



# ECMWF Global Data Monitoring Report

**November 2021**

*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 . . . . .	6
<b>3</b>	<b>Global monitoring statistics</b>	<b>6</b>
3.1	Data Availability . . . . .	6
3.2	Data Quality . . . . .	6
3.2.1	Figure 1 - Availability - SYNOP PRESSURE . . . . .	8
3.2.2	Figure 2 - Availability - DRIFTER PRESSURE . . . . .	9
3.2.3	Figure 3 - Availability - TEMP 500 hPa geopotential . . . . .	10
3.2.4	Figure 4 - Availability - TEMP/PILOT 300 hPa wind . . . . .	11
3.2.5	Figure 5 - Availability - AIRCRAFT winds 300-150 hPa . . . . .	12
3.2.6	Figure 6 - Availability - SATOB winds 400-150 hPa . . . . .	13
3.2.7	Figure 7 - Availability - SATOB winds 1000-700 hPa . . . . .	14
3.2.8	Figure 8 - Availability - NOAA15 ATOVS : AMSU-A . . . . .	15
3.2.9	Figure 9.1 - Availability - NOAA18 ATOVS : AMSU-A . . . . .	16
3.2.10	Figure 9.2 - Availability - AQUA ATOVS : AMSU-A . . . . .	17
3.2.11	Figure 9.3 - Availability - METOP ATOVS : AMSU-A . . . . .	18
3.2.12	Table 1 - Suspect ships and fixed marine platforms: Surface pressure - (hPa) . . . . .	19
3.2.13	Table 2 - Suspect ships and fixed marine platforms: Wind speed (m/s) . . . . .	21
3.2.14	Table 3 - Suspect ships and fixed marine platforms: Wind direction (DEGREES) . . . . .	22
3.2.15	Table 4 - Suspect drifters: Surface pressure (HPA) . . . . .	23
3.2.16	Table 5 - Suspect drifters: Wind speed (m/s) . . . . .	24
3.2.17	Table 6 - Suspect drifters: Wind direction (degrees) . . . . .	25
3.2.18	Table 7 - Suspect radiosondes: Geopotential height (metres) . . . . .	27
3.2.19	Table 8 - Suspect radiosondes: Wind (m/s) . . . . .	28
3.2.20	Table 9 - Suspect radiosondes: Wind direction (degrees) . . . . .	29
3.2.21	Figure 10 - Suspect TEMP observations - geopotential : 00 UTC . . . . .	30
3.2.22	Figure 11 - Suspect TEMP observations - geopotential : 12 UTC . . . . .	31
3.2.23	Figure 12 - Suspect TEMP/PILOT observations - wind : 00 UTC . . . . .	32
3.2.24	Figure 13 - Suspect TEMP/PILOT observations - wind : 12 UTC . . . . .	33
3.2.25	Table 10 - Radiosonde monitoring statistics (SHIPs): Geopotential height (metres) . . . . .	34
3.2.26	Table 11 - Radiosonde monitoring statistics (SHIPs): Wind (m/s) . . . . .	35
3.2.27	Figure 14 - SATOB Winds: 700-1000hPa . . . . .	36
3.2.28	Figure 15 - SATOB Winds: 150- 400hPa . . . . .	37
3.2.29	Figure 16 - SATOB Winds: 700-1000hPa . . . . .	38
3.2.30	Figure 17 - SATOB Winds: 150- 400hPa . . . . .	39
3.2.31	Figure 18 - AIRCRAFT Winds: 150- 300hPa . . . . .	40
3.2.32	Table 12 - Airep Monitoring Statistics For Airline Carriers (Global) . . . . .	41
<b>4</b>	<b>EUCOS Area Monitoring Statistics</b>	<b>48</b>
4.1	Table 13 - Radiosonde Monitoring Statistics (EUCOS): 50 hPa Geopotential height (metres) . . . . .	49
4.2	Table 14 - Radiosonde Monitoring Statistics (EUCOS):50 hPa Wind (m/s) . . . . .	52
4.3	Table 15 - Radiosonde Monitoring Statistics (EUCOS): 100 hPa Geopotential height (metres) . . . . .	55
4.4	Table 16 - Radiosonde Monitoring Statistics (EUCOS): 100 hPa Wind (m/s) . . . . .	58
4.5	Table 17 - Radiosonde Monitoring Statistics (EUCOS): 500 hPa Geopotential height (metres) . . . . .	61
4.6	Table 18 - Radiosonde Monitoring Statistics (EUCOS): 500 hPa Wind (m/s) . . . . .	64
4.7	Table 19 - Radiosonde Monitoring Statistics (EUCOS): 850 hPa Geopotential height (metres) . . . . .	67
4.8	Table 20 - Radiosonde Monitoring Statistics (EUCOS): 850 hPa Wind (m/s) . . . . .	70
4.9	Table 21 - Drifter Monitoring Statistics (EUCOS): Surface pressure (hpa) . . . . .	73
4.10	Table 22 - Drifter Monitoring Statistics (EUCOS): Wind speed (m/s) . . . . .	86
4.11	Table 23 - Drifter Monitoring Statistics (EUCOS): Wind direction . . . . .	90
4.12	Table 24 - List of Assimilated BUFR Encoded Radiosonde Stations . . . . .	95
4.13	Table 25 - List of BUFR Encoded Radiosonde Stations with no TAC Counterpart . . . . .	96

<b>5 Annex - Explanations of figures and tables</b>	<b>97</b>
5.1 General . . . . .	97
5.2 Data Availability . . . . .	97
5.3 Data Quality . . . . .	97

### 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 coordinate 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	Oct	Nov	Ident	Time	Oct	Nov
16113	(12)	31	16	23955	(00)	16	27
23415	(00)	31	13	30230	(00)	0	13
23415	(12)	31	13	30230	(12)	0	12
24908	(00)	28	7	31538	(00)	17	30
29698	(00)	18	0	42101	(12)	0	14
29698	(12)	18	0	42182	(12)	0	18
43192	(00)	13	1	42971	(00)	0	15
48565	(00)	27	0	43150	(00)	0	17
48568	(00)	12	0	44373	(00)	19	30
61660	(00)	19	7	44373	(12)	19	30
61660	(12)	19	7	60096	(12)	5	28
63741	(00)	19	0	62378	(12)	0	13
64700	(00)	15	0	64400	(00)	0	17
65548	(12)	16	0	64400	(12)	0	11
65578	(00)	31	11	71964	(00)	0	11
65578	(12)	31	10	78807	(00)	1	30
67083	(12)	18	6	89662	(00)	8	20
68512	(12)	27	15	89662	(12)	8	20
70308	(00)	28	15	91610	(00)	14	29
70308	(12)	30	16	96996	(00)	17	32
78970	(00)	31	4	-	-	-	-
78970	(12)	31	8	-	-	-	-
98618	(00)	15	0	-	-	-	-

## 2.2 Drifting Buoys

Surface pressure observations from **1808** 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

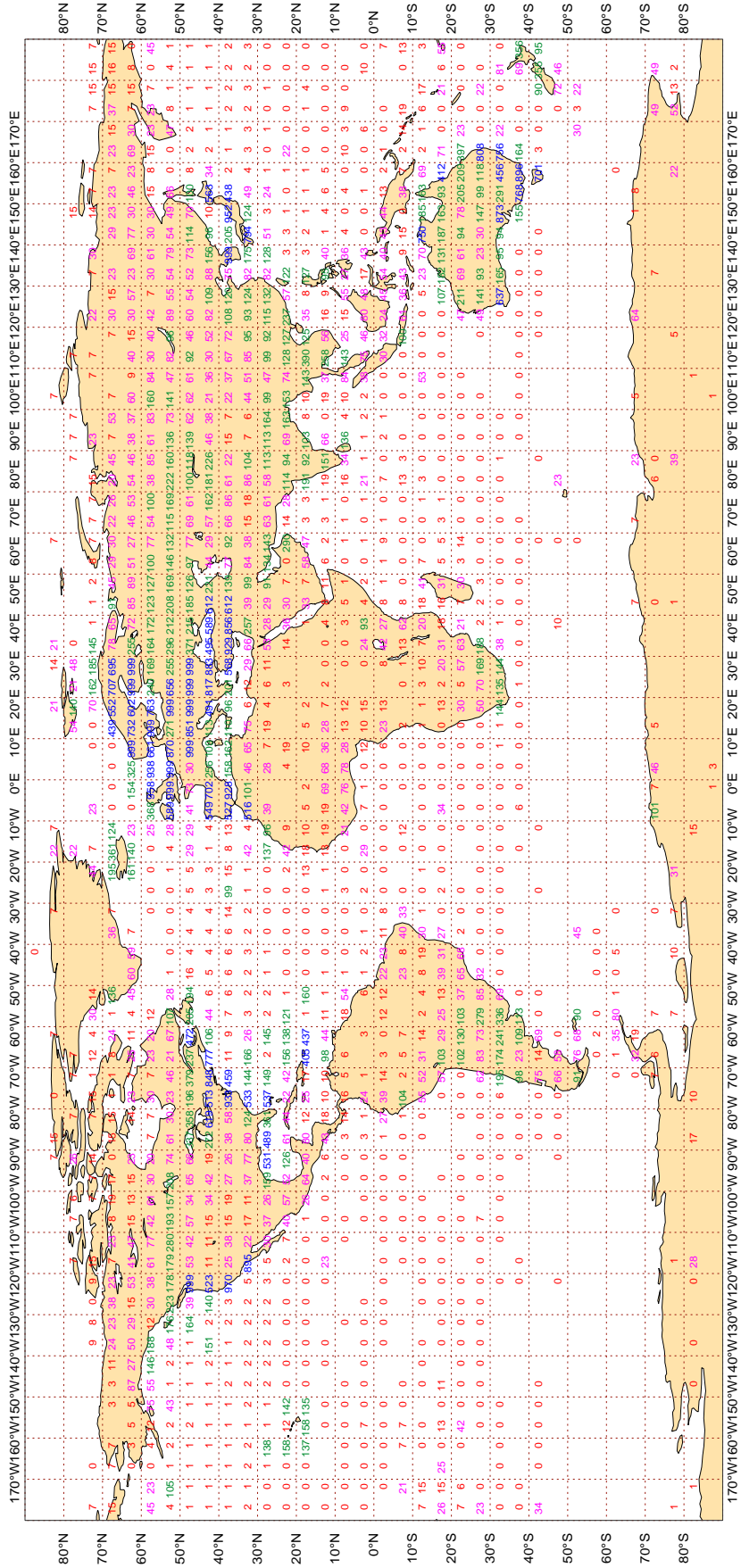
Table 12 provides quality statistics of aircraft wind observations stratified by airline carrier.



### 3.2.1 Figure 1 - Availability - SYNOP PRESSURE

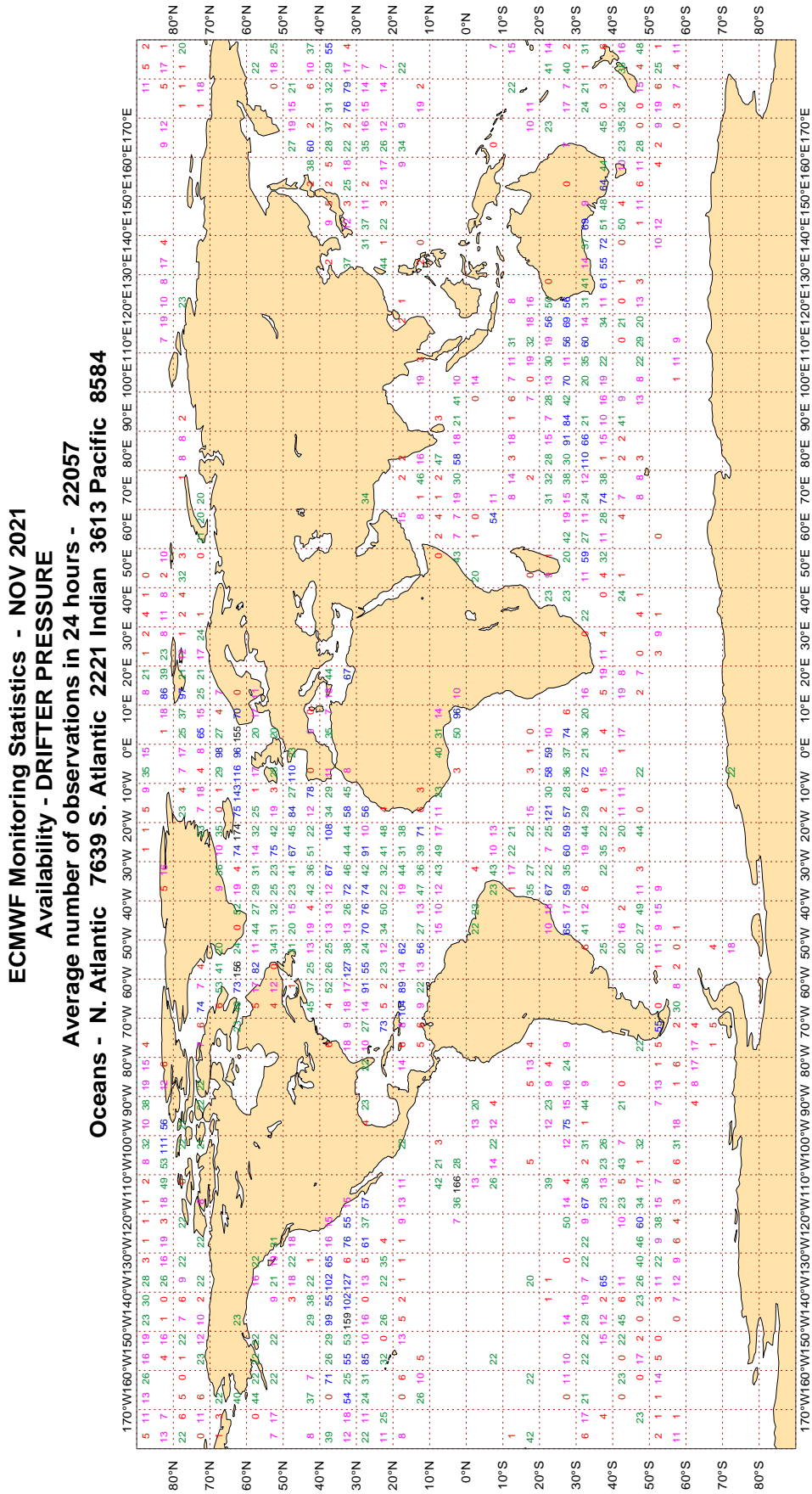
Figure 1

ECMWF Monitoring Statistics - NOV 2021  
 Availability - SYNOP/SHIP (manual, auto) pressure  
 Average number of observations in 24 hours - 114730  
 LAND - WMO Region I: 4261 II:20088 III: 4158 IV: 7031  
 Region V:14592 VI:42682 Antarctic: 839  
 Oceans - N. Atlantic 10384 S. Atlantic 153 Indian 584 Pacific 9959



3.2.2 Figure 2 - Availability - DRIFTER PRESSURE

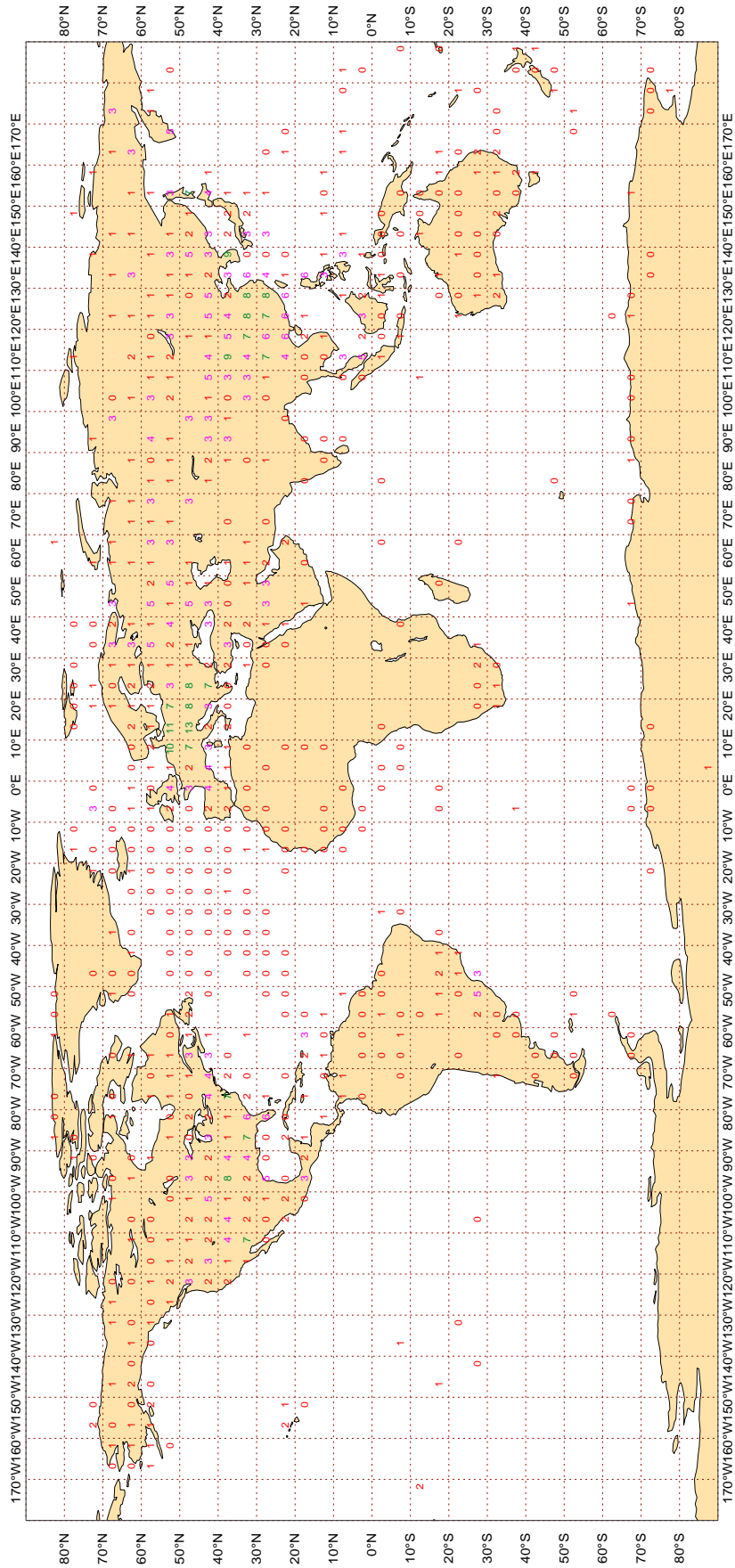
Figure 2



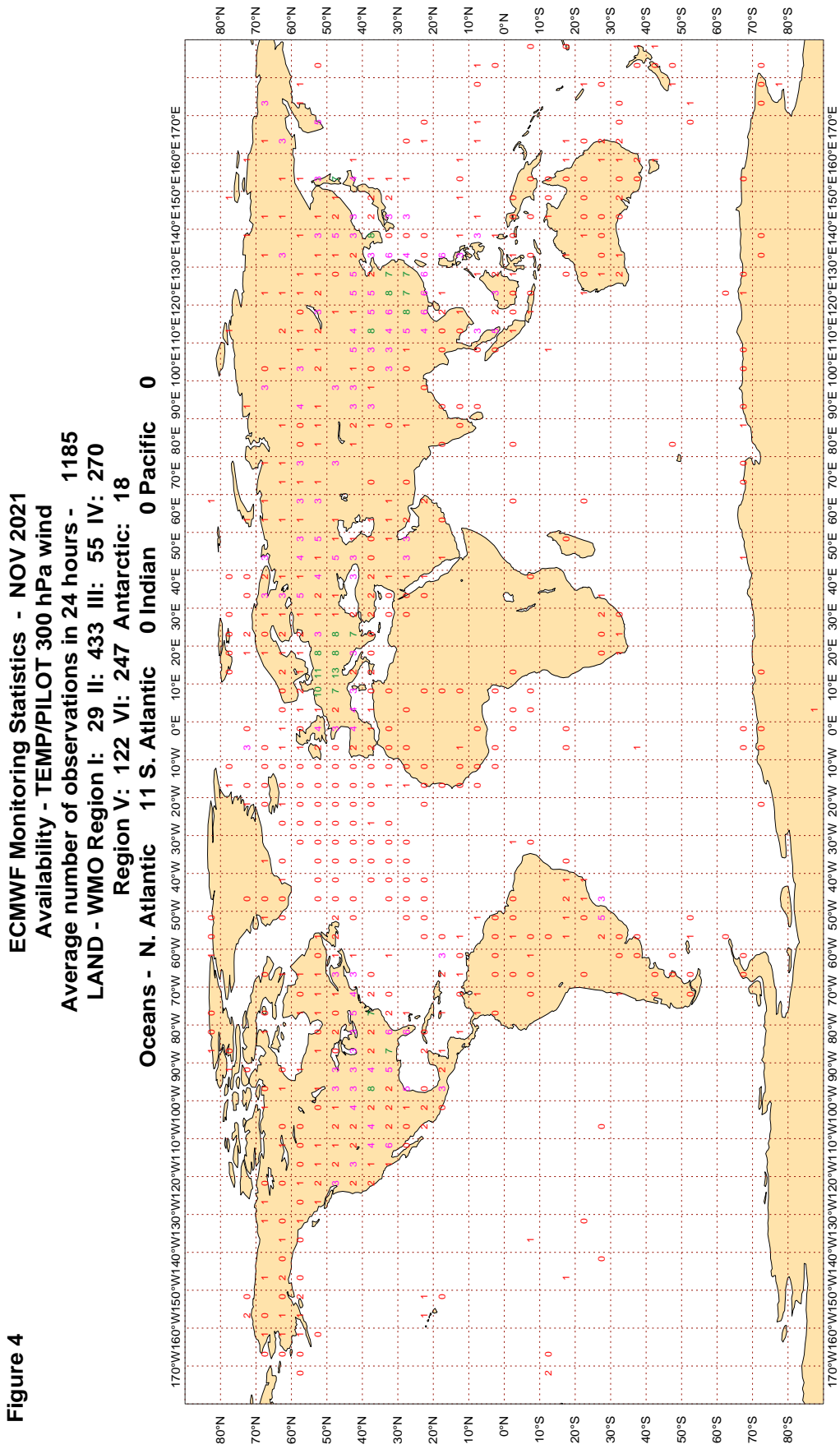
3.2.3 Figure 3 - Availability - TEMP 500 hPa geopotential

Figure 3

ECMWF Monitoring Statistics - NOV 2021  
 Availability - TEMP 500 hPa Geopotential  
 Average number of observations in 24 hours - 1192  
 LAND - WMO Region I: 29 II: 438 III: 55 IV: 266  
 Region V: 123 VI: 251 Antarctic: 18  
 Oceans - N. Atlantic 12 S. Atlantic 0 Indian 0 Pacific 0



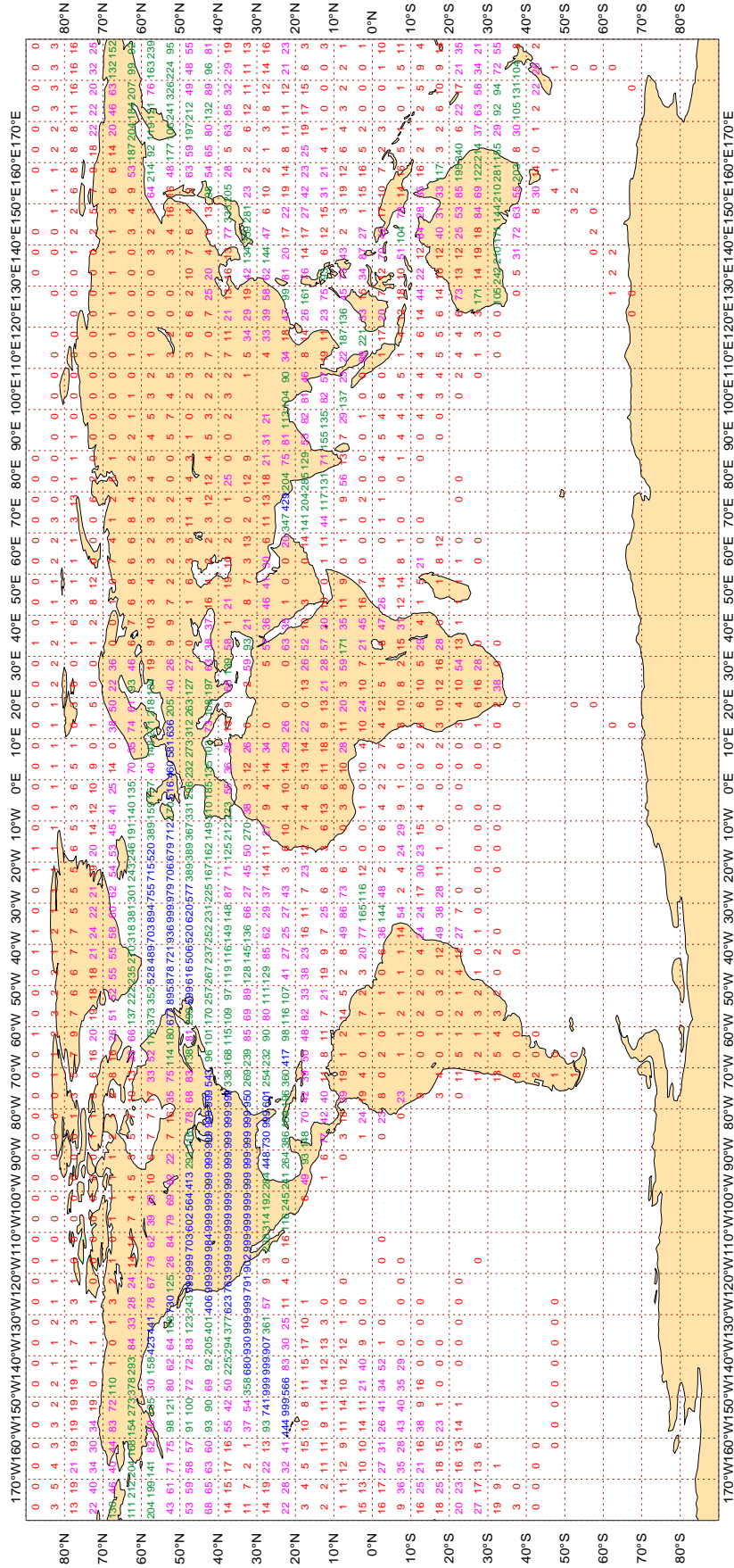
3.2.4 Figure 4 - Availability - TEMP/PILOT 300 hPa wind



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

Figure 5

ECMWF Monitoring Statistics - NOV 2021  
Availability - Aircraft winds 300-150 hPa  
Average number of observations in 24 hours - 160505

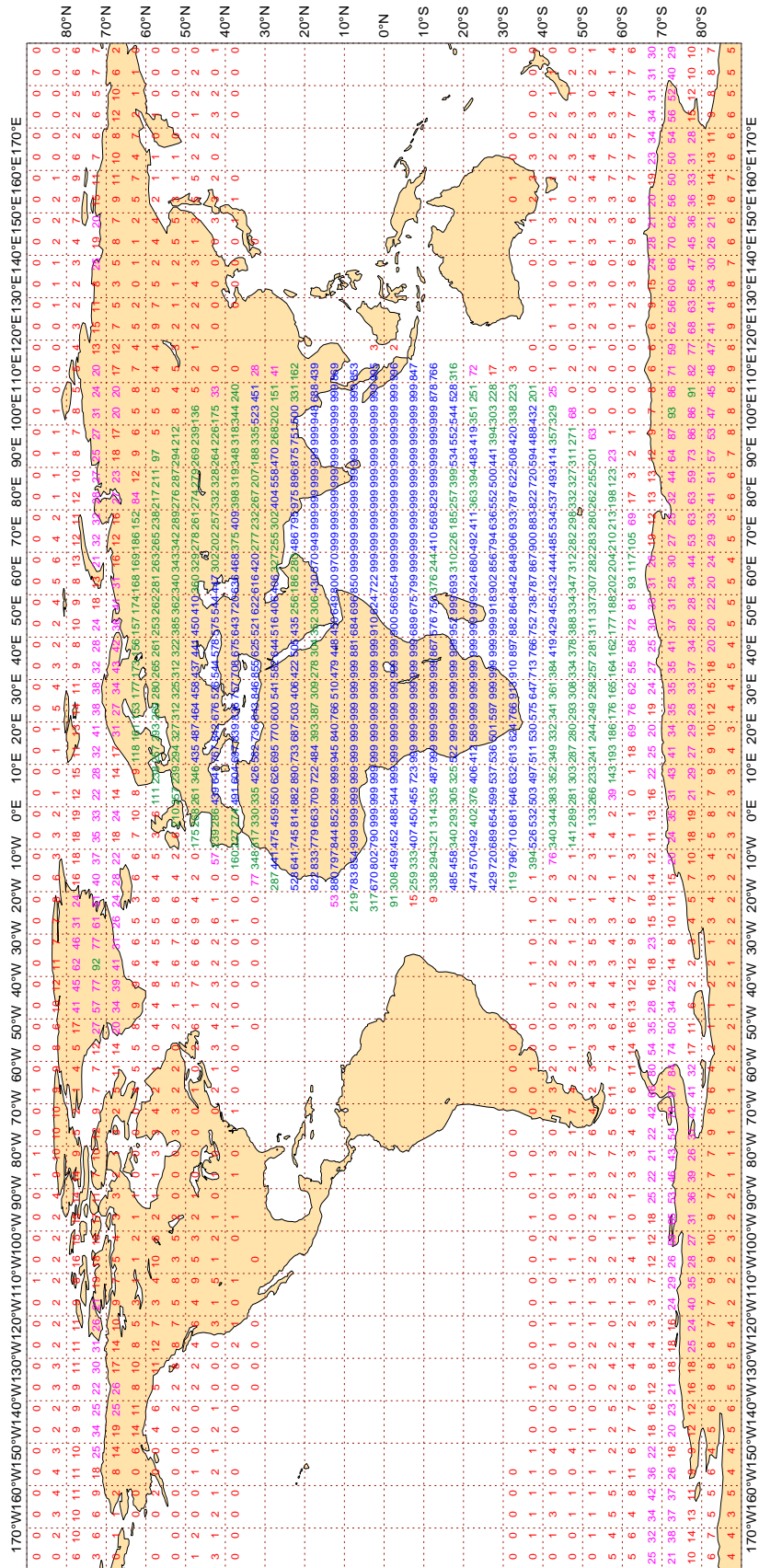




3.2.6 Figure 6 - Availability - SATOB winds 400-150 hPa

Figure 6

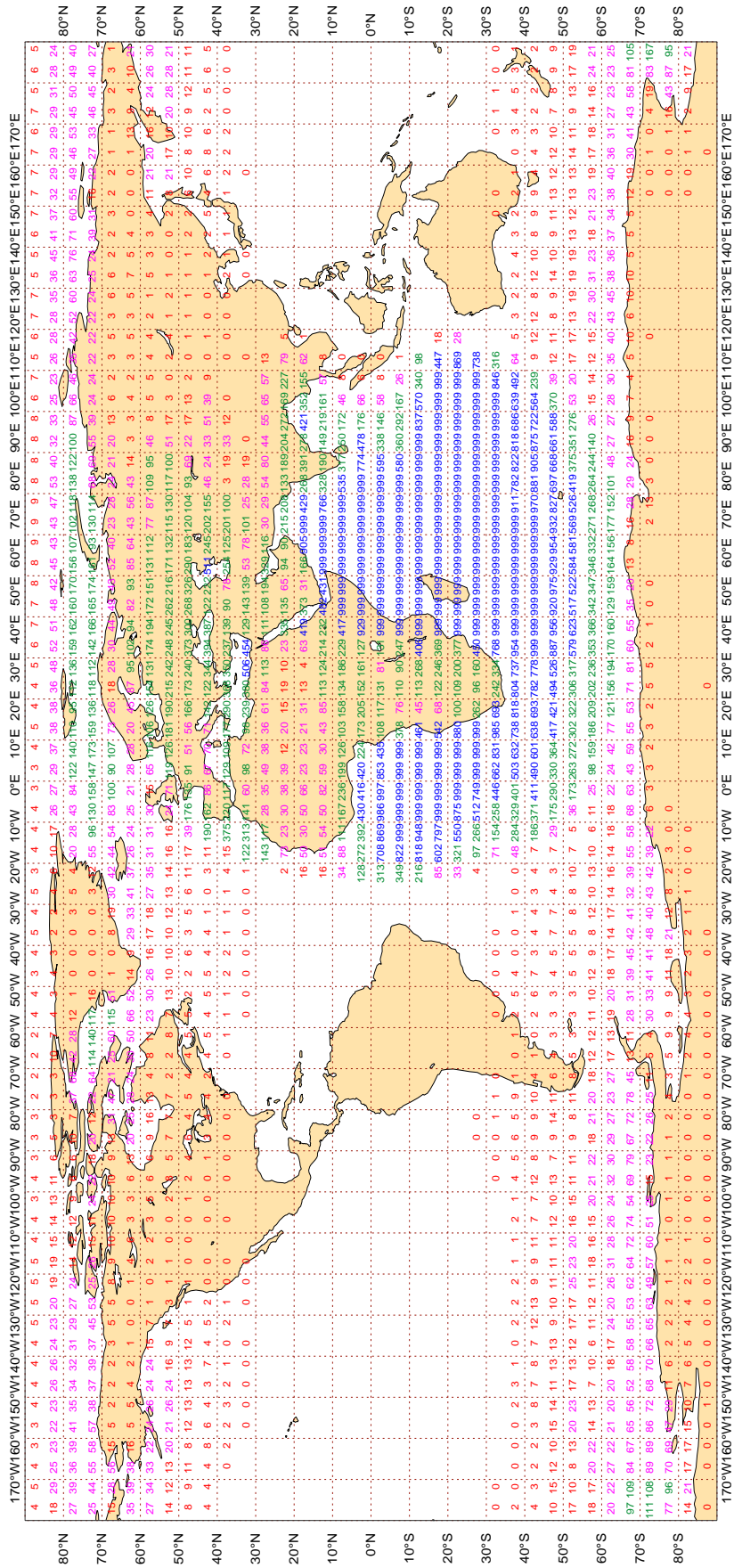
ECMWF Monitoring Statistics - NOV 2021  
Availability - AMV winds 400-150 hPa  
Average number of observations in 24 hours - 388857



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

Figure 7

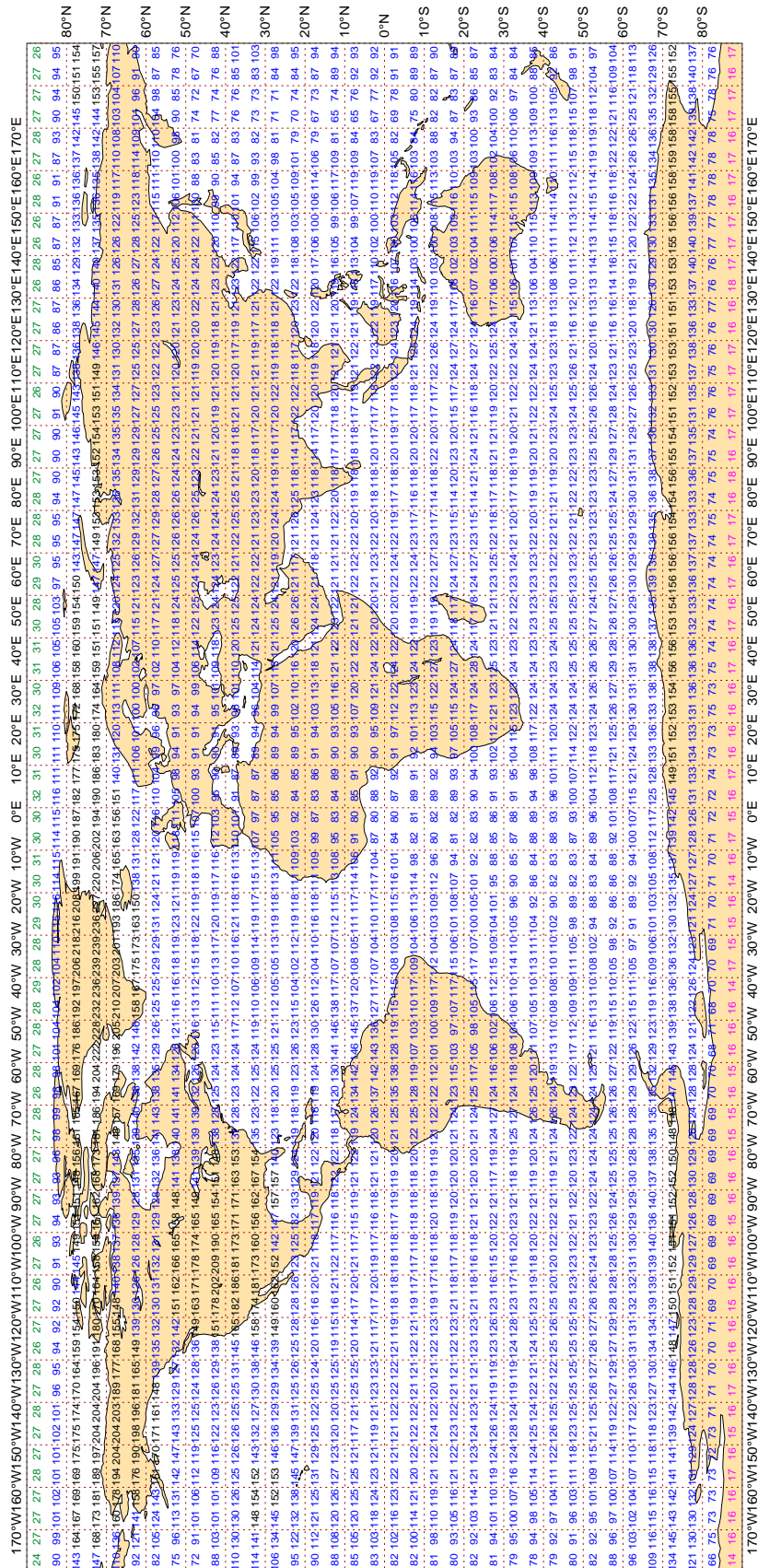
ECMWF Monitoring Statistics - NOV 2021  
Availability - AMV winds 1000-700 hPa  
Average number of observations in 24 hours - 370116



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

Figure 8

ECMWF Monitoring Statistics - NOV 2021  
Availability - NOAA15 ATOVS : AMSU-A  
Average number of observations in 24 hours - 298475



Magics 3.0.4 (64 bit)

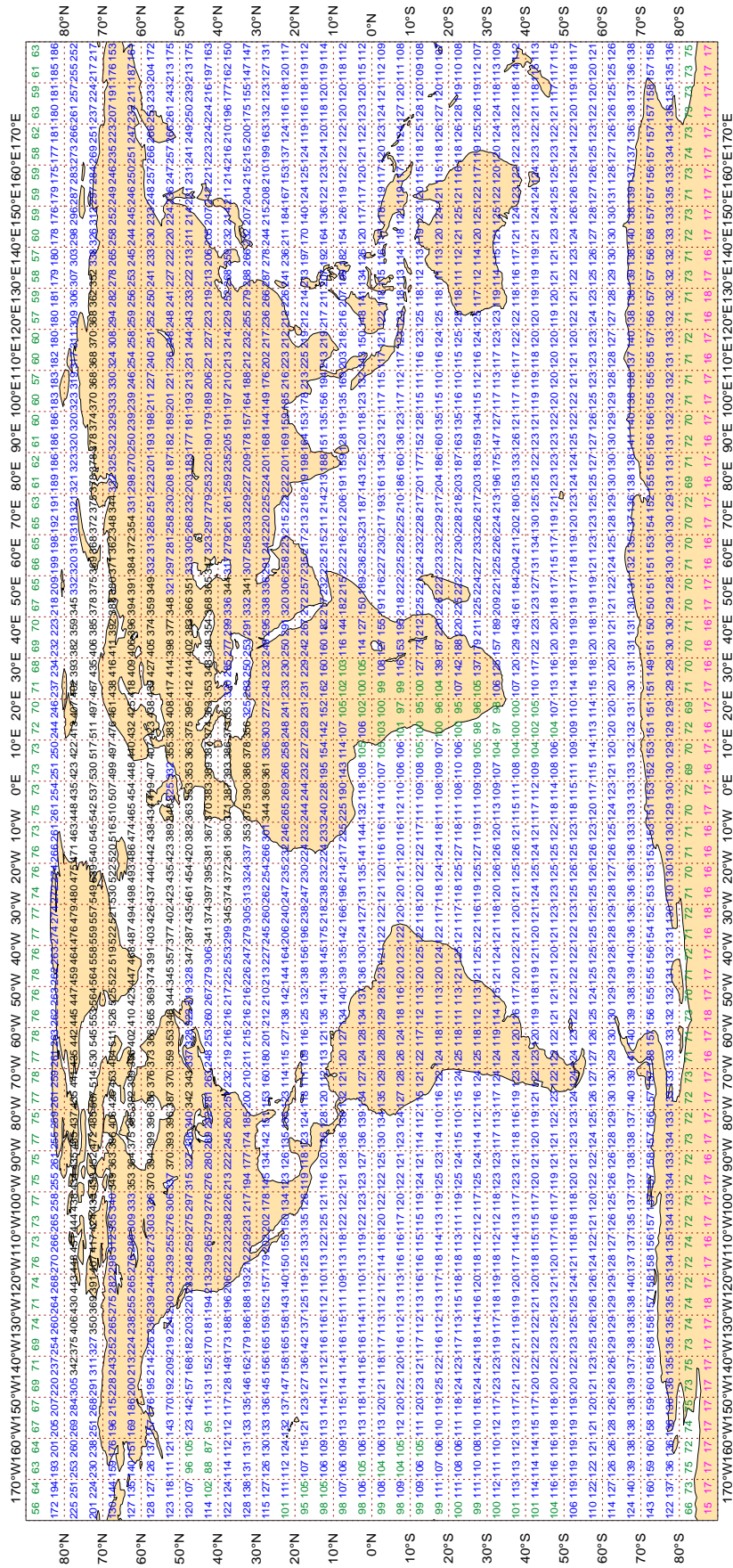




3.2.9 Figure 9.1 - Availability - NOAA18 ATOVS : AMSU-A

Figure 9.1

ECMWF Monitoring Statistics - NOV 2021  
Availability - NOAA18 ATOVS : AMSU-A  
Average number of observations in 24 hours - 467405



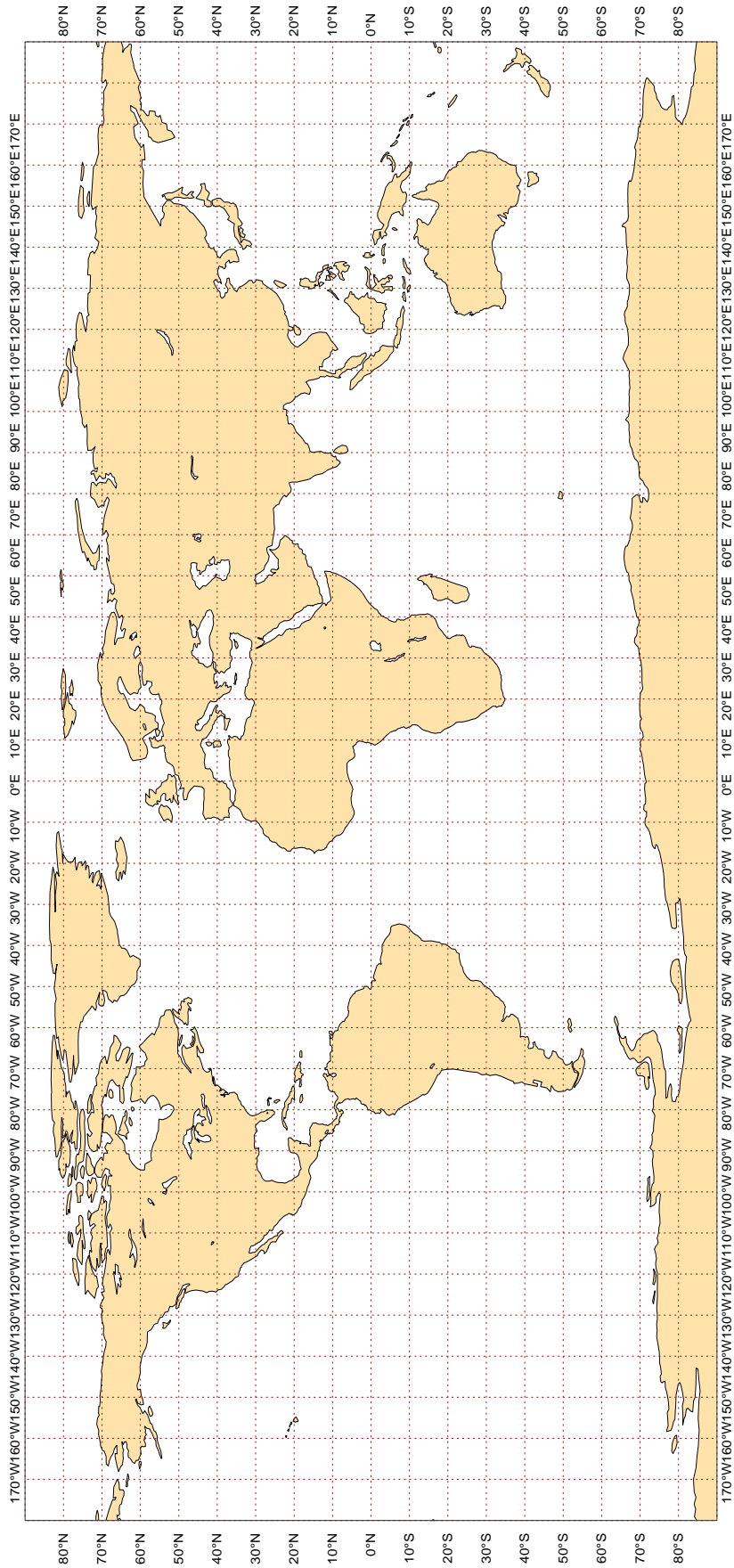
Magics 3.0.4 (64 bit)



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

Figure 9.2

ECMWF Monitoring Statistics - NOV 2021  
Availability - AQUA ATOVS : AMSU-A  
Average number of observations in 24 hours - 0

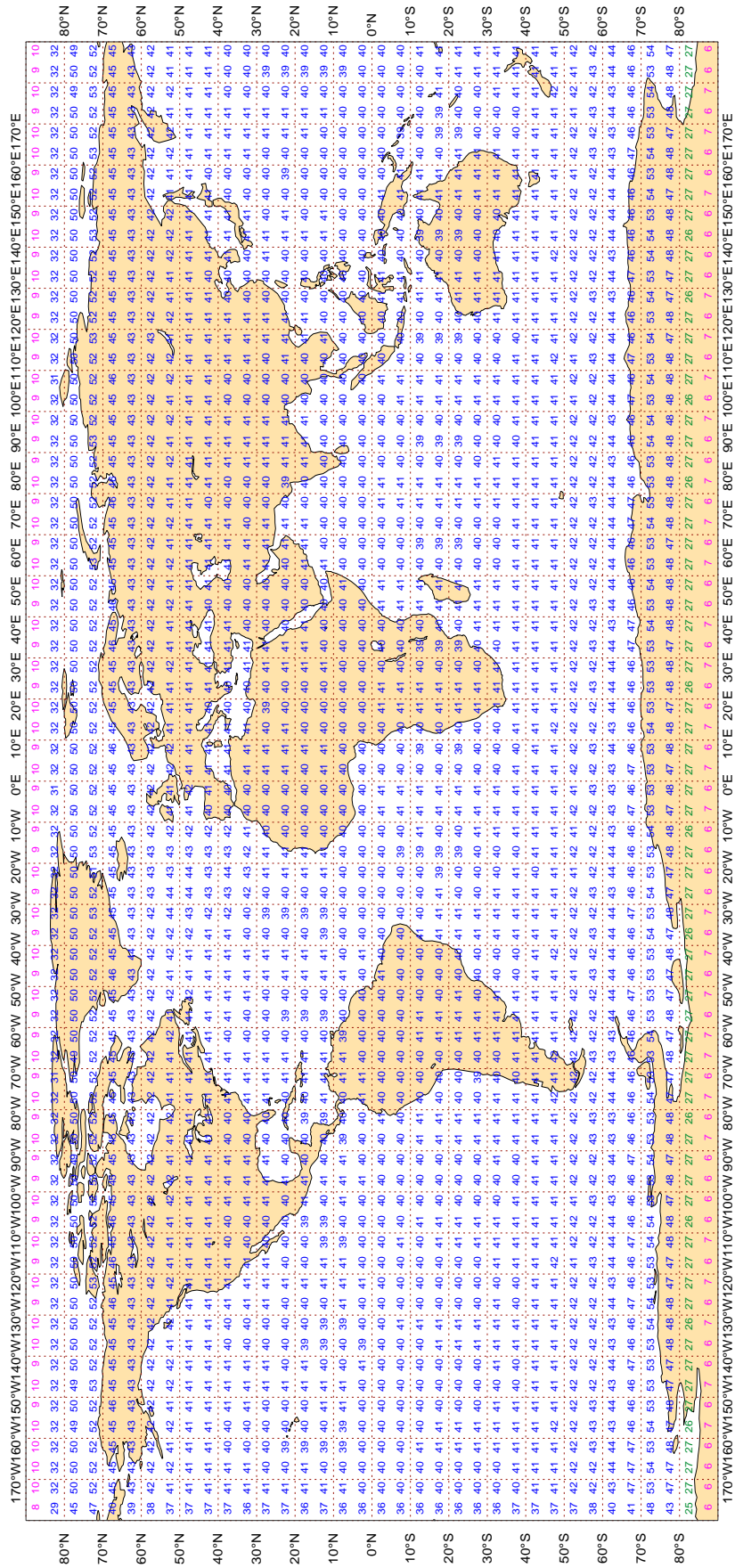


3.2.11 Figure 9.3 - Availability - METOP ATOVS : AMSU-A

Figure 9.3

ECMWF Monitoring Statistics - NOV 2021  
Availability - METOP ATOVS : AMSU-A

Average number of observations in 24 hours - 104516



**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 : NOV 2021  
 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
3FWH8	99	P	SUR	35	0	1.2	6.6	6.7
3FZO8	99	P	SUR	16	0	0.6	3.8	3.9
7KEG	99	P	SUR	32	0	3.8	-3.5	5.1
9HA5197	99	P	SUR	38	0	0.9	6.0	6.1
9HA5209	99	P	SUR	25	0	4.0	6.2	7.4
9V9365	99	P	SUR	22	0	2.2	4.5	5.0
9V9374	99	P	SUR	16	0	2.9	4.6	5.4
9V9401	99	P	SUR	44	0	0.8	-5.0	5.0
9V9404	99	P	SUR	96	3	2.7	5.1	5.8
AVFX	99	P	SUR	130	0	0.4	4.1	4.1
BKIC	99	P	SUR	68	0	1.4	3.6	3.9
C6AV5	99	P	SUR	30	0	0.8	-4.9	4.9
C6BH2	99	P	SUR	21	0	0.5	-3.1	3.1
C6LG6	99	P	SUR	110	0	0.8	-3.6	3.7
C6TQ6	99	P	SUR	35	0	0.7	-7.7	7.7
C6TX6	99	P	SUR	18	0	4.4	3.0	5.3
H3WC	99	P	SUR	17	0	1.2	6.1	6.2
JMJRCES	99	P	SUR	91	0	0.6	-6.2	6.3
KIAB	99	P	SUR	24	0	1.2	3.8	4.0
KRGB	99	P	SUR	73	0	2.1	-3.6	4.2
KSKW	99	P	SUR	19	0	1.1	-3.6	3.8
LAJK7	99	P	SUR	34	0	0.9	3.0	3.2
LAQM7	99	P	SUR	17	0	1.0	5.3	5.4
LAVD4	99	P	SUR	27	0	0.6	3.0	3.1
LAZU5	99	P	SUR	33	0	1.2	3.8	4.0
LOCW	99	P	SUR	32	0	1.2	-4.8	4.9
NWS1968	99	P	SUR	108	0	0.3	5.0	5.0
ONGI	99	P	SUR	15	0	0.3	4.0	4.0
OUJK2	99	P	SUR	16	0	0.8	5.4	5.4
OZ2049	99	P	SUR	54	0	0.6	-9.0	9.0
PBGJ	99	P	SUR	34	0	1.6	-5.3	5.5
PINX	99	P	SUR	31	0	0.4	-3.8	3.9

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
SJA4RSK	99	P	SUR	73	28	5.8	-5.7	8.1
TBWUK62	99	P	SUR	38	0	0.6	3.2	3.2
UAST	99	P	SUR	23	4	3.8	9.1	9.9
UBSH	99	P	SUR	49	16	6.9	-4.3	8.1
UBSW9	99	P	SUR	40	1	5.0	-5.0	7.1
UBUO6	99	P	SUR	37	0	3.1	-4.8	5.7
UCFT	99	P	SUR	43	0	1.3	-3.5	3.8
UHOW	99	P	SUR	50	0	3.1	3.1	4.4
V7FA7	99	P	SUR	31	0	2.6	3.1	4.0
V7FV9	99	P	SUR	106	0	0.4	-3.3	3.4
VDBA	99	P	SUR	54	48	1.8	9.3	9.5
VQFS4	99	P	SUR	21	0	0.8	-3.2	3.3
VRAR6	99	P	SUR	25	0	0.9	10.2	10.2
VRBQ6	99	P	SUR	24	1	1.2	-5.5	5.7
VRLJ3	99	P	SUR	32	0	0.3	5.2	5.2
VRME7	99	P	SUR	20	2	3.6	8.6	9.3
VRMX7	99	P	SUR	18	0	3.6	5.6	6.6
VRRB6	99	P	SUR	35	0	3.8	3.8	5.4
VRTX7	99	P	SUR	30	1	1.5	4.8	5.0
VTSJ	99	P	SUR	20	14	5.5	-5.0	7.5
WRJP	99	P	SUR	26	0	0.8	4.8	4.9

**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 : NOV 2021  
 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 : NOV 2021  
 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
45141	99	DIRN	SUR	16	0	0	19.8	31.8	37.5
45196	99	DIRN	SUR	149	0	0	87.3	79.3	117.9
45197	99	DIRN	SUR	158	0	0	27.1	-40.9	49.1
46001	99	DIRN	SUR	51	2	0	12.8	-141.3	141.9
46073	99	DIRN	SUR	27	2	0	43.1	124.4	131.7
46184	99	DIRN	SUR	83	0	0	18.1	-38.2	42.3
46303	99	DIRN	SUR	70	0	0	30.7	55.6	63.5

**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 : NOV 2021  
 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
0022958	99	P	SUR	34	121	596	17	5.1	9.6	10.8
1301716	99	P	SUR	19	-24	22	0	0.8	9.8	9.8
1601531	99	P	SUR	-36	25	680	84	7.1	2.1	7.4
2201597	99	P	SUR	23	121	705	705	0.0	0.0	0.0
4101846	99	P	SUR	-1	-47	695	0	0.4	-5.0	5.0
4401562	99	P	SUR	31	-71	183	0	2.4	-6.6	7.0
4402712	99	P	SUR	73	-72	179	147	6.9	-0.3	6.9
4402713	99	P	SUR	74	-77	180	134	6.6	0.4	6.6
4701658	99	P	SUR	72	-95	694	599	1.6	-12.3	12.4
4701735	99	P	SUR	73	-119	269	125	8.1	-1.0	8.2
4701738	99	P	SUR	70	-67	649	590	1.6	-1.7	2.3
4701739	99	P	SUR	72	-64	700	166	5.8	-4.4	7.3
4701744	99	P	SUR	80	-100	719	719	0.0	0.0	0.0
4801670	99	P	SUR	85	-168	689	402	8.3	-0.1	8.3
4801691	99	P	SUR	67	-170	584	214	3.2	-1.4	3.5
4801753	99	P	SUR	72	-170	720	565	4.2	-5.4	6.9
4802552	99	P	SUR	60	-167	687	216	2.1	1.0	2.3
5601518	99	P	SUR	-38	175	395	12	4.5	-5.9	7.4
6200200	99	P	SUR	36	-8	523	49	8.0	4.6	9.2
6301511	99	P	SUR	49	-40	688	0	1.8	6.7	6.9



**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 : NOV 2021  
 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
0031260	99	SPEED	SUR	-18	-39	611	0	0	2.2	5.8	6.2
0031374	99	SPEED	SUR	-25	-42	435	0	0	2.1	-5.1	5.5

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

LIST OF SUSPECT STATIONS : DRIFTER  
 MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : WIND DIRECTION (DEGREES)  
 PERIOD : NOV 2021  
 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
1300008	99	DIRN	SUR	15	-38	489	0	0	120.2	65.6	136.9
1300131	99	DIRN	SUR	28	-17	461	0	0	51.6	-62.4	81.0
1801580	99	DIRN	SUR	19	-67	1336	0	0	15.7	-99.2	100.4
2200298	99	DIRN	SUR	35	125	584	0	0	15.1	-45.6	48.0
23092	99	DIRN	SUR	18	89	77	0	0	43.1	-65.6	78.5
23093	99	DIRN	SUR	16	88	177	0	0	23.1	20.5	30.8
23095	99	DIRN	SUR	10	94	72	0	0	83.9	45.6	95.5
23491	99	DIRN	SUR	12	93	128	0	0	54.7	100.2	114.2
23497	99	DIRN	SUR	11	72	127	0	0	115.8	-39.4	122.3
4400075	99	DIRN	SUR	40	-71	126	0	0	5.8	-20.0	20.8
44075	99	DIRN	SUR	40	-71	155	0	0	5.9	-20.5	21.4
4500196	99	DIRN	SUR	42	-82	892	0	0	73.8	92.0	117.9
4500197	99	DIRN	SUR	42	-82	870	0	0	27.1	-40.2	48.5
45141	99	DIRN	SUR	61	-115	110	0	0	18.6	27.1	32.9
45150	99	DIRN	SUR	62	-114	35	0	0	74.9	24.7	78.8
45196	99	DIRN	SUR	42	-82	1230	0	0	73.9	90.2	116.6
45197	99	DIRN	SUR	42	-82	1326	0	0	27.0	-42.2	50.1
4600001	99	DIRN	SUR	56	-148	303	12	0	28.5	-137.6	140.5
4600073	99	DIRN	SUR	55	-172	158	11	0	50.4	124.5	134.3
46001	99	DIRN	SUR	56	-148	541	21	0	18.6	-139.5	140.7
46073	99	DIRN	SUR	55	-172	281	20	0	43.6	126.5	133.8
46184	99	DIRN	SUR	54	-139	599	0	0	19.8	-38.5	43.3
46303	99	DIRN	SUR	49	-123	518	0	0	30.7	55.1	63.1
46304	99	DIRN	SUR	49	-123	558	0	0	32.1	20.5	38.2
5100307	99	DIRN	SUR	8	-125	518	0	0	35.1	-29.0	45.5
51307	99	DIRN	SUR	8	-125	513	0	0	35.4	-29.0	45.7
5200001	99	DIRN	SUR	2	165	688	0	0	13.9	23.5	27.3
52001	99	DIRN	SUR	2	165	687	0	0	14.6	23.5	27.7
6100196	99	DIRN	SUR	42	4	507	5	0	74.7	-6.3	75.0
6101009	99	DIRN	SUR	35	25	28	0	0	71.1	-28.2	76.5
6200086	99	DIRN	SUR	55	6	321	0	0	15.6	23.2	27.9

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
6200200	99	DIRN	SUR	36	-8	439	20	0	167.5	-32.2	170.6
6301003	99	DIRN	SUR	74	24	665	0	0	14.9	23.2	27.6
6301004	99	DIRN	SUR	72	20	502	0	0	66.3	18.1	68.7
6600022	99	DIRN	SUR	54	14	249	5	0	33.7	-117.5	122.2

**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 : NOV 2021  
 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	26	0	5.5	76.5	76.7
01400	12	Z	1000	57	3	27	1	15.2	75.8	77.3
24122	12	Z	100	69	112	22	0	71.7	-83.2	109.8
24122	00	Z	400	69	112	23	0	27.0	-50.2	57.0
33791	12	Z	200	48	33	30	0	55.4	-63.3	84.1
38064	00	Z	250	45	66	25	0	68.3	68.2	96.5
38064	12	Z	200	45	66	27	0	74.3	67.4	100.3
43150	00	Z	1000	18	83	17	0	5.9	58.5	58.8
71934	12	Z	50	60	-112	29	6	173.4	-102.0	201.2
76394	12	Z	200	26	-100	14	0	110.8	111.1	156.9
76394	00	Z	200	26	-100	14	0	101.3	141.2	173.8
76644	12	Z	1000	21	-90	28	0	6.0	29.7	30.3
76644	00	Z	1000	21	-90	27	0	7.4	29.8	30.7
98233	00	Z	1000	18	122	19	1	31.8	38.6	50.0
98233	12	Z	1000	18	122	19	0	29.7	29.7	42.0
98558	00	Z	1000	11	126	13	0	8.1	65.7	66.2
JNKN7J	12	Z	1000	54	-25	13	0	5.7	40.0	40.4
JNKN7J	00	Z	1000	55	-20	11	0	3.9	38.4	38.6

**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 : NOV 2021  
 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
--------------	-------------	-----	-----	-----	------	------------	--------------	-------	-------	-----

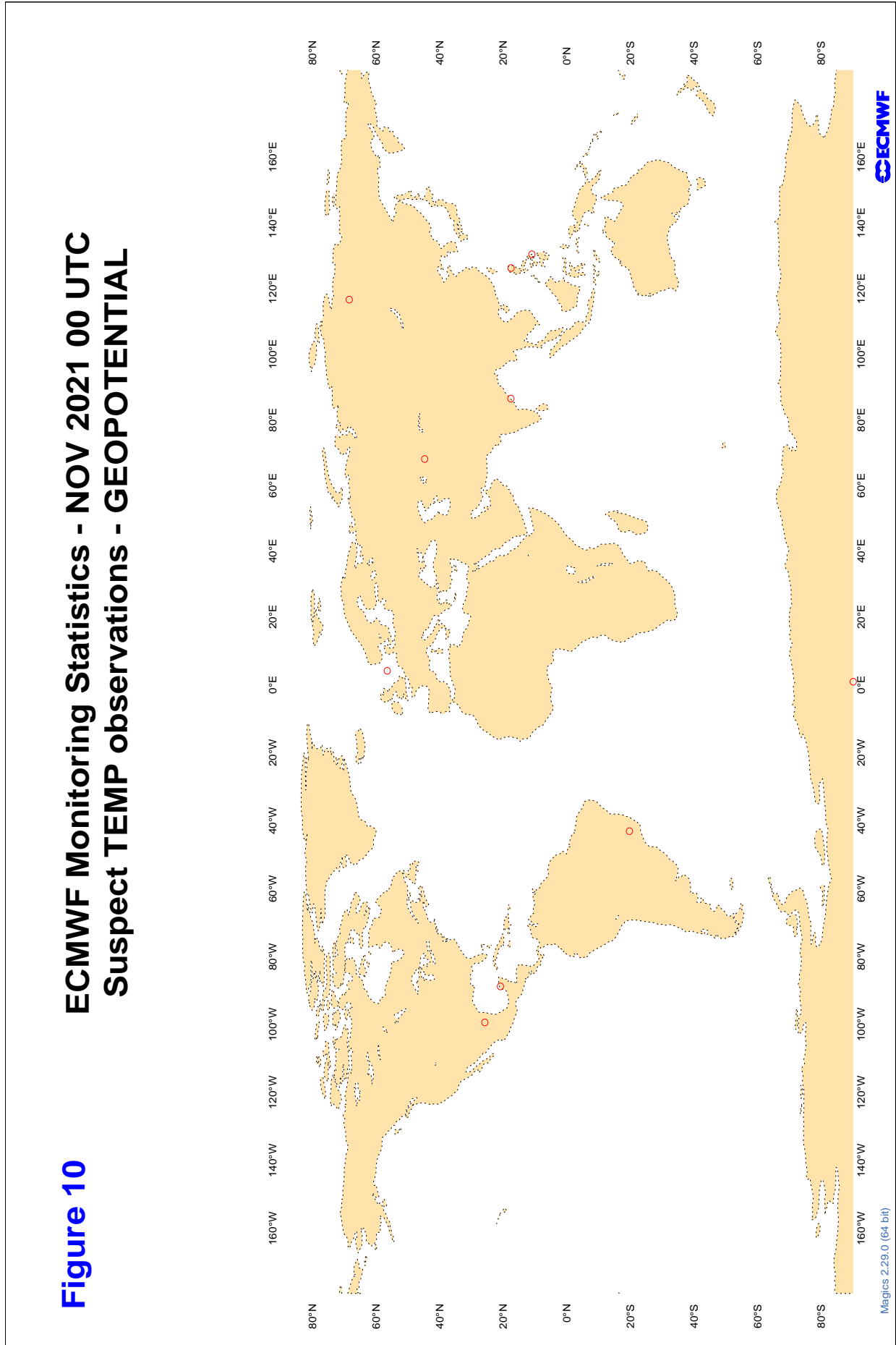
**3.2.20 Table 9 - Suspect radiosondes: Wind direction (degrees)**

LIST OF SUSPECT STATIONS : RADIOSONDES  
 MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : WIND DIRECTION (DEGREES)  
 AREA : GLOBAL  
 PERIOD : NOV 2021  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

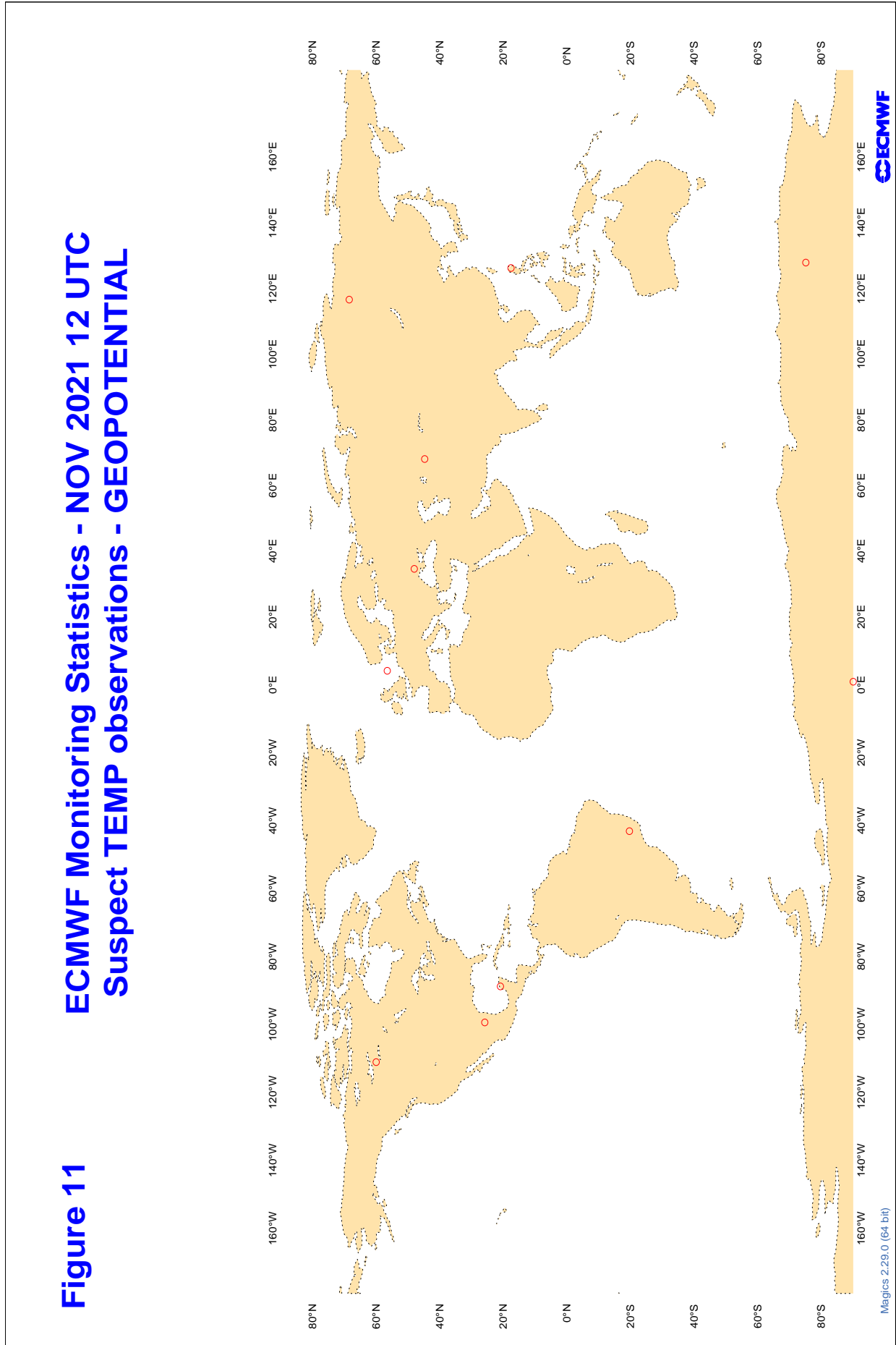
SELECTION CRITERIA: OBSERVED/FORECAST WIND SPEEDS  $\geq$  5 M/S  
 NO. OF OBSERVATIONS  $\geq$  5, AND,  
 ABSOLUTE BIAS  $\geq$  10 DEGREES, WITH  
 STANDARD DEVIATION  $<$  30 DEGREES, AND,  
 VERTICAL SPREAD  $<$  10 DEGREES  
 (AVERAGE BETWEEN 500 AND 150 HPA)

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

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

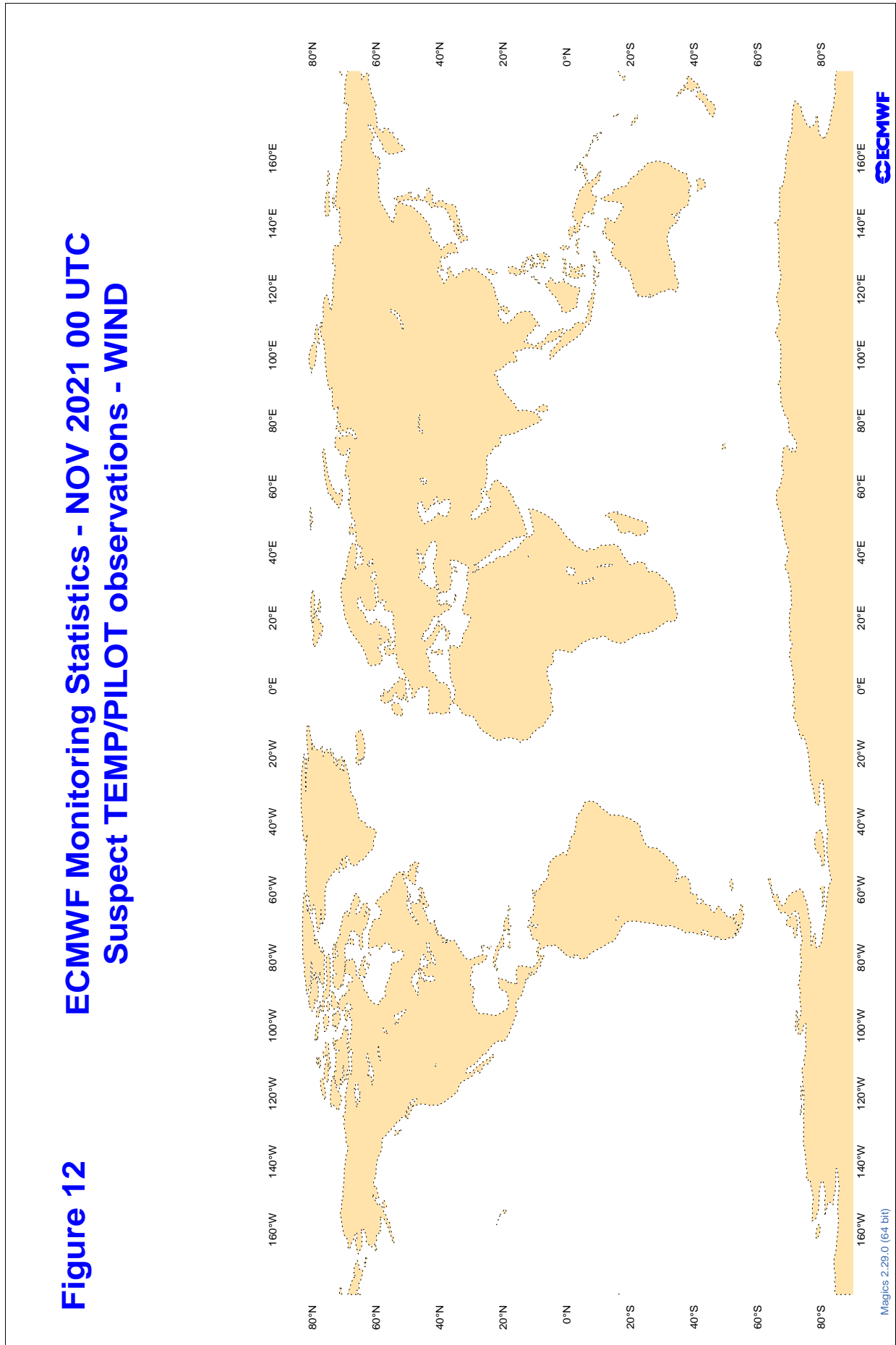


3.2.22 Figure 11 - Suspect TEMP observations - geopotential : 12 UTC

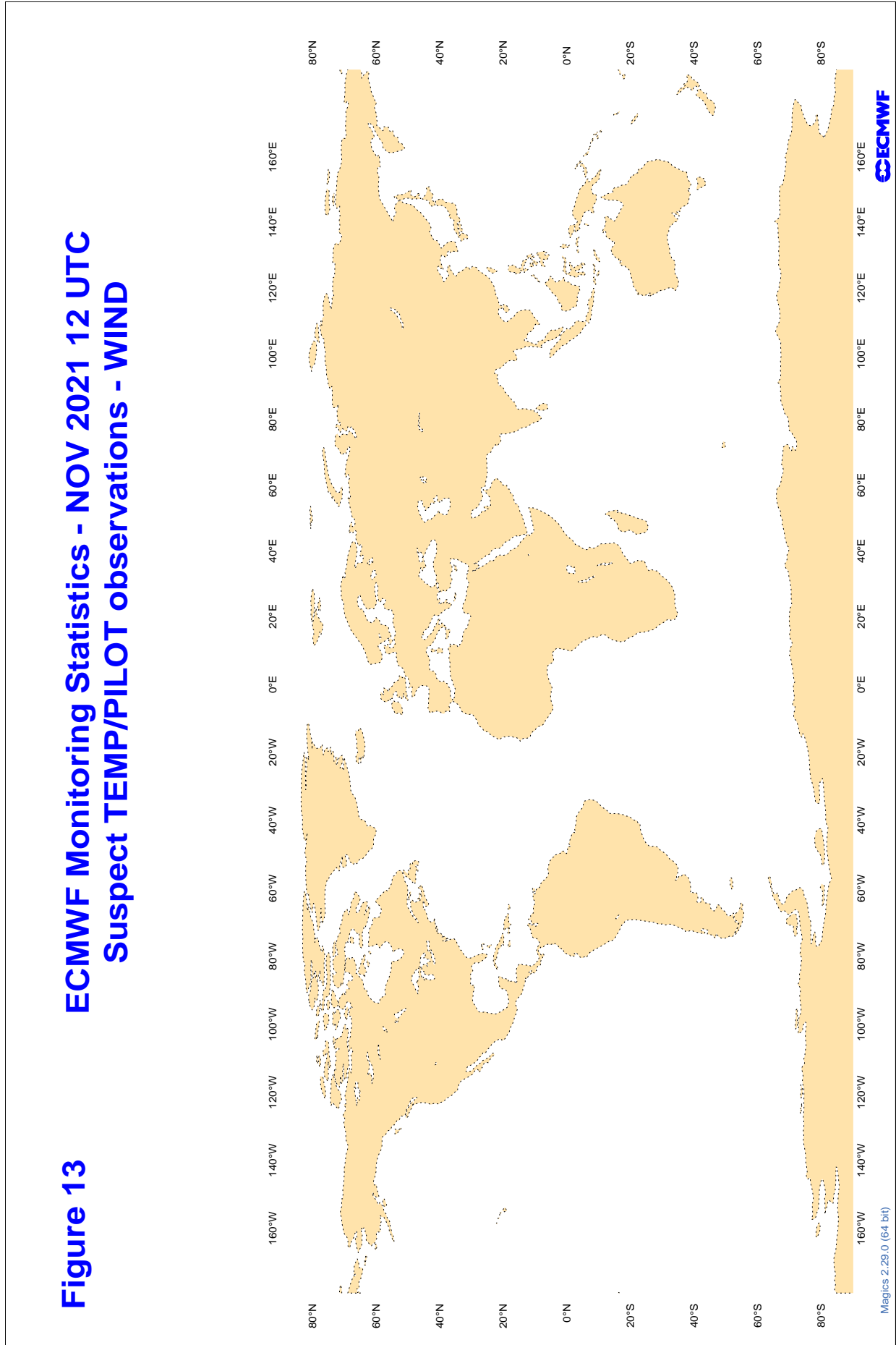




3.2.23 Figure 12 - Suspect TEMP/PILOT observations - wind : 00 UTC



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 : NOV 2021  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
2EERV	00	Z	100	6	8.1	-5.0
2EERV	12	Z	100	6	7.3	-0.7
7JUNA4	00	Z	100	6	4.2	2.3
7JUNA4	12	Z	100	7	13.5	8.1
ASDE09	12	Z	100	7	16.5	13.2
ATGU3F	12	Z	100	7	17.3	-13.1
ATGU3F	00	Z	100	6	27.9	-16.6
BPMWB2	00	Z	100	4	2.7	0.5
BPMWB2	12	Z	100	6	19.0	11.3
CHQUR4	00	Z	100	14	12.7	7.0
CHQUR4	12	Z	100	9	10.2	2.1
DBLK	12	Z	100	2	11.2	11.0
FPUW5G	12	Z	100	11	7.2	-4.5
HTXUH4	00	Z	100	3	47.8	-0.9
HTXUH4	12	Z	100	1	36.1	-36.1
JNKN7J	12	Z	100	11	58.1	54.1
JNKN7J	00	Z	100	8	31.6	29.9
KJFF9X	12	Z	100	8	10.7	7.0
KJFF9X	00	Z	100	6	18.4	14.3
KMPLHP	00	Z	100	4	34.0	31.5
KMPLHP	12	Z	100	6	70.2	62.8
LRYQE3	00	Z	100	10	88.0	23.0
LRYQE3	12	Z	100	9	29.1	15.6
MALIK0	12	Z	100	0	0.0	0.0
UXK5JT	12	Z	100	12	9.4	5.7
UXK5JT	00	Z	100	13	8.3	-3.0
VKB4L5	00	Z	100	1	30.5	30.5
VKB4L5	12	Z	100	6	21.3	19.9
WDK38H	12	Z	100	8	6.4	-5.2
XKQLWQ	12	Z	100	14	38.6	37.8
XQFJRG	00	Z	100	3	10.5	-9.7
XQFJRG	12	Z	100	4	9.9	4.0
YLV96W	12	Z	100	7	20.9	9.9
YLV96W	00	Z	100	8	12.6	4.1
ZVQEQC	12	Z	100	1	4.0	4.0

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

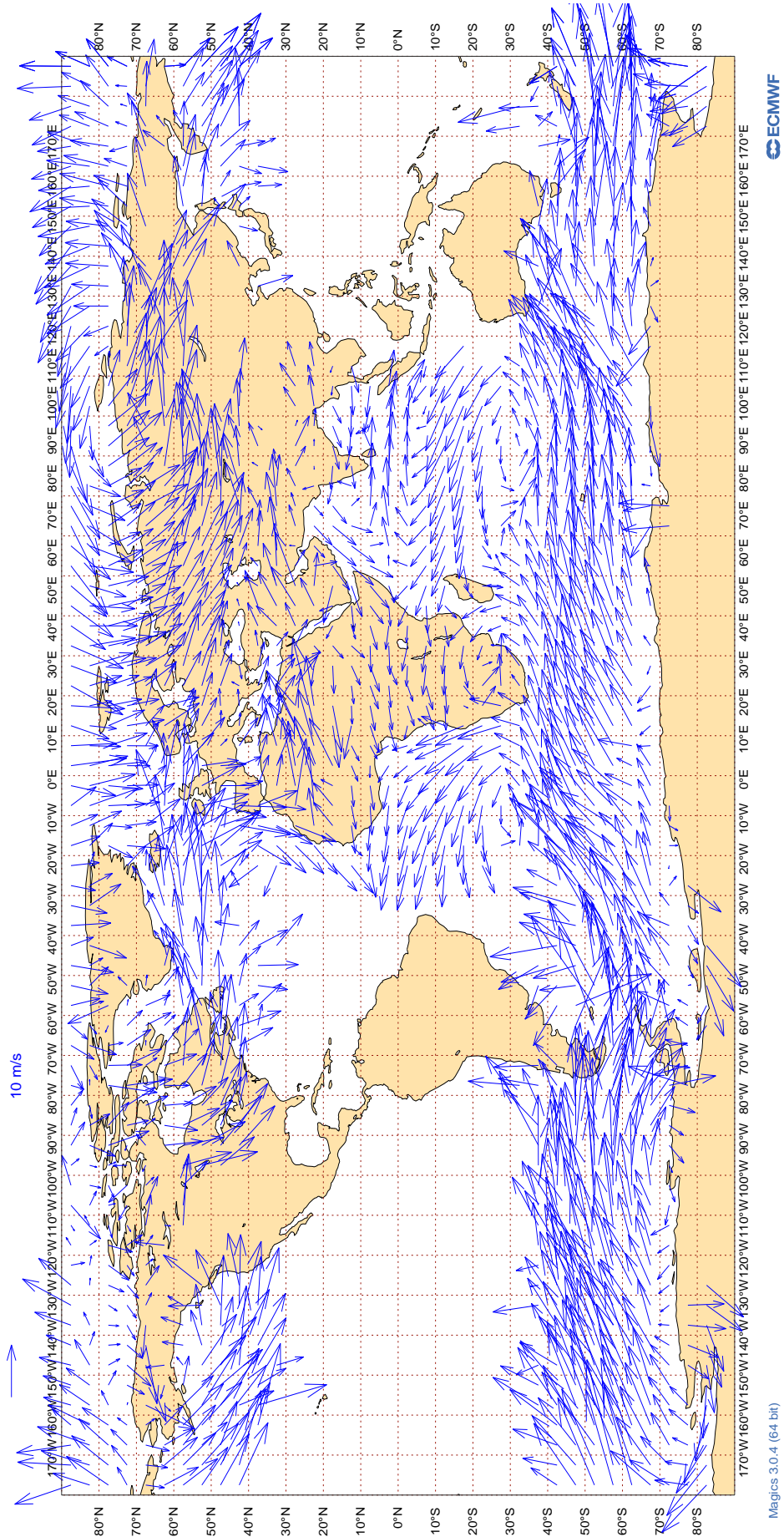
## RADIOSONDE MONITORING STATISTICS (SHIPS)

MONITORING CENTRE : ECMWF  
 ELEMENT MONITORED : WIND (M/S)  
 LEVEL : 100 HPA  
 AREA : GLOBAL  
 PERIOD : NOV 2021  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
2EERVT	00	V	100	6	3.6	1.2	-0.5
2EERVT	12	V	100	6	4.0	1.2	0.8
7JUNA4	00	V	100	6	3.5	-0.2	0.7
7JUNA4	12	V	100	7	3.6	1.2	1.3
ASDE09	12	V	100	7	3.4	0.7	1.0
ATGU3F	12	V	100	7	2.0	-0.6	-0.1
ATGU3F	00	V	100	6	3.7	-0.5	-1.1
BPMWB2	00	V	100	4	3.4	-1.0	-1.0
BPMWB2	12	V	100	6	4.2	-0.5	-1.7
CHQUR4	00	V	100	14	4.1	0.1	1.2
CHQUR4	12	V	100	9	5.1	1.0	0.1
DBLK	12	V	100	1	1.1	-1.0	-0.4
FPUW5G	12	V	100	10	2.8	0.0	-0.3
HTXUH4	00	V	100	3	2.7	-0.8	-1.0
HTXUH4	12	V	100	1	3.5	3.5	-0.2
JNKN7J	12	V	100	11	3.0	1.1	-0.9
JNKN7J	00	V	100	8	2.7	-1.1	0.1
KJJF9X	12	V	100	8	2.7	-0.3	1.2
KJJF9X	00	V	100	6	3.2	-0.1	0.4
KMPLHP	00	V	100	4	3.3	0.5	-1.8
KMPLHP	12	V	100	6	4.3	1.2	0.1
LRYQE3	00	V	100	10	4.9	0.4	-0.9
LRYQE3	12	V	100	9	2.6	0.3	0.7
MALIK0	12	V	100	0	0.0	0.0	0.0
UXK5JT	12	V	100	12	3.8	0.2	0.5
UXK5JT	00	V	100	13	2.6	0.2	-0.3
VKB4L5	00	V	100	1	1.8	-1.2	-1.3
VKB4L5	12	V	100	6	3.0	0.4	0.3
WDK38H	12	V	100	8	2.9	0.5	-0.3
XKQLWQ	12	V	100	13	2.9	0.5	0.0
XQFJRG	00	V	100	3	5.0	-2.3	0.5
XQFJRG	12	V	100	3	2.6	-0.6	1.5
YL96W	12	V	100	7	4.3	1.1	-0.2
YL96W	00	V	100	8	4.3	0.4	-0.4
ZVQEQC	12	V	100	1	4.1	3.3	-2.4

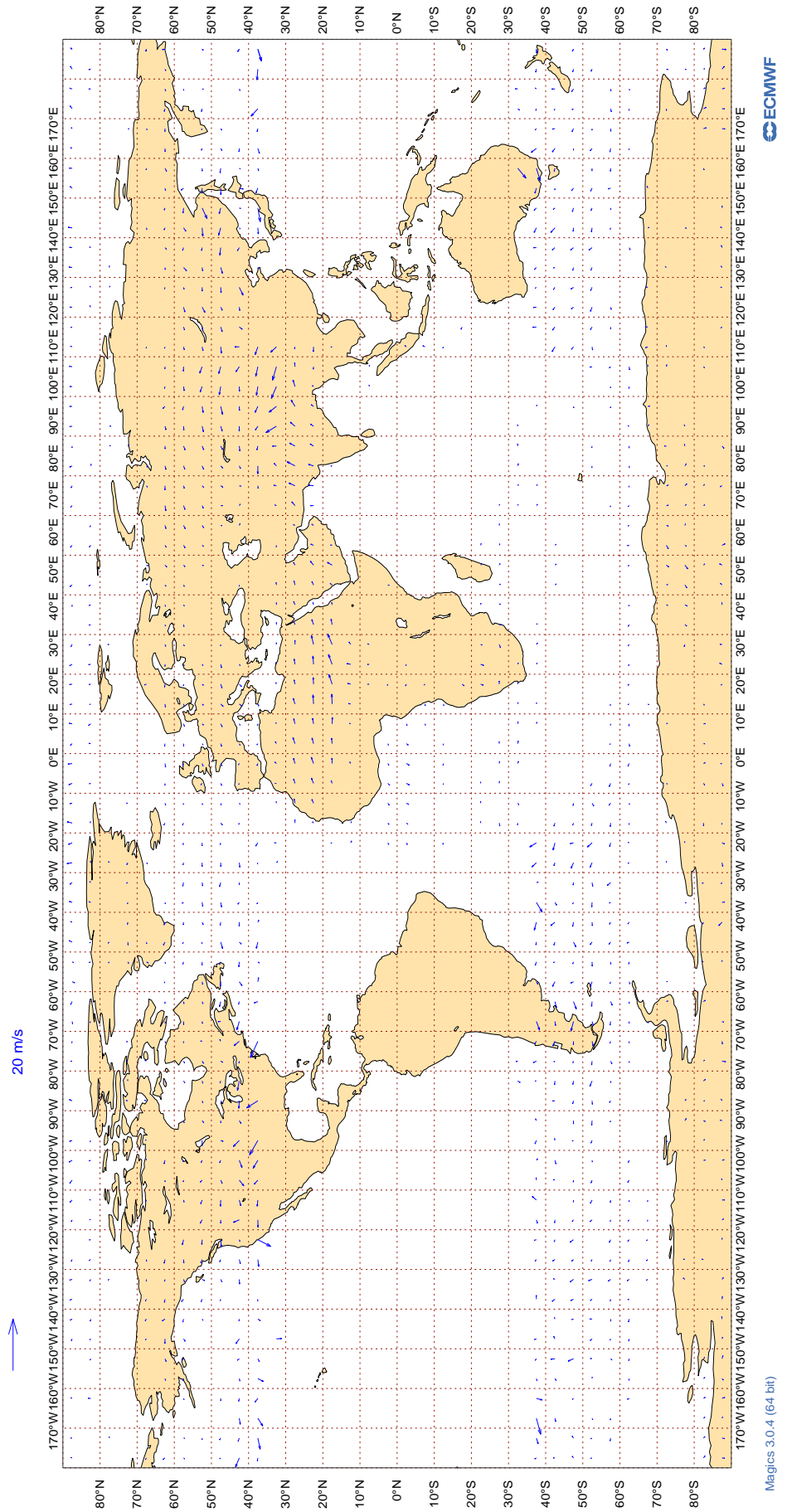
3.2.27 Figure 14 - SATOB Winds: 700-1000hPa

**Figure 14**  
**ECMWF Monitoring Statistics: Nov 2021**  
**AMV Winds: 700-1000hPa**  
**Mean Observed Wind**



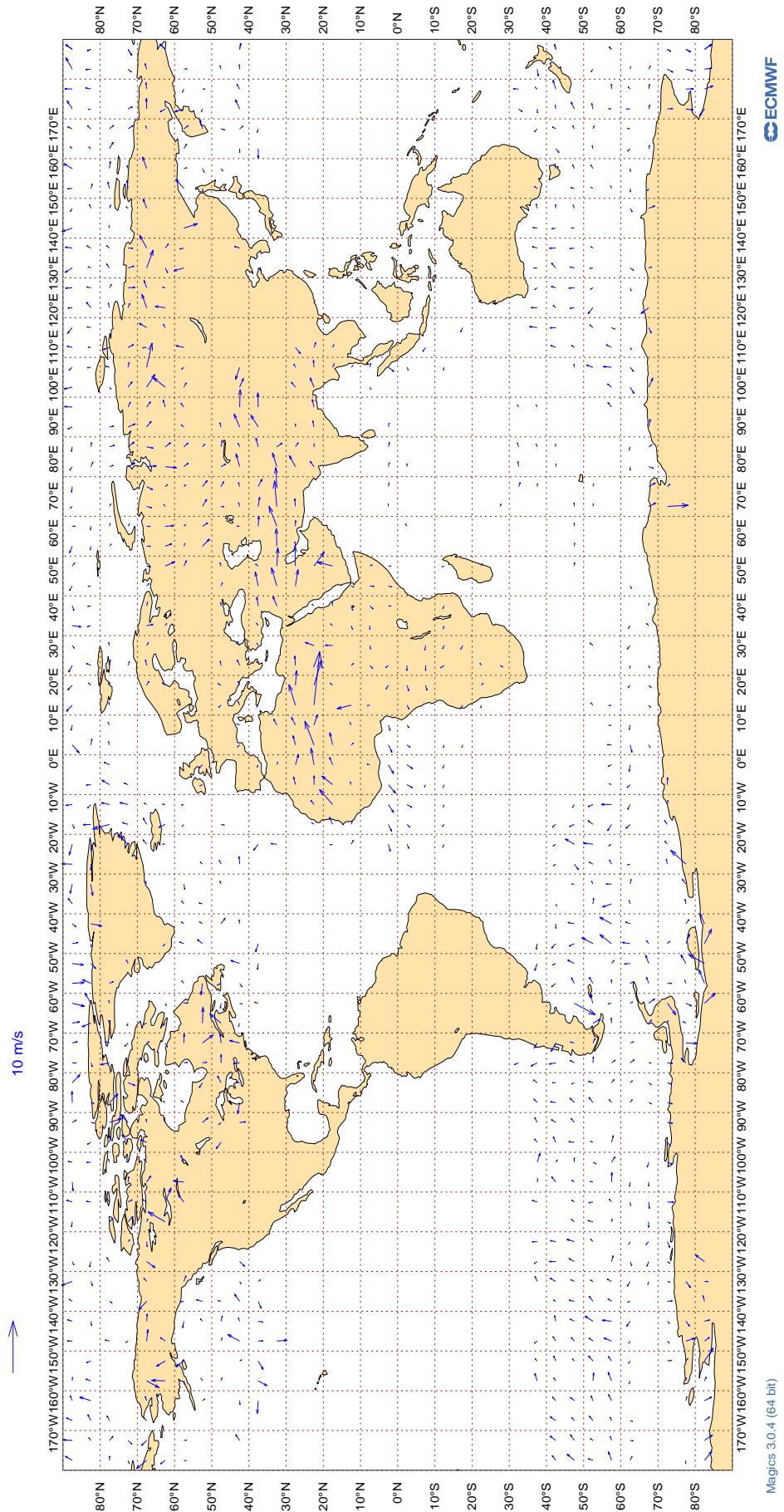
3.2.28 Figure 15 - SATOB Winds: 150- 400hPa

**Figure 15**  
**ECMWF Monitoring Statistics: Nov 2021**  
**AMV Winds: 150- 400hPa**  
**Wind bias: Observation - FG**



3.2.29 Figure 16 - SATOB Winds: 700-1000hPa

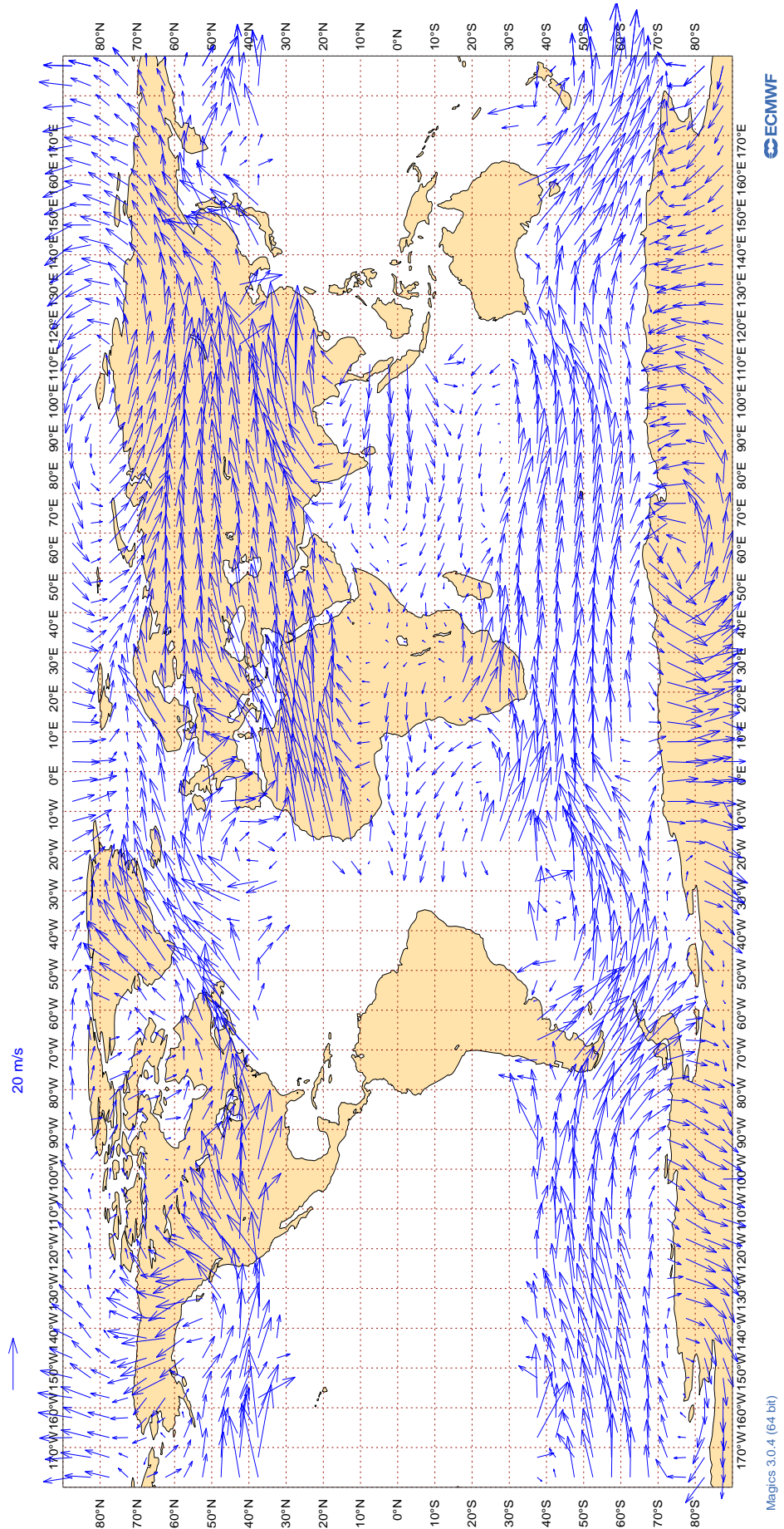
**Figure 16**  
**ECMWF Monitoring Statistics: Nov 2021**  
**AMV Winds: 700-1000hPa**  
**Wind bias: Observation - FG**





3.2.30 Figure 17 - SATOB Winds: 150- 400hPa

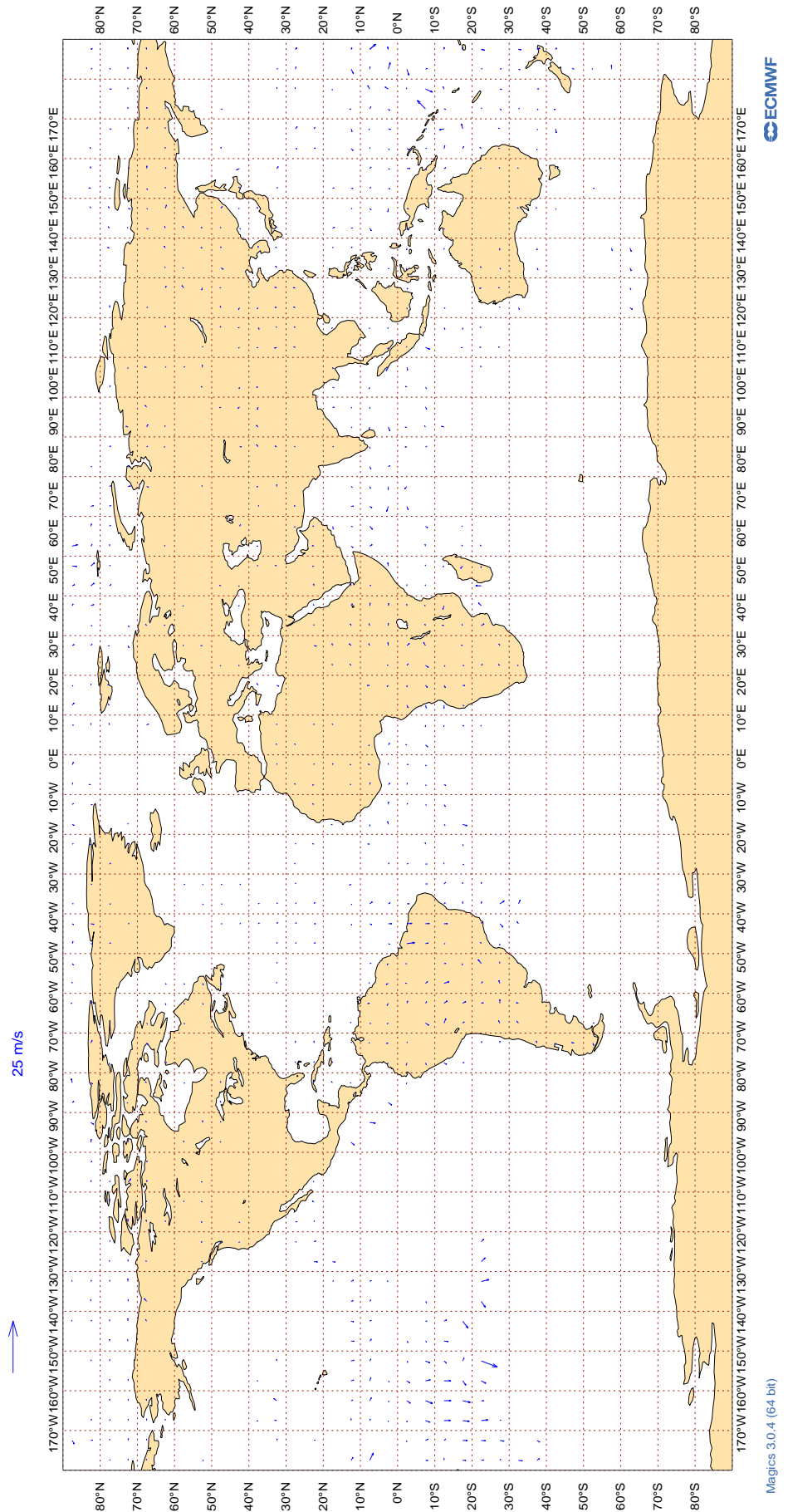
**Figure 17**  
**ECMWF Monitoring Statistics: Nov 2021**  
**AMV Winds: 150- 400hPa**  
**Mean Observed Wind**





3.2.31 Figure 18 - AIRCRAFT Winds: 150- 300hPa

**Figure 18**  
**ECMWF Monitoring Statistics: Nov 2021**  
**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 : NOV 2021  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

SELECTION CRITERIA: NO. OF OBS. &gt;= 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	92	0	0	3.6	0.1
AAL	99	V	300-150	15074	2	0	4.2	0.1
AAR	99	V	300-150	196	0	0	3.5	-1.1
ABB	99	V	300-150	1093	0	0	3.7	0.1
ABD	99	V	300-150	1393	0	0	4.0	-0.1
ABG	99	V	300-150	388	0	0	3.4	-0.0
ABW	99	V	300-150	563	0	0	3.5	-0.3
ABX	99	V	300-150	175	0	0	3.6	-0.2
ACA	99	V	300-150	15536	8	0	5.8	-0.1
ACI	99	V	300-150	89	0	0	4.8	0.2
ACP	99	V	300-150	25	0	0	5.5	2.9
AEA	99	V	300-150	469	6	0	8.0	-0.4
AFL	99	V	300-150	1823	0	0	3.7	0.1
AFR	99	V	300-150	25288	1	0	4.1	0.1
AHO	99	V	300-150	361	0	0	4.2	-0.1
AIB	99	V	300-150	96	0	0	4.1	0.3
AIC	99	V	300-150	2489	5	0	7.3	0.3
AJT	99	V	300-150	688	0	0	3.6	0.2
ALE	99	V	300-150	34	0	0	3.6	-0.0
ALK	99	V	300-150	1969	0	0	4.2	0.7
AMX	99	V	300-150	1917	10	0	7.1	-0.0
ANZ	99	V	300-150	8843	4	0	7.9	0.2
AOJ	99	V	300-150	162	0	0	4.0	0.4
ASA	99	V	300-150	40	3	3	4.3	0.3
ASL	99	V	300-150	279	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
ATC	99	V	300-150	109	2	0	11.4	-0.0
ATN	99	V	300-150	164	1	1	4.7	0.6
AUA	99	V	300-150	3002	0	0	4.1	0.0
AWC	99	V	300-150	372	0	0	3.8	0.1
AXA	99	V	300-150	22	0	0	4.7	2.9
AXB	99	V	300-150	63	0	0	3.8	0.4
AXM	99	V	300-150	155	0	2	6.7	0.7
AXY	99	V	300-150	45	0	0	3.3	-0.0
AZG	99	V	300-150	824	0	0	3.6	0.0
AZV	99	V	300-150	1251	0	0	3.1	0.1
BAH	99	V	300-150	28	0	0	4.0	0.4
BAR	99	V	300-150	32	0	0	3.4	-1.3
BAV	99	V	300-150	44	20	0	7.8	-0.6
BAW	99	V	300-150	35941	7	0	5.6	-0.0
BBC	99	V	300-150	527	14	0	6.8	0.4
BCS	99	V	300-150	2469	0	0	3.6	0.2
BEL	99	V	300-150	404	0	0	3.5	0.2
BFD	99	V	300-150	32	0	0	4.4	-0.0
BOX	99	V	300-150	3771	0	0	3.5	0.1
BOX	99	V	300-150	94	0	0	2.9	-0.0
BTX	99	V	300-150	92	0	0	3.5	0.3
BVR	99	V	300-150	72	0	0	4.2	-0.4
CAL	99	V	300-150	327	0	0	3.8	0.6
CAZ	99	V	300-150	276	0	0	3.9	0.2
CEB	99	V	300-150	187	0	0	3.2	0.7
CES	99	V	300-150	75	0	0	4.4	0.2
CFC	99	V	300-150	312	0	0	4.0	-0.4
CFG	99	V	300-150	2952	0	0	3.9	-0.3
CHG	99	V	300-150	445	0	0	4.4	0.3
CJT	99	V	300-150	2314	0	0	4.2	-0.2
CKS	99	V	300-150	1432	0	0	3.8	0.1
CLO	99	V	300-150	28	0	0	5.6	0.7
CLU	99	V	300-150	839	0	0	3.9	-0.1
CLX	99	V	300-150	5189	0	0	4.0	-0.2
CMB	99	V	300-150	599	0	0	3.6	-0.1
CNV	99	V	300-150	73	0	0	4.1	0.9
CPA	99	V	300-150	990	0	0	4.4	0.7
CRL	99	V	300-150	749	0	0	3.0	0.2
CSC	99	V	300-150	24	0	0	4.2	0.7
CSN	99	V	300-150	304	8	0	8.3	-0.2
CTM	99	V	300-150	80	0	0	5.8	-0.2
CWG	99	V	300-150	54	0	0	5.0	0.6
CXB	99	V	300-150	23	0	0	3.5	-0.1

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS  
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
DAH	99	V	300-150	441	0	0	4.0	-0.1
DAL	99	V	300-150	22433	0	0	3.5	0.1
DCS	99	V	300-150	54	0	0	4.0	0.0
DGX	99	V	300-150	75	0	0	4.0	0.8
DHK	99	V	300-150	2590	6	0	6.4	-0.1
DJT	99	V	300-150	818	0	0	3.8	0.3
DLH	99	V	300-150	19734	0	0	3.7	0.0
EDC	99	V	300-150	21	0	0	4.7	2.5
EDG	99	V	300-150	29	0	0	4.6	2.0
EDW	99	V	300-150	1030	0	0	3.9	0.3
EIN	99	V	300-150	5266	0	0	3.6	0.3
EJM	99	V	300-150	483	0	0	3.7	0.3
ELY	99	V	300-150	3104	11	0	7.0	-0.2
ETD	99	V	300-150	8651	7	0	7.4	0.2
ETH	99	V	300-150	6601	5	0	6.4	0.4
EUK	99	V	300-150	165	0	1	3.4	0.6
EUW	99	V	300-150	24	0	0	3.4	1.0
EXS	99	V	300-150	89	0	0	3.3	0.1
EXV	99	V	300-150	74	0	0	4.6	0.4
FAF	99	V	300-150	32	0	0	3.7	0.5
FBU	99	V	300-150	1104	0	0	4.0	0.2
FDX	99	V	300-150	6878	0	0	3.4	0.2
FEX	99	V	300-150	20	0	0	6.0	2.2
FIN	99	V	300-150	932	0	0	4.0	-0.1
FJI	99	V	300-150	622	0	0	4.4	0.6
FSY	99	V	300-150	31	0	0	3.7	-0.5
FWI	99	V	300-150	1256	0	0	3.2	-0.1
FYG	99	V	300-150	174	0	1	3.9	0.3
GAF	99	V	300-150	210	0	0	3.3	0.0
GBG	99	V	300-150	36	0	0	3.3	-0.2
GCK	99	V	300-150	131	0	0	3.6	-0.0
GEC	99	V	300-150	1752	0	0	3.7	0.1
GES	99	V	300-150	48	0	0	7.1	0.0
GFA	99	V	300-150	532	8	0	7.1	0.5
GIA	99	V	300-150	193	0	0	4.0	0.4
GKY	99	V	300-150	44	0	0	3.7	-0.7
GLJ	99	V	300-150	95	0	0	4.3	0.4
GNJ	99	V	300-150	55	0	0	3.6	-0.4
GOL	99	V	300-150	60	0	0	5.9	0.9
GRP	99	V	300-150	41	0	0	3.7	-0.4
GTI	99	V	300-150	2026	0	0	4.0	-0.1
HAL	99	V	300-150	340	1	1	4.4	-0.2
HFM	99	V	300-150	259	0	0	3.3	0.1

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS  
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
HKC	99	V	300-150	104	0	0	4.1	0.7
HNW	99	V	300-150	35	0	0	9.6	4.8
HRT	99	V	300-150	171	0	0	3.6	0.3
HUA	99	V	300-150	102	0	0	4.8	-0.9
HVN	99	V	300-150	39	10	0	7.6	0.9
HYP	99	V	300-150	42	0	0	4.0	0.2
IAM	99	V	300-150	43	0	0	4.0	-0.1
IBE	99	V	300-150	2740	0	0	3.8	0.2
ICE	99	V	300-150	3344	0	0	3.7	0.0
ICL	99	V	300-150	582	0	0	3.9	-0.1
ICV	99	V	300-150	740	0	0	4.2	0.1
IFA	99	V	300-150	143	0	0	4.3	-0.1
IFC	99	V	300-150	95	0	0	3.5	0.2
IJM	99	V	300-150	58	0	0	3.7	0.4
ITY	99	V	300-150	391	0	0	3.8	0.4
IXR	99	V	300-150	43	0	0	3.9	0.6
JAF	99	V	300-150	697	8	0	6.6	-0.0
JAS	99	V	300-150	86	0	0	3.8	1.2
JBU	99	V	300-150	2079	0	0	3.8	0.1
JCO	99	V	300-150	120	0	0	4.2	-0.0
JEF	99	V	300-150	23	0	0	4.5	-1.5
JET	99	V	300-150	110	0	0	4.5	-0.4
JME	99	V	300-150	118	0	0	3.6	-0.5
JML	99	V	300-150	78	0	0	3.5	0.2
JST	99	V	300-150	216	1	0	5.0	0.5
KAC	99	V	300-150	778	0	0	3.5	0.5
KAF	99	V	300-150	38	0	0	4.0	0.8
KAI	99	V	300-150	85	1	0	5.4	0.0
KAL	99	V	300-150	105	4	0	4.0	-0.6
KAR	99	V	300-150	530	0	0	3.5	0.0
KAY	99	V	300-150	319	0	0	3.8	-0.4
KCE	99	V	300-150	35	0	0	4.2	0.5
KFE	99	V	300-150	44	0	0	3.6	0.2
KFS	99	V	300-150	23	78	0	30.4	-2.0
KIW	99	V	300-150	48	0	0	4.0	-0.3
KLM	99	V	300-150	15785	7	0	5.2	-0.0
KQA	99	V	300-150	150	15	1	11.0	0.1
LCO	99	V	300-150	439	0	0	4.2	-1.1
LDX	99	V	300-150	67	0	0	4.5	0.4
LEX	99	V	300-150	25	0	0	3.3	1.0
LGT	99	V	300-150	171	0	0	4.6	-0.5
LNK	99	V	300-150	43	0	0	4.3	0.4
LOT	99	V	300-150	3138	12	0	8.1	-0.4

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS  
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
LUC	99	V	300-150	56	0	0	4.0	-0.2
LXA	99	V	300-150	24	0	0	4.3	1.0
LXG	99	V	300-150	39	0	0	4.0	1.0
LXJ	99	V	300-150	269	0	0	3.7	0.4
LYX	99	V	300-150	60	0	0	3.6	0.2
MAS	99	V	300-150	1738	0	0	4.6	1.1
MAU	99	V	300-150	191	0	0	5.3	1.1
MED	99	V	300-150	70	0	0	4.2	-0.5
MGE	99	V	300-150	54	0	4	4.8	-0.1
MHV	99	V	300-150	105	0	0	3.8	0.0
MJE	99	V	300-150	24	0	0	4.7	1.2
MJF	99	V	300-150	33	0	0	3.4	0.9
MLM	99	V	300-150	52	0	0	4.1	-0.4
MLT	99	V	300-150	649	0	0	4.0	0.5
MMD	99	V	300-150	499	0	0	3.7	-0.0
MMN	99	V	300-150	25	0	0	2.7	-0.4
MMZ	99	V	300-150	224	0	1	4.1	-0.1
MNB	99	V	300-150	144	0	0	3.0	0.3
MPH	99	V	300-150	652	0	0	4.1	-0.9
MSR	99	V	300-150	2716	4	0	4.9	0.0
MVJ	99	V	300-150	52	0	0	4.5	-0.0
NAC	99	V	300-150	21	0	10	3.5	0.2
NAF	99	V	300-150	36	0	0	4.7	-0.0
NCR	99	V	300-150	534	0	0	4.1	0.1
NJE	99	V	300-150	569	0	0	3.7	0.2
NOS	99	V	300-150	658	9	0	8.6	-0.1
NWS	99	V	300-150	703	0	0	3.5	0.2
OAE	99	V	300-150	573	0	0	4.2	-0.3
OCN	99	V	300-150	2078	0	0	3.8	0.3
OLI	99	V	300-150	21	0	0	4.2	-0.6
OMA	99	V	300-150	480	2	0	6.5	0.6
PAC	99	V	300-150	528	0	0	3.8	0.0
PAL	99	V	300-150	489	0	0	3.3	0.2
PEG	99	V	300-150	85	0	0	4.1	0.9
PIA	99	V	300-150	138	0	0	3.4	0.2
PLF	99	V	300-150	37	0	0	3.6	0.0
PLM	99	V	300-150	1374	0	0	3.5	0.2
PVA	99	V	300-150	173	0	0	4.1	0.3
PVG	99	V	300-150	182	0	0	3.9	0.2
PYT	99	V	300-150	25	0	0	5.0	1.7
QAF	99	V	300-150	71	0	0	3.4	-0.3
QFA	99	V	300-150	1458	2	0	7.2	0.5
QQE	99	V	300-150	348	0	0	4.5	0.6

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS  
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
QTR	99	V	300-150	25209	1	0	4.9	0.3
RAM	99	V	300-150	387	11	0	8.0	-0.3
RCH	99	V	300-150	3817	0	0	4.5	0.3
RDN	99	V	300-150	52	0	0	3.3	0.2
REI	99	V	300-150	24	0	0	3.5	-0.4
RJA	99	V	300-150	1272	15	0	7.3	-0.3
RKK	99	V	300-150	26	0	0	3.4	-0.5
RKS	99	V	300-150	84	0	0	3.7	0.1
ROJ	99	V	300-150	56	0	0	4.0	1.0
ROM	99	V	300-150	25	0	0	8.9	2.7
RRR	99	V	300-150	189	0	0	4.7	0.1
RSB	99	V	300-150	34	0	0	5.5	1.4
RSY	99	V	300-150	86	0	0	4.0	0.2
RUN	99	V	300-150	356	0	0	4.0	-0.2
RZO	99	V	300-150	97	0	7	3.8	-0.4
SAM	99	V	300-150	472	0	0	3.6	0.1
SAS	99	V	300-150	2734	0	0	3.6	0.1
SAZ	99	V	300-150	46	0	0	3.9	1.0
SCX	99	V	300-150	92	0	0	5.0	0.7
SEY	99	V	300-150	81	0	0	4.5	0.9
SHE	99	V	300-150	55	0	0	3.2	0.0
SIA	99	V	300-150	8160	0	0	4.5	0.7
SIO	99	V	300-150	176	0	0	3.8	0.5
SLM	99	V	300-150	93	0	0	3.0	0.2
SON	99	V	300-150	66	0	0	3.0	0.4
SOO	99	V	300-150	220	0	0	3.6	-0.0
SPA	99	V	300-150	59	0	0	4.6	-0.3
SUI	99	V	300-150	35	0	0	5.0	0.5
SVA	99	V	300-150	3700	2	0	5.6	0.2
SVW	99	V	300-150	387	0	0	4.0	-0.0
SWA	99	V	300-150	22	9	0	10.5	-2.1
SWR	99	V	300-150	6282	0	1	3.8	0.1
SYB	99	V	300-150	105	0	0	4.2	-0.4
TAM	99	V	300-150	21	0	0	3.8	1.5
TAP	99	V	300-150	1856	0	0	4.0	0.3
TAR	99	V	300-150	141	0	0	3.7	0.3
TAX	99	V	300-150	108	0	0	3.8	1.0
TAY	99	V	300-150	451	0	0	3.8	0.1
TEU	99	V	300-150	193	0	0	3.9	0.0
TFF	99	V	300-150	76	0	0	5.2	0.5
TFL	99	V	300-150	1178	7	0	5.7	-0.2
TGW	99	V	300-150	808	5	0	10.8	1.0
THA	99	V	300-150	200	0	1	4.4	-0.2

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS  
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
THT	99	V	300-150	2274	3	0	6.7	0.1
THY	99	V	300-150	13798	3	0	5.0	0.0
TMN	99	V	300-150	304	0	0	5.3	1.4
TOM	99	V	300-150	2684	10	0	6.5	-0.2
TOW	99	V	300-150	71	0	0	3.1	0.0
TPA	99	V	300-150	302	0	0	4.2	0.8
TSC	99	V	300-150	1984	0	0	3.6	0.2
TWY	99	V	300-150	629	0	0	3.8	0.2
UAE	99	V	300-150	21029	0	0	3.8	0.3
UAF	99	V	300-150	63	0	0	3.8	-0.7
UAL	99	V	300-150	41129	7	2	6.0	0.0
UPS	99	V	300-150	5012	0	0	3.7	-0.0
UTN	99	V	300-150	151	0	0	4.4	0.1
UZB	99	V	300-150	35	17	0	7.3	-0.7
VCG	99	V	300-150	105	0	0	3.5	0.0
VCJ	99	V	300-150	38	0	0	6.2	1.9
VCN	99	V	300-150	99	0	0	3.3	0.3
VIR	99	V	300-150	12883	5	0	5.4	-0.0
VJT	99	V	300-150	1579	0	0	3.9	0.2
VMP	99	V	300-150	130	0	1	6.7	0.4
VTI	99	V	300-150	97	0	1	4.1	0.7
WJA	99	V	300-150	819	9	0	6.2	-0.3
WRC	99	V	300-150	38	0	3	2.9	0.1
XAX	99	V	300-150	127	0	0	5.3	1.8
XOJ	99	V	300-150	28	0	0	3.4	0.8
XRO	99	V	300-150	173	0	0	4.3	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 : NOV 2021  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	12	Z	50	27	12.8	-2.7
01001	00	Z	50	29	15.3	-2.8
01028	00	Z	50	27	8.6	-2.0
01028	12	Z	50	29	5.6	-0.9
01400	00	Z	50	8	80.2	80.1
01400	12	Z	50	13	75.3	71.9
01415	00	Z	50	28	13.3	1.1
01415	12	Z	50	30	16.4	-2.5
02365	00	Z	50	20	9.3	2.6
02365	12	Z	50	21	7.0	2.5
02836	12	Z	50	32	8.6	-0.4
02836	00	Z	50	30	8.0	-2.3
02963	12	Z	50	32	6.5	1.7
02963	00	Z	50	30	8.1	4.5
03005	00	Z	50	29	7.9	-3.0
03005	12	Z	50	28	9.2	-4.3
03238	12	Z	50	1	0.2	0.2
03238	00	Z	50	30	9.8	1.6
03808	00	Z	50	28	7.0	-0.4
03808	12	Z	50	26	6.8	2.3
03918	12	Z	50	2	10.6	4.9
03918	00	Z	50	30	11.5	4.8
03953	00	Z	50	30	9.3	-7.1
03953	12	Z	50	30	10.5	-5.2
04018	12	Z	50	30	5.6	-0.2
04018	00	Z	50	27	9.4	1.7
04220	00	Z	50	30	9.0	2.9
04220	12	Z	50	30	6.0	0.1
04270	00	Z	50	22	7.1	0.7
04270	12	Z	50	23	16.8	-4.3
04320	00	Z	50	26	10.9	4.0
04320	12	Z	50	22	12.9	5.7
04339	00	Z	50	25	18.3	7.9
04339	12	Z	50	23	12.0	0.1
04360	00	Z	50	16	13.2	-9.2
04360	12	Z	50	15	8.2	-3.3
06011	00	Z	50	23	12.8	1.8
06011	12	Z	50	26	11.6	4.5
06260	12	Z	50	4	10.4	6.5

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06260	00	Z	50	27	16.6	0.7
06610	12	Z	50	32	9.2	3.4
06610	00	Z	50	29	7.9	4.7
07110	00	Z	50	29	7.0	0.3
07110	12	Z	50	30	14.8	6.0
07510	12	Z	50	28	31.5	7.4
07510	00	Z	50	28	11.1	-4.6
07645	00	Z	50	29	11.1	-7.9
07645	12	Z	50	32	15.5	-12.9
07761	00	Z	50	29	23.5	-15.8
07761	12	Z	50	30	16.1	-11.8
08001	12	Z	50	29	7.2	3.6
08001	00	Z	50	28	8.3	7.0
08221	12	Z	50	28	12.4	10.4
08221	00	Z	50	25	11.6	9.0
08302	00	Z	50	28	5.0	0.0
08302	12	Z	50	29	10.2	-2.8
08508	12	Z	50	30	7.9	3.2
08522	12	Z	50	30	7.1	4.4
10035	00	Z	50	30	16.8	15.0
10035	12	Z	50	30	14.7	13.1
10393	12	Z	50	30	10.8	3.0
10393	00	Z	50	26	6.9	2.7
10410	00	Z	50	29	6.8	3.0
10410	12	Z	50	29	6.1	0.1
10739	00	Z	50	30	13.0	10.5
10739	12	Z	50	30	8.9	6.0
11035	00	Z	50	29	8.7	5.5
11035	12	Z	50	28	16.1	6.5
12982	00	Z	50	30	6.2	4.0
12982	12	Z	50	30	7.8	3.1
16245	12	Z	50	28	7.9	1.1
16245	00	Z	50	27	7.3	4.4
16429	00	Z	50	25	7.8	4.5
16429	12	Z	50	30	10.3	1.2
16622	00	Z	50	26	12.9	9.7
16754	00	Z	50	24	14.5	6.5
17607	12	Z	50	24	5.9	1.3
26435	12	Z	50	14	6.1	-1.7
2EERV	00	Z	50	6	7.1	-3.3
2EERV	12	Z	50	6	11.7	-1.4
60018	00	Z	50	29	10.1	9.4
60018	12	Z	50	27	8.2	4.1

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
7JUNA4	00	Z	50	0	0.0	0.0
7JUNA4	12	Z	50	0	0.0	0.0
ASDE09	12	Z	50	6	19.3	14.4
ATGU3F	12	Z	50	6	14.8	-6.4
ATGU3F	00	Z	50	2	32.2	-27.0
BPMWB2	00	Z	50	4	10.5	7.3
BPMWB2	12	Z	50	4	24.6	21.7
CHQUR4	00	Z	50	13	13.9	11.2
CHQUR4	12	Z	50	8	14.2	9.2
DBLK	12	Z	50	2	15.7	15.7
FPUW5G	12	Z	50	10	5.2	-4.4
HTXUH4	00	Z	50	3	51.2	-0.2
HTXUH4	12	Z	50	1	37.7	-37.7
JNKN7J	12	Z	50	1	39.6	39.6
JNKN7J	00	Z	50	1	41.9	41.9
KJJF9X	12	Z	50	8	17.8	13.8
KJJF9X	00	Z	50	6	24.7	21.0
KMPLHP	00	Z	50	0	0.0	0.0
KMPLHP	12	Z	50	4	105.5	83.9
LRYQE3	00	Z	50	8	95.2	29.2
LRYQE3	12	Z	50	4	48.8	32.9
MALIK0	12	Z	50	0	0.0	0.0
UXK5JT	12	Z	50	12	11.2	8.2
UXK5JT	00	Z	50	13	9.3	1.8
VKB4L5	00	Z	50	1	34.3	34.3
VKB4L5	12	Z	50	6	24.9	23.5
WDK38H	12	Z	50	8	7.7	-3.6
XKQLWQ	12	Z	50	13	53.0	52.1
XQFJRG	00	Z	50	3	16.7	-14.8
XQFJRG	12	Z	50	3	4.3	-3.0
YLV96W	12	Z	50	1	72.4	72.4
YLV96W	00	Z	50	1	8.8	8.8
ZVQEQC	12	Z	50	1	8.0	8.0

**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 : NOV 2021  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	12	V	50	27	2.9	0.3	0.5
01001	00	V	50	22	2.6	0.4	-0.2
01028	00	V	50	19	3.4	0.7	0.6
01028	12	V	50	28	3.0	0.4	-0.2
01400	00	V	50	8	3.9	-0.4	-0.4
01400	12	V	50	11	2.9	0.2	0.1
01415	00	V	50	22	5.2	0.0	-1.0
01415	12	V	50	28	4.4	0.5	0.0
02365	00	V	50	16	3.7	-0.2	-0.5
02365	12	V	50	20	4.4	-0.9	0.3
02836	12	V	50	29	3.0	0.4	-0.6
02836	00	V	50	24	3.5	-0.3	-0.3
02963	12	V	50	30	3.4	0.3	0.1
02963	00	V	50	25	3.4	-0.1	-0.2
03005	00	V	50	22	3.7	0.3	0.1
03005	12	V	50	28	3.6	0.0	-0.2
03238	12	V	50	1	3.2	2.2	2.3
03238	00	V	50	21	4.6	0.2	0.1
03808	00	V	50	22	3.9	1.0	-0.2
03808	12	V	50	26	3.6	0.1	0.4
03918	12	V	50	2	4.5	-4.1	-1.6
03918	00	V	50	30	4.9	-0.9	0.5
03953	00	V	50	26	3.5	0.4	0.9
03953	12	V	50	30	4.2	0.2	-0.8
04018	12	V	50	30	4.0	0.4	-0.5
04018	00	V	50	26	4.0	-0.2	0.5
04220	00	V	50	25	3.0	-0.2	0.2
04220	12	V	50	30	3.3	-0.1	-0.1
04270	00	V	50	18	3.8	-0.5	-0.6
04270	12	V	50	23	4.3	1.3	-0.1
04320	00	V	50	21	3.3	0.5	-0.7
04320	12	V	50	22	3.1	0.1	-0.1
04339	00	V	50	21	4.0	-0.2	-0.1
04339	12	V	50	23	4.4	-0.4	-0.5
04360	00	V	50	14	2.9	0.4	-0.2
04360	12	V	50	15	3.4	0.0	0.5
06011	00	V	50	20	2.9	0.0	0.5
06011	12	V	50	26	3.7	0.2	0.7
06260	12	V	50	4	4.6	1.7	0.3

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06260	00	V	50	22	4.1	0.5	0.4
06610	12	V	50	30	3.5	1.1	0.2
06610	00	V	50	22	4.0	0.9	-1.0
07110	00	V	50	21	3.2	0.3	0.8
07110	12	V	50	30	3.1	0.3	0.2
07510	12	V	50	28	3.8	0.5	-0.4
07510	00	V	50	24	3.3	0.2	0.3
07645	00	V	50	23	3.8	0.1	-0.2
07645	12	V	50	29	3.4	0.5	0.0
07761	00	V	50	25	3.9	0.5	-0.6
07761	12	V	50	30	4.2	0.1	-0.6
08001	12	V	50	29	3.4	-0.5	0.5
08001	00	V	50	24	3.3	0.1	1.2
08221	12	V	50	28	3.4	0.0	0.2
08221	00	V	50	20	3.7	0.6	1.0
08302	00	V	50	23	3.3	-0.1	-0.8
08302	12	V	50	28	3.8	0.2	-0.4
08508	12	V	50	30	3.1	0.3	0.1
08522	12	V	50	30	3.1	0.7	0.3
10035	00	V	50	29	4.1	0.1	-0.3
10035	12	V	50	30	3.2	0.2	0.2
10393	12	V	50	30	2.9	0.0	0.1
10393	00	V	50	24	3.1	-0.7	0.1
10410	00	V	50	25	3.5	0.9	0.0
10410	12	V	50	29	3.9	-0.1	0.7
10739	00	V	50	27	3.5	0.6	0.1
10739	12	V	50	30	3.5	0.3	0.2
11035	00	V	50	25	3.2	-0.2	0.0
11035	12	V	50	28	3.4	-0.2	0.0
12982	00	V	50	21	3.6	0.5	-1.0
12982	12	V	50	30	3.4	0.4	-0.4
16245	12	V	50	28	4.1	0.0	-0.6
16245	00	V	50	22	3.8	-0.3	-0.1
16429	00	V	50	21	3.8	-0.6	0.3
16429	12	V	50	30	4.9	-0.7	-1.1
16622	00	V	50	21	3.8	-0.3	0.1
16754	00	V	50	21	3.1	0.9	0.0
17607	12	V	50	2	6.2	-4.0	-2.7
26435	12	V	50	13	3.7	-0.7	-1.0
2EERV	00	V	50	6	3.6	0.1	-1.6
2EERV	12	V	50	6	4.4	0.2	2.6
60018	00	V	50	23	3.9	0.1	-0.2
60018	12	V	50	26	4.2	-0.4	-0.2

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
7JUNA4	00	V	50	0	0.0	0.0	0.0
7JUNA4	12	V	50	0	0.0	0.0	0.0
ASDE09	12	V	50	6	3.0	0.3	-2.0
ATGU3F	12	V	50	6	4.5	-0.5	-2.2
ATGU3F	00	V	50	2	5.5	1.8	-3.3
BPMWB2	00	V	50	4	2.4	0.4	0.4
BPMWB2	12	V	50	4	3.5	0.4	-1.1
CHQUR4	00	V	50	13	3.8	0.8	0.9
CHQUR4	12	V	50	8	3.3	-0.3	-0.4
DBLK	12	V	50	1	0.9	-0.5	-0.8
FPUW5G	12	V	50	9	2.5	-0.6	-0.7
HTXUH4	00	V	50	3	4.2	0.6	-1.7
HTXUH4	12	V	50	1	6.3	-1.1	6.2
JNKN7J	12	V	50	1	1.9	1.9	0.2
JNKN7J	00	V	50	1	1.6	1.6	-0.3
KJJF9X	12	V	50	8	3.9	1.3	0.3
KJJF9X	00	V	50	6	3.3	0.9	-0.5
KMPLHP	00	V	50	0	0.0	0.0	0.0
KMPLHP	12	V	50	4	3.0	-1.6	0.3
LRYQE3	00	V	50	8	3.9	0.5	0.7
LRYQE3	12	V	50	4	3.4	-0.2	0.2
MALIK0	12	V	50	0	0.0	0.0	0.0
UXK5JT	12	V	50	12	3.6	-1.0	0.2
UXK5JT	00	V	50	12	3.4	0.3	-0.3
VKB4L5	00	V	50	1	1.9	-1.9	0.3
VKB4L5	12	V	50	6	2.4	-1.0	-0.1
WDK38H	12	V	50	8	3.0	0.5	-0.1
XKQLWQ	12	V	50	13	3.8	0.4	-1.2
XQFJRG	00	V	50	3	2.8	-1.6	-0.8
XQFJRG	12	V	50	3	3.5	-0.6	-2.7
YLV96W	12	V	50	1	3.2	-3.0	1.1
YLV96W	00	V	50	1	3.7	-1.1	3.5
ZVQEQC	12	V	50	1	3.4	-0.2	-3.4

### 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 : NOV 2021  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	12	Z	100	27	12.8	-8.6
01001	00	Z	100	29	12.8	-7.2
01028	00	Z	100	28	7.6	-5.0
01028	12	Z	100	29	6.7	-3.6
01400	00	Z	100	14	74.4	74.1
01400	12	Z	100	17	93.7	81.5
01415	00	Z	100	29	9.5	0.7
01415	12	Z	100	30	12.0	-2.7
02365	00	Z	100	21	5.6	0.0
02365	12	Z	100	23	6.0	-1.2
02836	12	Z	100	32	7.3	-3.0
02836	00	Z	100	30	7.6	-4.8
02963	12	Z	100	31	6.6	-1.0
02963	00	Z	100	30	4.6	0.4
03005	00	Z	100	31	9.0	-6.0
03005	12	Z	100	30	10.4	-6.5
03238	12	Z	100	1	5.7	-5.7
03238	00	Z	100	30	7.1	-1.5
03808	00	Z	100	28	6.6	-2.6
03808	12	Z	100	29	5.3	0.8
03918	12	Z	100	2	1.5	1.4
03918	00	Z	100	30	7.0	0.7
03953	00	Z	100	30	10.8	-9.0
03953	12	Z	100	30	9.5	-5.4
04018	12	Z	100	30	5.4	-1.9
04018	00	Z	100	29	8.6	-2.6
04220	00	Z	100	30	6.8	1.5
04220	12	Z	100	30	6.6	0.3
04270	00	Z	100	23	7.4	-3.9
04270	12	Z	100	27	20.3	-8.8
04320	00	Z	100	26	8.3	0.4
04320	12	Z	100	25	9.3	2.4
04339	00	Z	100	26	9.9	-2.9
04339	12	Z	100	25	10.8	-6.6
04360	00	Z	100	17	14.8	-12.8
04360	12	Z	100	15	13.1	-11.7
06011	00	Z	100	26	8.6	0.4
06011	12	Z	100	29	10.0	1.6
06260	12	Z	100	4	8.0	3.8



RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06260	00	Z	100	28	16.7	-3.4
06610	12	Z	100	32	6.0	-2.4
06610	00	Z	100	29	4.5	-1.0
07110	00	Z	100	29	7.9	-4.5
07110	12	Z	100	30	9.9	-0.6
07510	12	Z	100	30	17.4	-1.1
07510	00	Z	100	30	10.5	-7.0
07645	00	Z	100	29	13.6	-12.6
07645	12	Z	100	34	15.1	-14.0
07761	00	Z	100	29	23.1	-18.7
07761	12	Z	100	30	19.0	-16.1
08001	12	Z	100	30	6.5	1.5
08001	00	Z	100	28	5.5	3.5
08221	12	Z	100	29	8.9	7.1
08221	00	Z	100	28	12.8	7.4
08302	00	Z	100	29	7.3	-3.8
08302	12	Z	100	29	7.5	-3.8
08508	12	Z	100	30	6.7	4.3
08522	12	Z	100	30	6.2	4.7
10035	00	Z	100	30	13.1	11.4
10035	12	Z	100	30	11.3	10.0
10393	12	Z	100	32	8.2	-0.2
10393	00	Z	100	28	7.2	-3.1
10410	00	Z	100	31	4.8	-1.7
10410	12	Z	100	29	5.5	-2.3
10739	00	Z	100	30	8.1	4.4
10739	12	Z	100	30	6.0	1.3
11035	00	Z	100	30	7.2	-0.4
11035	12	Z	100	32	9.3	0.6
12982	00	Z	100	30	4.3	0.0
12982	12	Z	100	30	5.6	0.4
16245	12	Z	100	29	7.0	-3.4
16245	00	Z	100	29	6.0	1.0
16429	00	Z	100	27	5.0	0.7
16429	12	Z	100	30	8.1	-1.2
16622	00	Z	100	30	10.7	8.8
16754	00	Z	100	28	11.6	3.5
17607	12	Z	100	27	9.8	1.9
26435	12	Z	100	15	5.8	-3.9
2EERVT	00	Z	100	6	8.1	-5.0
2EERVT	12	Z	100	6	7.3	-0.7
60018	00	Z	100	30	8.3	6.6
60018	12	Z	100	29	6.8	3.5

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
7JUNA4	00	Z	100	6	4.2	2.3
7JUNA4	12	Z	100	7	13.5	8.1
ASDE09	12	Z	100	7	16.5	13.2
ATGU3F	12	Z	100	7	17.3	-13.1
ATGU3F	00	Z	100	6	27.9	-16.6
BPMWB2	00	Z	100	4	2.7	0.5
BPMWB2	12	Z	100	6	19.0	11.3
CHQUR4	00	Z	100	14	12.7	7.0
CHQUR4	12	Z	100	9	10.2	2.1
DBLK	12	Z	100	2	11.2	11.0
FPUW5G	12	Z	100	11	7.2	-4.5
HTXUH4	00	Z	100	3	47.8	-0.9
HTXUH4	12	Z	100	1	36.1	-36.1
JNKN7J	12	Z	100	11	58.1	54.1
JNKN7J	00	Z	100	8	31.6	29.9
KJFF9X	12	Z	100	8	10.7	7.0
KJFF9X	00	Z	100	6	18.4	14.3
KMPLHP	00	Z	100	4	34.0	31.5
KMPLHP	12	Z	100	6	70.2	62.8
LRYQE3	00	Z	100	10	88.0	23.0
LRYQE3	12	Z	100	9	29.1	15.6
MALIK0	12	Z	100	0	0.0	0.0
UXK5JT	12	Z	100	12	9.4	5.7
UXK5JT	00	Z	100	13	8.3	-3.0
VKB4L5	00	Z	100	1	30.5	30.5
VKB4L5	12	Z	100	6	21.3	19.9
WDK38H	12	Z	100	8	6.4	-5.2
XKQLWQ	12	Z	100	14	38.6	37.8
XQFJRG	00	Z	100	3	10.5	-9.7
XQFJRG	12	Z	100	4	9.9	4.0
YLV96W	12	Z	100	7	20.9	9.9
YLV96W	00	Z	100	8	12.6	4.1
ZVQEQC	12	Z	100	1	4.0	4.0

**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 : NOV 2021  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	12	V	100	27	2.9	-0.3	-0.6
01001	00	V	100	23	2.7	-0.4	-0.8
01028	00	V	100	20	2.5	0.1	-0.1
01028	12	V	100	29	2.9	0.4	-0.4
01400	00	V	100	11	3.3	-0.8	-0.6
01400	12	V	100	15	3.4	0.0	1.5
01415	00	V	100	22	3.5	-0.9	0.6
01415	12	V	100	30	3.5	-0.4	0.3
02365	00	V	100	18	3.8	0.6	0.7
02365	12	V	100	23	3.2	-0.4	0.1
02836	12	V	100	30	2.8	0.0	-0.3
02836	00	V	100	24	2.5	-0.3	0.0
02963	12	V	100	30	3.3	-0.4	0.6
02963	00	V	100	26	3.6	0.5	0.5
03005	00	V	100	22	3.2	-0.1	0.0
03005	12	V	100	30	3.3	0.1	0.6
03238	12	V	100	1	4.5	0.0	-4.5
03238	00	V	100	21	3.2	0.9	-0.2
03808	00	V	100	22	3.5	1.0	1.2
03808	12	V	100	29	3.0	0.1	-0.3
03918	12	V	100	2	3.0	1.1	-1.0
03918	00	V	100	30	5.8	-0.1	1.4
03953	00	V	100	26	3.7	0.8	-0.5
03953	12	V	100	30	4.0	-0.1	1.5
04018	12	V	100	30	3.6	0.6	1.6
04018	00	V	100	28	3.0	0.1	-0.1
04220	00	V	100	25	2.3	0.2	-0.2
04220	12	V	100	30	2.2	0.2	0.2
04270	00	V	100	22	4.9	-0.7	-0.4
04270	12	V	100	27	4.8	0.0	0.1
04320	00	V	100	22	2.5	0.1	-0.3
04320	12	V	100	25	3.4	-0.3	0.1
04339	00	V	100	25	3.0	0.7	-0.6
04339	12	V	100	25	2.8	0.2	-0.2
04360	00	V	100	16	3.8	-0.3	0.6
04360	12	V	100	15	3.5	1.2	0.2
06011	00	V	100	22	3.1	0.3	0.0
06011	12	V	100	29	2.7	0.0	-0.5
06260	12	V	100	4	1.8	-0.6	0.9

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06260	00	V	100	23	3.6	-0.9	0.7
06610	12	V	100	30	2.9	-0.4	0.4
06610	00	V	100	28	3.8	0.0	-0.2
07110	00	V	100	21	2.9	0.1	-0.2
07110	12	V	100	30	3.1	0.1	-0.1
07510	12	V	100	30	3.5	0.0	0.2
07510	00	V	100	25	2.8	0.2	-0.6
07645	00	V	100	23	3.0	0.0	0.5
07645	12	V	100	30	2.8	0.1	0.7
07761	00	V	100	25	3.3	0.8	0.1
07761	12	V	100	30	3.6	0.8	0.5
08001	12	V	100	30	3.6	0.1	0.2
08001	00	V	100	24	3.3	0.3	0.6
08221	12	V	100	29	3.5	0.4	0.1
08221	00	V	100	21	3.9	0.6	0.4
08302	00	V	100	25	2.9	0.0	-0.6
08302	12	V	100	29	3.1	0.3	-0.6
08508	12	V	100	30	2.9	-0.1	0.7
08522	12	V	100	30	3.1	0.8	0.5
10035	00	V	100	30	3.3	0.1	-0.8
10035	12	V	100	30	2.8	0.5	-0.1
10393	12	V	100	30	3.6	0.3	0.2
10393	00	V	100	26	2.8	0.4	0.2
10410	00	V	100	28	2.9	-0.3	0.2
10410	12	V	100	29	3.3	0.2	-0.2
10739	00	V	100	30	3.2	0.3	-0.3
10739	12	V	100	30	3.0	0.3	0.0
11035	00	V	100	25	3.4	1.1	0.2
11035	12	V	100	30	3.5	-0.4	0.5
12982	00	V	100	26	3.1	0.2	-0.3
12982	12	V	100	30	3.0	-0.6	-0.6
16245	12	V	100	28	3.9	1.5	0.0
16245	00	V	100	27	4.2	0.4	0.3
16429	00	V	100	25	3.9	0.0	0.3
16429	12	V	100	30	3.8	0.7	-0.6
16622	00	V	100	22	3.4	0.9	0.7
16754	00	V	100	23	3.9	0.1	0.4
17607	12	V	100	2	3.0	1.6	-2.3
26435	12	V	100	15	2.9	0.4	-0.4
2EERV	00	V	100	6	3.6	1.2	-0.5
2EERV	12	V	100	6	4.0	1.2	0.8
60018	00	V	100	24	3.9	0.7	0.3
60018	12	V	100	29	3.9	0.7	0.9

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
7JUNA4	00	V	100	6	3.5	-0.2	0.7
7JUNA4	12	V	100	7	3.6	1.2	1.3
ASDE09	12	V	100	7	3.4	0.7	1.0
ATGU3F	12	V	100	7	2.0	-0.6	-0.1
ATGU3F	00	V	100	6	3.7	-0.5	-1.1
BPMWB2	00	V	100	4	3.4	-1.0	-1.0
BPMWB2	12	V	100	6	4.2	-0.5	-1.7
CHQUR4	00	V	100	14	4.1	0.1	1.2
CHQUR4	12	V	100	9	5.1	1.0	0.1
DBLK	12	V	100	1	1.1	-1.0	-0.4
FPUW5G	12	V	100	10	2.8	0.0	-0.3
HTXUH4	00	V	100	3	2.7	-0.8	-1.0
HTXUH4	12	V	100	1	3.5	3.5	-0.2
JNKN7J	12	V	100	11	3.0	1.1	-0.9
JNKN7J	00	V	100	8	2.7	-1.1	0.1
KJFF9X	12	V	100	8	2.7	-0.3	1.2
KJFF9X	00	V	100	6	3.2	-0.1	0.4
KMPLHP	00	V	100	4	3.3	0.5	-1.8
KMPLHP	12	V	100	6	4.3	1.2	0.1
LRYQE3	00	V	100	10	4.9	0.4	-0.9
LRYQE3	12	V	100	9	2.6	0.3	0.7
MALIK0	12	V	100	0	0.0	0.0	0.0
UXK5JT	12	V	100	12	3.8	0.2	0.5
UXK5JT	00	V	100	13	2.6	0.2	-0.3
VKB4L5	00	V	100	1	1.8	-1.2	-1.3
VKB4L5	12	V	100	6	3.0	0.4	0.3
WDK38H	12	V	100	8	2.9	0.5	-0.3
XKQLWQ	12	V	100	13	2.9	0.5	0.0
XQFJRG	00	V	100	3	5.0	-2.3	0.5
XQFJRG	12	V	100	3	2.6	-0.6	1.5
YLV96W	12	V	100	7	4.3	1.1	-0.2
YLV96W	00	V	100	8	4.3	0.4	-0.4
ZVQEQC	12	V	100	1	4.1	3.3	-2.4

#### 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 : NOV 2021  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	12	Z	500	30	11.1	-9.2
01001	00	Z	500	29	11.3	-9.5
01028	00	Z	500	30	3.5	-1.4
01028	12	Z	500	29	2.6	0.1
01400	00	Z	500	26	77.7	77.5
01400	12	Z	500	26	77.2	75.5
01415	00	Z	500	30	4.5	2.7
01415	12	Z	500	30	5.2	4.0
02365	00	Z	500	21	6.3	5.4
02365	12	Z	500	23	4.0	2.3
02836	12	Z	500	32	2.7	0.3
02836	00	Z	500	30	2.3	-0.2
02963	12	Z	500	31	3.0	1.8
02963	00	Z	500	30	2.9	1.9
03005	00	Z	500	31	5.9	-4.0
03005	12	Z	500	30	3.9	-1.6
03238	12	Z	500	1	2.8	2.8
03238	00	Z	500	30	4.9	2.3
03808	00	Z	500	29	3.8	1.4
03808	12	Z	500	29	3.8	3.0
03918	12	Z	500	2	6.4	5.6
03918	00	Z	500	30	8.8	6.6
03953	00	Z	500	31	3.1	-1.3
03953	12	Z	500	30	4.3	0.2
04018	12	Z	500	30	3.8	0.5
04018	00	Z	500	28	4.6	0.4
04220	00	Z	500	30	5.3	3.0
04220	12	Z	500	30	7.4	3.4
04270	00	Z	500	27	9.3	-7.5
04270	12	Z	500	29	9.1	-7.1
04320	00	Z	500	28	4.9	-0.6
04320	12	Z	500	27	4.5	0.1
04339	00	Z	500	28	8.9	-7.7
04339	12	Z	500	25	9.5	-7.7
04360	00	Z	500	17	13.6	-13.1
04360	12	Z	500	15	11.8	-11.2
06011	00	Z	500	29	8.4	4.6
06011	12	Z	500	30	8.6	5.3
06260	12	Z	500	4	3.1	1.6

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06260	00	Z	500	29	15.4	-2.5
06610	12	Z	500	32	3.0	1.2
06610	00	Z	500	30	2.7	1.3
07110	00	Z	500	31	7.5	-5.7
07110	12	Z	500	30	6.3	-3.3
07510	12	Z	500	30	7.2	-1.4
07510	00	Z	500	30	5.0	-2.6
07645	00	Z	500	30	7.0	-6.4
07645	12	Z	500	35	6.5	-5.0
07761	00	Z	500	30	13.1	-11.4
07761	12	Z	500	31	9.9	-8.7
08001	12	Z	500	30	4.6	3.6
08001	00	Z	500	28	4.0	3.3
08221	12	Z	500	29	5.5	4.0
08221	00	Z	500	28	6.0	3.9
08302	00	Z	500	30	6.3	-4.4
08302	12	Z	500	29	7.2	-5.5
08508	12	Z	500	30	7.4	5.6
08522	12	Z	500	30	7.1	6.4
10035	00	Z	500	30	13.0	12.9
10035	12	Z	500	30	13.2	13.0
10393	12	Z	500	32	3.5	0.0
10393	00	Z	500	29	2.6	1.5
10410	00	Z	500	32	1.9	0.1
10410	12	Z	500	29	2.4	-0.8
10739	00	Z	500	30	4.7	4.3
10739	12	Z	500	30	4.8	3.7
11035	00	Z	500	30	4.3	0.4
11035	12	Z	500	33	5.8	-0.9
12982	00	Z	500	31	3.2	2.0
12982	12	Z	500	30	3.7	1.9
16245	12	Z	500	29	3.4	1.2
16245	00	Z	500	29	4.3	1.8
16429	00	Z	500	27	4.6	2.9
16429	12	Z	500	30	4.6	2.6
16622	00	Z	500	30	10.9	9.5
16754	00	Z	500	29	9.5	0.6
17607	12	Z	500	28	4.4	3.6
26435	12	Z	500	15	2.1	0.4
2EERVT	00	Z	500	7	10.3	-7.6
2EERVT	12	Z	500	6	3.9	-0.3
60018	00	Z	500	30	4.6	3.3
60018	12	Z	500	29	4.6	3.8

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
7JUNA4	00	Z	500	7	5.6	2.9
7JUNA4	12	Z	500	8	4.7	0.8
ASDE09	12	Z	500	7	28.7	28.5
ATGU3F	12	Z	500	8	20.0	-19.0
ATGU3F	00	Z	500	8	30.9	-22.5
BPMWB2	00	Z	500	7	5.9	-1.5
BPMWB2	12	Z	500	6	11.6	1.6
CHQUR4	00	Z	500	14	3.9	-2.8
CHQUR4	12	Z	500	9	5.3	-1.3
DBLK	12	Z	500	4	13.4	13.0
FPUW5G	12	Z	500	13	9.2	-7.9
HTXUH4	00	Z	500	3	41.6	7.9
HTXUH4	12	Z	500	1	28.7	-28.7
JNKN7J	12	Z	500	13	36.9	36.6
JNKN7J	00	Z	500	10	33.8	32.7
KJFF9X	12	Z	500	9	8.8	6.6
KJFF9X	00	Z	500	8	9.4	7.3
KMPLHP	00	Z	500	5	47.1	46.6
KMPLHP	12	Z	500	7	43.9	43.2
LRYQE3	00	Z	500	11	7.3	-3.8
LRYQE3	12	Z	500	9	6.9	-4.5
MALIK0	12	Z	500	0	0.0	0.0
UXK5JT	12	Z	500	13	6.7	-3.0
UXK5JT	00	Z	500	13	9.4	-7.3
VKB4L5	00	Z	500	3	25.5	25.5
VKB4L5	12	Z	500	6	26.2	24.9
WDK38H	12	Z	500	8	4.7	-3.9
XKQLWQ	12	Z	500	15	23.6	23.2
XQFJRG	00	Z	500	7	9.6	-8.6
XQFJRG	12	Z	500	9	7.7	-6.5
YLV96W	12	Z	500	7	5.3	-2.4
YLV96W	00	Z	500	10	5.1	-0.6
ZVQEQC	12	Z	500	1	5.2	5.2



**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 : NOV 2021  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	12	V	500	30	2.7	0.3	0.3
01001	00	V	500	29	3.6	0.3	0.1
01028	00	V	500	30	2.5	-0.2	0.2
01028	12	V	500	29	2.8	0.2	-0.1
01400	00	V	500	26	2.7	-0.4	-0.1
01400	12	V	500	26	2.2	0.2	0.3
01415	00	V	500	30	3.6	0.5	0.1
01415	12	V	500	30	2.8	0.5	0.2
02365	00	V	500	21	3.6	0.7	0.7
02365	12	V	500	23	3.0	0.6	-0.2
02836	12	V	500	30	2.2	0.1	-0.2
02836	00	V	500	30	2.4	0.3	0.2
02963	12	V	500	30	2.2	0.5	0.1
02963	00	V	500	30	2.0	0.3	0.2
03005	00	V	500	30	3.0	-0.1	-0.4
03005	12	V	500	30	3.1	-0.5	-0.3
03238	12	V	500	1	1.4	1.2	-0.8
03238	00	V	500	30	2.6	0.5	0.2
03808	00	V	500	28	2.5	-0.4	0.0
03808	12	V	500	29	2.6	0.1	-0.6
03918	12	V	500	2	2.7	-1.7	2.1
03918	00	V	500	30	3.9	1.0	0.0
03953	00	V	500	30	2.9	-0.4	-0.3
03953	12	V	500	30	3.4	0.6	0.3
04018	12	V	500	30	3.2	0.4	0.2
04018	00	V	500	28	2.7	0.2	-0.2
04220	00	V	500	30	2.8	-0.1	-0.5
04220	12	V	500	30	2.8	0.2	0.0
04270	00	V	500	27	3.1	0.0	-0.3
04270	12	V	500	29	2.8	0.7	-0.7
04320	00	V	500	28	2.5	1.0	0.0
04320	12	V	500	27	2.9	-0.2	0.1
04339	00	V	500	28	3.4	-0.1	-0.1
04339	12	V	500	25	3.0	0.2	-0.1
04360	00	V	500	17	3.7	1.3	0.5
04360	12	V	500	15	2.8	0.6	0.6
06011	00	V	500	29	3.3	-0.6	0.1
06011	12	V	500	30	3.9	-0.3	0.3
06260	12	V	500	4	1.6	0.3	0.1

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06260	00	V	500	27	2.5	-0.4	0.0
06610	12	V	500	30	2.5	0.3	-0.3
06610	00	V	500	29	2.9	0.0	-0.1
07110	00	V	500	30	3.1	-0.6	-0.5
07110	12	V	500	30	2.1	0.1	-0.2
07510	12	V	500	30	2.7	0.3	0.1
07510	00	V	500	30	2.5	0.1	0.1
07645	00	V	500	30	3.3	-0.2	0.5
07645	12	V	500	30	3.3	0.2	-0.2
07761	00	V	500	30	4.0	0.1	0.1
07761	12	V	500	30	3.6	0.2	1.0
08001	12	V	500	30	2.5	-0.4	-0.1
08001	00	V	500	28	2.1	-0.3	0.1
08221	12	V	500	29	2.2	0.2	0.4
08221	00	V	500	26	2.6	-0.8	-0.5
08302	00	V	500	30	3.4	-0.1	0.4
08302	12	V	500	29	3.7	0.4	0.0
08508	12	V	500	30	2.9	-0.1	0.3
08522	12	V	500	30	2.5	0.3	-0.2
10035	00	V	500	30	2.3	-0.4	0.6
10035	12	V	500	30	2.4	-0.4	0.3
10393	12	V	500	30	2.1	0.5	0.0
10393	00	V	500	26	2.3	-0.2	-0.4
10410	00	V	500	30	2.4	0.4	-0.4
10410	12	V	500	29	2.0	-0.1	-0.2
10739	00	V	500	30	2.3	-0.1	0.1
10739	12	V	500	30	2.3	0.3	-0.2
11035	00	V	500	29	2.7	-0.3	-0.1
11035	12	V	500	30	2.8	-0.3	-0.5
12982	00	V	500	30	2.3	0.1	-0.1
12982	12	V	500	30	2.6	-0.2	-0.1
16245	12	V	500	29	5.0	0.8	0.8
16245	00	V	500	29	4.4	-0.2	-0.1
16429	00	V	500	27	3.4	-0.1	-0.2
16429	12	V	500	30	4.4	0.3	-0.3
16622	00	V	500	30	3.3	0.1	0.6
16754	00	V	500	26	2.3	0.3	-0.6
17607	12	V	500	5	3.4	-0.2	1.0
26435	12	V	500	15	2.4	0.7	0.8
2EERV	00	V	500	7	2.3	1.5	0.4
2EERV	12	V	500	6	2.5	0.5	1.1
60018	00	V	500	30	2.1	0.0	0.5
60018	12	V	500	29	2.2	0.3	-0.5

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
7JUNA4	00	V	500	7	2.5	-0.5	-0.7
7JUNA4	12	V	500	8	2.3	0.2	0.8
ASDE09	12	V	500	7	1.6	-0.5	0.3
ATGU3F	12	V	500	8	3.1	1.5	0.1
ATGU3F	00	V	500	8	2.5	0.4	0.5
BPMWB2	00	V	500	7	2.4	0.7	0.3
BPMWB2	12	V	500	6	2.4	0.6	-1.4
CHQUR4	00	V	500	14	2.8	-0.6	-0.2
CHQUR4	12	V	500	9	2.4	0.9	0.7
DBLK	12	V	500	2	1.0	0.3	0.4
FPUW5G	12	V	500	13	3.0	0.8	-1.0
HTXUH4	00	V	500	3	3.3	1.9	-0.9
HTXUH4	12	V	500	1	1.3	0.8	-1.0
JNKN7J	12	V	500	13	4.5	-1.5	1.2
JNKN7J	00	V	500	10	1.9	0.3	1.2
KJJF9X	12	V	500	9	1.8	0.0	0.1
KJJF9X	00	V	500	8	2.6	0.3	0.3
KMPLHP	00	V	500	5	2.7	1.0	-0.5
KMPLHP	12	V	500	7	2.5	0.4	0.6
LRYQE3	00	V	500	11	5.2	0.4	-1.3
LRYQE3	12	V	500	9	5.0	1.8	1.6
MALIK0	12	V	500	0	0.0	0.0	0.0
UXK5JT	12	V	500	13	2.0	0.1	0.2
UXK5JT	00	V	500	13	2.8	-0.3	0.4
VKB4L5	00	V	500	3	1.3	1.0	0.6
VKB4L5	12	V	500	6	3.1	0.0	-0.9
WDK38H	12	V	500	8	1.3	0.1	0.0
XKQLWQ	12	V	500	15	3.1	0.2	-0.4
XQFJRG	00	V	500	7	4.1	-0.6	-0.6
XQFJRG	12	V	500	9	2.3	0.3	-0.1
YLV96W	12	V	500	7	2.2	1.4	0.3
YLV96W	00	V	500	10	1.7	-0.3	-0.2
ZVQEQC	12	V	500	1	2.6	2.4	1.0

#### 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 : NOV 2021  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	12	Z	850	30	12.4	-7.6
01001	00	Z	850	30	9.7	-8.8
01028	00	Z	850	30	3.6	-1.7
01028	12	Z	850	29	2.4	0.0
01400	00	Z	850	26	76.9	76.7
01400	12	Z	850	27	77.4	75.8
01415	00	Z	850	30	3.4	2.5
01415	12	Z	850	30	3.9	3.4
02365	00	Z	850	21	7.4	6.0
02365	12	Z	850	23	5.4	4.8
02836	12	Z	850	32	2.6	1.8
02836	00	Z	850	30	2.3	1.5
02963	12	Z	850	31	3.4	3.0
02963	00	Z	850	30	3.2	2.5
03005	00	Z	850	31	4.3	-2.8
03005	12	Z	850	30	4.2	-2.2
03238	12	Z	850	1	4.0	4.0
03238	00	Z	850	30	4.3	2.0
03808	00	Z	850	29	3.4	2.9
03808	12	Z	850	29	3.7	2.6
03918	12	Z	850	2	5.5	5.5
03918	00	Z	850	30	6.7	6.0
03953	00	Z	850	31	2.6	-0.8
03953	12	Z	850	30	3.8	0.8
04018	12	Z	850	30	2.2	-0.5
04018	00	Z	850	28	3.3	-1.8
04220	00	Z	850	30	4.1	2.0
04220	12	Z	850	30	8.3	3.4
04270	00	Z	850	28	7.2	-6.2
04270	12	Z	850	29	6.2	-5.3
04320	00	Z	850	28	3.3	-1.1
04320	12	Z	850	27	4.3	-0.5
04339	00	Z	850	29	8.7	-7.7
04339	12	Z	850	25	9.4	-8.1
04360	00	Z	850	17	13.0	-12.1
04360	12	Z	850	15	12.3	-11.9
06011	00	Z	850	29	4.4	2.6
06011	12	Z	850	30	4.7	3.3
06260	12	Z	850	4	2.1	-0.2

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06260	00	Z	850	29	15.7	-2.4
06610	12	Z	850	31	2.2	0.1
06610	00	Z	850	30	2.5	1.5
07110	00	Z	850	30	3.0	-1.5
07110	12	Z	850	30	3.2	-1.6
07510	12	Z	850	30	3.7	2.0
07510	00	Z	850	30	3.4	2.1
07645	00	Z	850	30	4.3	-3.7
07645	12	Z	850	35	4.1	-3.4
07761	00	Z	850	30	5.0	-3.8
07761	12	Z	850	31	3.5	-2.6
08001	12	Z	850	30	2.2	0.4
08001	00	Z	850	29	2.0	0.2
08221	12	Z	850	29	2.0	1.4
08221	00	Z	850	28	2.6	1.9
08302	00	Z	850	30	6.1	-5.6
08302	12	Z	850	29	9.7	-8.6
08508	12	Z	850	30	5.1	4.5
08522	12	Z	850	30	4.0	2.5
10035	00	Z	850	30	12.5	12.3
10035	12	Z	850	30	12.4	12.2
10393	12	Z	850	30	1.6	-0.1
10393	00	Z	850	27	2.6	0.0
10410	00	Z	850	32	2.3	-0.8
10410	12	Z	850	29	1.9	-0.3
10739	00	Z	850	30	3.9	2.8
10739	12	Z	850	30	3.9	3.4
11035	00	Z	850	30	3.6	0.4
11035	12	Z	850	33	3.9	-0.3
12982	00	Z	850	31	2.5	0.7
12982	12	Z	850	30	3.4	0.8
16245	12	Z	850	29	3.2	2.6
16245	00	Z	850	29	3.9	3.0
16429	00	Z	850	27	4.2	3.0
16429	12	Z	850	30	3.8	2.5
16622	00	Z	850	30	10.1	9.3
16754	00	Z	850	29	7.9	0.7
17607	12	Z	850	30	3.0	2.1
26435	12	Z	850	15	2.1	0.6
2EERVT	00	Z	850	7	6.3	-5.3
2EERVT	12	Z	850	6	4.2	-3.4
60018	00	Z	850	30	1.7	0.5
60018	12	Z	850	29	2.4	-0.1

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
7JUNA4	00	Z	850	7	4.8	2.4
7JUNA4	12	Z	850	8	5.0	-1.1
ASDE09	12	Z	850	7	32.7	32.6
ATGU3F	12	Z	850	9	23.9	-23.1
ATGU3F	00	Z	850	9	28.1	-13.7
BPMWB2	00	Z	850	7	3.6	0.4
BPMWB2	12	Z	850	6	3.2	2.9
CHQUR4	00	Z	850	14	6.3	-5.8
CHQUR4	12	Z	850	9	4.7	-3.4
DBLK	12	Z	850	4	16.2	15.6
FPUW5G	12	Z	850	13	10.3	-10.0
HTXUH4	00	Z	850	3	52.7	12.6
HTXUH4	12	Z	850	1	29.8	-29.8
JNKN7J	12	Z	850	13	38.8	38.4
JNKN7J	00	Z	850	11	37.5	37.3
KJFF9X	12	Z	850	9	6.1	4.9
KJFF9X	00	Z	850	8	6.2	4.9
KMPLHP	00	Z	850	5	49.6	48.9
KMPLHP	12	Z	850	7	50.2	49.2
LRYQE3	00	Z	850	11	9.7	-6.1
LRYQE3	12	Z	850	9	6.6	-4.7
MALIK0	12	Z	850	0	0.0	0.0
UXK5JT	12	Z	850	13	5.6	-5.1
UXK5JT	00	Z	850	13	6.5	-4.9
VKB4L5	00	Z	850	3	23.0	22.8
VKB4L5	12	Z	850	6	24.2	23.5
WDK38H	12	Z	850	8	8.0	-6.8
XKQLWQ	12	Z	850	15	17.2	16.5
XQFJRG	00	Z	850	8	9.8	-9.1
XQFJRG	12	Z	850	9	8.7	-6.9
YLV96W	12	Z	850	7	4.9	-3.7
YLV96W	00	Z	850	10	5.2	-1.5
ZVQEQC	12	Z	850	1	2.3	2.3

**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 : NOV 2021  
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	12	V	850	30	6.8	1.7	-1.1
01001	00	V	850	30	4.0	0.4	-0.6
01028	00	V	850	30	2.9	0.3	-0.6
01028	12	V	850	29	3.4	0.2	0.2
01400	00	V	850	26	2.3	0.0	0.4
01400	12	V	850	27	2.3	0.3	-0.2
01415	00	V	850	30	2.7	0.3	0.0
01415	12	V	850	30	2.8	-0.3	-0.1
02365	00	V	850	21	3.2	0.8	-0.1
02365	12	V	850	23	3.7	-0.1	0.2
02836	12	V	850	30	2.4	0.2	0.0
02836	00	V	850	30	2.1	-0.3	0.2
02963	12	V	850	30	2.2	-0.1	0.0
02963	00	V	850	30	2.4	-0.3	-0.1
03005	00	V	850	30	2.5	0.0	-0.1
03005	12	V	850	30	3.3	0.3	0.1
03238	12	V	850	1	2.8	1.4	-2.4
03238	00	V	850	30	3.1	-0.6	-0.3
03808	00	V	850	28	2.7	-0.2	-0.2
03808	12	V	850	29	3.0	0.5	0.1
03918	12	V	850	2	2.7	2.2	0.1
03918	00	V	850	30	2.9	-0.1	0.5
03953	00	V	850	30	3.1	0.1	0.5
03953	12	V	850	30	2.6	-0.3	0.2
04018	12	V	850	30	3.1	1.0	-0.1
04018	00	V	850	28	2.3	0.3	-0.3
04220	00	V	850	30	4.1	0.7	-0.1
04220	12	V	850	30	3.6	0.6	0.7
04270	00	V	850	28	3.2	0.7	0.5
04270	12	V	850	29	3.6	0.4	0.3
04320	00	V	850	28	4.1	-0.1	0.8
04320	12	V	850	27	3.2	-0.1	-0.2
04339	00	V	850	29	4.7	1.1	0.6
04339	12	V	850	25	4.8	0.8	0.8
04360	00	V	850	17	6.7	1.4	1.0
04360	12	V	850	15	4.0	0.9	0.5
06011	00	V	850	29	3.0	0.3	-0.4
06011	12	V	850	30	2.8	-0.1	-0.7
06260	12	V	850	4	1.6	-0.7	0.2

RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06260	00	V	850	29	2.6	0.3	0.0
06610	12	V	850	30	2.6	-0.3	-0.8
06610	00	V	850	29	2.6	0.1	-0.1
07110	00	V	850	29	2.2	-0.3	-0.4
07110	12	V	850	30	2.9	-0.5	-0.2
07510	12	V	850	30	3.5	-0.1	-0.9
07510	00	V	850	30	2.4	0.7	-0.1
07645	00	V	850	30	3.2	0.1	0.1
07645	12	V	850	30	3.7	0.2	-0.2
07761	00	V	850	30	3.4	1.0	-0.2
07761	12	V	850	30	4.2	0.6	-0.3
08001	12	V	850	30	2.8	0.0	0.0
08001	00	V	850	28	2.1	0.3	0.0
08221	12	V	850	29	3.6	0.1	1.4
08221	00	V	850	26	5.0	-0.4	0.1
08302	00	V	850	30	4.0	-0.3	1.0
08302	12	V	850	29	3.8	-0.2	0.7
08508	12	V	850	30	3.6	0.1	-0.3
08522	12	V	850	30	3.8	0.0	0.3
10035	00	V	850	30	2.5	0.2	-0.2
10035	12	V	850	30	2.7	0.4	-0.1
10393	12	V	850	30	2.5	0.3	0.2
10393	00	V	850	26	2.3	-0.5	-0.2
10410	00	V	850	30	2.4	0.2	0.1
10410	12	V	850	29	1.9	0.0	0.0
10739	00	V	850	30	2.6	-0.1	-0.3
10739	12	V	850	30	2.4	-0.5	-0.4
11035	00	V	850	29	2.6	0.2	0.3
11035	12	V	850	30	3.0	0.0	-0.3
12982	00	V	850	30	3.3	-0.1	-0.1
12982	12	V	850	30	3.0	-0.4	0.1
16245	12	V	850	29	3.5	0.2	-0.4
16245	00	V	850	29	3.5	0.6	0.3
16429	00	V	850	27	4.0	-0.1	-1.0
16429	12	V	850	30	4.6	0.7	0.9
16622	00	V	850	30	3.5	0.5	0.0
16754	00	V	850	29	4.9	-0.6	-1.4
17607	12	V	850	26	3.3	0.4	-0.2
26435	12	V	850	15	2.1	-0.1	-0.2
2EERV	00	V	850	7	3.0	-0.7	0.8
2EERV	12	V	850	6	3.9	1.6	-0.1
60018	00	V	850	30	3.1	-0.6	-0.6
60018	12	V	850	29	3.4	0.3	-1.0



RADIOSONDE MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
7JUNA4	00	V	850	7	1.3	-0.8	0.1
7JUNA4	12	V	850	8	2.1	0.9	-0.2
ASDE09	12	V	850	7	1.4	-0.5	0.3
ATGU3F	12	V	850	9	2.1	1.2	-0.1
ATGU3F	00	V	850	9	3.9	0.1	-1.2
BPMWB2	00	V	850	7	1.3	0.0	0.7
BPMWB2	12	V	850	6	2.8	-1.1	-0.1
CHQUR4	00	V	850	14	2.7	-0.9	-0.7
CHQUR4	12	V	850	9	2.6	-0.6	-1.5
DBLK	12	V	850	2	1.5	0.4	0.0
FPUW5G	12	V	850	13	2.8	-0.1	0.8
HTXUH4	00	V	850	3	2.8	-2.1	-0.5
HTXUH4	12	V	850	1	1.7	-1.6	-0.6
JNKN7J	12	V	850	13	3.0	-0.1	0.2
JNKN7J	00	V	850	11	3.6	0.9	-0.5
KJJF9X	12	V	850	9	3.0	1.0	-0.2
KJJF9X	00	V	850	8	2.6	1.4	-0.3
KMPLHP	00	V	850	5	3.0	0.1	-0.4
KMPLHP	12	V	850	7	3.1	-0.6	-0.4
LRYQE3	00	V	850	11	2.6	0.2	0.1
LRYQE3	12	V	850	9	2.3	-0.1	-0.2
MALIK0	12	V	850	0	0.0	0.0	0.0
UXK5JT	12	V	850	13	2.6	0.1	-1.0
UXK5JT	00	V	850	13	2.5	-0.1	-0.7
VKB4L5	00	V	850	3	2.0	1.1	0.2
VKB4L5	12	V	850	6	2.2	1.1	0.0
WDK38H	12	V	850	8	2.2	-0.3	-0.6
XKQLWQ	12	V	850	15	3.1	-0.5	0.2
XQFJRG	00	V	850	8	2.1	-0.7	0.7
XQFJRG	12	V	850	9	4.4	0.4	0.3
YLV96W	12	V	850	7	2.7	-0.6	0.6
YLV96W	00	V	850	10	2.2	-0.7	0.6
ZVQEQC	12	V	850	1	1.0	-0.2	-1.0

**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 : NOV 2021  
 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
03380	99	P	SUR	54	0	1574	0	0.3	-0.4	0.5
1300001	99	P	SUR	11	-23	592	0	0.3	0.2	0.4
1300008	99	P	SUR	15	-38	596	0	0.2	0.1	0.3
1300130	99	P	SUR	28	-16	669	0	0.3	0.1	0.3
1300131	99	P	SUR	28	-17	681	0	0.3	0.0	0.3
1301569	99	P	SUR	30	-61	665	0	0.3	-0.8	0.8
1301603	99	P	SUR	32	-62	720	0	0.7	-0.2	0.7
1301608	99	P	SUR	32	-54	720	0	0.4	-0.1	0.4
1301610	99	P	SUR	53	-10	719	0	0.5	-0.3	0.6
1301612	99	P	SUR	34	-26	719	0	1.2	-0.1	1.2
1301619	99	P	SUR	30	-68	719	0	0.7	-0.3	0.8
1301699	99	P	SUR	24	-26	691	0	0.3	-0.5	0.6
1301700	99	P	SUR	13	-25	691	0	0.4	0.0	0.4
1301701	99	P	SUR	10	-20	196	0	0.3	0.2	0.3
1301712	99	P	SUR	12	-22	218	0	0.3	0.0	0.3
1301713	99	P	SUR	18	-23	409	0	0.3	0.1	0.3
1301714	99	P	SUR	18	-25	698	0	0.3	0.1	0.3
1301715	99	P	SUR	14	-24	491	0	0.4	-0.0	0.4
1301716	99	P	SUR	19	-24	22	0	0.8	9.8	9.8
1301717	99	P	SUR	35	-11	698	0	0.2	-0.1	0.2
1301718	99	P	SUR	24	-19	697	0	0.3	0.1	0.3
1301719	99	P	SUR	22	-20	696	0	0.3	0.3	0.5
1301720	99	P	SUR	26	-17	700	0	0.3	0.0	0.3
1301721	99	P	SUR	38	-10	698	0	0.3	-0.2	0.4
1301722	99	P	SUR	22	-22	697	0	0.3	0.0	0.3
1701632	99	P	SUR	31	-58	693	0	0.3	0.0	0.3
1801568	99	P	SUR	18	-66	1997	0	0.2	0.1	0.3
1801580	99	P	SUR	19	-67	1380	0	0.3	0.2	0.3
4100040	99	P	SUR	15	-53	4314	0	0.2	0.5	0.5
4100043	99	P	SUR	21	-65	4272	0	0.2	-1.2	1.2
4100044	99	P	SUR	22	-59	4315	0	0.2	0.2	0.3
4100046	99	P	SUR	24	-68	4316	0	0.3	0.2	0.3
4100048	99	P	SUR	32	-70	4310	0	0.4	0.2	0.5
4100049	99	P	SUR	27	-63	4315	0	0.3	-1.0	1.0
4100052	99	P	SUR	18	-65	4238	0	0.3	-1.1	1.1
4100053	99	P	SUR	18	-66	4287	0	0.3	-0.3	0.4

DRIFTER MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
4100056	99	P	SUR	18	-65	4228	0	0.3	-2.0	2.0
4100139	99	P	SUR	20	-38	572	0	0.3	0.1	0.3
4100300	99	P	SUR	16	-57	642	0	0.2	0.2	0.3
4101531	99	P	SUR	33	-52	213	0	0.3	-0.1	0.3
4101557	99	P	SUR	39	-55	717	0	0.5	0.1	0.5
4101567	99	P	SUR	28	-47	719	0	0.3	0.4	0.5
4101609	99	P	SUR	26	-28	720	0	0.4	-0.1	0.4
4101613	99	P	SUR	30	-39	720	0	0.3	0.4	0.5
4101614	99	P	SUR	25	-29	373	0	0.3	-0.2	0.4
4101616	99	P	SUR	32	-32	720	0	0.3	-0.1	0.3
4101618	99	P	SUR	28	-31	720	0	0.4	0.1	0.4
4101621	99	P	SUR	29	-30	720	0	0.3	0.2	0.4
4101627	99	P	SUR	50	-29	676	0	0.7	-0.5	0.9
4101652	99	P	SUR	63	-25	720	0	0.5	-0.3	0.6
4101654	99	P	SUR	69	0	689	0	0.4	0.0	0.4
4101656	99	P	SUR	64	-26	720	0	0.5	-0.2	0.5
4101657	99	P	SUR	73	4	673	0	0.5	-0.0	0.5
4101658	99	P	SUR	63	-8	720	0	0.4	-0.1	0.4
4101659	99	P	SUR	75	40	720	0	0.4	0.0	0.4
4101663	99	P	SUR	35	-41	720	0	0.7	-0.0	0.7
4101664	99	P	SUR	52	-51	720	0	0.4	0.4	0.6
4101665	99	P	SUR	61	-12	352	0	0.4	-0.5	0.7
4101696	99	P	SUR	33	-38	720	0	0.3	-0.0	0.3
4101698	99	P	SUR	13	-60	255	0	0.3	0.1	0.3
4101702	99	P	SUR	39	-38	720	0	1.7	0.2	1.7
4101714	99	P	SUR	33	-58	720	11	2.1	-0.6	2.2
4101717	99	P	SUR	45	-11	720	0	1.1	-0.2	1.1
4101718	99	P	SUR	33	-59	720	0	0.6	0.4	0.7
4101719	99	P	SUR	36	-32	719	0	0.8	0.3	0.8
4101720	99	P	SUR	33	-24	720	0	0.6	0.3	0.7
4101723	99	P	SUR	14	-60	718	0	0.3	-0.1	0.3
4101724	99	P	SUR	11	-52	720	0	0.3	0.5	0.6
4101725	99	P	SUR	13	-53	720	0	0.3	-0.2	0.3
4101743	99	P	SUR	33	-57	720	0	1.3	-0.2	1.3
4101752	99	P	SUR	49	-10	720	17	1.6	0.3	1.6
4101753	99	P	SUR	31	-51	720	0	0.3	0.2	0.4
4101755	99	P	SUR	29	-43	719	0	0.3	0.2	0.3
4101756	99	P	SUR	12	-62	703	0	0.3	-0.8	0.8
4101817	99	P	SUR	37	-65	1	0	0.0	-0.8	0.8
4101842	99	P	SUR	60	-9	690	0	0.4	-0.3	0.5
4101843	99	P	SUR	62	-14	692	0	0.5	-0.2	0.5
4101845	99	P	SUR	60	-17	686	0	0.4	-0.2	0.5
4101850	99	P	SUR	45	-10	688	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
4102547	99	P	SUR	12	-48	686	0	0.3	0.3	0.4
4102548	99	P	SUR	13	-53	688	0	0.3	-0.2	0.3
4102549	99	P	SUR	12	-38	683	0	0.3	0.4	0.5
4102550	99	P	SUR	11	-43	147	0	0.3	0.2	0.3
4102551	99	P	SUR	14	-34	677	0	0.3	-0.0	0.3
4102627	99	P	SUR	39	-45	239	0	0.5	0.1	0.5
4102629	99	P	SUR	31	-36	238	0	0.3	0.0	0.3
4102630	99	P	SUR	12	-68	279	0	0.4	0.2	0.4
4102632	99	P	SUR	18	-67	695	0	0.2	-1.0	1.0
4102633	99	P	SUR	15	-65	662	0	0.3	0.2	0.3
4102634	99	P	SUR	18	-67	566	0	0.3	-0.1	0.3
4102637	99	P	SUR	15	-65	652	0	0.3	0.3	0.4
41040	99	P	SUR	15	-53	4924	0	0.3	0.5	0.6
41043	99	P	SUR	21	-65	4250	0	0.3	-1.2	1.2
41044	99	P	SUR	22	-59	3718	0	0.3	0.2	0.4
41046	99	P	SUR	24	-68	6070	0	0.3	0.2	0.4
41048	99	P	SUR	32	-70	6759	0	0.5	0.2	0.5
41049	99	P	SUR	28	-63	6004	0	0.3	-1.0	1.0
41052	99	P	SUR	18	-65	3023	0	0.3	-1.0	1.1
41053	99	P	SUR	19	-66	3028	0	0.3	-0.3	0.4
41056	99	P	SUR	18	-66	3010	0	0.3	-2.0	2.0
4200059	99	P	SUR	15	-67	4315	0	0.3	-1.2	1.2
4200060	99	P	SUR	16	-63	4297	0	0.3	0.0	0.3
4200085	99	P	SUR	18	-67	3998	0	0.2	0.2	0.3
4201703	99	P	SUR	43	-63	639	0	0.5	0.2	0.5
42059	99	P	SUR	15	-68	4244	0	0.3	-1.2	1.2
42060	99	P	SUR	16	-63	3832	0	0.3	0.1	0.3
42085	99	P	SUR	18	-67	3497	0	0.3	0.2	0.3
4400005	99	P	SUR	43	-69	718	0	0.5	-0.5	0.7
4400008	99	P	SUR	40	-69	4316	0	0.4	-0.8	0.9
4400011	99	P	SUR	41	-67	4312	0	0.5	0.2	0.5
4400024	99	P	SUR	42	-66	75	0	0.3	-0.8	0.9
4400027	99	P	SUR	44	-67	719	0	0.5	-0.0	0.5
4400032	99	P	SUR	44	-69	710	0	0.5	-0.1	0.5
4400033	99	P	SUR	44	-69	707	0	0.5	0.3	0.6
4400034	99	P	SUR	44	-68	706	0	0.6	-0.3	0.7
4400037	99	P	SUR	43	-68	82	0	0.4	0.0	0.4
44005	99	P	SUR	43	-69	2010	0	0.5	-0.5	0.7
4400777	99	P	SUR	42	-34	720	0	0.7	0.4	0.8
44008	99	P	SUR	41	-69	6071	0	0.5	-0.8	1.0
4400857	99	P	SUR	30	-58	720	3	1.4	0.4	1.5
44011	99	P	SUR	41	-67	6071	0	0.5	0.2	0.6
4401557	99	P	SUR	30	-46	720	0	1.6	0.2	1.7

DRIFTER MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
4401563	99	P	SUR	34	-23	720	0	0.3	-0.2	0.4
4401569	99	P	SUR	64	8	392	0	0.4	-0.8	0.9
4401572	99	P	SUR	25	-60	720	0	0.3	0.4	0.5
4401576	99	P	SUR	27	-45	720	0	0.3	0.2	0.3
4401577	99	P	SUR	23	-48	720	0	0.3	0.1	0.3
4401581	99	P	SUR	29	-46	720	0	0.3	0.4	0.5
4401582	99	P	SUR	38	-21	720	0	0.3	0.2	0.4
4401584	99	P	SUR	34	-34	103	0	0.2	0.5	0.5
4401828	99	P	SUR	59	-26	516	0	0.4	0.2	0.5
4401837	99	P	SUR	36	-22	718	0	0.3	0.1	0.3
4401848	99	P	SUR	46	-33	686	0	0.5	0.3	0.6
4401850	99	P	SUR	60	-14	680	0	0.9	-0.3	1.0
4401851	99	P	SUR	49	-9	683	0	0.4	0.3	0.5
4401854	99	P	SUR	28	-63	720	0	0.3	-0.3	0.5
4401867	99	P	SUR	37	-68	720	0	0.5	-0.2	0.6
4401870	99	P	SUR	30	-48	720	0	0.3	-0.0	0.3
4401872	99	P	SUR	30	-57	720	0	0.3	-0.2	0.3
4401874	99	P	SUR	23	-48	720	0	0.3	0.2	0.4
44024	99	P	SUR	42	-66	196	0	0.3	-0.8	0.9
4402603	99	P	SUR	52	-27	691	0	0.3	0.1	0.4
4402604	99	P	SUR	48	-47	690	0	0.5	0.1	0.5
4402605	99	P	SUR	57	-22	691	0	0.4	-0.1	0.4
4402606	99	P	SUR	51	-46	691	0	0.5	0.2	0.5
4402607	99	P	SUR	50	-34	690	0	0.5	-0.0	0.5
4402608	99	P	SUR	55	-38	691	0	0.5	-0.0	0.5
4402609	99	P	SUR	52	-31	689	0	0.4	0.0	0.4
4402610	99	P	SUR	43	-28	689	0	0.3	0.2	0.4
4402611	99	P	SUR	48	-30	687	0	0.4	-0.1	0.4
4402612	99	P	SUR	45	-40	697	0	0.6	0.5	0.8
4402613	99	P	SUR	49	-20	691	0	0.3	-0.0	0.3
4402614	99	P	SUR	50	-27	680	0	0.3	-0.0	0.3
4402615	99	P	SUR	45	-15	690	0	0.3	0.2	0.4
4402616	99	P	SUR	51	-25	686	0	0.3	0.0	0.3
4402617	99	P	SUR	49	-39	1	1	0.0	0.0	0.0
4402618	99	P	SUR	31	-34	692	0	0.3	0.2	0.4
4402656	99	P	SUR	41	-62	691	0	0.6	0.2	0.6
4402660	99	P	SUR	39	-15	699	0	0.3	0.3	0.4
4402663	99	P	SUR	47	-16	695	0	0.3	-0.2	0.3
4402665	99	P	SUR	34	-16	699	0	0.3	0.2	0.4
4402670	99	P	SUR	21	-23	239	0	0.3	0.0	0.3
4402671	99	P	SUR	10	-23	274	0	0.3	0.2	0.3
4402672	99	P	SUR	15	-22	332	0	0.3	0.1	0.3
4402673	99	P	SUR	13	-24	264	0	0.3	0.3	0.4

DRIFTER MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
4402674	99	P	SUR	11	-25	266	0	0.3	0.3	0.4
4402675	99	P	SUR	41	-40	184	0	0.3	0.5	0.6
4402676	99	P	SUR	12	-24	258	0	0.3	0.4	0.5
4402687	99	P	SUR	38	-19	720	0	0.4	0.2	0.4
44027	99	P	SUR	44	-67	2005	0	0.5	-0.0	0.5
4402708	99	P	SUR	11	-23	290	0	0.3	0.3	0.4
4402714	99	P	SUR	68	-63	504	93	4.6	2.3	5.1
4402715	99	P	SUR	69	-65	698	46	1.6	-0.3	1.7
4402716	99	P	SUR	70	-67	468	110	2.6	-0.9	2.7
4402717	99	P	SUR	71	-68	700	0	0.6	-0.3	0.7
4402718	99	P	SUR	66	-61	698	0	0.5	-0.2	0.5
4402720	99	P	SUR	60	-63	698	0	0.5	-0.2	0.5
4402721	99	P	SUR	52	-52	699	0	0.4	0.2	0.5
4402722	99	P	SUR	50	-64	522	0	0.4	0.0	0.4
4402723	99	P	SUR	50	-54	697	0	0.4	0.1	0.4
4402725	99	P	SUR	55	-58	697	0	0.5	0.0	0.5
4402727	99	P	SUR	51	-55	698	0	0.4	0.0	0.4
44032	99	P	SUR	44	-69	1306	0	0.6	-0.2	0.6
44033	99	P	SUR	44	-69	1300	0	0.5	0.3	0.6
44034	99	P	SUR	44	-68	1298	0	0.6	-0.3	0.7
44037	99	P	SUR	44	-68	150	0	0.5	0.0	0.5
44078	99	P	SUR	60	-40	370	0	0.4	-1.2	1.3
44137	99	P	SUR	42	-62	727	0	0.6	-0.3	0.6
44139	99	P	SUR	44	-57	753	0	0.6	-0.0	0.6
44150	99	P	SUR	43	-64	781	0	0.5	-0.3	0.5
44258	99	P	SUR	45	-63	734	0	0.7	-0.3	0.7
44488	99	P	SUR	45	-61	779	0	0.6	-0.0	0.6
44489	99	P	SUR	46	-61	757	0	0.6	-0.1	0.6
44490	99	P	SUR	45	-66	778	0	0.5	-0.1	0.5
4601782	99	P	SUR	40	-54	694	0	0.6	0.4	0.7
4601810	99	P	SUR	89	-16	679	0	0.4	0.3	0.5
4701738	99	P	SUR	70	-67	649	590	1.6	-1.7	2.3
4701739	99	P	SUR	72	-64	700	166	5.8	-4.4	7.3
4801723	99	P	SUR	73	2	698	0	0.5	0.2	0.6
4801727	99	P	SUR	85	39	698	0	0.5	0.5	0.7
6100001	99	P	SUR	43	8	452	0	0.5	-0.3	0.6
6100002	99	P	SUR	42	5	614	0	0.4	-0.1	0.4
6100196	99	P	SUR	42	4	430	0	0.6	-0.1	0.6
6100197	99	P	SUR	40	4	697	0	0.6	0.2	0.6
6100198	99	P	SUR	37	-2	702	0	0.4	0.1	0.4
6100280	99	P	SUR	41	1	704	0	0.4	0.2	0.5
6100281	99	P	SUR	40	0	694	0	0.5	0.0	0.5
6100417	99	P	SUR	38	0	704	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
6100430	99	P	SUR	40	2	697	0	0.5	-0.1	0.5
6101003	99	P	SUR	40	25	144	0	0.7	0.0	0.7
6101005	99	P	SUR	38	26	122	0	0.6	0.1	0.7
6101007	99	P	SUR	36	25	148	0	0.6	-0.4	0.7
6101008	99	P	SUR	37	22	145	0	0.7	-0.2	0.7
6101009	99	P	SUR	35	25	64	1	0.6	-0.4	0.8
6102784	99	P	SUR	34	17	692	0	0.4	0.1	0.4
6102786	99	P	SUR	36	15	691	0	0.5	0.1	0.5
6102787	99	P	SUR	36	15	694	0	0.5	0.1	0.6
6102788	99	P	SUR	31	18	692	0	0.4	0.1	0.4
6102789	99	P	SUR	34	16	695	0	0.4	0.2	0.5
6102791	99	P	SUR	37	9	695	0	0.4	-0.2	0.5
6102792	99	P	SUR	39	8	107	0	0.5	-0.1	0.5
6102793	99	P	SUR	40	1	699	0	0.4	0.4	0.5
6102794	99	P	SUR	39	1	698	0	0.9	0.5	1.0
6102795	99	P	SUR	40	3	3	0	0.2	-0.4	0.4
6102796	99	P	SUR	40	3	2	0	0.1	-0.5	0.5
6102797	99	P	SUR	40	3	2	0	0.1	-0.3	0.3
6102798	99	P	SUR	40	3	2	0	0.2	-0.3	0.4
6200024	99	P	SUR	44	-3	705	0	0.5	0.3	0.5
6200025	99	P	SUR	44	-6	705	0	0.4	0.2	0.5
6200082	99	P	SUR	44	-8	705	0	0.4	0.0	0.4
6200083	99	P	SUR	43	-9	705	0	0.4	0.1	0.4
6200084	99	P	SUR	42	-9	703	0	0.3	-0.1	0.4
6200085	99	P	SUR	36	-7	703	0	0.4	0.1	0.4
6200086	99	P	SUR	55	6	342	0	0.3	-0.3	0.5
6200087	99	P	SUR	55	7	356	0	0.4	-0.4	0.5
6200091	99	P	SUR	53	-5	717	0	0.5	-0.3	0.6
6200092	99	P	SUR	51	-11	717	0	0.4	-0.2	0.4
6200093	99	P	SUR	55	-10	717	0	0.4	-0.4	0.6
6200094	99	P	SUR	52	-7	716	0	0.4	-0.0	0.4
6200095	99	P	SUR	53	-16	717	0	0.4	-0.4	0.6
62001	99	P	SUR	45	-5	1575	0	0.4	0.0	0.4
6200192	99	P	SUR	40	-10	639	0	0.4	-1.2	1.3
6200199	99	P	SUR	40	-9	632	0	0.2	-1.0	1.0
6200200	99	P	SUR	36	-8	523	49	8.0	4.6	9.2
6201066	99	P	SUR	55	7	659	0	0.2	0.3	0.4
6202613	99	P	SUR	28	-66	720	0	0.4	-0.2	0.5
6202614	99	P	SUR	26	-58	719	0	0.3	-0.3	0.4
6202623	99	P	SUR	67	-5	720	0	0.5	-0.2	0.5
6202624	99	P	SUR	61	-24	719	0	0.4	-0.2	0.5
6202626	99	P	SUR	53	-11	720	0	1.2	-0.7	1.4
6202627	99	P	SUR	62	-22	692	0	0.5	-0.2	0.5

DRIFTER MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
6202629	99	P	SUR	35	-48	717	0	0.6	-0.3	0.7
6202630	99	P	SUR	46	-3	720	0	0.3	-0.0	0.3
6202631	99	P	SUR	60	-8	720	0	0.4	-0.0	0.4
6202632	99	P	SUR	61	-26	720	0	0.4	-0.2	0.4
6202633	99	P	SUR	63	-10	719	0	0.4	-0.2	0.5
6202635	99	P	SUR	64	7	720	0	0.4	0.2	0.4
6202636	99	P	SUR	71	18	718	0	0.4	-0.5	0.7
6202637	99	P	SUR	64	2	720	0	0.4	0.0	0.4
6202639	99	P	SUR	32	-29	720	0	0.4	-0.1	0.4
6202640	99	P	SUR	36	-44	720	0	0.4	-0.3	0.5
6202643	99	P	SUR	29	-60	720	0	0.3	-0.2	0.3
6202644	99	P	SUR	32	-39	720	0	0.3	-0.3	0.4
6202645	99	P	SUR	28	-64	720	0	0.3	-0.5	0.5
62029	99	P	SUR	49	-12	1576	0	0.3	-0.0	0.3
6203507	99	P	SUR	42	-66	699	0	2.3	2.3	3.3
6203508	99	P	SUR	43	-68	699	0	0.4	0.6	0.7
6203516	99	P	SUR	44	-61	673	0	0.5	-0.1	0.5
6203574	99	P	SUR	61	-6	684	0	0.4	0.2	0.5
6203580	99	P	SUR	66	-11	1	1	0.0	0.0	0.0
6203588	99	P	SUR	63	-38	685	0	0.5	0.2	0.6
6203601	99	P	SUR	34	-55	720	0	1.6	-0.4	1.6
6203607	99	P	SUR	37	-58	673	46	2.5	-0.5	2.6
6203612	99	P	SUR	27	-40	720	0	0.3	0.1	0.4
6203613	99	P	SUR	27	-41	720	0	0.3	0.2	0.4
6203614	99	P	SUR	23	-55	719	0	0.2	0.2	0.3
6203615	99	P	SUR	23	-59	720	0	0.2	0.0	0.2
6203616	99	P	SUR	27	-38	719	0	0.3	0.2	0.4
6203617	99	P	SUR	13	-31	719	0	0.3	0.5	0.6
6203621	99	P	SUR	40	-21	720	0	0.5	0.5	0.7
6203622	99	P	SUR	41	-28	720	0	0.6	0.6	0.8
6203624	99	P	SUR	22	-63	718	0	0.3	0.1	0.3
6203625	99	P	SUR	41	-28	720	0	0.5	0.8	1.0
6203626	99	P	SUR	60	-1	720	0	0.4	-0.5	0.7
6203627	99	P	SUR	26	-59	720	0	0.3	-0.0	0.3
6203631	99	P	SUR	21	-67	720	0	0.3	-0.3	0.4
6203632	99	P	SUR	28	-28	720	0	0.4	0.0	0.4
6203633	99	P	SUR	54	-27	720	0	0.6	0.2	0.6
6203634	99	P	SUR	32	-19	718	0	0.3	0.1	0.3
6203635	99	P	SUR	15	-54	720	0	0.3	0.3	0.4
6203637	99	P	SUR	61	1	720	0	0.4	0.2	0.4
6203639	99	P	SUR	44	-20	720	0	0.5	0.7	0.9
6203640	99	P	SUR	39	-18	720	80	2.2	-0.1	2.2
6203643	99	P	SUR	26	-57	720	0	0.3	0.2	0.3



DRIFTER MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
6203644	99	P	SUR	10	-38	720	0	0.3	0.2	0.4
6203649	99	P	SUR	46	-33	375	68	3.6	-0.9	3.7
6203650	99	P	SUR	56	6	720	0	0.5	0.7	0.8
6203730	99	P	SUR	25	-41	685	0	0.3	0.3	0.5
6203732	99	P	SUR	19	-53	693	0	0.3	-0.6	0.6
6203734	99	P	SUR	13	-23	684	0	0.3	0.4	0.5
6203735	99	P	SUR	15	-54	685	0	0.4	0.5	0.6
6203737	99	P	SUR	29	-42	691	0	0.6	0.8	1.0
6203747	99	P	SUR	63	-14	695	0	0.5	-0.1	0.5
6203748	99	P	SUR	62	-1	687	0	0.4	0.1	0.4
6203749	99	P	SUR	62	-4	694	0	0.5	-0.0	0.5
6203750	99	P	SUR	61	-12	687	0	0.4	-0.1	0.4
6203751	99	P	SUR	62	1	692	0	0.7	1.4	1.5
6203752	99	P	SUR	62	-24	689	0	0.5	-0.3	0.6
6203753	99	P	SUR	59	-31	688	0	0.4	-0.4	0.6
6203755	99	P	SUR	49	-7	691	0	0.3	-0.7	0.8
6203760	99	P	SUR	59	2	695	0	0.3	0.2	0.3
6203762	99	P	SUR	25	-29	691	0	0.4	-0.2	0.5
6203764	99	P	SUR	29	-25	686	0	0.4	0.2	0.4
6203765	99	P	SUR	23	-38	691	0	0.3	0.2	0.3
6203766	99	P	SUR	25	-32	686	0	0.3	-2.7	2.7
6203767	99	P	SUR	19	-35	691	0	0.3	-0.4	0.5
6203768	99	P	SUR	32	-14	688	0	0.2	0.2	0.3
6203771	99	P	SUR	26	-29	689	0	0.4	0.1	0.4
6203772	99	P	SUR	25	-39	687	0	0.3	0.1	0.3
6203773	99	P	SUR	29	-38	691	0	0.3	-0.2	0.3
6203774	99	P	SUR	28	-16	417	0	0.3	-0.7	0.7
6203776	99	P	SUR	31	-20	689	0	0.3	-0.1	0.3
6203777	99	P	SUR	24	-42	687	0	0.3	0.1	0.3
6203838	99	P	SUR	15	-35	697	0	0.3	0.2	0.4
6203839	99	P	SUR	17	-30	698	0	0.3	-0.0	0.3
6203840	99	P	SUR	18	-27	699	0	0.3	0.2	0.4
62050	99	P	SUR	50	-4	1575	0	0.3	-0.2	0.3
62081	99	P	SUR	51	-13	1575	0	0.3	-0.3	0.4
62091	99	P	SUR	53	-5	717	0	0.5	-0.3	0.6
62092	99	P	SUR	51	-11	717	0	0.4	-0.2	0.4
62093	99	P	SUR	55	-10	717	0	0.4	-0.4	0.6
62094	99	P	SUR	52	-7	716	0	0.4	-0.0	0.4
62095	99	P	SUR	53	-16	717	0	0.4	-0.4	0.6
62102	99	P	SUR	58	2	1571	0	0.5	-0.1	0.5
62103	99	P	SUR	50	-3	1572	0	0.4	-0.2	0.4
62104	99	P	SUR	57	1	1570	0	0.4	-0.3	0.5
62107	99	P	SUR	50	-6	1911	0	0.3	-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
62112	99	P	SUR	58	0	1575	0	0.4	0.0	0.4
62113	99	P	SUR	58	0	1566	0	0.6	-0.1	0.6
62114	99	P	SUR	58	0	2868	0	0.6	0.0	0.6
62115	99	P	SUR	58	-3	1530	0	0.4	-0.2	0.4
62116	99	P	SUR	58	1	1572	0	0.5	-0.3	0.6
62118	99	P	SUR	58	1	1570	0	0.4	0.3	0.5
62119	99	P	SUR	57	2	1565	0	0.4	0.2	0.5
62120	99	P	SUR	56	2	1574	0	0.5	-0.2	0.6
62121	99	P	SUR	54	3	1574	0	0.4	0.2	0.5
62122	99	P	SUR	57	2	2268	0	0.5	-0.0	0.5
62124	99	P	SUR	54	-4	1489	0	0.4	-0.2	0.4
62127	99	P	SUR	54	1	682	0	0.3	0.3	0.5
62129	99	P	SUR	58	0	818	0	0.7	-0.1	0.7
62130	99	P	SUR	59	1	1564	0	0.5	-0.4	0.6
62131	99	P	SUR	54	1	1513	0	0.3	0.3	0.4
62132	99	P	SUR	56	2	1575	0	0.5	0.5	0.7
62133	99	P	SUR	57	1	1574	0	0.5	-0.2	0.5
62134	99	P	SUR	58	1	1557	0	0.4	0.5	0.6
62135	99	P	SUR	54	2	1575	0	0.5	0.3	0.6
62138	99	P	SUR	54	0	1972	0	0.5	0.5	0.7
62140	99	P	SUR	57	1	2272	0	0.5	-0.2	0.5
62141	99	P	SUR	58	-4	1460	0	0.5	-0.6	0.8
62143	99	P	SUR	58	2	1573	0	0.5	0.7	0.8
62144	99	P	SUR	53	2	1575	0	0.4	0.2	0.4
62145	99	P	SUR	53	3	2274	0	0.3	0.4	0.5
62146	99	P	SUR	57	2	1562	0	0.5	-0.0	0.5
62148	99	P	SUR	54	2	1563	0	0.5	1.0	1.1
62149	99	P	SUR	54	1	1575	0	0.3	0.6	0.7
62151	99	P	SUR	57	2	2005	0	0.3	-0.0	0.3
62152	99	P	SUR	57	2	1504	0	0.4	0.4	0.5
62153	99	P	SUR	57	2	2268	0	0.5	0.2	0.6
62154	99	P	SUR	56	2	1574	0	0.4	-0.1	0.4
62155	99	P	SUR	58	1	1572	0	0.5	0.3	0.6
62157	99	P	SUR	58	0	1573	0	0.5	-0.3	0.6
62160	99	P	SUR	57	2	2272	0	0.4	0.3	0.5
62161	99	P	SUR	58	1	1573	0	0.6	-0.2	0.6
62162	99	P	SUR	57	1	1464	0	0.4	-0.2	0.5
62163	99	P	SUR	48	-8	1578	0	0.3	0.3	0.4
62164	99	P	SUR	57	1	1538	0	0.6	0.2	0.6
62165	99	P	SUR	54	1	1562	0	0.6	0.7	0.9
62168	99	P	SUR	58	1	1573	0	0.4	-0.2	0.4
62170	99	P	SUR	51	2	1571	0	0.3	-0.1	0.3
62296	99	P	SUR	53	2	1575	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
62297	99	P	SUR	59	2	2272	0	0.4	-0.1	0.5
62302	99	P	SUR	61	-2	1572	0	0.7	-0.4	0.8
62304	99	P	SUR	51	2	1574	0	0.4	-0.1	0.4
62305	99	P	SUR	50	0	2169	0	0.4	-0.0	0.4
62442	99	P	SUR	49	-16	1573	0	0.3	-0.3	0.5
6301001	99	P	SUR	64	5	711	0	0.5	-0.3	0.6
6301003	99	P	SUR	74	24	718	0	3.4	-1.4	3.7
6301004	99	P	SUR	72	20	718	0	0.4	-0.3	0.5
6301510	99	P	SUR	80	16	668	67	2.1	-0.5	2.2
6301511	99	P	SUR	49	-40	688	0	1.8	6.7	6.9
6301564	99	P	SUR	56	-30	506	45	3.5	-0.2	3.5
6301570	99	P	SUR	54	-42	720	0	0.5	0.2	0.6
6301571	99	P	SUR	52	-25	719	0	0.3	-0.1	0.3
6301572	99	P	SUR	86	26	719	0	0.5	0.6	0.8
6301573	99	P	SUR	89	-25	719	0	0.4	1.4	1.4
6301574	99	P	SUR	84	11	718	0	0.4	0.4	0.6
6301575	99	P	SUR	89	-16	719	0	0.4	1.1	1.2
6301576	99	P	SUR	87	24	720	0	0.5	1.3	1.4
63055	99	P	SUR	61	2	1512	0	0.5	-0.1	0.6
63056	99	P	SUR	60	2	1575	0	0.6	0.2	0.6
63057	99	P	SUR	59	2	1575	0	0.4	-0.3	0.5
63058	99	P	SUR	53	2	2553	0	0.4	0.0	0.4
63059	99	P	SUR	58	-1	1574	0	0.4	0.2	0.4
63101	99	P	SUR	61	1	1574	0	0.6	-0.2	0.7
63102	99	P	SUR	61	1	1574	0	0.6	-0.0	0.6
63103	99	P	SUR	61	1	1574	0	0.5	0.1	0.5
63108	99	P	SUR	61	2	1512	0	0.6	-0.1	0.6
63109	99	P	SUR	60	2	1575	0	0.4	-0.4	0.6
63110	99	P	SUR	60	2	1575	0	0.5	-0.4	0.6
63111	99	P	SUR	61	2	2271	0	0.5	-0.7	0.9
63112	99	P	SUR	61	1	1574	0	0.5	-0.7	0.8
63115	99	P	SUR	62	1	1572	0	0.5	-0.1	0.5
63117	99	P	SUR	61	1	2272	0	0.6	0.2	0.7
63118	99	P	SUR	58	2	1573	0	0.7	-0.4	0.8
6401531	99	P	SUR	52	-32	679	0	0.4	-0.0	0.4
6401573	99	P	SUR	57	-25	720	0	0.4	-0.2	0.5
6401574	99	P	SUR	53	-51	718	1	1.3	0.8	1.5
6401575	99	P	SUR	67	-5	720	0	1.5	0.4	1.5
6401576	99	P	SUR	72	-22	720	0	0.7	-0.4	0.8
6401577	99	P	SUR	67	-21	135	0	2.7	0.9	2.9
6401578	99	P	SUR	78	-19	720	0	0.7	0.3	0.8
6401592	99	P	SUR	63	-17	344	0	0.6	-0.0	0.6
6401759	99	P	SUR	57	-49	720	0	0.4	0.1	0.4

DRIFTER MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
6401760	99	P	SUR	61	-53	717	0	0.4	-0.1	0.4
6401761	99	P	SUR	61	-58	720	0	0.4	0.1	0.4
6401762	99	P	SUR	69	0	720	0	0.4	0.3	0.5
6401763	99	P	SUR	62	2	720	0	0.5	0.2	0.5
6401838	99	P	SUR	64	-18	675	0	1.9	-2.8	3.4
6401839	99	P	SUR	63	-14	528	0	0.5	0.1	0.5
6401840	99	P	SUR	62	-1	640	0	0.4	0.1	0.4
6401841	99	P	SUR	62	-12	274	0	0.4	0.2	0.5
6401842	99	P	SUR	64	-27	653	0	0.5	-0.2	0.6
6401843	99	P	SUR	63	-18	641	0	0.5	0.0	0.5
6402539	99	P	SUR	52	-32	685	0	0.4	-0.1	0.4
6402541	99	P	SUR	70	-13	513	0	0.7	0.2	0.7
6402543	99	P	SUR	58	-45	682	0	0.4	0.1	0.4
6402544	99	P	SUR	73	9	681	0	0.5	0.1	0.5
6402545	99	P	SUR	74	19	202	0	0.5	0.0	0.5
6402547	99	P	SUR	59	-59	569	0	0.4	0.2	0.5
6402548	99	P	SUR	70	17	600	0	0.5	0.2	0.5
6402549	99	P	SUR	76	11	615	0	0.5	0.0	0.5
6402550	99	P	SUR	72	26	160	0	0.4	0.2	0.4
6402551	99	P	SUR	58	-57	675	0	0.4	0.1	0.4
6402552	99	P	SUR	65	-3	597	0	0.5	0.2	0.6
6402554	99	P	SUR	61	4	490	0	0.4	0.5	0.6
6402557	99	P	SUR	69	-6	675	0	0.5	0.3	0.6
6402559	99	P	SUR	62	-56	659	0	0.5	0.1	0.5
6402560	99	P	SUR	69	-6	595	0	0.4	0.0	0.5
6402562	99	P	SUR	60	-44	688	0	0.6	-0.1	0.6
6402563	99	P	SUR	64	-2	585	0	0.5	0.3	0.6
6402587	99	P	SUR	62	-63	648	0	0.4	0.1	0.5
6402588	99	P	SUR	63	-62	673	0	0.5	0.0	0.5
6402589	99	P	SUR	66	-58	649	0	0.4	-0.3	0.5
6402590	99	P	SUR	65	-59	639	0	0.4	-0.4	0.6
6402591	99	P	SUR	66	-58	673	0	0.4	0.1	0.4
6402592	99	P	SUR	60	-56	628	0	0.4	-0.9	1.0
6402593	99	P	SUR	64	-54	684	0	0.4	-0.1	0.4
6402594	99	P	SUR	62	-59	664	0	0.5	-0.2	0.5
6402596	99	P	SUR	58	-48	603	0	0.4	-0.1	0.4
6402597	99	P	SUR	63	-57	677	0	0.4	-0.3	0.5
6402598	99	P	SUR	62	-56	631	0	0.5	-0.2	0.5
6402599	99	P	SUR	61	-56	652	0	0.4	-0.1	0.4
6402600	99	P	SUR	84	-37	707	0	0.7	1.1	1.3
6402610	99	P	SUR	60	-43	675	0	0.5	-0.3	0.6
6402611	99	P	SUR	59	-58	617	0	0.4	0.1	0.4
6402612	99	P	SUR	63	-63	678	0	0.6	-0.1	0.6

DRIFTER MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
6402614	99	P	SUR	65	-59	686	0	0.5	0.0	0.5
6402619	99	P	SUR	44	-11	693	0	0.3	0.1	0.3
6402620	99	P	SUR	47	-16	688	0	0.3	0.4	0.5
6402621	99	P	SUR	43	-14	692	0	0.3	0.4	0.5
6402622	99	P	SUR	41	-15	688	0	0.3	0.2	0.3
6402624	99	P	SUR	79	20	456	14	2.2	0.1	2.2
6402654	99	P	SUR	60	-9	400	0	0.4	-0.1	0.4
6402655	99	P	SUR	63	-14	603	0	0.5	0.0	0.5
6402656	99	P	SUR	66	-29	646	0	4.1	2.3	4.7
6402657	99	P	SUR	64	-21	580	0	0.5	0.2	0.5
6402659	99	P	SUR	60	-27	690	0	0.4	-0.2	0.5
6402660	99	P	SUR	66	-23	593	0	0.6	-0.6	0.8
6402661	99	P	SUR	61	-18	542	0	0.4	-0.1	0.4
6402663	99	P	SUR	59	-32	664	0	0.4	-0.4	0.6
6402665	99	P	SUR	61	-2	585	0	0.4	0.3	0.5
6402666	99	P	SUR	64	-21	685	0	0.5	0.0	0.5
6402667	99	P	SUR	61	-26	627	0	0.4	-0.3	0.5
6402668	99	P	SUR	54	-39	681	0	0.6	0.4	0.7
6402678	99	P	SUR	59	-34	239	0	0.4	-0.1	0.4
6402679	99	P	SUR	71	-1	238	0	0.5	0.2	0.6
6402680	99	P	SUR	55	-45	238	0	0.5	-0.2	0.6
6402681	99	P	SUR	68	-7	239	0	0.6	0.2	0.6
6402722	99	P	SUR	70	-4	241	0	0.5	0.1	0.5
64041	99	P	SUR	61	-3	1572	0	0.5	-0.4	0.6
64045	99	P	SUR	59	-12	1571	0	0.4	-0.4	0.6
6501545	99	P	SUR	79	11	678	0	1.0	0.0	1.0
6501546	99	P	SUR	82	11	214	0	1.6	0.4	1.7
6501547	99	P	SUR	79	11	151	11	3.1	-0.6	3.1
6501548	99	P	SUR	80	11	677	0	1.6	0.5	1.7
6501670	99	P	SUR	76	17	665	0	0.4	0.2	0.5
6501671	99	P	SUR	80	11	664	0	0.4	0.2	0.5
6501672	99	P	SUR	79	-2	29	0	0.4	0.2	0.5
6501674	99	P	SUR	75	11	671	0	0.4	0.1	0.5
6501675	99	P	SUR	74	2	659	0	0.4	0.1	0.4
6501676	99	P	SUR	77	9	635	0	0.4	0.3	0.5
6501677	99	P	SUR	75	-10	575	3	3.4	1.6	3.8
6501678	99	P	SUR	74	-15	141	0	1.5	0.4	1.5
6501679	99	P	SUR	76	1	665	0	0.5	0.1	0.5
6501681	99	P	SUR	68	-31	671	0	0.6	0.1	0.6
6501685	99	P	SUR	82	30	645	0	1.1	-0.2	1.1
6501686	99	P	SUR	82	31	183	0	1.2	0.1	1.2
6501687	99	P	SUR	81	20	683	0	0.5	0.2	0.5
6501689	99	P	SUR	79	11	2809	0	0.8	0.2	0.8

DRIFTER MONITORING STATISTICS (EUCOS)  
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
6600021	99	P	SUR	55	14	261	0	0.4	0.4	0.6
6600022	99	P	SUR	54	14	260	0	0.5	-0.6	0.7

**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 : NOV 2021  
 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
1300001	99	SPEED	SUR	11	-23	592	0	0	0.9	0.3	1.0
1300002	99	SPEED	SUR	20	-23	584	0	0	0.9	0.1	0.9
1300008	99	SPEED	SUR	15	-38	596	0	0	0.8	0.2	0.8
1300130	99	SPEED	SUR	28	-16	661	0	0	1.2	-0.1	1.2
1300131	99	SPEED	SUR	28	-17	679	0	0	1.8	1.2	2.2
1801568	99	SPEED	SUR	18	-66	1997	0	0	1.0	-0.2	1.0
1801580	99	SPEED	SUR	19	-67	1380	0	0	1.8	2.5	3.1
4100040	99	SPEED	SUR	15	-53	4314	0	0	0.9	0.3	1.0
4100043	99	SPEED	SUR	21	-65	4315	0	0	1.0	0.0	1.0
4100046	99	SPEED	SUR	24	-68	4315	0	0	1.1	0.0	1.1
4100048	99	SPEED	SUR	32	-70	3890	0	0	1.4	0.2	1.4
4100049	99	SPEED	SUR	27	-63	4312	0	0	1.2	0.2	1.2
4100052	99	SPEED	SUR	18	-65	4238	0	0	0.9	-0.3	1.0
4100053	99	SPEED	SUR	18	-66	4287	0	0	1.4	0.9	1.7
4100056	99	SPEED	SUR	18	-65	4228	0	0	1.1	-0.5	1.2
4100139	99	SPEED	SUR	20	-38	572	0	0	1.1	0.0	1.1
4100300	99	SPEED	SUR	16	-57	642	0	0	0.8	-0.7	1.1
4101817	99	SPEED	SUR	37	-65	1	0	0	0.0	3.3	3.3
41040	99	SPEED	SUR	15	-53	4924	0	0	0.9	0.1	1.0
41043	99	SPEED	SUR	21	-65	4393	0	0	1.0	-0.0	1.0
41046	99	SPEED	SUR	24	-68	6069	0	0	1.2	-0.0	1.2
41048	99	SPEED	SUR	32	-70	6098	0	0	1.5	0.0	1.5
41049	99	SPEED	SUR	28	-63	6000	0	0	1.3	0.1	1.3
41052	99	SPEED	SUR	18	-65	3023	0	0	1.0	-0.2	1.0
41053	99	SPEED	SUR	19	-66	3028	0	0	1.4	0.3	1.5
41056	99	SPEED	SUR	18	-66	3010	0	0	1.1	-0.2	1.1
4200059	99	SPEED	SUR	15	-67	4315	0	0	0.9	0.2	1.0
4200085	99	SPEED	SUR	18	-67	3998	0	0	1.3	-0.4	1.3
42059	99	SPEED	SUR	15	-68	4244	0	0	0.9	0.0	0.9
42085	99	SPEED	SUR	18	-67	3497	0	0	1.3	-0.2	1.3
4400005	99	SPEED	SUR	43	-69	718	0	0	1.2	0.2	1.2
4400008	99	SPEED	SUR	40	-69	4315	0	0	1.4	0.5	1.5
4400011	99	SPEED	SUR	41	-67	4312	0	0	1.6	0.3	1.6
4400024	99	SPEED	SUR	42	-66	75	0	0	1.0	-0.8	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
440027	99	SPEED	SUR	44	-67	719	0	0	1.4	0.4	1.5
440032	99	SPEED	SUR	44	-69	710	0	0	1.3	0.4	1.4
440033	99	SPEED	SUR	44	-69	707	0	0	1.4	0.1	1.4
440034	99	SPEED	SUR	44	-68	706	0	0	1.4	0.1	1.4
440037	99	SPEED	SUR	43	-68	82	0	0	1.0	-0.3	1.1
44005	99	SPEED	SUR	43	-69	2010	0	0	1.2	0.2	1.3
44008	99	SPEED	SUR	41	-69	6070	0	0	1.4	-0.1	1.4
44011	99	SPEED	SUR	41	-67	6077	4	0	1.6	-0.2	1.6
44024	99	SPEED	SUR	42	-66	196	0	0	1.1	-0.8	1.3
44027	99	SPEED	SUR	44	-67	2005	0	0	1.4	0.5	1.5
44032	99	SPEED	SUR	44	-69	1306	0	0	1.4	0.5	1.5
44033	99	SPEED	SUR	44	-69	1300	0	0	1.4	0.5	1.5
44034	99	SPEED	SUR	44	-68	1298	0	0	1.5	0.1	1.5
44037	99	SPEED	SUR	44	-68	150	0	0	1.1	-0.2	1.1
44078	99	SPEED	SUR	60	-40	370	0	0	1.3	-0.9	1.6
44137	99	SPEED	SUR	42	-62	726	0	0	1.7	-0.3	1.7
44139	99	SPEED	SUR	44	-57	753	0	0	1.5	0.1	1.5
44150	99	SPEED	SUR	43	-64	781	0	0	1.4	-0.0	1.4
44258	99	SPEED	SUR	45	-63	731	0	0	1.7	0.3	1.7
44488	99	SPEED	SUR	45	-61	778	0	0	1.8	0.3	1.9
44489	99	SPEED	SUR	46	-61	756	0	0	1.7	1.0	2.0
44490	99	SPEED	SUR	45	-66	773	0	0	1.5	-0.3	1.5
6100001	99	SPEED	SUR	43	8	520	0	0	2.0	-0.9	2.2
6100002	99	SPEED	SUR	42	5	614	0	0	1.7	-0.8	1.8
6100196	99	SPEED	SUR	42	4	587	5	0	1.7	-0.3	1.7
6100197	99	SPEED	SUR	40	4	693	0	0	1.9	-0.3	1.9
6100198	99	SPEED	SUR	37	-2	689	0	0	1.8	-0.2	1.8
6100280	99	SPEED	SUR	41	1	701	0	0	1.9	-0.6	2.0
6100281	99	SPEED	SUR	40	0	348	0	0	1.9	0.7	2.0
6100417	99	SPEED	SUR	38	0	698	0	0	1.7	-0.0	1.7
6100430	99	SPEED	SUR	40	2	216	0	0	2.0	-0.8	2.2
6101003	99	SPEED	SUR	40	25	152	0	0	2.0	-0.6	2.1
6101005	99	SPEED	SUR	38	26	122	0	0	1.7	0.2	1.8
6101007	99	SPEED	SUR	36	25	148	0	0	1.9	-0.4	1.9
6101008	99	SPEED	SUR	37	22	146	0	0	2.1	-0.5	2.1
6101009	99	SPEED	SUR	35	25	68	0	0	1.5	0.4	1.6
6200024	99	SPEED	SUR	44	-3	696	0	0	1.5	-0.8	1.7
6200025	99	SPEED	SUR	44	-6	684	0	0	1.4	-0.9	1.7
6200082	99	SPEED	SUR	44	-8	704	0	0	1.1	-0.7	1.3
6200083	99	SPEED	SUR	43	-9	704	0	0	1.2	-0.2	1.2
6200084	99	SPEED	SUR	42	-9	701	0	0	1.2	-1.2	1.7



## 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
6200085	99	SPEED	SUR	36	-7	696	0	0	1.2	-0.4	1.3
6200086	99	SPEED	SUR	55	6	341	0	0	2.0	1.7	2.6
6200087	99	SPEED	SUR	55	7	356	0	0	1.6	1.3	2.1
6200091	99	SPEED	SUR	53	-5	717	0	0	1.0	0.4	1.1
6200092	99	SPEED	SUR	51	-11	717	0	0	1.2	0.2	1.3
6200093	99	SPEED	SUR	55	-10	717	0	0	1.1	-0.7	1.3
6200094	99	SPEED	SUR	52	-7	716	0	0	1.1	-0.6	1.3
6200095	99	SPEED	SUR	53	-16	717	0	0	0.9	0.2	0.9
62001	99	SPEED	SUR	45	-5	1575	0	0	1.3	0.6	1.5
6200200	99	SPEED	SUR	36	-8	572	20	0	1.2	0.2	1.2
6201066	99	SPEED	SUR	55	7	652	0	0	1.8	0.0	1.8
62029	99	SPEED	SUR	49	-12	1576	0	0	1.0	0.6	1.2
62081	99	SPEED	SUR	51	-13	1575	0	0	0.9	0.7	1.2
62091	99	SPEED	SUR	53	-5	717	0	0	1.1	0.5	1.2
62092	99	SPEED	SUR	51	-11	717	0	0	1.3	0.5	1.4
62093	99	SPEED	SUR	55	-10	717	0	0	1.0	-0.3	1.1
62094	99	SPEED	SUR	52	-7	716	0	0	1.1	-0.4	1.2
62095	99	SPEED	SUR	53	-16	717	0	0	0.9	0.5	1.1
62102	99	SPEED	SUR	58	2	1571	0	0	1.5	-0.2	1.5
62103	99	SPEED	SUR	50	-3	1574	0	0	1.2	-0.1	1.2
62104	99	SPEED	SUR	57	1	1567	0	0	1.5	-0.5	1.6
62107	99	SPEED	SUR	50	-6	1057	0	0	1.1	0.3	1.1
62112	99	SPEED	SUR	58	0	1575	0	0	1.6	-0.6	1.7
62113	99	SPEED	SUR	58	0	1566	0	0	1.8	-0.2	1.8
62114	99	SPEED	SUR	58	0	2868	0	0	1.8	0.5	1.9
62118	99	SPEED	SUR	58	1	1572	0	0	1.6	0.3	1.7
62119	99	SPEED	SUR	57	2	1565	0	0	2.0	-0.6	2.1
62120	99	SPEED	SUR	56	2	1574	0	0	1.4	0.0	1.4
62121	99	SPEED	SUR	54	3	1574	0	0	1.2	-0.5	1.3
62122	99	SPEED	SUR	57	2	2268	0	0	1.8	-0.5	1.9
62131	99	SPEED	SUR	54	1	1513	0	0	1.4	-0.1	1.4
62132	99	SPEED	SUR	56	2	1575	0	0	3.0	-2.1	3.7
62133	99	SPEED	SUR	57	1	1574	0	0	1.6	-0.4	1.6
62134	99	SPEED	SUR	58	1	1555	0	0	1.5	-0.5	1.6
62140	99	SPEED	SUR	57	1	2259	0	0	1.6	0.0	1.6
62143	99	SPEED	SUR	58	2	1573	0	0	2.3	-1.2	2.6
62144	99	SPEED	SUR	53	2	1575	0	0	1.4	-0.6	1.5
62145	99	SPEED	SUR	53	3	2274	0	0	1.4	-0.1	1.5
62146	99	SPEED	SUR	57	2	705	0	0	2.1	0.1	2.1
62148	99	SPEED	SUR	54	2	1519	0	0	1.7	-1.0	2.0
62149	99	SPEED	SUR	54	1	1575	0	0	1.2	0.1	1.2

## 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
62152	99	SPEED	SUR	57	2	1504	0	0	2.1	-2.2	3.0
62153	99	SPEED	SUR	57	2	2268	0	0	2.9	-2.3	3.7
62154	99	SPEED	SUR	56	2	1574	0	0	1.4	-0.2	1.4
62155	99	SPEED	SUR	58	1	1293	0	0	1.6	-0.3	1.6
62164	99	SPEED	SUR	57	1	1540	0	0	1.7	-1.6	2.3
62165	99	SPEED	SUR	54	1	1562	0	0	1.7	-0.8	1.8
62170	99	SPEED	SUR	51	2	1571	0	0	1.4	0.9	1.7
62304	99	SPEED	SUR	51	2	1574	0	0	1.6	1.0	1.9
62305	99	SPEED	SUR	50	0	2169	0	0	1.5	0.9	1.7
6301001	99	SPEED	SUR	64	5	710	0	0	1.6	-0.2	1.7
6301003	99	SPEED	SUR	74	24	717	0	0	1.5	-0.3	1.5
6301004	99	SPEED	SUR	72	20	718	0	0	3.2	-2.7	4.2
63055	99	SPEED	SUR	61	2	1512	0	0	1.5	-1.4	2.1
63056	99	SPEED	SUR	60	2	1575	0	0	1.6	0.0	1.6
63057	99	SPEED	SUR	59	2	1575	0	0	2.8	-1.5	3.1
63058	99	SPEED	SUR	53	2	1838	0	0	1.3	-0.1	1.3
63101	99	SPEED	SUR	61	1	1574	0	0	1.6	-0.8	1.8
63103	99	SPEED	SUR	61	1	1574	0	0	1.9	-0.5	2.0
63106	99	SPEED	SUR	61	2	1547	0	0	2.1	-1.2	2.4
63108	99	SPEED	SUR	61	2	1512	0	0	1.9	-0.4	2.0
63109	99	SPEED	SUR	60	2	1530	0	0	1.5	-0.0	1.5
63110	99	SPEED	SUR	60	2	1573	0	0	1.5	-0.8	1.7
63112	99	SPEED	SUR	61	1	1574	0	0	1.5	-0.7	1.7
63115	99	SPEED	SUR	62	1	1572	0	0	1.5	-0.6	1.6
63117	99	SPEED	SUR	61	1	2272	0	0	1.5	-0.8	1.7
64041	99	SPEED	SUR	61	-3	1562	0	0	1.5	-0.4	1.5
64045	99	SPEED	SUR	59	-12	1571	0	0	1.2	0.9	1.5
6600021	99	SPEED	SUR	55	14	261	0	0	1.2	0.6	1.4
6600022	99	SPEED	SUR	54	14	260	5	0	1.1	0.4	1.2

### 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 : NOV 2021  
 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
1300001	99	DIRN	SUR	11	-23	509	0	0	13.4	3.5	13.9
1300002	99	DIRN	SUR	20	-23	504	0	0	11.9	0.4	11.9
1300008	99	DIRN	SUR	15	-38	489	0	0	120.2	65.6	136.9
1300130	99	DIRN	SUR	28	-16	523	0	0	11.8	2.1	12.0
1300131	99	DIRN	SUR	28	-17	461	0	0	51.6	-62.4	81.0
1801560	99	DIRN	SUR	35	-76	408	0	0	13.3	-0.3	13.3
1801568	99	DIRN	SUR	18	-66	1931	0	0	12.7	5.5	13.8
1801580	99	DIRN	SUR	19	-67	1336	0	0	15.7	-99.2	100.4
4100002	99	DIRN	SUR	32	-75	3474	0	0	17.5	6.6	18.7
4100004	99	DIRN	SUR	33	-79	3550	0	0	15.1	5.2	16.0
4100008	99	DIRN	SUR	31	-81	553	0	0	13.3	1.2	13.3
4100009	99	DIRN	SUR	29	-80	3623	0	0	23.0	5.0	23.5
4100010	99	DIRN	SUR	29	-78	3341	0	0	22.0	6.5	23.0
4100013	99	DIRN	SUR	33	-78	3682	0	0	17.0	4.9	17.7
4100024	99	DIRN	SUR	34	-78	477	0	0	13.1	-13.2	18.6
4100025	99	DIRN	SUR	35	-75	3778	0	0	16.2	7.7	17.9
4100029	99	DIRN	SUR	33	-80	500	0	0	14.6	-0.7	14.6
4100033	99	DIRN	SUR	32	-80	485	0	0	18.8	-2.4	19.0
4100037	99	DIRN	SUR	34	-77	604	0	0	21.0	-0.5	21.0
4100038	99	DIRN	SUR	34	-78	564	0	0	12.6	-19.2	23.0
4100040	99	DIRN	SUR	15	-53	4171	0	0	8.6	4.2	9.6
4100043	99	DIRN	SUR	21	-65	3931	0	0	13.3	1.2	13.4
4100046	99	DIRN	SUR	24	-68	3285	0	0	15.8	-2.5	16.0
4100047	99	DIRN	SUR	27	-71	3509	0	0	17.1	5.3	17.9
4100048	99	DIRN	SUR	32	-70	3411	0	0	18.9	2.1	19.0
4100049	99	DIRN	SUR	27	-63	3696	0	0	18.0	1.7	18.0
4100052	99	DIRN	SUR	18	-65	3914	0	0	12.1	5.9	13.5
4100053	99	DIRN	SUR	18	-66	2413	0	0	14.8	2.5	15.1
4100056	99	DIRN	SUR	18	-65	3798	0	0	16.0	4.0	16.5
4100064	99	DIRN	SUR	34	-77	624	0	0	34.3	0.3	34.3
4100139	99	DIRN	SUR	20	-38	386	0	0	16.0	2.4	16.2
41002	99	DIRN	SUR	32	-75	4794	0	0	17.6	6.2	18.6

## 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	597	0	0	12.3	8.4	14.8
41004	99	DIRN	SUR	33	-79	5395	0	0	15.3	2.5	15.5
41008	99	DIRN	SUR	31	-81	1485	0	0	13.5	0.5	13.5
41009	99	DIRN	SUR	29	-80	5013	0	0	22.9	2.4	23.0
41010	99	DIRN	SUR	29	-79	4561	0	0	21.9	5.7	22.6
41013	99	DIRN	SUR	33	-78	5135	0	0	17.4	4.3	17.9
4101817	99	DIRN	SUR	37	-65	1	0	0	0.0	-88.7	88.7
41024	99	DIRN	SUR	34	-79	863	0	0	13.6	-13.1	18.9
41025	99	DIRN	SUR	35	-76	5234	0	0	16.6	6.0	17.7
41029	99	DIRN	SUR	33	-80	1315	0	0	14.1	-1.3	14.2
41033	99	DIRN	SUR	32	-80	846	0	0	18.7	-3.5	19.0
41037	99	DIRN	SUR	34	-77	1103	0	0	20.8	-2.2	20.9
41038	99	DIRN	SUR	34	-78	1025	0	0	13.6	-18.5	23.0
41040	99	DIRN	SUR	15	-53	4701	0	0	9.7	3.5	10.3
41043	99	DIRN	SUR	21	-65	3920	0	0	13.5	-2.7	13.7
41046	99	DIRN	SUR	24	-68	4543	0	0	16.5	1.3	16.6
41047	99	DIRN	SUR	28	-72	4874	0	0	17.0	3.3	17.4
41048	99	DIRN	SUR	32	-70	5259	0	0	18.9	2.0	19.0
41049	99	DIRN	SUR	28	-63	4973	0	0	19.1	1.7	19.2
41052	99	DIRN	SUR	18	-65	2737	0	0	12.3	5.3	13.4
41053	99	DIRN	SUR	19	-66	1815	0	0	16.2	1.1	16.3
41056	99	DIRN	SUR	18	-66	2638	0	0	16.3	4.3	16.9
41064	99	DIRN	SUR	34	-77	1138	0	0	34.6	-0.0	34.6
4200013	99	DIRN	SUR	27	-83	1087	0	0	20.4	-7.9	21.8
4200022	99	DIRN	SUR	28	-84	1279	0	0	16.9	-6.0	17.9
4200026	99	DIRN	SUR	25	-83	492	0	0	19.0	-2.2	19.1
4200036	99	DIRN	SUR	29	-85	3897	0	0	12.7	2.2	12.9
4200056	99	DIRN	SUR	20	-85	3207	0	0	18.1	4.4	18.7
4200059	99	DIRN	SUR	15	-67	4286	0	0	10.4	0.1	10.4
4200085	99	DIRN	SUR	18	-67	3452	0	0	19.4	13.8	23.8
42013	99	DIRN	SUR	27	-83	1484	0	0	20.6	-7.8	22.1
42022	99	DIRN	SUR	28	-84	1693	0	0	17.3	-6.8	18.6
42026	99	DIRN	SUR	25	-84	692	0	0	19.7	-2.6	19.8
42036	99	DIRN	SUR	29	-85	5364	0	0	13.0	0.8	13.0
42056	99	DIRN	SUR	20	-85	3077	0	0	18.0	3.8	18.4
42059	99	DIRN	SUR	15	-68	4188	0	0	11.6	1.6	11.7
42085	99	DIRN	SUR	18	-67	2888	0	0	18.2	13.1	22.4
4400005	99	DIRN	SUR	43	-69	617	0	0	13.0	-1.7	13.1
4400007	99	DIRN	SUR	44	-70	3293	0	0	18.3	3.0	18.5
4400008	99	DIRN	SUR	40	-69	3979	0	0	14.9	4.8	15.7
4400009	99	DIRN	SUR	38	-75	3917	0	0	13.4	3.3	13.8

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
4400011	99	DIRN	SUR	41	-67	3797	0	0	16.9	5.0	17.7
4400013	99	DIRN	SUR	42	-71	3547	0	0	13.2	2.6	13.5
4400014	99	DIRN	SUR	37	-75	3332	0	0	12.0	5.6	13.2
4400017	99	DIRN	SUR	41	-72	3789	0	0	12.2	3.1	12.6
4400020	99	DIRN	SUR	41	-70	3682	0	0	13.1	3.3	13.5
4400022	99	DIRN	SUR	41	-74	455	0	0	14.6	4.3	15.2
4400024	99	DIRN	SUR	42	-66	60	0	0	19.2	2.5	19.4
4400027	99	DIRN	SUR	44	-67	648	0	0	13.7	-5.6	14.8
4400029	99	DIRN	SUR	43	-71	36	0	0	11.1	-8.7	14.1
4400030	99	DIRN	SUR	43	-70	61	0	0	22.2	-4.9	22.7
4400032	99	DIRN	SUR	44	-69	586	0	0	14.3	-4.0	14.9
4400033	99	DIRN	SUR	44	-69	568	0	0	16.6	-0.4	16.6
4400034	99	DIRN	SUR	44	-68	617	0	0	13.2	5.5	14.3
4400037	99	DIRN	SUR	43	-68	72	0	0	14.2	0.5	14.2
4400039	99	DIRN	SUR	41	-73	446	0	0	15.9	9.7	18.6
4400040	99	DIRN	SUR	41	-74	669	0	0	15.7	-0.9	15.7
4400042	99	DIRN	SUR	38	-76	5262	0	0	17.5	1.0	17.5
4400058	99	DIRN	SUR	38	-76	5311	0	0	16.6	3.0	16.8
4400062	99	DIRN	SUR	39	-76	4620	0	0	17.6	3.0	17.8
4400063	99	DIRN	SUR	39	-76	4969	0	0	22.1	8.9	23.9
4400065	99	DIRN	SUR	40	-74	3854	0	0	17.0	2.9	17.2
4400066	99	DIRN	SUR	40	-73	3999	0	0	12.1	6.4	13.7
4400072	99	DIRN	SUR	37	-76	3462	0	0	22.9	-0.8	22.9
4400073	99	DIRN	SUR	43	-71	240	0	0	13.3	4.2	14.0
4400075	99	DIRN	SUR	40	-71	126	0	0	5.8	-20.0	20.8
4400076	99	DIRN	SUR	40	-71	31	0	0	5.6	-13.6	14.7
4400077	99	DIRN	SUR	40	-71	126	0	0	5.5	-16.0	16.9
44005	99	DIRN	SUR	43	-69	1693	0	0	13.3	-2.3	13.5
44007	99	DIRN	SUR	44	-70	5035	0	0	16.9	4.0	17.4
44008	99	DIRN	SUR	41	-69	5465	0	0	14.5	4.1	15.1
44009	99	DIRN	SUR	39	-75	5465	0	0	13.7	1.5	13.8
44011	99	DIRN	SUR	41	-67	5269	4	0	17.0	-3.8	17.5
44013	99	DIRN	SUR	42	-71	5065	0	0	13.4	1.0	13.5
44014	99	DIRN	SUR	37	-75	4955	0	0	14.0	5.0	14.9
44017	99	DIRN	SUR	41	-72	5210	0	0	12.7	3.3	13.2
44020	99	DIRN	SUR	42	-70	5030	0	0	13.4	3.5	13.9
44022	99	DIRN	SUR	41	-74	680	0	0	14.8	4.6	15.5
44024	99	DIRN	SUR	42	-66	153	0	0	21.9	2.7	22.0
44027	99	DIRN	SUR	44	-67	1784	0	0	13.6	-5.9	14.8
44029	99	DIRN	SUR	43	-71	93	0	0	10.1	-8.9	13.5
44030	99	DIRN	SUR	43	-70	112	0	0	22.2	-5.7	22.9

## 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
44032	99	DIRN	SUR	44	-69	1050	0	0	14.5	-4.4	15.1
44033	99	DIRN	SUR	44	-69	985	0	0	16.2	-1.2	16.2
44034	99	DIRN	SUR	44	-68	1112	0	0	12.6	5.1	13.6
44037	99	DIRN	SUR	44	-68	132	0	0	17.0	1.6	17.0
44039	99	DIRN	SUR	41	-73	819	0	0	15.9	9.5	18.5
44040	99	DIRN	SUR	41	-74	1047	0	0	15.2	-0.3	15.2
44042	99	DIRN	SUR	38	-76	6940	0	0	18.0	1.5	18.0
44058	99	DIRN	SUR	38	-76	6681	0	0	16.3	1.0	16.3
44062	99	DIRN	SUR	39	-76	6347	0	0	18.2	3.2	18.5
44063	99	DIRN	SUR	39	-76	6361	0	0	22.7	9.0	24.4
44065	99	DIRN	SUR	40	-74	5031	0	0	17.3	2.2	17.5
44066	99	DIRN	SUR	40	-73	6217	0	0	12.7	5.3	13.8
44069	99	DIRN	SUR	41	-73	1631	0	0	13.9	3.5	14.3
44072	99	DIRN	SUR	37	-76	4203	0	0	23.6	-1.3	23.6
44073	99	DIRN	SUR	43	-71	449	0	0	15.6	4.8	16.3
44075	99	DIRN	SUR	40	-71	155	0	0	5.9	-20.5	21.4
44076	99	DIRN	SUR	40	-71	33	0	0	5.6	-12.4	13.6
44077	99	DIRN	SUR	40	-71	161	0	0	6.0	-15.6	16.7
44078	99	DIRN	SUR	60	-40	283	0	0	14.5	-10.7	18.1
44137	99	DIRN	SUR	42	-62	601	0	0	18.6	-1.6	18.6
44139	99	DIRN	SUR	44	-57	681	0	0	19.4	5.5	20.2
44150	99	DIRN	SUR	43	-64	674	0	0	19.6	4.2	20.1
44258	99	DIRN	SUR	45	-63	628	0	0	18.3	-2.6	18.5
44488	99	DIRN	SUR	45	-61	663	0	0	19.2	8.6	21.1
44489	99	DIRN	SUR	46	-61	608	0	0	17.9	-0.5	17.9
44490	99	DIRN	SUR	45	-66	684	0	0	21.6	-8.4	23.2
4500003	99	DIRN	SUR	45	-83	3855	0	0	15.9	2.5	16.1
4500005	99	DIRN	SUR	42	-82	3868	0	0	11.8	1.2	11.8
4500008	99	DIRN	SUR	44	-82	3883	0	0	13.8	2.2	13.9
4500012	99	DIRN	SUR	44	-77	3478	0	0	17.7	9.0	19.8
4500196	99	DIRN	SUR	42	-82	892	0	0	73.8	92.0	117.9
4500197	99	DIRN	SUR	42	-82	870	0	0	27.1	-40.2	48.5
45003	99	DIRN	SUR	45	-83	5314	0	0	15.4	5.1	16.2
45005	99	DIRN	SUR	42	-82	5310	0	0	12.3	5.1	13.3
45008	99	DIRN	SUR	44	-82	5949	0	0	14.6	8.1	16.7
45012	99	DIRN	SUR	44	-77	4813	0	0	18.0	5.9	18.9
45132	99	DIRN	SUR	43	-81	696	0	0	13.1	-7.1	14.9
45135	99	DIRN	SUR	44	-77	652	0	0	21.0	-2.2	21.1
45139	99	DIRN	SUR	43	-80	475	0	0	18.8	-0.2	18.8
45142	99	DIRN	SUR	43	-79	706	0	0	17.7	-8.5	19.6
45143	99	DIRN	SUR	45	-81	721	0	0	25.1	-0.5	25.1

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
45147	99	DIRN	SUR	42	-83	230	0	0	19.3	11.4	22.4
45149	99	DIRN	SUR	44	-82	351	0	0	17.9	-4.1	18.4
45151	99	DIRN	SUR	45	-79	122	0	0	16.3	-8.2	18.2
45152	99	DIRN	SUR	46	-80	161	0	0	16.4	-10.7	19.6
45154	99	DIRN	SUR	46	-83	642	0	0	18.0	-4.3	18.5
45159	99	DIRN	SUR	44	-79	305	0	0	21.6	-2.4	21.7
45196	99	DIRN	SUR	42	-82	1230	0	0	73.9	90.2	116.6
45197	99	DIRN	SUR	42	-82	1326	0	0	27.0	-42.2	50.1
6100198	99	DIRN	SUR	37	-2	472	0	0	16.2	-3.5	16.6
6100281	99	DIRN	SUR	40	0	255	0	0	49.3	8.6	50.1
6100417	99	DIRN	SUR	38	0	559	0	0	20.5	4.6	21.1
6200024	99	DIRN	SUR	44	-3	491	0	0	21.7	1.5	21.8
6200025	99	DIRN	SUR	44	-6	423	0	0	18.0	0.3	18.0
6200082	99	DIRN	SUR	44	-8	618	0	0	12.2	-5.6	13.4
6200083	99	DIRN	SUR	43	-9	675	0	0	9.6	-2.4	9.9
6200084	99	DIRN	SUR	42	-9	579	0	0	9.7	-2.1	9.9
6200085	99	DIRN	SUR	36	-7	542	0	0	17.7	-0.5	17.7
6200091	99	DIRN	SUR	53	-5	679	0	0	12.1	-0.2	12.1
6200092	99	DIRN	SUR	51	-11	659	0	0	11.8	2.7	12.1
6200093	99	DIRN	SUR	55	-10	697	0	0	9.4	3.8	10.1
6200094	99	DIRN	SUR	52	-7	661	0	0	14.0	0.3	14.0
6200095	99	DIRN	SUR	53	-16	702	0	0	8.9	2.1	9.2
62001	99	DIRN	SUR	45	-5	1400	0	0	21.1	3.4	21.4
6200200	99	DIRN	SUR	36	-8	439	20	0	167.5	-32.2	170.6
62029	99	DIRN	SUR	49	-12	1451	0	0	16.6	-11.8	20.4
62081	99	DIRN	SUR	51	-13	1440	0	0	10.9	-4.3	11.8
62091	99	DIRN	SUR	53	-5	673	0	0	12.1	-0.7	12.1
62092	99	DIRN	SUR	51	-11	646	0	0	12.2	2.1	12.3
62093	99	DIRN	SUR	55	-10	697	0	0	10.0	3.3	10.5
62094	99	DIRN	SUR	52	-7	648	0	0	13.0	-0.2	13.0
62095	99	DIRN	SUR	53	-16	703	0	0	9.4	1.5	9.5
62103	99	DIRN	SUR	50	-3	1396	0	0	14.4	5.1	15.3
62107	99	DIRN	SUR	50	-6	1009	0	0	14.8	3.2	15.2
62112	99	DIRN	SUR	58	0	1452	0	0	14.6	-2.9	14.9
62114	99	DIRN	SUR	58	0	2673	0	0	13.1	1.0	13.2
62305	99	DIRN	SUR	50	0	1984	0	0	18.0	5.3	18.7
64041	99	DIRN	SUR	61	-3	1495	0	0	10.6	9.2	14.0
64045	99	DIRN	SUR	59	-12	1531	0	0	11.5	-7.7	13.8

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

ASDE09	ATGU3FT	BPMWB2N	CHQUR4G	DBLK	FPUW5GN	HTXUH4H	JNKN7JF	KJJF9XN
KMPLHPW	LRVQE3U	MALIKAR	UXK5JTU	VKB4L5Q	WDK38HS	XKQLWQB	XQFJRGX	YLV96WM
ZVQEQCM	2EERVTP	7JUNA4N	01001	01004	01010	01028	01241	01400
01415	01492	02185	02365	02527	02836	02963	03005	03023
03238	03354	03502	03743	03808	03882	03953	04018	04089
04220	04270	04320	04339	04360	06011	06260	06458	06610
07110	07145	07510	07645	07761	08001	08023	08190	08221
08302	08383	08430	08508	08522	08536	10035	10113	10184
10238	10304	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	16064	16113	16144	16245	16332
16429	16546	16622	16716	16754	17030	17095	17196	17220
17240	17351	17607	20674	22008	23205	23472	23884	24908
26038	26435	26708	26850	27459	27707	27713	28225	28661
29612	30673	33041	37789	40186	43599	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	63894	63985	68263	68424	68442	68512
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	71913	71917	71924
71926	71934	71945	71957	71964	72201	72206	72208	72210
72214	72215	72230	72233	72235	72240	72248	72249	72250
72251	72261	72265	72274	72293	72305	72317	72327	72340
72363	72364	72365	72376	72388	72413	72426	72440	72451
72476	72489	72493	72501	72518	72520	72528	72558	72562
72572	72582	72597	72632	72634	72645	72649	72659	72662
72672	72694	72712	72764	72768	72776	72786	72797	73033
73110	74389	74560	76225	76256	76394	76405	76458	76526
76595	76612	76644	76654	76679	76692	76743	76805	76903
78897	78954	81405	83768	85442	85586	85799	85934	87155
87344	87576	87623	87860	88889	89002	89022	89062	89564
89571	89592	89611	89625	89642	89662	89859	91165	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	94461	94510	94578
94610	94637	94638	94653	94659	94672	94711	94767	94776
94802	94821	94866	94910	94975	94995	94996	94998	95282
95527	96996							



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

ASDE09	ATGU3FT	BPMWB2N	CHQUR4G	FPUW5GN	HTXUH4H	JNKN7JF	KJJF9XN	KMPLHPW
LRVQE3U	MALIKAR	UXK5JTU	VKB4L5Q	WDK38HS	XKQLWQB	XQFJRGX	YLV96WM	ZVQEQCM
2EERVTP	7JUNA4N	01010	01028	01415	01492	02185	02365	02527
02836	02963	03953	06610	07110	07145	07510	07645	07761
08001	08023	08190	08221	08302	08383	08430	08536	11010
11035	11120	11240	17607	40186	47155	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	63894	72413	76743	76903	89642	89859
91925	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.