of observations in 24 hours - 1254

LAND - WMO Region I: 29 II: 453 III: 67 IV: 264

Region V: 134 VI: 279 Antarctic: 14

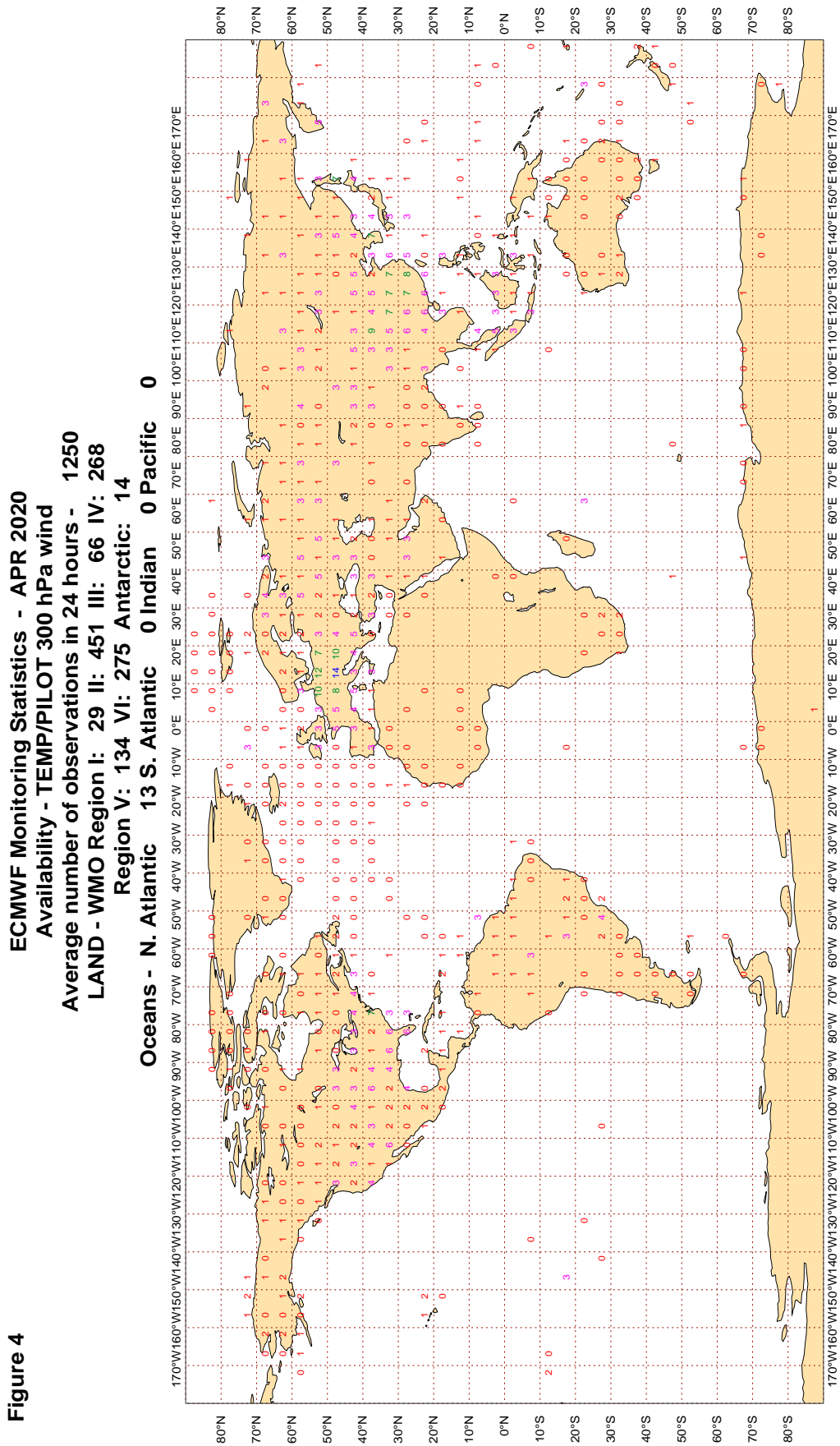
Oceans - N. Atlantic 14 S. Atlantic 0 Indian 0 Pacific 0



Magics 3.0.4 (64 bit)



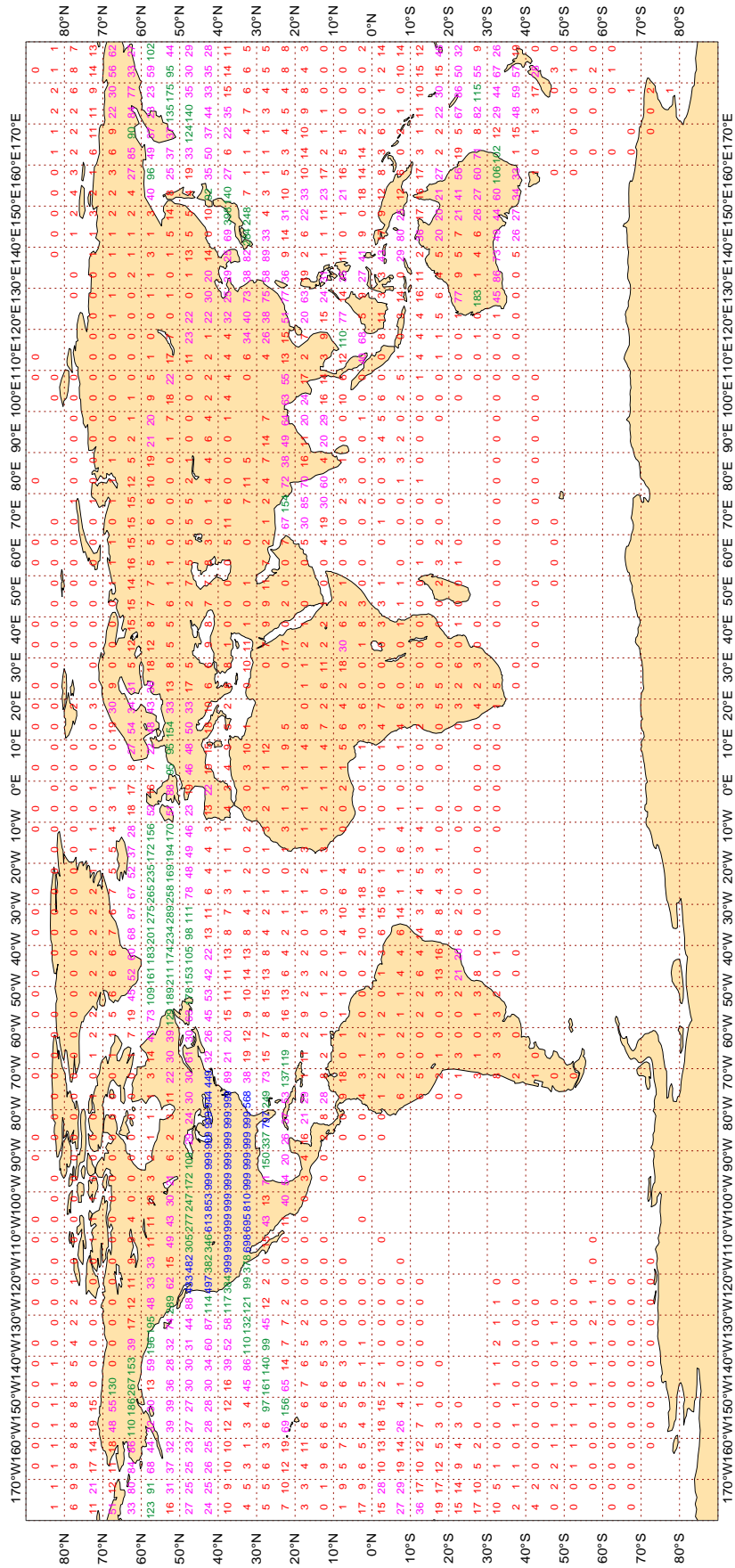
3.2.4 Figure 4 - Availability - TEMP/PILOT 300 hPa wind



3.2.5 Figure 5 - Availability - AIRCRAFT winds 300-150 hPa

Figure 5

ECMWF Monitoring Statistics - APR 2020  
Availability - Aircraft winds 300-150 hPa  
Average number of observations in 24 hours - 66353



Magics 3.0.4 (64 bit)

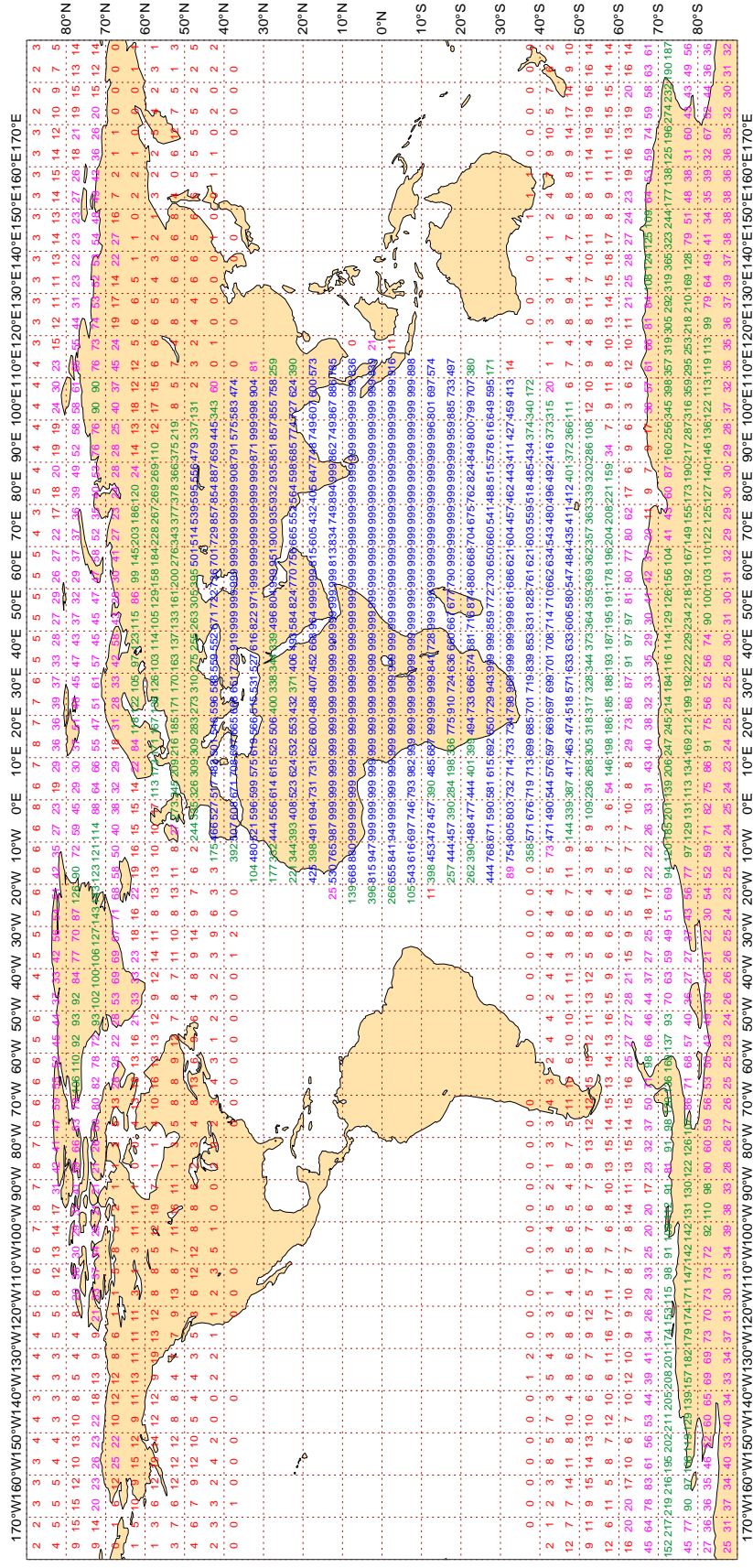




3.2.6 Figure 6 - Availability - SATOB winds 400-150 hPa

Figure 6

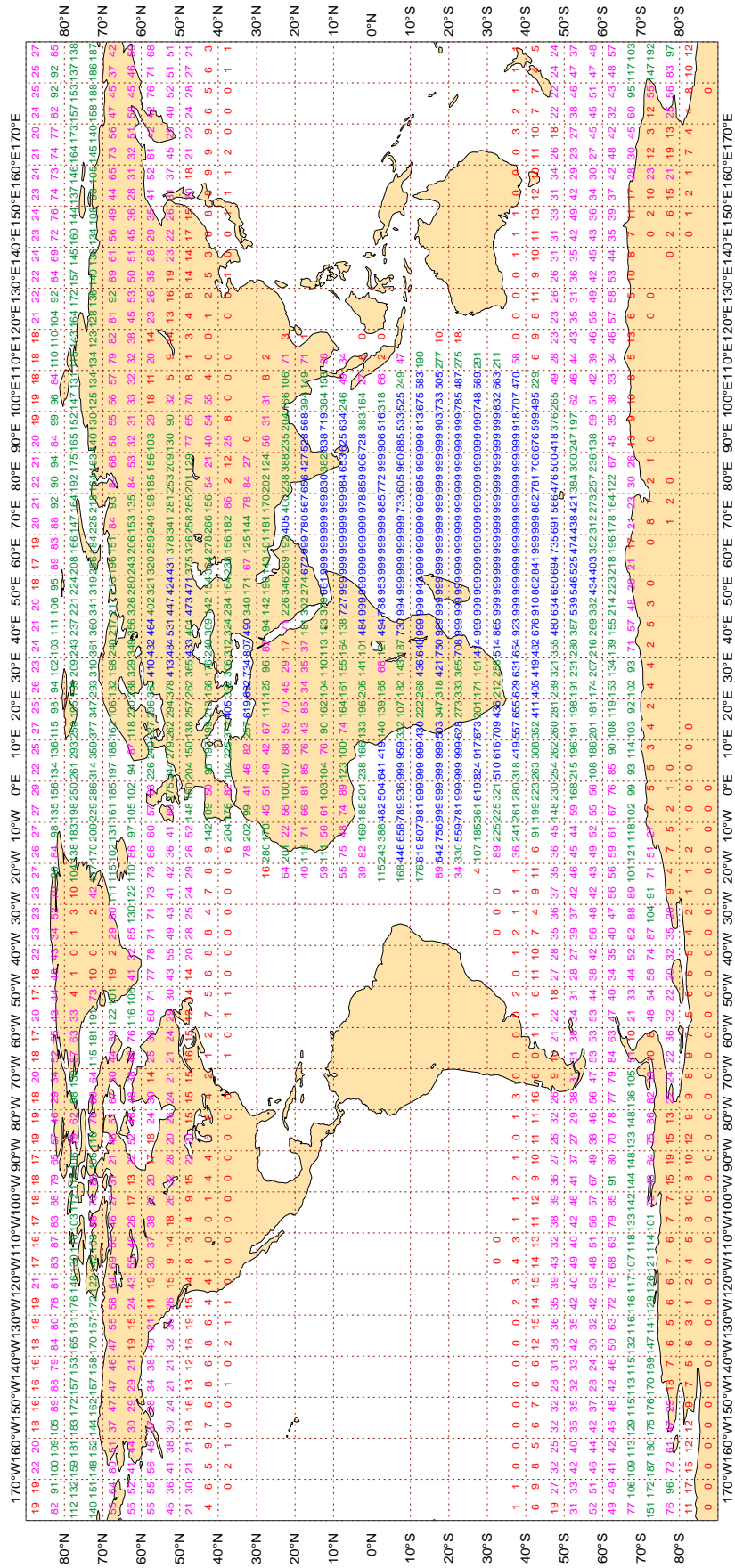
ECMWF Monitoring Statistics - APR 2020  
 Availability - AMV winds 400-150 hPa  
 Average number of observations in 24 hours - 473685



3.2.7 Figure 7 - Availability - SATOB winds 1000-700 hPa

Figure 7

ECMWF Monitoring Statistics - APR 2020  
Availability - AMV winds 1000-700 hPa  
Average number of observations in 24 hours - 363818

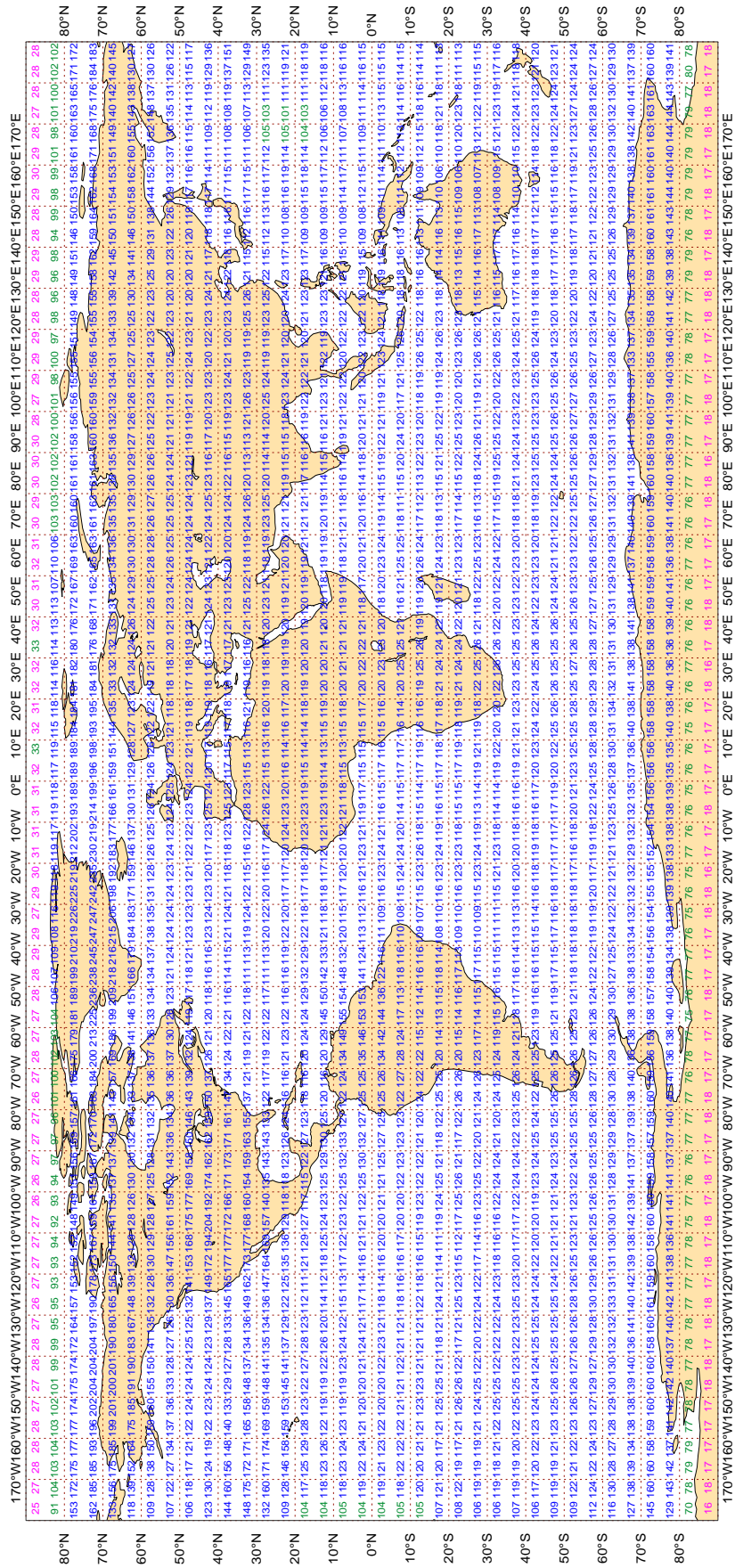




3.2.8 Figure 8 - Availability - NOAA15 ATOVS : AMSU-A

Figure 8

ECMWF Monitoring Statistics - APR 2020  
Availability - NOAA15 ATOVS : AMSU-A  
Average number of observations in 24 hours - 317867



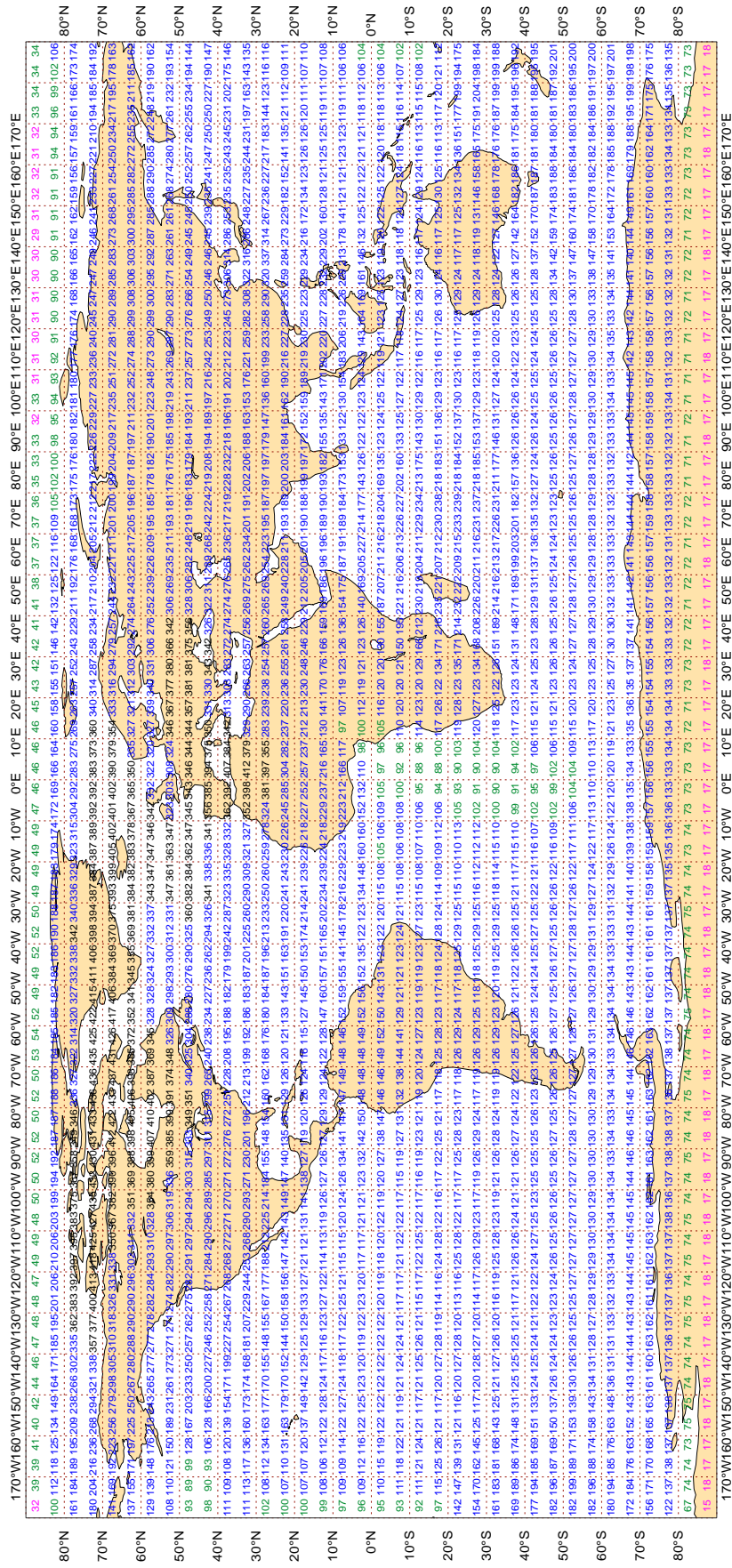
Magics 3.0.4 (64 bit)



3.2.9 Figure 9.1 - Availability - NOAA18 ATOVS : AMSU-A

Figure 9.1

ECMWF Monitoring Statistics - APR 2020  
Availability - NOAA18 ATOVS : AMSU-A  
Average number of observations in 24 hours - 450769



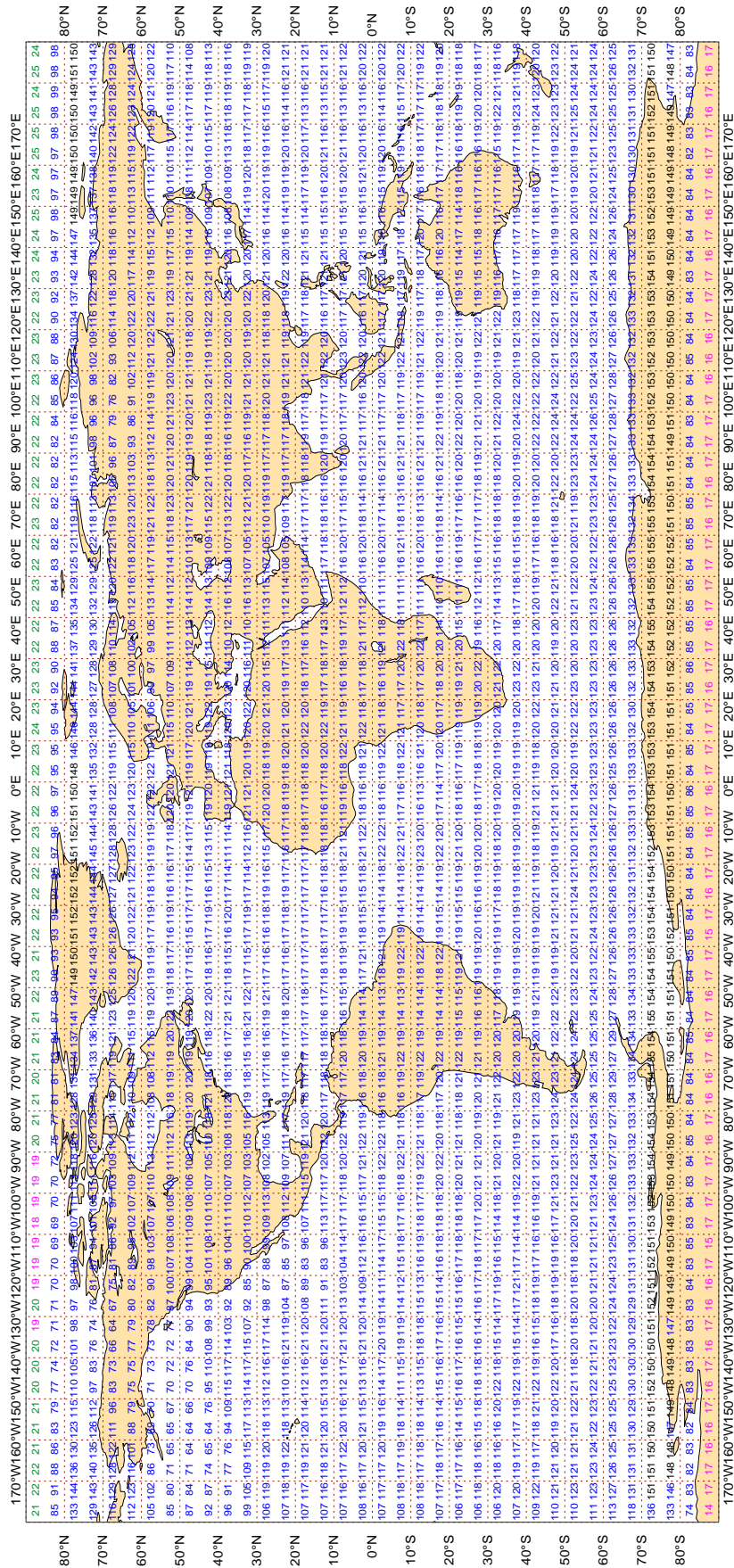
Magics 3.0.4 (64 bit)



3.2.10 Figure 9.2 - Availability - AQUA ATOVS : AMSU-A

Figure 9.2

ECMWF Monitoring Statistics - APR 2020  
Availability - AQUA ATOVS : AMSU-A  
Average number of observations in 24 hours - 292011



Magics 3.0.4 (64 bit)



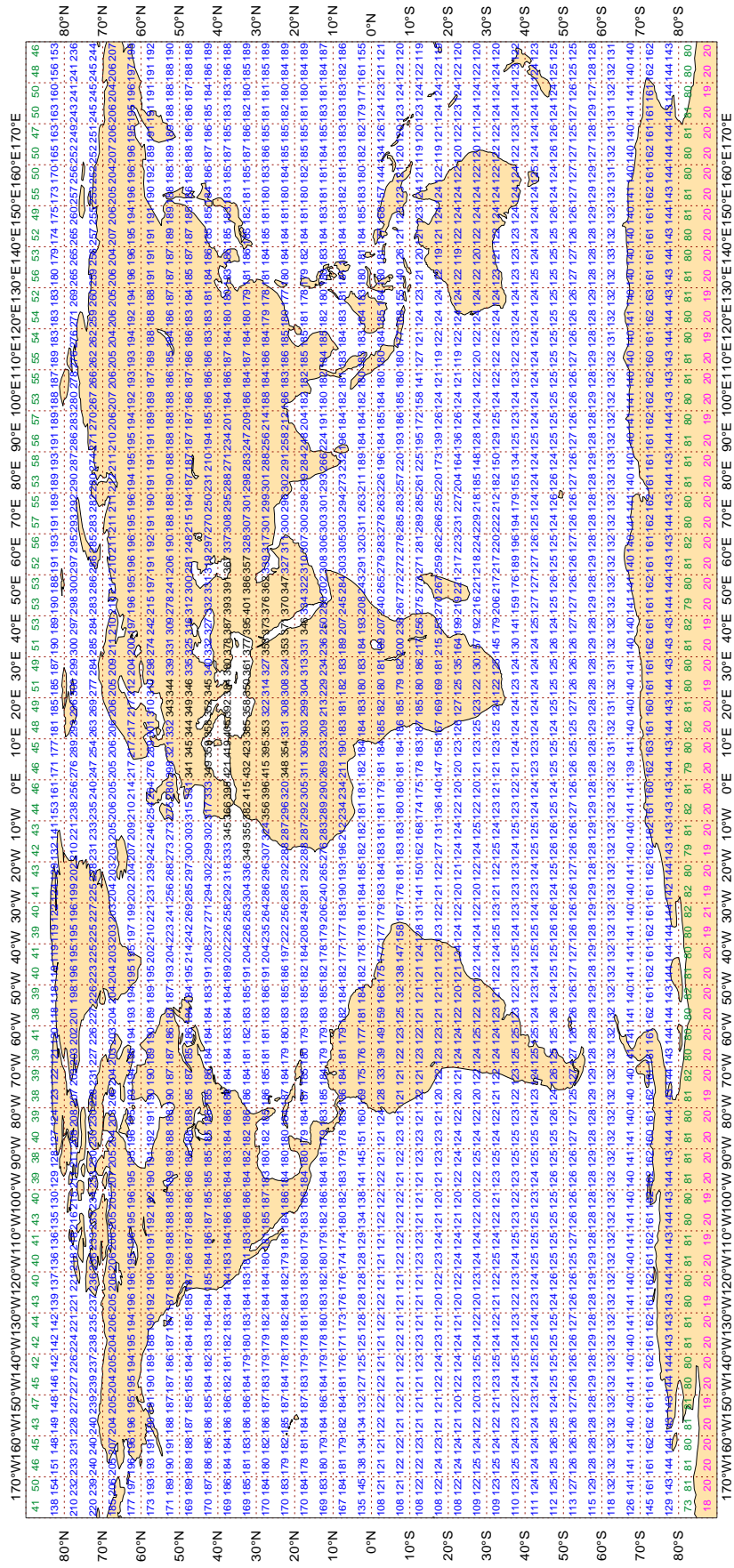


3.2.11 Figure 9.3 - Availability - METOP ATOVS : AMSU-A

Figure 9.3

ECMWF Monitoring Statistics - APR 2020  
Availability - METOP ATOVS : AMSU-A

Average number of observations in 24 hours - 436742



Magics 3.0.4 (64 bit)



### 3.2.12 Table 1 - Suspect ships and fixed marine platforms: Surface pressure - (hPa)

LIST OF SUSPECT STATIONS : SHIPS + FIXED MARINE PLATFORMS  
 MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : SURFACE PRESSURE (HPA)  
 AREA : GLOBAL  
 PERIOD : APR 2020  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

SELECTION CRITERIA: NO. OF OBS. >= 15(50), AND,  
 Manual (Automatic) ABSOLUTE BIAS >= 3(2) HPA, OR,  
 STANDARD DEVIATION >= 5(4) HPA, OR,  
 % GROSS ERROR >= 25(15)  
 (GROSS ERROR LIMIT = 15 HPA)

TIME = 99 => AVERAGE OF 00, 06, 12 AND 18 UTC OBSERVATIONS

WMO IDENT	OBS TIME	ELM	LEVEL	NUM OBS	NUM GROSS	SD	BIAS	RMS
3EVZ8	99	P	SUR	18	0	1.3	-3.5	3.7
3FPS9	99	P	SUR	17	0	1.5	8.5	8.6
44009	99	P	SUR	118	0	0.6	-4.4	4.4
44058	99	P	SUR	162	0	0.8	3.0	3.1
44062	99	P	SUR	53	50	5.7	-8.4	10.1
7KCR	99	P	SUR	29	0	2.5	5.5	6.1
9HA4330	99	P	SUR	20	0	0.9	-4.2	4.3
9HA4691	99	P	SUR	33	0	2.2	3.1	3.8
9V3092	99	P	SUR	33	0	0.7	4.9	4.9
9V5600	99	P	SUR	15	4	0.9	13.8	13.9
9V5601	99	P	SUR	20	18	0.7	0.3	0.8
9V5602	99	P	SUR	43	7	4.5	5.7	7.3
9V7010	99	P	SUR	32	0	4.6	4.3	6.3
9V7639	99	P	SUR	57	4	5.2	9.1	10.5
9V8503	99	P	SUR	45	0	3.0	3.6	4.7
9V8838	99	P	SUR	40	0	1.2	7.0	7.1
9V9375	99	P	SUR	91	0	2.9	3.5	4.6
9V9793	99	P	SUR	40	0	2.1	4.7	5.2
9VEZ3	99	P	SUR	50	1	0.9	13.0	13.0
9VHK7	99	P	SUR	42	10	4.0	7.5	8.5
A8OR8	99	P	SUR	88	0	3.6	3.5	5.0
ATVK	99	P	SUR	113	0	0.4	3.1	3.1
AUXE	99	P	SUR	127	0	0.4	3.3	3.3
BKIZ	99	P	SUR	34	0	1.4	-6.5	6.6
C6AB8	99	P	SUR	23	0	1.6	6.7	6.9
C6AX6	99	P	SUR	67	0	2.0	3.8	4.3
C6BQ8	99	P	SUR	19	0	5.1	1.5	5.4
D5HF5	99	P	SUR	21	1	4.5	4.5	6.4
FMFT	99	P	SUR	36	0	2.5	4.4	5.0
IBJD	99	P	SUR	15	0	3.0	3.8	4.8
KLUX	99	P	SUR	34	0	0.9	3.4	3.5
LAJK7	99	P	SUR	27	3	3.2	-11.1	11.5

LIST OF SUSPECT STATIONS : SHIPS + FIXED MARINE PLATFORMS  
 MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : SURFACE PRESSURE (HPA)  
 (CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	NUM OBS	NUM GROSS	SD	BIAS	RMS
LAPD7	99	P	SUR	36	0	2.2	3.9	4.5
OUIY2	99	P	SUR	18	4	0.7	8.1	8.1
OWUQ2	99	P	SUR	27	0	4.2	3.5	5.5
PBAD	99	P	SUR	35	0	0.4	-4.9	4.9
UAST	99	P	SUR	29	11	6.3	-2.1	6.7
UCFT	99	P	SUR	39	0	0.9	5.2	5.3
UCUE	99	P	SUR	27	0	1.4	3.5	3.8
UIFY	99	P	SUR	35	0	0.6	-5.1	5.2
V7FA7	99	P	SUR	47	0	2.3	3.7	4.3
V7HH2	99	P	SUR	38	0	2.2	3.5	4.1
VRDJ3	99	P	SUR	135	0	0.9	-5.1	5.2
VRFX2	99	P	SUR	23	0	0.9	-4.0	4.1
VRJS2	99	P	SUR	32	1	0.8	-5.6	5.7
VRJU9	99	P	SUR	61	0	1.4	6.4	6.6
VRJV3	99	P	SUR	33	0	4.6	10.0	11.0
VRLI8	99	P	SUR	19	8	4.8	-0.2	4.8
VRLJ2	99	P	SUR	20	0	0.5	-5.8	5.8
VRRB6	99	P	SUR	158	0	1.8	3.8	4.2
VRWE8	99	P	SUR	16	0	0.6	-3.8	3.8
VRZQ8	99	P	SUR	18	0	2.3	-3.1	3.9
VTWS	99	P	SUR	110	52	4.7	2.8	5.5
WDDI	99	P	SUR	94	0	0.7	3.7	3.7
WDF2960	99	P	SUR	24	0	1.4	3.8	4.0
WDG8555	99	P	SUR	39	0	2.5	4.2	4.9
WDJ3192	99	P	SUR	53	0	2.3	6.4	6.8
WECH	99	P	SUR	19	0	1.8	3.4	3.8
WPKW	99	P	SUR	32	0	4.0	3.4	5.2

### 3.2.13 Table 2 - Suspect ships and fixed marine platforms: Wind speed (m/s)

LIST OF SUSPECT STATIONS : SHIPS + FIXED MARINE PLATFORMS  
 MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : WIND SPEED (M/S)  
 AREA : GLOBAL  
 PERIOD : APR 2020  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

SELECTION CRITERIA: NO. OF OBS. >= 15(50), AND,  
 Manual (Automatic) ABSOLUTE BIAS >= 4(4) M/S, OR,  
 % GROSS ERROR >= 25(15)  
 (GROSS ERROR LIMIT FOR VECTOR WIND = 25 M/S)

TIME = 99 => AVERAGE OF 00, 06, 12 AND 18 UTC OBSERVATIONS

WMO IDENT	OBS TIME	ELM	LEVEL	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
--------------	-------------	-----	-------	------------	--------------	------------	----	------	-----

**3.2.14 Table 3 - Suspect ships and fixed marine platforms: Wind direction (DEGREES)**

LIST OF SUSPECT STATIONS : SHIPS + FIXED MARINE PLATFORMS  
 MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : WIND DIRECTION (DEGREES)  
 AREA : GLOBAL  
 PERIOD : APR 2020  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

SELECTION CRITERIA: NO. OF OBS. >= 15 (50) (WIND SPEEDS > 3M/S), AND ,  
 Manual (Automatic) ABSOLUTE BIAS >= 30 (25) DEGREES, OR,  
 STANDARD DEVIATION >= 70 (50) DEGREES  
 (GROSS ERROR LIMIT FOR VECTOR WIND = 25 M/S)

TIME = 99 => AVERAGE OF 00, 06, 12 AND 18 UTC OBSERVATIONS

WMO IDENT	OBS TIME	ELM	LEVEL	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
41047	99	DIRN	SUR	15	0	0	33.8	38.2	51.0
44072	99	DIRN	SUR	210	0	0	26.9	-71.2	76.1



### 3.2.15 Table 4 - Suspect drifters: Surface pressure (HPA)

LIST OF SUSPECT STATIONS : DRIFTER  
 MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : SURFACE PRESSURE (HPA)  
 AREA : GLOBAL  
 PERIOD : APR 2020  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

SELECTION CRITERIA: NO. OF OBS. >= 20, AND,  
 ABSOLUTE BIAS >= 4 HPA, OR,  
 STANDARD DEVIATION >= 6 HPA, OR,  
 % GROSS ERROR >= 25  
 (GROSS ERROR LIMIT = 15 HPA)

TIME = 99 => AVERAGE OF ALL OBSERVATIONS

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
2300670	99	P	SUR	23	64	532	196	0.2	0.3	0.4
23670	99	P	SUR	23	64	530	196	0.2	0.3	0.4
2501539	99	P	SUR	72	166	720	284	4.8	-4.6	6.7
2501540	99	P	SUR	73	178	720	630	2.4	-11.8	12.0
2501667	99	P	SUR	77	113	720	454	8.5	1.0	8.6
2501668	99	P	SUR	81	157	721	488	5.8	-5.5	8.0
3100866	99	P	SUR	-39	-44	607	236	5.5	5.2	7.5
4301502	99	P	SUR	24	126	626	34	4.9	-5.1	7.1
4400009	99	P	SUR	38	-75	702	0	0.6	-4.4	4.5
4400062	99	P	SUR	39	-76	1282	1214	6.3	-6.8	9.2
44009	99	P	SUR	39	-75	706	0	0.7	-4.4	4.4
44062	99	P	SUR	39	-76	258	240	5.6	-8.5	10.2
4701658	99	P	SUR	72	-95	609	609	0.0	0.0	0.0
4701660	99	P	SUR	70	-102	648	648	0.0	0.0	0.0
4800770	99	P	SUR	67	10	489	489	0.0	0.0	0.0
4801654	99	P	SUR	72	174	684	247	0.6	0.3	0.7
4801667	99	P	SUR	79	-169	690	690	0.0	0.0	0.0
6202676	99	P	SUR	63	-19	398	2	2.8	4.2	5.0

**3.2.16 Table 5 - Suspect drifters: Wind speed (m/s)**

LIST OF SUSPECT STATIONS : DRIFTER  
 MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : WIND SPEED (M/S)  
 AREA : GLOBAL  
 PERIOD : APR 2020  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

SELECTION CRITERIA: NO. OF OBS. >= 20, AND,  
 ABSOLUTE BIAS >= 5 M/S, OR,  
 % GROSS ERROR >= 25  
 (GROSS ERROR LIMIT FOR VECTOR WIND = 25 M/S)

TIME = 99 => AVERAGE OF ALL OBSERVATIONS

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
6101005	99	SPEED	SUR	38	26	195	0	0	3.8	-8.2	9.0

### 3.2.17 Table 6 - Suspect drifters: Wind direction (degrees)

LIST OF SUSPECT STATIONS : DRIFTER  
 MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : WIND DIRECTION (DEGREES)  
 PERIOD : APR 2020  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

SELECTION CRITERIA: NO. OF OBS. >= 20 (WIND SPEEDS > 3M/S), AND ,  
 ABSOLUTE BIAS >= 20 DEGREES, OR,  
 STANDARD DEVIATION >= 60 DEGREES  
 (GROSS ERROR LIMIT FOR VECTOR WIND = 25 M/S)

TIME = 99 => AVERAGE OF ALL OBSERVATIONS

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
1400047	99	DIRN	SUR	-4	57	89	0	0	135.8	-77.9	156.6
1500002	99	DIRN	SUR	0	-10	186	0	0	133.7	90.8	161.7
1500008	99	DIRN	SUR	-20	-10	242	0	0	15.4	27.3	31.3
23091	99	DIRN	SUR	18	89	109	0	0	22.9	-34.1	41.1
23094	99	DIRN	SUR	14	84	73	0	0	13.7	-25.6	29.0
23099	99	DIRN	SUR	13	80	259	0	0	95.4	-26.6	99.0
23451	99	DIRN	SUR	15	69	117	0	0	14.8	-27.1	30.9
23452	99	DIRN	SUR	12	69	69	0	0	31.1	-40.4	51.0
23453	99	DIRN	SUR	8	73	36	0	0	27.8	-25.3	37.6
23454	99	DIRN	SUR	10	73	52	0	0	52.9	54.8	76.2
23460	99	DIRN	SUR	7	88	75	0	0	20.3	21.7	29.8
23497	99	DIRN	SUR	11	72	57	0	0	79.7	-77.3	111.0
3100003	99	DIRN	SUR	-8	-31	232	0	0	106.7	-120.9	161.2
4100047	99	DIRN	SUR	28	-71	174	0	0	36.0	33.6	49.2
41047	99	DIRN	SUR	28	-72	57	0	0	34.4	33.2	47.8
4400029	99	DIRN	SUR	43	-71	594	0	0	18.3	-21.5	28.3
4400072	99	DIRN	SUR	37	-76	3433	0	0	35.2	-68.6	77.1
44029	99	DIRN	SUR	43	-71	620	0	0	17.3	-21.8	27.8
44072	99	DIRN	SUR	37	-76	756	0	0	36.5	-70.8	79.7
44139	99	DIRN	SUR	44	-57	613	0	0	14.7	-22.9	27.2
4500026	99	DIRN	SUR	42	-87	217	0	0	60.2	5.6	60.5
4500029	99	DIRN	SUR	43	-86	238	0	0	70.4	0.9	70.4
4500168	99	DIRN	SUR	42	-86	2544	0	0	36.4	35.6	50.9
45029	99	DIRN	SUR	43	-86	46	0	0	61.6	-7.2	62.0
45168	99	DIRN	SUR	42	-86	570	0	0	39.7	32.5	51.3
4600060	99	DIRN	SUR	61	-147	292	0	0	28.9	24.0	37.5
46060	99	DIRN	SUR	61	-147	279	0	0	29.2	22.8	37.0
5100301	99	DIRN	SUR	8	-155	199	0	0	78.3	16.3	80.0
51301	99	DIRN	SUR	8	-155	196	0	0	78.9	16.0	80.5
5200085	99	DIRN	SUR	0	156	399	0	0	151.4	-15.2	152.2
52085	99	DIRN	SUR	0	156	376	0	0	152.2	-9.6	152.6

LIST OF SUSPECT STATIONS : DRIFTER  
 MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : WIND DIRECTION (DEGREES)  
 (CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
5300040	99	DIRN	SUR	-8	95	369	0	0	153.2	64.5	166.3
5300056	99	DIRN	SUR	-5	95	304	0	0	157.2	36.1	161.3
53040	99	DIRN	SUR	-8	95	349	0	0	153.6	62.0	165.6
53056	99	DIRN	SUR	-5	95	283	0	0	158.9	29.0	161.5

**3.2.18 Table 7 - Suspect radiosondes: Geopotential height (metres)**

LIST OF SUSPECT STATIONS : RADIOSONDES  
 MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : GEOPOTENTIAL HEIGHT (METRES)  
 AREA : GLOBAL  
 PERIOD : APR 2020  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

SELECTION CRITERIA: AT LEAST 3 LEVELS WITH  
 10 OBS AND 100 M WEIGHTED RMS

ONLY THE WORST LEVEL IS SHOWN (WITH UNWEIGHTED RMS)

WMO IDENT	OBS TIME	ELM	LEV	LAT	LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
01400	00	Z	1000	57	3	14	0	5.6	78.5	78.7
01400	12	Z	1000	57	3	12	0	5.6	79.3	79.5
24507	12	Z	30	64	100	14	0	143.1	138.4	199.1
24507	00	Z	30	64	100	15	0	135.7	216.7	255.7
61687	12	Z	1000	14	-14	16	0	2.8	-40.1	40.2
76394	12	Z	200	26	-100	13	0	104.9	108.2	150.7
98233	00	Z	1000	18	122	30	0	31.4	23.3	39.1

**3.2.19 Table 8 - Suspect radiosondes: Wind (m/s)**

LIST OF SUSPECT STATIONS : RADIOSONDES  
 MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : WIND (M/S)  
 AREA : GLOBAL  
 PERIOD : APR 2020  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

SELECTION CRITERIA: AT LEAST 10 OBS AND 15 M/S RMS VECTOR WIND

STANDARD LEVEL (1000-100 HPA) WITH HIGHEST RMS IS SHOWN

WMO IDENT	OBS TIME	ELM	LEV	LAT	LONG	NUM OBS	NUM GROSS	UBIAS	VBIAS	RMS
42410	00	V	150	26	92	25	0	-12.0	-2.4	16.6

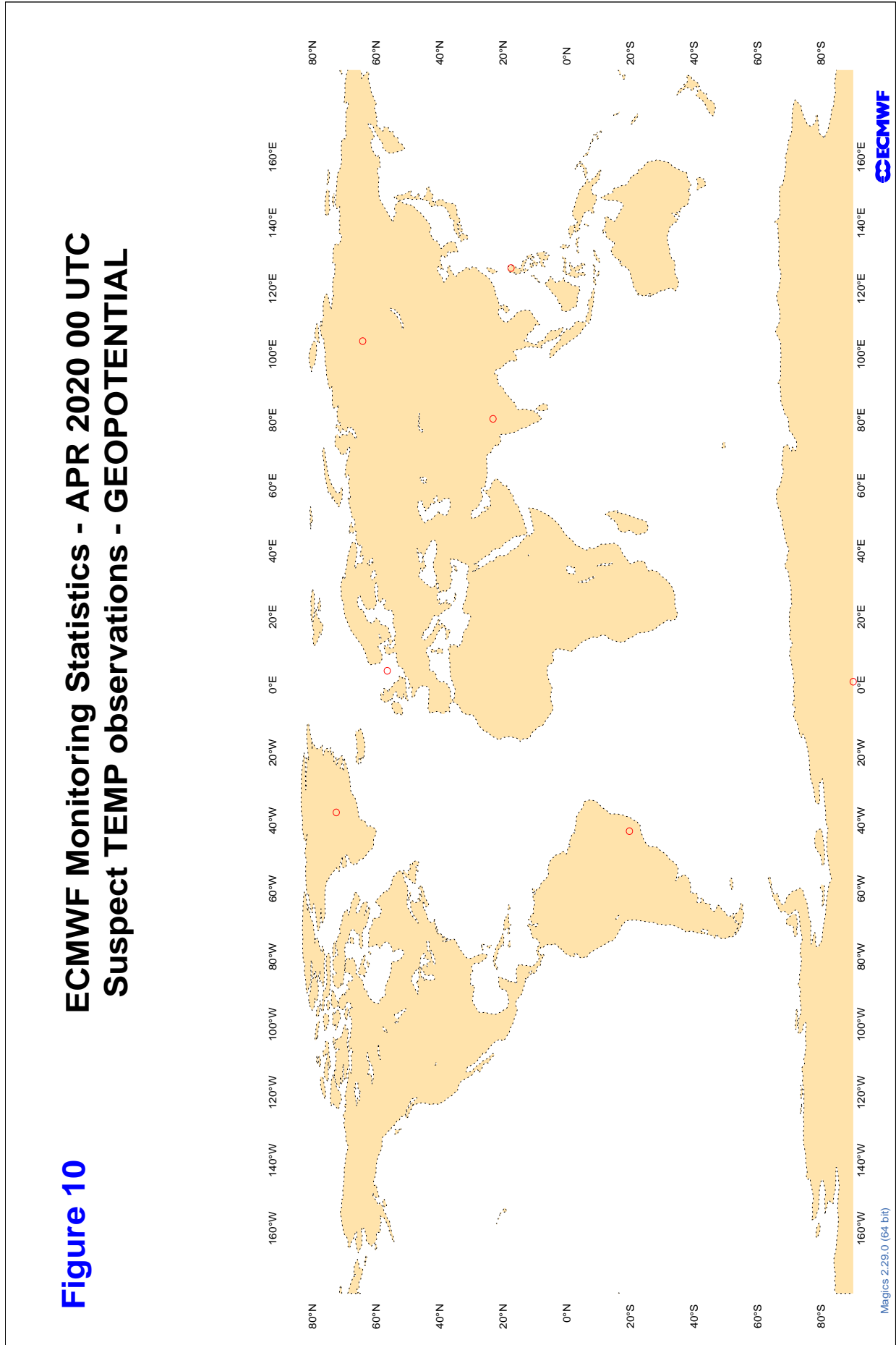
### 3.2.20 Table 9 - Suspect radiosondes: Wind direction (degrees)

LIST OF SUSPECT STATIONS : RADIOSONDES  
 MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : WIND DIRECTION (DEGREES)  
 AREA : GLOBAL  
 PERIOD : APR 2020  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

SELECTION CRITERIA: OBSERVED/FORECAST WIND SPEEDS  $\geq$  5 M/S  
 NO. OF OBSERVATIONS  $\geq$  5, AND,  
 ABSOLUTE BIAS  $\geq$  10 DEGREES, WITH  
 STANDARD DEVIATION  $<$  30 DEGREES, AND,  
 VERTICAL SPREAD  $<$  10 DEGREES  
 (AVERAGE BETWEEN 500 AND 150 HPA)

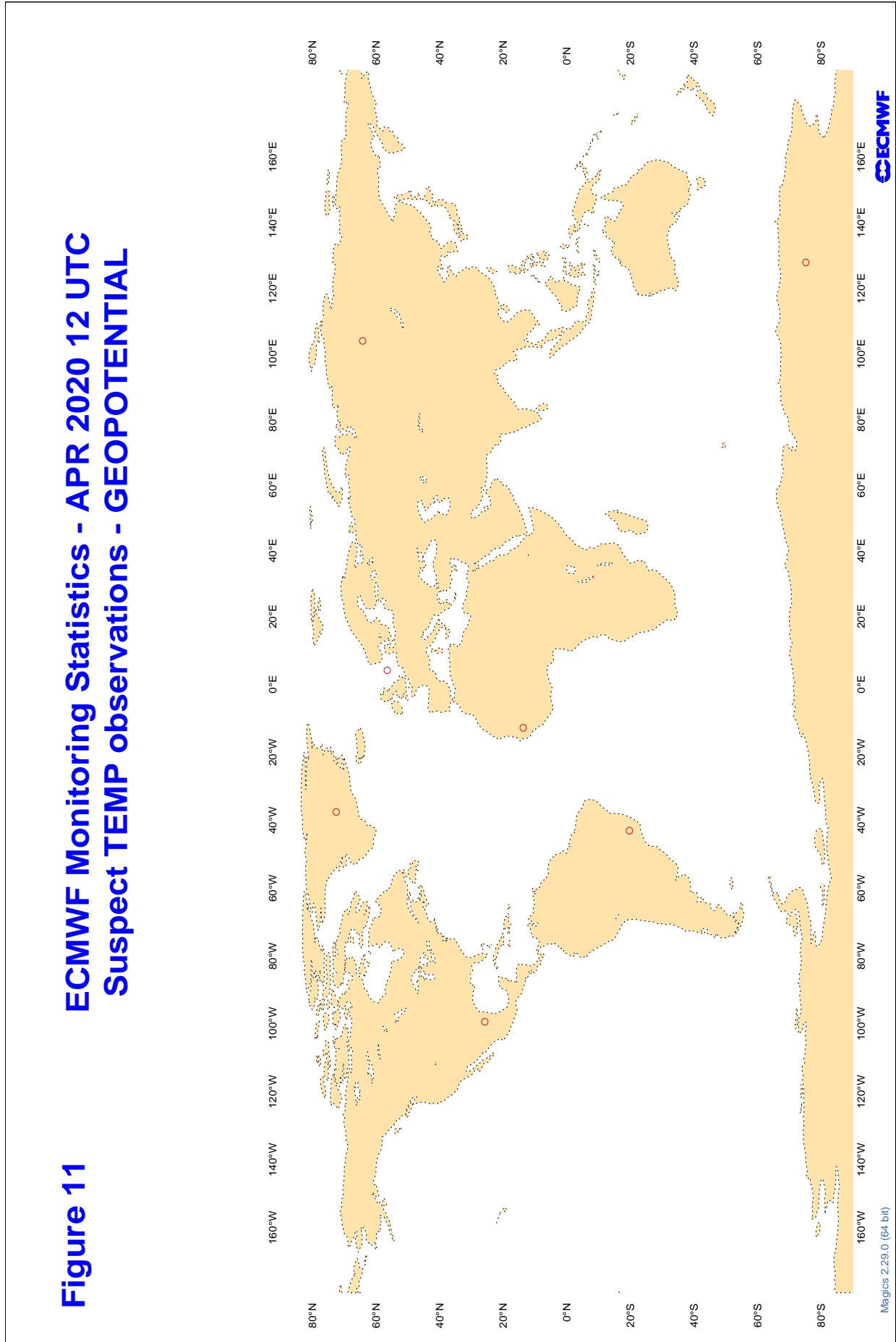
WMO IDENT	OBS TIME	ELM	LAT	LONG	NUM OBS	BIAS	MAX SPREAD	SD
--------------	-------------	-----	-----	------	------------	------	---------------	----

3.2.21 Figure 10 - Suspect TEMP observations - geopotential : 00 UTC

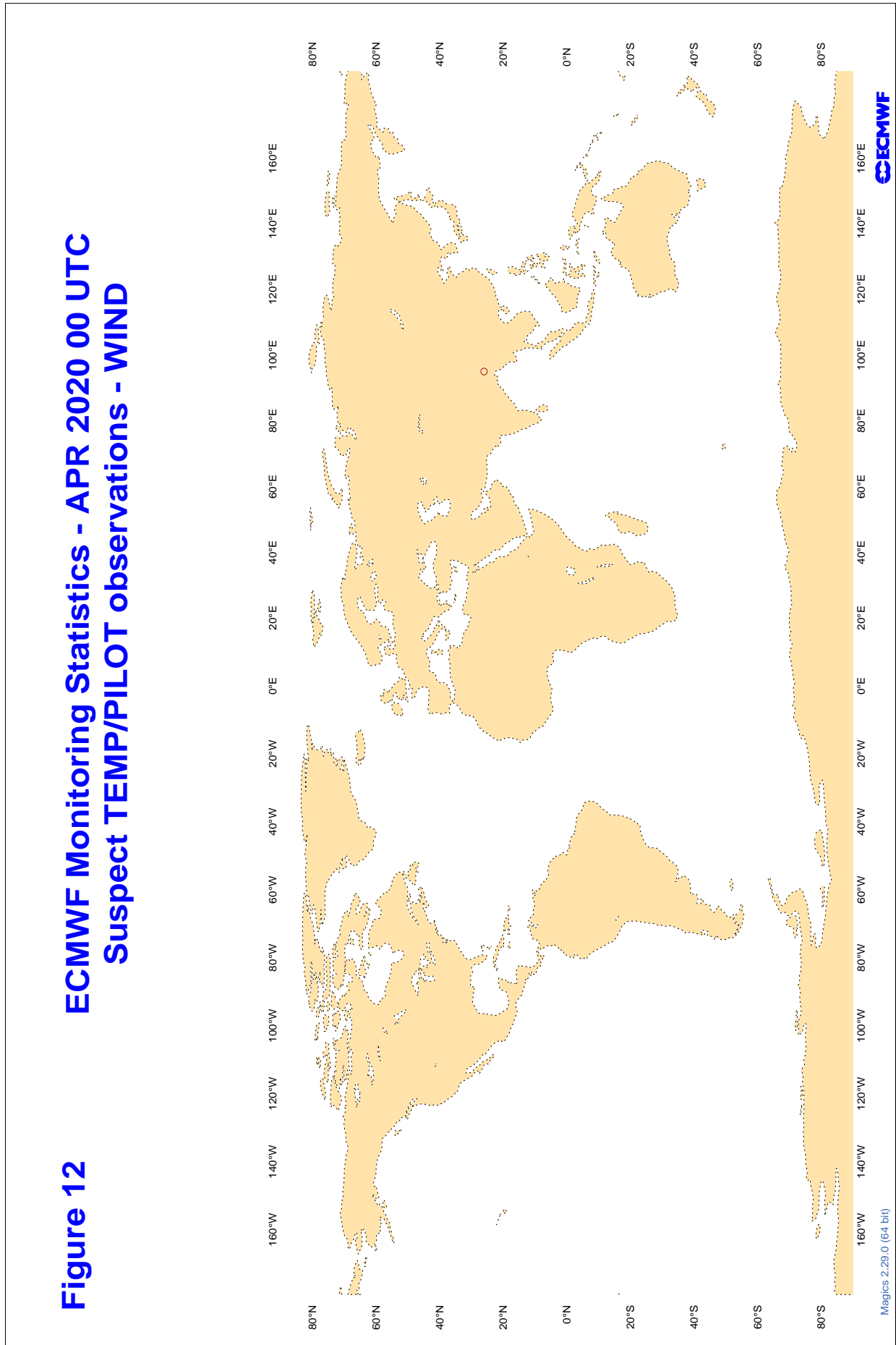




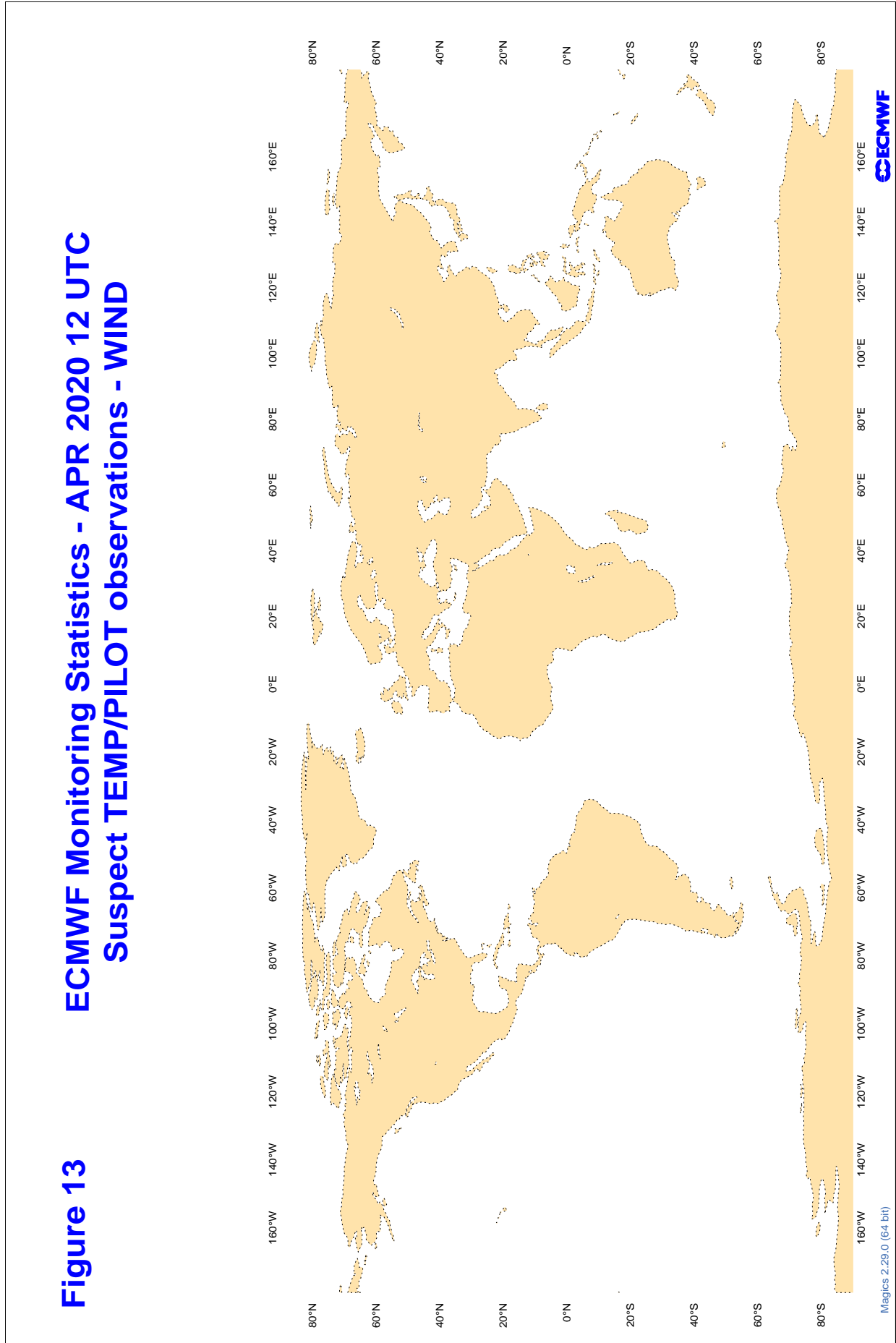
3.2.22 Figure 11 - Suspect TEMP observations - geopotential : 12 UTC



3.2.23 Figure 12 - Suspect TEMP/PILOT observations - wind : 00 UTC



3.2.24 Figure 13 - Suspect TEMP/PILOT observations - wind : 12 UTC



**3.2.25 Table 10 - Radiosonde monitoring statistics (SHIPS): Geopotential height (metres)**

## RADIOSONDE MONITORING STATISTICS (SHIPS)

MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : GEOPOTENTIAL HEIGHT (METRES)  
 LEVEL : 100 HPA  
 AREA : GLOBAL  
 PERIOD : APR 2020  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
5QPW8X	12	Z	100	10	21.2	18.5
5QPW8X	00	Z	100	8	21.3	19.8
7JUNA4	00	Z	100	1	0.0	0.0
7JUNA4	12	Z	100	4	34.1	34.0
ASDE09	12	Z	100	3	45.4	41.2
DBLK	12	Z	100	36	6.2	-0.1
DBLK	00	Z	100	28	4.8	-1.3
FPUW5G	12	Z	100	7	13.7	10.3
HTXUH4	12	Z	100	13	11.9	-2.2
HTXUH4	00	Z	100	17	9.4	4.2
JNKN7J	00	Z	100	4	42.2	41.9
JNKN7J	12	Z	100	5	116.0	83.8
KJJF9X	00	Z	100	8	17.9	16.7
KJJF9X	12	Z	100	7	18.5	16.5
KMPLHP	12	Z	100	6	92.0	74.7
KMPLHP	00	Z	100	7	75.2	30.1
LRYQE3	12	Z	100	10	24.6	21.7
LRYQE3	00	Z	100	11	9.2	-1.0
VKB4L5	12	Z	100	6	33.6	33.2
VKB4L5	00	Z	100	7	31.8	31.4
XKQLWQ	12	Z	100	11	34.6	33.5
XQFJRG	00	Z	100	7	13.1	-11.3
XQFJRG	12	Z	100	6	26.8	21.6
YLV96W	12	Z	100	4	78.3	74.1
YLV96W	00	Z	100	6	25.0	9.8
ZVQEQC	12	Z	100	3	13.8	12.9

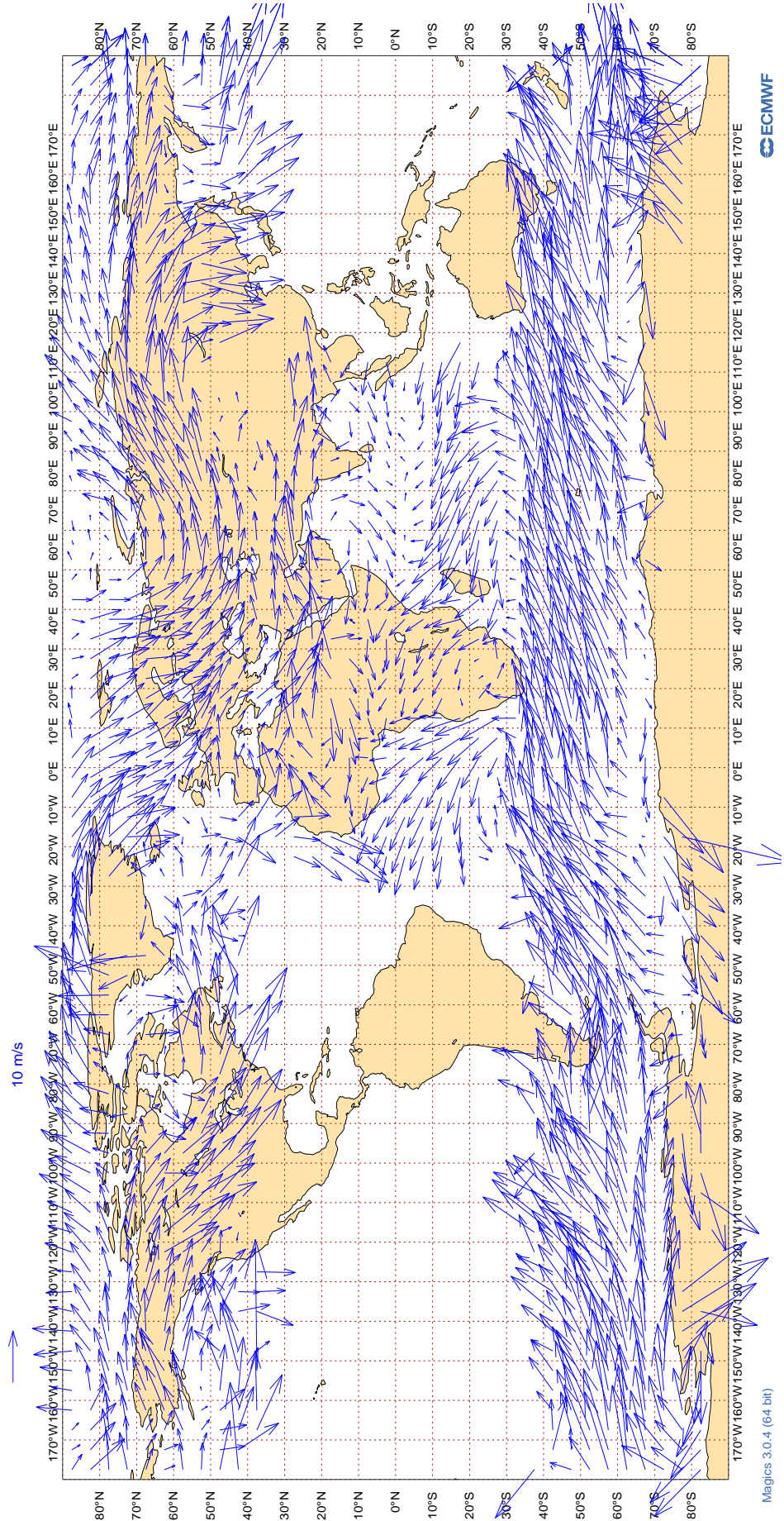
**3.2.26 Table 11 - Radiosonde monitoring statistics (SHIPs): Wind (m/s)**

RADIOSONDE MONITORING STATISTICS (SHIPS)  
 MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : WIND (M/S)  
 LEVEL : 100 HPA  
 AREA : GLOBAL  
 PERIOD : APR 2020  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
5QPW8X	12	V	100	9	3.7	0.7	-1.5
5QPW8X	00	V	100	8	3.5	-0.5	1.9
7JUNA4	00	V	100	1	2.5	-0.3	-2.5
7JUNA4	12	V	100	3	2.8	-2.1	0.1
ASDE09	12	V	100	3	2.7	-0.5	-0.3
DBLK	12	V	100	29	2.7	-0.4	0.0
DBLK	00	V	100	28	2.4	-0.1	-0.1
FPUW5G	12	V	100	7	2.9	0.9	-0.5
HTXUH4	12	V	100	13	2.6	0.1	-0.1
HTXUH4	00	V	100	15	2.5	-0.8	0.2
JNKN7J	00	V	100	4	4.7	-1.1	1.8
JNKN7J	12	V	100	5	5.3	2.2	0.3
KJJF9X	00	V	100	8	2.5	-1.7	0.0
KJJF9X	12	V	100	7	3.5	-0.4	0.5
KMPLHP	12	V	100	6	3.2	0.3	-0.8
KMPLHP	00	V	100	7	4.4	1.2	-0.1
LRYQE3	12	V	100	9	2.8	0.2	0.9
LRYQE3	00	V	100	11	3.7	0.6	0.7
VKB4L5	12	V	100	6	3.3	0.5	2.0
VKB4L5	00	V	100	7	2.6	0.1	-0.3
XKQLWQ	12	V	100	11	2.5	0.5	-0.2
XQFJRG	00	V	100	7	2.9	-1.9	0.4
XQFJRG	12	V	100	6	2.7	0.1	0.4
YLV96W	12	V	100	4	3.4	0.5	0.2
YLV96W	00	V	100	6	4.6	0.5	-1.0
ZVQEQC	12	V	100	3	4.6	2.0	0.9

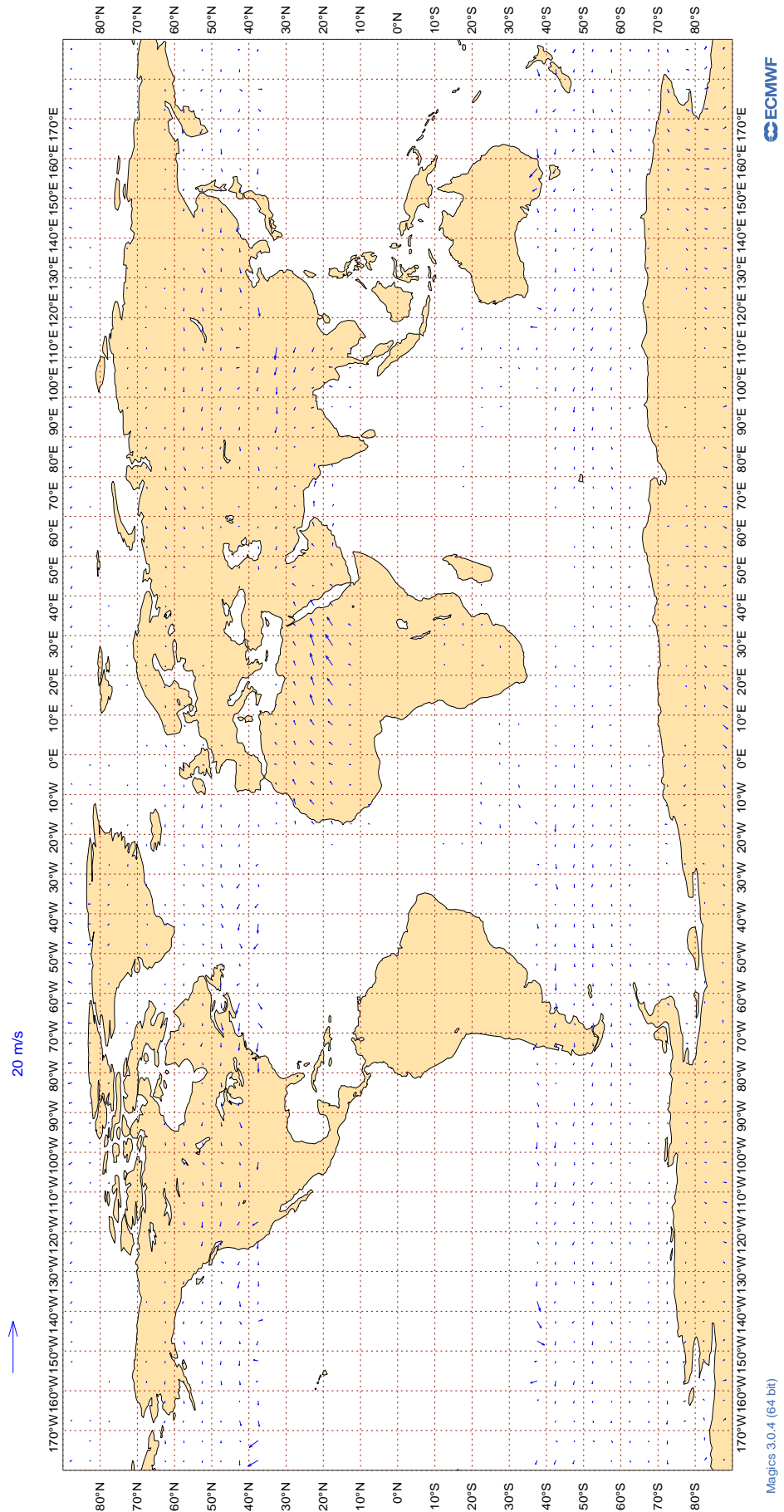
3.2.27 Figure 14 - SATOB Winds: 700-1000hPa

**Figure 14**  
**ECMWF Monitoring Statistics: Apr 2020**  
**AMV Winds: 700-1000hPa**  
**Mean Observed Wind**



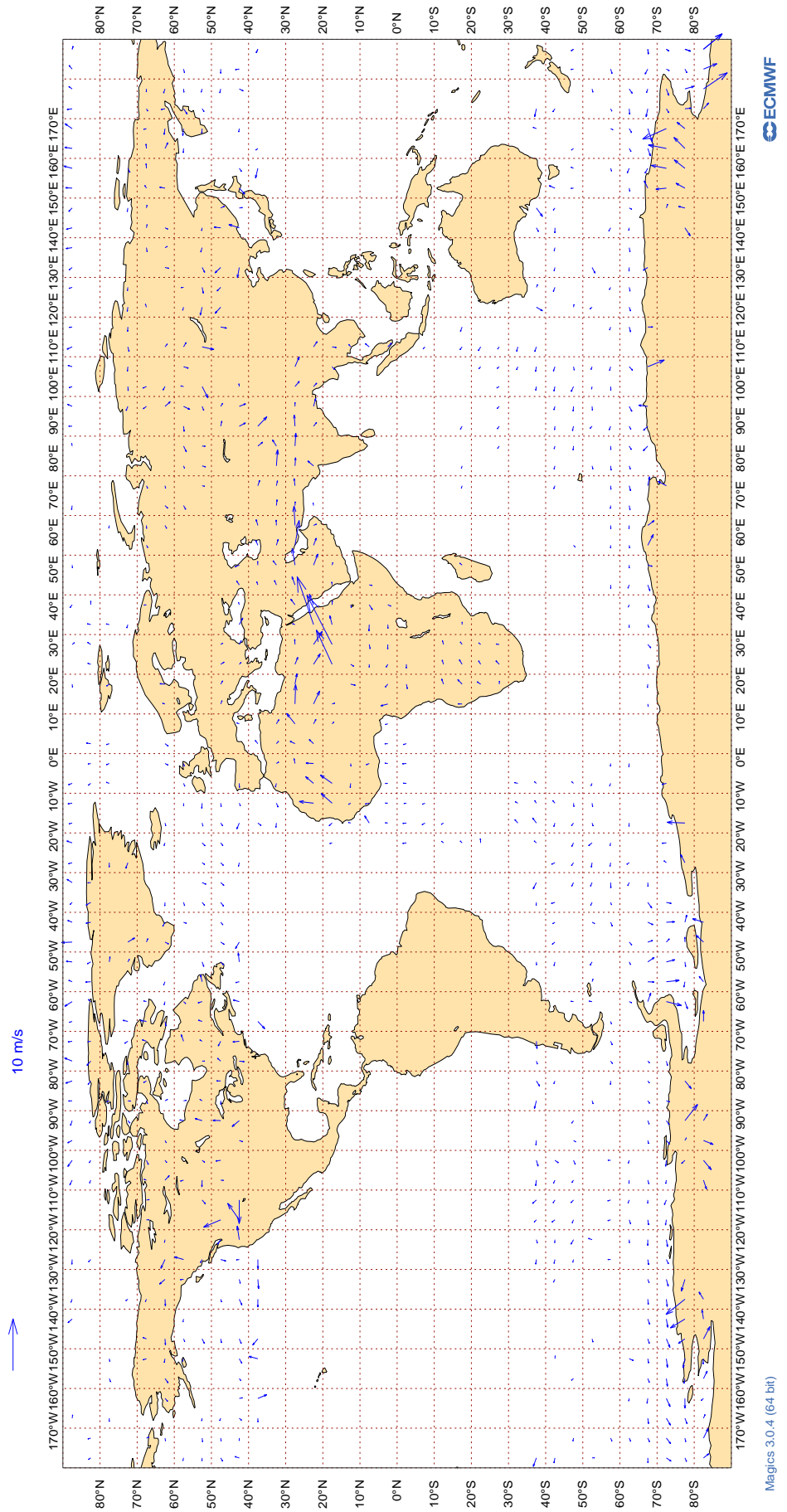
3.2.28 Figure 15 - SATOB Winds: 150- 400hPa

**Figure 15**  
**ECMWF Monitoring Statistics: Apr 2020**  
**AMV Winds: 150- 400hPa**  
**Wind bias: Observation - FG**



3.2.29 Figure 16 - SATOB Winds: 700-1000hPa

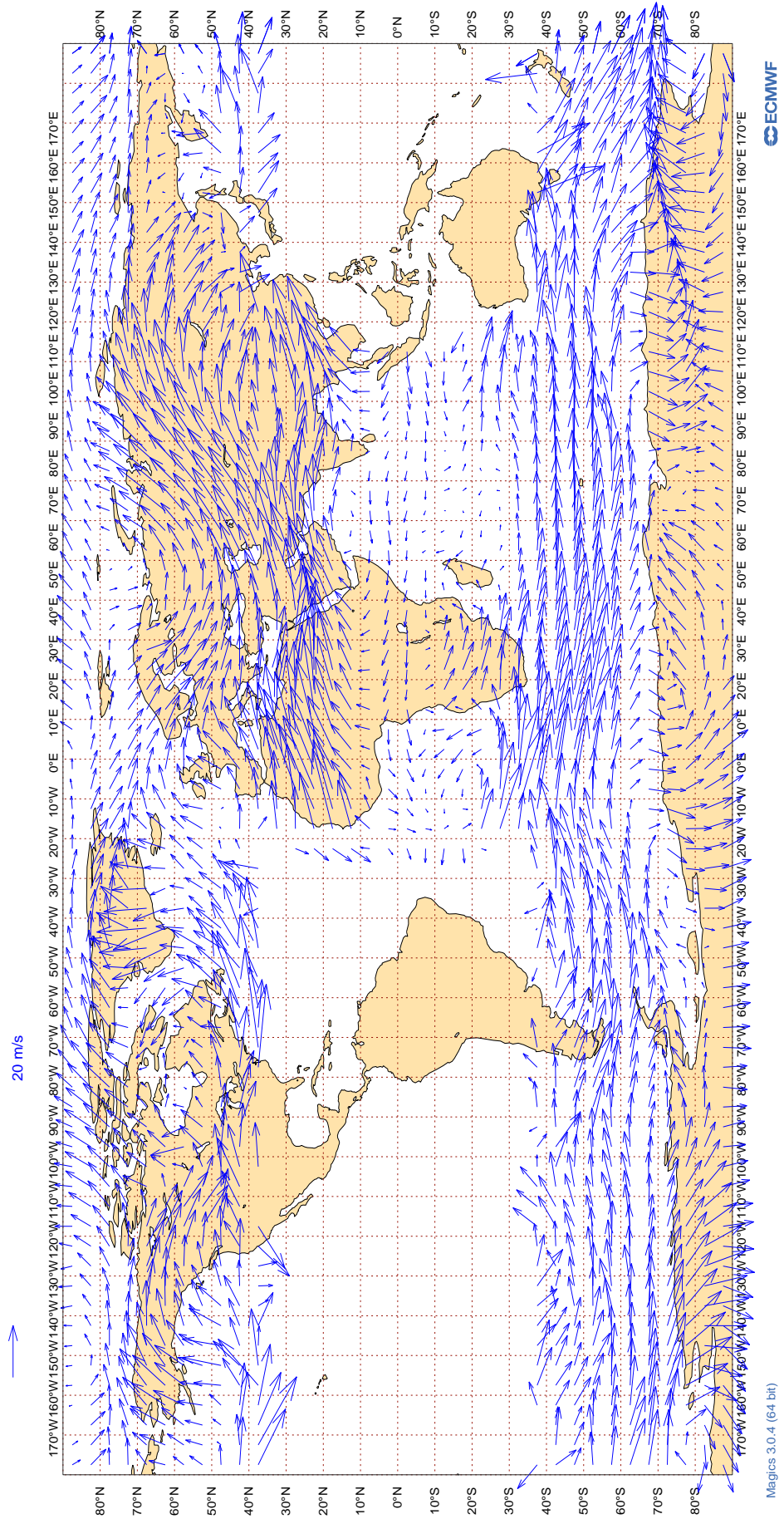
**Figure 16**  
**ECMWF Monitoring Statistics: Apr 2020**  
**AMV Winds: 700-1000hPa**  
**Wind bias: Observation - FG**





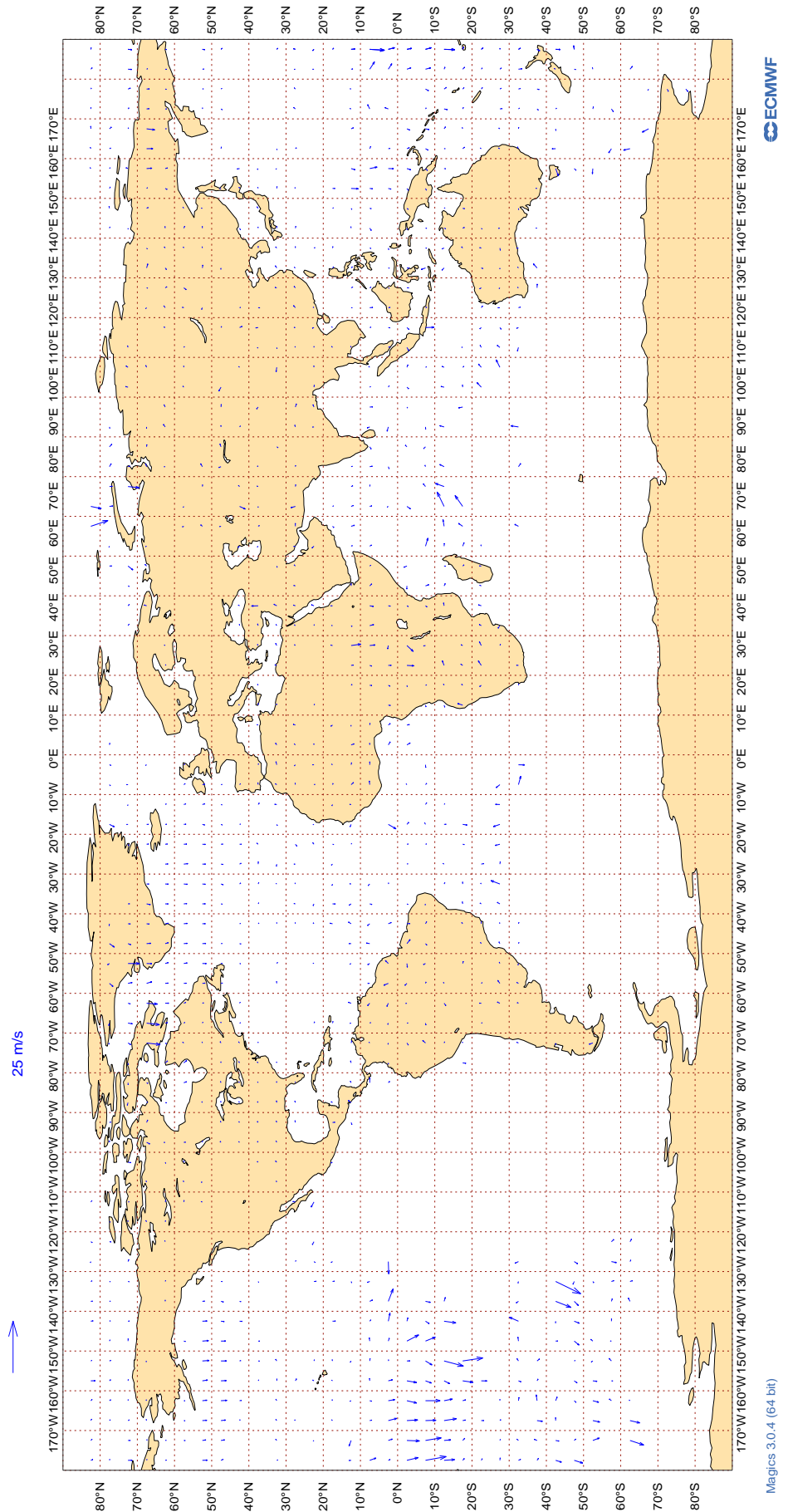
3.2.30 Figure 17 - SATOB Winds: 150- 400hPa

**Figure 17**  
**ECMWF Monitoring Statistics: Apr 2020**  
**AMV Winds: 150- 400hPa**  
**Mean Observed Wind**



3.2.31 Figure 18 - AIRCRAFT Winds: 150- 300hPa

**Figure 18**  
**ECMWF Monitoring Statistics: Apr 2020**  
**Aircraft Winds: 150- 300hPa**  
**Wind bias: Observation - FG**



### 3.2.32 Table 12 - Airep Monitoring Statistics For Airline Carriers (Global)

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS

MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : VECTOR WIND (M/S)  
 AREA : GLOBAL  
 PERIOD : APR 2020  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

SELECTION CRITERIA: NO. OF OBS. >= 20

TIME = 99 => AVERAGE OF ALL OBSERVATIONS  
 GROSS ERROR LIMIT ON VECTOR WIND = 40 M/S

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
AAB	99	V	300-150	63	0	0	3.8	-0.2
AAL	99	V	300-150	2371	0	0	3.7	0.2
AAR	99	V	300-150	202	0	0	4.2	-1.2
ABB	99	V	300-150	48	0	0	4.3	-0.0
ABD	99	V	300-150	783	0	0	4.1	-0.2
ABW	99	V	300-150	762	0	0	4.0	-0.2
ACA	99	V	300-150	5660	12	0	14.5	0.3
ACI	99	V	300-150	552	0	0	4.4	0.6
AEA	99	V	300-150	26	4	0	11.3	0.7
AFL	99	V	300-150	177	0	0	3.4	0.5
AFR	99	V	300-150	3712	2	0	5.6	0.1
AHO	99	V	300-150	296	0	0	3.7	-0.2
AIC	99	V	300-150	64	0	0	4.3	-0.3
AJT	99	V	300-150	528	0	0	4.3	-0.4
ALK	99	V	300-150	178	0	0	3.3	0.8
AMX	99	V	300-150	368	17	0	12.2	-0.2
ANZ	99	V	300-150	7197	3	0	6.5	0.8
ARG	99	V	300-150	539	0	0	4.8	0.8
ASL	99	V	300-150	36	0	0	2.8	0.3
ASY	99	V	300-150	218	0	0	3.8	0.7
ATN	99	V	300-150	170	1	0	4.1	0.3
AVA	99	V	300-150	65	2	0	6.9	0.2
AWC	99	V	300-150	73	0	0	3.8	-0.9
AYY	99	V	300-150	40	0	0	5.9	1.3
AZA	99	V	300-150	944	0	0	3.6	0.5
AZG	99	V	300-150	492	0	0	3.7	0.1
BAW	99	V	300-150	10385	10	0	11.2	0.2
BCS	99	V	300-150	2407	0	0	3.4	0.3
BEL	99	V	300-150	20	0	0	3.3	1.3
BFF	99	V	300-150	40	0	0	11.9	1.5
BLU	99	V	300-150	68	0	0	4.0	-0.3

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS  
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
BOX	99	V	300-150	1814	0	0	3.6	0.1
CAL	99	V	300-150	66	0	0	4.3	0.4
CCA	99	V	300-150	121	16	0	8.5	-0.1
CES	99	V	300-150	587	4	0	7.0	0.2
CFC	99	V	300-150	337	0	0	4.8	-0.4
CFG	99	V	300-150	295	0	0	3.5	0.2
CJT	99	V	300-150	813	0	0	3.8	0.1
CKS	99	V	300-150	3450	0	0	4.2	0.4
CLX	99	V	300-150	3647	0	0	4.1	-0.2
CMB	99	V	300-150	1172	0	0	4.4	0.2
CNV	99	V	300-150	104	0	0	3.8	0.3
CPA	99	V	300-150	368	0	0	4.2	0.6
CSN	99	V	300-150	189	4	0	7.8	0.4
CXB	99	V	300-150	21	0	0	3.3	-0.5
DAL	99	V	300-150	3788	0	0	3.5	0.2
DGX	99	V	300-150	26	0	0	4.9	1.1
DHK	99	V	300-150	1554	0	0	5.5	-0.4
DLH	99	V	300-150	1287	0	0	3.6	0.2
ECC	99	V	300-150	33	0	0	3.2	-0.4
EDC	99	V	300-150	37	0	0	3.6	-1.1
EDW	99	V	300-150	136	0	0	3.6	0.5
EIN	99	V	300-150	2692	0	0	3.4	0.5
ELY	99	V	300-150	372	10	0	7.2	-0.3
ETD	99	V	300-150	1650	0	0	4.5	0.5
ETH	99	V	300-150	2360	4	0	6.9	0.5
EUW	99	V	300-150	22	0	0	4.1	-0.7
EVE	99	V	300-150	46	0	0	3.6	0.1
FDX	99	V	300-150	6952	0	0	3.7	0.3
FJI	99	V	300-150	984	0	0	5.2	1.9
FRH	99	V	300-150	882	0	0	4.4	-0.2
FWI	99	V	300-150	39	0	0	4.3	0.7
GEC	99	V	300-150	2409	0	0	3.7	0.3
GES	99	V	300-150	31	0	0	2.8	-0.1
GFA	99	V	300-150	83	0	0	5.1	0.5
GTI	99	V	300-150	1484	0	0	4.0	-0.1
HFM	99	V	300-150	38	0	0	4.2	-0.4
HUA	99	V	300-150	33	0	0	5.2	1.4
ICE	99	V	300-150	120	0	0	3.9	0.3
ICV	99	V	300-150	393	0	0	4.0	-0.3
IFA	99	V	300-150	219	0	0	3.9	0.1
JAF	99	V	300-150	109	6	0	6.7	0.1
JET	99	V	300-150	33	0	0	3.5	-0.3
KAC	99	V	300-150	298	0	0	3.7	-0.2

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS  
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
KAF	99	V	300-150	54	0	0	3.9	-0.3
KAI	99	V	300-150	31	0	0	3.3	0.5
KAL	99	V	300-150	161	1	0	10.2	1.7
KIW	99	V	300-150	34	0	0	3.7	0.2
KLM	99	V	300-150	3606	12	0	13.2	0.1
KQA	99	V	300-150	48	0	0	5.7	0.8
LAN	99	V	300-150	1125	3	0	6.7	0.7
LCO	99	V	300-150	515	0	0	4.7	-0.6
LHO	99	V	300-150	172	0	0	6.3	-0.2
LOT	99	V	300-150	234	13	0	20.7	-0.1
LXJ	99	V	300-150	344	0	0	3.8	0.2
LXP	99	V	300-150	21	0	0	4.0	-0.8
MAS	99	V	300-150	111	0	0	3.4	0.8
MED	99	V	300-150	52	0	0	4.3	0.9
MHV	99	V	300-150	41	0	0	4.2	-0.5
MMD	99	V	300-150	33	0	0	3.5	-0.2
MMZ	99	V	300-150	22	0	0	3.7	1.2
MPH	99	V	300-150	869	0	0	4.1	-0.3
MSR	99	V	300-150	401	12	0	7.2	0.1
NCR	99	V	300-150	48	0	0	4.0	0.3
NJE	99	V	300-150	267	0	0	3.3	0.4
NOS	99	V	300-150	24	0	0	8.6	0.7
NXU	99	V	300-150	33	0	0	4.2	0.5
OAE	99	V	300-150	715	0	0	4.3	1.1
OMA	99	V	300-150	123	0	0	3.5	0.7
PAC	99	V	300-150	225	0	0	3.5	-0.2
PAL	99	V	300-150	23	4	0	9.0	3.1
PAT	99	V	300-150	49	0	0	3.2	-0.4
PIA	99	V	300-150	97	0	0	3.0	-0.2
PLF	99	V	300-150	50	0	0	3.7	0.8
PLM	99	V	300-150	412	0	0	4.1	0.4
PVG	99	V	300-150	37	0	0	2.8	0.3
QFA	99	V	300-150	1029	1	0	6.5	0.3
QQE	99	V	300-150	27	0	0	3.5	0.1
QTR	99	V	300-150	10219	0	0	3.5	0.3
RCH	99	V	300-150	2643	0	0	4.9	0.7
ROU	99	V	300-150	50	0	0	4.3	-0.8
RRR	99	V	300-150	80	0	0	3.3	0.4
RWD	99	V	300-150	54	0	0	2.9	0.2
SAM	99	V	300-150	55	0	0	3.6	-0.4
SAS	99	V	300-150	95	0	0	2.8	-0.4
SAZ	99	V	300-150	40	0	0	3.8	0.0
SDM	99	V	300-150	23	0	0	2.4	0.6

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS  
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
SIA	99	V	300-150	755	0	0	3.9	-0.1
SOO	99	V	300-150	664	0	0	3.8	-0.1
SVA	99	V	300-150	1198	0	0	3.8	0.2
SWR	99	V	300-150	473	0	1	4.0	0.3
TAP	99	V	300-150	23	0	0	3.8	-1.0
TAR	99	V	300-150	27	0	0	4.6	1.4
TAY	99	V	300-150	278	0	0	4.3	-0.5
TFF	99	V	300-150	56	0	0	3.9	-0.3
THT	99	V	300-150	199	5	0	15.8	0.8
THY	99	V	300-150	1730	0	0	3.7	0.4
TMN	99	V	300-150	193	0	0	4.2	0.4
TOW	99	V	300-150	63	0	0	3.2	0.2
TPA	99	V	300-150	436	0	0	3.7	0.5
TSC	99	V	300-150	42	0	2	2.8	0.9
UAE	99	V	300-150	2654	0	0	3.2	0.4
UAL	99	V	300-150	14229	8	1	11.5	0.5
UPS	99	V	300-150	5323	0	0	4.0	0.2
VAL	99	V	300-150	23	0	0	5.3	-2.9
VIR	99	V	300-150	3146	5	0	7.3	0.0
VJT	99	V	300-150	463	0	0	3.8	0.5
VOZ	99	V	300-150	205	0	0	4.5	0.7
WGN	99	V	300-150	951	0	0	3.8	0.1
WJA	99	V	300-150	47	2	0	18.2	1.0
WWI	99	V	300-150	88	0	0	4.6	0.8

## 4 EUCOS Area Monitoring Statistics

The following tables provide information on the quality of upper-air data and surface DRIFTER data over the EUCOS area as received at ECMWF during the month.

Tables 13, 14 (50 hPa level), 15, 16 (100 hPa level) 17, 18 (500 hPa level) 19 and 20 (850 hPa level) provide quality statistics for all TEMPSHIPS and PILOTSHIPS received during the month in the area 10°N - 90°N, 70°W - 40°E and for TEMPS and PILOTS from selected land stations within the same area. The statistics are in the same form as tables 10 and 11.

Tables 21-23 provides quality statistics of pressure and wind for all DRIFTER reports received in the area 10°N - 90°N, 70°W - 40°E. The statistics are in the same form as tables 4-6.

#### 4.1 Table 13 - Radiosonde Monitoring Statistics (EUCOS): 50 hPa Geopotential height (metres)

RADIOSONDE MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : GEOPOTENTIAL HEIGHT (METRES)  
 LEVEL : 50 HPA  
 AREA : 0 - 90N, 100W - 40E  
 PERIOD : APR 2020  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	12	Z	50	29	15.4	11.9
01001	00	Z	50	27	14.8	10.0
01028	00	Z	50	36	8.0	4.9
01028	12	Z	50	34	8.8	3.7
01400	12	Z	50	11	88.0	87.4
01400	00	Z	50	14	87.2	86.5
01415	12	Z	50	30	13.2	8.9
01415	00	Z	50	28	19.1	13.7
02365	00	Z	50	15	17.6	11.3
02365	12	Z	50	16	10.7	9.3
02836	12	Z	50	29	9.9	4.6
02836	00	Z	50	25	12.3	8.5
02963	00	Z	50	29	12.0	9.6
02963	12	Z	50	28	11.2	4.6
03005	12	Z	50	29	12.6	10.6
03238	12	Z	50	30	11.8	10.1
03238	00	Z	50	29	16.4	14.2
03808	12	Z	50	29	12.3	10.9
03808	00	Z	50	29	14.8	14.4
03918	12	Z	50	29	18.2	16.4
03918	00	Z	50	26	20.6	18.2
03953	12	Z	50	30	38.3	33.6
03953	00	Z	50	29	33.4	32.4
04018	12	Z	50	29	14.6	6.6
04018	00	Z	50	28	17.2	12.6
04220	00	Z	50	27	13.5	10.1
04220	12	Z	50	30	13.9	8.9
04270	00	Z	50	27	15.5	5.0
04270	12	Z	50	29	13.9	8.7
04320	12	Z	50	30	12.6	4.2
04320	00	Z	50	30	7.6	2.3
04339	12	Z	50	30	9.9	4.4
04339	00	Z	50	28	17.2	7.9
04360	12	Z	50	14	20.8	13.7
04360	00	Z	50	14	17.1	-7.3
06011	00	Z	50	24	16.0	12.0
06011	12	Z	50	29	29.3	26.6
06260	00	Z	50	30	15.8	14.5
06260	12	Z	50	28	12.1	10.9



RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06610	00	Z	50	30	17.7	17.0
06610	12	Z	50	32	10.8	9.2
07110	12	Z	50	27	20.8	13.2
07110	00	Z	50	30	13.3	11.3
07510	12	Z	50	29	36.3	33.8
07510	00	Z	50	27	56.0	33.2
07645	00	Z	50	30	24.1	22.7
07645	12	Z	50	30	35.2	32.6
07761	00	Z	50	26	31.2	30.0
07761	12	Z	50	28	31.7	29.4
08001	12	Z	50	28	18.4	17.2
08001	00	Z	50	23	17.8	17.4
08221	00	Z	50	25	20.8	18.7
08221	12	Z	50	28	21.7	20.8
08302	00	Z	50	29	17.2	16.2
08302	12	Z	50	30	10.5	6.1
08508	12	Z	50	30	19.2	16.9
08508	00	Z	50	22	23.3	22.6
08522	12	Z	50	30	17.7	16.2
10035	00	Z	50	30	24.7	24.1
10035	12	Z	50	30	19.6	18.7
10393	12	Z	50	30	12.3	10.2
10393	00	Z	50	30	16.0	14.9
10410	00	Z	50	30	14.3	13.0
10410	12	Z	50	32	8.6	7.2
10739	00	Z	50	30	21.9	21.6
10739	12	Z	50	30	14.3	13.6
11035	00	Z	50	30	65.9	11.0
11035	12	Z	50	30	45.3	41.8
12982	12	Z	50	0	0.0	0.0
12982	00	Z	50	1	16.9	16.9
16080	00	Z	50	29	14.8	13.5
16080	12	Z	50	30	8.6	6.0
16245	00	Z	50	28	17.2	16.7
16245	12	Z	50	29	9.1	7.2
16320	00	Z	50	26	24.0	23.1
16320	12	Z	50	35	14.7	13.4
16429	12	Z	50	29	16.0	14.5
16429	00	Z	50	29	22.9	22.4
16622	00	Z	50	21	26.5	25.2
16754	00	Z	50	27	25.5	24.0
17607	12	Z	50	27	18.5	15.9
26435	12	Z	50	15	8.8	5.6

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
5QPW8X	12	Z	50	8	25.2	22.4
5QPW8X	00	Z	50	7	34.8	32.6
60018	00	Z	50	30	23.3	22.1
60018	12	Z	50	30	15.5	13.8
7JUNA4	00	Z	50	0	0.0	0.0
7JUNA4	12	Z	50	2	60.1	60.1
ASDE09	12	Z	50	2	76.5	75.2
DBLK	12	Z	50	36	9.5	3.3
DBLK	00	Z	50	28	7.3	3.8
FPUW5G	12	Z	50	6	17.4	15.3
HTXUH4	12	Z	50	11	14.8	7.6
HTXUH4	00	Z	50	13	16.4	13.9
JNKN7J	00	Z	50	4	50.6	50.1
JNKN7J	12	Z	50	5	73.1	68.5
KJJF9X	00	Z	50	7	39.3	37.2
KJJF9X	12	Z	50	6	30.9	30.2
KMPLHP	12	Z	50	6	158.4	130.5
KMPLHP	00	Z	50	8	91.6	43.0
LRVQE3	12	Z	50	11	42.1	40.3
LRVQE3	00	Z	50	11	15.1	5.9
VKB4L5	12	Z	50	5	40.1	39.7
VKB4L5	00	Z	50	6	44.8	44.7
XKQLWQ	12	Z	50	11	46.1	45.3
XQFJRG	00	Z	50	5	13.0	-0.8
XQFJRG	12	Z	50	6	82.3	71.3
YLV96W	12	Z	50	4	130.1	125.4
YLV96W	00	Z	50	4	34.9	14.2
ZVQEQC	12	Z	50	3	24.3	22.5

**4.2 Table 14 - Radiosonde Monitoring Statistics (EUCOS):50 hPa Wind (m/s)**

## RADIOSONDE MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : WIND (M/S)  
 LEVEL : 50 HPA  
 AREA : 0 - 90N, 100W - 40E  
 PERIOD : APR 2020  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	12	V	50	29	4.3	-0.5	-0.8
01001	00	V	50	23	3.3	-0.9	-0.6
01028	00	V	50	26	4.2	0.4	0.5
01028	12	V	50	29	3.9	0.6	0.5
01400	12	V	50	10	2.2	0.3	-0.7
01400	00	V	50	12	4.0	1.5	0.5
01415	12	V	50	30	3.9	1.1	-0.2
01415	00	V	50	24	3.5	0.9	0.2
02365	00	V	50	11	4.7	-1.0	1.6
02365	12	V	50	15	3.6	0.8	0.7
02836	12	V	50	29	3.5	-0.3	0.1
02836	00	V	50	22	3.3	0.4	0.1
02963	00	V	50	24	4.9	-1.0	0.6
02963	12	V	50	28	3.6	-0.2	0.7
03005	12	V	50	29	3.3	-0.6	0.3
03238	12	V	50	30	2.9	0.3	-0.1
03238	00	V	50	24	3.8	0.1	-0.4
03808	12	V	50	29	3.3	0.2	-0.5
03808	00	V	50	23	3.0	0.3	-0.6
03918	12	V	50	27	3.3	0.3	-0.6
03918	00	V	50	21	3.7	-0.1	0.4
03953	12	V	50	30	3.9	0.0	0.3
03953	00	V	50	24	3.2	0.3	-0.6
04018	12	V	50	28	3.1	-0.1	0.3
04018	00	V	50	20	3.6	0.6	1.0
04220	00	V	50	22	2.9	-0.6	0.0
04220	12	V	50	30	3.8	-1.1	-0.8
04270	00	V	50	24	4.1	-0.6	0.7
04270	12	V	50	29	3.7	-0.9	-0.9
04320	12	V	50	30	5.0	-1.1	-0.5
04320	00	V	50	21	4.3	1.0	1.5
04339	12	V	50	30	3.8	-0.2	-0.1
04339	00	V	50	23	3.4	-0.6	-0.3
04360	12	V	50	13	3.4	-0.2	0.4
04360	00	V	50	10	3.9	-1.7	0.3
06011	00	V	50	21	2.8	0.4	0.4
06011	12	V	50	29	2.7	0.2	-0.5
06260	00	V	50	23	2.9	0.4	-0.6
06260	12	V	50	28	3.0	1.0	0.1

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06610	00	V	50	22	2.9	0.3	-0.1
06610	12	V	50	30	2.6	0.5	-0.1
07110	12	V	50	27	2.8	0.4	-0.7
07110	00	V	50	23	3.2	0.1	-0.2
07510	12	V	50	29	3.3	0.9	-0.3
07510	00	V	50	23	2.6	0.2	0.4
07645	00	V	50	24	3.3	0.5	0.4
07645	12	V	50	30	2.8	0.4	-0.6
07761	00	V	50	20	2.3	0.3	0.0
07761	12	V	50	28	2.8	0.2	-0.4
08001	12	V	50	26	3.3	0.7	0.0
08001	00	V	50	16	2.5	0.3	0.5
08221	00	V	50	18	4.2	1.3	-0.4
08221	12	V	50	28	3.7	0.9	-0.3
08302	00	V	50	21	2.7	0.8	0.6
08302	12	V	50	30	3.5	0.9	-0.2
08508	12	V	50	30	2.8	0.5	-0.1
08508	00	V	50	18	2.4	0.2	0.0
08522	12	V	50	30	3.7	0.2	0.9
10035	00	V	50	26	3.8	-0.1	0.0
10035	12	V	50	30	3.5	0.1	-0.2
10393	12	V	50	30	3.2	0.3	-0.2
10393	00	V	50	30	2.9	0.3	-0.6
10410	00	V	50	29	2.6	-0.2	-0.3
10410	12	V	50	30	3.0	0.2	0.2
10739	00	V	50	29	3.1	-0.5	-0.5
10739	12	V	50	30	2.6	0.1	-0.8
11035	00	V	50	22	2.9	0.1	0.3
11035	12	V	50	30	3.5	0.6	-0.3
12982	12	V	50	0	0.0	0.0	0.0
12982	00	V	50	1	1.0	-1.0	-0.1
16080	00	V	50	21	2.5	0.6	-0.4
16080	12	V	50	30	2.6	0.5	-0.9
16245	00	V	50	21	2.9	1.0	-0.1
16245	12	V	50	29	3.6	0.1	-1.4
16320	00	V	50	20	3.1	0.1	0.4
16320	12	V	50	27	3.3	0.5	0.2
16429	12	V	50	29	3.2	0.4	0.3
16429	00	V	50	22	3.2	0.9	-0.1
16622	00	V	50	19	3.6	0.2	0.1
16754	00	V	50	20	3.3	1.0	0.6
17607	12	V	50	0	0.0	0.0	0.0
26435	12	V	50	15	2.9	-0.3	0.4

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
5QPW8X	12	V	50	6	3.1	-0.2	0.6
5QPW8X	00	V	50	6	3.8	1.2	-0.2
60018	00	V	50	23	4.4	1.3	-1.3
60018	12	V	50	30	4.3	0.7	1.3
7JUNA4	00	V	50	0	0.0	0.0	0.0
7JUNA4	12	V	50	2	2.7	-0.8	2.2
ASDE09	12	V	50	2	3.9	-2.8	-1.6
DBLK	12	V	50	28	2.8	-0.5	-0.3
DBLK	00	V	50	27	3.0	0.1	-0.1
FPUW5G	12	V	50	6	2.7	0.9	-1.0
HTXUH4	12	V	50	10	3.1	0.9	0.5
HTXUH4	00	V	50	13	3.0	-0.6	0.3
JNKN7J	00	V	50	4	3.5	1.5	-1.3
JNKN7J	12	V	50	5	3.4	-1.7	-2.1
KJJF9X	00	V	50	7	3.8	0.4	-0.4
KJJF9X	12	V	50	6	2.5	-1.0	-0.1
KMPLHP	12	V	50	6	4.8	-0.3	-2.6
KMPLHP	00	V	50	8	3.4	0.8	1.1
LRYPE3	12	V	50	10	3.1	0.5	0.6
LRYPE3	00	V	50	11	3.0	-0.6	0.1
VKB4L5	12	V	50	5	2.6	1.3	1.4
VKB4L5	00	V	50	5	2.2	0.2	-1.3
XKQLWQ	12	V	50	10	2.9	1.1	0.7
XQFJRG	00	V	50	5	3.3	-0.1	-1.3
XQFJRG	12	V	50	6	3.8	2.0	2.1
YLV96W	12	V	50	4	1.9	0.1	-0.8
YLV96W	00	V	50	4	4.8	1.5	-1.0
ZVQEQC	12	V	50	3	2.9	-1.5	-0.5

### 4.3 Table 15 - Radiosonde Monitoring Statistics (EUCOS): 100 hPa Geopotential height (metres)

RADIOSONDE MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : GEOPOTENTIAL HEIGHT (METRES)  
 LEVEL : 100 HPA  
 AREA : 0 - 90N, 100W - 40E  
 PERIOD : APR 2020  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	12	Z	100	29	8.7	3.2
01001	00	Z	100	29	8.7	-0.4
01028	00	Z	100	36	5.4	-0.8
01028	12	Z	100	34	5.1	-0.3
01400	12	Z	100	12	80.8	80.3
01400	00	Z	100	14	81.4	81.0
01415	12	Z	100	29	9.2	5.3
01415	00	Z	100	28	13.1	7.6
02365	00	Z	100	20	8.3	3.5
02365	12	Z	100	19	7.3	0.2
02836	12	Z	100	29	5.9	-0.9
02836	00	Z	100	28	5.8	1.5
02963	00	Z	100	29	5.3	1.0
02963	12	Z	100	29	4.6	-1.0
03005	12	Z	100	30	6.1	2.1
03238	12	Z	100	30	5.5	3.7
03238	00	Z	100	30	7.0	4.9
03808	12	Z	100	30	5.2	3.3
03808	00	Z	100	30	6.7	6.0
03918	12	Z	100	30	9.4	7.6
03918	00	Z	100	27	10.7	8.5
03953	12	Z	100	30	21.0	17.6
03953	00	Z	100	29	16.8	15.4
04018	12	Z	100	29	6.1	0.5
04018	00	Z	100	28	7.9	3.1
04220	00	Z	100	28	6.5	-0.8
04220	12	Z	100	30	6.2	1.3
04270	00	Z	100	29	11.0	-0.9
04270	12	Z	100	29	8.2	0.9
04320	12	Z	100	30	7.8	-1.4
04320	00	Z	100	30	8.8	-0.4
04339	12	Z	100	30	8.2	0.8
04339	00	Z	100	29	9.8	-0.1
04360	12	Z	100	14	11.4	3.7
04360	00	Z	100	13	21.6	-15.9
06011	00	Z	100	27	9.9	4.4
06011	12	Z	100	30	18.2	16.2
06260	00	Z	100	30	6.0	3.5
06260	12	Z	100	29	5.4	2.9

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06610	00	Z	100	30	6.3	5.1
06610	12	Z	100	32	3.7	1.6
07110	12	Z	100	27	12.5	-0.7
07110	00	Z	100	30	6.6	-0.7
07510	12	Z	100	29	19.1	17.0
07510	00	Z	100	27	37.7	17.3
07645	00	Z	100	30	9.4	6.6
07645	12	Z	100	30	19.5	16.7
07761	00	Z	100	26	14.7	13.2
07761	12	Z	100	29	15.7	12.3
08001	12	Z	100	29	6.8	4.8
08001	00	Z	100	31	7.7	6.3
08221	00	Z	100	29	10.1	8.2
08221	12	Z	100	30	9.8	8.7
08302	00	Z	100	30	5.4	3.4
08302	12	Z	100	30	7.0	-2.4
08508	12	Z	100	30	11.2	8.8
08508	00	Z	100	22	14.9	14.0
08522	12	Z	100	30	10.8	9.3
10035	00	Z	100	30	15.2	14.6
10035	12	Z	100	31	12.4	11.6
10393	12	Z	100	30	6.7	1.2
10393	00	Z	100	30	8.0	6.3
10410	00	Z	100	30	5.8	3.6
10410	12	Z	100	32	3.7	0.3
10739	00	Z	100	30	12.3	11.7
10739	12	Z	100	30	7.6	6.8
11035	00	Z	100	30	14.5	13.4
11035	12	Z	100	30	29.2	26.5
12982	12	Z	100	0	0.0	0.0
12982	00	Z	100	1	9.3	9.3
16080	00	Z	100	29	5.5	3.6
16080	12	Z	100	30	3.7	-1.1
16245	00	Z	100	29	6.3	4.6
16245	12	Z	100	29	4.5	-1.3
16320	00	Z	100	28	12.8	10.8
16320	12	Z	100	34	8.4	6.7
16429	12	Z	100	30	7.2	4.2
16429	00	Z	100	30	11.1	9.7
16622	00	Z	100	23	14.2	12.1
16754	00	Z	100	28	15.4	13.9
17607	12	Z	100	28	8.4	3.5
26435	12	Z	100	15	4.7	-0.7

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
5QPW8X	12	Z	100	10	21.2	18.5
5QPW8X	00	Z	100	8	21.3	19.8
60018	00	Z	100	30	13.3	11.8
60018	12	Z	100	30	8.2	5.3
7JUNA4	00	Z	100	1	0.0	0.0
7JUNA4	12	Z	100	4	34.1	34.0
ASDE09	12	Z	100	3	45.4	41.2
DBLK	12	Z	100	36	6.2	-0.1
DBLK	00	Z	100	28	4.8	-1.3
FPUW5G	12	Z	100	7	13.7	10.3
HTXUH4	12	Z	100	13	11.9	-2.2
HTXUH4	00	Z	100	17	9.4	4.2
JNKN7J	00	Z	100	4	42.2	41.9
JNKN7J	12	Z	100	5	116.0	83.8
KJJF9X	00	Z	100	8	17.9	16.7
KJJF9X	12	Z	100	7	18.5	16.5
KMPLHP	12	Z	100	6	92.0	74.7
KMPLHP	00	Z	100	7	75.2	30.1
LRVQE3	12	Z	100	10	24.6	21.7
LRVQE3	00	Z	100	11	9.2	-1.0
VKB4L5	12	Z	100	6	33.6	33.2
VKB4L5	00	Z	100	7	31.8	31.4
XKQLWQ	12	Z	100	11	34.6	33.5
XQFJRG	00	Z	100	7	13.1	-11.3
XQFJRG	12	Z	100	6	26.8	21.6
YLV96W	12	Z	100	4	78.3	74.1
YLV96W	00	Z	100	6	25.0	9.8
ZVQEQC	12	Z	100	3	13.8	12.9



**4.4 Table 16 - Radiosonde Monitoring Statistics (EUCOS): 100 hPa Wind (m/s)**

## RADIOSONDE MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : WIND (M/S)  
 LEVEL : 100 HPA  
 AREA : 0 - 90N, 100W - 40E  
 PERIOD : APR 2020  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	12	V	100	29	3.5	0.3	-0.4
01001	00	V	100	22	3.2	0.0	0.1
01028	00	V	100	27	3.1	0.1	0.2
01028	12	V	100	30	2.8	0.3	-0.1
01400	12	V	100	11	2.8	1.3	0.3
01400	00	V	100	12	2.1	-0.1	-0.1
01415	12	V	100	29	3.7	-0.4	-0.3
01415	00	V	100	27	3.3	-0.5	0.3
02365	00	V	100	16	3.9	0.1	-0.4
02365	12	V	100	18	3.4	0.3	-0.1
02836	12	V	100	29	3.4	-0.3	-0.7
02836	00	V	100	24	3.3	-0.3	-0.1
02963	00	V	100	24	3.3	-0.7	-0.7
02963	12	V	100	29	2.9	0.3	0.0
03005	12	V	100	30	2.7	0.2	-0.4
03238	12	V	100	30	2.7	-0.2	0.3
03238	00	V	100	25	2.8	0.7	0.9
03808	12	V	100	30	2.9	0.1	-0.1
03808	00	V	100	23	2.4	0.1	0.6
03918	12	V	100	29	2.8	0.2	0.4
03918	00	V	100	23	3.3	0.5	-0.3
03953	12	V	100	30	2.6	0.0	0.9
03953	00	V	100	24	2.3	-0.1	-0.8
04018	12	V	100	29	3.3	-0.9	-0.3
04018	00	V	100	28	3.8	0.1	-0.4
04220	00	V	100	28	3.3	0.1	0.6
04220	12	V	100	30	3.0	0.1	-0.6
04270	00	V	100	25	3.5	0.0	-0.1
04270	12	V	100	29	3.2	0.0	0.6
04320	12	V	100	30	4.5	0.2	-0.5
04320	00	V	100	23	3.3	0.0	0.1
04339	12	V	100	30	3.7	-0.2	0.8
04339	00	V	100	26	3.1	-0.5	-0.5
04360	12	V	100	13	3.2	-1.0	0.0
04360	00	V	100	12	4.2	-0.3	-0.4
06011	00	V	100	26	2.6	0.3	-0.5
06011	12	V	100	30	2.7	0.0	-0.3
06260	00	V	100	23	2.5	0.0	-0.6
06260	12	V	100	28	2.2	0.1	-0.3

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06610	00	V	100	30	2.6	0.2	-0.3
06610	12	V	100	30	2.7	0.0	-0.3
07110	12	V	100	27	2.7	0.3	0.6
07110	00	V	100	23	2.4	-0.1	0.3
07510	12	V	100	29	3.0	0.3	-0.2
07510	00	V	100	23	2.2	0.5	0.3
07645	00	V	100	24	3.1	0.4	0.3
07645	12	V	100	30	2.8	-0.2	-0.2
07761	00	V	100	20	3.0	0.1	-0.4
07761	12	V	100	29	3.5	0.7	-0.4
08001	12	V	100	29	3.7	1.0	0.7
08001	00	V	100	23	3.1	0.8	-0.3
08221	00	V	100	22	3.2	0.4	0.3
08221	12	V	100	30	3.4	0.4	0.2
08302	00	V	100	23	3.0	0.2	-0.4
08302	12	V	100	30	3.6	-0.3	-0.5
08508	12	V	100	30	3.8	0.8	0.3
08508	00	V	100	18	3.5	-0.1	0.8
08522	12	V	100	30	3.3	-0.7	-0.6
10035	00	V	100	30	3.0	-0.3	-0.7
10035	12	V	100	30	2.5	0.9	-0.1
10393	12	V	100	30	2.9	-0.4	-0.3
10393	00	V	100	30	2.8	0.0	0.6
10410	00	V	100	30	2.6	-0.3	-0.5
10410	12	V	100	30	2.5	0.0	-0.1
10739	00	V	100	30	3.2	0.1	0.0
10739	12	V	100	30	2.4	0.2	-0.1
11035	00	V	100	22	2.8	1.0	-0.8
11035	12	V	100	30	2.3	0.5	-0.2
12982	12	V	100	0	0.0	0.0	0.0
12982	00	V	100	1	2.3	0.8	2.2
16080	00	V	100	28	2.6	-0.3	0.1
16080	12	V	100	30	2.8	0.5	-0.2
16245	00	V	100	23	3.0	1.1	-0.3
16245	12	V	100	29	2.6	0.5	0.0
16320	00	V	100	26	2.7	0.6	0.4
16320	12	V	100	27	3.5	1.2	-0.6
16429	12	V	100	29	3.2	0.0	-0.4
16429	00	V	100	28	3.6	-0.2	0.3
16622	00	V	100	19	2.9	1.1	0.1
16754	00	V	100	21	3.9	0.9	-0.2
17607	12	V	100	2	4.4	2.5	-1.1
26435	12	V	100	15	3.3	-0.3	-0.4

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
5QPW8X	12	V	100	9	3.7	0.7	-1.5
5QPW8X	00	V	100	8	3.5	-0.5	1.9
60018	00	V	100	23	3.3	0.0	-0.6
60018	12	V	100	30	3.8	0.5	0.3
7JUNA4	00	V	100	1	2.5	-0.3	-2.5
7JUNA4	12	V	100	3	2.8	-2.1	0.1
ASDE09	12	V	100	3	2.7	-0.5	-0.3
DBLK	12	V	100	29	2.7	-0.4	0.0
DBLK	00	V	100	28	2.4	-0.1	-0.1
FPUW5G	12	V	100	7	2.9	0.9	-0.5
HTXUH4	12	V	100	13	2.6	0.1	-0.1
HTXUH4	00	V	100	15	2.5	-0.8	0.2
JNKN7J	00	V	100	4	4.7	-1.1	1.8
JNKN7J	12	V	100	5	5.3	2.2	0.3
KJJF9X	00	V	100	8	2.5	-1.7	0.0
KJJF9X	12	V	100	7	3.5	-0.4	0.5
KMPLHP	12	V	100	6	3.2	0.3	-0.8
KMPLHP	00	V	100	7	4.4	1.2	-0.1
LRVQE3	12	V	100	9	2.8	0.2	0.9
LRVQE3	00	V	100	11	3.7	0.6	0.7
VKB4L5	12	V	100	6	3.3	0.5	2.0
VKB4L5	00	V	100	7	2.6	0.1	-0.3
XKQLWQ	12	V	100	11	2.5	0.5	-0.2
XQFJRG	00	V	100	7	2.9	-1.9	0.4
XQFJRG	12	V	100	6	2.7	0.1	0.4
YLV96W	12	V	100	4	3.4	0.5	0.2
YLV96W	00	V	100	6	4.6	0.5	-1.0
ZVQEQC	12	V	100	3	4.6	2.0	0.9

#### 4.5 Table 17 - Radiosonde Monitoring Statistics (EUCOS): 500 hPa Geopotential height (metres)

RADIOSONDE MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : GEOPOTENTIAL HEIGHT (METRES)  
 LEVEL : 500 HPA  
 AREA : 0 - 90N, 100W - 40E  
 PERIOD : APR 2020  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	12	Z	500	30	6.4	-1.9
01001	00	Z	500	30	12.9	-7.6
01028	00	Z	500	34	3.7	-1.1
01028	12	Z	500	33	3.8	-0.5
01400	12	Z	500	12	80.6	80.5
01400	00	Z	500	14	79.0	78.7
01415	12	Z	500	29	6.5	5.3
01415	00	Z	500	29	6.7	4.9
02365	00	Z	500	21	6.5	-0.9
02365	12	Z	500	22	4.9	-1.3
02836	12	Z	500	30	3.1	-0.8
02836	00	Z	500	30	3.5	-0.6
02963	00	Z	500	29	3.6	0.5
02963	12	Z	500	29	3.4	1.9
03005	12	Z	500	31	3.9	0.3
03238	12	Z	500	30	4.0	2.8
03238	00	Z	500	30	4.5	3.6
03808	12	Z	500	30	4.0	2.8
03808	00	Z	500	30	3.9	3.1
03918	12	Z	500	30	7.9	7.5
03918	00	Z	500	28	8.1	7.7
03953	12	Z	500	30	10.1	9.2
03953	00	Z	500	32	7.3	4.0
04018	12	Z	500	29	3.2	0.6
04018	00	Z	500	28	3.2	1.6
04220	00	Z	500	28	3.9	1.6
04220	12	Z	500	30	4.3	1.1
04270	00	Z	500	29	7.2	0.3
04270	12	Z	500	29	7.4	-2.4
04320	12	Z	500	30	5.3	1.0
04320	00	Z	500	30	5.8	-0.6
04339	12	Z	500	30	4.5	1.3
04339	00	Z	500	29	10.6	-0.4
04360	12	Z	500	13	7.0	-5.0
04360	00	Z	500	13	8.6	-7.6
06011	00	Z	500	30	9.6	6.5
06011	12	Z	500	30	10.1	8.8
06260	00	Z	500	30	5.2	0.1
06260	12	Z	500	30	3.2	2.1

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06610	00	Z	500	31	3.1	2.6
06610	12	Z	500	32	2.5	0.9
07110	12	Z	500	29	5.5	-3.0
07110	00	Z	500	30	6.9	-4.3
07510	12	Z	500	29	6.5	5.5
07510	00	Z	500	28	5.3	3.9
07645	00	Z	500	30	3.7	0.1
07645	12	Z	500	30	4.8	2.7
07761	00	Z	500	27	8.9	-1.6
07761	12	Z	500	30	3.6	0.9
08001	12	Z	500	30	4.4	3.5
08001	00	Z	500	31	4.2	3.2
08221	00	Z	500	29	6.3	5.3
08221	12	Z	500	30	6.6	5.5
08302	00	Z	500	30	4.7	-2.4
08302	12	Z	500	30	5.3	-3.9
08508	12	Z	500	30	7.5	6.1
08508	00	Z	500	22	10.6	9.4
08522	12	Z	500	30	7.9	7.3
10035	00	Z	500	30	12.6	12.1
10035	12	Z	500	31	12.0	11.6
10393	12	Z	500	30	3.1	1.9
10393	00	Z	500	30	3.1	2.6
10410	00	Z	500	31	2.9	1.5
10410	12	Z	500	32	2.6	0.0
10739	00	Z	500	30	7.1	6.5
10739	12	Z	500	30	6.1	5.6
11035	00	Z	500	30	8.8	8.4
11035	12	Z	500	30	15.7	14.3
12982	12	Z	500	0	0.0	0.0
12982	00	Z	500	1	2.2	2.2
16080	00	Z	500	30	2.7	-0.1
16080	12	Z	500	30	3.0	-1.9
16245	00	Z	500	30	3.7	-0.9
16245	12	Z	500	30	3.8	-2.7
16320	00	Z	500	29	7.7	5.0
16320	12	Z	500	39	7.8	4.9
16429	12	Z	500	30	4.5	2.2
16429	00	Z	500	30	5.5	4.1
16622	00	Z	500	32	6.9	5.4
16754	00	Z	500	30	7.9	5.6
17607	12	Z	500	28	5.7	4.2
26435	12	Z	500	15	3.0	1.5

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
5QPW8X	12	Z	500	10	22.8	21.9
5QPW8X	00	Z	500	8	24.6	21.8
60018	00	Z	500	30	4.5	2.8
60018	12	Z	500	30	6.4	6.0
7JUNA4	00	Z	500	1	18.3	18.3
7JUNA4	12	Z	500	4	8.5	6.6
ASDE09	12	Z	500	3	50.4	-3.9
DBLK	12	Z	500	36	3.9	0.0
DBLK	00	Z	500	28	3.1	-1.0
FPUW5G	12	Z	500	7	11.6	11.2
HTXUH4	12	Z	500	18	8.4	0.2
HTXUH4	00	Z	500	22	8.6	6.1
JNKN7J	00	Z	500	5	42.8	42.4
JNKN7J	12	Z	500	6	58.8	55.0
KJJF9X	00	Z	500	8	8.1	7.8
KJJF9X	12	Z	500	7	11.7	9.3
KMPLHP	12	Z	500	7	64.3	44.9
KMPLHP	00	Z	500	7	14.0	9.6
LRVQE3	12	Z	500	12	7.1	5.8
LRVQE3	00	Z	500	12	6.3	1.3
VKB4L5	12	Z	500	6	31.0	30.5
VKB4L5	00	Z	500	7	28.4	27.9
XKQLWQ	12	Z	500	11	21.2	20.5
XQFJRG	00	Z	500	8	11.8	-11.3
XQFJRG	12	Z	500	7	9.8	-6.9
YLV96W	12	Z	500	8	61.0	43.3
YLV96W	00	Z	500	8	41.7	30.8
ZVQEQC	12	Z	500	3	10.7	10.0

**4.6 Table 18 - Radiosonde Monitoring Statistics (EUCOS): 500 hPa Wind (m/s)**

## RADIOSONDE MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : WIND (M/S)  
 LEVEL : 500 HPA  
 AREA : 0 - 90N, 100W - 40E  
 PERIOD : APR 2020  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	12	V	500	30	2.5	-0.1	0.0
01001	00	V	500	30	2.6	-0.1	-1.0
01028	00	V	500	30	2.4	-0.2	-0.4
01028	12	V	500	30	2.1	0.1	-0.3
01400	12	V	500	12	2.5	0.2	0.0
01400	00	V	500	14	2.7	0.7	-0.1
01415	12	V	500	29	3.3	0.2	-0.1
01415	00	V	500	29	2.5	0.0	0.7
02365	00	V	500	20	3.5	0.2	-0.5
02365	12	V	500	22	3.5	0.2	0.2
02836	12	V	500	30	3.1	0.7	0.6
02836	00	V	500	30	2.8	0.0	-0.3
02963	00	V	500	29	2.6	-0.3	0.1
02963	12	V	500	29	2.6	0.7	0.6
03005	12	V	500	30	2.5	0.2	0.7
03238	12	V	500	30	2.6	-0.2	0.1
03238	00	V	500	30	2.6	0.4	0.0
03808	12	V	500	30	2.1	0.3	0.3
03808	00	V	500	30	2.1	0.5	0.2
03918	12	V	500	29	2.3	0.0	-0.1
03918	00	V	500	28	2.3	-0.5	-0.3
03953	12	V	500	30	2.6	0.6	-0.1
03953	00	V	500	30	2.5	-0.3	0.1
04018	12	V	500	29	2.5	-0.4	-0.2
04018	00	V	500	28	2.6	0.4	-0.4
04220	00	V	500	28	2.7	0.2	0.0
04220	12	V	500	30	2.5	0.2	-0.2
04270	00	V	500	29	3.1	-0.3	0.7
04270	12	V	500	29	3.1	0.4	0.2
04320	12	V	500	30	2.7	0.1	0.3
04320	00	V	500	30	2.6	0.2	0.2
04339	12	V	500	30	3.0	0.4	0.5
04339	00	V	500	29	3.1	0.4	0.5
04360	12	V	500	13	3.9	0.3	-0.2
04360	00	V	500	13	2.9	-0.9	-0.4
06011	00	V	500	30	2.6	0.3	-0.1
06011	12	V	500	30	2.4	0.3	0.4
06260	00	V	500	29	3.0	0.1	0.3
06260	12	V	500	30	2.5	0.1	-0.3

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06610	00	V	500	30	2.2	0.4	0.3
06610	12	V	500	30	2.0	0.0	-0.3
07110	12	V	500	29	3.5	0.4	0.4
07110	00	V	500	30	3.3	-0.2	-0.2
07510	12	V	500	29	2.8	0.3	0.5
07510	00	V	500	28	3.0	0.1	1.2
07645	00	V	500	30	2.2	-0.2	-0.4
07645	12	V	500	30	2.1	0.0	-0.6
07761	00	V	500	27	2.4	0.5	-0.4
07761	12	V	500	30	3.0	-0.2	0.3
08001	12	V	500	30	2.7	0.3	0.4
08001	00	V	500	30	2.4	-0.3	0.6
08221	00	V	500	29	3.2	-0.5	0.1
08221	12	V	500	30	2.8	-0.3	0.4
08302	00	V	500	30	3.4	0.6	0.0
08302	12	V	500	30	2.9	0.0	0.2
08508	12	V	500	30	3.7	0.4	-0.3
08508	00	V	500	22	3.0	0.5	-1.0
08522	12	V	500	30	2.8	0.5	-0.4
10035	00	V	500	30	2.1	0.1	-0.1
10035	12	V	500	30	1.9	-0.3	0.4
10393	12	V	500	30	1.8	-0.5	-0.1
10393	00	V	500	30	2.2	0.2	-0.1
10410	00	V	500	30	2.1	0.1	0.1
10410	12	V	500	30	2.1	-0.2	-0.4
10739	00	V	500	30	2.3	0.0	-0.3
10739	12	V	500	30	2.4	-0.3	0.0
11035	00	V	500	30	2.6	0.9	-0.4
11035	12	V	500	30	2.3	0.2	-0.5
12982	12	V	500	0	0.0	0.0	0.0
12982	00	V	500	1	2.1	1.4	1.5
16080	00	V	500	30	2.5	0.4	-0.2
16080	12	V	500	30	2.6	0.5	0.0
16245	00	V	500	30	2.8	0.5	0.2
16245	12	V	500	30	2.5	0.2	0.0
16320	00	V	500	29	2.6	0.3	0.0
16320	12	V	500	29	3.7	1.6	-0.1
16429	12	V	500	30	3.7	1.2	-0.2
16429	00	V	500	30	3.3	0.6	0.1
16622	00	V	500	30	2.9	0.3	0.5
16754	00	V	500	23	2.7	0.8	-0.2
17607	12	V	500	12	5.9	1.5	0.2
26435	12	V	500	15	2.7	1.0	-0.1



RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
5QPW8X	12	V	500	10	6.0	0.5	-1.1
5QPW8X	00	V	500	8	2.8	0.1	0.5
60018	00	V	500	30	2.7	0.8	-0.1
60018	12	V	500	30	2.8	0.4	-0.4
7JUNA4	00	V	500	1	1.5	0.4	-1.4
7JUNA4	12	V	500	4	5.0	-0.1	3.3
ASDE09	12	V	500	3	7.5	-3.9	0.1
DBLK	12	V	500	29	2.1	-0.6	-0.3
DBLK	00	V	500	28	2.2	-0.1	0.3
FPUW5G	12	V	500	7	1.9	-0.1	-0.3
HTXUH4	12	V	500	18	3.3	-0.4	0.7
HTXUH4	00	V	500	22	2.6	-0.3	0.6
JNKN7J	00	V	500	5	4.1	-1.6	-0.3
JNKN7J	12	V	500	6	3.2	1.2	-0.2
KJJF9X	00	V	500	8	2.6	0.1	-0.1
KJJF9X	12	V	500	7	2.0	0.6	-0.4
KMPLHP	12	V	500	7	2.7	1.0	-1.2
KMPLHP	00	V	500	7	3.3	-0.3	-0.8
LRVQE3	12	V	500	11	1.9	-0.1	0.3
LRVQE3	00	V	500	12	2.1	-0.4	-0.7
VKB4L5	12	V	500	6	3.6	1.0	2.0
VKB4L5	00	V	500	7	3.2	0.5	-0.3
XKQLWQ	12	V	500	9	3.5	0.6	-0.3
XQFJRG	00	V	500	8	2.4	0.1	1.1
XQFJRG	12	V	500	7	2.4	-1.1	0.1
YLV96W	12	V	500	8	2.3	0.4	0.4
YLV96W	00	V	500	8	2.9	0.4	0.8
ZVQEQC	12	V	500	3	3.6	1.1	0.0

#### 4.7 Table 19 - Radiosonde Monitoring Statistics (EUCOS): 850 hPa Geopotential height (metres)

RADIOSONDE MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : GEOPOTENTIAL HEIGHT (METRES)  
 LEVEL : 850 HPA  
 AREA : 0 - 90N, 100W - 40E  
 PERIOD : APR 2020  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	12	Z	850	30	6.0	-4.3
01001	00	Z	850	30	9.3	-6.8
01028	00	Z	850	34	3.6	-1.5
01028	12	Z	850	33	2.7	-0.8
01400	12	Z	850	12	79.7	79.6
01400	00	Z	850	14	79.4	79.3
01415	12	Z	850	29	4.7	3.9
01415	00	Z	850	29	4.2	3.7
02365	00	Z	850	21	3.3	1.8
02365	12	Z	850	22	2.6	0.9
02836	12	Z	850	30	1.6	1.1
02836	00	Z	850	30	2.0	1.3
02963	00	Z	850	29	2.9	2.5
02963	12	Z	850	29	4.4	3.7
03005	12	Z	850	31	2.9	-0.9
03238	12	Z	850	30	4.2	3.5
03238	00	Z	850	30	4.0	3.4
03808	12	Z	850	30	3.8	3.1
03808	00	Z	850	30	2.8	2.2
03918	12	Z	850	30	7.1	6.9
03918	00	Z	850	28	7.3	7.0
03953	12	Z	850	30	7.6	7.0
03953	00	Z	850	32	5.2	4.4
04018	12	Z	850	29	2.6	-1.1
04018	00	Z	850	28	2.8	0.7
04220	00	Z	850	28	3.1	1.2
04220	12	Z	850	30	2.6	1.0
04270	00	Z	850	29	5.3	1.0
04270	12	Z	850	29	4.1	-1.3
04320	12	Z	850	30	4.4	-2.0
04320	00	Z	850	30	4.8	-1.9
04339	12	Z	850	30	5.8	0.3
04339	00	Z	850	29	10.7	-1.7
04360	12	Z	850	15	9.1	-7.9
04360	00	Z	850	14	6.6	-6.0
06011	00	Z	850	30	6.0	4.5
06011	12	Z	850	30	5.8	4.8
06260	00	Z	850	30	5.5	-1.5
06260	12	Z	850	30	2.4	1.2

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06610	00	Z	850	31	1.9	0.2
06610	12	Z	850	32	2.1	0.1
07110	12	Z	850	29	2.9	-0.3
07110	00	Z	850	30	2.9	-0.9
07510	12	Z	850	29	4.1	3.6
07510	00	Z	850	28	3.9	3.3
07645	00	Z	850	30	2.9	-1.3
07645	12	Z	850	30	2.4	-0.7
07761	00	Z	850	27	8.9	-2.3
07761	12	Z	850	30	2.9	-0.8
08001	12	Z	850	30	2.6	1.2
08001	00	Z	850	31	3.0	2.2
08221	00	Z	850	29	4.2	3.9
08221	12	Z	850	30	4.6	4.2
08302	00	Z	850	30	6.2	-5.2
08302	12	Z	850	30	6.8	-6.4
08508	12	Z	850	30	5.1	3.7
08508	00	Z	850	22	5.3	4.8
08522	12	Z	850	30	3.3	2.5
10035	00	Z	850	30	10.8	10.5
10035	12	Z	850	31	11.6	11.4
10393	12	Z	850	30	2.6	1.4
10393	00	Z	850	30	1.2	0.1
10410	00	Z	850	31	2.4	-0.8
10410	12	Z	850	32	2.1	-0.8
10739	00	Z	850	30	3.8	3.3
10739	12	Z	850	30	4.3	3.7
11035	00	Z	850	30	6.9	6.6
11035	12	Z	850	30	14.4	13.2
12982	12	Z	850	0	0.0	0.0
12982	00	Z	850	1	5.9	5.9
16080	00	Z	850	30	2.9	-1.5
16080	12	Z	850	30	4.6	-3.9
16245	00	Z	850	30	3.3	-1.9
16245	12	Z	850	30	4.2	-3.8
16320	00	Z	850	29	7.9	3.4
16320	12	Z	850	39	7.2	2.5
16429	12	Z	850	30	5.1	1.6
16429	00	Z	850	30	5.3	3.0
16622	00	Z	850	32	4.7	3.3
16754	00	Z	850	30	5.2	3.7
17607	12	Z	850	28	4.0	3.3
26435	12	Z	850	15	3.4	2.7

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
5QPW8X	12	Z	850	10	21.7	20.4
5QPW8X	00	Z	850	8	26.3	25.5
60018	00	Z	850	30	3.3	1.7
60018	12	Z	850	31	2.9	1.6
7JUNA4	00	Z	850	1	12.9	12.9
7JUNA4	12	Z	850	4	11.3	7.1
ASDE09	12	Z	850	3	32.4	32.3
DBLK	12	Z	850	36	4.6	-1.4
DBLK	00	Z	850	28	4.6	-1.9
FPUW5G	12	Z	850	7	8.7	8.2
HTXUH4	12	Z	850	18	7.3	0.0
HTXUH4	00	Z	850	22	7.1	4.8
JNKN7J	00	Z	850	5	43.5	43.4
JNKN7J	12	Z	850	6	46.1	45.9
KJJF9X	00	Z	850	8	3.8	3.3
KJJF9X	12	Z	850	7	5.1	4.0
KMPLHP	12	Z	850	7	14.3	10.6
KMPLHP	00	Z	850	8	18.0	9.6
LRVQE3	12	Z	850	12	20.2	6.3
LRVQE3	00	Z	850	12	4.7	-0.2
VKB4L5	12	Z	850	6	25.6	24.8
VKB4L5	00	Z	850	7	24.2	23.6
XKQLWQ	12	Z	850	11	13.5	12.6
XQFJRG	00	Z	850	8	13.5	-12.8
XQFJRG	12	Z	850	7	12.5	-12.0
YLV96W	12	Z	850	8	46.8	35.2
YLV96W	00	Z	850	8	45.7	33.6
ZVQEQC	12	Z	850	3	6.2	6.1

**4.8 Table 20 - Radiosonde Monitoring Statistics (EUCOS): 850 hPa Wind (m/s)**

## RADIOSONDE MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : WIND (M/S)  
 LEVEL : 850 HPA  
 AREA : 0 - 90N, 100W - 40E  
 PERIOD : APR 2020  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	12	V	850	30	3.2	0.4	-1.0
01001	00	V	850	30	3.1	-0.1	-0.2
01028	00	V	850	30	2.8	1.1	-0.6
01028	12	V	850	30	2.9	1.2	-0.1
01400	12	V	850	12	2.5	0.5	-0.6
01400	00	V	850	14	3.2	0.2	-0.7
01415	12	V	850	29	2.7	-0.5	-0.3
01415	00	V	850	29	2.3	-0.3	0.2
02365	00	V	850	20	3.9	-0.2	0.0
02365	12	V	850	22	3.1	0.2	-0.5
02836	12	V	850	30	2.5	0.1	0.0
02836	00	V	850	30	3.0	-0.2	-0.2
02963	00	V	850	29	2.5	-0.4	-0.1
02963	12	V	850	29	2.4	0.2	-0.4
03005	12	V	850	30	3.8	0.8	0.4
03238	12	V	850	30	2.4	0.8	0.4
03238	00	V	850	30	2.7	0.4	0.5
03808	12	V	850	30	2.5	0.8	0.1
03808	00	V	850	30	2.6	-0.3	0.5
03918	12	V	850	29	2.4	0.3	0.4
03918	00	V	850	28	2.4	-0.4	-0.3
03953	12	V	850	30	2.6	0.4	0.3
03953	00	V	850	30	2.3	0.2	0.4
04018	12	V	850	29	3.4	0.5	0.3
04018	00	V	850	28	2.7	0.1	0.7
04220	00	V	850	28	3.5	0.5	0.6
04220	12	V	850	30	3.3	0.2	-0.6
04270	00	V	850	29	5.1	0.4	1.0
04270	12	V	850	29	3.6	0.8	-0.1
04320	12	V	850	30	3.9	-0.6	-0.2
04320	00	V	850	30	3.3	-0.3	0.1
04339	12	V	850	30	4.1	0.4	0.2
04339	00	V	850	29	3.8	1.2	0.2
04360	12	V	850	14	5.1	0.1	-0.2
04360	00	V	850	14	4.1	-1.6	0.5
06011	00	V	850	30	3.4	-0.8	-0.9
06011	12	V	850	30	3.1	-0.2	0.1
06260	00	V	850	30	2.4	0.2	0.1
06260	12	V	850	30	2.8	-0.3	-0.3

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06610	00	V	850	30	2.3	0.4	-0.2
06610	12	V	850	30	2.3	0.3	-0.3
07110	12	V	850	29	3.2	-0.4	-0.4
07110	00	V	850	30	2.3	0.4	0.5
07510	12	V	850	29	3.1	-0.4	-0.8
07510	00	V	850	28	3.1	-0.2	0.1
07645	00	V	850	30	2.9	-0.1	-0.6
07645	12	V	850	30	2.9	-0.2	-0.5
07761	00	V	850	27	2.9	0.5	-0.8
07761	12	V	850	30	2.8	1.0	0.4
08001	12	V	850	30	2.7	0.8	0.2
08001	00	V	850	30	3.0	0.3	0.7
08221	00	V	850	29	2.2	0.3	0.1
08221	12	V	850	30	2.4	-0.1	-0.1
08302	00	V	850	30	2.5	0.0	0.2
08302	12	V	850	30	3.1	0.5	0.0
08508	12	V	850	30	2.8	0.6	-0.4
08508	00	V	850	22	2.8	-0.1	0.3
08522	12	V	850	30	2.5	0.4	0.0
10035	00	V	850	30	2.2	0.1	0.1
10035	12	V	850	30	2.6	0.3	0.2
10393	12	V	850	30	2.4	0.2	-0.3
10393	00	V	850	30	2.5	0.2	-0.6
10410	00	V	850	30	2.8	0.0	-0.5
10410	12	V	850	30	2.3	0.1	0.2
10739	00	V	850	30	2.3	-0.2	0.2
10739	12	V	850	30	2.5	-0.7	0.0
11035	00	V	850	30	2.8	0.1	-0.2
11035	12	V	850	30	2.5	0.9	0.1
12982	12	V	850	0	0.0	0.0	0.0
12982	00	V	850	1	1.0	0.9	-0.5
16080	00	V	850	30	3.0	0.6	-0.4
16080	12	V	850	30	3.2	0.7	-0.8
16245	00	V	850	30	3.0	-0.6	-0.5
16245	12	V	850	30	3.1	0.1	0.2
16320	00	V	850	29	3.8	0.0	-0.8
16320	12	V	850	29	3.8	0.0	-1.2
16429	12	V	850	30	3.5	0.4	0.5
16429	00	V	850	30	2.4	-0.2	0.0
16622	00	V	850	30	3.9	0.8	0.1
16754	00	V	850	24	3.0	-0.3	0.1
17607	12	V	850	28	2.9	0.8	0.0
26435	12	V	850	15	2.6	0.2	0.4

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
5QPW8X	12	V	850	10	4.9	0.9	2.3
5QPW8X	00	V	850	8	5.5	-1.6	-2.1
60018	00	V	850	30	4.0	-0.8	0.4
60018	12	V	850	30	3.1	-1.0	0.4
7JUNA4	00	V	850	1	2.0	-0.3	-2.0
7JUNA4	12	V	850	4	5.2	0.1	1.9
ASDE09	12	V	850	3	7.5	5.7	-0.6
DBLK	12	V	850	29	2.1	-0.3	-0.4
DBLK	00	V	850	28	2.3	-0.5	0.0
FPUW5G	12	V	850	7	2.9	0.9	0.7
HTXUH4	12	V	850	18	2.9	0.4	-0.3
HTXUH4	00	V	850	22	2.9	-0.3	-0.1
JNKN7J	00	V	850	5	2.9	0.0	0.2
JNKN7J	12	V	850	6	1.8	0.1	-0.3
KJJF9X	00	V	850	8	1.4	0.2	0.1
KJJF9X	12	V	850	7	2.1	0.0	0.1
KMPLHP	12	V	850	7	6.5	-2.0	-2.4
KMPLHP	00	V	850	8	3.3	-0.9	0.7
LRVQE3	12	V	850	11	3.5	0.5	-0.8
LRVQE3	00	V	850	12	2.5	0.4	0.1
VKB4L5	12	V	850	6	1.8	-0.6	0.9
VKB4L5	00	V	850	7	2.9	0.5	0.4
XKQLWQ	12	V	850	9	3.6	0.1	0.9
XQFJRG	00	V	850	8	1.6	-0.1	-0.8
XQFJRG	12	V	850	7	2.5	0.0	0.0
YLV96W	12	V	850	8	2.3	0.3	0.6
YLV96W	00	V	850	8	2.6	0.6	1.0
ZVQEQC	12	V	850	3	1.8	0.4	1.6

**4.9 Table 21 - Drifter Monitoring Statistics (EUCOS): Surface pressure (hpa)**

## DRIFTER MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : SURFACE PRESSURE (HPA)  
 AREA : 10N - 90N, 70W - 40E  
 PERIOD : APR 2020  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

TIME = 99 => AVERAGE OF ALL OBSERVATIONS  
 GROSS ERROR LIMIT = 15 HPA

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
0062087	99	P	SUR	55	7	385	0	0.3	-0.1	0.4
0066023	99	P	SUR	55	11	383	0	0.3	0.1	0.3
0066024	99	P	SUR	55	13	84	6	0.3	0.0	0.3
03380	99	P	SUR	54	0	728	0	0.3	-0.2	0.3
0640046	99	P	SUR	60	-4	641	0	0.4	-0.2	0.4
1300001	99	P	SUR	11	-23	700	0	0.3	0.4	0.5
1300008	99	P	SUR	15	-38	710	0	0.2	0.3	0.3
1300131	99	P	SUR	28	-17	720	0	0.3	0.1	0.3
1301569	99	P	SUR	23	-43	719	0	0.3	-0.3	0.4
1301603	99	P	SUR	27	-52	719	0	0.3	0.0	0.3
1301605	99	P	SUR	25	-70	714	0	0.3	-0.0	0.3
1301608	99	P	SUR	28	-45	718	0	0.3	-0.9	1.0
1301612	99	P	SUR	27	-42	717	0	0.3	-0.0	0.3
1301618	99	P	SUR	19	-63	431	84	1.3	-0.9	1.6
1301619	99	P	SUR	34	-32	718	9	2.5	0.5	2.6
1301620	99	P	SUR	12	-48	721	0	0.3	0.7	0.7
1501531	99	P	SUR	29	-49	720	0	0.3	-0.3	0.5
1501584	99	P	SUR	14	-52	719	0	0.2	-0.1	0.3
1701631	99	P	SUR	13	-46	511	0	0.2	0.5	0.5
1701632	99	P	SUR	15	-48	498	0	0.2	0.3	0.4
1701633	99	P	SUR	15	-48	499	0	0.2	0.6	0.6
1701634	99	P	SUR	11	-44	525	0	0.3	0.2	0.3
1701635	99	P	SUR	11	-44	444	0	0.4	0.4	0.5
2501543	99	P	SUR	85	37	721	0	0.6	0.1	0.6
2501544	99	P	SUR	85	31	720	0	0.7	0.4	0.8
2501643	99	P	SUR	80	-1	657	0	0.5	-0.1	0.5
2501644	99	P	SUR	79	-1	658	0	0.5	-0.4	0.7
2501645	99	P	SUR	83	-11	72	0	0.9	-0.3	1.0
2501647	99	P	SUR	83	-12	662	0	0.5	0.2	0.6
2600570	99	P	SUR	87	16	658	0	0.4	-0.5	0.7
2601625	99	P	SUR	77	17	720	0	4.6	-1.1	4.8
4100040	99	P	SUR	15	-53	4303	0	0.3	-0.1	0.3
4100044	99	P	SUR	22	-59	4311	0	0.3	0.7	0.7
4100046	99	P	SUR	24	-68	4065	0	0.3	0.2	0.3
4100048	99	P	SUR	32	-70	4063	0	0.5	-0.3	0.6
4100049	99	P	SUR	27	-63	4310	0	0.3	0.6	0.7



DRIFTER MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
4100052	99	P	SUR	18	-65	433	0	0.3	-1.1	1.1
4100053	99	P	SUR	18	-66	4213	0	0.3	-0.8	0.9
4100056	99	P	SUR	18	-65	4201	0	0.3	-0.9	1.0
4100139	99	P	SUR	20	-38	709	0	0.2	0.1	0.3
4100300	99	P	SUR	16	-57	713	0	0.3	0.2	0.3
4100729	99	P	SUR	36	-33	720	0	1.3	1.9	2.3
4101531	99	P	SUR	28	-21	716	0	0.3	0.6	0.6
4101539	99	P	SUR	33	-16	718	0	0.3	0.3	0.4
4101554	99	P	SUR	26	-65	678	0	0.6	1.1	1.3
4101557	99	P	SUR	26	-35	720	0	0.3	0.2	0.4
4101560	99	P	SUR	38	-14	718	0	0.3	0.6	0.7
4101562	99	P	SUR	28	-56	652	0	0.4	0.5	0.6
4101564	99	P	SUR	28	-45	694	0	0.3	0.0	0.3
4101565	99	P	SUR	22	-48	716	0	0.3	0.4	0.5
4101567	99	P	SUR	33	-34	720	0	0.3	0.4	0.5
4101570	99	P	SUR	26	-63	719	0	0.3	0.2	0.3
4101572	99	P	SUR	52	-4	192	0	0.3	-2.3	2.4
4101573	99	P	SUR	32	-39	720	0	0.3	0.2	0.4
4101574	99	P	SUR	34	-44	719	0	0.4	0.4	0.5
4101603	99	P	SUR	15	-61	717	0	0.3	-0.1	0.3
4101607	99	P	SUR	39	-13	458	0	0.4	0.3	0.4
4101609	99	P	SUR	35	-21	719	0	0.3	0.2	0.3
4101610	99	P	SUR	65	-7	718	0	0.4	0.4	0.5
4101613	99	P	SUR	27	-19	720	0	0.3	0.6	0.6
4101614	99	P	SUR	33	-16	720	0	0.3	0.0	0.3
4101616	99	P	SUR	36	-18	693	0	0.3	0.1	0.3
4101617	99	P	SUR	28	-26	720	0	0.3	0.4	0.5
4101618	99	P	SUR	31	-28	720	0	0.4	0.1	0.4
4101621	99	P	SUR	39	-37	719	0	0.5	0.3	0.5
4101622	99	P	SUR	66	-21	720	0	0.6	0.2	0.6
4101623	99	P	SUR	56	-49	720	0	0.4	0.1	0.4
4101627	99	P	SUR	61	-57	719	0	0.5	0.2	0.5
4101630	99	P	SUR	14	-68	720	0	0.3	0.1	0.4
4101636	99	P	SUR	11	-23	720	0	0.8	0.4	0.9
4101655	99	P	SUR	61	-10	720	0	0.3	-0.0	0.3
4101658	99	P	SUR	60	-28	720	0	0.4	0.1	0.4
4101659	99	P	SUR	62	-2	720	0	0.3	0.2	0.4
4101662	99	P	SUR	72	15	720	0	0.4	-0.1	0.4
4101663	99	P	SUR	62	-56	720	0	0.5	0.1	0.5
4101664	99	P	SUR	59	-27	720	0	0.5	0.2	0.5
4101669	99	P	SUR	15	-46	720	0	0.3	0.2	0.3
4101690	99	P	SUR	47	-21	718	0	0.4	0.2	0.4
4101696	99	P	SUR	10	-52	720	0	0.3	0.1	0.3

DRIFTER MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
4101697	99	P	SUR	13	-59	683	0	0.9	-0.9	1.3
4101698	99	P	SUR	14	-59	720	0	0.4	0.4	0.5
4101699	99	P	SUR	13	-61	720	0	0.4	-0.5	0.6
4101705	99	P	SUR	31	-40	720	0	0.3	-0.7	0.8
4101706	99	P	SUR	32	-18	683	54	0.5	-0.8	0.9
4101707	99	P	SUR	38	-23	720	0	0.4	-0.0	0.4
4101708	99	P	SUR	35	-50	720	0	0.5	-0.5	0.7
4101712	99	P	SUR	42	-12	720	0	0.3	-0.2	0.4
4101714	99	P	SUR	34	-33	720	0	0.3	-0.2	0.4
4101715	99	P	SUR	33	-58	720	1	1.9	-0.2	1.9
4101716	99	P	SUR	25	-69	719	0	0.4	-0.9	0.9
4101717	99	P	SUR	31	-68	720	0	0.4	-0.3	0.5
4101718	99	P	SUR	29	-28	719	0	0.3	-0.0	0.3
4101719	99	P	SUR	32	-49	719	0	0.4	-0.0	0.4
4101720	99	P	SUR	31	-47	718	0	0.4	0.3	0.5
4101721	99	P	SUR	28	-46	719	0	0.3	0.8	0.9
4101742	99	P	SUR	32	-37	720	0	0.3	0.1	0.3
4101743	99	P	SUR	30	-68	720	0	1.2	0.6	1.3
4101753	99	P	SUR	26	-34	720	0	0.3	0.3	0.4
4101755	99	P	SUR	19	-34	720	0	0.2	0.3	0.4
4101756	99	P	SUR	12	-30	720	0	0.3	0.4	0.5
4101757	99	P	SUR	15	-60	1440	0	0.3	0.4	0.5
4101758	99	P	SUR	12	-59	1440	0	0.4	0.6	0.7
4101780	99	P	SUR	14	-61	680	0	0.3	-0.5	0.6
41040	99	P	SUR	15	-53	1364	0	0.4	-0.2	0.4
41044	99	P	SUR	22	-59	1278	0	0.3	0.7	0.8
41046	99	P	SUR	24	-68	1432	0	0.4	0.2	0.4
41048	99	P	SUR	32	-70	1341	0	0.6	-0.3	0.6
41049	99	P	SUR	28	-63	1373	0	0.4	0.6	0.7
41052	99	P	SUR	18	-65	438	0	0.2	-1.0	1.0
41053	99	P	SUR	19	-66	1531	0	0.3	-0.9	0.9
41056	99	P	SUR	18	-66	1516	0	0.3	-1.0	1.0
4200059	99	P	SUR	15	-67	4076	0	0.5	0.3	0.6
4200060	99	P	SUR	16	-63	2434	0	0.3	-0.1	0.3
4200085	99	P	SUR	18	-67	4170	0	0.3	-0.8	0.8
42059	99	P	SUR	15	-68	1380	0	0.6	0.3	0.6
42060	99	P	SUR	16	-63	787	0	0.3	-0.1	0.3
42085	99	P	SUR	18	-67	1490	0	0.4	-0.8	0.9
4400008	99	P	SUR	41	-69	4247	0	0.6	0.5	0.8
4400011	99	P	SUR	41	-67	4309	0	0.6	0.4	0.7
4400027	99	P	SUR	44	-67	717	0	0.6	-0.5	0.8
4400032	99	P	SUR	44	-69	691	0	0.5	-1.8	1.9
4400033	99	P	SUR	44	-69	683	0	0.5	-1.4	1.5

DRIFTER MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
4400037	99	P	SUR	43	-68	676	0	0.5	0.0	0.5
4400777	99	P	SUR	28	-62	720	0	0.4	0.0	0.4
44008	99	P	SUR	41	-69	2560	0	0.7	0.5	0.9
4400857	99	P	SUR	36	-31	720	3	1.0	0.3	1.1
44011	99	P	SUR	41	-67	2084	0	0.7	0.4	0.8
4401531	99	P	SUR	35	-19	720	0	0.3	0.3	0.4
4401536	99	P	SUR	33	-15	690	0	0.6	1.2	1.3
4401539	99	P	SUR	30	-38	720	0	2.9	0.4	2.9
4401540	99	P	SUR	34	-38	720	1	0.3	0.1	0.3
4401541	99	P	SUR	33	-37	720	0	0.3	-0.4	0.5
4401542	99	P	SUR	30	-68	720	0	0.4	0.1	0.4
4401551	99	P	SUR	33	-25	696	0	0.3	0.1	0.3
4401556	99	P	SUR	21	-68	720	0	0.3	-0.2	0.3
4401557	99	P	SUR	34	-38	720	0	0.4	0.2	0.5
4401558	99	P	SUR	66	12	720	0	0.6	-0.4	0.7
4401562	99	P	SUR	28	-40	719	0	0.3	-0.5	0.5
4401563	99	P	SUR	37	-41	720	0	0.4	-0.4	0.5
4401564	99	P	SUR	30	-21	720	0	0.3	0.1	0.3
4401565	99	P	SUR	60	-21	720	0	0.4	0.1	0.4
4401568	99	P	SUR	60	4	719	0	0.6	0.3	0.7
4401569	99	P	SUR	55	-25	718	0	0.4	0.1	0.4
4401572	99	P	SUR	42	-16	719	0	0.3	0.4	0.6
4401574	99	P	SUR	62	-35	720	0	0.5	0.3	0.6
4401576	99	P	SUR	38	-17	720	0	0.3	0.4	0.5
4401577	99	P	SUR	41	-28	720	0	0.5	0.1	0.5
4401578	99	P	SUR	39	-16	720	0	0.4	0.1	0.4
4401579	99	P	SUR	40	-29	720	0	0.4	0.1	0.4
4401580	99	P	SUR	50	-15	719	0	0.4	0.3	0.5
4401581	99	P	SUR	40	-36	719	0	1.9	0.6	2.0
4401582	99	P	SUR	45	-22	711	0	0.4	0.4	0.5
4401611	99	P	SUR	48	-15	659	0	0.4	0.2	0.4
4401613	99	P	SUR	29	-38	659	0	0.7	0.2	0.7
4401750	99	P	SUR	68	-3	669	0	0.4	-1.2	1.3
4401751	99	P	SUR	71	23	717	0	0.4	-0.0	0.4
4401799	99	P	SUR	27	-68	603	0	0.3	-0.0	0.3
4401826	99	P	SUR	43	-62	710	0	1.0	-0.7	1.2
4401827	99	P	SUR	44	-64	144	0	0.5	0.3	0.6
4401828	99	P	SUR	49	-47	661	0	0.5	0.5	0.7
4401829	99	P	SUR	49	-43	691	0	0.6	0.4	0.7
4401830	99	P	SUR	46	-37	552	0	0.5	0.0	0.5
4401831	99	P	SUR	43	-51	236	0	0.8	1.4	1.7
4401833	99	P	SUR	46	-53	709	0	0.5	0.7	0.9
4401837	99	P	SUR	44	-53	709	0	0.6	0.2	0.6

DRIFTER MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
4401838	99	P	SUR	49	-31	400	0	0.5	0.5	0.7
4401840	99	P	SUR	47	-45	414	0	0.5	0.9	1.0
4401870	99	P	SUR	23	-28	720	0	0.3	0.3	0.4
4401872	99	P	SUR	21	-33	720	0	0.2	0.2	0.3
4401873	99	P	SUR	18	-27	720	0	0.2	0.3	0.4
4401874	99	P	SUR	25	-21	720	0	0.3	0.4	0.5
4401894	99	P	SUR	52	-45	710	0	0.5	0.3	0.6
4402687	99	P	SUR	41	-60	658	0	0.5	0.2	0.5
44027	99	P	SUR	44	-67	732	0	0.6	-0.5	0.8
44032	99	P	SUR	44	-69	690	0	0.6	-1.8	1.9
44033	99	P	SUR	44	-69	683	0	0.6	-1.4	1.5
44037	99	P	SUR	44	-68	677	0	0.5	0.0	0.5
44137	99	P	SUR	42	-62	712	0	0.7	-0.4	0.8
44139	99	P	SUR	44	-57	720	0	0.6	-0.1	0.6
44258	99	P	SUR	45	-63	684	0	0.5	0.0	0.5
4700546	99	P	SUR	33	-55	652	26	3.7	-1.1	3.8
4800770	99	P	SUR	67	10	489	489	0.0	0.0	0.0
4802505	99	P	SUR	83	-54	139	0	0.9	-0.2	1.0
6100001	99	P	SUR	43	8	694	0	0.4	0.3	0.5
6100002	99	P	SUR	42	5	714	0	0.4	0.2	0.4
6100196	99	P	SUR	42	4	720	0	0.9	0.9	1.2
6100198	99	P	SUR	37	-2	720	0	0.5	0.5	0.7
6100281	99	P	SUR	40	0	720	0	0.5	0.6	0.8
6100417	99	P	SUR	38	0	720	0	0.4	0.5	0.6
6100430	99	P	SUR	40	2	720	0	0.5	0.4	0.6
6101003	99	P	SUR	40	25	172	0	0.6	0.6	0.8
6101007	99	P	SUR	36	25	148	0	0.5	0.2	0.6
6101009	99	P	SUR	35	25	189	0	0.5	-0.7	0.9
6102507	99	P	SUR	32	29	282	0	0.3	0.4	0.5
6102508	99	P	SUR	34	28	717	0	0.3	-0.0	0.3
6200024	99	P	SUR	44	-3	720	0	0.4	0.5	0.7
6200025	99	P	SUR	44	-6	720	0	0.4	0.5	0.7
6200082	99	P	SUR	44	-8	720	0	0.4	0.3	0.5
6200083	99	P	SUR	43	-9	720	0	0.9	0.5	1.0
6200084	99	P	SUR	42	-9	720	0	0.4	0.3	0.5
6200085	99	P	SUR	36	-7	720	0	0.4	0.6	0.7
6200091	99	P	SUR	53	-5	719	0	0.3	-0.1	0.4
6200092	99	P	SUR	51	-11	719	0	0.4	-0.1	0.4
6200093	99	P	SUR	55	-10	719	0	0.4	-0.1	0.4
6200094	99	P	SUR	52	-7	719	0	0.4	0.1	0.4
6200095	99	P	SUR	53	-16	83	0	0.5	-0.1	0.5
62001	99	P	SUR	45	-5	728	0	0.3	0.2	0.4
6200192	99	P	SUR	40	-10	713	0	0.3	-0.5	0.6

DRIFTER MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
6200200	99	P	SUR	36	-8	705	0	0.4	-0.0	0.4
6201030	99	P	SUR	44	-4	717	0	0.4	0.3	0.5
62023	99	P	SUR	51	-8	600	0	0.4	-0.2	0.4
6202613	99	P	SUR	21	-37	720	0	0.2	0.2	0.3
6202614	99	P	SUR	19	-31	720	0	0.6	1.3	1.4
6202638	99	P	SUR	16	-51	720	0	0.2	-0.0	0.2
6202639	99	P	SUR	30	-43	720	0	0.3	0.0	0.3
6202640	99	P	SUR	22	-59	720	0	0.3	-0.1	0.3
6202642	99	P	SUR	20	-64	720	0	0.3	-0.2	0.3
6202643	99	P	SUR	17	-66	720	0	0.3	-0.4	0.5
6202644	99	P	SUR	26	-47	720	0	0.3	-0.4	0.5
6202645	99	P	SUR	21	-64	720	0	0.3	-0.2	0.3
6202646	99	P	SUR	18	-55	719	0	0.2	0.0	0.2
6202675	99	P	SUR	58	-7	678	0	0.3	0.4	0.5
6202676	99	P	SUR	63	-19	398	2	2.8	4.2	5.0
6202677	99	P	SUR	64	-13	695	0	0.4	0.3	0.5
6202678	99	P	SUR	62	-39	624	0	0.6	0.3	0.7
6202679	99	P	SUR	62	-59	409	0	0.4	0.5	0.7
6202680	99	P	SUR	63	6	711	0	0.3	0.2	0.4
6202681	99	P	SUR	65	-9	694	0	0.4	0.4	0.5
6202683	99	P	SUR	61	-3	660	0	0.3	0.5	0.6
6202684	99	P	SUR	67	-20	689	0	0.6	0.6	0.8
6202685	99	P	SUR	38	8	720	0	0.4	0.6	0.7
6202686	99	P	SUR	38	6	718	0	0.4	0.5	0.6
6202687	99	P	SUR	39	13	718	0	0.3	0.6	0.7
6202688	99	P	SUR	39	3	715	0	0.4	0.4	0.6
6202690	99	P	SUR	40	4	718	0	0.4	0.0	0.4
6202691	99	P	SUR	41	3	720	0	0.4	0.3	0.5
6203523	99	P	SUR	72	3	653	0	0.4	-1.0	1.1
6203529	99	P	SUR	36	-44	717	0	0.5	-0.7	0.8
6203574	99	P	SUR	56	-55	703	0	0.5	0.4	0.6
6203580	99	P	SUR	66	-8	675	0	0.4	0.5	0.7
6203581	99	P	SUR	74	11	658	0	0.4	-0.2	0.5
6203582	99	P	SUR	60	-52	641	0	0.5	0.4	0.6
6203583	99	P	SUR	57	-23	498	0	0.4	0.2	0.4
6203585	99	P	SUR	64	3	644	0	0.4	0.5	0.6
6203586	99	P	SUR	68	-10	266	0	0.4	0.6	0.7
6203587	99	P	SUR	64	2	618	0	0.3	-0.0	0.3
6203588	99	P	SUR	59	-49	635	0	0.5	0.7	0.9
6203601	99	P	SUR	26	-36	720	0	0.3	0.5	0.6
6203607	99	P	SUR	36	-22	720	0	0.3	0.2	0.4
6203609	99	P	SUR	38	-22	720	0	0.4	-0.2	0.4
6203634	99	P	SUR	46	-11	720	0	0.4	0.2	0.4

DRIFTER MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
6203641	99	P	SUR	46	-5	719	0	0.3	0.4	0.5
62091	99	P	SUR	53	-5	719	0	0.3	-0.1	0.4
62092	99	P	SUR	51	-11	719	0	0.4	-0.1	0.4
62093	99	P	SUR	55	-10	719	0	0.4	-0.1	0.4
62094	99	P	SUR	52	-7	719	0	0.4	0.1	0.4
62095	99	P	SUR	53	-16	83	0	0.5	-0.1	0.5
62102	99	P	SUR	58	2	728	0	0.4	0.2	0.4
62103	99	P	SUR	50	-3	711	0	0.4	0.6	0.7
62104	99	P	SUR	57	1	728	0	0.3	-0.0	0.3
62105	99	P	SUR	55	-12	723	1	0.3	-0.1	0.3
62107	99	P	SUR	50	-6	1424	0	0.3	0.4	0.5
62112	99	P	SUR	58	0	728	0	0.3	0.2	0.4
62113	99	P	SUR	58	0	728	0	0.4	0.1	0.4
62114	99	P	SUR	58	0	1426	0	0.4	0.2	0.5
62115	99	P	SUR	58	-3	728	0	0.3	-0.1	0.4
62116	99	P	SUR	58	1	728	0	0.4	0.0	0.4
62118	99	P	SUR	58	1	728	0	0.3	0.5	0.5
62119	99	P	SUR	57	2	728	0	0.3	0.3	0.4
62120	99	P	SUR	56	2	668	0	0.4	-0.0	0.4
62121	99	P	SUR	54	3	728	0	0.3	0.3	0.4
62122	99	P	SUR	57	2	1426	0	0.3	0.1	0.3
62124	99	P	SUR	54	-4	728	0	0.3	0.1	0.3
62127	99	P	SUR	54	1	481	0	0.3	0.7	0.7
62129	99	P	SUR	58	0	728	0	0.4	0.0	0.4
62130	99	P	SUR	59	1	728	0	0.4	-0.1	0.4
62131	99	P	SUR	54	1	728	0	0.3	0.6	0.7
62132	99	P	SUR	56	2	728	0	0.4	0.4	0.5
62133	99	P	SUR	57	1	728	0	0.4	0.1	0.4
62134	99	P	SUR	58	1	728	0	0.3	0.6	0.6
62135	99	P	SUR	54	2	728	0	0.4	0.6	0.7
62140	99	P	SUR	57	1	1424	0	0.4	0.2	0.4
62141	99	P	SUR	58	-4	720	0	0.4	-2.3	2.3
62143	99	P	SUR	58	2	727	0	0.4	0.8	0.8
62144	99	P	SUR	53	2	727	0	0.3	0.2	0.4
62145	99	P	SUR	53	3	1426	0	0.4	0.4	0.5
62146	99	P	SUR	57	2	728	0	0.3	-0.0	0.3
62148	99	P	SUR	54	2	728	0	0.4	0.8	0.9
62149	99	P	SUR	54	1	728	0	0.3	0.8	0.9
62150	99	P	SUR	54	1	728	0	0.3	1.3	1.3
62151	99	P	SUR	57	2	1425	0	0.3	0.2	0.3
62152	99	P	SUR	57	2	728	0	0.3	0.4	0.5
62153	99	P	SUR	57	2	421	0	0.4	0.3	0.4
62154	99	P	SUR	56	2	728	0	0.3	-0.0	0.3

DRIFTER MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
62155	99	P	SUR	58	1	728	0	0.3	0.4	0.5
62157	99	P	SUR	58	0	728	0	0.4	-0.0	0.4
62160	99	P	SUR	57	2	1425	0	0.3	0.4	0.5
62161	99	P	SUR	58	1	717	0	0.4	-0.1	0.4
62162	99	P	SUR	57	1	728	0	0.3	0.1	0.3
62163	99	P	SUR	48	-8	728	0	0.3	0.3	0.5
62164	99	P	SUR	57	1	715	0	0.3	0.7	0.8
62165	99	P	SUR	54	1	728	0	0.3	0.6	0.7
62168	99	P	SUR	58	1	728	0	0.3	0.1	0.3
62296	99	P	SUR	53	2	728	0	0.3	0.2	0.4
62297	99	P	SUR	59	2	1425	0	0.4	0.0	0.4
62302	99	P	SUR	61	-2	721	0	0.5	-0.2	0.6
62304	99	P	SUR	51	2	728	0	0.4	0.2	0.5
62305	99	P	SUR	50	0	5	0	0.3	0.2	0.4
6301508	99	P	SUR	71	30	698	0	0.4	0.1	0.4
6301536	99	P	SUR	69	38	706	0	0.3	0.4	0.5
6301537	99	P	SUR	73	35	511	4	1.8	0.6	1.9
6301543	99	P	SUR	70	38	706	0	0.4	0.3	0.5
6301544	99	P	SUR	73	24	647	0	0.4	0.3	0.5
6301545	99	P	SUR	76	29	219	0	1.7	-0.3	1.7
6301564	99	P	SUR	63	-34	719	0	1.1	0.6	1.3
6301566	99	P	SUR	86	29	720	0	0.5	0.4	0.6
6301567	99	P	SUR	84	13	720	0	0.5	0.0	0.5
6301569	99	P	SUR	83	12	717	0	0.5	0.7	0.9
6301570	99	P	SUR	85	10	720	0	0.5	0.8	1.0
6301571	99	P	SUR	85	10	718	0	0.4	0.4	0.6
6301683	99	P	SUR	77	4	192	0	0.4	-0.1	0.4
63055	99	P	SUR	61	2	728	0	0.5	-0.1	0.5
63056	99	P	SUR	60	2	728	0	0.5	0.1	0.5
63057	99	P	SUR	59	2	728	0	0.3	-0.1	0.4
63058	99	P	SUR	53	2	1736	0	0.3	0.4	0.5
63059	99	P	SUR	58	-1	727	0	0.3	0.5	0.6
63101	99	P	SUR	61	1	713	0	0.5	-0.0	0.5
63102	99	P	SUR	61	1	727	0	0.5	0.1	0.5
63103	99	P	SUR	61	1	728	0	0.4	0.1	0.4
63104	99	P	SUR	61	2	728	0	0.4	-0.2	0.5
63108	99	P	SUR	61	2	726	0	0.5	-0.2	0.5
63109	99	P	SUR	60	2	728	0	0.4	-0.4	0.5
63110	99	P	SUR	60	2	728	0	0.4	-0.2	0.5
63112	99	P	SUR	61	1	715	0	0.4	-0.4	0.6
63115	99	P	SUR	62	1	727	0	0.5	0.1	0.5
63117	99	P	SUR	61	1	1426	0	0.5	0.3	0.6
63118	99	P	SUR	58	-1	733	0	0.5	-0.1	0.5

DRIFTER MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
6401502	99	P	SUR	74	7	697	0	0.4	0.2	0.4
6401506	99	P	SUR	70	0	556	0	0.4	0.5	0.6
6401531	99	P	SUR	65	-27	713	0	0.5	0.2	0.5
6401539	99	P	SUR	51	-15	716	0	0.3	0.6	0.7
6401569	99	P	SUR	66	-22	719	0	1.2	0.0	1.2
6401784	99	P	SUR	76	7	2846	0	0.4	0.0	0.4
6401789	99	P	SUR	76	1	682	0	0.5	0.3	0.6
6401795	99	P	SUR	75	5	704	0	0.4	0.3	0.5
6401796	99	P	SUR	72	29	702	0	0.4	0.2	0.4
6401797	99	P	SUR	75	31	598	0	0.5	0.2	0.5
6401806	99	P	SUR	76	4	703	0	0.4	0.2	0.5
6401807	99	P	SUR	72	36	699	0	0.4	0.1	0.4
6402539	99	P	SUR	63	-39	717	0	0.6	0.0	0.6
6402540	99	P	SUR	65	-32	659	0	0.6	0.4	0.7
6402541	99	P	SUR	64	-3	683	0	0.4	0.2	0.5
6402542	99	P	SUR	63	-12	703	0	0.4	0.3	0.5
64041	99	P	SUR	61	-3	728	0	0.5	-0.1	0.5
64045	99	P	SUR	59	-12	892	0	0.3	-0.2	0.4
64046	99	P	SUR	61	-4	728	0	0.4	-0.1	0.4
6501556	99	P	SUR	68	11	719	1	0.8	0.2	0.8
9373	99	P	SUR	37	4	2	0	0.0	3.0	3.0



#### 4.10 Table 22 - Drifter Monitoring Statistics (EUCOS): Wind speed (m/s)

##### DRIFTER MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : WIND SPEED (M/S)  
 AREA : 10N - 90N, 70W - 40E  
 PERIOD : APR 2020  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

TIME = 99 => AVERAGE OF ALL OBSERVATIONS

GROSS ERROR LIMIT FOR VECTOR WIND = 25 M/S

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
0066023	99	SPEED	SUR	55	11	384	0	0	1.7	1.4	2.2
0066024	99	SPEED	SUR	55	13	84	0	0	1.4	0.3	1.5
0640046	99	SPEED	SUR	60	-4	641	0	0	1.1	-0.5	1.3
1300001	99	SPEED	SUR	11	-23	700	0	0	0.7	0.4	0.8
1300002	99	SPEED	SUR	20	-23	716	0	0	0.7	-0.0	0.7
1300008	99	SPEED	SUR	15	-38	710	0	0	0.8	0.1	0.8
1300131	99	SPEED	SUR	28	-17	710	0	0	1.9	1.1	2.2
4100026	99	SPEED	SUR	12	-38	249	0	0	0.7	-0.1	0.7
4100040	99	SPEED	SUR	15	-53	4309	0	0	0.8	0.2	0.8
4100043	99	SPEED	SUR	21	-65	4310	0	0	0.9	0.3	1.0
4100044	99	SPEED	SUR	22	-59	4313	0	0	1.0	0.2	1.0
4100046	99	SPEED	SUR	24	-68	4054	0	0	0.9	0.1	0.9
4100048	99	SPEED	SUR	32	-70	4063	0	0	1.3	-0.3	1.3
4100049	99	SPEED	SUR	27	-63	4306	0	0	0.8	0.1	0.8
4100052	99	SPEED	SUR	18	-65	433	0	0	0.8	-0.3	0.8
4100053	99	SPEED	SUR	18	-66	4213	0	0	1.3	1.3	1.8
4100056	99	SPEED	SUR	18	-65	4208	0	0	1.1	-0.5	1.2
4100139	99	SPEED	SUR	20	-38	709	0	0	0.8	-0.0	0.8
4100300	99	SPEED	SUR	16	-57	713	0	0	0.9	-0.2	0.9
41040	99	SPEED	SUR	15	-53	1369	0	0	0.9	-0.0	0.9
41043	99	SPEED	SUR	21	-65	1373	0	0	1.0	0.1	1.0
41044	99	SPEED	SUR	22	-59	1280	0	0	1.0	-0.1	1.0
41046	99	SPEED	SUR	24	-68	1427	0	0	1.0	0.0	1.0
41048	99	SPEED	SUR	32	-70	1341	0	0	1.3	-0.5	1.4
41049	99	SPEED	SUR	28	-63	1371	0	0	0.9	-0.0	0.9
41052	99	SPEED	SUR	18	-65	438	0	0	0.8	-0.2	0.8
41053	99	SPEED	SUR	19	-66	1531	0	0	1.3	0.7	1.5
41056	99	SPEED	SUR	18	-66	1517	0	0	1.1	-0.3	1.1
4200059	99	SPEED	SUR	15	-67	4093	0	0	0.7	0.4	0.8
4200060	99	SPEED	SUR	16	-63	2433	0	0	1.0	0.3	1.0
4200085	99	SPEED	SUR	18	-67	4195	0	0	1.0	-0.2	1.0
42059	99	SPEED	SUR	15	-68	1383	0	0	0.7	0.1	0.8
42060	99	SPEED	SUR	16	-63	786	0	0	1.0	-0.2	1.0
42085	99	SPEED	SUR	18	-67	1495	0	0	1.0	0.1	1.0

## DRIFTER MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF

ELEMENT MONITORED : WIND SPEED (M/S)

(CONTINU

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
4400008	99	SPEED	SUR	41	-69	4312	0	0	1.3	-0.2	1.3
4400027	99	SPEED	SUR	44	-67	717	0	0	1.5	0.4	1.5
4400032	99	SPEED	SUR	44	-69	691	0	0	1.3	-0.0	1.3
4400033	99	SPEED	SUR	44	-69	683	0	0	1.4	-0.0	1.4
4400037	99	SPEED	SUR	43	-68	676	0	0	1.2	0.2	1.2
44008	99	SPEED	SUR	41	-69	2599	0	0	1.4	-0.3	1.4
44027	99	SPEED	SUR	44	-67	732	0	0	1.5	0.5	1.6
44032	99	SPEED	SUR	44	-69	690	0	0	1.4	0.0	1.4
44033	99	SPEED	SUR	44	-69	683	0	0	1.4	0.3	1.5
44037	99	SPEED	SUR	44	-68	677	0	0	1.3	0.3	1.3
44139	99	SPEED	SUR	44	-57	720	0	0	1.9	-0.5	1.9
6100001	99	SPEED	SUR	43	8	694	0	0	1.6	-0.2	1.6
6100002	99	SPEED	SUR	42	5	714	0	0	1.1	-0.0	1.1
6100196	99	SPEED	SUR	42	4	708	0	0	1.3	-0.2	1.3
6100198	99	SPEED	SUR	37	-2	714	0	0	1.5	-0.3	1.5
6100417	99	SPEED	SUR	38	0	716	0	0	1.3	-0.4	1.3
6100430	99	SPEED	SUR	40	2	697	0	0	1.5	-0.2	1.5
6101003	99	SPEED	SUR	40	25	197	0	0	2.7	-1.8	3.2
6101005	99	SPEED	SUR	38	26	195	0	0	3.8	-8.2	9.0
6101007	99	SPEED	SUR	36	25	155	0	0	2.0	-0.7	2.1
6101008	99	SPEED	SUR	37	22	9	0	0	4.0	-6.4	7.5
6101009	99	SPEED	SUR	35	25	189	0	0	1.5	1.0	1.8
6200024	99	SPEED	SUR	44	-3	701	0	0	1.5	-0.7	1.7
6200025	99	SPEED	SUR	44	-6	704	0	0	1.4	-0.4	1.4
6200082	99	SPEED	SUR	44	-8	719	0	0	1.1	-0.8	1.4
6200083	99	SPEED	SUR	43	-9	713	0	0	1.3	-0.5	1.4
6200084	99	SPEED	SUR	42	-9	718	0	0	1.2	-0.6	1.3
6200085	99	SPEED	SUR	36	-7	717	0	0	1.3	0.0	1.3
6200091	99	SPEED	SUR	53	-5	719	0	0	1.3	-0.1	1.3
6200092	99	SPEED	SUR	51	-11	719	0	0	1.5	0.6	1.6
6200093	99	SPEED	SUR	55	-10	719	0	0	1.0	0.1	1.0
6200094	99	SPEED	SUR	52	-7	719	0	0	1.0	0.3	1.1
6200095	99	SPEED	SUR	53	-16	83	0	0	1.1	-0.1	1.2
62001	99	SPEED	SUR	45	-5	728	0	0	1.2	0.5	1.3
6200192	99	SPEED	SUR	40	-10	713	0	0	1.3	0.2	1.3
6200200	99	SPEED	SUR	36	-8	705	0	0	1.3	0.2	1.3
6201030	99	SPEED	SUR	44	-4	700	0	0	1.3	-0.3	1.4
62023	99	SPEED	SUR	51	-8	596	0	0	1.3	0.8	1.6
62091	99	SPEED	SUR	53	-5	719	0	0	1.3	-0.0	1.3
62092	99	SPEED	SUR	51	-11	719	0	0	1.5	0.7	1.6
62093	99	SPEED	SUR	55	-10	719	0	0	1.0	0.1	1.0

## DRIFTER MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF

ELEMENT MONITORED : WIND SPEED (M/S)

(CONTINU

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
62094	99	SPEED	SUR	52	-7	719	0	0	1.1	0.4	1.1
62095	99	SPEED	SUR	53	-16	83	0	0	1.2	-0.2	1.2
62102	99	SPEED	SUR	58	2	728	0	0	1.6	-0.3	1.6
62103	99	SPEED	SUR	50	-3	706	0	0	1.6	1.3	2.1
62104	99	SPEED	SUR	57	1	728	0	0	1.2	-0.3	1.2
62105	99	SPEED	SUR	55	-12	306	0	0	2.0	-0.3	2.0
62107	99	SPEED	SUR	50	-6	1424	0	0	1.5	1.2	1.9
62112	99	SPEED	SUR	58	0	728	0	0	1.2	-0.3	1.3
62113	99	SPEED	SUR	58	0	728	0	0	1.4	0.3	1.4
62114	99	SPEED	SUR	58	0	1426	0	0	1.4	0.5	1.5
62118	99	SPEED	SUR	58	1	728	0	0	1.3	0.3	1.4
62119	99	SPEED	SUR	57	2	728	0	0	1.5	-0.7	1.6
62120	99	SPEED	SUR	56	2	728	0	0	1.3	0.1	1.3
62121	99	SPEED	SUR	54	3	728	0	0	1.2	0.0	1.2
62122	99	SPEED	SUR	57	2	1426	0	0	1.2	-0.1	1.2
62129	99	SPEED	SUR	58	0	728	0	0	1.2	0.1	1.2
62131	99	SPEED	SUR	54	1	728	0	0	3.2	-1.6	3.6
62132	99	SPEED	SUR	56	2	696	0	0	2.4	-2.4	3.4
62133	99	SPEED	SUR	57	1	728	0	0	1.3	0.2	1.3
62134	99	SPEED	SUR	58	1	728	0	0	1.3	-0.0	1.3
62140	99	SPEED	SUR	57	1	1132	0	0	1.3	0.0	1.3
62143	99	SPEED	SUR	58	2	727	0	0	1.7	-0.6	1.8
62144	99	SPEED	SUR	53	2	727	0	0	1.5	-0.5	1.6
62145	99	SPEED	SUR	53	3	1426	0	0	1.4	1.0	1.8
62146	99	SPEED	SUR	57	2	536	0	0	1.2	0.1	1.2
62148	99	SPEED	SUR	54	2	728	0	0	1.2	-0.0	1.2
62149	99	SPEED	SUR	54	1	728	0	0	1.3	0.2	1.3
62150	99	SPEED	SUR	54	1	728	0	0	1.3	-0.6	1.5
62152	99	SPEED	SUR	57	2	728	0	0	1.3	-0.7	1.4
62153	99	SPEED	SUR	57	2	421	0	0	2.5	-1.3	2.8
62154	99	SPEED	SUR	56	2	726	0	0	1.3	-0.2	1.4
62155	99	SPEED	SUR	58	1	728	0	0	1.3	-0.2	1.3
62163	99	SPEED	SUR	48	-8	728	0	0	1.1	0.3	1.2
62164	99	SPEED	SUR	57	1	715	0	0	1.3	-1.0	1.7
62165	99	SPEED	SUR	54	1	728	0	0	1.3	-0.3	1.3
62304	99	SPEED	SUR	51	2	727	0	0	1.6	1.2	2.0
62305	99	SPEED	SUR	50	0	1	0	0	0.0	2.4	2.4
63055	99	SPEED	SUR	61	2	728	0	0	1.2	-0.8	1.4
63056	99	SPEED	SUR	60	2	728	0	0	1.4	0.4	1.4
63057	99	SPEED	SUR	59	2	728	0	0	1.6	0.2	1.6
63058	99	SPEED	SUR	53	2	1441	0	0	1.2	0.4	1.3

## DRIFTER MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF

ELEMENT MONITORED : WIND SPEED (M/S)

(CONTINU

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
63101	99	SPEED	SUR	61	1	713	0	0	1.3	-0.4	1.4
63103	99	SPEED	SUR	61	1	728	0	0	1.4	-0.3	1.5
63104	99	SPEED	SUR	61	2	728	0	0	1.3	-0.4	1.3
63106	99	SPEED	SUR	61	2	708	0	0	1.7	-0.9	1.9
63108	99	SPEED	SUR	61	2	726	0	0	1.8	-0.3	1.8
63109	99	SPEED	SUR	60	2	696	0	0	1.5	0.2	1.5
63110	99	SPEED	SUR	60	2	728	0	0	1.4	-0.3	1.4
63112	99	SPEED	SUR	61	1	715	0	0	1.3	-0.6	1.4
63115	99	SPEED	SUR	62	1	727	0	0	1.2	-0.5	1.4
63117	99	SPEED	SUR	61	1	1426	0	0	1.4	-0.5	1.5
64041	99	SPEED	SUR	61	-3	728	0	0	1.2	-0.2	1.2
64045	99	SPEED	SUR	59	-12	892	0	0	1.1	0.2	1.1
64046	99	SPEED	SUR	61	-4	728	0	0	1.1	0.7	1.3
66024	99	SPEED	SUR	55	13	608	0	0	1.3	0.3	1.3
9373	99	SPEED	SUR	37	4	2	0	0	0.0	2.6	2.6

### 4.11 Table 23 - Drifter Monitoring Statistics (EUCOS): Wind direction

DRIFTER MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : WIND DIRECTION (DEGREES)  
 AREA : 10N - 90N, 70W - 40E  
 PERIOD : APR 2020  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

TIME = 99 => AVERAGE OF ALL OBSERVATIONS  
 GROSS ERROR LIMIT FOR VECTOR WIND = 25 M/S  
 WIND SPEEDS > 3M/S USED

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
0640046	99	DIRN	SUR	60	-4	582	0	0	14.7	2.5	14.9
1300001	99	DIRN	SUR	11	-23	675	0	0	7.6	0.9	7.6
1300002	99	DIRN	SUR	20	-23	697	0	0	8.4	0.2	8.5
1300008	99	DIRN	SUR	15	-38	704	0	0	8.3	1.2	8.4
1300131	99	DIRN	SUR	28	-17	270	0	0	29.3	-4.2	29.6
4100001	99	DIRN	SUR	35	-73	655	0	0	13.0	13.2	18.5
4100002	99	DIRN	SUR	32	-75	969	0	0	32.3	9.1	33.5
4100008	99	DIRN	SUR	31	-81	570	0	0	27.3	0.8	27.3
4100009	99	DIRN	SUR	29	-80	3537	0	0	24.0	6.9	24.9
4100010	99	DIRN	SUR	29	-78	3888	0	0	16.7	10.3	19.6
4100013	99	DIRN	SUR	33	-78	3531	0	0	18.5	5.0	19.2
4100024	99	DIRN	SUR	34	-78	600	0	0	20.8	-12.2	24.1
4100025	99	DIRN	SUR	35	-75	3672	0	0	24.0	5.7	24.6
4100026	99	DIRN	SUR	12	-38	249	0	0	8.5	7.8	11.6
4100029	99	DIRN	SUR	33	-80	742	0	0	33.4	-7.9	34.3
4100033	99	DIRN	SUR	32	-80	735	0	0	30.2	5.6	30.7
4100037	99	DIRN	SUR	34	-77	643	0	0	22.8	-11.8	25.7
4100038	99	DIRN	SUR	34	-78	620	0	0	25.1	-6.5	25.9
4100040	99	DIRN	SUR	15	-53	4283	0	0	9.7	4.0	10.5
4100043	99	DIRN	SUR	21	-65	3535	0	0	13.0	1.9	13.1
4100044	99	DIRN	SUR	22	-59	3646	0	0	13.8	5.0	14.7
4100046	99	DIRN	SUR	24	-68	3276	0	0	15.6	6.5	16.9
4100047	99	DIRN	SUR	28	-71	174	0	0	36.0	33.6	49.2
4100048	99	DIRN	SUR	32	-70	3891	0	0	15.1	9.6	17.9
4100049	99	DIRN	SUR	27	-63	4187	0	0	11.6	3.8	12.2
4100052	99	DIRN	SUR	18	-65	432	0	0	8.8	6.8	11.1
4100053	99	DIRN	SUR	18	-66	2473	0	0	14.9	2.4	15.1
4100056	99	DIRN	SUR	18	-65	3782	0	0	15.2	4.7	15.9
4100064	99	DIRN	SUR	34	-77	542	0	0	20.6	-15.1	25.5
41001	99	DIRN	SUR	35	-73	179	0	0	13.1	8.6	15.7
4100139	99	DIRN	SUR	20	-38	660	0	0	10.9	2.1	11.1
41002	99	DIRN	SUR	32	-75	348	0	0	30.9	6.5	31.6

## DRIFTER MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF

ELEMENT MONITORED : WIND DIRECTION (DEGREES)

(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
4100300	99	DIRN	SUR	16	-57	696	0	0	10.5	4.6	11.5
41008	99	DIRN	SUR	31	-81	557	0	0	27.9	0.7	27.9
41009	99	DIRN	SUR	29	-80	928	0	0	23.2	5.5	23.8
41010	99	DIRN	SUR	29	-79	1258	0	0	15.7	9.1	18.2
41013	99	DIRN	SUR	33	-78	926	0	0	19.8	3.6	20.1
41024	99	DIRN	SUR	34	-79	599	0	0	20.0	-12.3	23.5
41025	99	DIRN	SUR	35	-75	958	0	0	23.8	8.7	25.3
41029	99	DIRN	SUR	33	-80	623	0	0	29.0	-9.3	30.5
41033	99	DIRN	SUR	32	-80	549	0	0	23.5	6.2	24.3
41037	99	DIRN	SUR	34	-77	639	0	0	22.3	-12.4	25.5
41038	99	DIRN	SUR	34	-78	617	0	0	26.3	-6.6	27.1
41040	99	DIRN	SUR	15	-53	1359	0	0	10.5	5.0	11.7
41043	99	DIRN	SUR	21	-65	1098	0	0	13.5	0.5	13.5
41044	99	DIRN	SUR	22	-59	1045	0	0	14.3	4.3	14.9
41046	99	DIRN	SUR	24	-68	1095	0	0	17.1	5.3	17.9
41047	99	DIRN	SUR	28	-72	57	0	0	34.4	33.2	47.8
41048	99	DIRN	SUR	32	-70	1275	0	0	14.8	8.4	17.0
41049	99	DIRN	SUR	28	-63	1331	0	0	12.4	2.4	12.6
41052	99	DIRN	SUR	18	-65	437	0	0	9.5	5.8	11.1
41053	99	DIRN	SUR	19	-66	989	0	0	16.8	1.7	16.9
41056	99	DIRN	SUR	18	-66	1331	0	0	16.2	5.2	17.0
41064	99	DIRN	SUR	34	-77	542	0	0	22.1	-16.0	27.3
4200013	99	DIRN	SUR	27	-83	1053	0	0	26.5	0.7	26.5
4200022	99	DIRN	SUR	28	-84	964	0	0	23.6	-1.8	23.7
4200023	99	DIRN	SUR	26	-83	782	0	0	20.6	-4.0	21.0
4200026	99	DIRN	SUR	25	-83	792	0	0	23.1	4.2	23.5
4200036	99	DIRN	SUR	29	-85	3100	0	0	17.7	15.8	23.7
4200056	99	DIRN	SUR	20	-85	3515	0	0	9.4	3.7	10.1
4200057	99	DIRN	SUR	17	-81	3706	0	0	10.5	2.2	10.7
4200058	99	DIRN	SUR	15	-75	4256	0	0	6.8	2.6	7.2
4200059	99	DIRN	SUR	15	-67	4089	0	0	8.3	4.6	9.5
4200060	99	DIRN	SUR	16	-63	2398	0	0	9.5	5.5	11.0
4200085	99	DIRN	SUR	18	-67	3651	0	0	18.9	15.0	24.1
42013	99	DIRN	SUR	27	-83	1000	0	0	26.4	0.1	26.4
42022	99	DIRN	SUR	28	-84	892	0	0	24.1	-2.8	24.2
42023	99	DIRN	SUR	26	-83	654	0	0	22.4	-5.1	22.9
42026	99	DIRN	SUR	25	-84	735	0	0	24.3	3.5	24.5
42036	99	DIRN	SUR	29	-85	1739	0	0	19.1	14.6	24.0
42056	99	DIRN	SUR	20	-85	1157	0	0	9.8	2.9	10.2
42057	99	DIRN	SUR	17	-81	1163	0	0	11.1	0.7	11.1
42058	99	DIRN	SUR	15	-75	1381	0	0	7.7	0.5	7.7

DRIFTER MONITORING STATISTICS (EUCOS)  
 MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : WIND DIRECTION (DEGREES)  
 (CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
42059	99	DIRN	SUR	15	-68	1382	0	0	8.9	0.4	9.0
42060	99	DIRN	SUR	16	-63	764	0	0	9.6	9.9	13.8
42085	99	DIRN	SUR	18	-67	1243	0	0	16.9	13.2	21.5
4400007	99	DIRN	SUR	44	-70	575	0	0	19.3	-1.6	19.4
4400008	99	DIRN	SUR	41	-69	3815	0	0	14.2	3.9	14.7
4400009	99	DIRN	SUR	38	-75	600	0	0	18.9	13.5	23.2
4400013	99	DIRN	SUR	42	-71	596	0	0	18.6	7.1	19.9
4400018	99	DIRN	SUR	42	-70	611	0	0	16.9	9.6	19.4
4400022	99	DIRN	SUR	41	-74	1279	0	0	16.0	7.3	17.7
4400027	99	DIRN	SUR	44	-67	634	0	0	13.9	1.8	14.1
4400029	99	DIRN	SUR	43	-71	594	0	0	18.3	-21.5	28.3
4400030	99	DIRN	SUR	43	-70	529	0	0	19.8	3.4	20.1
4400032	99	DIRN	SUR	44	-69	564	0	0	18.2	4.8	18.9
4400033	99	DIRN	SUR	44	-69	539	0	0	22.0	-6.1	22.8
4400037	99	DIRN	SUR	43	-68	596	0	0	14.0	4.1	14.6
4400040	99	DIRN	SUR	41	-74	799	0	0	17.6	-0.4	17.6
4400042	99	DIRN	SUR	38	-76	5213	0	0	24.4	8.2	25.7
4400058	99	DIRN	SUR	38	-76	1608	0	0	29.5	-10.9	31.4
4400062	99	DIRN	SUR	39	-76	2964	0	0	28.3	-9.1	29.7
4400064	99	DIRN	SUR	37	-76	3507	0	0	24.4	-19.3	31.1
4400065	99	DIRN	SUR	40	-74	3637	0	0	16.4	6.5	17.7
4400072	99	DIRN	SUR	37	-76	3433	0	0	35.2	-68.6	77.1
4400073	99	DIRN	SUR	43	-71	551	0	0	15.9	4.1	16.5
44007	99	DIRN	SUR	44	-70	581	0	0	19.7	-2.1	19.8
44008	99	DIRN	SUR	41	-69	2250	0	0	14.7	3.0	15.0
44009	99	DIRN	SUR	39	-75	593	0	0	18.6	13.1	22.8
44013	99	DIRN	SUR	42	-71	599	0	0	18.6	6.1	19.6
44018	99	DIRN	SUR	42	-70	611	0	0	17.2	8.8	19.4
44022	99	DIRN	SUR	41	-74	442	0	0	15.7	6.9	17.1
44027	99	DIRN	SUR	44	-67	640	0	0	13.8	1.0	13.8
44029	99	DIRN	SUR	43	-71	620	0	0	17.3	-21.8	27.8
44030	99	DIRN	SUR	43	-70	519	0	0	19.8	3.6	20.1
44032	99	DIRN	SUR	44	-69	553	0	0	17.7	3.9	18.2
44033	99	DIRN	SUR	44	-69	527	0	0	20.9	-6.0	21.8
44037	99	DIRN	SUR	44	-68	593	0	0	14.4	3.9	14.9
44040	99	DIRN	SUR	41	-74	461	0	0	18.1	0.7	18.1
44042	99	DIRN	SUR	38	-76	836	0	0	27.0	6.0	27.7
44058	99	DIRN	SUR	38	-76	618	0	0	31.9	-13.8	34.8
44062	99	DIRN	SUR	39	-76	722	0	0	24.5	-9.3	26.2
44064	99	DIRN	SUR	37	-76	787	0	0	26.2	-19.7	32.8
44065	99	DIRN	SUR	40	-74	902	0	0	15.6	4.8	16.3

## DRIFTER MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF

ELEMENT MONITORED : WIND DIRECTION (DEGREES)

(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
44072	99	DIRN	SUR	37	-76	756	0	0	36.5	-70.8	79.7
44073	99	DIRN	SUR	43	-71	558	0	0	17.1	4.2	17.6
44139	99	DIRN	SUR	44	-57	613	0	0	14.7	-22.9	27.2
45135	99	DIRN	SUR	44	-77	310	0	0	14.0	4.9	14.9
45139	99	DIRN	SUR	43	-80	391	0	0	19.4	5.5	20.1
45142	99	DIRN	SUR	43	-79	482	0	0	19.1	-1.2	19.2
45149	99	DIRN	SUR	44	-82	281	0	0	19.2	-10.6	21.9
45159	99	DIRN	SUR	44	-79	290	0	0	14.7	0.3	14.7
6100198	99	DIRN	SUR	37	-2	593	0	0	15.8	-0.9	15.9
6100417	99	DIRN	SUR	38	0	551	0	0	14.3	1.7	14.4
6200024	99	DIRN	SUR	44	-3	347	0	0	19.9	3.3	20.2
6200025	99	DIRN	SUR	44	-6	371	0	0	19.6	0.8	19.6
6200082	99	DIRN	SUR	44	-8	533	0	0	17.7	4.2	18.2
6200083	99	DIRN	SUR	43	-9	514	0	0	12.8	1.3	12.8
6200084	99	DIRN	SUR	42	-9	530	0	0	13.7	3.3	14.1
6200085	99	DIRN	SUR	36	-7	551	0	0	15.7	2.9	15.9
6200091	99	DIRN	SUR	53	-5	538	0	0	12.7	4.7	13.5
6200092	99	DIRN	SUR	51	-11	601	0	0	17.0	-2.3	17.1
6200093	99	DIRN	SUR	55	-10	629	0	0	12.1	-0.5	12.2
6200094	99	DIRN	SUR	52	-7	540	0	0	13.0	7.7	15.1
6200095	99	DIRN	SUR	53	-16	64	0	0	19.6	-0.2	19.6
62001	99	DIRN	SUR	45	-5	513	0	0	15.8	6.3	17.0
6200192	99	DIRN	SUR	40	-10	568	0	0	18.9	-0.2	18.9
6200200	99	DIRN	SUR	36	-8	577	0	0	19.0	5.3	19.8
6201030	99	DIRN	SUR	44	-4	403	0	0	19.9	9.7	22.1
62023	99	DIRN	SUR	51	-8	495	0	0	14.1	2.4	14.3
62091	99	DIRN	SUR	53	-5	522	0	0	13.2	4.1	13.8
62092	99	DIRN	SUR	51	-11	590	0	0	16.4	-2.9	16.7
62093	99	DIRN	SUR	55	-10	619	0	0	11.7	-1.3	11.8
62094	99	DIRN	SUR	52	-7	537	0	0	13.2	7.0	14.9
62095	99	DIRN	SUR	53	-16	63	0	0	20.3	-1.1	20.3
62103	99	DIRN	SUR	50	-3	574	0	0	20.5	13.6	24.6
62105	99	DIRN	SUR	55	-12	292	0	0	54.4	13.0	55.9
62107	99	DIRN	SUR	50	-6	1086	0	0	20.4	12.2	23.8
62112	99	DIRN	SUR	58	0	579	0	0	15.4	-3.1	15.7
62114	99	DIRN	SUR	58	0	1173	0	0	12.5	-1.3	12.5
62163	99	DIRN	SUR	48	-8	527	0	0	13.2	-0.9	13.3
62305	99	DIRN	SUR	50	0	1	0	0	0.0	6.5	6.5
64041	99	DIRN	SUR	61	-3	566	0	0	12.5	8.7	15.2
64045	99	DIRN	SUR	59	-12	791	0	0	10.4	4.4	11.3
64046	99	DIRN	SUR	61	-4	639	0	0	15.2	0.1	15.2



#### 4.12 Table 24 - List of Assimilated BUFR Encoded Radiosonde Stations

ASDE09	DBLK	FPUW5GN	HTXUH4H	JNKN7JF	KJJF9XN	KMPLHPW	LRYQE3U	VKB4L5Q
XKQLWQB	XQFJRGX	YLV96WM	ZVQEQCM	5QPW8XG	7JUNA4N	01001	01004	01010
01028	01241	01400	01415	01492	02365	02527	02836	02963
03005	03238	03354	03502	03808	03882	03918	03953	04018
04089	04220	04270	04320	04339	04360	04417	06011	06060
06260	06458	06610	07110	07145	07510	07645	07761	08001
08023	08190	08221	08302	08383	08430	08508	08522	08536
10035	10113	10184	10238	10393	10410	10548	10618	10739
10771	10868	10954	10962	11010	11035	11120	11240	11520
11747	11952	12120	12374	12425	12843	12982	13275	13388
14015	14240	14430	15420	15614	16045	16080	16113	16144
16245	16320	16429	16546	16622	16716	16754	17030	17064
17095	17220	17240	17281	17607	22008	23205	23472	23884
26038	26435	26850	27707	27713	29612	33008	33041	37789
40179	40186	42339	42379	45004	47102	47104	47138	47155
47169	47186	47401	47412	47418	47582	47600	47646	47678
47741	47778	47807	47827	47909	47918	47945	47971	47991
48698	50527	50557	50774	50953	51076	51243	51431	51463
51644	51656	51709	51777	51828	51839	52203	52267	52323
52418	52533	52652	52681	52818	52836	52866	52983	53068
53463	53513	53543	53614	53772	53845	53915	54102	54135
54161	54218	54292	54374	54511	54662	54727	54857	55299
55591	56029	56046	56080	56137	56146	56187	56492	56571
56651	56691	56739	56778	56964	56985	57083	57127	57131
57178	57245	57447	57461	57494	57516	57687	57749	57816
57957	57972	57993	58027	58150	58203	58238	58362	58424
58457	58606	58633	58665	58725	58847	59023	59134	59211
59265	59280	59293	59316	59431	59758	59981	60018	60096
60155	60390	60571	60630	60656	60680	61660	61901	61980
61998	63741	68263	68424	68442	68538	68816	68842	70026
70133	70200	70219	70231	70261	70308	70316	70326	70350
70361	70398	71043	71081	71082	71109	71119	71603	71722
71802	71811	71815	71816	71823	71836	71845	71867	71906
71907	71908	71909	71917	71924	71925	71926	71934	71945
71957	71964	72206	72208	72210	72214	72215	72230	72233
72235	72240	72248	72249	72250	72251	72265	72274	72293
72317	72327	72340	72363	72364	72365	72376	72388	72426
72440	72451	72476	72489	72493	72501	72518	72520	72528
72558	72562	72572	72582	72597	72632	72634	72645	72649
72659	72662	72672	72694	72712	72747	72764	72768	72776
72786	72797	73033	73110	74389	74494	74560	76225	76256
76394	76405	76458	76526	76595	76612	76644	76654	76679
76692	76743	76805	76903	78897	78954	81405	82983	83525
83768	84384	85442	85469	85586	85799	85934	87155	87344
87418	87576	87623	87715	87860	88889	89002	89062	89564
89571	89592	89611	89625	89642	89859	91212	91285	91592
91610	91765	91925	91938	91948	91958	93112	93417	93817
93844	94120	94150	94170	94203	94299	94302	94312	94326
94332	94374	94403	94430	94510	94578	94610	94637	94638
94653	94659	94672	94711	94767	94776	94802	94821	94866
94910	94975	94995	94996	94998	95527	96996		

**4.13 Table 25 - List of BUFR Encoded Radiosonde Stations with no TAC Counterpart**

	ASDE09	DBLK	FPUW5GN	HTXUH4H	JNKN7JF	KJJF9XN	KMPLHPW	LRYQE3U
VKB4L5Q	XKQLWQB	XQFJRGX	YLV96WM	ZVQEQCM	5QPW8XG	7JUNA4N	00379	01001
01010	01028	01241	01400	01415	01492	02836	02963	06610
07110	07145	07510	07645	07761	08536	11010	11035	11120
11240	17607	40186	47155	51243	51656	52652	53543	56046
56492	56651	57245	59023	59293	61980	61998	76743	76903
78897	81405	84384	89002	89642	89859	91592	91938	93817
94653	94767							

## 5 Annex - Explanations of figures and tables

### 5.1 General

All information presented in this report is based on data received at ECMWF before the appropriate analysis. Approximate cut-off times (UTC) are shown below:

Analysis	Obs Time	Cut-off
0000	2101-0300	1530 (16 hours)
1200	0901-1500	1900 ( 7 hours)

### 5.2 Data Availability

For each observation type/parameter the average number of reports received per day is displayed in boxes of 5 degrees square. The numbers plotted are the nearest integer values - e.g. if 40 reports were received during the month then the average daily value plotted will be 1. If the average number is greater than 1000 then 999 will be plotted. If the average number is less than 0.5 then the digit 0 will be plotted. If no observations were received then the box will be left blank.

### 5.3 Data Quality

The information presented on data quality is based on differences between observations and the values of the most recent ECMWF forecast ("first guess") of the same parameter. Depending on the time of the observation, the forecast range is between 9 and 15 hours. The ability of a modern data assimilation system to provide the diagnostic facilities to monitor the performance of the observational network is demonstrated by A. Hollingsworth et. al., *Monthly Weather Review*, Vol 114, No. 5, May 1986.

It should be noted that:

- (i) all results are based on software that may undergo further development;
- (ii) although the quality of the ECMWF first-guess fields is of a generally high standard this is only true to a limited extent in the tropics, where small-scale processes such as convection are of much greater importance than in mid-latitudes, and the observations will sometimes not be representative of the scales of motion given by the first-guess;
- (iii) the first-guess fields themselves will vary in accuracy depending on the density and quality of data, particularly in the upstream regions and over Antarctica and the southern hemisphere mid-latitudes. Direct comparisons between stations (or airlines) should preferably be restricted to observations in a reasonably homogeneous climatic region.

Tables 1-9 contain lists of SHIPs (including fixed marine platforms), DRIFTERS, TEMPs and TEMPs/PILOTs believed to have supplied suspect reports of surface pressure, geopotential height or wind during the month. The format of the tables is according to Recommendation 3 CBS-Ext(85) and the criteria for stations or data platforms to be classified as suspect are given at the top of each table. For tables 7 and 8 data for the worst

standard pressure level are shown. Units of RMS, standard deviation and bias are hPa in tables 1 and 4, m in table 7 and  $\text{ms}^{-1}$  in tables 2, 5 and 8. In tables 7 and 8 the station position is indicated; in the case of TEMPSHIPS and PILOTSHIPS this position is obtained from the first report of the month. The gross error limits for first-guess deviations of geopotential in table 7 are as follows:

Level	Geop
1000	100m
925	100m
850	100m
700	100m
500	150m
400	175m
300	200m
250	225m
200	250m
150	275m
100	300m
70	375m
50	400m
30	450m

The corresponding limits for wind (table 8) are:

Level	Wind
1000	$35\text{ms}^{-1}$
925	$35\text{ms}^{-1}$
850	$35\text{ms}^{-1}$
700	$40\text{ms}^{-1}$
500	$45\text{ms}^{-1}$
400	$50\text{ms}^{-1}$
300	$60\text{ms}^{-1}$
250	$60\text{ms}^{-1}$
200	$50\text{ms}^{-1}$
150	$50\text{ms}^{-1}$
100	$45\text{ms}^{-1}$

In table 7 the weighted RMS values at standard levels are calculated using the following weights:

Level	Weight
1000	3.70
925	3.55
850	3.40
700	2.90
500	2.20
400	1.90
300	1.60
250	1.50
200	1.37
150	1.19
100	1.00
70	0.87
50	0.80
30	0.64

Tables 10 and 11 provide geopotential and wind quality statistics (100 hPa level) for TEMPSHIPs and PILOTSHIPs received during the month. Units and display format are identical to those in tables 7 and 8 respectively. Tables 13, 14 (50 hPa), 15 and 16 (100 hPa), 17 and 18 (500hPa), 19 and 20 (850hPa) provide similar radiosonde statistics for the EUCOS area.

Tables 21-23 are similar to tables 4-6 with data coverage restricted to the EUCOS area.

Figures 14-18 show global charts of SATOB and aircraft wind quality, where the statistics have been averaged over latitude/longitude boxes of 5 degrees square, and the mean observed minus first-guess (or 'bias') wind vectors have been plotted. All observations in the specified layers have been used. For comparison the mean observed wind (from the SATOB reports only) for each layer is shown in figures 14 and 15. A reference value of wind speed is plotted in the top right corner of each figure. An arrow is only plotted if 10 or more observations have been received in that 5 degree square.

Table 12 provides quality statistics of aircraft wind observations in the layer 300-150 hPa stratified by airline carrier. The format and specifications of the table have been defined by NMC Washington, the lead centre for the monitoring of aircraft and satellite data.

Table 24 shows list of Assimilated BUFR Encoded Radiosonde Stations monitored within the month.

Table 25 shows list of BUFR Encoded Radiosonde Stations with no TAC Counterpart monitored within the month.