



ECMWF Global Data Monitoring Report

December 2020

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

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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	Nov	Dec	Ident	Time	Nov	Dec
03743	(12)	30	13	03918	(00)	6	31
17516	(12)	17	4	06458	(00)	0	31
29612	(12)	30	9	30557	(00)	17	30
31168	(00)	30	10	34122	(00)	19	31
31168	(12)	30	9	34122	(12)	20	31
31736	(00)	18	0	34858	(00)	12	27
33008	(00)	30	15	34858	(12)	13	26
33041	(00)	30	16	40186	(12)	2	15
40179	(12)	17	1	43150	(00)	0	17
42647	(00)	19	5	48407	(00)	10	28
43346	(00)	15	0	48565	(00)	3	28
58968	(00)	19	6	48568	(00)	12	31
58968	(12)	17	5	56571	(00)	0	31
59758	(00)	30	0	56571	(12)	0	31
59758	(12)	30	0	58457	(00)	0	32
60096	(12)	13	0	58457	(12)	0	31
71701	(12)	24	0	59981	(00)	0	31
72261	(00)	30	15	59981	(12)	0	31
72261	(12)	31	15	60155	(00)	0	14
72797	(00)	18	4	61291	(00)	1	28
72797	(12)	19	7	61291	(12)	3	28
74004	(12)	43	18	62423	(00)	0	22
76458	(00)	23	4	62423	(12)	0	24
76644	(00)	27	8	76405	(00)	8	25
78583	(12)	26	15	76743	(00)	1	22
78897	(00)	19	2	76743	(12)	0	21
83525	(12)	23	1	78866	(00)	15	30
83554	(12)	29	17	78866	(12)	14	30
83840	(00)	30	2	82917	(12)	16	30
86218	(12)	14	0	85586	(00)	0	30
-	-	-	-	89662	(00)	18	30
-	-	-	-	96147	(12)	10	29
-	-	-	-	96645	(12)	13	30
-	-	-	-	97502	(00)	0	16

2.2 Drifting Buoys

Surface pressure observations from **1886** 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.

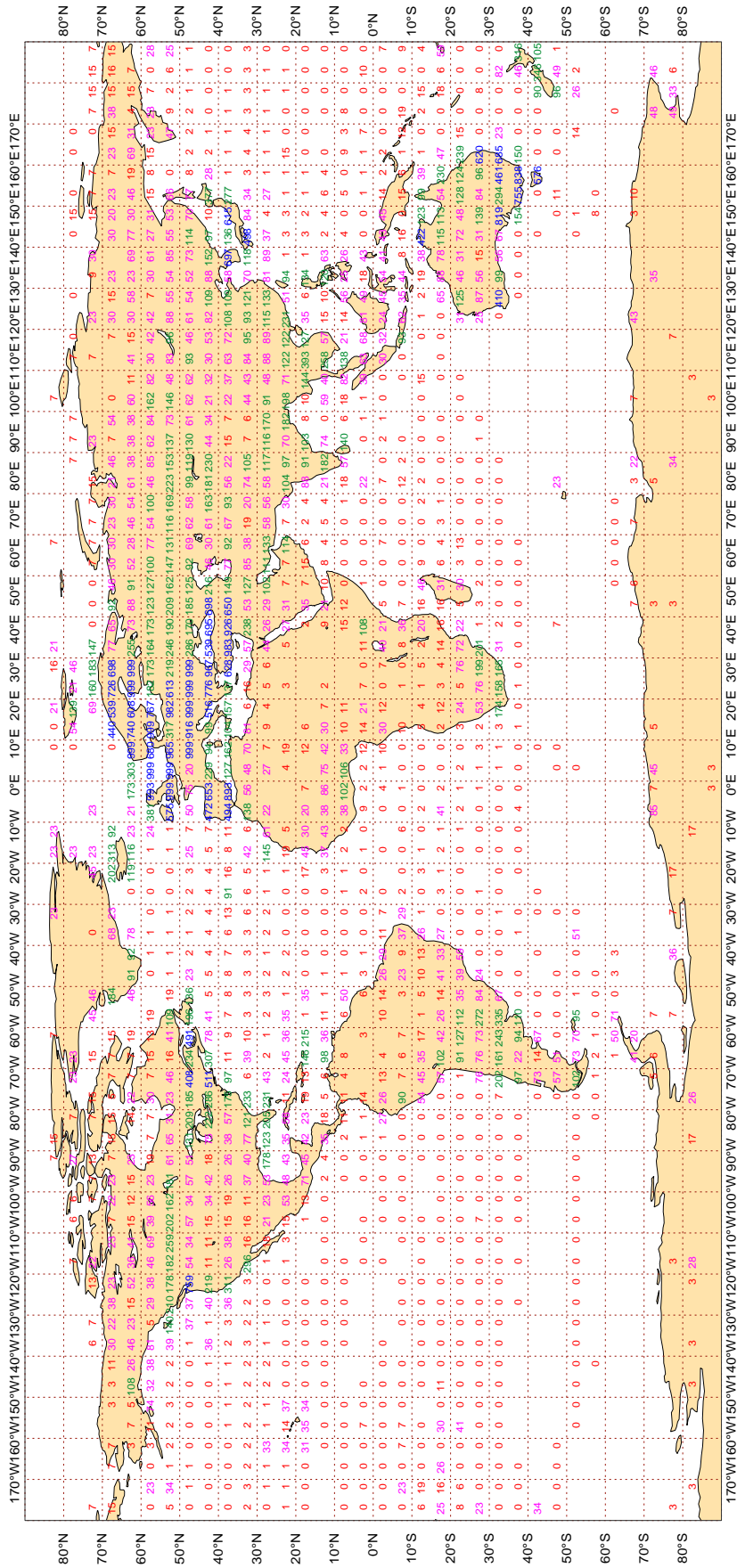
Fig	Parameter	Level/Layer
14	SATOB - Mean observed wind	1000-700 hPa
15	SATOB - Mean observed wind	400-150 hPa
16	SATOB - Mean observed minus first-guess wind	1000-700 hPa
17	SATOB - Mean observed minus first-guess wind	400-150 hPa
18	AIRCRAFT WIND - Mean observed minus first-guess	300-150 hPa

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

3.2.1 Figure 1 - Availability - SYNOP PRESSURE

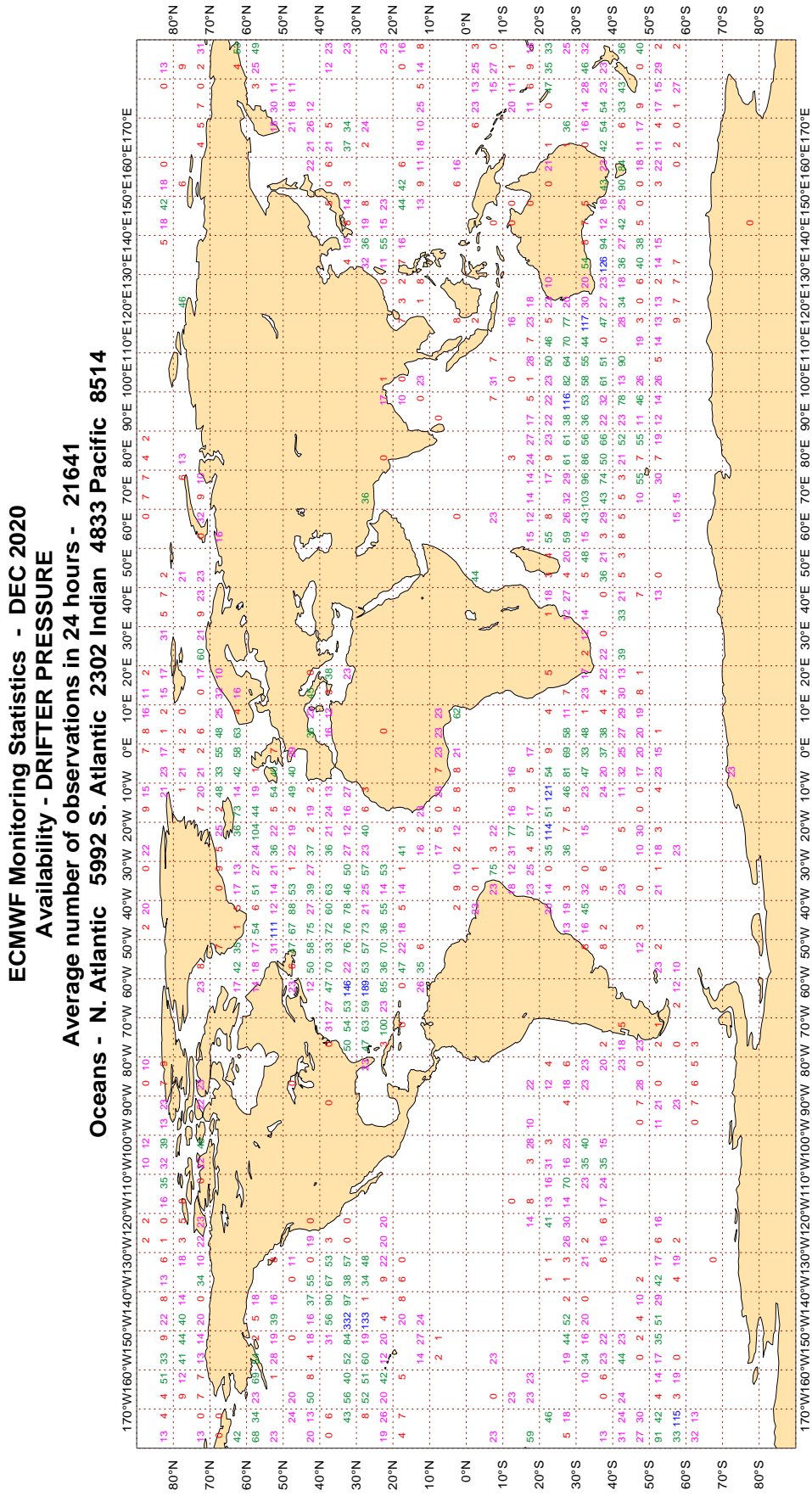
Figure 1

ECMWF Monitoring Statistics - DEC 2020
 Availability - SYNOP/SHIP (manual, auto) pressure
 Average number of observations in 24 hours - 100097
 LAND - WMO Region I: 4023 II:18124 III: 4076 IV: 6812
 Region V:11903 VI:42774 Antarctic: 891
 Oceans - N. Atlantic 6475 S. Atlantic 214 Indian 585 Pacific 4220



3.2.2 Figure 2 - Availability - DRIFTER PRESSURE

Figure 2



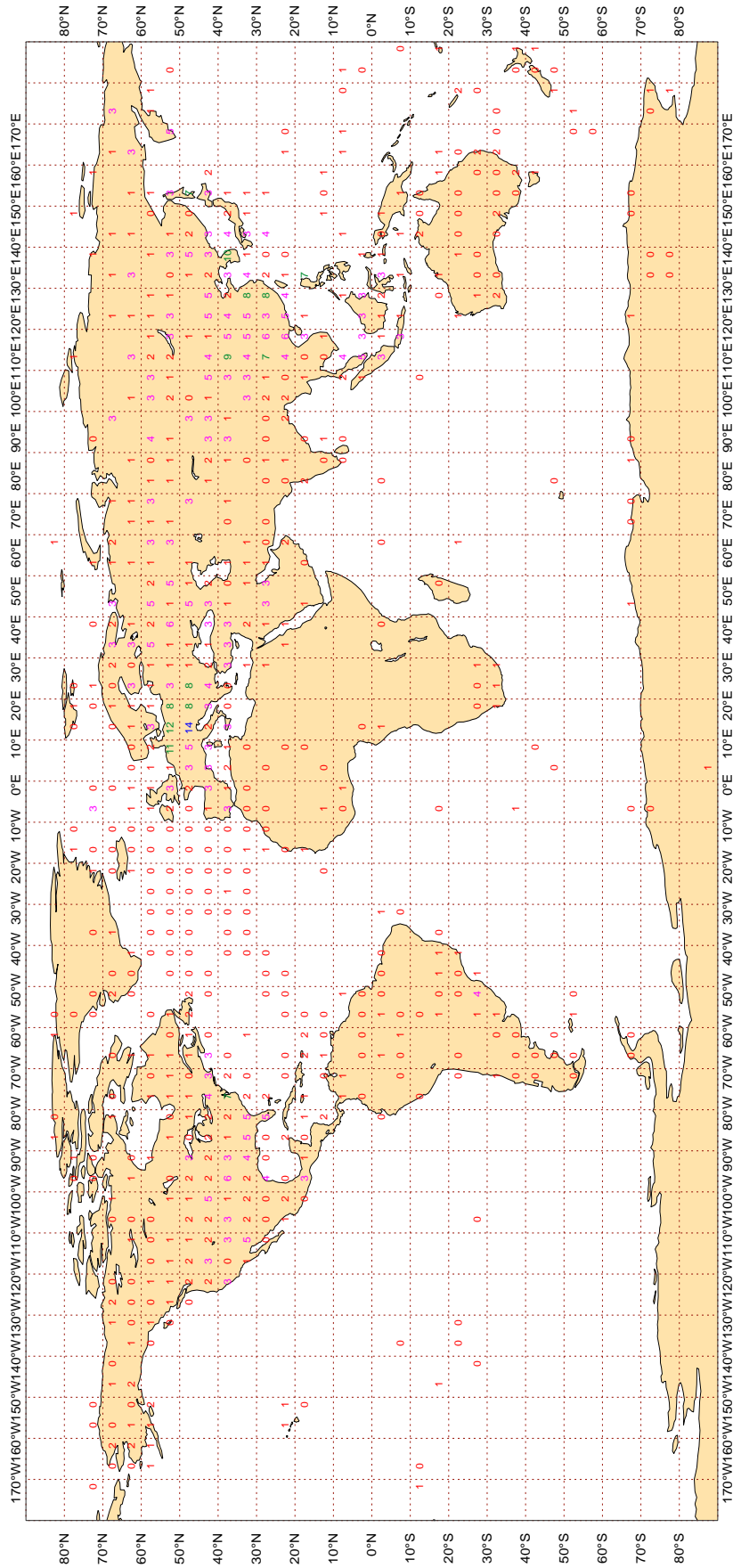
Magicis 3.0.4 (64 bit)



3.2.3 Figure 3 - Availability - TEMP 500 hPa geopotential

Figure 3

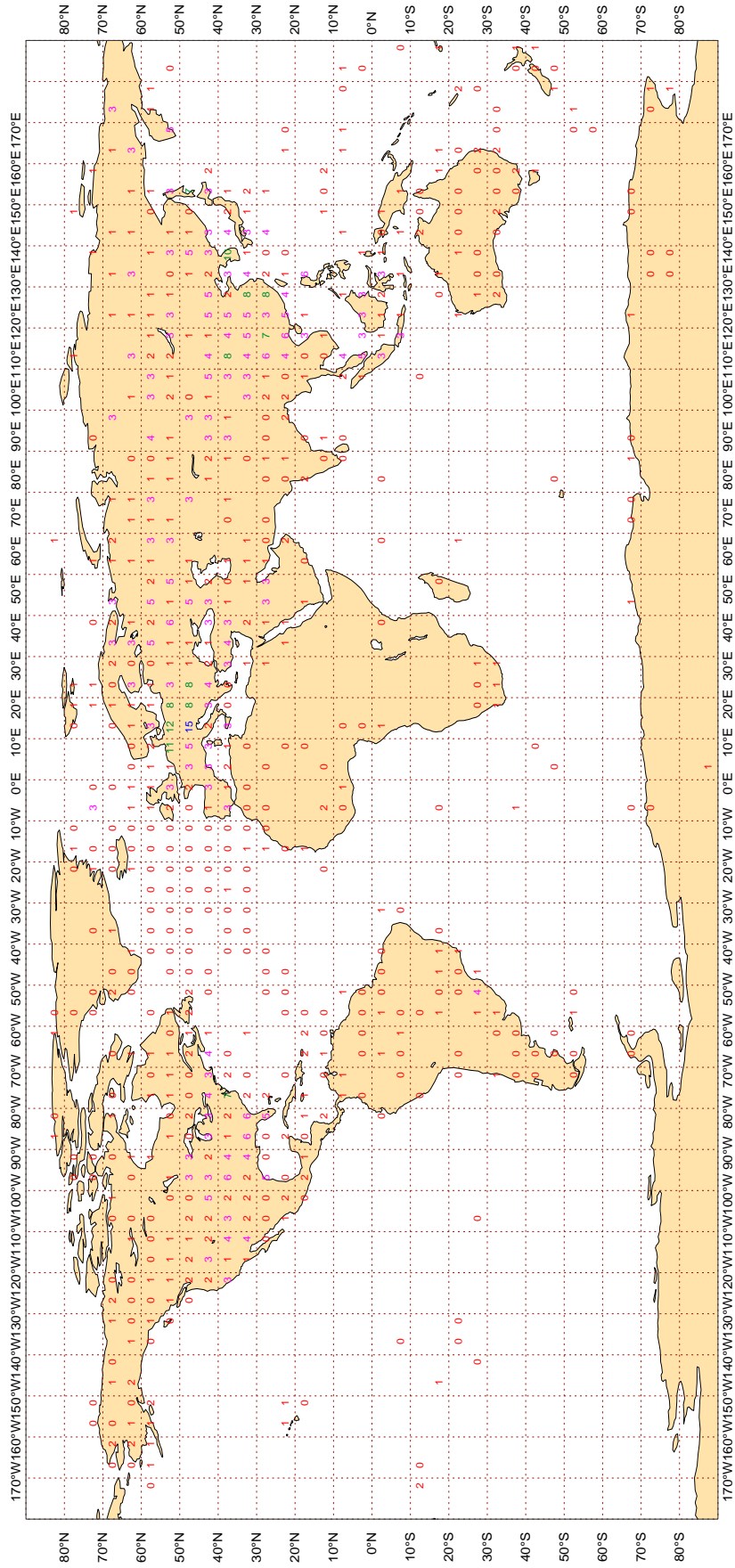
ECMWF Monitoring Statistics - DEC 2020
 Availability - TEMP 500 hPa Geopotential
 Average number of observations in 24 hours - 1215
 LAND - WMO Region I: 35 II: 455 III: 55 IV: 247
 Region V: 134 VI: 265 Antarctic: 15
 Oceans - N. Atlantic 8 S. Atlantic 0 Indian 0 Pacific 0



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

Figure 4

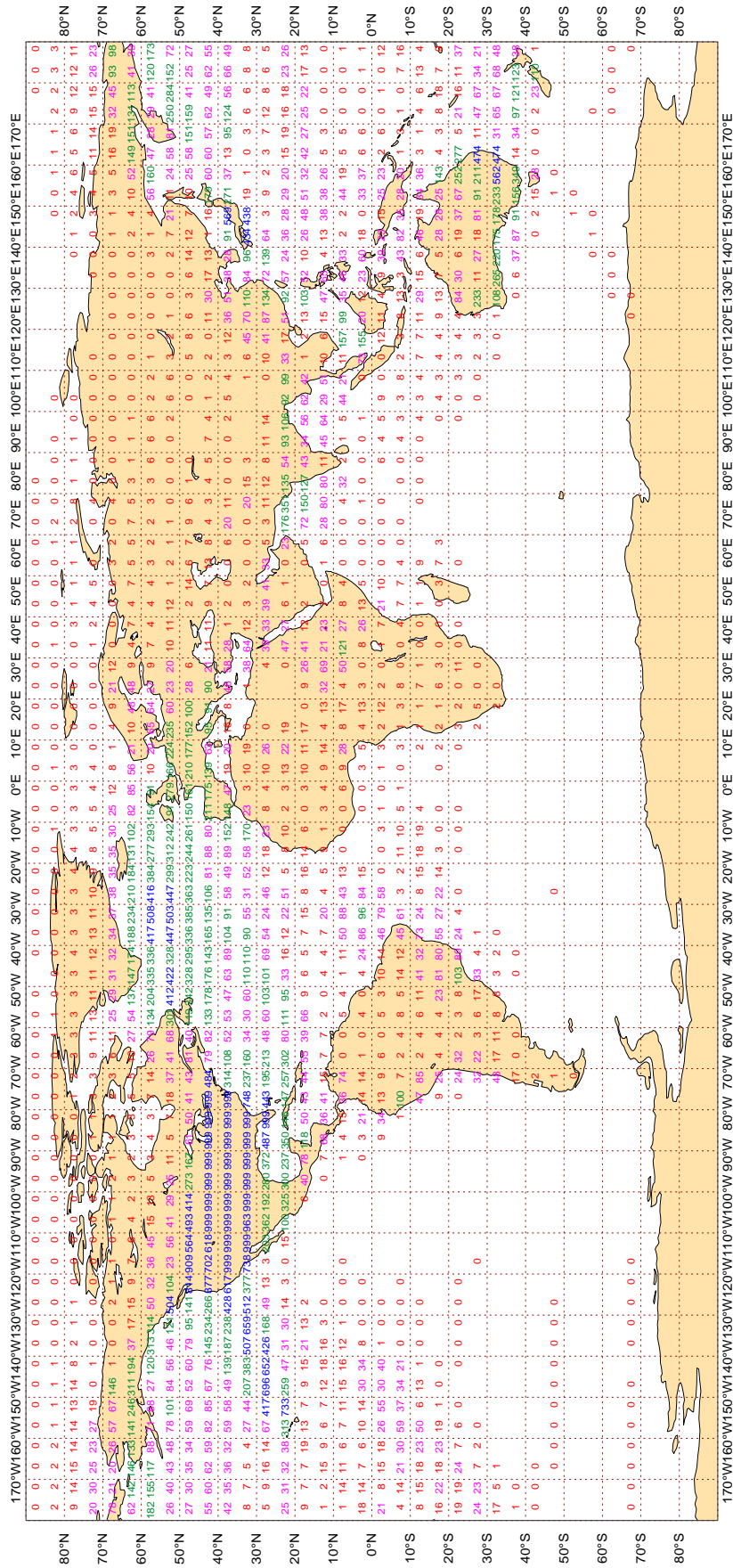
ECMWF Monitoring Statistics - DEC 2020
 Availability - TEMP/PILOT 300 hPa wind
 Average number of observations in 24 hours - 1214
 LAND - WMO Region I: 36 II: 450 III: 54 IV: 254
 Region V: 133 VI: 264 Antarctic: 15
 Oceans - N. Atlantic 7 S. Atlantic 0 Indian 0 Pacific 0



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

Figure 5

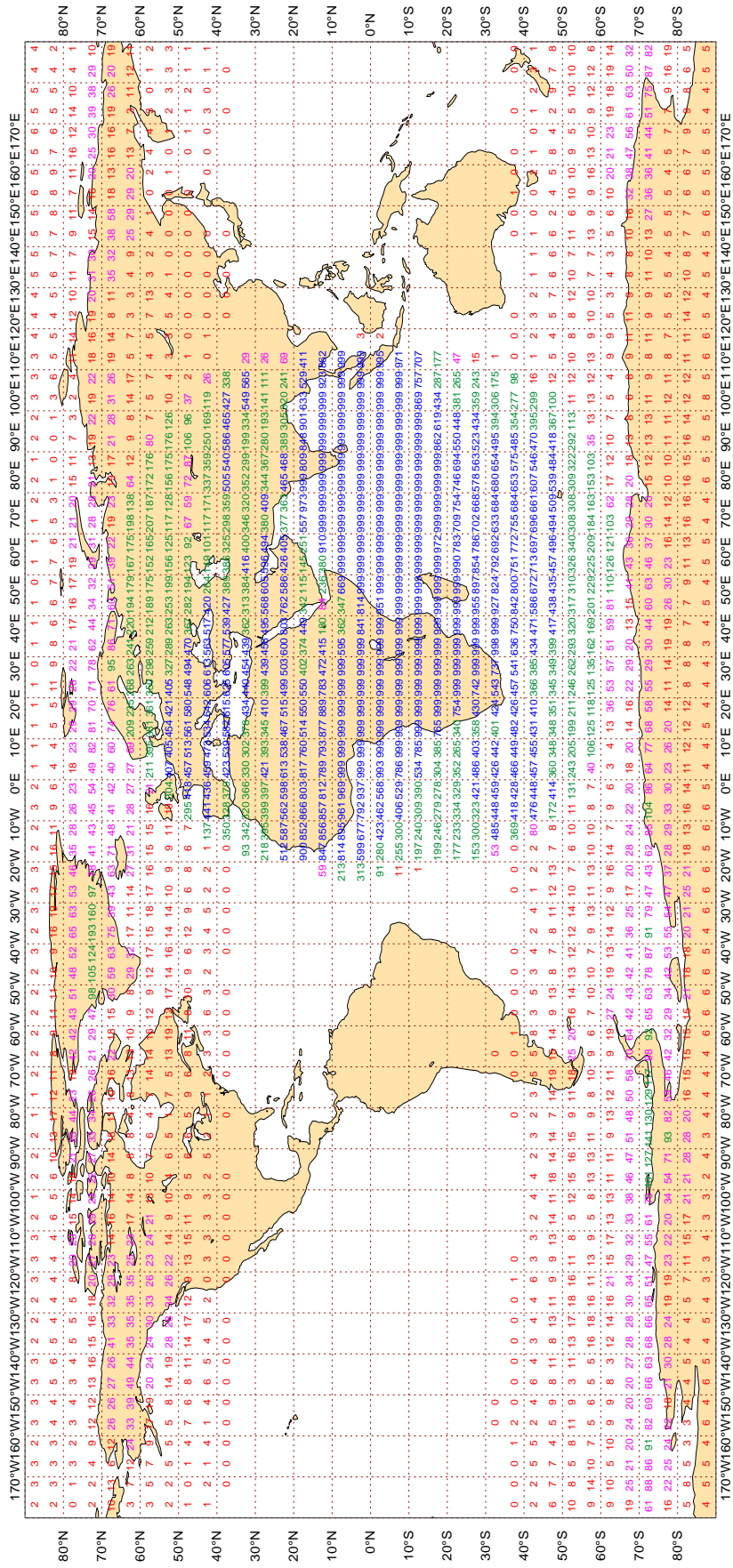
ECMWF Monitoring Statistics - DEC 2020
Availability - Aircraft winds 300-150 hPa
Average number of observations in 24 hours - 119945



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

Figure 6

ECMWF Monitoring Statistics - DEC 2020
Availability - AMV winds 400-150 hPa
Average number of observations in 24 hours - 410505



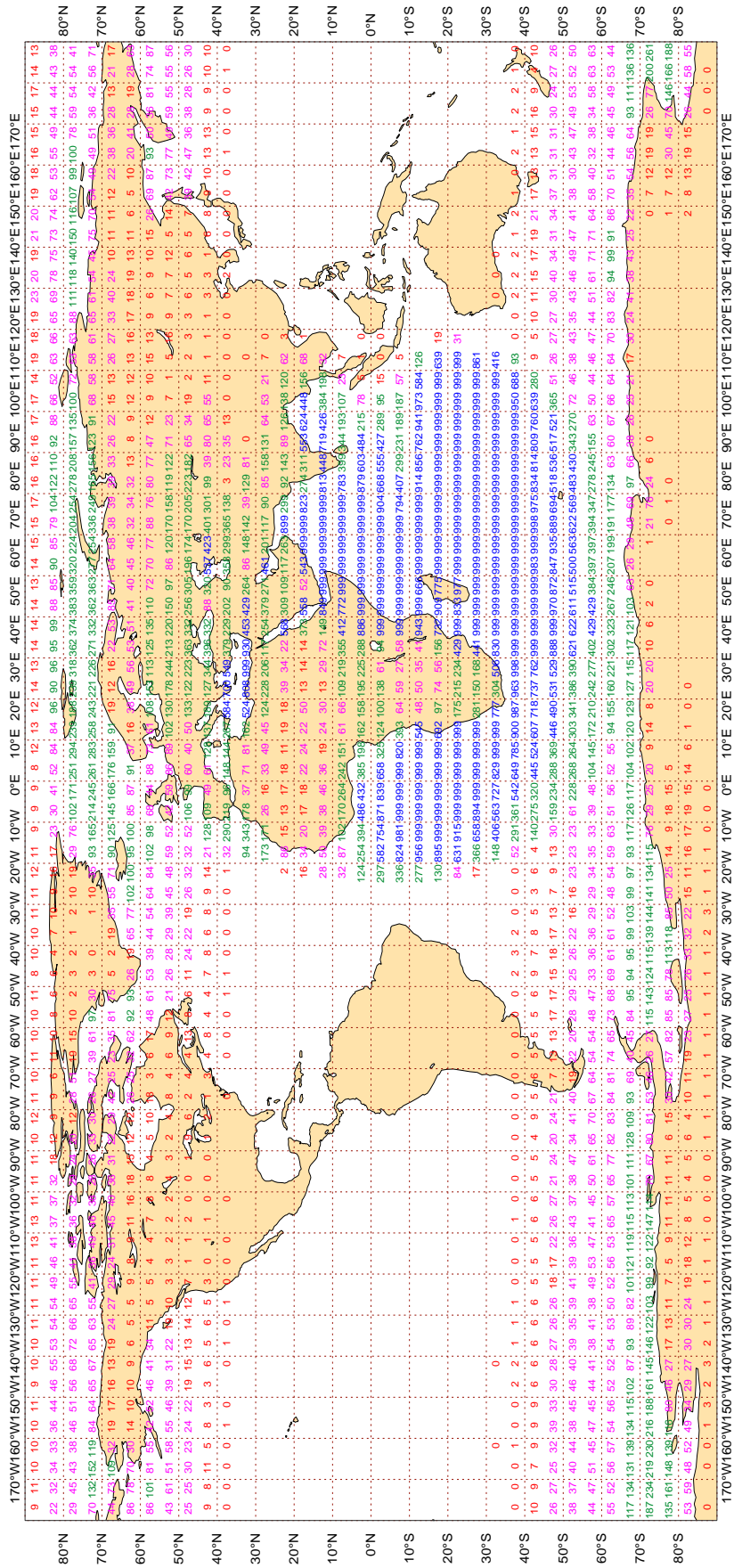
Magics 3.0.4 (64 bit)



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

Figure 7

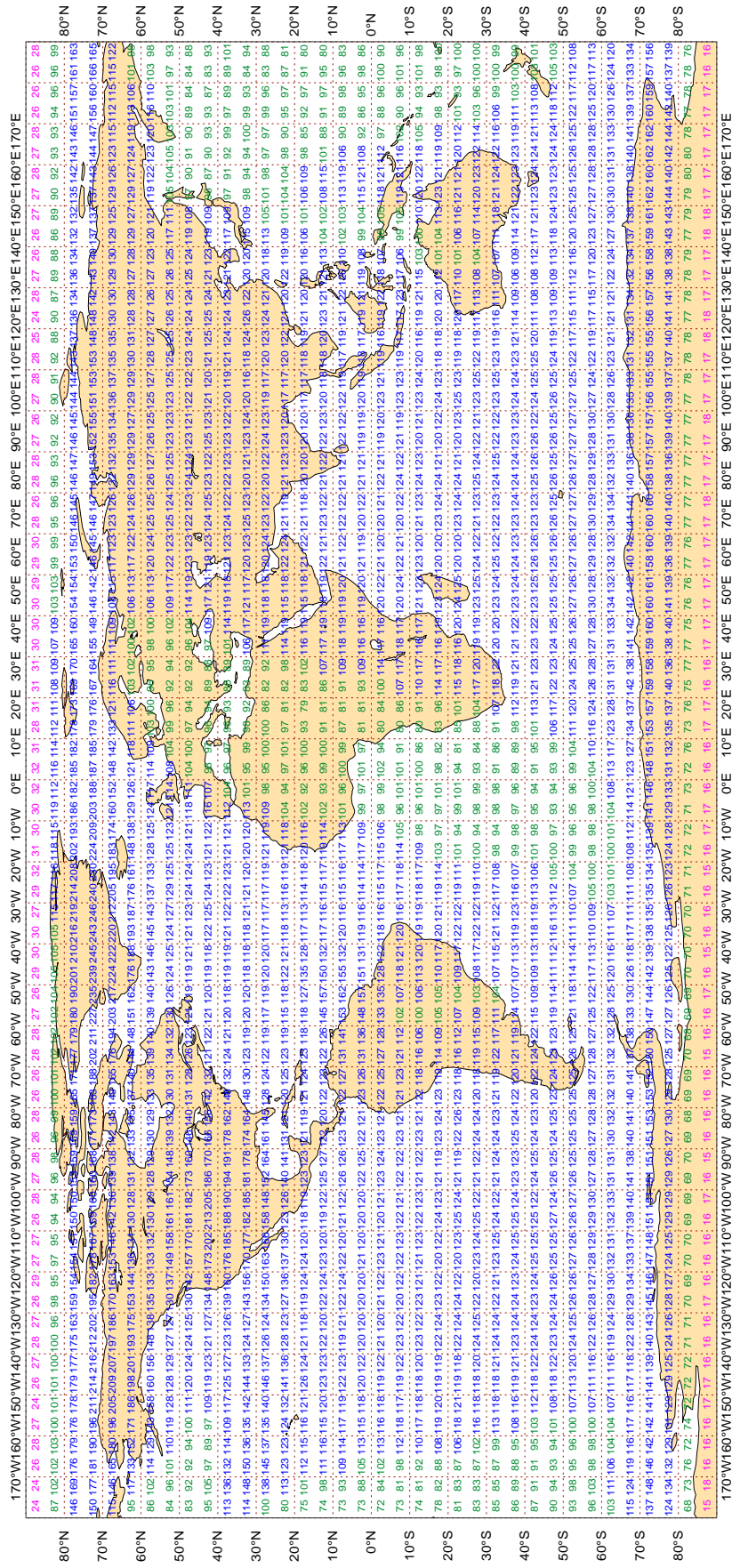
ECMWF Monitoring Statistics - DEC 2020
Availability - AMV winds 1000-700 hPa
Average number of observations in 24 hours - 395243



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

Figure 8

ECMWF Monitoring Statistics - DEC 2020
Availability - NOAA15 ATOVS : AMSU-A
Average number of observations in 24 hours - 302985



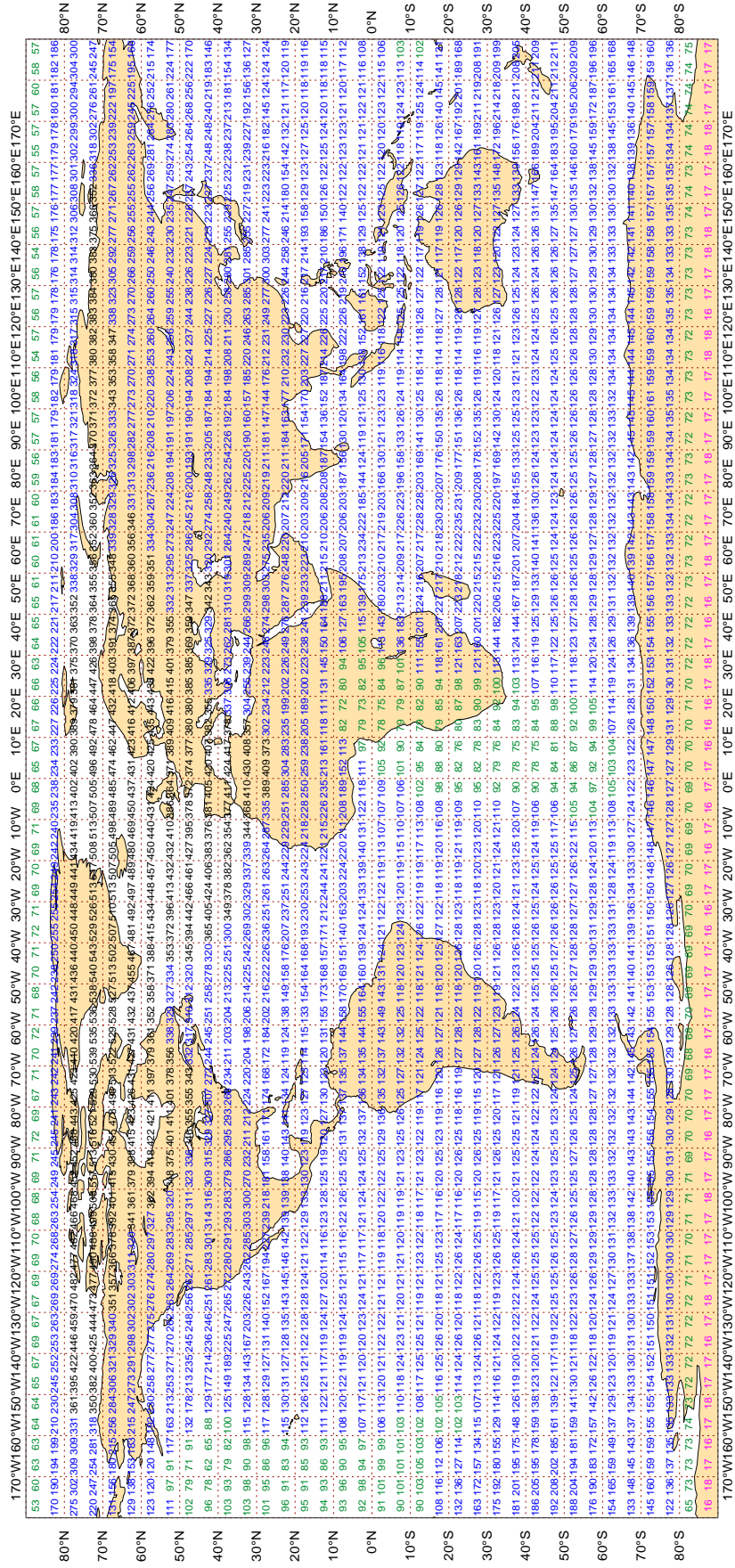
Magics 3.0.4 (64 bit)



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

Figure 9.1

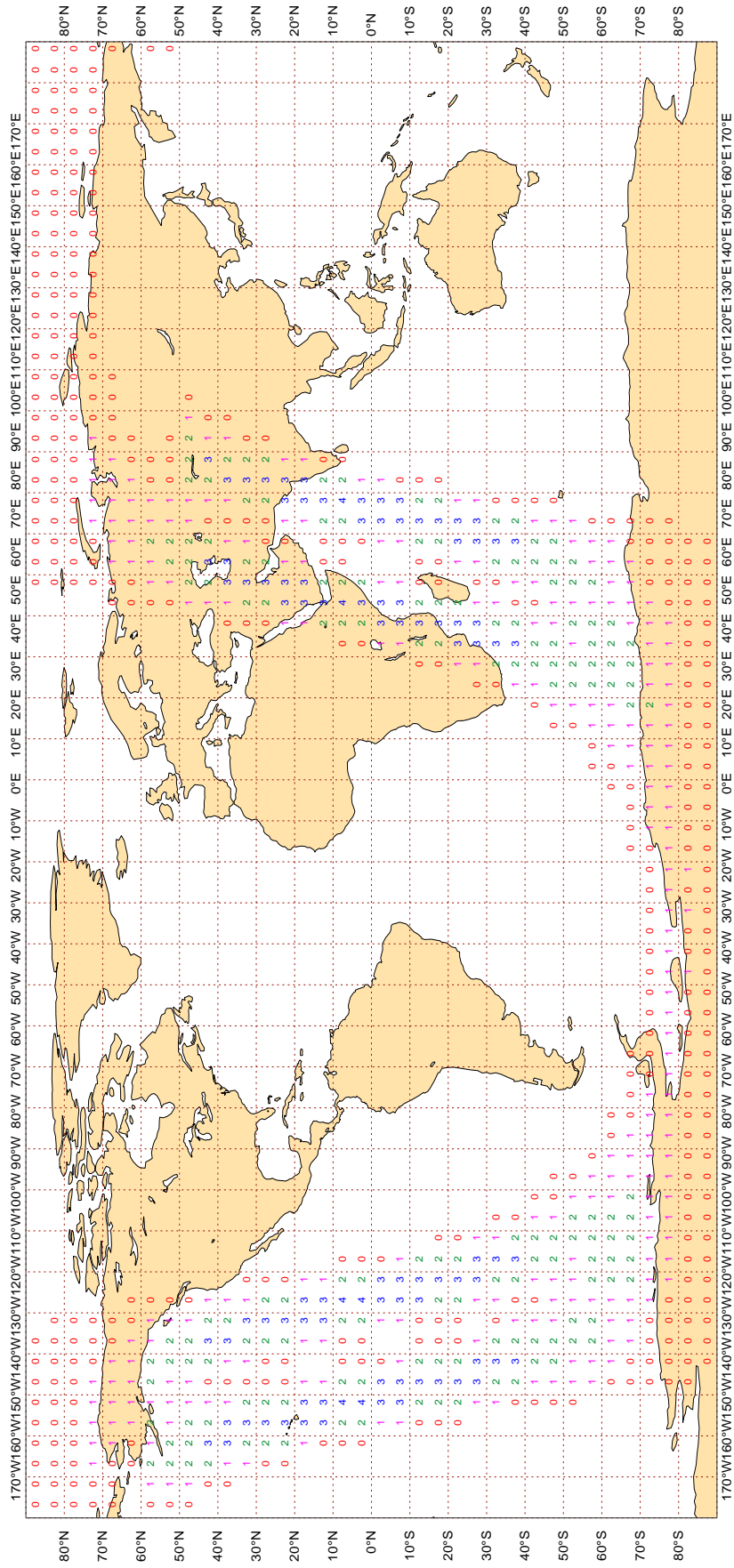
ECMWF Monitoring Statistics - DEC 2020
Availability - NOAA18 ATOVS : AMSU-A
Average number of observations in 24 hours - 481190



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

Figure 9.2

ECMWF Monitoring Statistics - DEC 2020
 Availability - AQUA ATOVS : AMSU-A
 Average number of observations in 24 hours - 1258



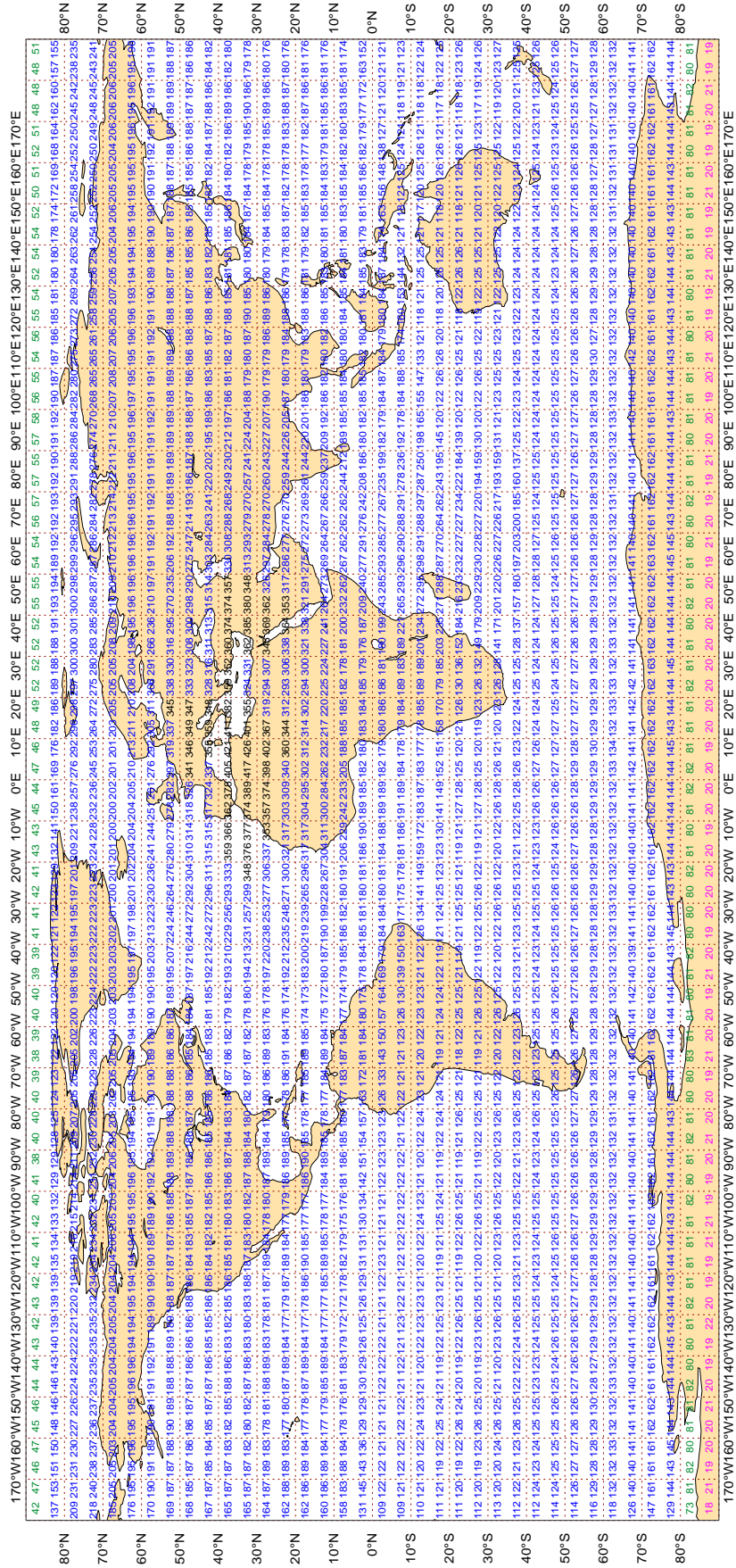
Magics 3.0.4 (64 bit)



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

Figure 9.3

ECMWF Monitoring Statistics - DEC 2020
Availability - METOP ATOVS : AMSU-A
Average number of observations in 24 hours - 434984



Magics 3.0.4 (64 bit)



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

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

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

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

WMO IDENT	OBS TIME	ELM	LEVEL	NUM OBS	NUM GROSS	SD	BIAS	RMS
42043	99	P	SUR	93	0	1.4	-5.1	5.3
46145	99	P	SUR	109	0	0.8	5.2	5.3
8PSH	99	P	SUR	124	0	2.1	3.3	3.9
9HY07	99	P	SUR	30	0	1.6	-3.0	3.4
9V2676	99	P	SUR	88	0	1.4	8.7	8.8
9V3936	99	P	SUR	16	0	2.2	11.0	11.2
9V5905	99	P	SUR	30	4	0.7	13.3	13.4
9V6443	99	P	SUR	22	0	2.4	-7.4	7.8
9V9409	99	P	SUR	16	0	2.8	5.8	6.5
ATVK	99	P	SUR	119	0	0.5	3.6	3.7
C6DP5	99	P	SUR	32	0	3.3	3.0	4.5
C6LG6	99	P	SUR	144	0	1.1	-3.9	4.1
D5LW3	99	P	SUR	82	0	2.1	3.1	3.7
D5WI8	99	P	SUR	50	0	5.6	-2.1	6.0
D5YP7	99	P	SUR	32	0	3.0	7.0	7.6
DCUJ2	99	P	SUR	31	0	0.5	-5.9	5.9
H3VU	99	P	SUR	36	0	3.4	-5.5	6.5
KRAU	99	P	SUR	27	0	0.3	5.3	5.3
LAQM7	99	P	SUR	21	0	0.9	3.7	3.8
LAQQ7	99	P	SUR	36	0	2.0	4.6	5.0
LAZV5	99	P	SUR	53	0	0.5	3.5	3.5
OXLK2	99	P	SUR	25	0	2.3	7.4	7.7
OZ2049	99	P	SUR	15	0	0.6	-8.2	8.3
UBNY	99	P	SUR	29	0	0.5	3.2	3.3
UBRI5	99	P	SUR	26	3	3.9	-3.4	5.2
UBUO6	99	P	SUR	26	0	0.9	-3.3	3.4
UDKG	99	P	SUR	20	0	5.5	-3.1	6.3
UHBY	99	P	SUR	23	0	1.1	3.1	3.3
V7FA7	99	P	SUR	45	0	2.6	5.0	5.6
VRBI2	99	P	SUR	56	0	3.4	-3.2	4.7
VRCU7	99	P	SUR	17	0	0.9	-4.6	4.7
VRHY7	99	P	SUR	19	0	1.2	-3.7	3.8

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
VRMX7	99	P	SUR	18	0	2.3	5.9	6.3
VRNS2	99	P	SUR	58	0	0.9	-3.3	3.4
VRQS3	99	P	SUR	16	0	1.5	4.2	4.5
VRZP8	99	P	SUR	18	0	4.3	-3.4	5.5
VTFG	99	P	SUR	193	0	0.4	-3.2	3.2
WCEU	99	P	SUR	19	8	2.2	-2.9	3.6
WDB9918	99	P	SUR	22	0	1.3	-5.2	5.4
WDH7560	99	P	SUR	18	0	1.0	-3.3	3.4

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 : DEC 2020
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

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

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

WMO IDENT	OBS TIME	ELM	LEVEL	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
42043	99	SPEED	SUR	93	0	0	2.1	-5.4	5.8

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 : DEC 2020
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

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

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

WMO IDENT	OBS TIME	ELM	LEVEL	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
44072	99	DIRN	SUR	174	0	0	21.8	-58.9	62.8
44150	99	DIRN	SUR	88	0	0	14.5	-39.6	42.2
46185	99	DIRN	SUR	89	0	0	16.7	41.4	44.7
46303	99	DIRN	SUR	68	0	0	25.6	38.0	45.8
66022	99	DIRN	SUR	47	0	0	63.7	92.3	112.2

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 : DEC 2020
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

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

TIME = 99 => AVERAGE OF ALL OBSERVATIONS

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
0022949	99	P	SUR	31	123	721	185	1.1	12.6	12.6
1401764	99	P	SUR	-31	77	743	0	0.7	-8.5	8.5
1601531	99	P	SUR	-26	71	744	51	6.6	-1.9	6.9
1701577	99	P	SUR	-45	14	656	20	3.4	6.4	7.3
2101637	99	P	SUR	34	179	443	0	2.0	4.2	4.7
2501717	99	P	SUR	81	144	744	267	5.3	-4.0	6.7
2601503	99	P	SUR	79	140	744	128	5.3	-6.4	8.3
4200043	99	P	SUR	29	-95	568	0	1.5	-5.3	5.5
42043	99	P	SUR	29	-95	1056	0	1.5	-5.3	5.5
4400066	99	P	SUR	40	-73	182	0	0.6	5.9	5.9
4401541	99	P	SUR	31	-46	266	16	5.7	-6.1	8.4
4402661	99	P	SUR	70	-64	744	744	0.0	0.0	0.0
44066	99	P	SUR	40	-73	128	0	0.5	5.9	5.9
4601815	99	P	SUR	71	-164	510	278	3.7	-1.8	4.2
46145	99	P	SUR	54	-132	756	0	0.8	5.2	5.3
4701658	99	P	SUR	72	-95	705	542	2.7	-9.8	10.1
4801628	99	P	SUR	77	-151	675	589	7.2	-1.9	7.5
4801652	99	P	SUR	83	-112	514	438	7.6	-7.2	10.5
4801670	99	P	SUR	80	-159	713	388	6.1	-5.2	8.0
4801679	99	P	SUR	77	-154	351	337	4.3	-5.7	7.1
4801723	99	P	SUR	82	42	743	239	2.4	-1.3	2.8
4801727	99	P	SUR	82	142	713	713	0.0	0.0	0.0
4801729	99	P	SUR	76	-152	744	744	0.0	0.0	0.0
4802542	99	P	SUR	77	-151	88	88	0.0	0.0	0.0
5102719	99	P	SUR	34	-156	87	0	0.5	-7.1	7.2
5401548	99	P	SUR	-29	31	177	49	3.9	-4.7	6.1

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 : DEC 2020
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

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

TIME = 99 => AVERAGE OF ALL OBSERVATIONS

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
4200043	99	SPEED	SUR	29	-95	573	0	0	2.2	-5.2	5.7
42043	99	SPEED	SUR	29	-95	1066	0	0	2.3	-5.3	5.8
5300041	99	SPEED	SUR	-8	100	2388	0	0	6.9	5.2	8.6
6101005	99	SPEED	SUR	38	26	166	0	0	2.5	-8.0	8.4

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

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

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

TIME = 99 => AVERAGE OF ALL OBSERVATIONS

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
1500008	99	DIRN	SUR	-20	-10	258	0	0	42.2	24.2	48.6
2101796	99	DIRN	SUR	27	124	603	0	0	8.5	-25.0	26.4
23091	99	DIRN	SUR	18	89	107	0	0	7.9	-27.8	28.9
23497	99	DIRN	SUR	11	72	94	0	0	94.5	31.9	99.8
4101783	99	DIRN	SUR	27	-65	1206	0	0	22.7	-24.8	33.7
4200043	99	DIRN	SUR	29	-95	46	0	0	14.2	36.4	39.1
42043	99	DIRN	SUR	29	-95	85	0	0	14.9	34.7	37.8
4400072	99	DIRN	SUR	37	-76	3228	0	0	20.1	-60.3	63.6
44072	99	DIRN	SUR	37	-76	2190	0	0	20.5	-60.9	64.2
44137	99	DIRN	SUR	42	-62	623	0	0	22.0	-30.0	37.3
44139	99	DIRN	SUR	44	-57	682	0	0	15.9	-28.5	32.6
44150	99	DIRN	SUR	43	-64	604	0	0	17.4	-38.0	41.8
4600060	99	DIRN	SUR	61	-147	560	0	0	26.8	22.9	35.2
46060	99	DIRN	SUR	61	-147	997	0	0	25.5	22.4	33.9
46185	99	DIRN	SUR	52	-130	607	0	0	16.6	39.7	43.0
46207	99	DIRN	SUR	51	-130	546	0	0	23.4	22.7	32.6
46303	99	DIRN	SUR	49	-123	471	0	0	25.1	38.8	46.2
46304	99	DIRN	SUR	49	-123	465	0	0	36.6	23.6	43.6
5100006	99	DIRN	SUR	9	-140	177	0	0	46.3	86.9	98.5
51006	99	DIRN	SUR	9	-140	171	0	0	45.2	87.2	98.2
5200311	99	DIRN	SUR	0	-180	740	0	0	7.9	-25.4	26.6
52311	99	DIRN	SUR	0	-180	738	0	0	8.3	-25.5	26.8
5300040	99	DIRN	SUR	-8	95	380	1	0	153.4	51.9	161.9
5300041	99	DIRN	SUR	-8	100	1306	0	0	73.4	14.3	74.8
5300056	99	DIRN	SUR	-5	95	535	0	0	126.2	-97.5	159.5
53040	99	DIRN	SUR	-8	95	372	1	0	153.5	51.7	161.9
53056	99	DIRN	SUR	-5	95	519	0	0	132.3	-89.5	159.7
6101007	99	DIRN	SUR	36	25	129	0	0	61.4	-7.7	61.9
6200199	99	DIRN	SUR	40	-9	584	14	0	167.1	-11.0	167.5
6301004	99	DIRN	SUR	72	20	610	0	0	12.5	25.6	28.5
66022	99	DIRN	SUR	54	14	415	0	0	69.1	90.7	114.1

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 : DEC 2020
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

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

ONLY THE WORST LEVEL IS SHOWN (WITH UNWEIGHTED RMS)

WMO IDENT	OBS TIME	ELM	LEV	LAT	LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
01400	00	Z	1000	57	3	25	0	3.9	75.4	75.5
01400	12	Z	1000	57	3	29	0	3.9	74.7	74.8
24343	00	Z	250	67	123	31	0	62.5	47.2	78.3
40437	12	Z	925	25	47	31	0	12.7	31.1	33.6
48565	00	Z	925	8	98	28	0	35.6	-41.4	54.6
62306	00	Z	1000	31	27	25	0	23.3	18.7	29.9
72261	00	Z	925	29	-101	15	1	37.1	38.5	53.5
85586	00	Z	1000	-34	-72	30	0	31.9	23.4	39.6
85586	12	Z	1000	-34	-72	31	0	31.6	23.3	39.3
91680	12	Z	1000	-18	177	29	0	4.8	28.4	28.8
97014	00	Z	1000	2	125	29	0	35.3	18.4	39.8
97014	12	Z	1000	2	125	29	0	33.0	11.8	35.0
98233	12	Z	1000	18	122	29	0	31.7	27.2	41.8
LRYQE3	12	Z	1000	40	-71	12	0	6.6	42.9	43.4
LRYQE3	00	Z	1000	41	-67	11	0	7.1	41.4	42.0

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 : DEC 2020
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

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

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

WMO IDENT	OBS TIME	ELM	LEV	LAT	LONG	NUM OBS	NUM GROSS	UBIAS	VBIAS	RMS
40875	00	V	200	27	56	11	1	4.4	1.2	15.3
48381	00	V	1000	16	103	22	0	-6.0	9.3	15.2
48407	00	V	1000	15	105	9	1	-3.9	-11.8	23.2
98753	00	V	150	-1	-81	25	0	-9.1	4.7	16.8

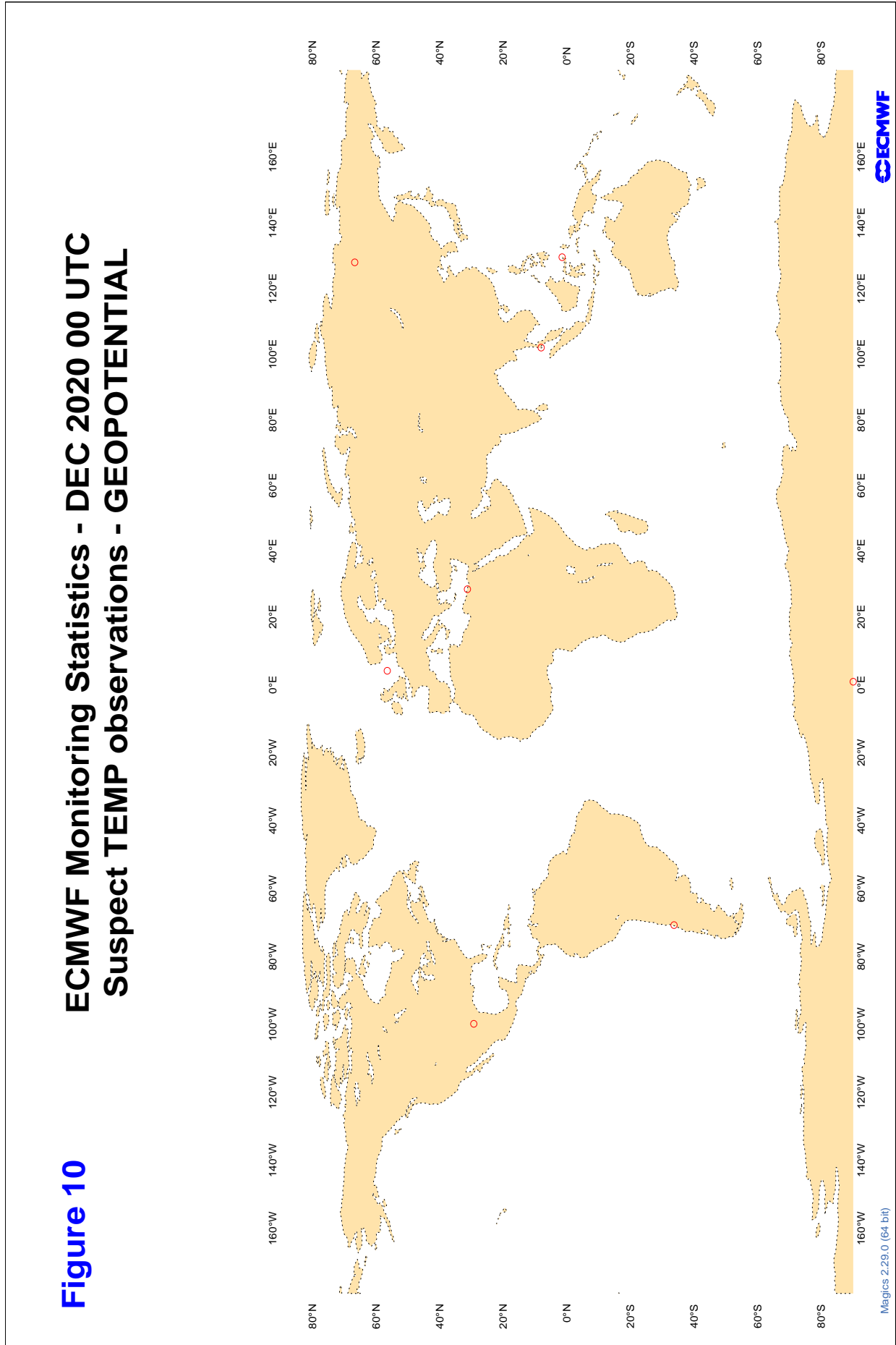
3.2.20 Table 9 - Suspect radiosondes: Wind direction (degrees)

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

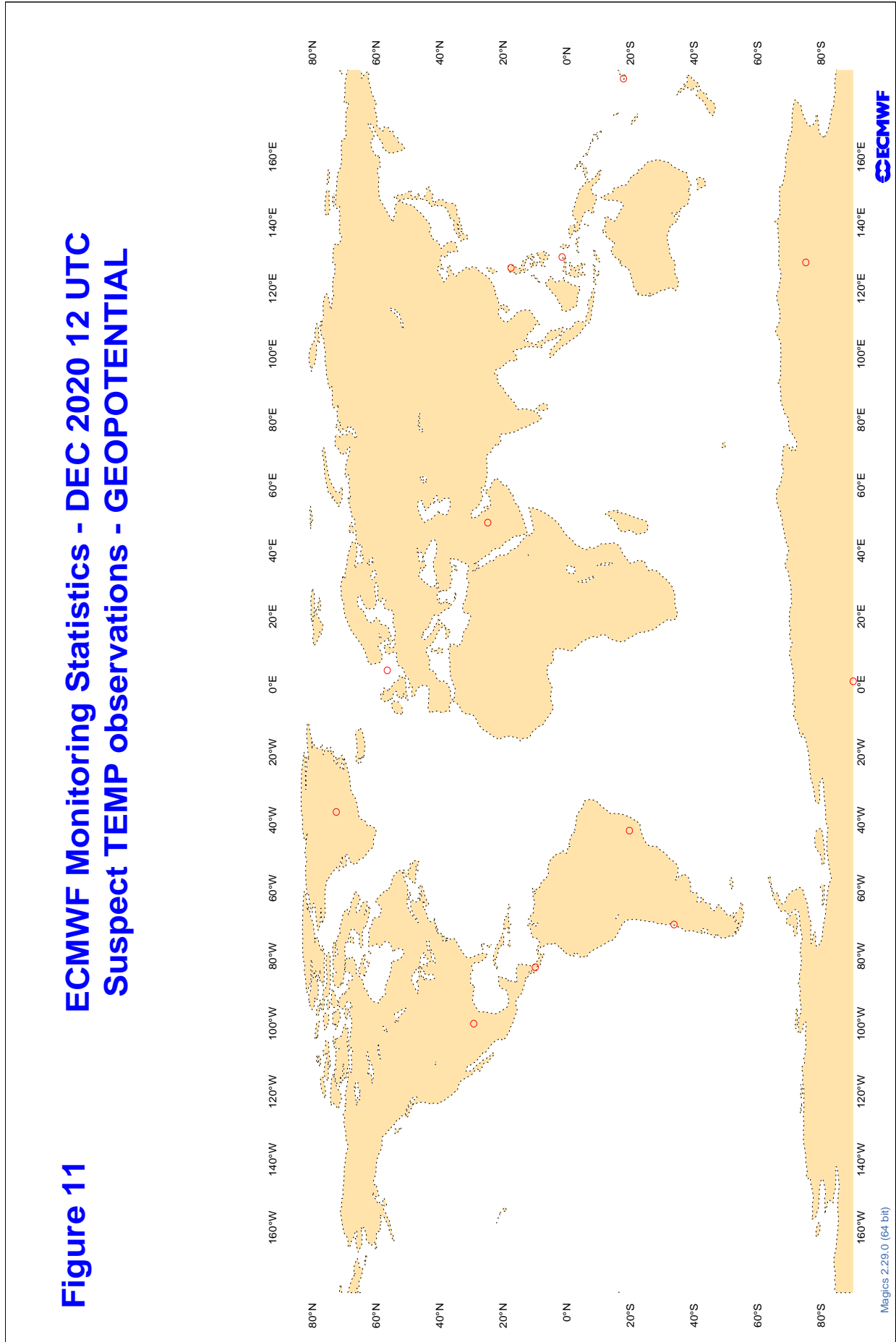
SELECTION CRITERIA: OBSERVED/FORECAST WIND SPEEDS \geq 5 M/S
 NO. OF OBSERVATIONS \geq 5, AND,
 ABSOLUTE BIAS \geq 10 DEGREES, WITH
 STANDARD DEVIATION $<$ 30 DEGREES, AND,
 VERTICAL SPREAD $<$ 10 DEGREES
 (AVERAGE BETWEEN 500 AND 150 HPA)

WMO IDENT	OBS TIME	ELM	LAT	LONG	NUM OBS	BIAS	MAX SPREAD	SD
33791	12	DD	48	33	29	10.2	2.8	11.3
48565	00	DD	8	98	22	11.6	7.3	11.8

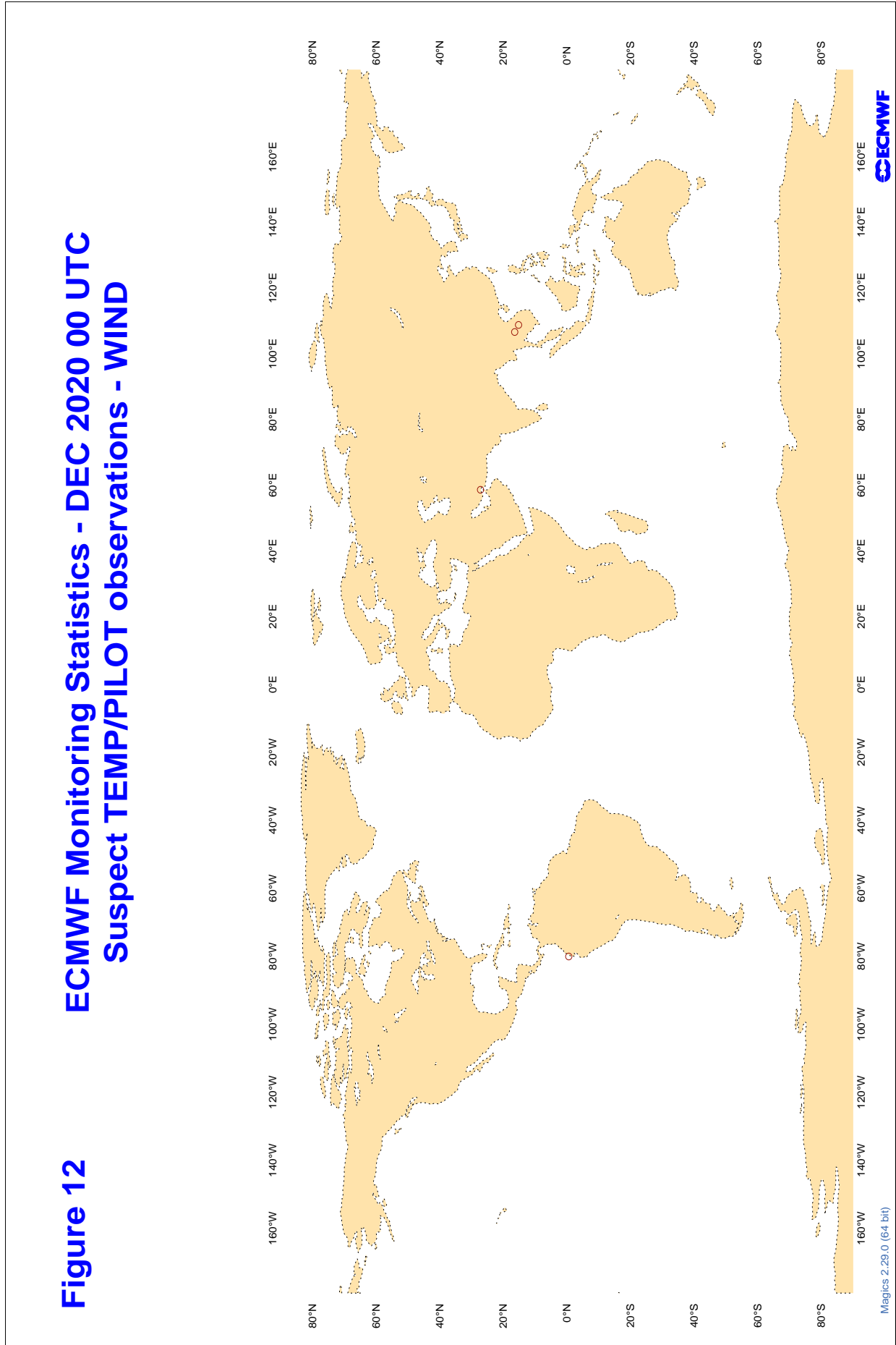
3.2.21 Figure 10 - Suspect TEMP observations - geopotential : 00 UTC



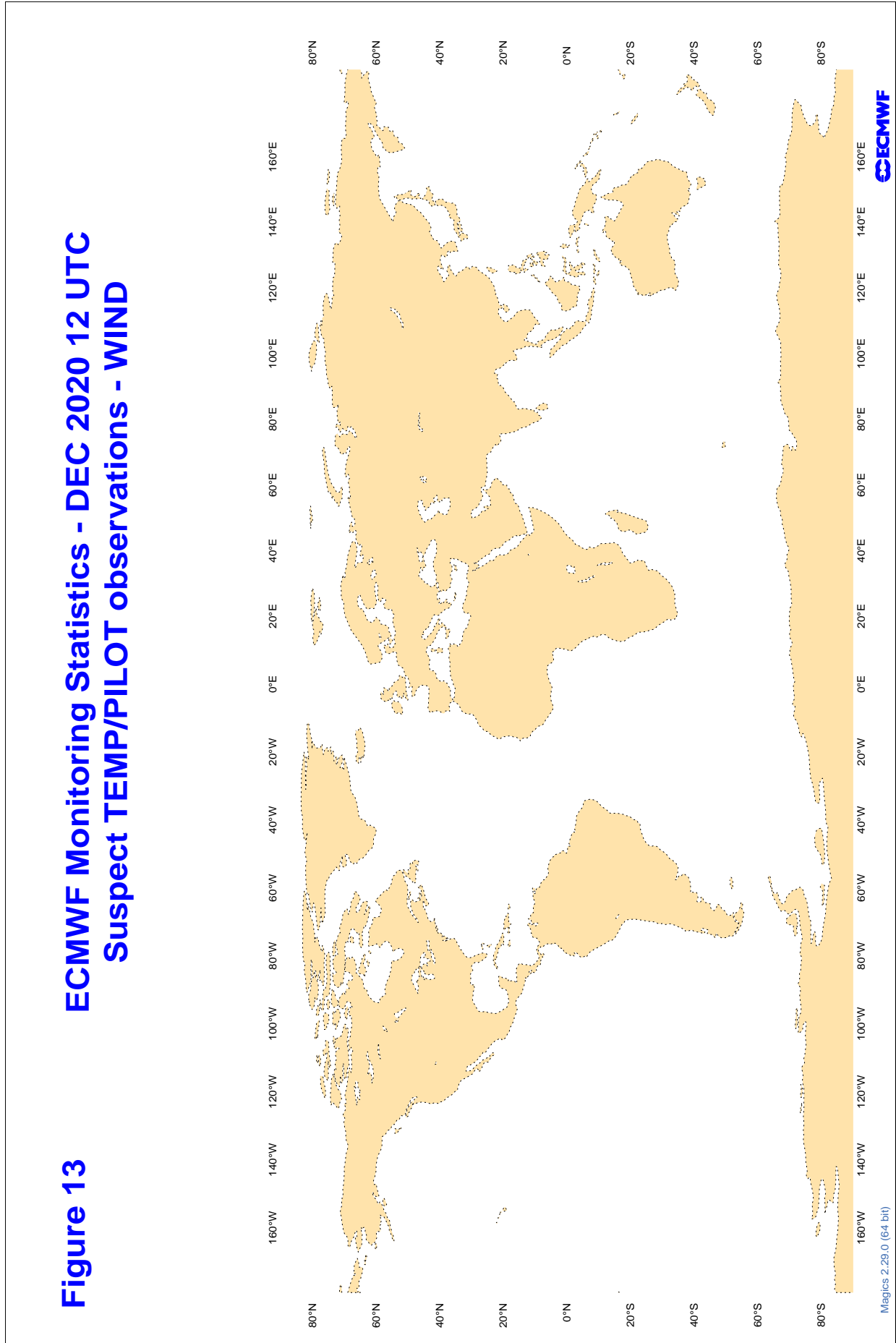
3.2.22 Figure 11 - Suspect TEMP observations - geopotential : 12 UTC



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 : DEC 2020
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
7JUNA4	12	Z	100	7	28.8	-0.7
7JUNA4	00	Z	100	5	32.6	0.6
ASDE09	12	Z	100	8	24.7	24.5
BPMWB2	12	Z	100	2	20.0	20.0
BPMWB2	00	Z	100	2	6.6	0.7
DBLK	12	Z	100	7	6.3	2.2
FAPR	00	Z	100	1	0.6	0.6
FPUW5G	12	Z	100	1	5.9	-5.9
HTXUH4	12	Z	100	11	8.6	-6.1
HTXUH4	00	Z	100	8	9.1	-7.0
JNKN7J	12	Z	100	8	57.9	52.2
JNKN7J	00	Z	100	8	39.9	31.2
KJJF9X	12	Z	100	10	24.6	16.8
KJJF9X	00	Z	100	7	13.8	13.2
KMPLHP	12	Z	100	7	59.5	52.7
KMPLHP	00	Z	100	4	15.6	2.2
LRYQE3	12	Z	100	11	59.2	50.7
LRYQE3	00	Z	100	11	38.5	36.9
UXK5JT	00	Z	100	3	12.4	12.0
UXK5JT	12	Z	100	3	7.4	-5.1
VKB4L5	12	Z	100	5	57.7	45.0
VKB4L5	00	Z	100	6	34.2	32.7
XQFJRG	12	Z	100	3	37.6	11.5
XQFJRG	00	Z	100	4	9.7	-9.3
YLV96W	12	Z	100	6	83.8	63.6
YLV96W	00	Z	100	6	85.7	72.9
ZSNO	00	Z	100	1	0.6	0.6
ZSNO	12	Z	100	1	17.0	-17.0
ZVQEQC	12	Z	100	1	5.2	5.2

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

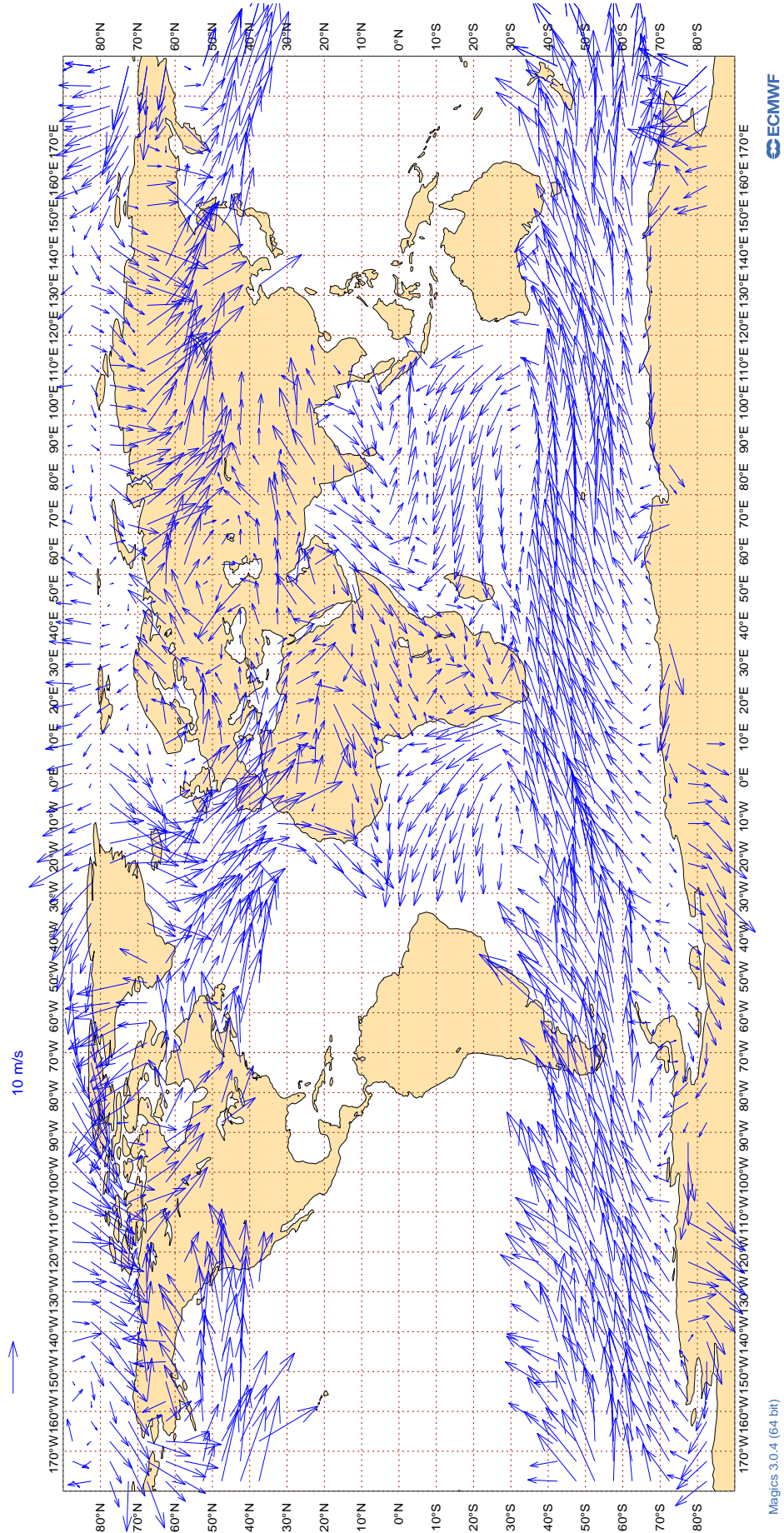
RADIOSONDE MONITORING STATISTICS (SHIPS)

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

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
7JUNA4	12	V	100	7	4.3	-0.2	-0.2
7JUNA4	00	V	100	5	4.3	0.5	1.4
ASDE09	12	V	100	7	2.9	0.3	-0.2
BPMWB2	12	V	100	2	5.7	-4.9	2.4
BPMWB2	00	V	100	2	2.3	-1.5	-0.8
DBLK	12	V	100	7	4.2	1.0	-2.5
FAPR	00	V	100	1	5.1	-1.7	-4.8
FPUW5G	12	V	100	1	2.7	1.2	2.4
HTXUH4	12	V	100	11	3.3	-0.9	0.6
HTXUH4	00	V	100	8	2.6	0.6	0.4
JNKN7J	12	V	100	8	4.1	-0.6	2.3
JNKN7J	00	V	100	8	3.4	1.9	-0.6
KJJF9X	12	V	100	10	3.4	-1.1	0.9
KJJF9X	00	V	100	7	2.9	0.1	-0.6
KMPLHP	12	V	100	7	5.9	2.3	1.0
KMPLHP	00	V	100	4	5.1	-2.3	0.4
LRYQE3	12	V	100	10	3.3	0.6	-0.1
LRYQE3	00	V	100	11	3.5	1.1	0.9
UXK5JT	00	V	100	3	2.6	-0.4	-1.7
UXK5JT	12	V	100	3	2.9	1.2	1.1
VKB4L5	12	V	100	5	4.5	0.5	-1.3
VKB4L5	00	V	100	6	4.7	0.3	-0.1
XQFJRG	12	V	100	3	3.8	-1.4	0.1
XQFJRG	00	V	100	4	3.0	0.0	-0.3
YLV96W	12	V	100	6	4.4	1.2	2.3
YLV96W	00	V	100	6	4.0	0.9	0.8
ZSNO	00	V	100	1	5.1	-1.7	-4.8
ZSNO	12	V	100	1	2.5	1.6	-1.9
ZVQEQC	12	V	100	1	3.1	-0.9	3.0

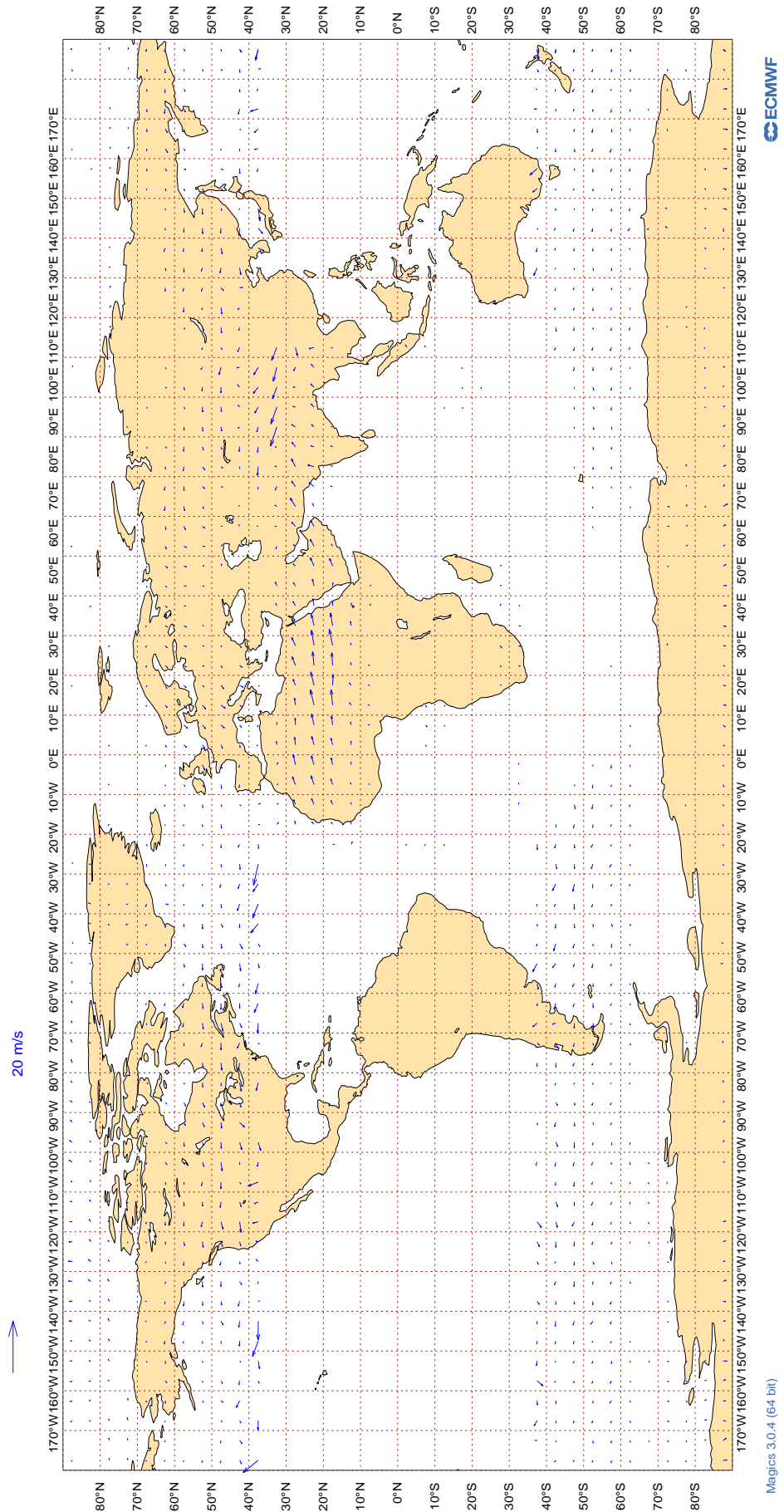
3.2.27 Figure 14 - SATOB Winds: 700-1000hPa

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



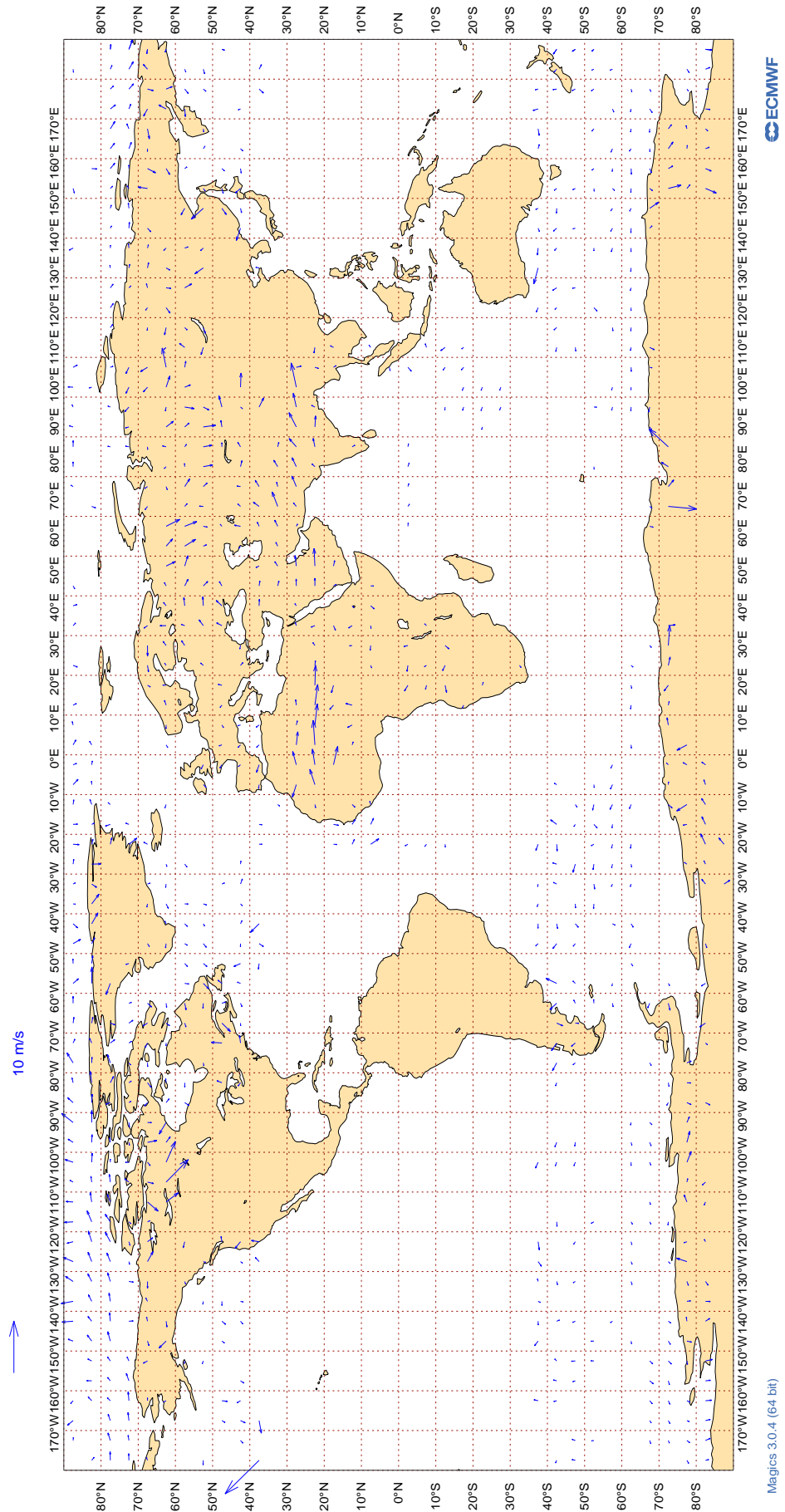
3.2.28 Figure 15 - SATOB Winds: 150- 400hPa

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



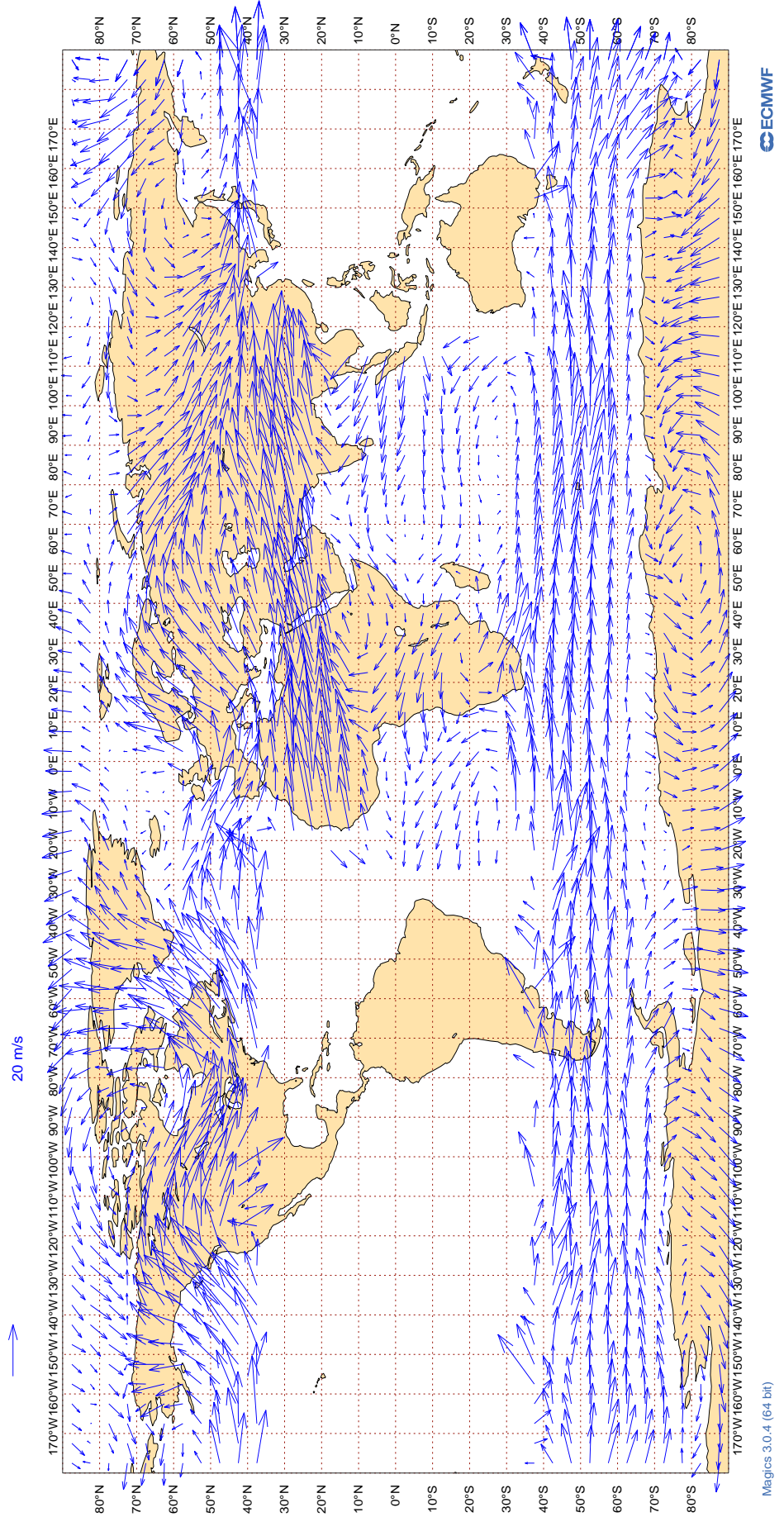
3.2.29 Figure 16 - SATOB Winds: 700-1000hPa

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



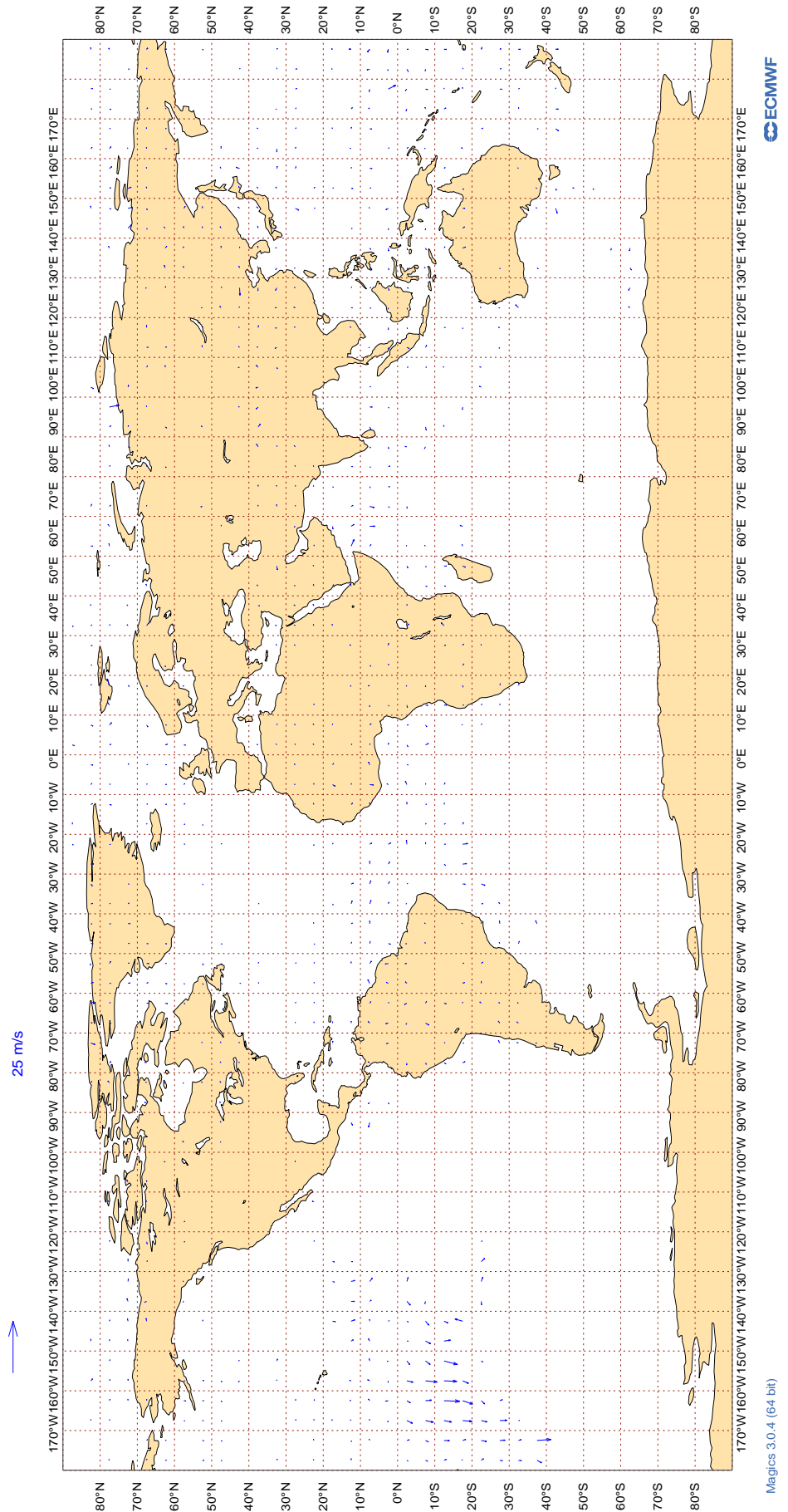
3.2.30 Figure 17 - SATOB Winds: 150- 400hPa

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



3.2.31 Figure 18 - AIRCRAFT Winds: 150- 300hPa

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



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

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS

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

SELECTION CRITERIA: NO. OF OBS. >= 20

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

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
AAL	99	V	300-150	10909	3	0	5.2	0.2
AAR	99	V	300-150	196	0	1	5.0	-1.6
ABB	99	V	300-150	144	0	0	3.6	0.2
ABD	99	V	300-150	1225	0	0	3.9	-0.2
ABW	99	V	300-150	503	0	0	4.1	-0.5
ABX	99	V	300-150	155	0	1	5.7	0.0
ACA	99	V	300-150	10309	4	0	5.5	0.1
ACI	99	V	300-150	124	0	0	4.5	0.6
AEA	99	V	300-150	73	3	5	11.3	-0.3
AFL	99	V	300-150	686	0	0	3.7	0.3
AFR	99	V	300-150	16269	2	0	4.4	0.2
AHO	99	V	300-150	207	0	0	3.6	-0.1
AIC	99	V	300-150	1255	4	0	5.4	-0.1
AJT	99	V	300-150	710	0	0	4.0	0.3
ALK	99	V	300-150	398	0	0	3.5	0.6
AMX	99	V	300-150	1096	5	0	5.9	-0.0
ANZ	99	V	300-150	7799	6	0	9.9	0.6
AOJ	99	V	300-150	108	0	0	4.1	-0.2
ASA	99	V	300-150	24	0	0	4.5	1.3
ASL	99	V	300-150	308	0	0	3.3	0.2
ATC	99	V	300-150	40	0	0	5.7	0.0
ATN	99	V	300-150	67	0	10	5.3	0.8
AUA	99	V	300-150	758	0	0	4.5	-0.5
AVA	99	V	300-150	45	2	0	6.3	0.2
AVL	99	V	300-150	34	0	0	2.8	0.3
AWC	99	V	300-150	29	0	0	3.9	-0.9
AXM	99	V	300-150	41	0	0	8.9	1.4
AZA	99	V	300-150	935	0	0	3.5	0.4

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
AZG	99	V	300-150	556	0	0	3.4	0.0
BAF	99	V	300-150	111	0	0	4.0	0.9
BAH	99	V	300-150	34	0	0	2.8	0.5
BAW	99	V	300-150	18293	4	0	5.3	0.1
BBC	99	V	300-150	163	1	0	5.8	1.1
BCS	99	V	300-150	1628	0	0	3.7	0.5
BFF	99	V	300-150	31	0	0	11.6	-2.3
BOX	99	V	300-150	2573	0	0	3.7	0.0
BOX	99	V	300-150	108	0	0	4.1	-0.2
BPA	99	V	300-150	66	0	0	3.7	0.3
BTX	99	V	300-150	54	0	0	3.4	0.1
CAL	99	V	300-150	377	0	0	4.0	0.3
CAZ	99	V	300-150	77	0	0	5.0	0.3
CCA	99	V	300-150	26	0	0	3.8	0.5
CEB	99	V	300-150	113	0	0	2.8	0.3
CES	99	V	300-150	99	4	0	5.3	0.5
CFC	99	V	300-150	201	0	0	4.8	-0.2
CFG	99	V	300-150	581	0	0	4.4	0.3
CJT	99	V	300-150	1814	0	0	4.0	-0.2
CKS	99	V	300-150	2167	0	0	3.8	-0.1
CLF	99	V	300-150	50	0	0	2.8	-0.1
CLU	99	V	300-150	708	0	0	4.2	-0.7
CLX	99	V	300-150	4267	0	0	3.9	-0.4
CMB	99	V	300-150	488	0	0	4.0	0.2
CNV	99	V	300-150	227	0	0	3.4	-0.2
CPA	99	V	300-150	355	0	0	4.0	0.1
CRL	99	V	300-150	517	0	1	3.8	0.6
CRV	99	V	300-150	32	0	0	3.3	0.3
CSN	99	V	300-150	293	5	0	5.6	0.7
CTM	99	V	300-150	265	0	0	5.7	0.5
CWG	99	V	300-150	38	0	0	5.6	0.8
DAH	99	V	300-150	27	0	0	3.3	0.7
DAL	99	V	300-150	15664	0	0	3.7	0.2
DCS	99	V	300-150	66	0	0	4.5	2.2
DHK	99	V	300-150	755	0	0	4.7	-0.5
DJT	99	V	300-150	72	0	0	3.0	0.5
DLH	99	V	300-150	9117	0	0	3.6	0.2
DSO	99	V	300-150	28	0	0	3.1	0.7
EAU	99	V	300-150	69	0	0	3.5	1.0
EAV	99	V	300-150	37	0	0	3.5	0.2
EDC	99	V	300-150	48	0	0	2.8	-0.2
EDG	99	V	300-150	108	0	0	2.7	0.2
EDW	99	V	300-150	309	0	0	3.7	0.3

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
EIN	99	V	300-150	2917	0	0	3.5	0.2
EJM	99	V	300-150	327	0	0	4.0	0.2
ELY	99	V	300-150	945	9	0	5.1	-0.2
EMM	99	V	300-150	24	0	0	3.5	0.7
ETD	99	V	300-150	3472	5	0	5.5	0.2
ETH	99	V	300-150	3701	4	0	6.0	0.2
FBU	99	V	300-150	318	0	0	4.2	-0.2
FDX	99	V	300-150	7323	0	0	3.8	0.2
FGR	99	V	300-150	37	0	0	5.2	-0.5
FIN	99	V	300-150	238	0	0	3.6	-0.5
FJI	99	V	300-150	369	0	0	4.5	0.2
FRH	99	V	300-150	745	0	0	4.3	-0.0
FWI	99	V	300-150	1198	0	1	3.9	0.6
FYG	99	V	300-150	47	0	0	4.0	1.5
GAF	99	V	300-150	43	0	0	3.3	0.3
GCT	99	V	300-150	30	0	0	3.2	-0.3
GEC	99	V	300-150	1636	0	0	3.9	-0.0
GES	99	V	300-150	58	0	0	3.8	0.2
GFA	99	V	300-150	144	6	0	4.3	1.1
GIA	99	V	300-150	62	0	0	3.6	1.0
GNJ	99	V	300-150	35	0	0	4.6	0.6
GTI	99	V	300-150	1965	0	0	4.0	-0.1
HAL	99	V	300-150	23	0	0	4.6	-0.4
HOO	99	V	300-150	32	0	0	3.8	-0.9
HRN	99	V	300-150	27	0	0	3.7	-0.0
HRT	99	V	300-150	30	0	0	3.7	0.5
HWA	99	V	300-150	24	0	0	2.9	-0.6
HZS	99	V	300-150	21	0	0	4.8	4.3
IAM	99	V	300-150	68	0	0	3.8	0.1
IBE	99	V	300-150	770	0	1	4.0	0.3
ICE	99	V	300-150	107	0	1	4.1	0.1
ICL	99	V	300-150	34	0	0	3.9	0.6
ICV	99	V	300-150	345	0	0	4.1	-0.6
IFA	99	V	300-150	207	0	0	3.5	-0.0
IJM	99	V	300-150	93	0	0	5.2	-0.9
JAF	99	V	300-150	111	2	0	6.7	0.1
JBU	99	V	300-150	20	0	35	3.1	-0.3
JCL	99	V	300-150	27	0	0	4.6	0.7
JCO	99	V	300-150	65	0	0	4.4	-0.4
JEF	99	V	300-150	23	0	0	3.5	1.0
JET	99	V	300-150	59	0	0	4.2	0.4
JME	99	V	300-150	55	0	0	3.1	-0.1
KAC	99	V	300-150	165	0	0	3.2	1.0

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
KAI	99	V	300-150	85	0	0	4.3	0.5
KAL	99	V	300-150	35	9	3	10.2	0.6
KAY	99	V	300-150	194	0	0	4.1	-0.2
KLM	99	V	300-150	14355	3	0	4.9	0.2
KQA	99	V	300-150	183	5	0	11.2	0.3
LAN	99	V	300-150	34	6	3	6.8	0.0
LCO	99	V	300-150	351	0	0	4.1	-1.6
LGT	99	V	300-150	61	0	0	4.0	-1.2
LNX	99	V	300-150	24	0	0	3.5	-1.4
LOT	99	V	300-150	1595	8	0	7.4	-0.2
LUC	99	V	300-150	23	0	0	3.7	-0.7
LVT	99	V	300-150	29	0	0	3.7	-0.1
LXG	99	V	300-150	40	0	0	3.8	0.8
LXJ	99	V	300-150	257	0	3	3.9	0.1
MAS	99	V	300-150	242	0	0	5.0	1.0
MAU	99	V	300-150	110	0	0	4.7	1.3
MED	99	V	300-150	38	0	0	4.0	-0.7
MHV	99	V	300-150	60	0	0	3.3	-0.1
MJF	99	V	300-150	83	0	0	4.0	0.4
MLM	99	V	300-150	72	0	0	2.9	-0.1
MLT	99	V	300-150	877	0	0	3.8	0.4
MMD	99	V	300-150	207	0	0	4.2	0.4
MNB	99	V	300-150	172	0	1	3.2	0.3
MPH	99	V	300-150	732	0	0	4.0	-0.7
MSR	99	V	300-150	1026	5	0	5.0	0.1
NCR	99	V	300-150	524	0	0	3.9	0.0
NJE	99	V	300-150	345	0	0	4.0	0.3
NWS	99	V	300-150	233	0	0	4.0	0.1
OAE	99	V	300-150	704	0	0	4.5	0.0
OHY	99	V	300-150	21	0	0	3.0	0.7
OMA	99	V	300-150	109	6	0	3.5	0.4
OPM	99	V	300-150	23	0	0	2.2	0.4
PAC	99	V	300-150	116	0	0	3.4	-0.9
PAL	99	V	300-150	310	0	0	2.9	0.5
PEG	99	V	300-150	38	0	0	4.1	-0.1
PIA	99	V	300-150	116	0	0	3.5	0.2
PLF	99	V	300-150	41	0	0	3.6	-0.4
PLM	99	V	300-150	381	0	0	3.9	0.4
PVG	99	V	300-150	32	0	0	5.4	-0.9
QFA	99	V	300-150	341	0	0	6.0	0.7
QQE	99	V	300-150	168	0	0	3.8	0.9
QTR	99	V	300-150	13786	0	0	4.0	0.2
RAM	99	V	300-150	431	11	0	6.4	0.4

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
RCH	99	V	300-150	3294	0	0	4.6	0.2
RDN	99	V	300-150	68	0	0	3.4	0.1
RJA	99	V	300-150	455	10	0	6.2	-0.1
ROJ	99	V	300-150	20	0	0	3.7	0.8
ROU	99	V	300-150	21	0	0	5.4	1.5
RRR	99	V	300-150	236	0	0	3.9	0.5
RWD	99	V	300-150	20	0	0	4.1	0.4
RYR	99	V	300-150	43	0	2	4.3	0.4
RZO	99	V	300-150	23	0	22	5.0	1.3
SAM	99	V	300-150	276	0	0	4.0	-0.1
SAS	99	V	300-150	1154	0	0	3.7	0.3
SAZ	99	V	300-150	124	0	0	2.9	-0.0
SCN	99	V	300-150	27	0	0	5.8	-0.3
SCX	99	V	300-150	62	0	2	7.1	1.0
SEY	99	V	300-150	48	0	0	4.5	0.8
SGC	99	V	300-150	33	0	0	3.1	-0.3
SHE	99	V	300-150	57	0	0	3.3	0.9
SIA	99	V	300-150	1312	0	0	4.0	-0.0
SIO	99	V	300-150	83	0	0	4.0	0.6
SLM	99	V	300-150	69	0	0	4.1	1.2
SOO	99	V	300-150	636	0	0	4.3	-0.0
SPA	99	V	300-150	154	0	0	4.3	0.0
SPU	99	V	300-150	33	0	0	3.3	0.8
SVA	99	V	300-150	2230	0	0	3.5	0.3
SVW	99	V	300-150	231	0	0	4.0	0.2
SWA	99	V	300-150	43	0	2	8.9	-0.4
SWR	99	V	300-150	2763	0	1	3.8	0.3
SYB	99	V	300-150	37	0	0	4.1	0.6
TAM	99	V	300-150	37	0	0	3.4	0.1
TAP	99	V	300-150	704	0	1	3.7	0.4
TAR	99	V	300-150	79	0	0	3.0	0.0
TAY	99	V	300-150	509	0	0	4.2	-0.3
TEU	99	V	300-150	44	0	0	3.2	-0.0
TFF	99	V	300-150	59	0	0	4.6	-0.3
TFL	99	V	300-150	658	8	0	6.0	0.2
THT	99	V	300-150	1270	2	0	8.4	-0.3
THY	99	V	300-150	7106	4	0	4.8	0.1
TIH	99	V	300-150	23	0	0	4.8	1.0
TMN	99	V	300-150	272	0	0	4.7	0.4
TOM	99	V	300-150	1897	7	0	5.9	0.2
TOW	99	V	300-150	59	0	0	2.9	0.5
TPA	99	V	300-150	323	0	0	4.1	0.5
TSC	99	V	300-150	650	0	0	3.6	0.5

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
TWY	99	V	300-150	79	0	0	2.9	-0.1
UAE	99	V	300-150	10264	0	0	3.6	0.3
UAL	99	V	300-150	26994	5	2	6.7	0.2
ULC	99	V	300-150	56	0	0	4.3	-0.0
UPS	99	V	300-150	4808	0	0	4.0	-0.2
UTN	99	V	300-150	60	0	0	5.0	-0.9
UZB	99	V	300-150	54	17	0	11.6	0.2
VCG	99	V	300-150	148	0	0	3.9	0.5
VCJ	99	V	300-150	45	0	0	4.0	0.7
VIR	99	V	300-150	6614	5	0	5.2	0.1
VJT	99	V	300-150	1193	0	0	4.0	0.3
VTI	99	V	300-150	44	0	0	3.5	1.1
WJA	99	V	300-150	326	8	0	7.2	0.2
XRO	99	V	300-150	28	0	0	4.4	0.6

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 : DEC 2020
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	00	Z	50	26	13.0	2.8
01001	12	Z	50	22	11.2	0.3
01028	00	Z	50	29	6.2	-1.4
01028	12	Z	50	29	9.1	0.6
01400	12	Z	50	23	77.3	77.1
01400	00	Z	50	22	78.7	78.0
01415	00	Z	50	28	7.3	1.9
01415	12	Z	50	31	8.4	1.2
02365	12	Z	50	20	6.8	-2.8
02365	00	Z	50	18	6.6	-1.5
02836	12	Z	50	30	5.5	-1.0
02836	00	Z	50	29	6.3	0.1
02963	00	Z	50	30	5.5	1.7
02963	12	Z	50	32	5.1	-2.1
03005	00	Z	50	31	6.8	-2.0
03005	12	Z	50	31	8.5	-1.7
03238	12	Z	50	5	9.3	-5.0
03238	00	Z	50	27	11.2	0.2
03808	00	Z	50	29	8.5	2.1
03808	12	Z	50	31	8.4	-0.8
03918	12	Z	50	8	24.8	12.7
03918	00	Z	50	31	17.0	7.3
03953	12	Z	50	31	15.2	-7.6
03953	00	Z	50	31	12.7	-9.4
04018	12	Z	50	30	12.2	-2.5
04018	00	Z	50	25	14.2	0.8
04220	12	Z	50	31	5.6	0.7
04220	00	Z	50	30	10.6	0.2
04270	12	Z	50	25	51.4	5.7
04270	00	Z	50	27	11.0	2.9
04320	00	Z	50	31	7.6	-2.8
04320	12	Z	50	30	6.1	-2.7
04339	00	Z	50	28	6.0	2.1
04339	12	Z	50	29	4.8	-1.0
04360	12	Z	50	20	8.6	-2.3
04360	00	Z	50	18	9.9	-2.0
06011	00	Z	50	26	11.1	-0.3
06011	12	Z	50	27	7.5	-0.1
06260	00	Z	50	28	17.9	6.2

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06260	12	Z	50	5	10.4	7.0
06610	12	Z	50	31	9.4	6.6
06610	00	Z	50	28	10.1	5.1
07110	12	Z	50	29	11.8	3.7
07110	00	Z	50	28	11.7	2.5
07510	00	Z	50	29	17.3	5.9
07510	12	Z	50	31	23.4	19.2
07645	00	Z	50	30	15.3	9.7
07645	12	Z	50	29	21.9	15.6
07761	12	Z	50	31	14.1	3.6
07761	00	Z	50	29	21.9	12.0
08001	00	Z	50	24	10.6	6.2
08001	12	Z	50	30	11.7	6.6
08221	00	Z	50	31	12.7	4.5
08221	12	Z	50	31	14.1	10.4
08302	12	Z	50	31	8.9	-3.2
08302	00	Z	50	30	8.7	-2.3
08508	00	Z	50	27	11.5	8.3
08508	12	Z	50	31	31.3	-1.9
08522	12	Z	50	30	10.1	8.3
10035	12	Z	50	31	16.2	14.0
10035	00	Z	50	27	18.0	16.4
10393	00	Z	50	29	7.2	2.4
10393	12	Z	50	30	12.0	0.7
10410	00	Z	50	30	9.6	-2.2
10410	12	Z	50	31	7.7	-2.3
10739	00	Z	50	30	10.8	6.6
10739	12	Z	50	31	7.9	1.5
11035	12	Z	50	30	46.7	35.7
11035	00	Z	50	29	13.8	10.3
12982	12	Z	50	31	10.7	2.0
12982	00	Z	50	31	7.0	2.4
16080	00	Z	50	30	10.3	-1.0
16080	12	Z	50	31	7.9	1.1
16245	00	Z	50	31	7.7	1.6
16245	12	Z	50	29	8.7	1.6
16320	00	Z	50	27	11.4	9.7
16320	12	Z	50	31	10.5	4.4
16429	12	Z	50	30	11.4	5.1
16429	00	Z	50	29	11.8	7.3
16622	00	Z	50	24	20.6	17.1
16754	00	Z	50	27	10.1	4.7
17607	12	Z	50	28	7.1	5.0

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
26435	12	Z	50	14	5.2	-2.5
60018	12	Z	50	29	10.5	7.3
60018	00	Z	50	28	11.4	9.8
7JUNA4	12	Z	50	5	34.2	-6.0
7JUNA4	00	Z	50	4	37.0	-1.5
ASDE09	12	Z	50	7	34.3	33.8
BPMWB2	12	Z	50	2	31.7	31.2
BPMWB2	00	Z	50	2	14.6	11.2
DBLK	12	Z	50	7	7.8	3.0
FPUW5G	12	Z	50	1	1.7	-1.7
HTXUH4	12	Z	50	11	8.1	-5.6
HTXUH4	00	Z	50	7	11.9	-7.4
JNKN7J	12	Z	50	7	108.3	94.6
JNKN7J	00	Z	50	5	30.2	29.0
KJJF9X	12	Z	50	8	27.0	16.0
KJJF9X	00	Z	50	6	21.4	20.4
KMPLHP	12	Z	50	6	142.9	136.8
KMPLHP	00	Z	50	4	17.3	3.8
LRYQE3	12	Z	50	11	106.6	84.8
LRYQE3	00	Z	50	10	36.6	35.6
UXK5JT	00	Z	50	3	25.3	24.1
UXK5JT	12	Z	50	3	10.2	2.5
VKB4L5	12	Z	50	5	48.9	39.0
VKB4L5	00	Z	50	5	36.7	34.0
XQFJRG	12	Z	50	3	67.3	34.2
XQFJRG	00	Z	50	4	8.0	-7.0
YLV96W	12	Z	50	6	158.0	108.7
YLV96W	00	Z	50	6	94.5	81.0
ZVQEQC	12	Z	50	1	5.2	-5.2

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 : DEC 2020
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	00	V	50	21	3.0	0.4	0.6
01001	12	V	50	22	3.0	0.1	-0.1
01028	00	V	50	21	2.8	0.1	0.0
01028	12	V	50	28	3.5	0.8	-0.6
01400	12	V	50	18	3.7	0.7	-0.4
01400	00	V	50	13	3.8	0.6	-0.5
01415	00	V	50	22	3.6	0.5	-0.4
01415	12	V	50	31	3.0	0.6	-0.6
02365	12	V	50	19	3.1	0.1	0.0
02365	00	V	50	14	2.7	0.7	0.2
02836	12	V	50	24	3.3	0.2	0.2
02836	00	V	50	21	3.5	-0.6	0.9
02963	00	V	50	26	3.5	0.1	0.7
02963	12	V	50	29	2.9	0.4	0.0
03005	00	V	50	22	3.1	-0.2	-0.6
03005	12	V	50	31	3.5	0.2	-0.5
03238	12	V	50	5	4.1	2.0	-0.5
03238	00	V	50	21	3.3	0.8	-0.7
03808	00	V	50	22	3.7	-0.3	1.3
03808	12	V	50	31	3.6	0.1	0.0
03918	12	V	50	8	5.0	1.3	2.1
03918	00	V	50	30	5.3	-0.4	1.2
03953	12	V	50	31	3.5	1.1	0.2
03953	00	V	50	26	4.7	0.5	-0.4
04018	12	V	50	28	4.1	0.8	-0.3
04018	00	V	50	19	4.1	-0.7	0.0
04220	12	V	50	31	3.0	0.2	-0.1
04220	00	V	50	22	3.9	0.2	0.4
04270	12	V	50	21	4.5	0.2	-0.2
04270	00	V	50	21	4.5	-1.0	-0.5
04320	00	V	50	26	3.3	0.3	-0.4
04320	12	V	50	30	3.7	0.7	-0.1
04339	00	V	50	23	3.7	0.3	0.3
04339	12	V	50	29	3.4	0.6	-0.1
04360	12	V	50	20	3.3	0.5	-0.2
04360	00	V	50	13	3.4	0.1	-1.1
06011	00	V	50	21	2.8	-0.8	0.3
06011	12	V	50	27	3.7	1.0	-0.1
06260	00	V	50	22	3.5	1.2	0.7

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06260	12	V	50	5	3.9	0.4	1.2
06610	12	V	50	30	3.2	0.2	0.3
06610	00	V	50	22	4.0	0.4	-0.5
07110	12	V	50	29	3.9	0.1	0.0
07110	00	V	50	23	3.1	-0.5	0.9
07510	00	V	50	25	4.7	1.0	0.5
07510	12	V	50	31	4.2	0.6	-0.3
07645	00	V	50	26	5.0	-0.2	-0.2
07645	12	V	50	29	4.1	0.9	-0.4
07761	12	V	50	31	4.2	0.2	0.0
07761	00	V	50	23	4.5	0.2	-0.6
08001	00	V	50	18	3.5	0.8	-0.3
08001	12	V	50	28	4.0	0.2	-0.2
08221	00	V	50	24	4.1	-0.9	-0.1
08221	12	V	50	31	5.0	-0.1	0.2
08302	12	V	50	31	4.3	-0.4	-0.5
08302	00	V	50	23	4.6	-0.5	-0.1
08508	00	V	50	22	3.9	-0.7	1.3
08508	12	V	50	31	3.5	0.3	-0.8
08522	12	V	50	30	2.6	0.8	0.3
10035	12	V	50	31	3.7	0.3	-0.9
10035	00	V	50	23	3.4	0.6	0.6
10393	00	V	50	25	3.6	0.3	-0.7
10393	12	V	50	30	3.5	0.7	-1.2
10410	00	V	50	29	3.6	0.2	0.3
10410	12	V	50	31	3.9	-0.3	-0.1
10739	00	V	50	26	3.8	0.2	-1.0
10739	12	V	50	31	3.9	1.1	-0.1
11035	12	V	50	30	4.2	0.2	-0.2
11035	00	V	50	21	3.8	1.5	-1.0
12982	12	V	50	31	3.0	-0.7	0.2
12982	00	V	50	25	4.2	-0.5	-0.3
16080	00	V	50	20	4.1	-0.7	0.4
16080	12	V	50	31	3.3	0.1	-0.3
16245	00	V	50	25	4.4	0.7	-0.6
16245	12	V	50	29	4.8	0.5	0.2
16320	00	V	50	25	4.8	0.2	0.1
16320	12	V	50	31	5.2	-0.7	-1.3
16429	12	V	50	30	4.7	0.5	-0.3
16429	00	V	50	21	4.1	-0.3	-0.3
16622	00	V	50	14	4.1	-0.5	0.5
16754	00	V	50	21	4.1	1.3	-0.5
17607	12	V	50	20	3.4	1.2	-0.6

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
26435	12	V	50	14	3.2	0.8	0.5
60018	12	V	50	27	3.9	0.5	1.2
60018	00	V	50	21	2.8	-0.6	-0.4
7JUNA4	12	V	50	4	4.8	0.0	-0.4
7JUNA4	00	V	50	4	2.3	1.1	-0.3
ASDE09	12	V	50	7	2.9	-0.7	0.1
BPMWB2	12	V	50	2	3.3	-0.6	2.9
BPMWB2	00	V	50	2	2.4	0.7	1.5
DBLK	12	V	50	6	3.3	0.9	-0.6
FPUW5G	12	V	50	1	2.9	1.6	-2.4
HTXUH4	12	V	50	9	2.1	0.1	-0.9
HTXUH4	00	V	50	6	2.1	0.6	0.5
JNKN7J	12	V	50	7	3.9	0.0	1.0
JNKN7J	00	V	50	5	3.6	-1.4	-1.0
KJFF9X	12	V	50	8	3.5	-1.1	0.6
KJFF9X	00	V	50	6	4.6	0.5	-0.8
KMPLHP	12	V	50	6	3.0	1.3	1.3
KMPLHP	00	V	50	4	3.5	-1.4	-0.5
LRYQE3	12	V	50	11	4.7	-0.2	0.6
LRYQE3	00	V	50	9	3.6	0.9	0.3
UXK5JT	00	V	50	3	3.6	-0.7	-0.9
UXK5JT	12	V	50	3	4.5	3.8	2.2
VKB4L5	12	V	50	5	3.9	1.4	0.0
VKB4L5	00	V	50	3	3.3	-2.3	-2.1
XQFJRG	12	V	50	3	3.1	0.2	-1.0
XQFJRG	00	V	50	4	4.2	-0.7	-1.8
YLV96W	12	V	50	4	2.8	1.6	0.5
YLV96W	00	V	50	6	3.2	0.5	1.2
ZVQEQC	12	V	50	1	3.9	0.2	-3.9

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 : DEC 2020
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	00	Z	100	28	11.9	-6.0
01001	12	Z	100	26	10.0	-4.2
01028	00	Z	100	29	7.7	-5.5
01028	12	Z	100	29	9.3	-2.5
01400	12	Z	100	28	75.3	74.9
01400	00	Z	100	23	74.1	73.6
01415	00	Z	100	30	6.1	-1.1
01415	12	Z	100	31	5.5	-0.6
02365	12	Z	100	21	6.5	-4.4
02365	00	Z	100	22	6.4	-2.8
02836	12	Z	100	33	5.1	-1.9
02836	00	Z	100	30	6.6	-3.7
02963	00	Z	100	31	5.0	-2.5
02963	12	Z	100	32	5.0	-2.8
03005	00	Z	100	31	7.3	-5.7
03005	12	Z	100	31	9.0	-5.4
03238	12	Z	100	5	10.8	-6.3
03238	00	Z	100	31	7.0	-1.6
03808	00	Z	100	31	7.2	-0.5
03808	12	Z	100	31	9.4	-3.8
03918	12	Z	100	8	12.4	4.6
03918	00	Z	100	31	10.1	1.7
03953	12	Z	100	31	12.9	-8.2
03953	00	Z	100	31	11.6	-9.6
04018	12	Z	100	32	8.1	-4.3
04018	00	Z	100	28	11.1	-1.3
04220	12	Z	100	31	5.1	-1.0
04220	00	Z	100	30	9.1	0.6
04270	12	Z	100	30	36.9	1.8
04270	00	Z	100	27	5.3	0.2
04320	00	Z	100	31	5.7	-2.8
04320	12	Z	100	30	5.7	-3.5
04339	00	Z	100	28	5.4	0.5
04339	12	Z	100	29	4.6	-0.3
04360	12	Z	100	24	10.7	-8.8
04360	00	Z	100	25	8.9	-6.4
06011	00	Z	100	29	7.2	-1.5
06011	12	Z	100	28	5.0	-1.2
06260	00	Z	100	31	16.8	1.2

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06260	12	Z	100	5	7.4	6.0
06610	12	Z	100	32	6.9	2.0
06610	00	Z	100	32	6.6	-0.5
07110	12	Z	100	30	9.8	-3.3
07110	00	Z	100	30	18.9	-0.9
07510	00	Z	100	29	11.6	0.3
07510	12	Z	100	31	14.6	8.5
07645	00	Z	100	31	10.2	1.6
07645	12	Z	100	31	13.9	8.6
07761	12	Z	100	31	14.0	-2.7
07761	00	Z	100	30	12.6	3.7
08001	00	Z	100	30	7.4	1.8
08001	12	Z	100	30	8.7	3.9
08221	00	Z	100	31	8.6	2.4
08221	12	Z	100	31	9.8	7.0
08302	12	Z	100	31	7.8	-5.1
08302	00	Z	100	31	9.6	-6.5
08508	00	Z	100	27	8.7	5.6
08508	12	Z	100	31	30.7	-2.0
08522	12	Z	100	31	8.8	7.5
10035	12	Z	100	31	13.0	11.7
10035	00	Z	100	32	14.4	12.4
10393	00	Z	100	30	6.1	-0.5
10393	12	Z	100	31	8.1	-0.6
10410	00	Z	100	31	7.8	-3.3
10410	12	Z	100	31	7.1	-3.7
10739	00	Z	100	31	7.4	3.9
10739	12	Z	100	31	7.3	-0.2
11035	12	Z	100	32	32.4	26.0
11035	00	Z	100	32	11.6	8.1
12982	12	Z	100	31	6.1	-0.1
12982	00	Z	100	31	5.2	0.8
16080	00	Z	100	31	7.7	-4.4
16080	12	Z	100	32	7.1	-2.9
16245	00	Z	100	31	7.7	-3.0
16245	12	Z	100	29	5.1	-1.3
16320	00	Z	100	28	6.6	4.2
16320	12	Z	100	31	8.4	1.2
16429	12	Z	100	30	8.9	1.7
16429	00	Z	100	29	8.3	1.7
16622	00	Z	100	30	12.4	9.9
16754	00	Z	100	30	8.2	2.8
17607	12	Z	100	31	7.1	4.7

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
26435	12	Z	100	14	4.1	-2.1
60018	12	Z	100	31	8.0	6.0
60018	00	Z	100	31	8.2	5.9
7JUNA4	12	Z	100	7	28.8	-0.7
7JUNA4	00	Z	100	5	32.6	0.6
ASDE09	12	Z	100	8	24.7	24.5
BPMWB2	12	Z	100	2	20.0	20.0
BPMWB2	00	Z	100	2	6.6	0.7
DBLK	12	Z	100	7	6.3	2.2
FPUW5G	12	Z	100	1	5.9	-5.9
HTXUH4	12	Z	100	11	8.6	-6.1
HTXUH4	00	Z	100	8	9.1	-7.0
JNKN7J	12	Z	100	8	57.9	52.2
JNKN7J	00	Z	100	8	39.9	31.2
KJJF9X	12	Z	100	10	24.6	16.8
KJJF9X	00	Z	100	7	13.8	13.2
KMPLHP	12	Z	100	7	59.5	52.7
KMPLHP	00	Z	100	4	15.6	2.2
LRYQE3	12	Z	100	11	59.2	50.7
LRYQE3	00	Z	100	11	38.5	36.9
UXK5JT	00	Z	100	3	12.4	12.0
UXK5JT	12	Z	100	3	7.4	-5.1
VKB4L5	12	Z	100	5	57.7	45.0
VKB4L5	00	Z	100	6	34.2	32.7
XQFJRG	12	Z	100	3	37.6	11.5
XQFJRG	00	Z	100	4	9.7	-9.3
YLV96W	12	Z	100	6	83.8	63.6
YLV96W	00	Z	100	6	85.7	72.9
ZVQEQC	12	Z	100	1	5.2	5.2

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 : DEC 2020
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	00	V	100	22	2.0	0.2	0.2
01001	12	V	100	26	2.3	0.3	-0.2
01028	00	V	100	22	2.7	0.2	-0.9
01028	12	V	100	29	3.0	-0.3	-0.2
01400	12	V	100	23	2.5	0.3	0.7
01400	00	V	100	13	3.0	-0.8	-0.6
01415	00	V	100	23	3.1	0.9	-0.2
01415	12	V	100	31	3.1	0.1	0.4
02365	12	V	100	21	2.3	0.5	0.6
02365	00	V	100	18	2.6	0.1	-0.5
02836	12	V	100	31	2.8	0.0	-0.1
02836	00	V	100	23	3.0	-0.5	0.2
02963	00	V	100	27	3.0	0.0	-0.4
02963	12	V	100	31	2.8	0.5	-0.2
03005	00	V	100	22	2.9	0.6	0.0
03005	12	V	100	31	3.7	0.2	0.6
03238	12	V	100	5	2.5	0.8	-1.3
03238	00	V	100	23	3.2	0.3	-0.1
03808	00	V	100	25	3.1	-0.6	0.0
03808	12	V	100	31	3.5	1.8	0.3
03918	12	V	100	8	2.3	1.0	0.6
03918	00	V	100	30	4.6	1.7	0.5
03953	12	V	100	31	3.6	0.1	-0.8
03953	00	V	100	26	3.6	0.7	0.0
04018	12	V	100	31	2.7	0.1	-0.3
04018	00	V	100	27	3.6	-0.4	-0.6
04220	12	V	100	31	3.3	0.2	0.7
04220	00	V	100	26	3.1	0.3	-1.0
04270	12	V	100	29	3.4	0.9	-0.6
04270	00	V	100	26	3.6	-0.7	-0.5
04320	00	V	100	29	3.5	-0.5	-0.2
04320	12	V	100	30	2.9	0.5	-0.3
04339	00	V	100	27	3.3	-0.5	0.1
04339	12	V	100	29	3.1	0.5	0.1
04360	12	V	100	24	3.1	0.3	-0.3
04360	00	V	100	23	3.3	0.2	0.4
06011	00	V	100	25	2.9	0.5	-0.3
06011	12	V	100	28	3.2	1.1	0.1
06260	00	V	100	25	3.4	-0.2	0.3

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06260	12	V	100	5	3.3	-2.0	-1.2
06610	12	V	100	30	3.7	0.3	-0.6
06610	00	V	100	29	3.3	0.6	-0.2
07110	12	V	100	30	3.5	0.2	0.2
07110	00	V	100	24	3.3	0.0	-0.4
07510	00	V	100	25	3.1	0.6	-0.5
07510	12	V	100	31	3.3	0.6	0.3
07645	00	V	100	26	4.0	-0.7	0.8
07645	12	V	100	31	4.0	-0.2	-0.1
07761	12	V	100	31	3.8	-0.4	-0.1
07761	00	V	100	23	3.8	-0.3	-0.2
08001	00	V	100	22	4.0	0.5	0.1
08001	12	V	100	30	3.5	0.6	0.9
08221	00	V	100	25	4.1	0.0	-0.5
08221	12	V	100	31	4.5	-0.2	1.3
08302	12	V	100	31	4.1	0.2	-0.6
08302	00	V	100	22	3.5	-0.9	0.4
08508	00	V	100	22	3.2	0.3	0.0
08508	12	V	100	31	4.0	-0.8	-0.1
08522	12	V	100	31	3.4	0.3	-1.0
10035	12	V	100	31	3.1	0.1	0.4
10035	00	V	100	30	3.1	0.3	0.3
10393	00	V	100	30	3.0	-0.1	0.0
10393	12	V	100	30	3.3	-0.4	-0.4
10410	00	V	100	30	3.8	0.2	0.0
10410	12	V	100	31	3.9	0.8	0.0
10739	00	V	100	29	3.7	0.2	-0.4
10739	12	V	100	31	2.6	0.1	-0.4
11035	12	V	100	31	3.2	-0.1	-0.4
11035	00	V	100	24	3.3	0.8	0.4
12982	12	V	100	31	3.7	-0.7	-0.1
12982	00	V	100	25	3.0	0.3	-0.7
16080	00	V	100	23	3.1	1.0	0.5
16080	12	V	100	31	3.5	0.3	-0.2
16245	00	V	100	30	3.5	0.2	-0.3
16245	12	V	100	29	3.4	-0.3	-0.7
16320	00	V	100	27	4.0	0.3	0.8
16320	12	V	100	31	3.3	0.5	0.0
16429	12	V	100	30	3.2	-0.4	0.0
16429	00	V	100	28	4.1	-0.2	0.5
16622	00	V	100	24	3.3	0.0	0.3
16754	00	V	100	22	3.2	0.4	0.7
17607	12	V	100	23	3.4	0.6	0.1

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
26435	12	V	100	14	2.4	0.7	0.3
60018	12	V	100	31	3.7	-0.2	0.0
60018	00	V	100	22	3.3	0.1	1.0
7JUNA4	12	V	100	7	4.3	-0.2	-0.2
7JUNA4	00	V	100	5	4.3	0.5	1.4
ASDE09	12	V	100	7	2.9	0.3	-0.2
BPMWB2	12	V	100	2	5.7	-4.9	2.4
BPMWB2	00	V	100	2	2.3	-1.5	-0.8
DBLK	12	V	100	7	4.2	1.0	-2.5
FPUW5G	12	V	100	1	2.7	1.2	2.4
HTXUH4	12	V	100	11	3.3	-0.9	0.6
HTXUH4	00	V	100	8	2.6	0.6	0.4
JNKN7J	12	V	100	8	4.1	-0.6	2.3
JNKN7J	00	V	100	8	3.4	1.9	-0.6
KJJF9X	12	V	100	10	3.4	-1.1	0.9
KJJF9X	00	V	100	7	2.9	0.1	-0.6
KMPLHP	12	V	100	7	5.9	2.3	1.0
KMPLHP	00	V	100	4	5.1	-2.3	0.4
LRYQE3	12	V	100	10	3.3	0.6	-0.1
LRYQE3	00	V	100	11	3.5	1.1	0.9
UXK5JT	00	V	100	3	2.6	-0.4	-1.7
UXK5JT	12	V	100	3	2.9	1.2	1.1
VKB4L5	12	V	100	5	4.5	0.5	-1.3
VKB4L5	00	V	100	6	4.7	0.3	-0.1
XQFJRG	12	V	100	3	3.8	-1.4	0.1
XQFJRG	00	V	100	4	3.0	0.0	-0.3
YLV96W	12	V	100	6	4.4	1.2	2.3
YLV96W	00	V	100	6	4.0	0.9	0.8
ZVQEQC	12	V	100	1	3.1	-0.9	3.0

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 : DEC 2020
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	00	Z	500	32	9.3	-6.4
01001	12	Z	500	29	8.7	-7.4
01028	00	Z	500	30	3.0	0.5
01028	12	Z	500	30	5.7	0.1
01400	12	Z	500	29	76.6	76.4
01400	00	Z	500	25	76.8	76.6
01415	00	Z	500	31	3.9	2.6
01415	12	Z	500	31	4.0	1.9
02365	12	Z	500	23	3.8	0.8
02365	00	Z	500	23	5.1	2.7
02836	12	Z	500	34	3.5	1.5
02836	00	Z	500	30	3.8	1.5
02963	00	Z	500	31	3.2	2.0
02963	12	Z	500	32	2.8	1.5
03005	00	Z	500	31	3.3	-1.4
03005	12	Z	500	31	3.4	-1.6
03238	12	Z	500	5	4.2	3.2
03238	00	Z	500	31	3.9	2.2
03808	00	Z	500	31	4.1	3.3
03808	12	Z	500	31	3.8	2.3
03918	12	Z	500	8	9.5	8.4
03918	00	Z	500	31	7.9	6.8
03953	12	Z	500	31	5.5	-1.1
03953	00	Z	500	31	3.9	-0.6
04018	12	Z	500	31	4.8	2.0
04018	00	Z	500	30	3.9	2.1
04220	12	Z	500	31	4.7	3.3
04220	00	Z	500	31	9.1	4.4
04270	12	Z	500	31	6.3	1.2
04270	00	Z	500	31	4.0	1.3
04320	00	Z	500	31	3.0	1.2
04320	12	Z	500	30	4.2	1.8
04339	00	Z	500	28	6.6	4.7
04339	12	Z	500	29	7.0	4.0
04360	12	Z	500	26	11.8	-11.1
04360	00	Z	500	25	10.0	-9.0
06011	00	Z	500	31	7.8	5.9
06011	12	Z	500	31	7.8	4.4
06260	00	Z	500	31	15.6	2.9

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06260	12	Z	500	5	3.7	-0.8
06610	12	Z	500	34	2.5	0.5
06610	00	Z	500	32	3.0	1.5
07110	12	Z	500	31	7.4	-4.8
07110	00	Z	500	31	7.8	-5.4
07510	00	Z	500	30	4.7	1.6
07510	12	Z	500	32	11.2	3.3
07645	00	Z	500	31	6.8	-3.2
07645	12	Z	500	31	6.2	-0.3
07761	12	Z	500	31	6.8	-3.8
07761	00	Z	500	31	6.9	-4.9
08001	00	Z	500	31	5.4	2.5
08001	12	Z	500	31	5.0	3.6
08221	00	Z	500	31	6.8	5.4
08221	12	Z	500	31	6.4	5.1
08302	12	Z	500	31	6.5	-5.4
08302	00	Z	500	31	7.3	-5.6
08508	00	Z	500	27	7.8	6.4
08508	12	Z	500	31	7.6	5.7
08522	12	Z	500	31	8.0	7.3
10035	12	Z	500	31	13.6	13.2
10035	00	Z	500	33	14.2	13.9
10393	00	Z	500	30	2.5	1.3
10393	12	Z	500	31	2.8	0.0
10410	00	Z	500	31	4.0	-0.6
10410	12	Z	500	31	3.5	-1.9
10739	00	Z	500	32	5.3	4.1
10739	12	Z	500	31	4.5	2.8
11035	12	Z	500	32	18.7	15.5
11035	00	Z	500	32	10.8	8.3
12982	12	Z	500	31	3.3	1.2
12982	00	Z	500	31	3.2	1.1
16080	00	Z	500	32	4.1	-2.2
16080	12	Z	500	32	4.0	-2.8
16245	00	Z	500	31	5.2	-1.5
16245	12	Z	500	31	3.0	-1.9
16320	00	Z	500	29	5.3	3.6
16320	12	Z	500	31	7.2	3.6
16429	12	Z	500	31	4.3	2.7
16429	00	Z	500	30	5.6	-0.3
16622	00	Z	500	31	10.8	10.3
16754	00	Z	500	30	4.5	2.5
17607	12	Z	500	30	4.9	4.5

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
26435	12	Z	500	15	2.3	0.5
60018	12	Z	500	31	5.9	5.5
60018	00	Z	500	31	5.1	4.2
7JUNA4	12	Z	500	7	31.8	-11.2
7JUNA4	00	Z	500	7	44.9	-8.8
ASDE09	12	Z	500	8	24.6	24.4
BPMWB2	12	Z	500	6	12.5	1.4
BPMWB2	00	Z	500	6	7.6	5.5
DBLK	12	Z	500	7	4.7	2.2
FPUW5G	12	Z	500	1	4.0	4.0
HTXUH4	12	Z	500	11	5.3	-0.4
HTXUH4	00	Z	500	8	7.0	-2.2
JNKN7J	12	Z	500	9	37.3	37.1
JNKN7J	00	Z	500	8	36.4	36.3
KJFF9X	12	Z	500	12	14.7	12.6
KJFF9X	00	Z	500	9	12.4	11.0
KMPLHP	12	Z	500	7	7.4	5.6
KMPLHP	00	Z	500	4	6.8	2.8
LRYQE3	12	Z	500	11	38.0	37.3
LRYQE3	00	Z	500	11	40.0	39.6
UXK5JT	00	Z	500	4	4.5	-2.4
UXK5JT	12	Z	500	3	5.2	-3.6
VKB4L5	12	Z	500	5	58.1	45.3
VKB4L5	00	Z	500	6	33.3	32.4
XQFJRG	12	Z	500	4	12.2	-9.8
XQFJRG	00	Z	500	5	12.7	-11.9
YLV96W	12	Z	500	7	35.7	34.8
YLV96W	00	Z	500	6	84.5	70.8
ZVQEQC	12	Z	500	1	6.7	6.7

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 : DEC 2020
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	00	V	500	29	2.0	0.0	0.7
01001	12	V	500	29	2.6	0.0	0.3
01028	00	V	500	29	1.8	0.1	-0.3
01028	12	V	500	30	2.3	0.7	-0.5
01400	12	V	500	29	3.0	-0.3	-0.4
01400	00	V	500	24	2.2	-0.1	-0.1
01415	00	V	500	30	2.8	-0.2	0.5
01415	12	V	500	31	2.9	0.1	0.2
02365	12	V	500	23	2.8	-0.4	0.0
02365	00	V	500	22	2.5	-0.4	0.7
02836	12	V	500	31	2.4	0.3	0.2
02836	00	V	500	29	2.1	0.0	0.2
02963	00	V	500	30	2.4	0.3	-0.4
02963	12	V	500	31	2.3	0.4	0.2
03005	00	V	500	30	2.6	0.2	0.2
03005	12	V	500	31	3.5	-0.1	-0.8
03238	12	V	500	5	3.4	1.7	1.0
03238	00	V	500	30	3.0	0.4	-0.2
03808	00	V	500	30	4.1	0.2	-0.3
03808	12	V	500	31	4.0	0.4	-0.2
03918	12	V	500	8	3.1	0.8	0.5
03918	00	V	500	30	2.7	0.2	-0.2
03953	12	V	500	31	3.3	1.1	-0.3
03953	00	V	500	30	3.4	0.4	0.3
04018	12	V	500	31	3.0	-0.1	-0.5
04018	00	V	500	29	3.6	-0.3	0.5
04220	12	V	500	31	2.3	0.0	0.1
04220	00	V	500	29	2.8	0.3	-0.1
04270	12	V	500	31	3.0	0.2	-0.1
04270	00	V	500	30	3.2	0.3	-0.2
04320	00	V	500	30	2.0	0.4	0.2
04320	12	V	500	30	2.5	0.8	-0.3
04339	00	V	500	27	2.6	0.3	0.2
04339	12	V	500	29	2.3	-0.4	0.0
04360	12	V	500	26	3.5	0.0	-0.1
04360	00	V	500	24	2.7	-0.3	-0.7
06011	00	V	500	30	3.6	-0.2	-0.6
06011	12	V	500	31	3.1	-0.3	0.2
06260	00	V	500	29	2.9	-0.2	-0.3

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06260	12	V	500	5	2.3	0.0	-0.3
06610	12	V	500	31	3.2	0.2	0.1
06610	00	V	500	30	3.4	0.3	0.6
07110	12	V	500	31	3.1	0.3	-0.6
07110	00	V	500	30	2.8	-0.4	0.0
07510	00	V	500	29	3.6	0.3	0.6
07510	12	V	500	31	3.3	-0.3	0.7
07645	00	V	500	30	2.9	0.6	-0.3
07645	12	V	500	31	3.3	-0.3	-0.7
07761	12	V	500	31	2.8	0.2	0.2
07761	00	V	500	30	3.8	0.6	-0.1
08001	00	V	500	30	3.1	0.0	-0.1
08001	12	V	500	31	3.5	0.4	0.4
08221	00	V	500	30	2.8	0.6	-0.4
08221	12	V	500	31	3.0	0.5	-0.2
08302	12	V	500	31	2.7	0.1	-0.2
08302	00	V	500	30	2.9	0.5	0.3
08508	00	V	500	27	2.6	0.3	-0.1
08508	12	V	500	31	2.3	-0.3	-0.4
08522	12	V	500	31	2.4	0.3	-0.3
10035	12	V	500	31	2.4	0.0	-0.2
10035	00	V	500	31	3.3	-0.2	0.5
10393	00	V	500	30	2.4	-0.3	0.1
10393	12	V	500	30	2.5	0.1	0.5
10410	00	V	500	30	3.3	0.4	-0.1
10410	12	V	500	31	3.3	-0.3	0.1
10739	00	V	500	30	2.8	-0.7	0.5
10739	12	V	500	31	2.3	-0.3	-0.6
11035	12	V	500	31	2.9	0.3	0.3
11035	00	V	500	30	2.5	0.0	-0.1
12982	12	V	500	31	2.3	0.4	-0.1
12982	00	V	500	30	2.6	-0.2	-0.1
16080	00	V	500	30	3.2	-0.2	-0.6
16080	12	V	500	31	3.3	0.3	0.2
16245	00	V	500	30	3.1	0.0	0.2
16245	12	V	500	31	3.3	0.3	0.1
16320	00	V	500	28	3.2	0.5	0.0
16320	12	V	500	31	3.6	0.1	-0.2
16429	12	V	500	31	2.6	0.4	-0.7
16429	00	V	500	29	3.6	0.5	-0.3
16622	00	V	500	30	2.8	-0.1	-0.3
16754	00	V	500	29	2.4	0.1	0.4
17607	12	V	500	30	3.0	-0.5	-0.2

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
26435	12	V	500	15	2.0	-0.1	0.5
60018	12	V	500	31	2.3	0.3	0.2
60018	00	V	500	30	2.8	0.7	0.4
7JUNA4	12	V	500	7	3.2	1.2	0.0
7JUNA4	00	V	500	7	2.9	0.6	0.5
ASDE09	12	V	500	7	3.0	-0.1	1.7
BPMWB2	12	V	500	6	2.8	1.3	-0.1
BPMWB2	00	V	500	6	3.4	0.7	1.4
DBLK	12	V	500	7	4.0	0.6	0.9
FPUW5G	12	V	500	1	2.3	0.8	2.2
HTXUH4	12	V	500	11	1.6	-0.3	-0.1
HTXUH4	00	V	500	8	1.6	-0.1	0.1
JNKN7J	12	V	500	9	2.4	-0.6	-0.2
JNKN7J	00	V	500	8	2.4	0.0	0.9
KJJF9X	12	V	500	11	2.5	0.0	0.2
KJJF9X	00	V	500	9	1.6	0.2	0.3
KMPLHP	12	V	500	7	3.0	-0.4	1.8
KMPLHP	00	V	500	4	3.5	1.0	1.9
LRYQE3	12	V	500	11	2.2	0.3	-0.1
LRYQE3	00	V	500	11	2.4	0.4	0.8
UXK5JT	00	V	500	4	2.5	0.8	0.3
UXK5JT	12	V	500	3	1.9	0.5	0.7
VKB4L5	12	V	500	5	2.4	-0.1	0.5
VKB4L5	00	V	500	6	3.0	0.5	1.0
XQFJRG	12	V	500	4	3.1	0.0	0.5
XQFJRG	00	V	500	5	6.1	2.8	1.9
YLV96W	12	V	500	7	4.5	-1.1	1.0
YLV96W	00	V	500	6	2.8	1.0	-1.2
ZVQEQC	12	V	500	1	1.1	0.5	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 : DEC 2020
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	00	Z	850	32	9.9	-8.4
01001	12	Z	850	29	8.1	-6.9
01028	00	Z	850	30	2.7	0.1
01028	12	Z	850	30	3.8	-0.3
01400	12	Z	850	29	75.1	75.0
01400	00	Z	850	25	76.5	76.3
01415	00	Z	850	31	3.8	3.2
01415	12	Z	850	31	3.8	2.9
02365	12	Z	850	23	4.1	3.3
02365	00	Z	850	23	4.1	3.5
02836	12	Z	850	34	2.9	1.2
02836	00	Z	850	30	3.2	2.0
02963	00	Z	850	31	2.7	2.2
02963	12	Z	850	32	3.3	1.9
03005	00	Z	850	31	3.4	-2.4
03005	12	Z	850	31	3.8	-1.8
03238	12	Z	850	5	3.6	3.3
03238	00	Z	850	31	3.5	2.4
03808	00	Z	850	31	4.1	2.1
03808	12	Z	850	31	4.1	2.8
03918	12	Z	850	8	8.0	7.6
03918	00	Z	850	31	7.1	6.4
03953	12	Z	850	31	3.9	0.3
03953	00	Z	850	31	4.8	-1.7
04018	12	Z	850	31	3.8	1.2
04018	00	Z	850	30	3.1	-0.5
04220	12	Z	850	31	3.7	2.0
04220	00	Z	850	31	8.3	1.7
04270	12	Z	850	31	3.9	0.4
04270	00	Z	850	31	5.0	-0.4
04320	00	Z	850	31	5.1	-2.2
04320	12	Z	850	30	4.3	-1.8
04339	00	Z	850	28	5.1	2.5
04339	12	Z	850	29	4.4	1.8
04360	12	Z	850	26	14.5	-13.1
04360	00	Z	850	25	13.9	-12.9
06011	00	Z	850	31	4.4	4.0
06011	12	Z	850	31	5.3	4.3
06260	00	Z	850	31	15.1	2.4

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06260	12	Z	850	5	1.9	0.0
06610	12	Z	850	34	2.2	0.7
06610	00	Z	850	32	2.4	0.5
07110	12	Z	850	31	2.6	-0.9
07110	00	Z	850	31	3.3	-2.0
07510	00	Z	850	30	3.7	2.1
07510	12	Z	850	32	2.6	1.4
07645	00	Z	850	31	3.6	-2.5
07645	12	Z	850	32	2.7	-0.6
07761	12	Z	850	31	3.9	-3.3
07761	00	Z	850	31	4.5	-3.1
08001	00	Z	850	31	2.6	1.4
08001	12	Z	850	31	2.7	0.9
08221	00	Z	850	31	4.5	3.8
08221	12	Z	850	31	3.8	2.4
08302	12	Z	850	31	10.0	-9.5
08302	00	Z	850	31	8.4	-8.2
08508	00	Z	850	27	4.7	3.5
08508	12	Z	850	31	5.0	2.9
08522	12	Z	850	31	2.8	2.0
10035	12	Z	850	31	13.3	13.0
10035	00	Z	850	33	13.9	13.7
10393	00	Z	850	30	2.7	-0.3
10393	12	Z	850	31	2.0	0.1
10410	00	Z	850	31	2.5	-1.0
10410	12	Z	850	31	3.3	-1.3
10739	00	Z	850	32	3.7	3.0
10739	12	Z	850	31	3.6	2.6
11035	12	Z	850	32	19.6	15.0
11035	00	Z	850	32	10.8	7.5
12982	12	Z	850	31	2.5	-0.2
12982	00	Z	850	31	2.7	-0.6
16080	00	Z	850	33	3.6	-2.9
16080	12	Z	850	32	4.5	-3.0
16245	00	Z	850	32	3.1	-2.6
16245	12	Z	850	31	3.2	-2.4
16320	00	Z	850	29	4.0	2.4
16320	12	Z	850	31	6.3	2.0
16429	12	Z	850	31	2.9	0.6
16429	00	Z	850	30	6.3	-1.8
16622	00	Z	850	31	8.8	8.5
16754	00	Z	850	30	3.9	-0.1
17607	12	Z	850	30	2.9	2.1

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
26435	12	Z	850	15	2.9	-0.8
60018	12	Z	850	31	2.5	0.3
60018	00	Z	850	31	2.5	1.2
7JUNA4	12	Z	850	7	33.9	-15.1
7JUNA4	00	Z	850	7	45.3	-8.7
ASDE09	12	Z	850	8	31.9	31.8
BPMWB2	12	Z	850	6	2.2	1.5
BPMWB2	00	Z	850	6	5.7	2.2
DBLK	12	Z	850	7	2.6	-2.0
FPUW5G	12	Z	850	1	6.9	6.9
HTXUH4	12	Z	850	11	6.0	-2.2
HTXUH4	00	Z	850	8	5.1	-0.8
JNKN7J	12	Z	850	9	38.8	38.7
JNKN7J	00	Z	850	8	38.2	38.1
KJFF9X	12	Z	850	12	11.2	8.5
KJFF9X	00	Z	850	9	9.3	7.1
KMPLHP	12	Z	850	7	8.5	2.5
KMPLHP	00	Z	850	4	10.0	4.2
LRYQE3	12	Z	850	12	41.5	41.1
LRYQE3	00	Z	850	11	42.3	41.8
UXK5JT	00	Z	850	4	4.2	-3.6
UXK5JT	12	Z	850	4	4.4	-4.2
VKB4L5	12	Z	850	5	24.3	23.8
VKB4L5	00	Z	850	6	28.5	27.8
XQFJRG	12	Z	850	4	12.2	-10.8
XQFJRG	00	Z	850	5	12.3	-11.9
YLV96W	12	Z	850	8	34.8	34.6
YLV96W	00	Z	850	6	54.9	46.8
ZVQEQC	12	Z	850	1	0.6	0.6

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 : DEC 2020
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	00	V	850	29	3.9	0.0	0.2
01001	12	V	850	29	3.8	0.6	0.8
01028	00	V	850	29	3.1	1.4	0.2
01028	12	V	850	30	3.1	0.2	-0.1
01400	12	V	850	29	2.1	0.4	0.0
01400	00	V	850	24	2.3	-0.2	0.4
01415	00	V	850	30	3.1	-0.2	0.7
01415	12	V	850	31	3.2	0.5	0.2
02365	12	V	850	23	2.5	-0.1	0.8
02365	00	V	850	22	2.5	-0.2	0.2
02836	12	V	850	31	2.9	0.3	-0.1
02836	00	V	850	29	3.1	-0.5	0.3
02963	00	V	850	30	2.9	-0.3	-0.4
02963	12	V	850	31	2.8	0.3	0.0
03005	00	V	850	30	2.8	0.0	1.2
03005	12	V	850	31	2.6	-0.1	0.5
03238	12	V	850	5	2.7	-1.0	-0.7
03238	00	V	850	30	2.8	-0.6	-0.1
03808	00	V	850	30	2.9	0.3	-0.5
03808	12	V	850	31	3.6	0.3	-0.6
03918	12	V	850	8	2.4	0.8	-0.1
03918	00	V	850	30	2.1	0.0	0.4
03953	12	V	850	31	2.8	0.7	0.7
03953	00	V	850	30	3.0	-0.4	0.4
04018	12	V	850	31	3.9	0.8	-0.5
04018	00	V	850	29	3.5	1.0	-0.5
04220	12	V	850	31	4.3	-0.3	-0.3
04220	00	V	850	29	3.3	0.4	-0.5
04270	12	V	850	31	4.7	0.1	-0.3
04270	00	V	850	30	3.8	0.6	-0.3
04320	00	V	850	30	3.0	0.4	0.8
04320	12	V	850	30	3.8	-0.5	0.7
04339	00	V	850	27	5.6	1.1	1.5
04339	12	V	850	29	4.7	1.3	0.3
04360	12	V	850	26	6.6	1.3	1.6
04360	00	V	850	24	4.3	1.2	0.8
06011	00	V	850	30	2.5	0.1	0.1
06011	12	V	850	31	2.5	0.1	-0.6
06260	00	V	850	30	2.5	-0.6	0.0

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06260	12	V	850	5	2.6	0.9	-0.4
06610	12	V	850	31	3.3	1.4	0.2
06610	00	V	850	30	2.9	0.7	0.6
07110	12	V	850	31	2.4	0.2	-0.1
07110	00	V	850	30	3.1	0.5	0.7
07510	00	V	850	29	3.2	0.1	-0.4
07510	12	V	850	31	2.6	0.4	-0.1
07645	00	V	850	30	3.5	-0.5	0.5
07645	12	V	850	31	4.0	-1.2	1.0
07761	12	V	850	31	3.1	0.3	-0.5
07761	00	V	850	30	3.6	0.8	0.0
08001	00	V	850	30	2.6	0.0	-0.1
08001	12	V	850	31	2.9	0.1	-0.7
08221	00	V	850	30	3.5	-0.3	0.3
08221	12	V	850	31	2.9	-0.1	0.1
08302	12	V	850	31	2.8	0.5	0.3
08302	00	V	850	30	2.7	0.5	0.9
08508	00	V	850	27	3.1	-0.1	-0.3
08508	12	V	850	31	2.8	0.2	-0.2
08522	12	V	850	31	3.1	0.2	0.5
10035	12	V	850	31	2.6	0.1	0.5
10035	00	V	850	31	2.4	-0.6	-0.1
10393	00	V	850	30	2.7	0.4	0.6
10393	12	V	850	30	2.9	0.4	-0.4
10410	00	V	850	30	2.6	0.1	-0.4
10410	12	V	850	31	2.7	0.1	-0.2
10739	00	V	850	30	3.0	-0.1	-0.1
10739	12	V	850	31	2.5	0.4	0.2
11035	12	V	850	31	3.2	-0.1	0.3
11035	00	V	850	30	3.0	0.0	0.8
12982	12	V	850	31	2.1	-0.3	-0.2
12982	00	V	850	30	2.3	-0.1	-0.7
16080	00	V	850	30	3.4	-0.7	0.5
16080	12	V	850	31	2.7	0.5	0.3
16245	00	V	850	30	2.7	0.0	1.0
16245	12	V	850	31	3.2	-0.5	0.0
16320	00	V	850	28	3.5	0.0	-0.9
16320	12	V	850	31	3.2	0.1	-0.2
16429	12	V	850	31	2.6	-0.2	0.1
16429	00	V	850	29	2.8	0.0	0.6
16622	00	V	850	30	3.2	-0.8	0.8
16754	00	V	850	29	3.1	0.6	-0.1
17607	12	V	850	30	3.3	1.3	0.0

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
26435	12	V	850	15	2.0	0.4	-0.2
60018	12	V	850	31	3.0	0.2	-0.2
60018	00	V	850	30	2.5	-0.1	0.5
7JUNA4	12	V	850	7	2.1	-0.7	0.6
7JUNA4	00	V	850	7	2.2	0.6	0.4
ASDE09	12	V	850	7	2.1	0.4	0.6
BPMWB2	12	V	850	6	3.6	1.0	1.7
BPMWB2	00	V	850	6	2.2	0.6	-0.8
DBLK	12	V	850	7	2.1	0.9	0.4
FPUW5G	12	V	850	1	1.2	-1.0	0.7
HTXUH4	12	V	850	11	3.8	0.1	-0.1
HTXUH4	00	V	850	8	2.9	0.1	0.6
JNKN7J	12	V	850	9	3.2	-0.8	0.0
JNKN7J	00	V	850	8	1.6	0.2	0.1
KJJF9X	12	V	850	11	2.3	0.9	-1.1
KJJF9X	00	V	850	9	1.8	0.2	0.0
KMPLHP	12	V	850	7	2.7	-0.2	-0.2
KMPLHP	00	V	850	4	4.4	0.6	0.7
LRYQE3	12	V	850	12	2.1	0.0	0.2
LRYQE3	00	V	850	11	3.4	1.0	0.2
UXK5JT	00	V	850	4	2.7	1.4	-0.2
UXK5JT	12	V	850	4	2.3	0.6	-0.7
VKB4L5	12	V	850	5	2.6	0.3	0.6
VKB4L5	00	V	850	6	2.2	-0.4	0.5
XQFJRG	12	V	850	4	4.3	0.5	-2.8
XQFJRG	00	V	850	5	3.2	-0.9	-0.9
YLV96W	12	V	850	8	2.0	0.5	0.0
YLV96W	00	V	850	6	2.8	0.8	0.3
ZVQEQC	12	V	850	1	0.6	0.1	0.6

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

DRIFTER MONITORING STATISTICS (EUCOS)

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

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

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
012	99	P	SUR	80	9	1	0	0.0	2.5	2.5
03380	99	P	SUR	54	0	2114	0	0.4	-0.3	0.5
0640046	99	P	SUR	60	-4	730	0	0.4	-0.4	0.5
1300001	99	P	SUR	11	-23	590	0	0.3	0.1	0.3
1300130	99	P	SUR	28	-16	727	0	0.3	0.8	0.8
1300131	99	P	SUR	28	-17	727	0	0.3	0.0	0.3
1301569	99	P	SUR	22	-48	744	0	0.4	-0.7	0.8
1301603	99	P	SUR	30	-64	744	0	0.4	-0.1	0.4
1301608	99	P	SUR	32	-61	742	0	0.5	-0.0	0.5
1301610	99	P	SUR	39	-60	744	0	0.9	0.4	1.0
1301612	99	P	SUR	39	-42	743	1	1.9	-0.2	1.9
1301619	99	P	SUR	29	-49	744	0	0.7	0.3	0.8
1701631	99	P	SUR	23	-54	744	0	0.3	0.2	0.4
1701632	99	P	SUR	19	-57	743	0	0.4	0.0	0.4
1701633	99	P	SUR	16	-56	744	0	0.3	0.5	0.6
1701634	99	P	SUR	18	-59	744	0	0.3	-0.1	0.3
1701635	99	P	SUR	22	-60	678	0	0.5	0.1	0.5
2501538	99	P	SUR	82	-8	713	0	0.9	-0.0	0.9
2501544	99	P	SUR	72	-17	319	1	1.6	-0.5	1.7
4100040	99	P	SUR	15	-53	4449	0	0.3	-0.1	0.3
4100043	99	P	SUR	21	-65	4463	0	0.3	0.2	0.3
4100044	99	P	SUR	22	-59	4456	0	0.3	0.0	0.3
4100046	99	P	SUR	24	-68	4462	0	0.3	0.0	0.3
4100048	99	P	SUR	32	-70	4461	0	0.4	-0.0	0.5
4100052	99	P	SUR	18	-65	3523	0	0.3	-1.2	1.3
4100053	99	P	SUR	18	-66	3524	0	0.3	-1.1	1.2
4100056	99	P	SUR	18	-65	3444	0	0.9	-1.2	1.5
4100139	99	P	SUR	20	-38	614	0	0.3	-0.1	0.3
4100300	99	P	SUR	16	-57	740	0	0.3	0.0	0.3
4101531	99	P	SUR	25	-29	743	0	0.3	-0.1	0.3
4101557	99	P	SUR	25	-61	744	0	0.3	0.0	0.3
4101560	99	P	SUR	18	-45	739	0	0.5	-0.1	0.5
4101564	99	P	SUR	25	-50	744	0	0.4	-0.2	0.4
4101565	99	P	SUR	35	-60	700	0	0.4	-0.1	0.4
4101567	99	P	SUR	32	-46	744	0	0.4	0.3	0.5
4101573	99	P	SUR	36	-52	741	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
4101574	99	P	SUR	33	-40	742	0	0.3	0.2	0.4
4101609	99	P	SUR	33	-18	744	0	0.3	0.1	0.3
4101613	99	P	SUR	27	-24	744	0	0.3	0.4	0.5
4101614	99	P	SUR	30	-20	744	0	0.3	-0.1	0.3
4101616	99	P	SUR	35	-26	744	0	0.4	0.0	0.4
4101617	99	P	SUR	25	-31	744	0	0.5	0.3	0.6
4101618	99	P	SUR	32	-35	744	0	0.3	0.1	0.3
4101621	99	P	SUR	36	-36	744	0	0.3	0.1	0.3
4101622	99	P	SUR	65	1	311	0	0.3	0.1	0.3
4101627	99	P	SUR	56	-50	744	0	0.5	-0.2	0.5
4101630	99	P	SUR	40	-49	744	0	0.5	0.2	0.5
4101652	99	P	SUR	63	-17	1488	0	0.5	-0.1	0.5
4101653	99	P	SUR	66	11	744	0	0.5	-0.4	0.6
4101655	99	P	SUR	67	9	744	0	0.6	-0.3	0.7
4101656	99	P	SUR	62	-17	744	0	0.4	-0.0	0.4
4101657	99	P	SUR	66	4	744	0	0.3	-0.1	0.3
4101658	99	P	SUR	58	-22	742	0	0.6	-0.0	0.6
4101659	99	P	SUR	71	35	744	0	0.4	0.0	0.4
4101661	99	P	SUR	71	19	743	0	0.9	0.3	1.0
4101663	99	P	SUR	40	-52	744	0	0.6	-0.2	0.6
4101664	99	P	SUR	58	-47	744	0	0.5	0.1	0.5
4101669	99	P	SUR	25	-60	744	0	0.3	-0.2	0.4
4101690	99	P	SUR	46	-13	649	0	0.4	-0.1	0.4
4101696	99	P	SUR	31	-50	744	0	0.3	-0.1	0.4
4101698	99	P	SUR	13	-60	710	0	0.3	-0.1	0.3
4101699	99	P	SUR	13	-61	735	0	0.3	-1.0	1.1
4101707	99	P	SUR	27	-32	372	0	0.2	-0.2	0.3
4101708	99	P	SUR	42	-41	744	0	0.9	0.4	0.9
4101714	99	P	SUR	28	-37	744	0	0.3	-0.3	0.4
4101717	99	P	SUR	41	-40	744	0	0.5	-0.0	0.5
4101718	99	P	SUR	30	-45	744	0	0.3	-0.1	0.3
4101719	99	P	SUR	33	-50	743	0	0.4	-0.0	0.5
4101720	99	P	SUR	33	-37	738	0	0.4	0.2	0.5
4101742	99	P	SUR	37	-51	227	0	2.1	-0.3	2.1
4101752	99	P	SUR	44	-46	744	0	1.4	-0.1	1.4
4101753	99	P	SUR	31	-43	744	0	0.3	0.3	0.4
4101755	99	P	SUR	27	-46	744	0	0.4	0.1	0.4
4101756	99	P	SUR	12	-54	744	0	0.3	0.0	0.3
4101781	99	P	SUR	43	-30	1486	0	0.4	-0.1	0.4
4101782	99	P	SUR	27	-67	1472	0	0.4	0.1	0.4
4101783	99	P	SUR	27	-65	1467	0	0.3	-0.0	0.3
4101784	99	P	SUR	26	-64	1485	0	0.4	0.2	0.4
4101785	99	P	SUR	32	-63	1432	0	0.4	0.3	0.5

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
4101806	99	P	SUR	39	-51	989	0	0.5	0.1	0.5
4101807	99	P	SUR	28	-63	1426	0	0.4	0.3	0.5
4101810	99	P	SUR	28	-58	1488	0	0.3	0.1	0.3
4101815	99	P	SUR	64	-16	1488	0	0.5	0.0	0.5
4101816	99	P	SUR	34	-65	1472	0	0.4	0.2	0.5
4101817	99	P	SUR	36	-65	1436	0	0.5	-0.0	0.5
4101818	99	P	SUR	39	-58	1439	0	0.5	0.2	0.5
4101820	99	P	SUR	31	-61	1486	0	0.4	-0.1	0.4
4101821	99	P	SUR	36	-59	2	0	0.1	0.2	0.3
4101822	99	P	SUR	33	-66	2	0	0.6	-0.0	0.6
4101823	99	P	SUR	43	-45	1	0	0.0	-1.0	1.0
4101824	99	P	SUR	34	-66	1	0	0.0	0.2	0.2
4101825	99	P	SUR	35	-68	2	0	0.1	0.0	0.1
41040	99	P	SUR	15	-53	1107	0	0.4	-0.1	0.4
41043	99	P	SUR	21	-65	1089	0	0.4	0.2	0.4
41044	99	P	SUR	22	-59	1095	0	0.4	-0.0	0.4
41046	99	P	SUR	24	-68	2965	0	0.3	0.0	0.3
41048	99	P	SUR	32	-70	2980	0	0.5	-0.0	0.5
41052	99	P	SUR	18	-65	1409	0	0.4	-1.2	1.2
41053	99	P	SUR	19	-66	1357	0	0.3	-1.1	1.2
41056	99	P	SUR	18	-66	1351	0	0.9	-1.2	1.5
4200060	99	P	SUR	16	-63	4462	0	0.3	-0.1	0.3
4200085	99	P	SUR	18	-67	3449	0	0.3	-0.9	1.0
42060	99	P	SUR	16	-63	1073	0	0.4	-0.1	0.4
42085	99	P	SUR	18	-67	1749	0	0.3	-1.0	1.0
4400005	99	P	SUR	43	-69	744	0	0.7	-0.0	0.7
4400008	99	P	SUR	41	-69	4461	0	0.6	0.4	0.8
4400024	99	P	SUR	42	-66	374	0	0.5	-0.5	0.7
4400032	99	P	SUR	44	-69	736	0	0.9	-0.4	1.0
4400033	99	P	SUR	44	-69	739	0	0.9	-0.0	0.9
4400034	99	P	SUR	44	-68	739	0	1.2	0.4	1.3
4400037	99	P	SUR	43	-68	673	0	0.6	0.8	1.0
44005	99	P	SUR	43	-69	2084	0	0.7	-0.0	0.7
4400777	99	P	SUR	35	-69	744	4	1.0	-0.2	1.0
44008	99	P	SUR	41	-69	2966	0	0.7	0.4	0.8
4400857	99	P	SUR	29	-48	744	8	1.4	0.4	1.5
4401531	99	P	SUR	21	-53	743	0	0.4	0.1	0.4
4401539	99	P	SUR	32	-65	672	24	4.6	0.2	4.6
4401541	99	P	SUR	31	-46	266	16	5.7	-6.1	8.4
4401542	99	P	SUR	26	-70	744	0	0.3	0.1	0.3
4401551	99	P	SUR	25	-51	730	0	0.4	0.1	0.4
4401557	99	P	SUR	33	-51	744	0	0.6	0.1	0.6
4401562	99	P	SUR	29	-63	744	0	0.3	-0.5	0.7

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	-37	744	0	1.1	-0.2	1.1
4401569	99	P	SUR	58	-12	744	0	0.4	0.1	0.4
4401572	99	P	SUR	28	-32	730	0	1.1	0.5	1.2
4401574	99	P	SUR	59	-51	743	0	0.6	0.1	0.6
4401577	99	P	SUR	39	-26	743	0	0.4	0.3	0.5
4401578	99	P	SUR	24	-47	742	0	0.4	-0.1	0.5
4401580	99	P	SUR	39	-16	739	0	0.8	0.3	0.8
4401581	99	P	SUR	32	-45	743	0	0.3	0.3	0.4
4401582	99	P	SUR	40	-21	742	2	1.9	0.5	2.0
4401750	99	P	SUR	65	-4	482	0	0.4	-1.3	1.4
4401751	99	P	SUR	71	23	671	0	0.5	-0.3	0.6
4401827	99	P	SUR	44	-64	333	0	0.5	0.1	0.5
4401828	99	P	SUR	52	-29	685	0	0.5	0.2	0.5
4401829	99	P	SUR	47	-25	713	0	0.4	0.1	0.5
4401831	99	P	SUR	38	-29	589	0	0.7	0.6	1.0
4401837	99	P	SUR	40	-28	740	0	0.4	0.0	0.4
4401840	99	P	SUR	52	-21	700	0	0.6	-0.0	0.6
4401848	99	P	SUR	45	-55	740	1	0.6	0.3	0.7
4401850	99	P	SUR	42	-55	741	0	0.7	0.1	0.7
4401851	99	P	SUR	47	-42	740	0	1.0	0.4	1.0
4401854	99	P	SUR	29	-62	744	0	0.3	-0.7	0.8
4401870	99	P	SUR	25	-40	744	0	0.3	0.0	0.3
4401872	99	P	SUR	23	-43	744	0	0.5	-0.2	0.5
4401873	99	P	SUR	20	-43	744	0	0.5	-0.9	1.0
4401874	99	P	SUR	22	-34	744	0	0.3	0.1	0.4
4401894	99	P	SUR	58	-23	2148	0	0.7	0.2	0.7
44024	99	P	SUR	42	-66	1040	0	0.5	-0.5	0.8
4402603	99	P	SUR	47	-53	744	0	0.5	0.3	0.6
4402604	99	P	SUR	46	-46	743	0	0.4	-0.0	0.5
4402605	99	P	SUR	52	-41	743	0	0.5	0.1	0.5
4402606	99	P	SUR	54	-48	744	0	0.5	0.2	0.5
4402607	99	P	SUR	47	-45	744	0	0.5	0.0	0.5
4402608	99	P	SUR	49	-46	744	0	0.4	0.1	0.4
4402609	99	P	SUR	49	-46	744	0	0.4	0.1	0.4
4402610	99	P	SUR	48	-44	743	0	0.4	0.2	0.5
4402611	99	P	SUR	50	-49	729	0	0.5	0.0	0.5
4402612	99	P	SUR	52	-51	729	0	0.5	0.3	0.6
4402613	99	P	SUR	52	-50	729	0	0.5	0.2	0.5
4402614	99	P	SUR	54	-52	728	0	0.5	0.0	0.5
4402615	99	P	SUR	53	-52	729	0	0.5	0.3	0.6
4402616	99	P	SUR	52	-51	728	0	0.5	0.4	0.6
4402617	99	P	SUR	60	-61	729	27	2.5	0.6	2.6
4402618	99	P	SUR	47	-53	729	0	0.6	0.2	0.6

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
4402657	99	P	SUR	45	-63	744	0	0.5	-0.9	1.0
4402659	99	P	SUR	43	-58	743	0	0.8	0.7	1.0
4402660	99	P	SUR	44	-50	744	0	0.6	0.3	0.6
4402661	99	P	SUR	70	-64	744	744	0.0	0.0	0.0
4402663	99	P	SUR	43	-58	744	0	0.6	0.0	0.6
4402665	99	P	SUR	42	-52	744	0	0.6	0.2	0.6
4402687	99	P	SUR	38	-39	743	0	0.4	0.2	0.4
44032	99	P	SUR	44	-69	1351	0	0.9	-0.4	1.0
44033	99	P	SUR	44	-69	1356	0	1.0	-0.0	1.0
44034	99	P	SUR	44	-68	1356	0	1.2	0.4	1.2
44037	99	P	SUR	44	-68	1237	0	0.6	0.8	1.0
44078	99	P	SUR	60	-40	3818	0	0.7	-1.1	1.3
44137	99	P	SUR	42	-62	680	0	0.6	-0.2	0.6
44139	99	P	SUR	44	-57	786	0	0.6	-0.3	0.7
44150	99	P	SUR	43	-64	674	0	0.6	-0.5	0.8
44488	99	P	SUR	45	-61	784	0	0.6	-0.1	0.6
44489	99	P	SUR	46	-61	785	0	0.5	-0.1	0.5
44490	99	P	SUR	45	-66	689	0	0.6	-0.1	0.6
4700546	99	P	SUR	38	-46	734	1	2.7	0.1	2.7
4801625	99	P	SUR	85	-44	726	0	0.4	-0.0	0.5
4801722	99	P	SUR	81	28	744	9	1.7	-0.2	1.8
6100001	99	P	SUR	43	8	740	0	0.5	0.1	0.5
6100002	99	P	SUR	42	5	657	0	0.5	-0.2	0.5
6100196	99	P	SUR	42	4	724	75	2.6	0.6	2.7
6100197	99	P	SUR	40	4	727	0	0.5	0.3	0.5
6100198	99	P	SUR	37	-2	728	0	0.5	0.2	0.6
6100280	99	P	SUR	41	1	726	0	0.5	0.3	0.6
6100281	99	P	SUR	40	0	725	0	0.6	0.1	0.6
6100417	99	P	SUR	38	0	728	0	0.5	0.2	0.5
6100430	99	P	SUR	40	2	728	0	0.5	0.1	0.5
6101003	99	P	SUR	40	25	30	0	0.3	-0.2	0.4
6101007	99	P	SUR	36	25	153	0	0.5	-0.1	0.5
6101008	99	P	SUR	37	22	67	0	0.6	-0.4	0.7
6101009	99	P	SUR	35	25	89	0	0.5	-0.9	1.0
6102782	99	P	SUR	40	14	743	0	0.4	0.2	0.5
6102784	99	P	SUR	34	17	743	0	0.3	0.0	0.3
6102785	99	P	SUR	36	15	744	0	0.3	-0.1	0.3
6200024	99	P	SUR	44	-3	721	0	1.1	-0.3	1.1
6200025	99	P	SUR	44	-6	726	0	0.7	-0.1	0.7
6200082	99	P	SUR	44	-8	723	0	0.6	-0.2	0.7
6200083	99	P	SUR	43	-9	726	0	0.4	-0.2	0.5
6200084	99	P	SUR	42	-9	727	0	0.4	0.1	0.4
6200085	99	P	SUR	36	-7	705	0	0.3	0.5	0.6

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
6200091	99	P	SUR	53	-5	644	3	1.0	-0.4	1.1
6200092	99	P	SUR	51	-11	743	0	0.6	-0.5	0.7
6200093	99	P	SUR	55	-10	743	0	0.4	-0.3	0.5
6200094	99	P	SUR	52	-7	743	0	0.5	-0.2	0.5
6200095	99	P	SUR	53	-16	743	0	0.5	-0.4	0.7
62001	99	P	SUR	45	-5	2110	0	0.5	-0.2	0.5
6200199	99	P	SUR	40	-9	724	0	0.3	-0.7	0.8
6200200	99	P	SUR	36	-8	727	0	4.0	0.4	4.0
6201030	99	P	SUR	44	-4	204	0	0.7	-0.3	0.7
6201065	99	P	SUR	54	7	719	0	0.3	0.8	0.8
6201066	99	P	SUR	55	7	629	0	0.3	0.4	0.5
62023	99	P	SUR	51	-8	2225	0	0.5	-0.4	0.7
6202613	99	P	SUR	23	-42	744	0	0.3	-0.1	0.3
6202614	99	P	SUR	24	-47	744	0	0.7	0.1	0.7
6202615	99	P	SUR	23	-39	225	0	0.7	-0.3	0.8
6202623	99	P	SUR	69	-4	744	0	0.5	-0.1	0.5
6202624	99	P	SUR	60	-24	744	0	0.7	0.0	0.7
6202626	99	P	SUR	50	-13	744	0	0.6	-0.1	0.6
6202627	99	P	SUR	54	-30	743	0	0.5	-0.2	0.5
6202628	99	P	SUR	67	-32	147	0	2.5	0.9	2.7
6202629	99	P	SUR	46	-41	744	0	0.5	-0.5	0.7
6202630	99	P	SUR	48	-13	744	0	0.4	-0.1	0.5
6202631	99	P	SUR	57	-19	744	0	0.5	-0.1	0.5
6202632	99	P	SUR	55	-16	744	0	0.5	-0.1	0.5
6202633	99	P	SUR	60	-23	744	0	0.6	-0.1	0.6
6202634	99	P	SUR	67	3	744	0	0.3	-0.0	0.3
6202635	99	P	SUR	70	-11	744	0	0.5	0.3	0.5
6202636	99	P	SUR	68	-13	744	0	0.5	0.3	0.6
6202637	99	P	SUR	64	-2	744	0	0.3	0.1	0.3
6202638	99	P	SUR	20	-70	744	0	0.3	-0.4	0.5
6202639	99	P	SUR	33	-37	744	0	0.3	-0.1	0.3
6202642	99	P	SUR	29	-64	223	0	0.4	-0.4	0.6
6202644	99	P	SUR	32	-46	744	0	0.4	-0.3	0.5
6202645	99	P	SUR	25	-61	744	1	0.6	0.3	0.7
6202646	99	P	SUR	25	-60	744	0	0.4	-0.2	0.5
6202677	99	P	SUR	69	17	278	0	0.5	-0.3	0.5
6202678	99	P	SUR	54	-52	663	0	0.4	0.4	0.6
6202680	99	P	SUR	64	10	527	0	0.4	-0.1	0.4
6202683	99	P	SUR	71	23	537	0	0.4	0.3	0.5
6202684	99	P	SUR	65	-6	692	0	0.4	0.4	0.6
6202685	99	P	SUR	39	13	97	0	1.9	0.7	2.0
6202687	99	P	SUR	38	15	496	0	0.3	-2.6	2.6
6202688	99	P	SUR	37	8	69	0	0.5	-2.7	2.8

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
6202690	99	P	SUR	41	12	744	0	0.4	-0.3	0.5
6202691	99	P	SUR	37	8	342	0	0.6	0.0	0.6
6202692	99	P	SUR	43	8	744	0	0.4	0.1	0.4
6202693	99	P	SUR	40	3	195	0	0.5	-0.7	0.9
6202694	99	P	SUR	40	1	743	0	0.4	-0.1	0.4
6202695	99	P	SUR	41	3	744	0	0.4	0.2	0.4
6203529	99	P	SUR	35	-49	743	0	0.4	0.3	0.5
6203574	99	P	SUR	52	-34	734	0	0.4	0.2	0.5
6203580	99	P	SUR	68	1	575	0	0.4	0.3	0.5
6203582	99	P	SUR	61	-59	714	0	0.5	0.2	0.6
6203583	99	P	SUR	61	-4	576	0	0.4	0.2	0.5
6203585	99	P	SUR	73	24	579	0	0.4	0.4	0.6
6203587	99	P	SUR	71	24	657	0	0.4	-0.4	0.5
6203588	99	P	SUR	57	-37	743	0	0.4	0.4	0.6
6203601	99	P	SUR	29	-53	744	0	0.3	0.4	0.5
6203607	99	P	SUR	24	-52	744	0	0.3	0.0	0.3
6203609	99	P	SUR	32	-14	744	0	0.4	-0.8	0.9
6203612	99	P	SUR	31	-30	744	0	0.3	0.1	0.3
6203613	99	P	SUR	33	-28	744	0	1.1	0.5	1.2
6203614	99	P	SUR	18	-36	743	0	0.3	0.1	0.3
6203624	99	P	SUR	17	-50	586	0	0.3	-0.0	0.3
6203626	99	P	SUR	60	-11	744	0	0.5	0.4	0.7
6203631	99	P	SUR	28	-56	744	0	0.4	-0.3	0.5
6203632	99	P	SUR	29	-24	739	0	0.3	0.4	0.5
6203633	99	P	SUR	57	-27	742	0	0.5	0.0	0.5
6203634	99	P	SUR	44	-19	744	0	0.6	0.2	0.6
6203635	99	P	SUR	11	-27	743	0	0.3	0.0	0.3
6203637	99	P	SUR	56	-22	741	0	0.6	0.2	0.6
6203639	99	P	SUR	43	-33	744	0	0.9	0.7	1.1
6203640	99	P	SUR	46	-28	743	0	0.7	0.3	0.8
6203641	99	P	SUR	45	-5	743	0	0.5	0.6	0.8
6203643	99	P	SUR	17	-44	662	0	0.4	-0.1	0.5
6203645	99	P	SUR	10	-28	744	0	0.3	-0.1	0.3
6203646	99	P	SUR	73	-59	402	5	3.5	1.0	3.7
6203730	99	P	SUR	19	-27	744	0	0.3	0.2	0.3
6203732	99	P	SUR	14	-25	744	0	0.3	0.3	0.4
6203733	99	P	SUR	11	-18	744	0	0.3	0.4	0.5
6203735	99	P	SUR	20	-31	743	0	0.3	0.1	0.3
6203737	99	P	SUR	20	-32	744	0	0.3	0.3	0.4
6203754	99	P	SUR	50	-8	744	0	0.5	0.0	0.5
6203755	99	P	SUR	50	-14	743	0	0.6	-0.1	0.6
6203756	99	P	SUR	52	-11	744	0	0.6	-0.6	0.8
6203757	99	P	SUR	49	-7	743	0	0.5	-0.4	0.7

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
6203760	99	P	SUR	53	-13	744	0	0.5	-0.1	0.5
6203761	99	P	SUR	50	-8	744	0	0.5	-0.0	0.5
62087	99	P	SUR	55	7	744	0	0.4	-0.5	0.7
62091	99	P	SUR	53	-5	644	3	1.0	-0.4	1.1
62092	99	P	SUR	51	-11	644	0	0.6	-0.5	0.7
62093	99	P	SUR	55	-10	644	0	0.5	-0.3	0.6
62094	99	P	SUR	52	-7	644	0	0.5	-0.2	0.5
62095	99	P	SUR	53	-16	644	0	0.5	-0.4	0.7
62102	99	P	SUR	58	2	2111	0	0.6	0.5	0.8
62103	99	P	SUR	50	-3	2071	0	0.5	0.4	0.7
62104	99	P	SUR	57	1	2113	0	0.4	0.1	0.4
62107	99	P	SUR	50	-6	2835	0	0.4	0.1	0.5
62112	99	P	SUR	58	0	2114	0	0.3	0.3	0.4
62113	99	P	SUR	58	0	2113	0	0.6	0.2	0.7
62114	99	P	SUR	58	0	2836	0	0.4	0.2	0.5
62115	99	P	SUR	58	-3	1783	0	0.4	-0.2	0.5
62116	99	P	SUR	58	1	2081	0	0.5	0.2	0.6
62118	99	P	SUR	58	1	2114	0	0.3	0.4	0.5
62119	99	P	SUR	57	2	2083	0	0.4	0.2	0.4
62120	99	P	SUR	56	2	2095	0	0.5	-0.0	0.5
62121	99	P	SUR	54	3	1998	0	0.7	0.6	0.9
62122	99	P	SUR	57	2	2835	0	0.3	0.0	0.3
62124	99	P	SUR	54	-4	2110	0	0.4	-0.1	0.4
62127	99	P	SUR	54	1	1902	0	0.4	0.5	0.6
62129	99	P	SUR	58	0	2114	0	0.6	0.2	0.6
62130	99	P	SUR	59	1	2084	0	0.3	-0.1	0.3
62131	99	P	SUR	54	1	1860	0	0.5	0.6	0.8
62132	99	P	SUR	56	2	2111	0	0.3	0.3	0.5
62133	99	P	SUR	57	1	2113	0	0.6	0.4	0.8
62134	99	P	SUR	58	1	2100	0	0.3	0.5	0.6
62135	99	P	SUR	54	2	2100	0	0.5	0.4	0.6
62138	99	P	SUR	54	0	2817	0	0.6	0.5	0.8
62140	99	P	SUR	57	1	2824	0	0.3	0.2	0.4
62143	99	P	SUR	58	2	2114	0	0.4	0.5	0.7
62144	99	P	SUR	53	2	2114	0	0.4	0.1	0.4
62145	99	P	SUR	53	3	2837	0	0.4	0.3	0.5
62146	99	P	SUR	57	2	2113	0	0.4	-0.1	0.4
62148	99	P	SUR	54	2	291	0	0.3	0.4	0.5
62149	99	P	SUR	54	1	2088	0	0.4	0.6	0.7
62150	99	P	SUR	54	1	2114	0	0.4	1.2	1.3
62151	99	P	SUR	57	2	2832	0	0.3	0.3	0.5
62152	99	P	SUR	57	2	2113	0	0.4	0.3	0.5
62153	99	P	SUR	57	2	2836	0	0.4	0.3	0.5

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
62154	99	P	SUR	56	2	2113	0	0.4	0.1	0.4
62155	99	P	SUR	58	1	2114	0	0.4	0.4	0.5
62157	99	P	SUR	58	0	2100	0	0.4	0.0	0.4
62160	99	P	SUR	57	2	2770	0	0.4	0.4	0.6
62161	99	P	SUR	58	1	2099	0	0.6	0.1	0.6
62162	99	P	SUR	57	1	2113	0	0.3	0.0	0.3
62163	99	P	SUR	48	-8	2114	0	0.5	0.2	0.5
62164	99	P	SUR	57	1	1802	0	0.3	0.5	0.6
62165	99	P	SUR	54	1	2098	0	0.5	0.5	0.7
62168	99	P	SUR	58	1	2112	0	0.3	0.0	0.3
62296	99	P	SUR	53	2	2100	0	0.4	-0.0	0.4
62297	99	P	SUR	59	2	2817	0	0.3	0.0	0.3
62302	99	P	SUR	61	-2	2113	0	0.6	-0.0	0.6
62304	99	P	SUR	51	2	2113	0	0.5	0.0	0.5
62305	99	P	SUR	50	0	24	0	0.3	0.2	0.4
62442	99	P	SUR	49	-16	2103	0	0.5	-0.4	0.7
6301003	99	P	SUR	74	24	186	0	0.3	0.2	0.4
6301004	99	P	SUR	72	20	694	0	0.4	0.1	0.4
6301005	99	P	SUR	73	35	136	0	4.6	0.1	4.6
6301006	99	P	SUR	63	6	690	0	0.3	-1.0	1.0
6301510	99	P	SUR	81	13	712	25	1.4	0.1	1.4
6301511	99	P	SUR	81	13	714	16	1.9	0.5	2.0
6301564	99	P	SUR	62	-37	743	0	0.5	0.7	0.8
6301567	99	P	SUR	67	-22	744	0	1.3	-0.0	1.3
6301570	99	P	SUR	59	-37	743	0	0.7	0.2	0.7
6301571	99	P	SUR	61	-51	744	91	3.7	-0.7	3.7
63055	99	P	SUR	61	2	2114	0	0.4	-0.2	0.5
63056	99	P	SUR	60	2	2114	0	0.6	0.7	0.9
63057	99	P	SUR	59	2	2113	0	0.3	-0.0	0.3
63058	99	P	SUR	53	2	4094	0	0.4	0.3	0.5
63059	99	P	SUR	58	-1	2099	0	0.4	0.2	0.5
63101	99	P	SUR	61	1	2114	0	0.6	0.4	0.7
63102	99	P	SUR	61	1	2085	0	0.4	-0.1	0.4
63103	99	P	SUR	61	1	2114	0	0.4	0.1	0.4
63104	99	P	SUR	61	2	2114	0	0.4	-0.0	0.5
63108	99	P	SUR	61	2	2114	0	0.5	-0.2	0.5
63109	99	P	SUR	60	2	2114	0	0.3	-0.3	0.5
63110	99	P	SUR	60	2	2003	0	0.6	0.0	0.6
63112	99	P	SUR	61	1	2088	0	0.4	-0.4	0.5
63115	99	P	SUR	62	1	2114	0	0.5	-0.1	0.5
63117	99	P	SUR	61	1	2837	0	0.7	0.7	0.9
63118	99	P	SUR	58	1	2814	0	0.4	-0.2	0.4
6401531	99	P	SUR	58	-55	743	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
6401539	99	P	SUR	48	-6	741	0	1.4	-0.2	1.4
6401569	99	P	SUR	66	-22	739	2	0.9	0.0	0.9
6401573	99	P	SUR	79	-5	743	0	0.5	-0.0	0.5
6401574	99	P	SUR	83	-8	744	0	0.5	0.3	0.6
6401575	99	P	SUR	85	-15	740	0	0.5	0.2	0.6
6401576	99	P	SUR	87	17	743	0	0.5	0.4	0.7
6401577	99	P	SUR	88	8	734	0	0.6	-0.2	0.7
6401578	99	P	SUR	87	-16	743	0	0.6	0.4	0.7
6401581	99	P	SUR	86	-32	742	0	0.5	0.3	0.6
6401795	99	P	SUR	73	-9	720	0	0.6	0.4	0.7
6402539	99	P	SUR	60	-56	741	0	0.5	-0.1	0.5
6402540	99	P	SUR	64	-59	694	23	1.8	-0.2	1.8
6402541	99	P	SUR	66	-1	650	0	0.4	0.2	0.4
6402542	99	P	SUR	64	-18	744	0	0.5	-0.4	0.7
6402543	99	P	SUR	57	-36	715	0	0.4	0.1	0.4
6402544	99	P	SUR	65	2	648	0	0.3	0.4	0.5
6402545	99	P	SUR	62	1	682	0	0.3	0.2	0.3
6402546	99	P	SUR	64	-5	688	0	0.3	0.2	0.4
6402547	99	P	SUR	61	-52	669	0	0.5	0.2	0.5
6402548	99	P	SUR	64	-9	702	0	0.4	0.1	0.5
6402549	99	P	SUR	62	0	738	0	0.3	0.2	0.3
6402550	99	P	SUR	63	-1	718	0	0.3	0.3	0.4
6402551	99	P	SUR	65	-33	733	0	0.6	0.2	0.6
6402552	99	P	SUR	67	-14	668	0	0.5	0.2	0.6
6402553	99	P	SUR	65	-9	688	0	0.6	0.1	0.6
6402554	99	P	SUR	63	-12	729	0	0.4	0.3	0.6
64041	99	P	SUR	61	-3	2112	0	0.5	-0.0	0.5
64045	99	P	SUR	59	-12	2116	0	0.5	-0.3	0.5
64046	99	P	SUR	61	-4	2112	0	0.4	-0.2	0.4

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 : DEC 2020
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

TIME = 99 => AVERAGE OF ALL OBSERVATIONS

GROSS ERROR LIMIT FOR VECTOR WIND = 25 M/S

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
012	99	SPEED	SUR	80	9	1	0	0	0.0	0.9	0.9
0640046	99	SPEED	SUR	60	-4	730	0	0	1.4	-0.9	1.7
1300001	99	SPEED	SUR	11	-23	590	0	0	0.7	0.3	0.8
1300002	99	SPEED	SUR	20	-23	620	0	0	0.7	0.0	0.7
1300130	99	SPEED	SUR	28	-16	725	0	0	1.3	-0.3	1.3
1300131	99	SPEED	SUR	28	-17	721	0	0	1.6	1.4	2.1
4100040	99	SPEED	SUR	15	-53	4457	0	0	0.9	0.5	1.0
4100043	99	SPEED	SUR	21	-65	4461	0	0	1.0	0.2	1.0
4100044	99	SPEED	SUR	22	-59	4455	0	0	1.1	0.2	1.1
4100046	99	SPEED	SUR	24	-68	4452	0	0	1.1	0.3	1.2
4100048	99	SPEED	SUR	32	-70	4457	0	0	1.2	0.2	1.2
4100049	99	SPEED	SUR	27	-63	4408	0	0	1.3	0.0	1.3
4100052	99	SPEED	SUR	18	-65	3523	0	0	1.0	-0.3	1.1
4100053	99	SPEED	SUR	18	-66	3524	0	0	1.4	1.1	1.8
4100056	99	SPEED	SUR	18	-65	3514	0	0	1.1	-0.7	1.3
4100139	99	SPEED	SUR	20	-38	614	0	0	1.1	0.2	1.1
4100300	99	SPEED	SUR	16	-57	740	0	0	1.0	-0.1	1.0
4101781	99	SPEED	SUR	43	-30	1486	0	0	1.0	2.9	3.0
4101782	99	SPEED	SUR	27	-67	1472	0	0	1.3	2.8	3.1
4101783	99	SPEED	SUR	27	-65	1467	0	0	1.2	2.4	2.7
4101784	99	SPEED	SUR	26	-64	1485	0	0	1.3	2.4	2.7
4101785	99	SPEED	SUR	32	-63	1432	0	0	1.2	3.2	3.4
4101806	99	SPEED	SUR	39	-51	989	0	0	1.8	4.1	4.5
4101807	99	SPEED	SUR	28	-63	1426	0	0	2.8	1.9	3.4
4101810	99	SPEED	SUR	28	-58	1488	0	0	2.0	-4.7	5.1
4101816	99	SPEED	SUR	34	-65	1472	0	0	1.3	3.3	3.6
4101817	99	SPEED	SUR	36	-65	1436	0	0	1.5	3.9	4.2
4101818	99	SPEED	SUR	39	-58	1439	0	0	1.3	3.7	3.9
4101820	99	SPEED	SUR	31	-61	1486	0	0	1.4	2.7	3.0
41040	99	SPEED	SUR	15	-53	1118	0	0	0.9	0.2	0.9
41043	99	SPEED	SUR	21	-65	1087	0	0	1.0	0.0	1.0
41044	99	SPEED	SUR	22	-59	1095	0	0	1.1	0.2	1.1
41046	99	SPEED	SUR	24	-68	2952	0	0	1.2	-0.0	1.2
41048	99	SPEED	SUR	32	-70	2976	0	0	1.3	-0.2	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
41049	99	SPEED	SUR	28	-63	2931	0	0	1.4	-0.2	1.4
41052	99	SPEED	SUR	18	-65	1409	0	0	1.1	-0.2	1.1
41053	99	SPEED	SUR	19	-66	1357	0	0	1.3	0.5	1.4
41056	99	SPEED	SUR	18	-66	1373	0	0	1.1	-0.5	1.2
4200060	99	SPEED	SUR	16	-63	4458	0	0	0.8	-0.0	0.8
4200085	99	SPEED	SUR	18	-67	3458	0	0	1.3	-0.3	1.3
42060	99	SPEED	SUR	16	-63	1074	0	0	0.9	-0.2	0.9
42085	99	SPEED	SUR	18	-67	1751	0	0	1.3	0.2	1.3
4400005	99	SPEED	SUR	43	-69	744	0	0	1.6	-0.0	1.6
4400008	99	SPEED	SUR	41	-69	4455	0	0	1.9	0.4	1.9
4400024	99	SPEED	SUR	42	-66	375	0	0	1.5	-0.5	1.6
4400027	99	SPEED	SUR	44	-67	743	0	0	1.4	0.4	1.5
4400032	99	SPEED	SUR	44	-69	744	0	0	1.5	0.1	1.5
4400033	99	SPEED	SUR	44	-69	744	0	0	1.4	0.1	1.4
4400034	99	SPEED	SUR	44	-68	744	0	0	1.4	-0.1	1.4
4400037	99	SPEED	SUR	43	-68	673	0	0	1.4	-0.2	1.4
44005	99	SPEED	SUR	43	-69	2084	0	0	1.6	0.0	1.6
44008	99	SPEED	SUR	41	-69	2966	0	0	1.9	0.3	1.9
44024	99	SPEED	SUR	42	-66	1042	0	0	1.5	-0.5	1.6
44027	99	SPEED	SUR	44	-67	2084	0	0	1.5	0.5	1.5
44032	99	SPEED	SUR	44	-69	1366	0	0	1.5	0.2	1.6
44033	99	SPEED	SUR	44	-69	1366	0	0	1.4	0.5	1.5
44034	99	SPEED	SUR	44	-68	1366	0	0	1.4	-0.1	1.4
44037	99	SPEED	SUR	44	-68	1237	0	0	1.4	-0.1	1.4
44078	99	SPEED	SUR	60	-40	3943	0	0	2.0	-2.4	3.1
44137	99	SPEED	SUR	42	-62	680	0	0	1.6	-0.1	1.6
44139	99	SPEED	SUR	44	-57	785	0	0	1.6	-0.3	1.6
44150	99	SPEED	SUR	43	-64	672	0	0	1.6	0.0	1.6
44488	99	SPEED	SUR	45	-61	782	0	0	1.7	0.7	1.8
44489	99	SPEED	SUR	46	-61	783	0	0	1.6	1.2	2.0
44490	99	SPEED	SUR	45	-66	683	0	0	1.8	-0.4	1.8
6100001	99	SPEED	SUR	43	8	371	0	0	1.8	0.3	1.8
6100002	99	SPEED	SUR	42	5	657	0	0	1.5	0.4	1.5
6100196	99	SPEED	SUR	42	4	720	0	0	1.5	-0.5	1.6
6100197	99	SPEED	SUR	40	4	704	0	0	1.4	-0.8	1.6
6100198	99	SPEED	SUR	37	-2	715	0	0	1.6	-0.1	1.7
6100280	99	SPEED	SUR	41	1	716	0	0	1.7	-0.2	1.7
6100281	99	SPEED	SUR	40	0	701	0	0	2.3	1.3	2.7
6100417	99	SPEED	SUR	38	0	724	0	0	1.4	-0.4	1.5
6100430	99	SPEED	SUR	40	2	719	0	0	1.6	-0.6	1.7
6101003	99	SPEED	SUR	40	25	30	0	0	1.3	-0.7	1.5

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
6101005	99	SPEED	SUR	38	26	166	0	0	2.5	-8.0	8.4
6101007	99	SPEED	SUR	36	25	161	0	0	2.0	0.2	2.0
6101008	99	SPEED	SUR	37	22	67	0	0	2.2	-0.7	2.3
6101009	99	SPEED	SUR	35	25	93	0	0	1.7	1.3	2.2
6200024	99	SPEED	SUR	44	-3	720	0	0	2.2	-0.2	2.3
6200025	99	SPEED	SUR	44	-6	722	0	0	1.7	-1.1	2.1
6200082	99	SPEED	SUR	44	-8	728	0	0	1.5	-1.4	2.0
6200083	99	SPEED	SUR	43	-9	725	0	0	1.2	-0.6	1.3
6200084	99	SPEED	SUR	42	-9	725	0	0	1.4	-0.7	1.6
6200085	99	SPEED	SUR	36	-7	704	0	0	1.1	-0.1	1.2
6200091	99	SPEED	SUR	53	-5	644	0	0	1.1	0.3	1.2
6200092	99	SPEED	SUR	51	-11	743	0	0	1.3	0.6	1.4
6200093	99	SPEED	SUR	55	-10	743	0	0	1.3	0.6	1.4
6200094	99	SPEED	SUR	52	-7	743	0	0	1.2	0.0	1.2
6200095	99	SPEED	SUR	53	-16	743	0	0	1.6	-1.4	2.1
62001	99	SPEED	SUR	45	-5	2116	0	0	1.5	0.4	1.6
6200199	99	SPEED	SUR	40	-9	724	14	0	1.6	-0.2	1.6
6200200	99	SPEED	SUR	36	-8	727	0	0	1.1	0.1	1.1
6201030	99	SPEED	SUR	44	-4	201	0	0	1.8	-1.1	2.1
6201066	99	SPEED	SUR	55	7	537	0	0	1.9	-0.1	1.9
62023	99	SPEED	SUR	51	-8	2225	0	0	2.0	1.2	2.3
62087	99	SPEED	SUR	55	7	657	0	0	1.5	1.8	2.4
62091	99	SPEED	SUR	53	-5	644	0	0	1.2	0.4	1.2
62092	99	SPEED	SUR	51	-11	644	0	0	1.3	0.6	1.4
62093	99	SPEED	SUR	55	-10	644	0	0	1.3	0.7	1.4
62094	99	SPEED	SUR	52	-7	644	0	0	1.1	0.1	1.1
62095	99	SPEED	SUR	53	-16	644	0	0	1.6	-1.6	2.3
62102	99	SPEED	SUR	58	2	2114	0	0	1.5	-0.2	1.5
62103	99	SPEED	SUR	50	-3	2059	0	0	1.7	1.7	2.4
62104	99	SPEED	SUR	57	1	1803	0	0	1.3	-0.9	1.6
62107	99	SPEED	SUR	50	-6	2835	0	0	1.7	1.2	2.0
62112	99	SPEED	SUR	58	0	2114	0	0	1.3	-0.5	1.4
62113	99	SPEED	SUR	58	0	2113	0	0	1.5	-0.0	1.5
62114	99	SPEED	SUR	58	0	2836	0	0	1.4	0.3	1.4
62118	99	SPEED	SUR	58	1	2114	0	0	1.3	0.5	1.3
62119	99	SPEED	SUR	57	2	2083	0	0	1.7	-1.4	2.2
62120	99	SPEED	SUR	56	2	2095	0	0	1.2	-0.6	1.3
62121	99	SPEED	SUR	54	3	1998	0	0	1.4	-0.9	1.7
62122	99	SPEED	SUR	57	2	2835	0	0	1.3	-0.4	1.4
62131	99	SPEED	SUR	54	1	1860	0	0	2.1	-0.2	2.1
62132	99	SPEED	SUR	56	2	2111	0	0	2.0	-1.6	2.6

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
62133	99	SPEED	SUR	57	1	2113	0	0	1.3	0.0	1.3
62134	99	SPEED	SUR	58	1	2100	0	0	1.3	-0.2	1.3
62140	99	SPEED	SUR	57	1	2798	0	0	1.1	-0.4	1.2
62143	99	SPEED	SUR	58	2	2114	0	0	2.0	-0.9	2.2
62144	99	SPEED	SUR	53	2	2114	0	0	2.6	-1.5	3.0
62145	99	SPEED	SUR	53	3	2837	0	0	1.7	0.4	1.7
62146	99	SPEED	SUR	57	2	1742	0	0	1.4	-0.5	1.5
62148	99	SPEED	SUR	54	2	291	0	0	1.6	-0.3	1.6
62149	99	SPEED	SUR	54	1	2088	0	0	1.5	0.5	1.5
62150	99	SPEED	SUR	54	1	2114	0	0	2.2	-0.7	2.3
62152	99	SPEED	SUR	57	2	2113	0	0	1.6	-1.2	2.0
62153	99	SPEED	SUR	57	2	2836	0	0	2.1	-1.2	2.4
62154	99	SPEED	SUR	56	2	2113	0	0	1.2	-0.2	1.2
62155	99	SPEED	SUR	58	1	2111	0	0	1.3	-0.4	1.4
62163	99	SPEED	SUR	48	-8	2114	0	0	1.2	-0.6	1.3
62164	99	SPEED	SUR	57	1	1802	0	0	1.6	-1.5	2.2
62165	99	SPEED	SUR	54	1	2098	0	0	1.3	-0.5	1.4
62304	99	SPEED	SUR	51	2	2113	0	0	1.8	1.7	2.5
62305	99	SPEED	SUR	50	0	16	0	0	2.0	1.2	2.4
62442	99	SPEED	SUR	49	-16	3	3	0	0.2	2.8	2.8
6301003	99	SPEED	SUR	74	24	72	0	0	1.2	-0.4	1.3
6301004	99	SPEED	SUR	72	20	694	0	0	1.3	-0.7	1.5
6301006	99	SPEED	SUR	63	6	689	0	0	1.9	1.1	2.2
63055	99	SPEED	SUR	61	2	2114	0	0	1.4	-1.5	2.0
63056	99	SPEED	SUR	60	2	2114	0	0	1.4	0.1	1.4
63057	99	SPEED	SUR	59	2	2113	0	0	1.6	0.2	1.7
63058	99	SPEED	SUR	53	2	2062	0	0	1.5	-0.2	1.5
63101	99	SPEED	SUR	61	1	2114	0	0	1.4	-0.5	1.5
63103	99	SPEED	SUR	61	1	2114	0	0	1.7	-0.5	1.8
63104	99	SPEED	SUR	61	2	2108	0	0	1.3	-0.5	1.4
63106	99	SPEED	SUR	61	2	1375	0	0	2.2	-1.2	2.5
63108	99	SPEED	SUR	61	2	2114	0	0	1.6	-0.4	1.6
63109	99	SPEED	SUR	60	2	2082	0	0	1.4	-0.2	1.4
63110	99	SPEED	SUR	60	2	2107	0	0	1.7	-0.7	1.8
63112	99	SPEED	SUR	61	1	2088	0	0	1.3	-1.1	1.7
63115	99	SPEED	SUR	62	1	2114	0	0	1.5	-1.0	1.8
63117	99	SPEED	SUR	61	1	2837	0	0	1.3	-0.5	1.4
64041	99	SPEED	SUR	61	-3	841	0	0	1.3	-0.5	1.4
64045	99	SPEED	SUR	59	-12	2116	0	0	1.5	0.3	1.5
64046	99	SPEED	SUR	61	-4	2114	0	0	1.3	0.4	1.3
66021	99	SPEED	SUR	55	14	1484	0	0	1.4	1.0	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
66022	99	SPEED	SUR	54	14	519	0	0	3.2	-1.3	3.5
66024	99	SPEED	SUR	55	13	1478	0	0	1.1	1.0	1.5

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 : DEC 2020
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

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

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
0113092	99	DIRN	SUR	28	-81	1	0	0	0.0	1.8	1.8
0640046	99	DIRN	SUR	60	-4	691	0	0	13.3	2.7	13.6
1300001	99	DIRN	SUR	11	-23	587	0	0	8.3	2.8	8.8
1300002	99	DIRN	SUR	20	-23	559	0	0	10.4	1.2	10.5
1300130	99	DIRN	SUR	28	-16	560	0	0	15.5	-5.3	16.4
1300131	99	DIRN	SUR	28	-17	431	0	0	25.4	-4.9	25.9
4100001	99	DIRN	SUR	35	-72	4034	0	0	14.2	5.3	15.2
4100004	99	DIRN	SUR	33	-79	3708	0	0	16.7	8.4	18.7
4100008	99	DIRN	SUR	31	-81	520	0	0	18.8	5.6	19.6
4100009	99	DIRN	SUR	29	-80	3932	0	0	15.1	9.0	17.6
4100010	99	DIRN	SUR	29	-78	3968	0	0	13.7	10.2	17.1
4100013	99	DIRN	SUR	33	-78	3696	0	0	20.1	2.3	20.2
4100024	99	DIRN	SUR	34	-78	506	0	0	20.7	-14.9	25.5
4100025	99	DIRN	SUR	35	-75	4058	0	0	18.8	5.0	19.5
4100029	99	DIRN	SUR	33	-80	63	0	0	15.7	-18.0	23.9
4100033	99	DIRN	SUR	32	-80	494	0	0	22.0	-6.9	23.1
4100037	99	DIRN	SUR	34	-77	137	3	0	37.9	-0.9	37.9
4100038	99	DIRN	SUR	34	-78	552	0	0	18.2	-9.0	20.3
4100040	99	DIRN	SUR	15	-53	4271	0	0	13.4	2.2	13.6
4100043	99	DIRN	SUR	21	-65	4024	0	0	13.9	3.6	14.4
4100044	99	DIRN	SUR	22	-59	3860	0	0	13.9	3.5	14.3
4100046	99	DIRN	SUR	24	-68	3660	0	0	16.4	-3.1	16.7
4100048	99	DIRN	SUR	32	-70	4290	0	0	13.1	2.0	13.3
4100049	99	DIRN	SUR	27	-63	3690	0	0	20.1	8.5	21.9
4100052	99	DIRN	SUR	18	-65	3212	0	0	16.2	6.3	17.4
4100053	99	DIRN	SUR	18	-66	2139	0	0	16.5	-0.9	16.5
4100056	99	DIRN	SUR	18	-65	3177	0	0	16.2	0.1	16.2
4100064	99	DIRN	SUR	34	-77	602	0	0	21.7	-13.9	25.8
41001	99	DIRN	SUR	35	-72	2661	0	0	14.6	0.9	14.6
4100139	99	DIRN	SUR	20	-38	596	0	0	13.2	2.9	13.5
4100300	99	DIRN	SUR	16	-57	661	0	0	12.8	2.9	13.1
41004	99	DIRN	SUR	33	-79	2507	0	0	16.1	3.9	16.6

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
41008	99	DIRN	SUR	31	-81	1436	0	0	18.8	4.9	19.4
41009	99	DIRN	SUR	29	-80	2727	0	0	15.0	6.2	16.2
41010	99	DIRN	SUR	29	-79	2592	0	0	13.9	5.2	14.8
41013	99	DIRN	SUR	33	-78	2515	0	0	21.0	-0.9	21.0
4101781	99	DIRN	SUR	43	-30	1476	0	0	21.4	-4.4	21.9
4101782	99	DIRN	SUR	27	-67	1202	0	0	20.1	-16.7	26.2
4101783	99	DIRN	SUR	27	-65	1206	0	0	22.7	-24.8	33.7
4101784	99	DIRN	SUR	26	-64	1178	0	0	22.1	-6.6	23.0
4101785	99	DIRN	SUR	32	-63	1335	0	0	24.3	-8.9	25.9
4101806	99	DIRN	SUR	39	-51	968	0	0	28.6	-8.5	29.8
4101807	99	DIRN	SUR	28	-63	898	0	0	29.5	-11.7	31.7
4101816	99	DIRN	SUR	34	-65	1367	0	0	17.1	-7.7	18.8
4101817	99	DIRN	SUR	36	-65	1248	0	0	13.7	-8.0	15.8
4101818	99	DIRN	SUR	39	-58	1279	0	0	15.0	-9.5	17.7
4101820	99	DIRN	SUR	31	-61	1217	0	0	21.6	-10.2	23.9
41024	99	DIRN	SUR	34	-79	937	0	0	21.3	-14.8	25.9
41025	99	DIRN	SUR	35	-75	2813	0	0	18.8	4.1	19.2
41029	99	DIRN	SUR	33	-80	152	0	0	16.6	-18.8	25.1
41033	99	DIRN	SUR	32	-80	879	0	0	22.0	-7.7	23.3
41037	99	DIRN	SUR	34	-77	250	6	0	40.8	-2.3	40.8
41038	99	DIRN	SUR	34	-78	1005	0	0	21.1	-8.3	22.7
41040	99	DIRN	SUR	15	-53	1038	0	0	13.8	2.9	14.1
41043	99	DIRN	SUR	21	-65	972	0	0	14.9	2.3	15.1
41044	99	DIRN	SUR	22	-59	937	0	0	13.9	3.4	14.3
41046	99	DIRN	SUR	24	-68	2378	0	0	15.9	-3.2	16.3
41048	99	DIRN	SUR	32	-70	2849	0	0	13.4	3.2	13.8
41049	99	DIRN	SUR	28	-63	2343	0	0	20.4	7.8	21.8
41052	99	DIRN	SUR	18	-65	1254	0	0	17.0	5.9	18.0
41053	99	DIRN	SUR	19	-66	877	0	0	18.9	-2.9	19.1
41056	99	DIRN	SUR	18	-66	1191	0	0	16.2	-0.0	16.2
41064	99	DIRN	SUR	34	-77	1086	0	0	23.4	-14.9	27.7
4200013	99	DIRN	SUR	27	-83	183	0	0	35.7	-3.0	35.8
4200022	99	DIRN	SUR	28	-84	1123	0	0	17.3	-4.6	17.9
4200023	99	DIRN	SUR	26	-83	1329	0	0	15.7	-4.4	16.3
4200026	99	DIRN	SUR	25	-83	1161	0	0	16.5	-1.6	16.6
4200036	99	DIRN	SUR	29	-85	3944	0	0	15.6	13.3	20.5
4200056	99	DIRN	SUR	20	-85	4082	0	0	11.8	3.9	12.4
4200057	99	DIRN	SUR	17	-81	1538	0	0	14.3	-1.4	14.4
4200060	99	DIRN	SUR	16	-63	4118	0	0	9.9	7.9	12.6
4200085	99	DIRN	SUR	18	-67	2892	0	0	17.1	15.4	23.0
42013	99	DIRN	SUR	27	-83	256	0	0	33.8	-5.3	34.2

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
42022	99	DIRN	SUR	28	-84	1563	0	0	16.7	-5.6	17.7
42023	99	DIRN	SUR	26	-83	1965	0	0	15.9	-5.3	16.8
42026	99	DIRN	SUR	25	-84	1614	0	0	17.1	-2.1	17.3
42036	99	DIRN	SUR	29	-85	2437	0	0	15.6	12.0	19.7
42056	99	DIRN	SUR	20	-85	974	0	0	12.0	2.2	12.2
42057	99	DIRN	SUR	17	-81	383	0	0	15.7	-3.2	16.1
42060	99	DIRN	SUR	16	-63	974	0	0	10.0	7.5	12.5
42085	99	DIRN	SUR	18	-67	1343	0	0	15.8	13.9	21.1
4400005	99	DIRN	SUR	43	-69	691	0	0	11.9	-1.7	12.0
4400007	99	DIRN	SUR	44	-70	3806	0	0	13.6	4.5	14.3
4400008	99	DIRN	SUR	41	-69	4145	0	0	17.4	10.2	20.2
4400013	99	DIRN	SUR	42	-71	4055	0	0	12.8	6.4	14.3
4400014	99	DIRN	SUR	37	-75	3866	0	0	14.3	5.1	15.2
4400017	99	DIRN	SUR	41	-72	2538	0	0	15.3	4.9	16.1
4400018	99	DIRN	SUR	42	-70	4177	0	0	12.6	5.7	13.9
4400020	99	DIRN	SUR	41	-70	3969	0	0	16.4	5.3	17.2
4400022	99	DIRN	SUR	41	-74	1314	0	0	15.7	9.6	18.5
4400024	99	DIRN	SUR	42	-66	342	0	0	17.1	8.0	18.9
4400025	99	DIRN	SUR	40	-73	4115	0	0	12.0	4.8	12.9
4400027	99	DIRN	SUR	44	-67	690	0	0	13.3	3.2	13.7
4400029	99	DIRN	SUR	43	-71	674	0	0	14.3	-1.0	14.3
4400030	99	DIRN	SUR	43	-70	655	0	0	13.3	-2.5	13.5
4400032	99	DIRN	SUR	44	-69	664	0	0	14.0	8.9	16.6
4400033	99	DIRN	SUR	44	-69	642	0	0	13.5	0.9	13.5
4400034	99	DIRN	SUR	44	-68	690	0	0	12.3	-7.3	14.3
4400037	99	DIRN	SUR	43	-68	628	0	0	14.2	7.7	16.1
4400042	99	DIRN	SUR	38	-76	4124	0	0	25.3	-7.4	26.3
4400058	99	DIRN	SUR	38	-76	1784	0	0	21.8	-3.3	22.0
4400062	99	DIRN	SUR	39	-76	2339	0	0	23.2	-6.4	24.1
4400065	99	DIRN	SUR	40	-74	4056	0	0	12.2	5.7	13.5
4400072	99	DIRN	SUR	37	-76	3228	0	0	20.1	-60.3	63.6
4400073	99	DIRN	SUR	43	-71	604	0	0	13.8	3.8	14.3
4400075	99	DIRN	SUR	40	-71	3715	0	0	18.0	-13.8	22.7
4400076	99	DIRN	SUR	40	-71	4035	0	0	18.3	-14.8	23.5
4400077	99	DIRN	SUR	40	-71	4036	0	0	12.8	-16.0	20.5
44005	99	DIRN	SUR	43	-69	1930	0	0	12.0	-1.9	12.2
44007	99	DIRN	SUR	44	-70	2598	0	0	13.1	5.4	14.2
44008	99	DIRN	SUR	41	-69	2755	0	0	18.1	9.5	20.5
44013	99	DIRN	SUR	42	-71	2730	0	0	13.3	5.0	14.2
44014	99	DIRN	SUR	37	-75	2533	1	0	15.8	3.8	16.3
44017	99	DIRN	SUR	41	-72	1732	0	0	15.0	2.1	15.2

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
44018	99	DIRN	SUR	42	-70	2841	0	0	12.1	6.2	13.6
44020	99	DIRN	SUR	42	-70	2678	0	0	16.7	4.3	17.3
44022	99	DIRN	SUR	41	-74	1158	0	0	13.9	8.8	16.5
44024	99	DIRN	SUR	42	-66	946	0	0	17.8	8.5	19.8
44025	99	DIRN	SUR	40	-73	2796	1	0	12.6	3.9	13.2
44027	99	DIRN	SUR	44	-67	1928	0	0	13.6	2.4	13.8
44029	99	DIRN	SUR	43	-71	1855	0	0	14.8	-1.1	14.8
44030	99	DIRN	SUR	43	-70	1181	0	0	13.0	-2.0	13.2
44032	99	DIRN	SUR	44	-69	1205	0	0	13.8	8.8	16.4
44033	99	DIRN	SUR	44	-69	1154	0	0	13.2	1.0	13.2
44034	99	DIRN	SUR	44	-68	1259	0	0	13.1	-7.4	15.0
44037	99	DIRN	SUR	44	-68	1139	0	0	14.5	7.7	16.4
44042	99	DIRN	SUR	38	-76	2310	0	0	26.3	-7.7	27.4
44058	99	DIRN	SUR	38	-76	1016	0	0	23.0	-5.7	23.7
44062	99	DIRN	SUR	39	-76	1519	0	0	23.3	-7.3	24.4
44065	99	DIRN	SUR	40	-74	2790	0	0	12.4	5.0	13.3
44069	99	DIRN	SUR	41	-73	852	0	0	17.6	7.9	19.3
44072	99	DIRN	SUR	37	-76	2190	0	0	20.5	-60.9	64.2
44073	99	DIRN	SUR	43	-71	1101	0	0	13.2	4.4	13.9
44075	99	DIRN	SUR	40	-71	3718	0	0	19.1	-14.0	23.7
44076	99	DIRN	SUR	40	-71	4943	0	0	19.2	-14.9	24.3
44077	99	DIRN	SUR	40	-71	4918	0	0	14.0	-16.1	21.3
44078	99	DIRN	SUR	60	-40	3657	0	0	11.0	-18.7	21.7
44137	99	DIRN	SUR	42	-62	623	0	0	22.0	-30.0	37.3
44139	99	DIRN	SUR	44	-57	682	0	0	15.9	-28.5	32.6
44150	99	DIRN	SUR	43	-64	604	0	0	17.4	-38.0	41.8
44488	99	DIRN	SUR	45	-61	689	0	0	19.7	10.5	22.3
44489	99	DIRN	SUR	46	-61	650	0	0	18.6	2.2	18.7
44490	99	DIRN	SUR	45	-66	624	0	0	22.4	-2.4	22.6
4500003	99	DIRN	SUR	45	-83	4257	0	0	11.8	2.4	12.0
45003	99	DIRN	SUR	45	-83	2705	0	0	13.2	6.5	14.7
45132	99	DIRN	SUR	43	-81	74	0	0	16.5	-5.3	17.3
6100198	99	DIRN	SUR	37	-2	411	0	0	20.2	1.6	20.2
6100281	99	DIRN	SUR	40	0	442	0	0	23.7	-0.3	23.7
6100417	99	DIRN	SUR	38	0	490	0	0	18.0	7.5	19.5
6200024	99	DIRN	SUR	44	-3	634	0	0	22.2	5.2	22.8
6200025	99	DIRN	SUR	44	-6	550	0	0	20.0	-0.8	20.0
6200082	99	DIRN	SUR	44	-8	708	0	0	20.2	4.7	20.8
6200083	99	DIRN	SUR	43	-9	712	0	0	12.9	2.7	13.2
6200084	99	DIRN	SUR	42	-9	681	0	0	13.0	5.0	14.0
6200085	99	DIRN	SUR	36	-7	568	0	0	14.2	6.0	15.4

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
6200091	99	DIRN	SUR	53	-5	629	0	0	11.9	-0.1	11.9
6200092	99	DIRN	SUR	51	-11	723	0	0	11.3	1.7	11.5
6200093	99	DIRN	SUR	55	-10	709	0	0	12.6	2.7	12.9
6200094	99	DIRN	SUR	52	-7	717	0	0	13.0	-0.3	13.0
6200095	99	DIRN	SUR	53	-16	726	0	0	9.7	1.3	9.8
62001	99	DIRN	SUR	45	-5	2087	0	0	13.7	4.3	14.3
6200199	99	DIRN	SUR	40	-9	584	14	0	167.1	-11.0	167.5
6200200	99	DIRN	SUR	36	-8	609	0	0	14.3	1.0	14.3
6201030	99	DIRN	SUR	44	-4	186	0	0	17.0	0.3	17.0
62023	99	DIRN	SUR	51	-8	2172	0	0	14.4	4.7	15.1
62091	99	DIRN	SUR	53	-5	627	0	0	11.9	-0.5	11.9
62092	99	DIRN	SUR	51	-11	625	0	0	9.3	0.5	9.3
62093	99	DIRN	SUR	55	-10	611	0	0	13.0	2.9	13.3
62094	99	DIRN	SUR	52	-7	617	0	0	11.6	-1.9	11.8
62095	99	DIRN	SUR	53	-16	633	0	0	10.0	1.1	10.0
62103	99	DIRN	SUR	50	-3	2012	0	0	21.4	6.8	22.5
62107	99	DIRN	SUR	50	-6	2805	0	0	11.7	0.8	11.8
62112	99	DIRN	SUR	58	0	2063	0	0	10.8	-1.8	11.0
62114	99	DIRN	SUR	58	0	2735	0	0	10.0	2.2	10.3
62163	99	DIRN	SUR	48	-8	2088	0	0	9.8	-1.3	9.8
62305	99	DIRN	SUR	50	0	16	0	0	13.6	15.3	20.4
62442	99	DIRN	SUR	49	-16	3	3	0	0.1	-173.1	173.1
64041	99	DIRN	SUR	61	-3	792	0	0	12.3	9.6	15.6
64045	99	DIRN	SUR	59	-12	2038	0	0	11.7	4.4	12.5
64046	99	DIRN	SUR	61	-4	2008	0	0	13.9	-0.9	14.0

4.12 Table 24 - List of Assimilated BUFR Encoded Radiosonde Stations

ASDE09	BPMWB2N	DBLK	FPUW5GN	HTXUH4H	JNKN7JF	KJJF9XN	KMPLHPW	LRYQE3U
UXK5JTU	VKB4L5Q	XQFJRGX	YLV96WM	ZVQEQCM	7JUNA4N	01001	01004	01010
01028	01241	01400	01415	01492	02527	02836	02963	03005
03238	03354	03502	03743	03808	03882	03953	04018	04089
04220	04270	04320	04339	04360	04417	06011	06060	06260
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	12843	12982	13275	13388	14015	14240
14430	15420	15614	16045	16080	16113	16245	16320	16429
16546	16622	16716	16754	17030	17064	17095	17130	17196
17220	17240	17281	17351	17516	17607	22008	23205	23472
23884	24908	26038	26435	26708	26850	27459	27707	27713
28225	29612	29698	33008	33041	37789	40179	40186	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
56187	56492	56571	56651	56691	56739	56778	56964	56985
57083	57127	57131	57178	57245	57447	57494	57687	57816
57957	57993	58027	58203	58238	58362	58424	58457	58606
58633	58665	58725	59023	59134	59211	59265	59280	59293
59431	59981	60018	60155	60390	60571	60630	60656	60680
61901	61980	61998	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	71917	71924	71925	71926	71934
71945	71957	71964	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	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	74494	74560
76225	76256	76394	76405	76458	76526	76595	76612	76644
76654	76679	76692	76743	76805	76903	78897	78954	81405
83525	83649	83768	85442	85586	85799	85934	87155	87344
87576	87623	87715	87860	88889	89002	89062	89564	89571
89611	89625	89642	89662	89859	91212	91285	91592	91610
91765	91925	91938	91948	91958	93112	93417	93817	93844
94120	94150	94170	94203	94299	94302	94312	94326	94332
94374	94403	94430	94461	94510	94578	94610	94637	94638
94653	94659	94672	94711	94767	94776	94802	94821	94866
94910	94975	94995	94996	94998	95527	96996		

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

ASDE09	BPMWB2N	DBLK	FPUW5GN	HTXUH4H	JNKN7JF	KJJF9XN	KMPLHPW	LRYQE3U
UXK5JTU	VKB4L5Q	XQFJRGX	YLV96WM	ZVQEQCM	7JUNA4N	01001	01004	01010
01028	01241	01400	01415	01492	02365	02527	02836	02963
03953	06610	07110	07145	07510	07645	07761	08536	11010
11035	11120	11240	17607	26708	40186	47155	51243	51656
52652	53543	56046	56492	56651	57245	59023	59293	60155
61980	61998	76743	76903	78897	81405	89002	89642	89859
91592	91938	93817	94653					

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 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	35ms^{-1}
925	35ms^{-1}
850	35ms^{-1}
700	40ms^{-1}
500	45ms^{-1}
400	50ms^{-1}
300	60ms^{-1}
250	60ms^{-1}
200	50ms^{-1}
150	50ms^{-1}
100	45ms^{-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.