



ECMWF Global Data Monitoring Report

July 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	Jun	Jul	Ident	Time	Jun	Jul
03559	(12)	39	7	03005	(00)	5	30
17240	(00)	25	8	03502	(12)	1	16
17240	(12)	24	7	41316	(12)	1	13
20674	(00)	23	4	42101	(00)	0	12
20674	(12)	23	5	42182	(12)	19	30
30230	(00)	30	3	42314	(00)	0	12
30230	(12)	30	2	42379	(00)	1	16
40948	(00)	29	16	42867	(12)	8	25
42724	(00)	29	17	43041	(00)	0	13
43369	(00)	27	6	43295	(00)	0	11
56571	(00)	30	0	47138	(00)	8	30
56571	(12)	29	0	47138	(12)	14	33
57461	(00)	30	0	61660	(12)	18	34
57461	(12)	30	0	63741	(00)	9	23
57516	(00)	30	0	68512	(12)	0	16
57516	(12)	30	0	76612	(00)	0	20
57749	(00)	30	0	76644	(00)	1	26
57749	(12)	30	0	76692	(00)	0	24
57972	(00)	30	0	76805	(00)	0	16
57972	(12)	30	0	83746	(00)	0	15
58150	(00)	30	0	87623	(12)	0	18
58150	(12)	30	0	87715	(12)	0	17
58457	(00)	30	0	96413	(00)	4	31
58457	(12)	30	0	96413	(12)	5	31
58847	(00)	30	0	98223	(12)	0	29
58847	(12)	30	0	98433	(12)	6	21
70026	(00)	30	15	98444	(12)	0	22
70026	(12)	29	15	-	-	-	-
76679	(00)	30	9	-	-	-	-
78073	(12)	30	19	-	-	-	-
82599	(00)	27	2	-	-	-	-
82824	(12)	30	14	-	-	-	-
82917	(12)	29	17	-	-	-	-
85442	(12)	30	4	-	-	-	-
85469	(00)	16	0	-	-	-	-
85586	(12)	30	4	-	-	-	-
85799	(12)	29	4	-	-	-	-
85934	(12)	30	4	-	-	-	-
89592	(00)	19	0	-	-	-	-
91334	(12)	26	6	-	-	-	-
94659	(00)	29	11	-	-	-	-
96035	(00)	30	2	-	-	-	-
96237	(00)	30	13	-	-	-	-
96509	(00)	23	11	-	-	-	-
96685	(00)	29	13	-	-	-	-
97014	(00)	29	13	-	-	-	-
97180	(00)	29	5	-	-	-	-
97372	(00)	30	15	-	-	-	-
97560	(00)	30	14	-	-	-	-
97980	(00)	30	18	-	-	-	-

2.2 Drifting Buoys

Surface pressure observations from **1861** 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.

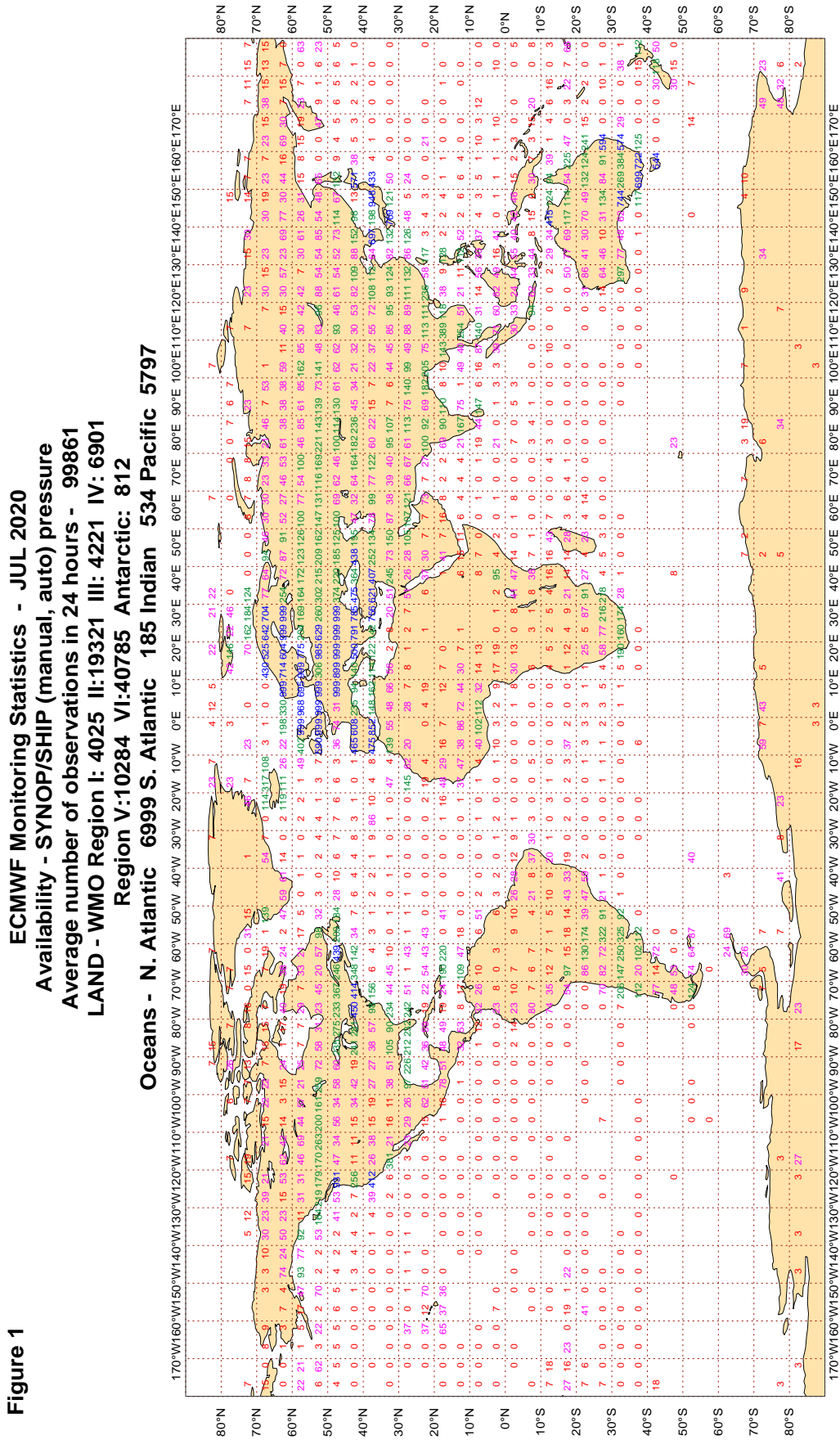
Tab	Parameter	Observation Time
10	Geopotential	00 and 12 UTC
11	Wind	00 and 12 UTC

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

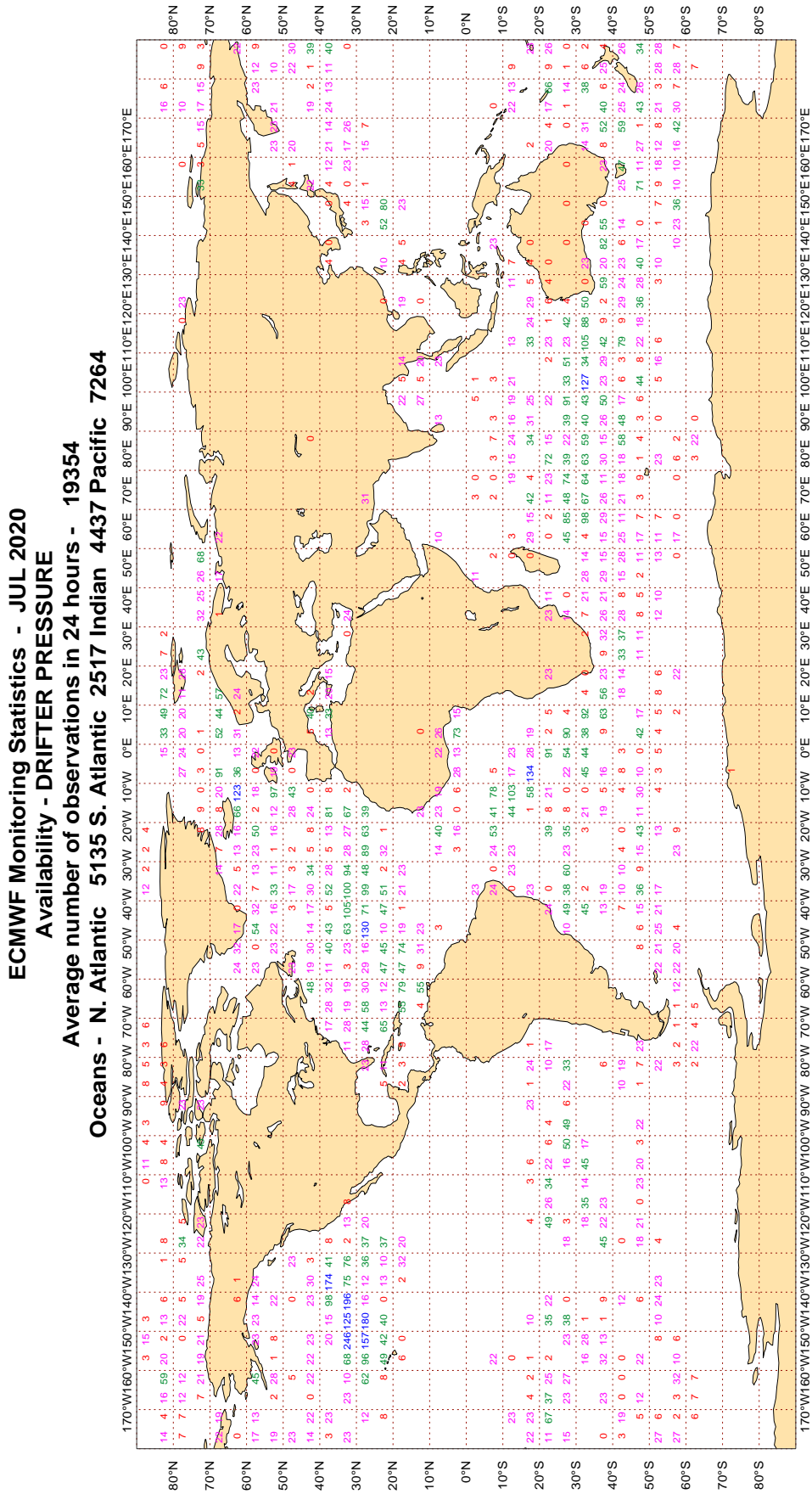
Table 12 provides quality statistics of aircraft wind observations stratified by airline carrier.

3.2.1 Figure 1 - Availability - SYNOP PRESSURE

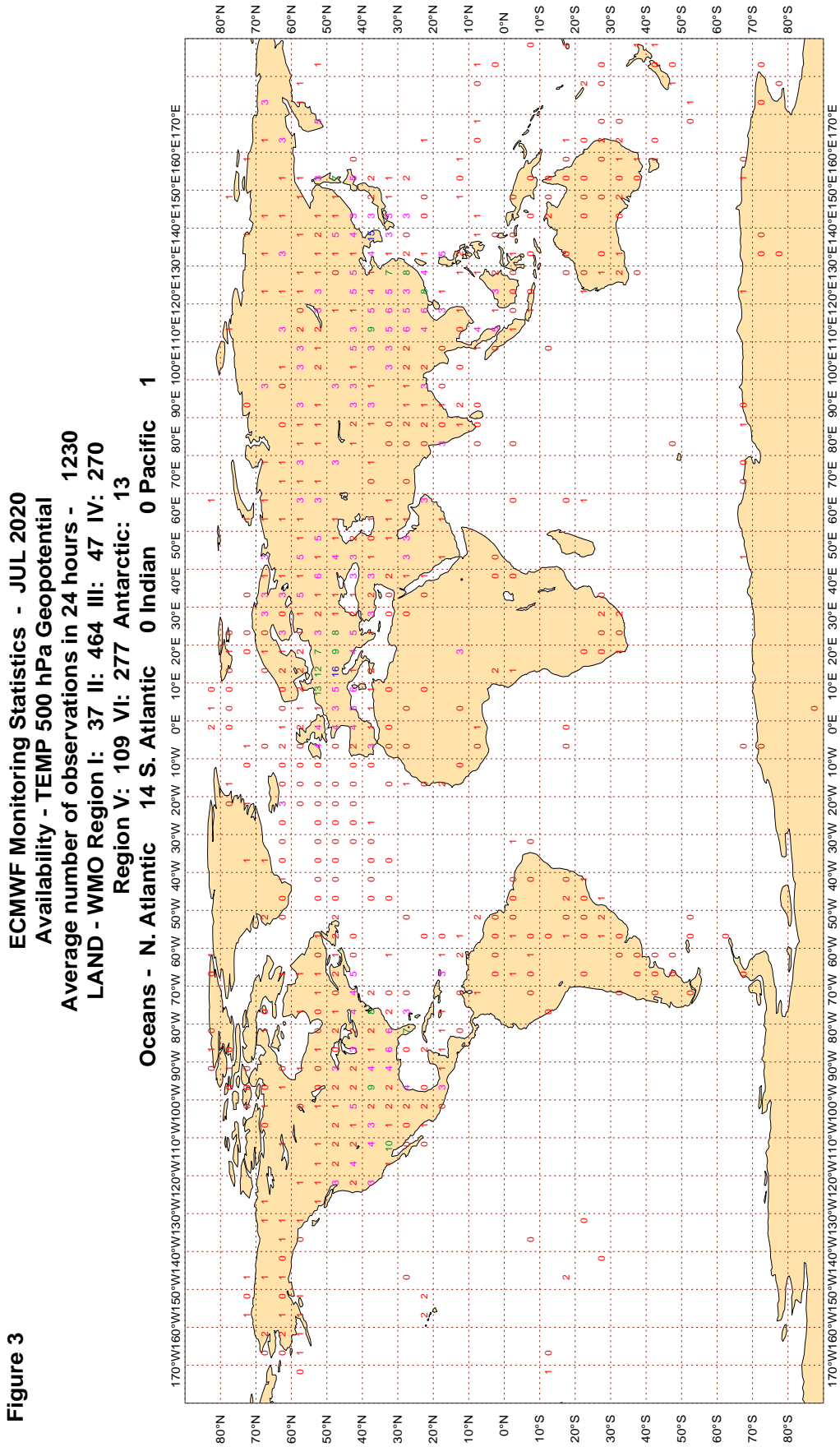


3.2.2 Figure 2 - Availability - DRIFTER PRESSURE

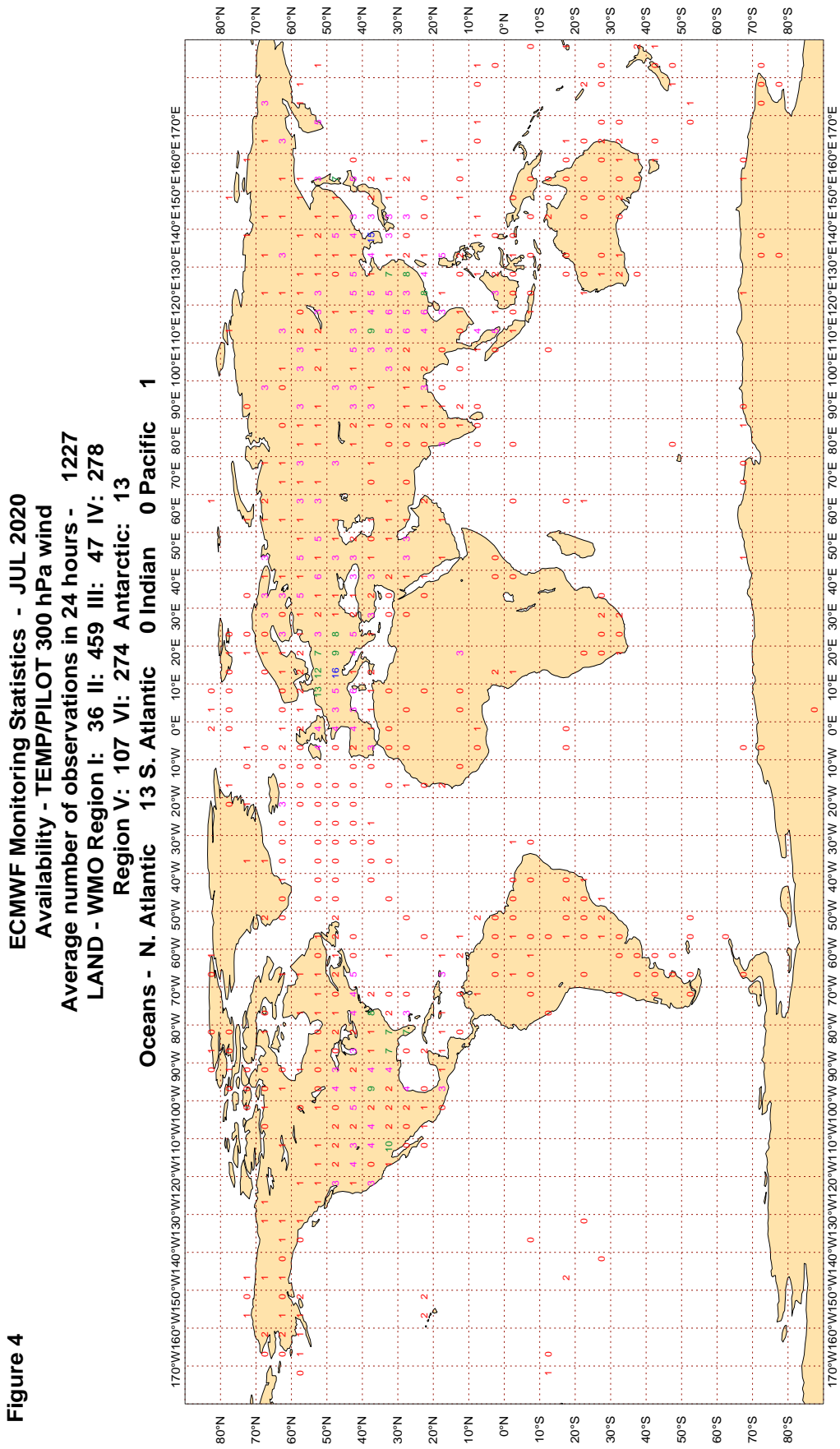
Figure 2



3.2.3 Figure 3 - Availability - TEMP 500 hPa geopotential



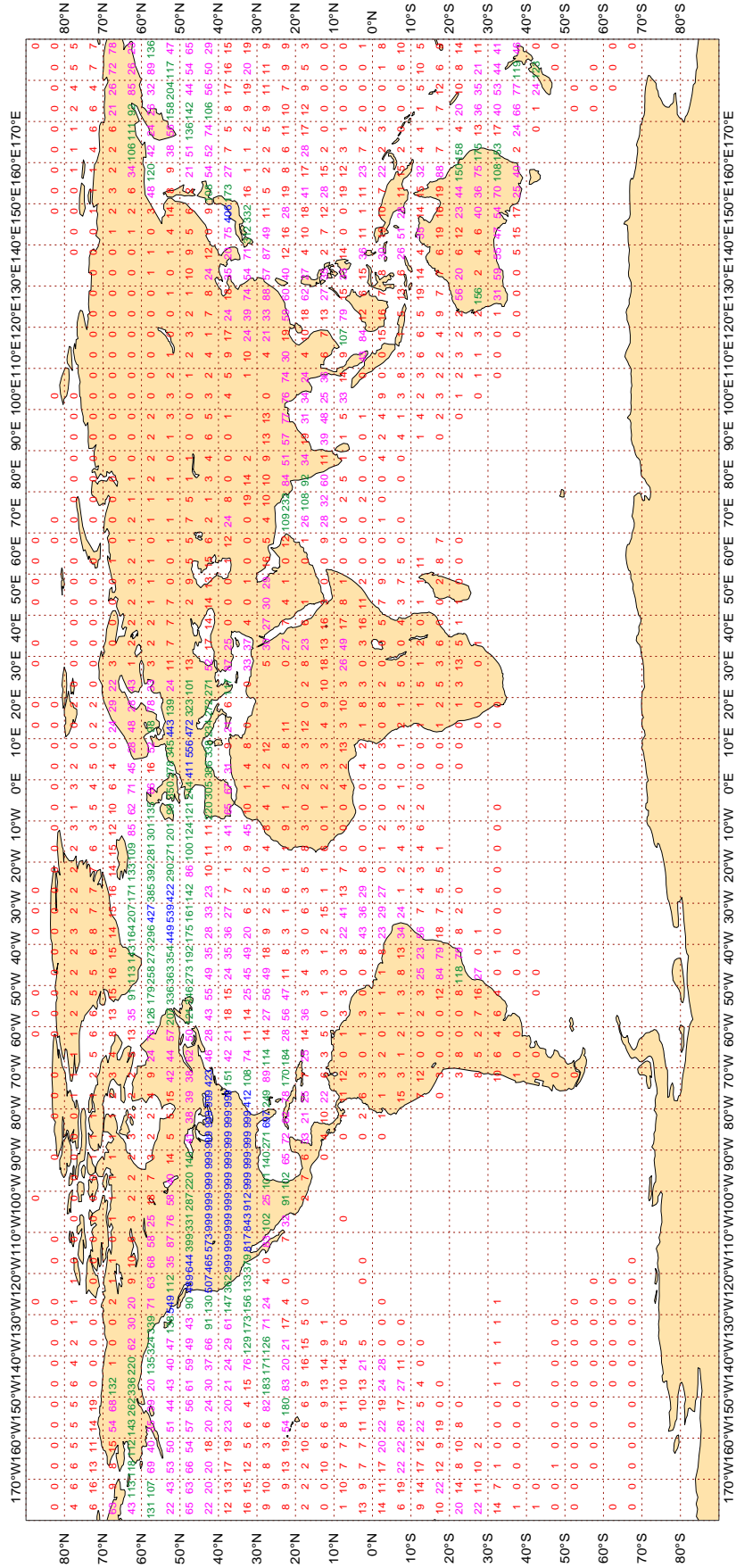
3.2.4 Figure 4 - Availability - TEMP/PILOT 300 hPa wind



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

Figure 5

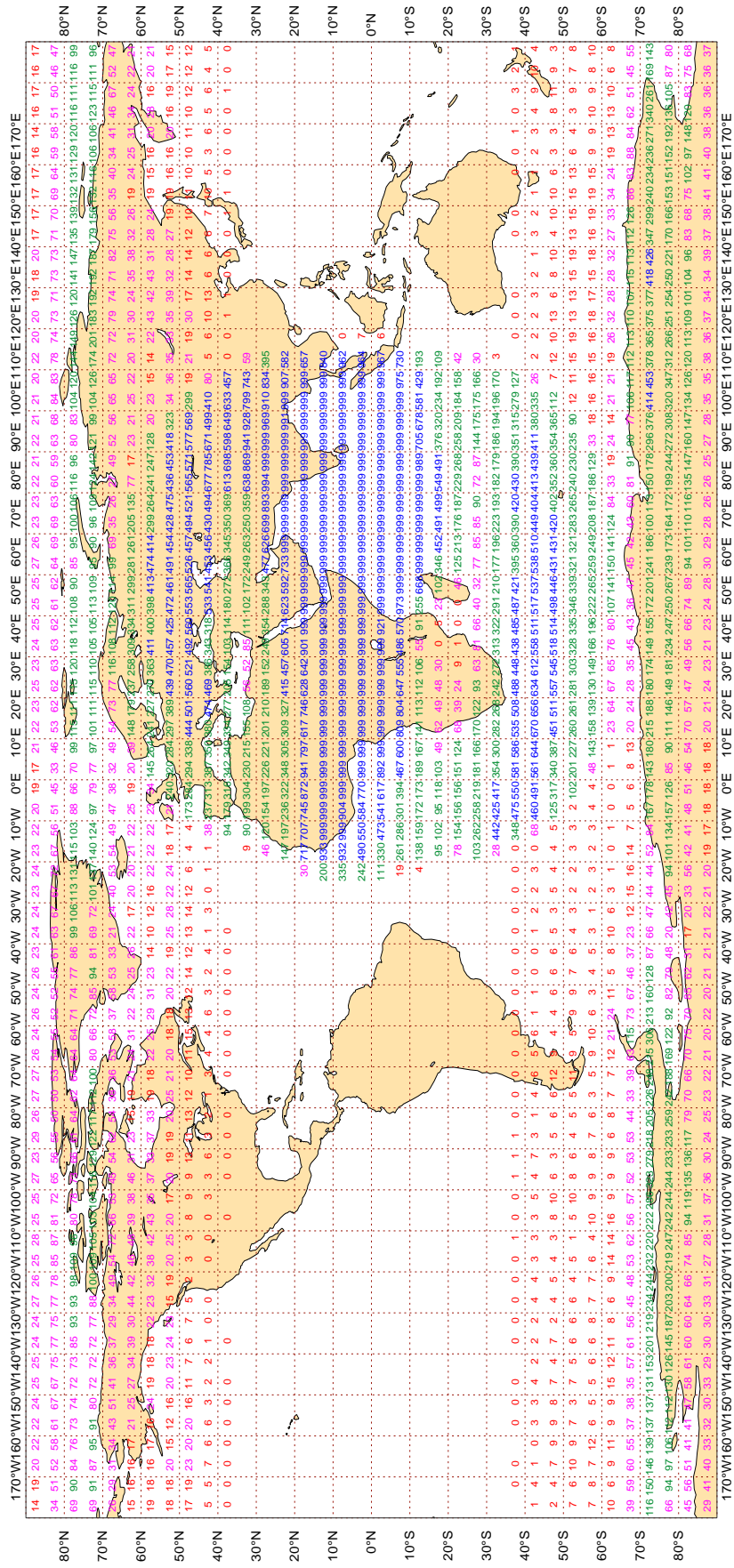
ECMWF Monitoring Statistics - JUL 2020
Availability - Aircraft winds 300-150 hPa
Average number of observations in 24 hours - 89296



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

Figure 6

ECMWF Monitoring Statistics - JUL 2020
Availability - AMV winds 400-150 hPa
Average number of observations in 24 hours - 434637



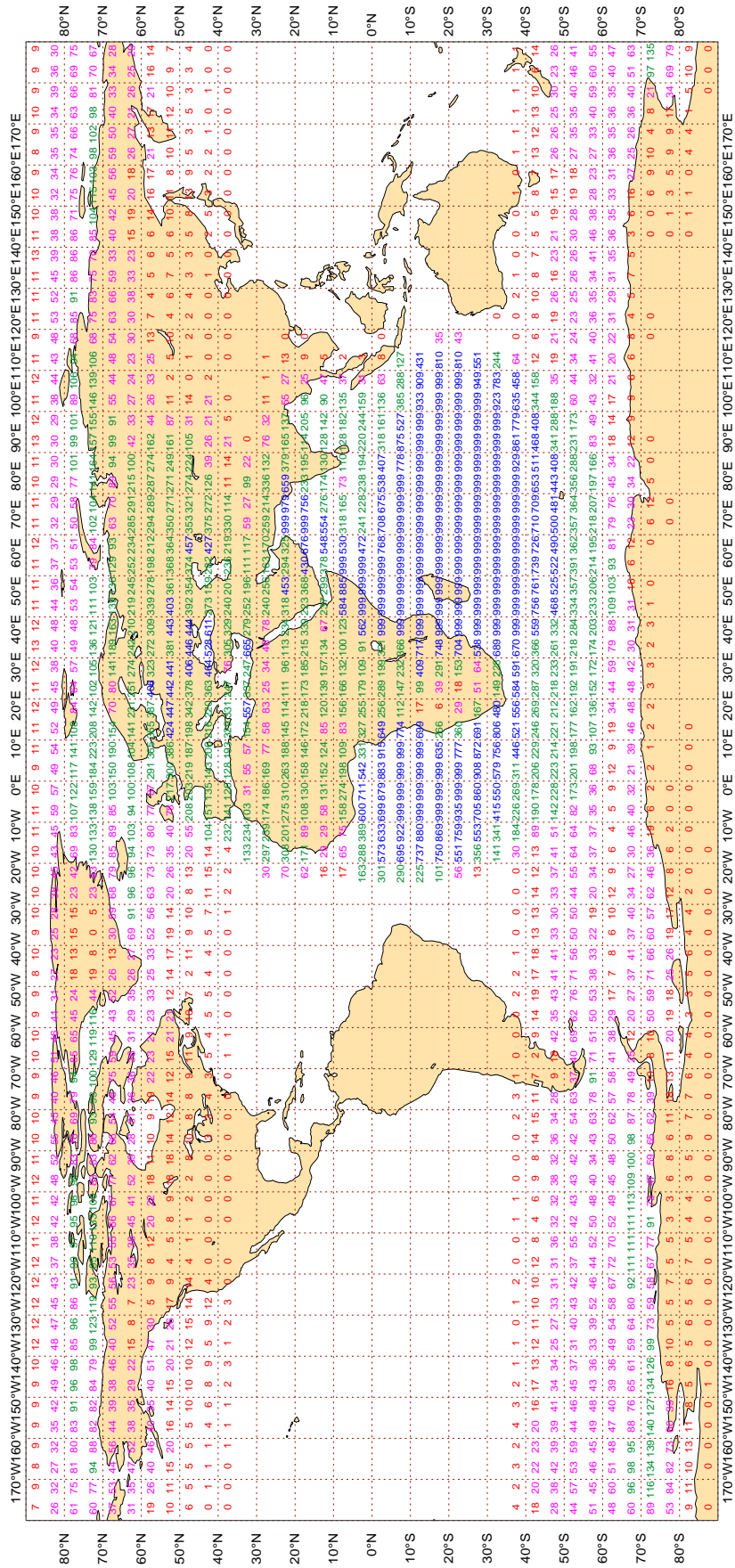
Magics 3.0.4 (64 bit)



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

Figure 7

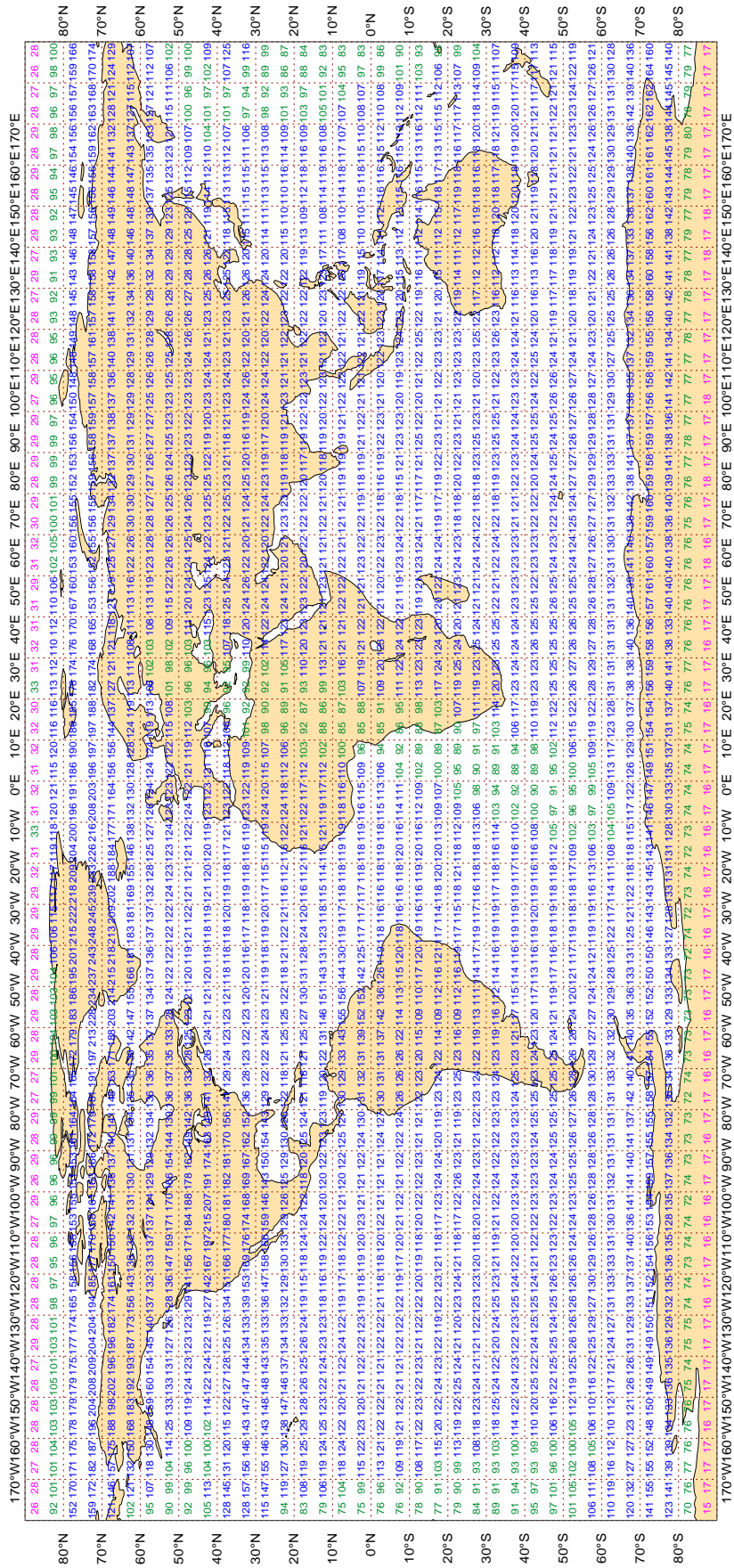
ECMWF Monitoring Statistics - JUL 2020
Availability - AMV winds 1000-700 hPa
Average number of observations in 24 hours - 354956



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

Figure 8

ECMWF Monitoring Statistics - JUL 2020
Availability - NOAA15 ATOVS : AMSU-A
Average number of observations in 24 hours - 310851



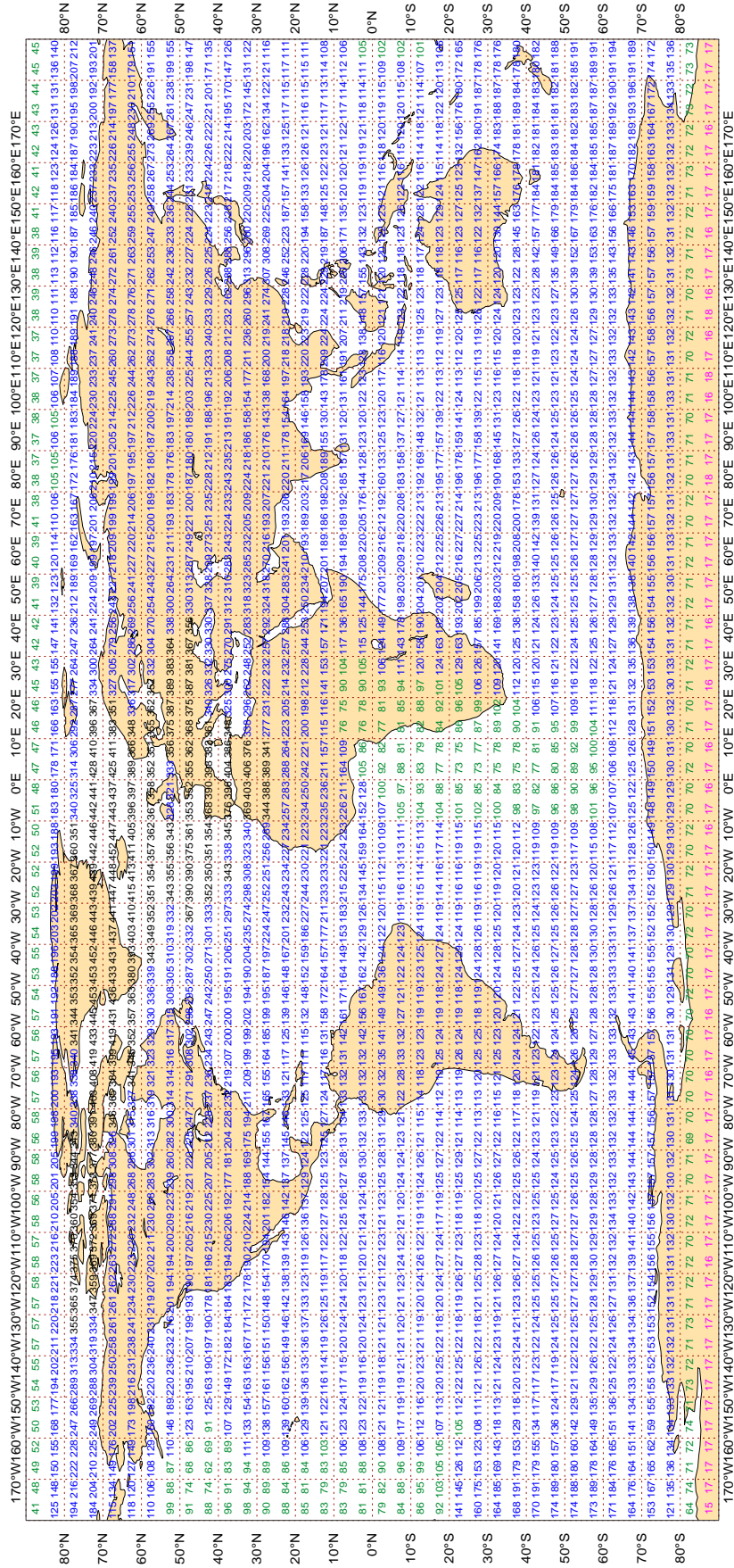
Magics 3.0.4 (64 bit)



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

Figure 9.1

ECMWF Monitoring Statistics - JUL 2020
Availability - NOAA18 ATOVS : AMSU-A
Average number of observations in 24 hours - 436656



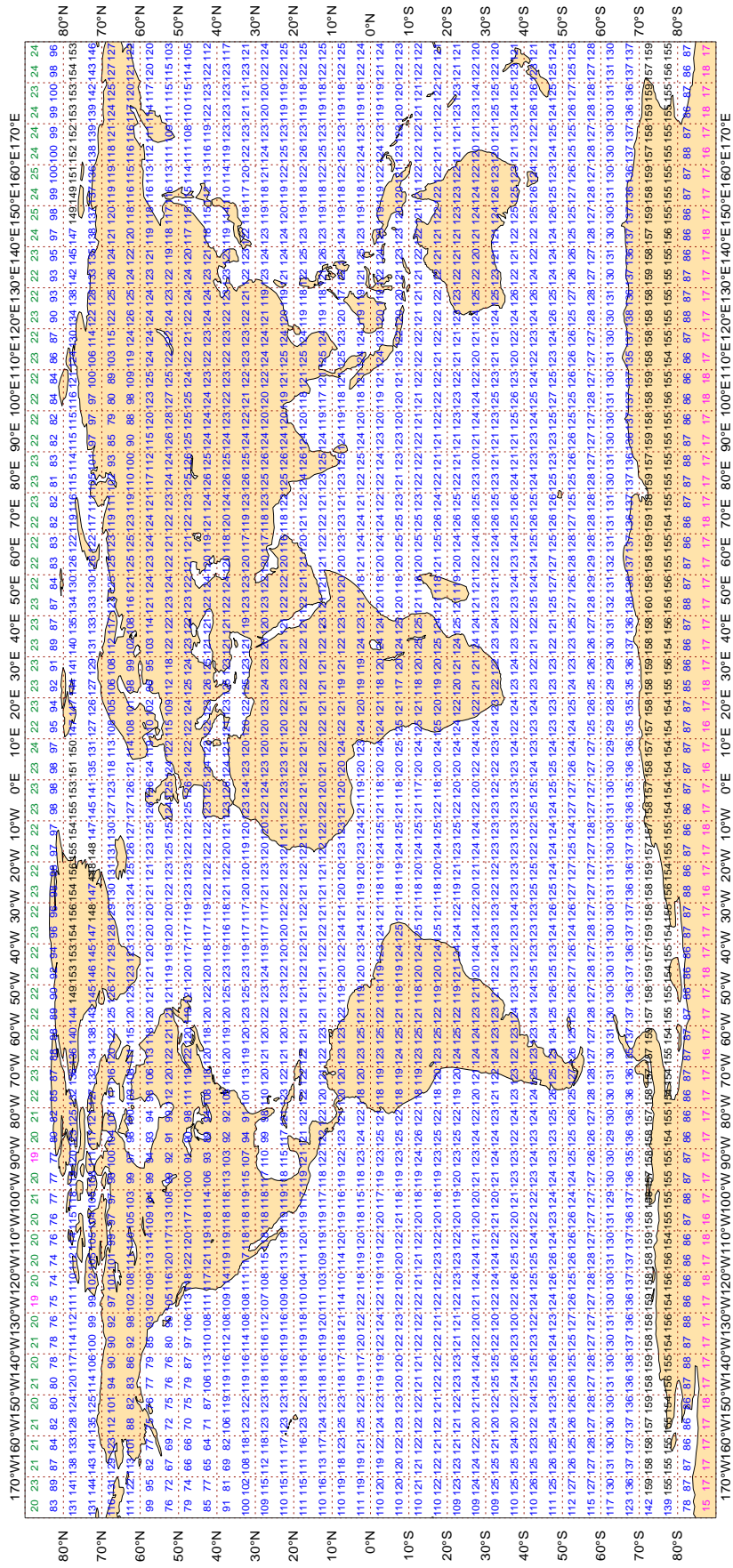
Magics 3.0.4 (64 bit)



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

Figure 9.2

ECMWF Monitoring Statistics - JUL 2020
Availability - AQUA ATOVS : AMSU-A
Average number of observations in 24 hours - 301269



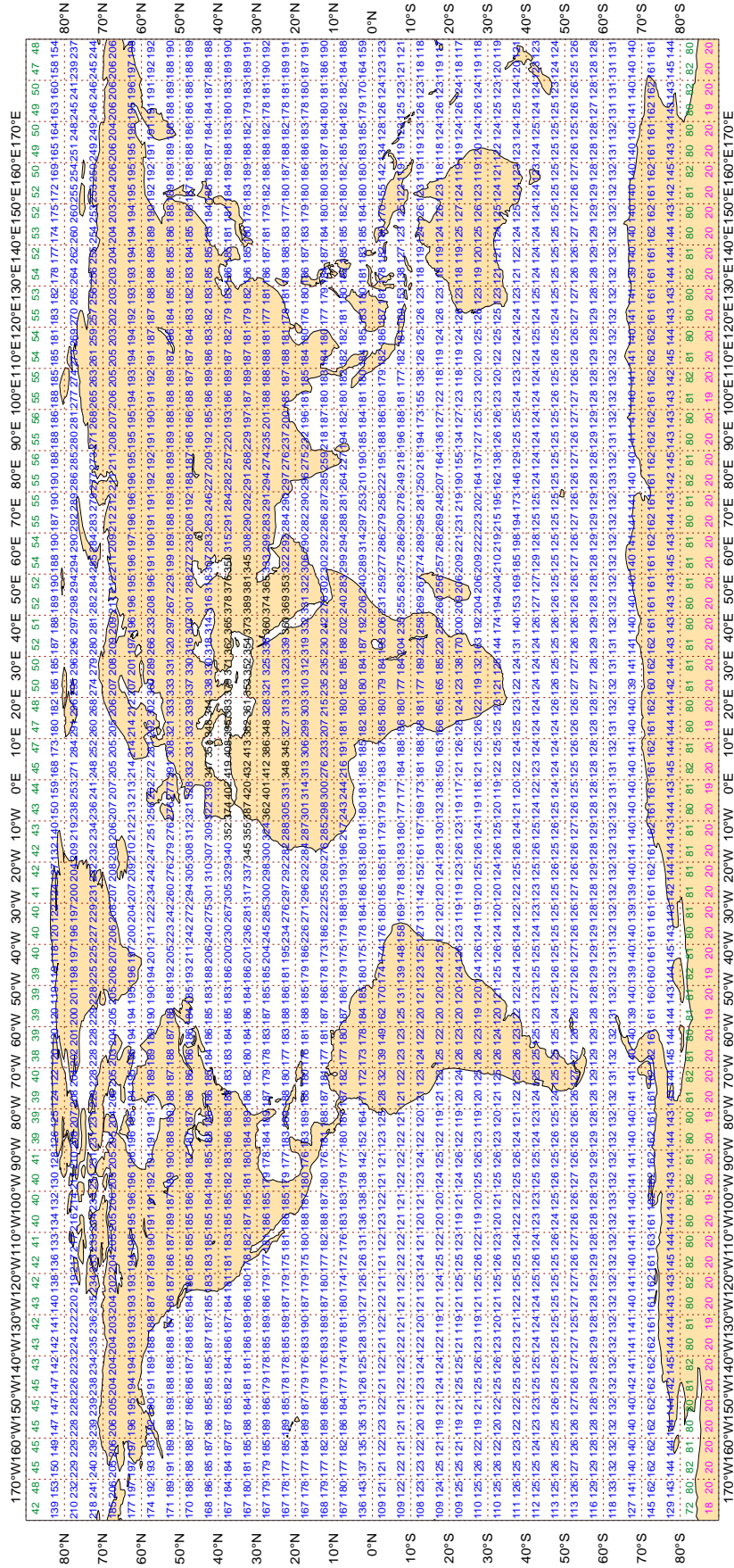
Magics 3.0.4 (64 bit)



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

Figure 9.3

ECMWF Monitoring Statistics - JUL 2020
Availability - METOP ATOVS : AMSU-A
Average number of observations in 24 hours - 435380



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 : JUL 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
2FRK7	99	P	SUR	28	0	2.8	5.9	6.5
3FAE4	99	P	SUR	63	0	1.2	3.5	3.7
3FZO8	99	P	SUR	37	0	2.2	-3.3	4.0
44030	99	P	SUR	59	0	0.6	6.2	6.2
44058	99	P	SUR	165	0	0.7	3.2	3.3
4XFC	99	P	SUR	15	0	0.8	7.6	7.6
7KCR	99	P	SUR	19	3	1.8	5.8	6.1
8PSH	99	P	SUR	106	0	0.6	3.9	3.9
9HA3667	99	P	SUR	57	0	0.6	8.4	8.4
9HA4330	99	P	SUR	67	0	1.5	-3.4	3.7
9V2171	99	P	SUR	102	0	0.7	-3.4	3.5
9V5245	99	P	SUR	18	0	3.2	6.4	7.2
9V6220	99	P	SUR	22	1	1.0	12.3	12.3
9V7632	99	P	SUR	20	3	3.4	9.7	10.2
9V9287	99	P	SUR	62	1	4.4	5.0	6.6
9V9288	99	P	SUR	45	0	3.1	3.1	4.4
9V9631	99	P	SUR	44	0	0.8	-3.6	3.7
9VHK7	99	P	SUR	27	2	1.5	9.1	9.2
ATVK	99	P	SUR	122	0	0.6	3.6	3.6
AUBC	99	P	SUR	26	0	2.5	7.6	8.0
C6AX3	99	P	SUR	23	0	1.0	-4.1	4.2
C6DQ4	99	P	SUR	38	0	2.3	-4.8	5.3
C6YM7	99	P	SUR	53	0	2.5	5.3	5.9
CFL24	99	P	SUR	83	16	8.5	2.1	8.8
D5GB9	99	P	SUR	49	0	0.9	3.4	3.5
D5SU3	99	P	SUR	28	0	2.0	-4.4	4.8
H3VS	99	P	SUR	79	0	1.1	-4.2	4.3
KLBO	99	P	SUR	17	0	1.2	-3.1	3.4
KLUX	99	P	SUR	34	1	0.6	3.7	3.7
KRAU	99	P	SUR	35	0	0.7	3.3	3.4
KRIH	99	P	SUR	79	0	0.5	-3.1	3.1
LAJS6	99	P	SUR	27	0	1.0	3.8	3.9

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

WMO IDENT	OBS TIME	ELM	LEVEL	NUM OBS	NUM GROSS	SD	BIAS	RMS
LAPD7	99	P	SUR	19	0	1.3	6.3	6.5
LAQM7	99	P	SUR	59	0	1.6	4.1	4.4
LAZV5	99	P	SUR	16	0	0.6	3.1	3.2
MFPB7	99	P	SUR	25	0	1.2	6.6	6.7
MKKZ7	99	P	SUR	53	0	2.7	4.1	4.9
OWYZ2	99	P	SUR	18	0	5.0	5.3	7.3
OWZW2	99	P	SUR	37	0	1.3	4.9	5.0
OZ2049	99	P	SUR	53	0	0.5	-7.0	7.0
PBGJ	99	P	SUR	29	0	1.6	-6.2	6.4
S6DU6	99	P	SUR	20	0	1.2	6.4	6.5
UAEV	99	P	SUR	34	0	0.7	3.0	3.1
V7FF3	99	P	SUR	25	0	0.6	10.0	10.0
V7HH2	99	P	SUR	20	0	3.0	3.6	4.7
VRCI9	99	P	SUR	36	0	1.4	3.5	3.8
VRDJ3	99	P	SUR	148	0	1.2	-3.2	3.4
VRFX2	99	P	SUR	17	0	1.5	-3.8	4.1
VRGH3	99	P	SUR	28	0	1.6	6.0	6.2
VRGL4	99	P	SUR	17	0	1.3	3.8	4.0
VRJS2	99	P	SUR	40	1	0.6	-5.2	5.3
VRLJ2	99	P	SUR	45	0	0.8	-5.8	5.8
VRNL2	99	P	SUR	21	0	2.3	3.4	4.2
VROX5	99	P	SUR	22	0	2.4	5.6	6.1
VRPY5	99	P	SUR	30	1	2.5	-3.1	4.0
VRRI4	99	P	SUR	121	0	1.7	5.8	6.0
VRWE8	99	P	SUR	16	0	0.7	-4.3	4.3
VTWS	99	P	SUR	104	104	0.0	0.0	0.0
WAZV	99	P	SUR	29	0	2.1	4.0	4.5
WDC6925	99	P	SUR	20	0	0.5	3.2	3.2
WDDI	99	P	SUR	68	0	0.5	3.7	3.8
WDJ3192	99	P	SUR	41	0	3.6	6.0	7.0
WECH	99	P	SUR	25	0	0.6	3.5	3.6
WPTC	99	P	SUR	26	0	1.8	3.1	3.6

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 : JUL 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
42360	99	SPEED	SUR	83	0	0	2.4	-4.3	4.9

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 : JUL 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	144	0	0	30.5	-67.8	74.3
45014	99	DIRN	SUR	82	0	0	85.7	-99.4	131.2
45025	99	DIRN	SUR	88	0	0	73.6	8.5	74.1
45169	99	DIRN	SUR	56	0	0	40.1	-47.0	61.8
45175	99	DIRN	SUR	110	0	0	45.4	-41.6	61.6
45188	99	DIRN	SUR	32	0	0	163.9	7.4	164.0
46118	99	DIRN	SUR	21	0	0	42.8	-32.5	53.8

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 : JUL 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
1501584	99	P	SUR	18	-64	437	130	3.8	-0.9	4.0
1601582	99	P	SUR	-33	60	162	3	3.9	6.0	7.2
1701546	99	P	SUR	-37	85	696	0	1.6	5.3	5.5
2501539	99	P	SUR	73	159	1490	1375	3.2	12.8	13.2
2501540	99	P	SUR	73	174	745	745	0.0	0.0	0.0
2501542	99	P	SUR	68	-175	95	0	4.2	7.8	8.9
2501647	99	P	SUR	74	-15	732	230	4.8	4.0	6.2
2501662	99	P	SUR	75	-173	745	0	2.2	10.2	10.4
2501668	99	P	SUR	83	164	745	592	2.2	-9.2	9.5
3101546	99	P	SUR	-43	22	103	1	3.3	8.5	9.2
3101567	99	P	SUR	-25	-42	1049	1049	0.0	0.0	0.0
4100729	99	P	SUR	32	-29	743	0	1.3	4.8	5.0
4101594	99	P	SUR	13	-60	23	0	0.4	-4.2	4.2
4101595	99	P	SUR	18	-65	23	23	0.0	0.0	0.0
4101599	99	P	SUR	50	-6	23	0	0.0	-4.1	4.1
4101620	99	P	SUR	53	-5	23	0	0.0	-5.0	5.0
4400030	99	P	SUR	43	-70	356	0	0.6	6.1	6.2
44030	99	P	SUR	43	-70	653	0	0.6	6.2	6.2
4701658	99	P	SUR	72	-95	743	0	3.8	7.2	8.2
4801670	99	P	SUR	79	-165	82	0	2.3	7.8	8.2
4801674	99	P	SUR	71	-159	654	605	8.2	-5.7	10.0
5601595	99	P	SUR	-19	105	743	0	1.3	4.0	4.2
6102501	99	P	SUR	32	25	21	21	0.0	0.0	0.0
6102504	99	P	SUR	36	1	23	0	0.5	-13.4	13.4
6202641	99	P	SUR	16	-61	23	0	0.0	-7.1	7.1

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 : JUL 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
23456	99	SPEED	SUR	18	67	240	0	0	2.6	-6.0	6.6
3101567	99	SPEED	SUR	-25	-42	1049	2	0	3.2	7.9	8.5
5300041	99	SPEED	SUR	-8	100	4138	0	0	1.9	-6.1	6.4
6101005	99	SPEED	SUR	38	26	143	0	0	2.3	-9.7	10.0

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

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

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

TIME = 99 => AVERAGE OF ALL OBSERVATIONS

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
1400047	99	DIRN	SUR	-4	57	221	0	0	154.8	-41.8	160.4
1500008	99	DIRN	SUR	-20	-10	241	0	0	17.1	31.6	35.9
2200189	99	DIRN	SUR	35	130	526	2	0	104.8	-33.9	110.1
23091	99	DIRN	SUR	18	89	187	0	0	16.0	-30.0	34.0
23099	99	DIRN	SUR	13	80	189	0	0	65.7	14.7	67.3
23451	99	DIRN	SUR	15	69	235	0	0	12.2	-30.9	33.2
23452	99	DIRN	SUR	12	69	239	0	0	28.3	-54.3	61.2
23454	99	DIRN	SUR	10	73	214	0	0	31.3	37.6	48.9
23456	99	DIRN	SUR	18	67	61	0	0	71.6	24.0	75.5
23460	99	DIRN	SUR	7	88	204	0	0	24.3	21.7	32.6
23491	99	DIRN	SUR	12	93	78	0	0	20.1	40.8	45.5
23497	99	DIRN	SUR	11	72	212	5	0	147.9	-36.9	152.4
4100024	99	DIRN	SUR	34	-78	489	0	0	27.2	-23.0	35.6
41024	99	DIRN	SUR	34	-79	906	0	0	26.7	-24.6	36.3
4400072	99	DIRN	SUR	37	-76	2540	0	0	28.6	-69.0	74.7
44072	99	DIRN	SUR	37	-76	1629	0	0	30.2	-68.7	75.0
44137	99	DIRN	SUR	42	-62	970	0	0	16.9	-25.1	30.3
44139	99	DIRN	SUR	44	-57	817	0	0	25.8	-26.3	36.8
44150	99	DIRN	SUR	43	-64	993	0	0	14.6	-29.1	32.6
4500004	99	DIRN	SUR	48	-87	27	0	0	9.7	29.6	31.1
4500013	99	DIRN	SUR	43	-88	751	0	0	26.5	25.2	36.5
4500014	99	DIRN	SUR	45	-88	517	0	0	75.6	-109.9	133.4
4500025	99	DIRN	SUR	47	-88	1344	0	0	77.4	1.8	77.4
4500169	99	DIRN	SUR	42	-82	1256	0	0	39.1	-41.8	57.2
4500175	99	DIRN	SUR	46	-85	1862	0	0	58.0	-36.8	68.7
4500188	99	DIRN	SUR	44	-73	77	0	0	147.0	-86.7	170.7
45013	99	DIRN	SUR	43	-88	1032	0	0	28.2	25.1	37.8
45014	99	DIRN	SUR	45	-88	687	0	0	75.7	-110.5	134.0
45025	99	DIRN	SUR	47	-88	763	0	0	76.3	4.0	76.4
45169	99	DIRN	SUR	42	-82	858	0	0	38.6	-43.5	58.2
45175	99	DIRN	SUR	46	-85	904	0	0	57.0	-36.6	67.8

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

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
45188	99	DIRN	SUR	44	-73	282	0	0	163.9	-30.4	166.7
4600061	99	DIRN	SUR	60	-147	393	0	0	28.0	-20.8	34.9
4600087	99	DIRN	SUR	48	-125	414	0	0	25.2	25.7	36.0
4600118	99	DIRN	SUR	49	-123	134	0	0	44.9	-23.3	50.6
46087	99	DIRN	SUR	49	-125	335	0	0	22.8	24.6	33.6
5300040	99	DIRN	SUR	-8	95	672	0	0	160.4	53.6	169.1
5300041	99	DIRN	SUR	-8	100	303	0	0	44.3	77.8	89.6
5300056	99	DIRN	SUR	-5	95	692	0	0	137.4	90.9	164.8
53040	99	DIRN	SUR	-8	95	665	0	0	159.4	55.5	168.8
53056	99	DIRN	SUR	-5	95	692	0	0	139.0	87.3	164.2
6101007	99	DIRN	SUR	36	25	200	0	0	43.1	50.0	66.0
6200199	99	DIRN	SUR	40	-9	385	0	0	135.3	100.5	168.5
6301004	99	DIRN	SUR	72	20	587	0	0	12.0	28.9	31.3

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 : JUL 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	29	0	15.3	77.1	78.6
01400	12	Z	1000	57	3	30	0	4.0	81.2	81.3
24343	12	Z	200	67	123	30	3	80.8	51.3	95.7
24343	00	Z	250	67	123	30	3	76.1	70.1	103.5
40437	12	Z	925	25	47	29	1	5.7	32.1	32.6
42623	00	Z	850	25	94	17	0	29.3	37.9	47.9
43128	00	Z	400	17	78	13	3	40.9	50.8	65.2
61687	12	Z	1000	14	-14	19	0	4.0	-40.3	40.5
76394	12	Z	200	26	-100	11	0	101.4	144.5	176.5
87623	12	Z	400	-37	-64	18	0	67.1	38.9	77.6
JNKN7J	12	Z	1000	40	-71	11	0	4.1	41.0	41.2

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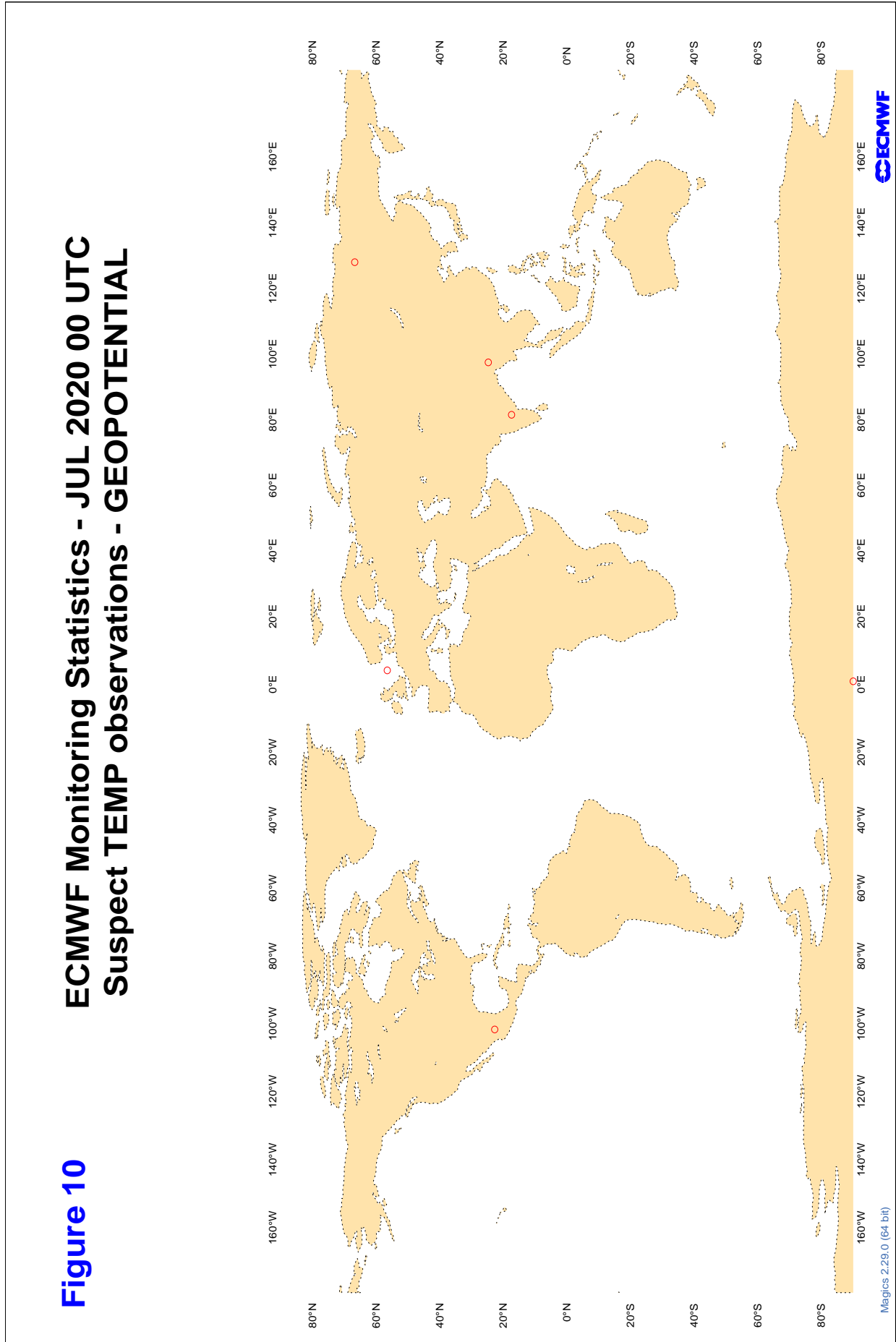
3.2.20 Table 9 - Suspect radiosondes: Wind direction (degrees)

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

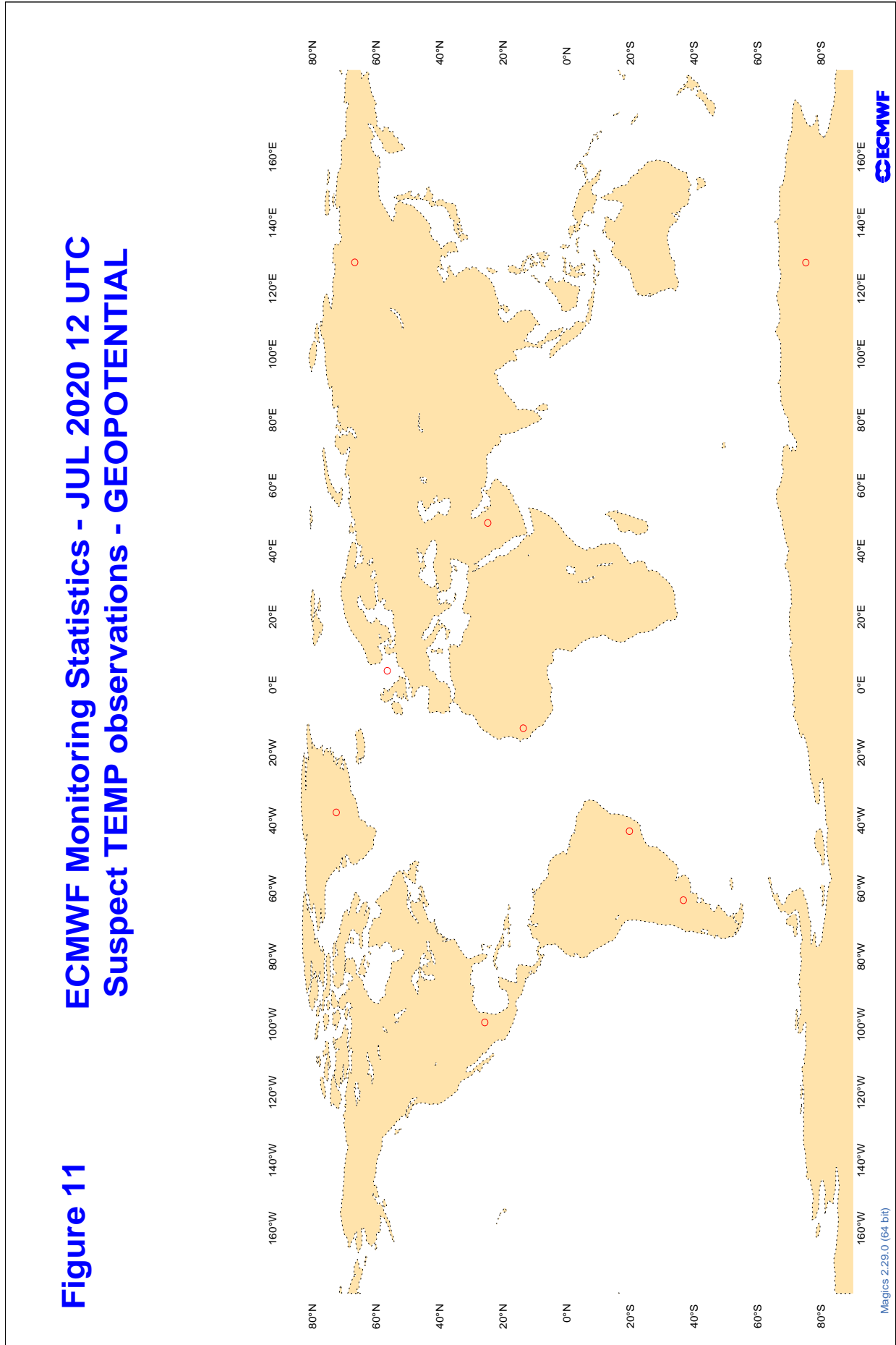
SELECTION CRITERIA: OBSERVED/FORECAST WIND SPEEDS \geq 5 M/S
 NO. OF OBSERVATIONS \geq 5, AND,
 ABSOLUTE BIAS \geq 10 DEGREES, WITH
 STANDARD DEVIATION $<$ 30 DEGREES, AND,
 VERTICAL SPREAD $<$ 10 DEGREES
 (AVERAGE BETWEEN 500 AND 150 HPA)

WMO IDENT	OBS TIME	ELM	LAT	LONG	NUM OBS	BIAS	MAX SPREAD	SD
48565	00	DD	8	98	25	13.8	5.0	13.3
59431	12	DD	23	109	20	-10.3	6.8	12.6

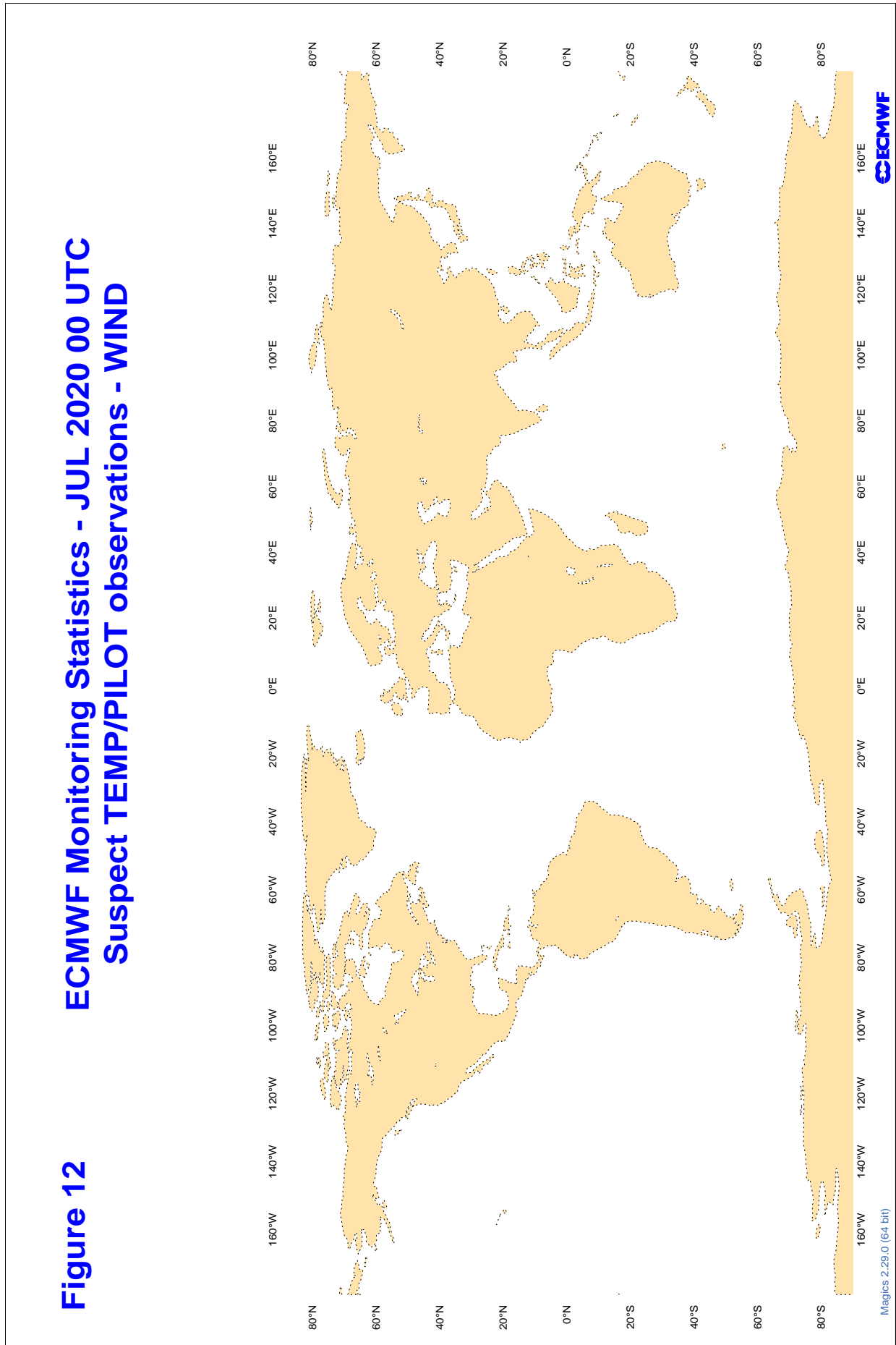
3.2.21 Figure 10 - Suspect TEMP observations - geopotential : 00 UTC



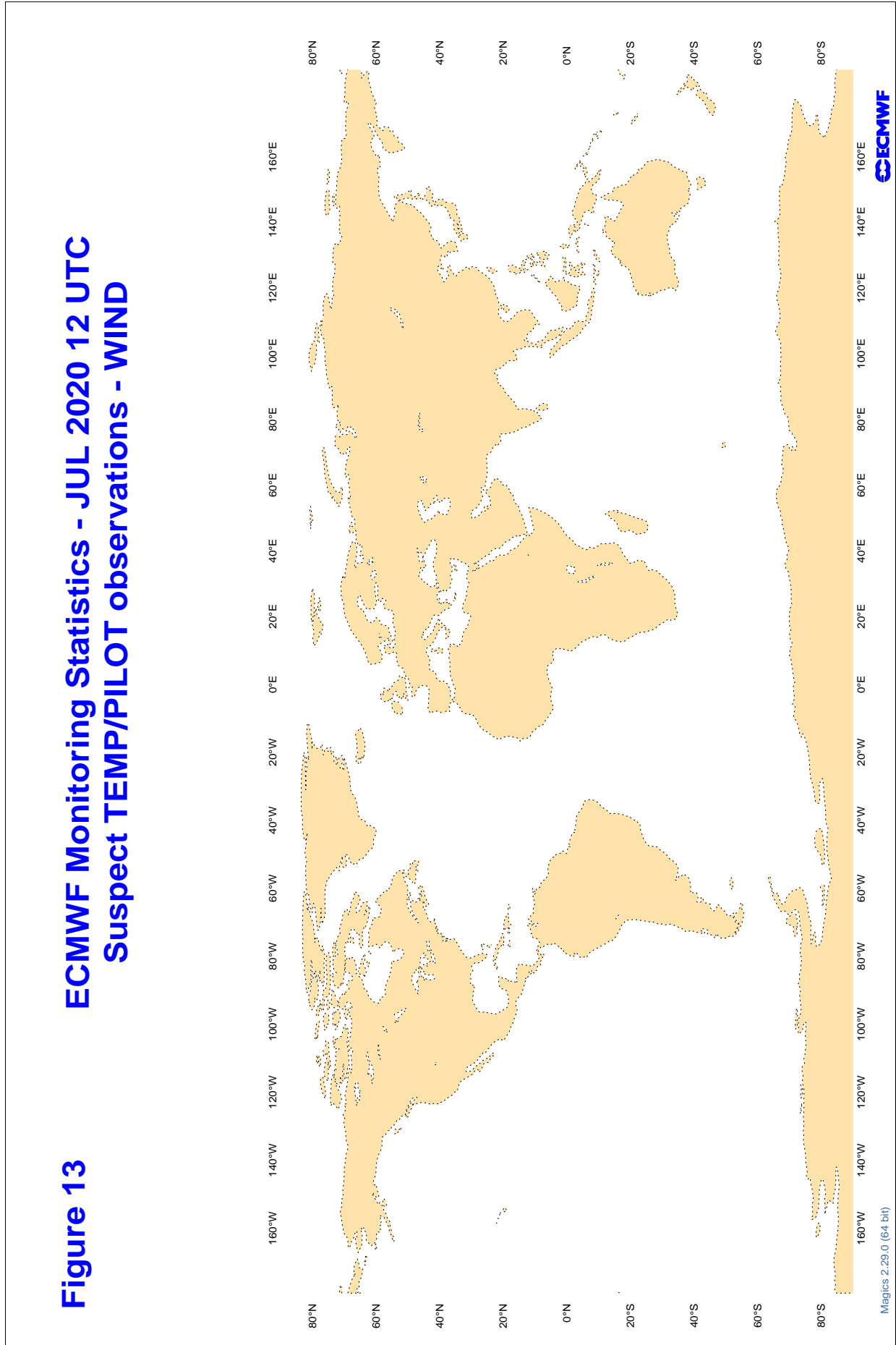
3.2.22 Figure 11 - Suspect TEMP observations - geopotential : 12 UTC



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 : JUL 2020
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
7JUNA4	12	Z	100	3	51.7	51.7
7JUNA4	00	Z	100	4	90.7	84.8
ASDE09	12	Z	100	14	43.5	13.5
DBLK	12	Z	100	29	6.5	-5.3
DBLK	00	Z	100	30	9.5	-7.6
FPUW5G	12	Z	100	12	5.0	2.8
HTXUH4	12	Z	100	14	6.5	-2.3
HTXUH4	00	Z	100	17	8.6	-4.5
JGQH	00	Z	100	0	0.0	0.0
JGQH	12	Z	100	0	0.0	0.0
JNKN7J	00	Z	100	9	27.8	26.2
JNKN7J	12	Z	100	10	68.2	64.2
KJJF9X	00	Z	100	5	8.3	6.8
KJJF9X	12	Z	100	8	10.9	4.7
KMPLHP	00	Z	100	3	77.8	60.3
KMPLHP	12	Z	100	2	9.2	9.2
LRQE3	12	Z	100	11	16.4	14.5
LRQE3	00	Z	100	12	12.7	0.3
VKB4L5	12	Z	100	8	37.4	37.1
VKB4L5	00	Z	100	7	38.7	37.6
WDK38H	12	Z	100	3	13.1	-13.0
XKQLWQ	12	Z	100	16	27.8	26.0
XQFJRG	00	Z	100	5	15.5	-15.0
XQFJRG	12	Z	100	4	16.5	4.7
YLV96W	00	Z	100	5	47.9	46.3
YLV96W	12	Z	100	4	53.0	47.4
ZVQEQC	12	Z	100	18	8.5	5.6

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

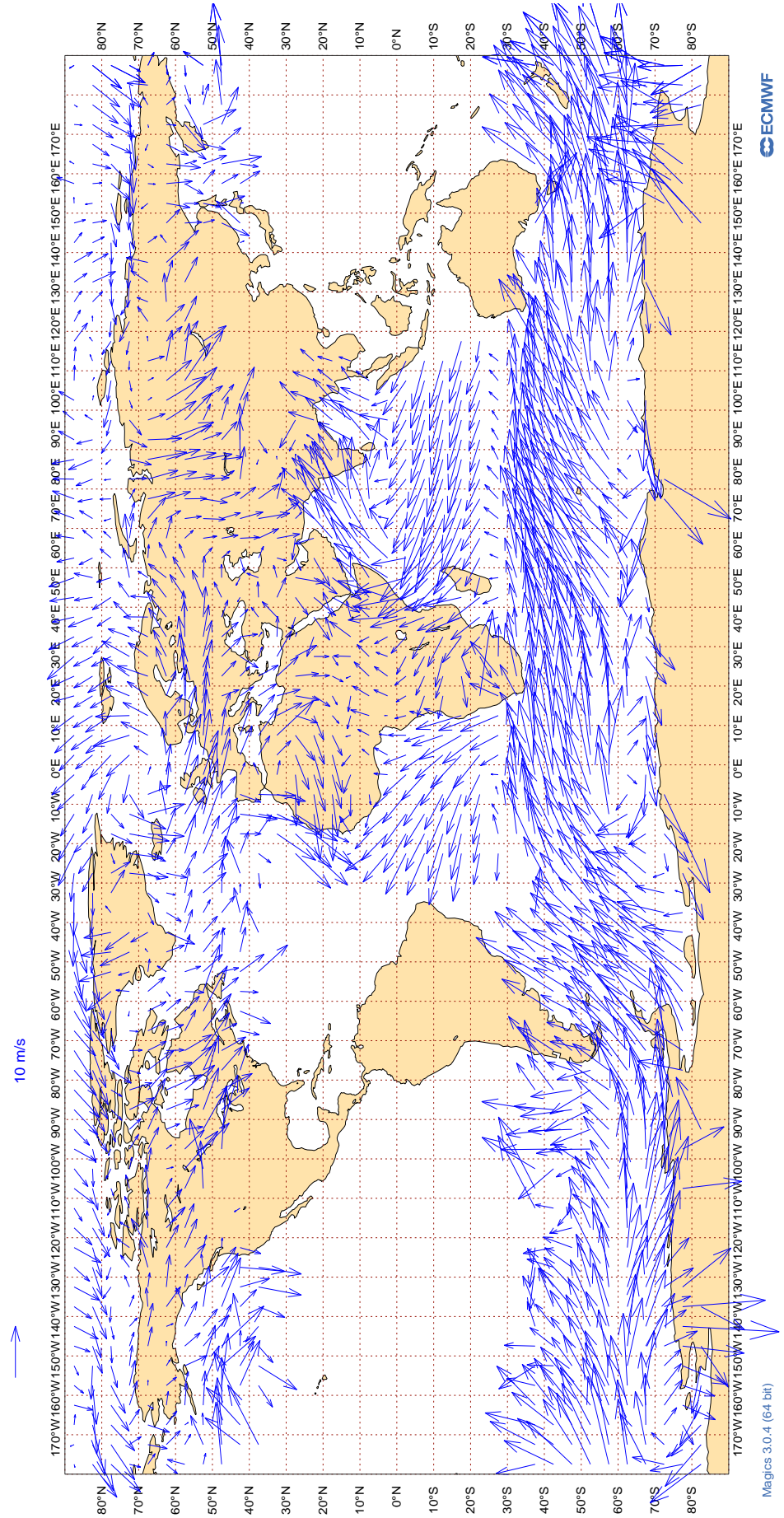
RADIOSONDE MONITORING STATISTICS (SHIPS)

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

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
7JUNA4	12	V	100	1	4.0	4.0	0.6
7JUNA4	00	V	100	2	1.7	1.1	0.4
ASDE09	12	V	100	14	2.3	0.8	-0.1
DBLK	12	V	100	29	2.4	-0.1	0.7
DBLK	00	V	100	28	2.4	0.0	0.6
FPUW5G	12	V	100	12	1.8	0.6	0.6
HTXUH4	12	V	100	14	1.7	-0.1	0.0
HTXUH4	00	V	100	17	2.0	0.5	0.2
JGQH	00	V	100	0	0.0	0.0	0.0
JGQH	12	V	100	0	0.0	0.0	0.0
JNKN7J	00	V	100	9	2.5	0.7	0.5
JNKN7J	12	V	100	9	2.7	0.3	0.9
KJJF9X	00	V	100	5	2.7	0.5	-1.6
KJJF9X	12	V	100	8	3.0	-0.5	0.5
KMPLHP	00	V	100	3	1.0	-0.3	-0.9
KMPLHP	12	V	100	2	9.2	-6.9	0.8
LRVQE3	12	V	100	11	2.7	0.4	0.3
LRVQE3	00	V	100	12	2.5	-0.2	0.0
VKB4L5	12	V	100	8	3.5	-1.3	0.0
VKB4L5	00	V	100	7	3.7	0.8	-1.2
WDK38H	12	V	100	3	1.9	-1.2	-0.3
XKQLWQ	12	V	100	16	2.8	1.0	0.0
XQFJRG	00	V	100	5	2.2	0.9	-0.9
XQFJRG	12	V	100	4	1.8	0.4	-0.1
YLV96W	00	V	100	4	3.7	-1.7	-1.0
YLV96W	12	V	100	4	2.9	0.8	0.7
ZVQEQC	12	V	100	18	3.3	0.3	0.4

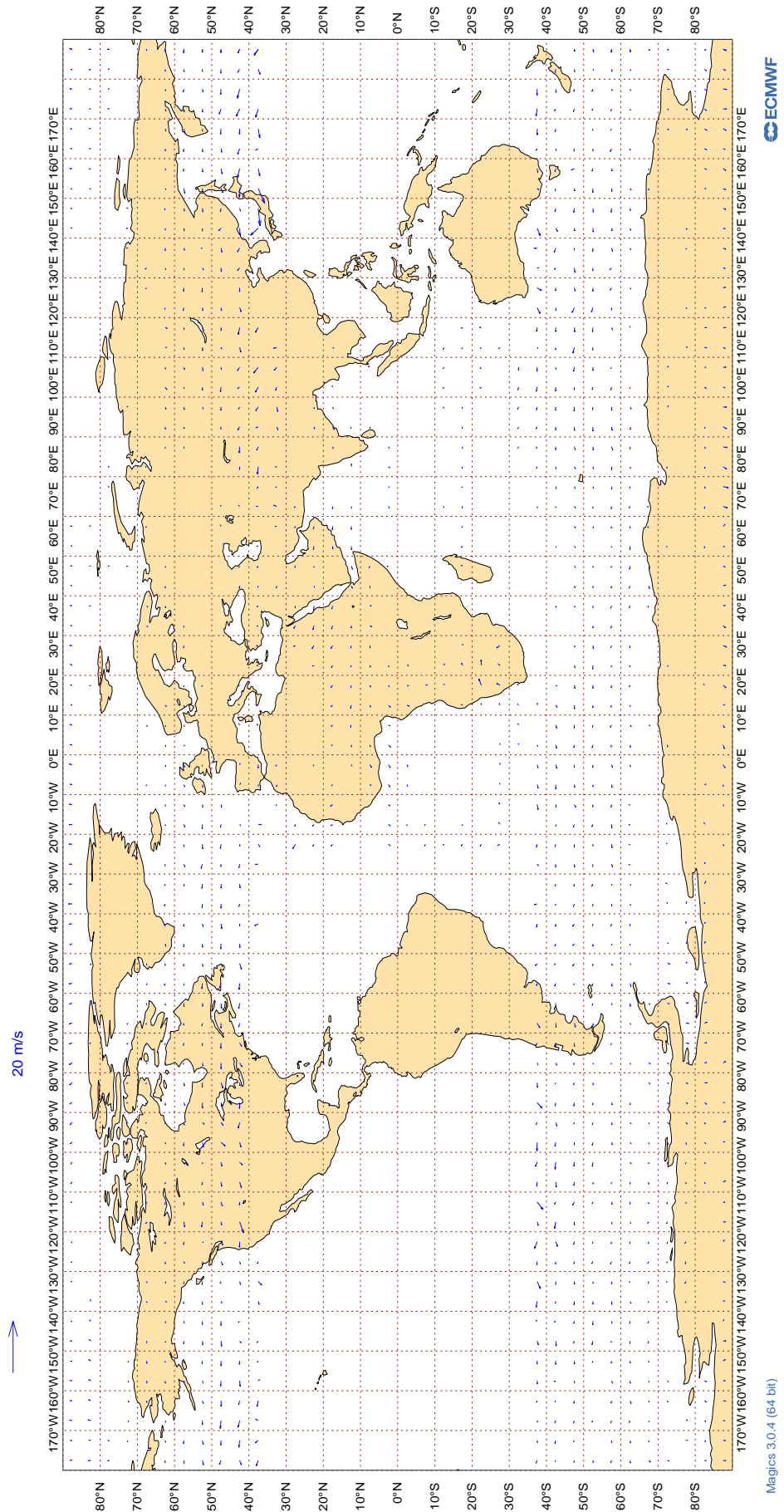
3.2.27 Figure 14 - SATOB Winds: 700-1000hPa

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



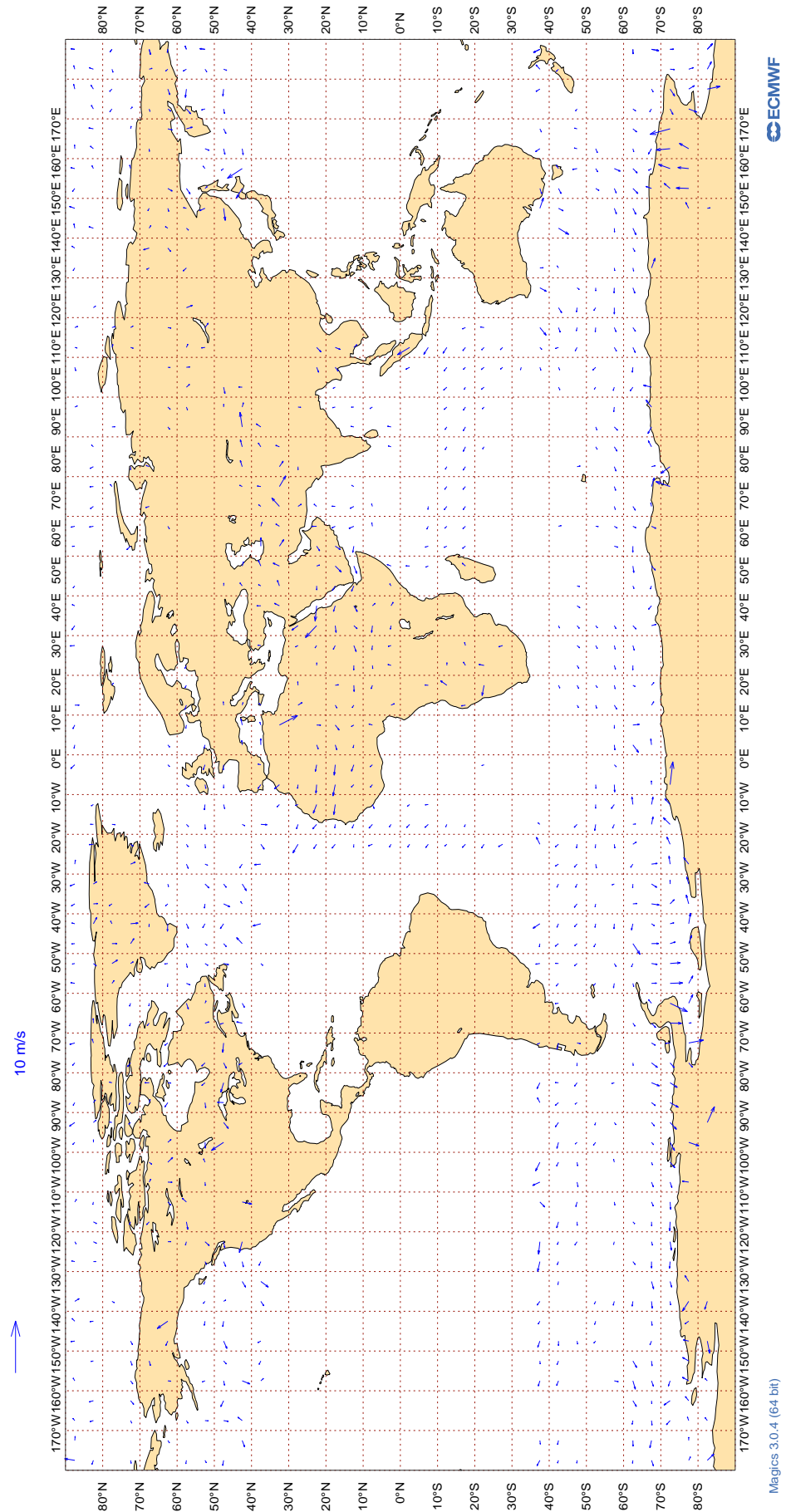
3.2.28 Figure 15 - SATOB Winds: 150- 400hPa

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



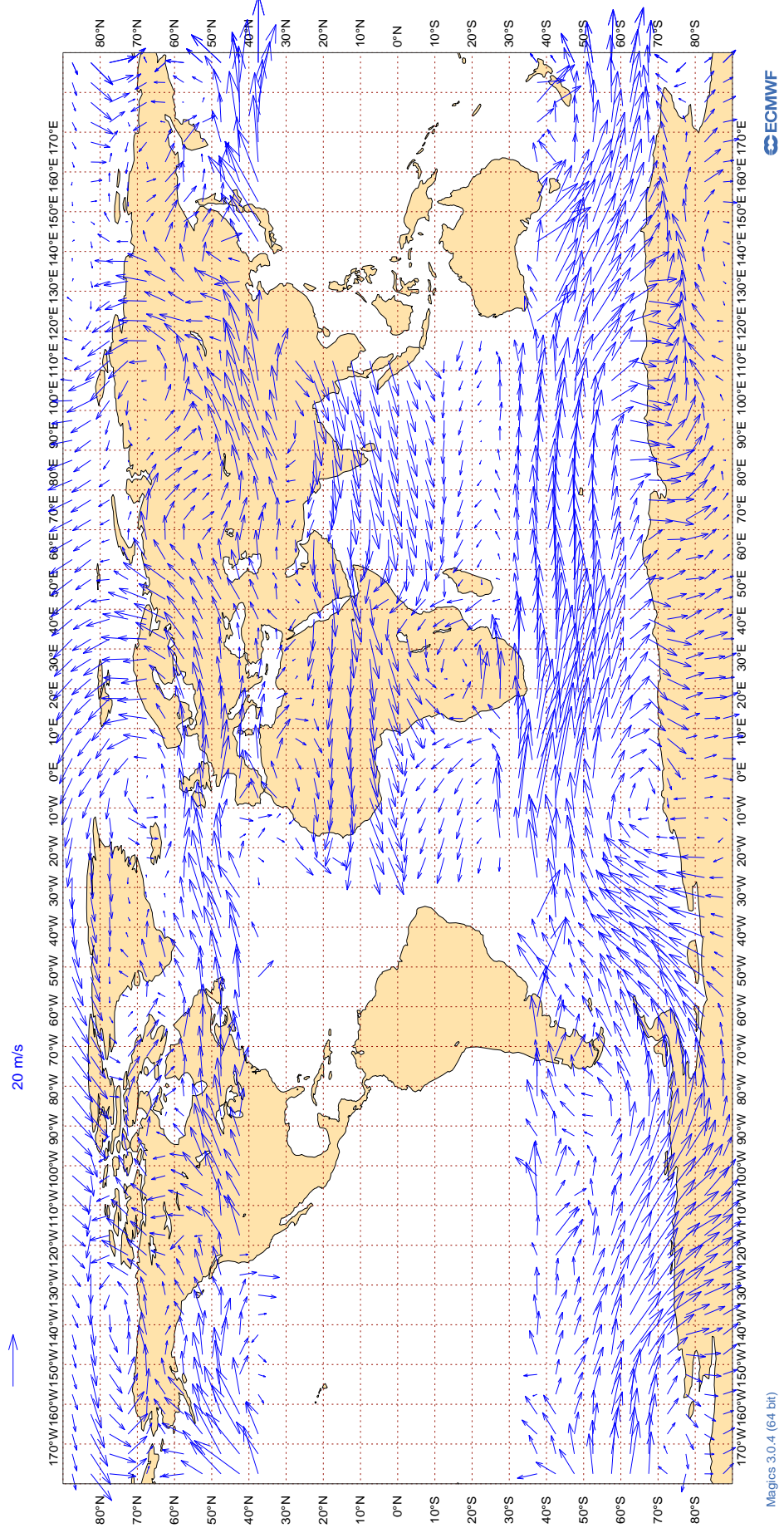
3.2.29 Figure 16 - SATOB Winds: 700-1000hPa

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



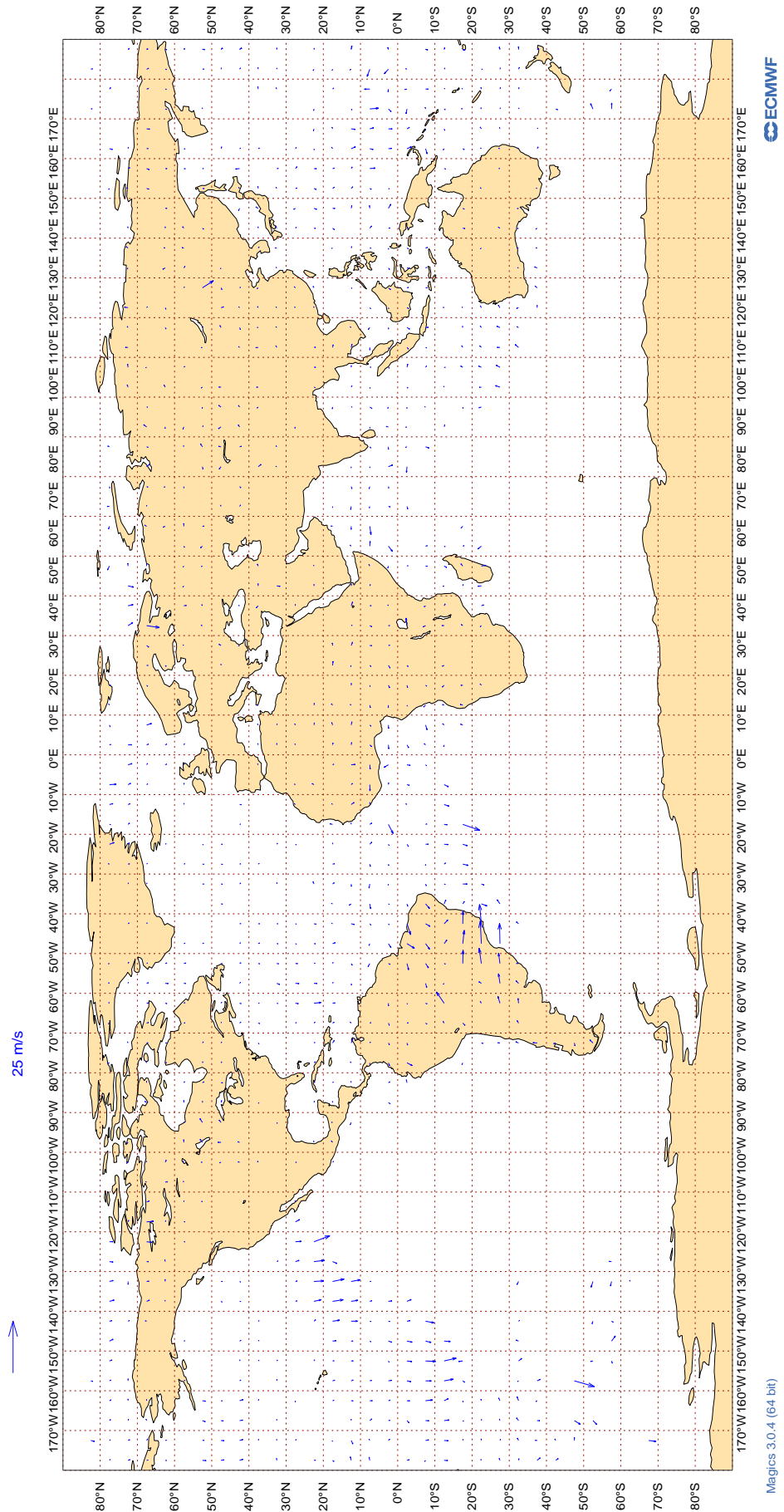
3.2.30 Figure 17 - SATOB Winds: 150- 400hPa

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



3.2.31 Figure 18 - AIRCRAFT Winds: 150- 300hPa

Figure 18
ECMWF Monitoring Statistics: Jul 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 : JUL 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	8767	2	0	5.8	0.2
AAR	99	V	300-150	198	0	0	3.3	-1.3
ABB	99	V	300-150	63	0	0	3.0	0.5
ABD	99	V	300-150	1065	0	0	4.0	-0.2
ABW	99	V	300-150	667	0	0	3.4	-0.2
ABX	99	V	300-150	54	2	0	3.8	0.0
ACA	99	V	300-150	10761	1	0	5.3	0.3
AFL	99	V	300-150	164	0	0	3.4	0.5
AFR	99	V	300-150	11186	1	0	4.3	0.3
AHO	99	V	300-150	121	0	0	3.6	0.8
AHY	99	V	300-150	33	0	0	10.1	1.4
AIC	99	V	300-150	1197	0	0	4.5	0.2
AJT	99	V	300-150	890	0	0	4.0	-0.1
ALK	99	V	300-150	313	0	0	5.5	0.9
AMX	99	V	300-150	1198	5	0	7.8	-0.1
ANZ	99	V	300-150	6679	4	0	7.8	0.7
AOJ	99	V	300-150	30	0	0	2.6	1.2
ARG	99	V	300-150	213	0	0	3.7	0.7
ASL	99	V	300-150	491	0	0	3.2	0.5
ATC	99	V	300-150	29	0	0	6.7	2.5
ATN	99	V	300-150	138	1	0	2.8	0.5
AUA	99	V	300-150	992	0	0	4.0	-0.3
AVA	99	V	300-150	32	0	0	4.0	0.2
AWK	99	V	300-150	42	2	5	4.0	0.5
AXM	99	V	300-150	103	0	1	4.5	0.2
AZA	99	V	300-150	921	0	0	3.6	0.4
AZG	99	V	300-150	259	0	0	3.4	-0.1
AZV	99	V	300-150	41	0	0	2.9	0.5

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
BAW	99	V	300-150	13953	1	0	5.6	0.2
BBA	99	V	300-150	24	0	0	2.5	1.2
BBC	99	V	300-150	61	0	0	4.8	-0.2
BCS	99	V	300-150	737	0	0	3.2	0.3
BFF	99	V	300-150	29	0	0	11.8	3.6
BLU	99	V	300-150	29	0	0	3.5	0.3
BOX	99	V	300-150	2412	0	0	3.5	0.1
CAL	99	V	300-150	243	0	0	4.8	0.8
CCA	99	V	300-150	39	0	0	4.4	0.8
CES	99	V	300-150	70	0	0	3.7	1.0
CFC	99	V	300-150	352	0	0	3.9	0.2
CJT	99	V	300-150	1640	0	0	3.7	0.1
CKS	99	V	300-150	2779	0	0	3.5	0.1
CLU	99	V	300-150	765	0	0	4.0	0.0
CLX	99	V	300-150	3855	0	0	3.8	-0.2
CMB	99	V	300-150	1582	0	0	3.9	0.2
CNV	99	V	300-150	155	0	0	3.7	0.7
CPA	99	V	300-150	184	0	0	3.9	1.1
CRL	99	V	300-150	627	0	0	3.1	0.0
CSN	99	V	300-150	230	2	1	6.3	0.6
CTM	99	V	300-150	90	0	0	4.2	1.0
DAH	99	V	300-150	65	0	0	3.1	0.3
DAL	99	V	300-150	10565	0	0	3.5	0.3
DCM	99	V	300-150	32	0	0	3.3	-0.4
DHK	99	V	300-150	343	0	0	4.2	0.1
DLH	99	V	300-150	4936	0	0	3.3	0.1
EAU	99	V	300-150	41	0	0	3.2	1.0
EDC	99	V	300-150	39	0	0	3.6	-0.1
EDW	99	V	300-150	68	0	0	3.2	0.5
EIN	99	V	300-150	2816	0	0	3.1	0.4
EJM	99	V	300-150	229	0	0	3.6	0.2
ELY	99	V	300-150	155	0	0	3.8	0.1
ETD	99	V	300-150	2943	1	0	4.9	0.2
ETH	99	V	300-150	3446	1	0	5.5	0.7
FBU	99	V	300-150	266	0	0	4.7	1.3
FDX	99	V	300-150	8044	0	0	3.5	0.4
FIN	99	V	300-150	240	0	0	3.0	-0.5
FJI	99	V	300-150	285	0	0	4.3	1.1
FRH	99	V	300-150	948	0	0	4.1	-0.3
FWI	99	V	300-150	814	0	0	3.0	0.2
GAF	99	V	300-150	123	0	0	3.2	-0.1
GAJ	99	V	300-150	20	0	0	2.9	1.4
GCK	99	V	300-150	21	0	0	5.4	0.5

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
GEC	99	V	300-150	2221	0	0	3.5	0.3
GFA	99	V	300-150	122	0	0	5.1	-0.3
GMA	99	V	300-150	21	0	0	3.3	-0.9
GNJ	99	V	300-150	29	0	0	4.5	-0.3
GTI	99	V	300-150	2086	0	0	3.9	-0.2
HFY	99	V	300-150	39	0	0	4.2	1.0
HRT	99	V	300-150	81	0	0	3.3	0.3
HUA	99	V	300-150	48	0	0	3.0	0.2
HUL	99	V	300-150	32	0	0	3.8	0.5
HVN	99	V	300-150	46	0	0	4.1	1.2
IBE	99	V	300-150	308	0	0	3.5	0.2
ICE	99	V	300-150	431	0	0	3.7	0.0
ICL	99	V	300-150	54	0	0	4.8	0.0
ICV	99	V	300-150	175	0	0	3.6	-0.2
IFA	99	V	300-150	87	0	0	3.7	0.0
JAF	99	V	300-150	49	0	0	5.1	1.2
JCO	99	V	300-150	68	0	0	3.5	1.0
JET	99	V	300-150	28	0	0	3.3	1.3
JME	99	V	300-150	58	0	0	3.4	0.5
KAC	99	V	300-150	100	0	0	5.0	-0.0
KAF	99	V	300-150	54	0	0	3.5	-0.0
KAI	99	V	300-150	65	0	0	4.5	0.8
KAY	99	V	300-150	200	0	0	3.3	0.2
KLM	99	V	300-150	11089	2	0	5.5	0.3
KQA	99	V	300-150	84	0	0	5.8	1.0
LAN	99	V	300-150	233	5	0	6.4	0.1
LCO	99	V	300-150	396	0	0	4.0	-1.5
LHO	99	V	300-150	39	0	0	4.1	0.4
LNK	99	V	300-150	79	0	0	3.0	0.4
LOT	99	V	300-150	1041	1	0	6.5	0.0
LVT	99	V	300-150	30	0	0	4.0	1.7
LXA	99	V	300-150	45	0	0	2.8	0.7
LXJ	99	V	300-150	318	0	0	3.2	0.3
MAS	99	V	300-150	87	0	0	5.3	1.4
MAU	99	V	300-150	24	0	0	6.5	3.0
MED	99	V	300-150	48	0	0	5.6	1.3
MJE	99	V	300-150	38	0	0	4.3	-0.9
MLM	99	V	300-150	20	0	0	4.7	0.3
MMD	99	V	300-150	254	0	0	3.1	0.0
MMZ	99	V	300-150	34	0	0	3.8	1.2
MNB	99	V	300-150	164	0	0	3.1	0.4
MPH	99	V	300-150	708	0	0	4.2	-0.5
MSR	99	V	300-150	945	2	0	4.1	0.2

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
NAF	99	V	300-150	42	0	0	4.5	1.7
NAS	99	V	300-150	33	0	0	3.5	0.1
NCR	99	V	300-150	48	0	0	3.4	-0.1
NJE	99	V	300-150	236	0	0	3.5	0.0
NOS	99	V	300-150	81	7	0	6.5	0.9
OAE	99	V	300-150	1311	0	0	3.8	0.2
OMA	99	V	300-150	26	0	0	5.4	-0.4
PAC	99	V	300-150	49	0	0	2.9	-0.9
PAL	99	V	300-150	283	0	0	5.2	0.4
PAT	99	V	300-150	50	0	0	3.4	0.3
PIA	99	V	300-150	97	0	0	2.9	0.5
PLF	99	V	300-150	52	0	0	3.6	0.0
PLM	99	V	300-150	90	0	0	4.6	0.8
PRD	99	V	300-150	46	0	0	4.1	0.0
QFA	99	V	300-150	463	0	0	4.1	0.3
QQE	99	V	300-150	83	0	0	3.7	-0.1
QTR	99	V	300-150	11209	0	0	4.1	0.2
RAM	99	V	300-150	135	13	0	7.3	0.6
RCH	99	V	300-150	4032	0	0	4.8	0.6
RJA	99	V	300-150	130	1	0	6.3	0.4
RRR	99	V	300-150	400	0	0	3.4	0.3
RSY	99	V	300-150	53	0	0	4.9	0.7
RWD	99	V	300-150	20	0	0	5.7	1.5
RYR	99	V	300-150	23	0	0	3.3	-0.3
RZO	99	V	300-150	97	0	1	4.1	0.7
SAM	99	V	300-150	370	0	0	3.9	0.6
SAS	99	V	300-150	997	0	0	3.2	0.3
SAZ	99	V	300-150	95	0	0	4.0	-0.1
SCX	99	V	300-150	27	0	0	3.7	1.4
SEY	99	V	300-150	67	0	0	6.1	0.3
SHE	99	V	300-150	34	0	0	2.3	0.4
SIA	99	V	300-150	849	0	0	4.8	0.1
SLM	99	V	300-150	49	0	0	2.9	0.6
SOO	99	V	300-150	707	0	0	3.5	0.2
SPA	99	V	300-150	104	0	0	4.5	0.8
SVA	99	V	300-150	1254	0	0	4.1	0.4
SVW	99	V	300-150	90	0	0	4.2	0.8
SWR	99	V	300-150	1822	0	0	3.6	0.4
TAP	99	V	300-150	242	0	0	4.1	0.5
TAR	99	V	300-150	354	0	0	3.7	0.8
TAY	99	V	300-150	329	0	0	3.9	0.1
TFF	99	V	300-150	71	0	0	3.8	-0.1
TFL	99	V	300-150	338	5	0	7.4	-0.1

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
THT	99	V	300-150	1590	1	0	9.8	0.0
THY	99	V	300-150	3965	1	0	4.6	0.2
TMN	99	V	300-150	255	0	0	4.5	0.7
TOM	99	V	300-150	23	0	0	3.9	0.6
TOW	99	V	300-150	64	0	0	3.0	-0.0
TPA	99	V	300-150	321	0	0	3.7	0.4
TSC	99	V	300-150	744	0	0	3.6	0.6
TWY	99	V	300-150	64	0	0	2.8	0.2
UAE	99	V	300-150	6496	0	0	4.4	0.2
UAL	99	V	300-150	18776	2	1	6.5	0.3
UPS	99	V	300-150	5149	0	0	3.8	0.2
UZB	99	V	300-150	29	0	0	3.5	-0.3
VCG	99	V	300-150	38	0	0	2.8	0.6
VIR	99	V	300-150	4907	1	0	5.5	0.1
VJT	99	V	300-150	950	0	0	3.3	0.3
VOZ	99	V	300-150	260	0	0	3.9	0.6
VTE	99	V	300-150	65	55	0	25.6	-0.3
VXS	99	V	300-150	35	0	0	5.9	0.6
WGN	99	V	300-150	1086	0	0	3.8	0.5
WWI	99	V	300-150	121	0	0	4.5	0.0
XOJ	99	V	300-150	43	0	0	3.1	0.5

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 : JUL 2020
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	00	Z	50	30	24.9	-13.7
01001	12	Z	50	23	30.8	-0.3
01028	00	Z	50	31	4.5	-2.3
01028	12	Z	50	31	7.4	-4.7
01400	00	Z	50	21	86.2	84.2
01400	12	Z	50	25	76.0	75.7
01415	12	Z	50	30	8.8	2.5
01415	00	Z	50	31	9.6	8.0
02365	00	Z	50	20	6.5	5.0
02365	12	Z	50	20	7.6	-4.3
02836	00	Z	50	31	6.1	3.2
02836	12	Z	50	31	7.9	-5.6
02963	12	Z	50	31	6.6	-2.5
02963	00	Z	50	31	6.8	5.2
03005	12	Z	50	31	8.5	-5.8
03005	00	Z	50	30	5.6	0.3
03238	00	Z	50	30	6.7	5.1
03238	12	Z	50	31	5.1	0.0
03808	00	Z	50	31	7.0	4.9
03808	12	Z	50	31	8.3	-1.3
03918	12	Z	50	31	9.9	6.5
03918	00	Z	50	31	12.5	10.4
03953	12	Z	50	31	7.8	-2.4
03953	00	Z	50	30	6.8	0.8
04018	00	Z	50	30	4.6	-1.1
04018	12	Z	50	30	7.0	-3.1
04220	00	Z	50	31	3.5	-0.8
04220	12	Z	50	31	4.5	-1.6
04270	12	Z	50	30	5.1	-1.9
04270	00	Z	50	31	4.4	-2.2
04320	12	Z	50	31	5.4	-3.3
04320	00	Z	50	31	7.4	-4.7
04339	00	Z	50	31	11.5	-7.4
04339	12	Z	50	30	7.6	-4.5
04360	12	Z	50	21	19.1	5.4
04360	00	Z	50	21	27.8	-3.5
06011	00	Z	50	30	13.3	-0.7
06011	12	Z	50	31	31.8	25.7
06260	00	Z	50	30	8.5	6.1

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06260	12	Z	50	31	6.3	-0.8
06610	00	Z	50	31	11.3	9.5
06610	12	Z	50	33	6.1	0.4
07110	00	Z	50	29	10.2	1.7
07110	12	Z	50	25	10.0	4.9
07510	00	Z	50	29	20.0	17.8
07510	12	Z	50	24	23.9	18.7
07645	12	Z	50	26	25.4	22.1
07645	00	Z	50	30	22.5	21.0
07761	12	Z	50	28	28.7	21.0
07761	00	Z	50	28	25.9	24.1
08001	00	Z	50	29	14.9	12.7
08001	12	Z	50	27	5.8	0.1
08221	12	Z	50	29	5.4	2.6
08221	00	Z	50	30	17.7	17.3
08302	00	Z	50	31	8.8	6.7
08302	12	Z	50	30	11.0	-9.1
08508	12	Z	50	31	7.7	5.2
08508	00	Z	50	9	12.0	10.8
08522	12	Z	50	31	4.9	1.7
10035	12	Z	50	32	12.4	10.2
10035	00	Z	50	31	17.3	16.1
10393	00	Z	50	31	8.7	5.4
10393	12	Z	50	31	7.1	0.7
10410	12	Z	50	31	6.6	-2.3
10410	00	Z	50	32	7.4	5.5
10739	12	Z	50	31	6.4	2.3
10739	00	Z	50	31	13.5	11.9
11035	12	Z	50	32	29.9	25.8
11035	00	Z	50	31	19.3	18.4
12982	00	Z	50	25	19.0	15.7
12982	12	Z	50	26	15.5	13.4
16080	12	Z	50	31	6.7	-3.8
16080	00	Z	50	31	11.3	8.6
16245	12	Z	50	29	4.8	-2.5
16245	00	Z	50	31	10.9	9.9
16320	12	Z	50	30	6.7	2.1
16320	00	Z	50	32	18.3	16.4
16429	00	Z	50	31	17.4	16.3
16429	12	Z	50	31	5.4	2.5
16622	00	Z	50	30	19.2	18.0
16754	00	Z	50	29	25.9	23.5
17607	12	Z	50	25	8.5	7.1

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
26435	12	Z	50	15	4.2	-1.2
60018	12	Z	50	27	6.0	2.0
60018	00	Z	50	28	16.9	16.0
7JUNA4	12	Z	50	2	151.5	151.5
7JUNA4	00	Z	50	2	127.8	127.8
ASDE09	12	Z	50	11	20.8	12.4
DBLK	12	Z	50	30	6.4	-2.6
DBLK	00	Z	50	31	7.5	-4.7
FPUW5G	12	Z	50	11	6.9	5.0
HTXUH4	12	Z	50	14	6.4	-0.4
HTXUH4	00	Z	50	16	8.2	-1.6
JNKN7J	00	Z	50	9	25.5	23.8
JNKN7J	12	Z	50	10	117.1	102.2
KJJF9X	00	Z	50	5	14.7	12.3
KJJF9X	12	Z	50	8	18.2	12.2
KMPLHP	00	Z	50	2	32.8	30.9
KMPLHP	12	Z	50	1	14.4	14.4
LRQE3	12	Z	50	11	24.2	22.4
LRQE3	00	Z	50	7	15.5	4.0
VKB4L5	12	Z	50	8	38.1	37.3
VKB4L5	00	Z	50	7	42.8	42.1
WDK38H	12	Z	50	3	11.7	-11.3
XKQLWQ	12	Z	50	15	34.2	32.3
XQFJRG	00	Z	50	5	15.1	-12.6
XQFJRG	12	Z	50	4	38.4	24.3
YLV96W	00	Z	50	4	54.5	53.0
YLV96W	12	Z	50	5	60.3	54.2
ZVQEQC	12	Z	50	18	10.5	5.6

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 : JUL 2020
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	00	V	50	25	2.4	0.1	-0.5
01001	12	V	50	23	2.4	-0.4	0.1
01028	00	V	50	25	2.2	0.3	0.1
01028	12	V	50	31	2.4	0.3	0.3
01400	00	V	50	16	2.2	0.5	-0.5
01400	12	V	50	20	2.7	0.3	-0.6
01415	12	V	50	30	2.8	0.1	-0.1
01415	00	V	50	25	3.0	-0.8	0.3
02365	00	V	50	15	2.9	0.7	0.3
02365	12	V	50	20	2.5	-0.2	-0.5
02836	00	V	50	25	2.4	0.1	0.3
02836	12	V	50	31	3.0	-0.1	0.1
02963	12	V	50	31	2.9	0.3	-0.5
02963	00	V	50	22	2.9	0.1	-0.4
03005	12	V	50	31	2.5	0.5	-0.4
03005	00	V	50	22	2.7	0.8	0.0
03238	00	V	50	23	2.7	0.2	0.2
03238	12	V	50	31	2.5	0.1	-0.4
03808	00	V	50	25	2.8	-0.4	0.6
03808	12	V	50	31	2.8	-0.1	0.0
03918	12	V	50	31	2.8	0.2	0.0
03918	00	V	50	25	2.3	0.2	0.2
03953	12	V	50	30	3.0	0.0	-0.8
03953	00	V	50	25	2.7	-0.6	-0.3
04018	00	V	50	23	2.3	0.4	0.2
04018	12	V	50	30	2.3	0.6	0.2
04220	00	V	50	26	2.4	-0.5	0.6
04220	12	V	50	31	2.4	0.0	0.4
04270	12	V	50	30	2.1	-0.2	0.0
04270	00	V	50	28	2.3	0.5	0.0
04320	12	V	50	31	2.6	0.3	0.1
04320	00	V	50	28	2.5	-0.5	0.2
04339	00	V	50	25	2.8	0.8	-0.4
04339	12	V	50	30	2.4	0.5	-0.3
04360	12	V	50	21	2.4	0.1	-0.4
04360	00	V	50	18	2.4	0.1	-0.5
06011	00	V	50	24	2.5	1.2	-0.1
06011	12	V	50	31	2.2	0.6	-0.1
06260	00	V	50	23	2.6	-0.1	0.2

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06260	12	V	50	29	2.5	0.2	-0.2
06610	00	V	50	24	2.8	0.0	0.1
06610	12	V	50	30	2.5	0.3	0.3
07110	00	V	50	23	2.9	0.3	-0.2
07110	12	V	50	25	2.7	-0.1	0.0
07510	00	V	50	24	2.4	0.6	-0.3
07510	12	V	50	24	2.6	0.1	-0.4
07645	12	V	50	26	3.1	0.4	0.0
07645	00	V	50	27	2.8	0.0	0.0
07761	12	V	50	28	3.4	0.9	-0.6
07761	00	V	50	23	3.9	0.0	-0.3
08001	00	V	50	21	2.8	0.2	-0.1
08001	12	V	50	26	2.7	-0.4	0.3
08221	12	V	50	28	3.3	0.1	-0.3
08221	00	V	50	23	3.0	0.1	0.8
08302	00	V	50	25	3.2	-0.2	-0.6
08302	12	V	50	30	3.0	-0.3	0.1
08508	12	V	50	31	3.2	0.5	0.4
08508	00	V	50	6	2.8	-0.2	0.7
08522	12	V	50	31	3.0	-0.3	-0.1
10035	12	V	50	29	3.1	-0.1	-0.1
10035	00	V	50	24	2.9	1.2	0.2
10393	00	V	50	28	3.1	-0.4	0.6
10393	12	V	50	31	2.9	0.5	0.3
10410	12	V	50	31	2.7	-0.1	-0.2
10410	00	V	50	28	2.9	-0.1	-0.4
10739	12	V	50	31	2.6	0.1	0.1
10739	00	V	50	29	2.6	0.3	-0.1
11035	12	V	50	31	2.7	-0.3	0.3
11035	00	V	50	25	3.2	0.3	-0.2
12982	00	V	50	19	3.6	0.8	-0.5
12982	12	V	50	26	6.7	1.5	0.0
16080	12	V	50	31	3.2	0.1	-0.1
16080	00	V	50	25	2.9	0.3	0.7
16245	12	V	50	29	3.3	0.7	-0.4
16245	00	V	50	24	3.4	0.8	-0.7
16320	12	V	50	30	4.1	0.2	-1.1
16320	00	V	50	25	3.4	0.0	-0.3
16429	00	V	50	24	3.5	-0.2	0.5
16429	12	V	50	31	3.7	0.2	-0.4
16622	00	V	50	23	3.5	0.4	-0.3
16754	00	V	50	21	3.5	0.6	-0.5
17607	12	V	50	21	3.3	0.6	-1.1

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
26435	12	V	50	15	3.7	-0.5	-0.5
60018	12	V	50	27	3.6	0.7	-0.4
60018	00	V	50	23	4.0	0.3	0.0
7JUNA4	12	V	50	1	2.9	-2.6	1.2
7JUNA4	00	V	50	2	1.8	1.4	-0.2
ASDE09	12	V	50	11	2.8	-0.1	-0.2
DBLK	12	V	50	29	2.5	0.4	-0.1
DBLK	00	V	50	28	2.5	0.2	0.2
FPUW5G	12	V	50	10	2.5	-0.8	-0.5
HTXUH4	12	V	50	14	2.3	-0.1	-0.1
HTXUH4	00	V	50	16	2.6	-0.2	0.6
JNKN7J	00	V	50	8	2.8	-0.6	-0.5
JNKN7J	12	V	50	9	7.3	1.8	1.4
KJJF9X	00	V	50	5	4.2	-2.0	1.4
KJJF9X	12	V	50	8	3.8	-1.3	0.2
KMPLHP	00	V	50	2	1.1	-0.7	-0.5
KMPLHP	12	V	50	1	1.0	-1.0	0.3
LRYQE3	12	V	50	11	3.2	-0.5	-1.0
LRYQE3	00	V	50	7	3.0	0.3	-0.5
VKB4L5	12	V	50	8	2.6	-0.6	-0.2
VKB4L5	00	V	50	7	3.1	0.0	0.0
WDK38H	12	V	50	3	1.9	-0.2	1.1
XKQLWQ	12	V	50	15	2.6	-0.2	0.3
XQFJRG	00	V	50	4	3.0	-0.3	-1.1
XQFJRG	12	V	50	4	2.3	0.0	-0.5
YLV96W	00	V	50	4	3.7	-0.5	-1.3
YLV96W	12	V	50	5	2.8	1.7	0.2
ZVQEQC	12	V	50	18	3.0	0.1	0.3

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 : JUL 2020
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	00	Z	100	30	22.1	-17.8
01001	12	Z	100	23	19.2	-6.7
01028	00	Z	100	31	6.5	-5.4
01028	12	Z	100	31	8.2	-6.5
01400	00	Z	100	24	81.2	79.4
01400	12	Z	100	27	76.2	76.0
01415	12	Z	100	30	8.2	-1.6
01415	00	Z	100	31	6.3	1.7
02365	00	Z	100	20	13.2	-3.5
02365	12	Z	100	20	7.9	-6.3
02836	00	Z	100	31	4.9	-1.5
02836	12	Z	100	31	8.6	-7.6
02963	12	Z	100	31	7.0	-5.1
02963	00	Z	100	31	4.8	0.7
03005	12	Z	100	31	8.8	-7.6
03005	00	Z	100	30	7.4	-4.4
03238	00	Z	100	31	3.8	0.0
03238	12	Z	100	31	6.1	-3.6
03808	00	Z	100	31	5.5	1.0
03808	12	Z	100	31	7.6	-3.4
03918	12	Z	100	31	7.0	2.6
03918	00	Z	100	31	8.4	5.9
03953	12	Z	100	31	8.6	-5.5
03953	00	Z	100	30	7.4	-4.8
04018	00	Z	100	30	6.9	-5.4
04018	12	Z	100	30	6.2	-4.2
04220	00	Z	100	31	4.2	-3.1
04220	12	Z	100	31	4.2	-3.4
04270	12	Z	100	30	4.4	-2.9
04270	00	Z	100	31	5.8	-4.6
04320	12	Z	100	31	6.3	-4.7
04320	00	Z	100	31	9.4	-7.5
04339	00	Z	100	31	12.8	-11.0
04339	12	Z	100	30	8.6	-7.0
04360	12	Z	100	21	10.8	-2.7
04360	00	Z	100	21	26.8	-7.0
06011	00	Z	100	30	7.8	-2.1
06011	12	Z	100	31	19.8	15.6
06260	00	Z	100	30	5.8	0.8

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06260	12	Z	100	31	7.2	-4.7
06610	00	Z	100	32	6.4	4.3
06610	12	Z	100	36	6.4	-2.2
07110	00	Z	100	30	11.7	-5.3
07110	12	Z	100	26	7.9	-1.8
07510	00	Z	100	30	11.4	9.3
07510	12	Z	100	27	13.8	10.2
07645	12	Z	100	27	15.1	12.7
07645	00	Z	100	31	13.1	11.5
07761	12	Z	100	28	13.7	9.1
07761	00	Z	100	28	13.4	10.9
08001	00	Z	100	31	7.9	6.3
08001	12	Z	100	28	4.9	-1.5
08221	12	Z	100	31	3.7	2.2
08221	00	Z	100	31	11.0	10.4
08302	00	Z	100	31	3.8	1.0
08302	12	Z	100	30	11.2	-10.0
08508	12	Z	100	31	7.0	5.7
08508	00	Z	100	9	10.1	9.3
08522	12	Z	100	31	7.0	6.3
10035	12	Z	100	32	7.9	6.0
10035	00	Z	100	31	11.0	9.9
10393	00	Z	100	31	5.9	2.2
10393	12	Z	100	31	5.1	-2.9
10410	12	Z	100	31	8.3	-6.6
10410	00	Z	100	32	5.0	0.5
10739	12	Z	100	32	4.8	-1.3
10739	00	Z	100	31	9.2	7.1
11035	12	Z	100	32	20.3	16.4
11035	00	Z	100	31	13.2	11.7
12982	00	Z	100	27	14.2	10.0
12982	12	Z	100	26	16.2	7.7
16080	12	Z	100	32	8.8	-6.6
16080	00	Z	100	31	6.6	3.2
16245	12	Z	100	30	6.2	-5.3
16245	00	Z	100	31	5.5	3.2
16320	12	Z	100	30	6.7	0.1
16320	00	Z	100	32	12.5	10.2
16429	00	Z	100	31	9.8	8.7
16429	12	Z	100	31	4.3	0.1
16622	00	Z	100	30	13.7	12.8
16754	00	Z	100	30	20.1	18.4
17607	12	Z	100	27	7.1	6.1

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
26435	12	Z	100	15	5.5	-4.9
60018	12	Z	100	29	7.2	5.8
60018	00	Z	100	30	14.8	14.0
7JUNA4	12	Z	100	3	51.7	51.7
7JUNA4	00	Z	100	4	90.7	84.8
ASDE09	12	Z	100	14	43.5	13.5
DBLK	12	Z	100	29	6.5	-5.3
DBLK	00	Z	100	30	9.5	-7.6
FPUW5G	12	Z	100	12	5.0	2.8
HTXUH4	12	Z	100	14	6.5	-2.3
HTXUH4	00	Z	100	17	8.6	-4.5
JNKN7J	00	Z	100	9	27.8	26.2
JNKN7J	12	Z	100	10	68.2	64.2
KJJF9X	00	Z	100	5	8.3	6.8
KJJF9X	12	Z	100	8	10.9	4.7
KMPLHP	00	Z	100	3	77.8	60.3
KMPLHP	12	Z	100	2	9.2	9.2
LRYQE3	12	Z	100	11	16.4	14.5
LRYQE3	00	Z	100	12	12.7	0.3
VKB4L5	12	Z	100	8	37.4	37.1
VKB4L5	00	Z	100	7	38.7	37.6
WDK38H	12	Z	100	3	13.1	-13.0
XKQLWQ	12	Z	100	16	27.8	26.0
XQFJRG	00	Z	100	5	15.5	-15.0
XQFJRG	12	Z	100	4	16.5	4.7
YLV96W	00	Z	100	5	47.9	46.3
YLV96W	12	Z	100	4	53.0	47.4
ZVQEQC	12	Z	100	18	8.5	5.6

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 : JUL 2020
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	00	V	100	25	2.1	-0.5	0.0
01001	12	V	100	23	1.8	0.3	0.5
01028	00	V	100	25	2.3	-0.8	0.1
01028	12	V	100	31	2.3	0.3	0.2
01400	00	V	100	13	2.0	0.5	-0.4
01400	12	V	100	26	2.5	0.9	-0.5
01415	12	V	100	30	2.8	0.7	-0.6
01415	00	V	100	27	2.7	0.1	-0.2
02365	00	V	100	16	3.3	0.2	-0.5
02365	12	V	100	20	2.1	0.1	-0.6
02836	00	V	100	25	2.7	0.3	-0.3
02836	12	V	100	31	2.5	-0.3	-0.3
02963	12	V	100	31	2.5	-0.1	-0.1
02963	00	V	100	22	2.3	-0.6	0.2
03005	12	V	100	31	2.2	0.2	-0.2
03005	00	V	100	22	2.3	0.5	0.0
03238	00	V	100	24	2.6	0.6	0.1
03238	12	V	100	31	2.6	-0.2	0.1
03808	00	V	100	25	2.1	0.4	0.3
03808	12	V	100	31	2.6	0.4	0.0
03918	12	V	100	31	2.8	0.6	-0.9
03918	00	V	100	24	3.0	0.8	0.6
03953	12	V	100	30	2.4	0.0	0.4
03953	00	V	100	25	2.6	0.7	-0.1
04018	00	V	100	28	2.1	0.3	0.2
04018	12	V	100	30	2.5	0.0	0.3
04220	00	V	100	29	2.2	0.7	-0.2
04220	12	V	100	31	2.3	-0.1	-0.6
04270	12	V	100	30	2.8	-0.3	0.7
04270	00	V	100	28	2.0	-0.3	0.7
04320	12	V	100	31	2.5	0.0	-0.3
04320	00	V	100	26	2.4	0.0	-0.3
04339	00	V	100	29	2.0	-0.3	-0.1
04339	12	V	100	30	2.1	-0.2	-0.7
04360	12	V	100	21	1.7	-0.7	0.1
04360	00	V	100	17	2.6	-0.2	0.5
06011	00	V	100	23	2.0	0.0	0.0
06011	12	V	100	31	2.4	0.1	0.0
06260	00	V	100	23	2.7	1.1	0.0

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06260	12	V	100	31	2.8	0.7	-0.1
06610	00	V	100	29	3.6	-0.1	-0.3
06610	12	V	100	31	3.0	-0.2	-0.8
07110	00	V	100	24	2.8	0.1	0.1
07110	12	V	100	26	2.9	-0.1	-1.0
07510	00	V	100	25	3.0	-0.8	-0.2
07510	12	V	100	27	2.8	1.0	0.3
07645	12	V	100	27	3.0	0.2	-0.9
07645	00	V	100	28	3.1	0.4	-0.4
07761	12	V	100	28	4.2	0.9	0.8
07761	00	V	100	23	3.1	-0.2	-0.6
08001	00	V	100	23	3.0	0.7	0.8
08001	12	V	100	27	3.1	-0.3	0.3
08221	12	V	100	31	3.1	0.2	0.1
08221	00	V	100	24	3.7	0.0	0.5
08302	00	V	100	25	3.7	1.4	-0.2
08302	12	V	100	30	3.3	-0.7	0.1
08508	12	V	100	31	3.1	-0.4	0.5
08508	00	V	100	6	1.5	0.2	0.0
08522	12	V	100	31	3.0	-0.4	-0.5
10035	12	V	100	31	2.3	0.6	-0.2
10035	00	V	100	30	2.6	0.5	0.6
10393	00	V	100	30	2.4	0.4	-0.5
10393	12	V	100	31	2.8	0.1	-0.6
10410	12	V	100	31	2.5	-0.1	0.2
10410	00	V	100	29	2.5	0.2	0.4
10739	12	V	100	31	3.5	0.7	-0.5
10739	00	V	100	29	2.8	0.7	-0.2
11035	12	V	100	31	2.8	0.1	0.3
11035	00	V	100	25	2.8	0.5	-0.1
12982	00	V	100	19	3.5	1.7	0.9
12982	12	V	100	26	6.0	1.1	0.7
16080	12	V	100	31	3.0	-0.1	-0.3
16080	00	V	100	26	4.2	-0.6	0.6
16245	12	V	100	30	3.2	0.2	1.0
16245	00	V	100	23	3.4	-0.4	0.1
16320	12	V	100	30	3.3	0.4	0.8
16320	00	V	100	24	3.4	0.6	-0.1
16429	00	V	100	24	3.6	1.1	0.2
16429	12	V	100	31	3.4	0.1	0.0
16622	00	V	100	23	4.4	-0.7	0.3
16754	00	V	100	23	3.8	0.5	1.2
17607	12	V	100	19	2.6	0.3	-0.4

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
26435	12	V	100	15	2.5	0.1	-0.3
60018	12	V	100	29	2.9	-0.2	-1.1
60018	00	V	100	25	3.8	0.6	0.3
7JUNA4	12	V	100	1	4.0	4.0	0.6
7JUNA4	00	V	100	2	1.7	1.1	0.4
ASDE09	12	V	100	14	2.3	0.8	-0.1
DBLK	12	V	100	29	2.4	-0.1	0.7
DBLK	00	V	100	28	2.4	0.0	0.6
FPUW5G	12	V	100	12	1.8	0.6	0.6
HTXUH4	12	V	100	14	1.7	-0.1	0.0
HTXUH4	00	V	100	17	2.0	0.5	0.2
JNKN7J	00	V	100	9	2.5	0.7	0.5
JNKN7J	12	V	100	9	2.7	0.3	0.9
KJJF9X	00	V	100	5	2.7	0.5	-1.6
KJJF9X	12	V	100	8	3.0	-0.5	0.5
KMPLHP	00	V	100	3	1.0	-0.3	-0.9
KMPLHP	12	V	100	2	9.2	-6.9	0.8
LRYQE3	12	V	100	11	2.7	0.4	0.3
LRYQE3	00	V	100	12	2.5	-0.2	0.0
VKB4L5	12	V	100	8	3.5	-1.3	0.0
VKB4L5	00	V	100	7	3.7	0.8	-1.2
WDK38H	12	V	100	3	1.9	-1.2	-0.3
XKQLWQ	12	V	100	16	2.8	1.0	0.0
XQFJRG	00	V	100	5	2.2	0.9	-0.9
XQFJRG	12	V	100	4	1.8	0.4	-0.1
YLV96W	00	V	100	4	3.7	-1.7	-1.0
YLV96W	12	V	100	4	2.9	0.8	0.7
ZVQEQC	12	V	100	18	3.3	0.3	0.4

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

RADIOSONDE MONITORING STATISTICS (EUCOS)

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

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	00	Z	500	32	12.7	-11.5
01001	12	Z	500	25	11.3	-8.8
01028	00	Z	500	31	3.2	-0.1
01028	12	Z	500	31	3.0	0.3
01400	00	Z	500	29	78.7	77.3
01400	12	Z	500	30	81.1	81.0
01415	12	Z	500	30	4.9	1.7
01415	00	Z	500	31	3.6	0.8
02365	00	Z	500	21	3.5	0.9
02365	12	Z	500	21	3.4	0.6
02836	00	Z	500	31	2.8	1.8
02836	12	Z	500	31	3.4	1.3
02963	12	Z	500	32	2.7	0.6
02963	00	Z	500	31	3.3	2.3
03005	12	Z	500	31	6.1	-4.5
03005	00	Z	500	30	5.2	-4.1
03238	00	Z	500	31	3.0	1.3
03238	12	Z	500	31	2.5	0.3
03808	00	Z	500	31	3.8	2.4
03808	12	Z	500	31	3.2	1.4
03918	12	Z	500	31	5.6	5.0
03918	00	Z	500	31	5.5	4.9
03953	12	Z	500	31	6.0	-2.5
03953	00	Z	500	31	3.9	-1.6
04018	00	Z	500	30	3.3	-1.2
04018	12	Z	500	30	2.8	-1.9
04220	00	Z	500	31	4.6	2.0
04220	12	Z	500	31	3.1	1.5
04270	12	Z	500	31	3.1	-0.5
04270	00	Z	500	31	3.2	-0.2
04320	12	Z	500	31	3.5	-0.2
04320	00	Z	500	31	3.7	-0.7
04339	00	Z	500	31	4.6	-2.2
04339	12	Z	500	30	4.2	-2.2
04360	12	Z	500	22	8.5	-7.7
04360	00	Z	500	22	17.0	-5.7
06011	00	Z	500	30	4.9	1.8
06011	12	Z	500	31	7.0	5.3
06260	00	Z	500	30	4.4	0.3

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06260	12	Z	500	31	4.9	-2.2
06610	00	Z	500	32	4.0	3.3
06610	12	Z	500	36	2.4	-0.1
07110	00	Z	500	30	8.8	-6.2
07110	12	Z	500	29	6.9	-3.3
07510	00	Z	500	30	5.6	3.8
07510	12	Z	500	28	8.1	5.7
07645	12	Z	500	28	6.0	4.9
07645	00	Z	500	31	3.9	1.9
07761	12	Z	500	30	10.8	2.7
07761	00	Z	500	29	8.9	1.6
08001	00	Z	500	31	4.2	3.6
08001	12	Z	500	31	4.5	3.8
08221	12	Z	500	31	6.3	5.9
08221	00	Z	500	31	7.6	7.1
08302	00	Z	500	31	3.7	-3.1
08302	12	Z	500	30	6.4	-6.1
08508	12	Z	500	31	7.1	6.4
08508	00	Z	500	9	6.8	6.5
08522	12	Z	500	31	8.1	7.6
10035	12	Z	500	32	9.6	9.1
10035	00	Z	500	31	10.6	10.2
10393	00	Z	500	31	2.7	1.3
10393	12	Z	500	31	2.5	-0.8
10410	12	Z	500	31	3.7	-2.7
10410	00	Z	500	33	2.1	-0.1
10739	12	Z	500	32	3.5	2.3
10739	00	Z	500	31	5.7	5.1
11035	12	Z	500	31	14.9	12.6
11035	00	Z	500	31	9.0	7.4
12982	00	Z	500	27	6.9	5.5
12982	12	Z	500	26	7.7	2.1
16080	12	Z	500	32	3.7	-3.2
16080	00	Z	500	31	2.6	-0.8
16245	12	Z	500	31	3.2	-2.7
16245	00	Z	500	31	2.3	-0.9
16320	12	Z	500	33	6.9	2.5
16320	00	Z	500	32	7.3	3.7
16429	00	Z	500	31	4.4	3.6
16429	12	Z	500	31	3.3	2.3
16622	00	Z	500	30	6.1	4.4
16754	00	Z	500	31	10.5	7.3
17607	12	Z	500	30	6.3	5.8

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
26435	12	Z	500	15	3.0	-0.3
60018	12	Z	500	28	7.8	7.1
60018	00	Z	500	30	8.5	7.9
7JUNA4	12	Z	500	12	19.7	11.9
7JUNA4	00	Z	500	8	11.8	10.9
ASDE09	12	Z	500	13	15.9	2.1
DBLK	12	Z	500	30	2.7	-1.0
DBLK	00	Z	500	30	3.0	-1.3
FPUW5G	12	Z	500	13	8.6	7.1
HTXUH4	12	Z	500	14	4.6	0.7
HTXUH4	00	Z	500	17	6.8	0.0
JNKN7J	00	Z	500	9	34.4	33.9
JNKN7J	12	Z	500	11	40.1	39.6
KJJF9X	00	Z	500	8	7.2	6.9
KJJF9X	12	Z	500	9	7.5	4.1
KMPLHP	00	Z	500	3	49.4	44.8
KMPLHP	12	Z	500	2	62.0	43.9
LRYQE3	12	Z	500	12	7.3	4.3
LRYQE3	00	Z	500	12	8.4	3.8
VKB4L5	12	Z	500	8	37.5	37.1
VKB4L5	00	Z	500	8	33.1	32.9
WDK38H	12	Z	500	3	8.8	-8.6
XKQLWQ	12	Z	500	16	21.7	20.2
XQFJRG	00	Z	500	6	12.5	-11.9
XQFJRG	12	Z	500	8	11.2	-9.3
YLV96W	00	Z	500	5	54.6	49.3
YLV96W	12	Z	500	5	52.5	42.6
ZVQEQC	12	Z	500	19	8.4	4.9

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 : JUL 2020
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	00	V	500	30	2.5	-0.3	0.7
01001	12	V	500	25	2.3	0.2	0.1
01028	00	V	500	30	2.1	-0.1	-0.4
01028	12	V	500	31	2.0	0.1	-0.2
01400	00	V	500	27	2.3	-0.1	0.1
01400	12	V	500	30	2.7	0.7	0.6
01415	12	V	500	30	2.7	0.3	-0.1
01415	00	V	500	30	2.6	-0.2	0.1
02365	00	V	500	21	2.5	0.0	0.0
02365	12	V	500	21	2.4	0.0	-0.6
02836	00	V	500	30	2.5	0.1	0.3
02836	12	V	500	31	2.2	0.0	-0.4
02963	12	V	500	31	2.8	0.1	-0.3
02963	00	V	500	30	2.1	-0.2	-0.6
03005	12	V	500	31	3.1	0.3	0.1
03005	00	V	500	29	2.8	-0.5	0.6
03238	00	V	500	30	2.8	0.8	0.1
03238	12	V	500	31	2.7	0.9	0.0
03808	00	V	500	30	2.3	0.0	-0.2
03808	12	V	500	31	3.0	0.5	0.4
03918	12	V	500	31	2.6	0.6	-0.3
03918	00	V	500	30	2.6	0.4	-0.3
03953	12	V	500	30	2.8	0.1	0.1
03953	00	V	500	29	2.6	0.2	-0.1
04018	00	V	500	29	2.4	0.1	0.0
04018	12	V	500	30	2.6	0.8	-0.4
04220	00	V	500	30	2.8	-0.6	-0.8
04220	12	V	500	31	2.3	-0.2	-0.7
04270	12	V	500	31	2.9	0.5	-0.1
04270	00	V	500	30	2.6	-0.2	-0.2
04320	12	V	500	31	2.4	0.3	0.1
04320	00	V	500	30	2.3	-0.1	0.2
04339	00	V	500	30	2.5	-0.3	-0.7
04339	12	V	500	30	2.4	-0.3	-0.5
04360	12	V	500	22	2.4	0.2	0.3
04360	00	V	500	21	2.6	0.0	0.1
06011	00	V	500	29	2.6	-0.2	0.4
06011	12	V	500	31	2.7	-0.6	-0.7
06260	00	V	500	28	2.4	0.4	0.3

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06260	12	V	500	31	2.5	0.5	0.1
06610	00	V	500	30	2.2	0.3	-0.4
06610	12	V	500	31	2.6	0.8	-0.4
07110	00	V	500	29	2.2	-0.1	-0.3
07110	12	V	500	29	2.5	-0.4	0.3
07510	00	V	500	29	2.2	0.2	-0.3
07510	12	V	500	28	2.2	0.3	0.2
07645	12	V	500	28	2.4	-0.1	-0.2
07645	00	V	500	30	3.0	0.2	-0.5
07761	12	V	500	30	2.2	0.4	-0.1
07761	00	V	500	28	2.0	-0.1	0.4
08001	00	V	500	30	1.7	0.0	0.0
08001	12	V	500	31	1.9	-0.2	0.5
08221	12	V	500	31	2.9	0.3	0.6
08221	00	V	500	30	2.9	0.9	0.3
08302	00	V	500	30	2.4	0.3	0.0
08302	12	V	500	30	2.4	0.5	0.2
08508	12	V	500	31	1.7	0.1	-0.3
08508	00	V	500	8	2.4	0.3	-1.1
08522	12	V	500	31	2.6	0.4	0.4
10035	12	V	500	31	2.5	0.5	0.0
10035	00	V	500	30	2.4	0.5	0.2
10393	00	V	500	30	1.6	-0.2	0.2
10393	12	V	500	31	1.8	0.3	0.0
10410	12	V	500	31	2.1	0.2	-0.3
10410	00	V	500	30	2.1	0.0	-0.2
10739	12	V	500	31	1.8	0.0	-0.1
10739	00	V	500	30	2.5	0.5	-0.3
11035	12	V	500	31	2.5	0.0	0.2
11035	00	V	500	30	2.7	0.7	-0.1
12982	00	V	500	23	3.8	-0.4	-0.5
12982	12	V	500	26	3.8	0.7	0.9
16080	12	V	500	31	2.4	0.6	-0.6
16080	00	V	500	30	2.8	0.1	0.0
16245	12	V	500	31	2.6	1.0	0.0
16245	00	V	500	30	2.5	0.7	-0.2
16320	12	V	500	31	2.3	0.5	-0.1
16320	00	V	500	30	2.6	0.4	0.1
16429	00	V	500	30	2.0	0.1	-0.2
16429	12	V	500	31	2.1	0.7	0.1
16622	00	V	500	29	2.3	0.6	-0.3
16754	00	V	500	25	1.8	0.5	-0.5
17607	12	V	500	28	2.8	0.6	0.5

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
26435	12	V	500	15	2.2	-0.8	-0.3
60018	12	V	500	28	3.3	-1.0	0.4
60018	00	V	500	29	3.0	0.2	0.7
7JUNA4	12	V	500	10	2.1	0.3	0.6
7JUNA4	00	V	500	5	5.5	1.5	-1.6
ASDE09	12	V	500	13	2.0	-0.2	-0.1
DBLK	12	V	500	30	2.4	-0.1	0.1
DBLK	00	V	500	28	1.8	-0.1	0.1
FPUW5G	12	V	500	13	2.9	0.9	0.5
HTXUH4	12	V	500	14	2.8	-0.4	-0.2
HTXUH4	00	V	500	17	2.8	-0.2	0.2
JNKN7J	00	V	500	9	2.6	0.1	-0.5
JNKN7J	12	V	500	11	3.2	0.0	0.6
KJJF9X	00	V	500	8	3.0	-0.1	0.4
KJJF9X	12	V	500	9	1.8	0.4	-0.4
KMPLHP	00	V	500	3	1.1	-0.1	-0.6
KMPLHP	12	V	500	2	2.5	-2.4	-0.4
LRYQE3	12	V	500	12	2.6	-0.1	-0.3
LRYQE3	00	V	500	12	2.2	0.4	0.4
VKB4L5	12	V	500	8	2.3	-0.3	0.1
VKB4L5	00	V	500	8	3.0	0.9	-0.9
WDK38H	12	V	500	3	0.9	0.7	0.0
XKQLWQ	12	V	500	16	2.2	0.7	0.8
XQFJRG	00	V	500	6	2.1	0.4	0.1
XQFJRG	12	V	500	8	2.9	0.0	-0.3
YLV96W	00	V	500	4	2.6	0.5	0.8
YLV96W	12	V	500	5	2.6	0.6	0.7
ZVQEQC	12	V	500	19	2.8	-0.3	-0.4

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 : JUL 2020
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	00	Z	850	32	9.9	-8.8
01001	12	Z	850	25	10.2	-8.6
01028	00	Z	850	31	3.6	2.2
01028	12	Z	850	31	3.2	1.7
01400	00	Z	850	29	78.6	77.1
01400	12	Z	850	30	81.3	81.1
01415	12	Z	850	30	4.6	2.4
01415	00	Z	850	31	3.6	2.9
02365	00	Z	850	21	3.8	2.6
02365	12	Z	850	21	2.1	1.1
02836	00	Z	850	31	4.0	3.3
02836	12	Z	850	31	3.7	3.1
02963	12	Z	850	32	3.9	3.5
02963	00	Z	850	31	4.3	4.0
03005	12	Z	850	31	3.5	-2.3
03005	00	Z	850	30	3.7	-2.4
03238	00	Z	850	31	2.6	1.9
03238	12	Z	850	31	3.4	2.4
03808	00	Z	850	31	2.7	2.2
03808	12	Z	850	31	2.2	1.1
03918	12	Z	850	31	6.8	6.4
03918	00	Z	850	31	6.0	5.6
03953	12	Z	850	31	4.0	-1.7
03953	00	Z	850	31	2.7	-1.7
04018	00	Z	850	30	2.7	1.1
04018	12	Z	850	30	2.6	-0.9
04220	00	Z	850	31	3.7	3.3
04220	12	Z	850	31	3.4	2.5
04270	12	Z	850	31	2.1	0.4
04270	00	Z	850	31	2.5	1.5
04320	12	Z	850	31	4.2	2.5
04320	00	Z	850	31	5.1	3.4
04339	00	Z	850	31	3.6	-0.4
04339	12	Z	850	30	3.0	-0.1
04360	12	Z	850	22	8.5	-7.8
04360	00	Z	850	23	6.9	-6.3
06011	00	Z	850	30	4.1	3.7
06011	12	Z	850	31	4.4	3.5
06260	00	Z	850	30	2.9	0.5

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06260	12	Z	850	31	4.0	-0.8
06610	00	Z	850	32	3.0	2.0
06610	12	Z	850	36	1.6	0.5
07110	00	Z	850	30	3.4	-2.3
07110	12	Z	850	28	3.2	-1.8
07510	00	Z	850	30	4.4	3.9
07510	12	Z	850	28	5.0	4.6
07645	12	Z	850	28	2.7	0.3
07645	00	Z	850	31	2.7	-0.2
07761	12	Z	850	30	1.8	-0.4
07761	00	Z	850	29	2.9	-1.3
08001	00	Z	850	31	2.3	0.8
08001	12	Z	850	31	2.1	1.1
08221	12	Z	850	31	3.0	2.6
08221	00	Z	850	31	4.8	3.8
08302	00	Z	850	31	7.3	-7.1
08302	12	Z	850	30	8.6	-8.4
08508	12	Z	850	31	3.2	2.4
08508	00	Z	850	9	5.0	4.6
08522	12	Z	850	31	4.3	4.0
10035	12	Z	850	32	12.1	11.8
10035	00	Z	850	31	11.0	10.8
10393	00	Z	850	31	1.9	0.6
10393	12	Z	850	31	2.1	0.8
10410	12	Z	850	31	2.2	-0.6
10410	00	Z	850	33	2.2	-1.6
10739	12	Z	850	32	3.9	3.5
10739	00	Z	850	31	4.3	3.9
11035	12	Z	850	31	17.5	16.0
11035	00	Z	850	31	10.2	8.7
12982	00	Z	850	27	5.5	2.3
12982	12	Z	850	26	5.1	4.5
16080	12	Z	850	32	4.3	-1.9
16080	00	Z	850	31	3.2	-1.0
16245	12	Z	850	31	3.4	-3.0
16245	00	Z	850	31	3.2	-2.6
16320	12	Z	850	33	7.3	2.3
16320	00	Z	850	32	6.6	3.2
16429	00	Z	850	31	2.6	1.4
16429	12	Z	850	31	2.4	1.0
16622	00	Z	850	30	5.0	2.1
16754	00	Z	850	31	8.1	4.4
17607	12	Z	850	31	3.0	2.4

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
26435	12	Z	850	15	2.1	1.8
60018	12	Z	850	29	3.3	2.0
60018	00	Z	850	30	2.6	1.9
7JUNA4	12	Z	850	12	7.8	5.2
7JUNA4	00	Z	850	8	9.6	9.1
ASDE09	12	Z	850	13	11.6	7.8
DBLK	12	Z	850	30	2.9	0.7
DBLK	00	Z	850	30	2.9	1.5
FPUW5G	12	Z	850	13	8.8	7.5
HTXUH4	12	Z	850	14	4.5	2.2
HTXUH4	00	Z	850	17	7.1	1.4
JNKN7J	00	Z	850	9	39.9	39.6
JNKN7J	12	Z	850	11	40.0	39.8
KJJF9X	00	Z	850	8	3.2	2.5
KJJF9X	12	Z	850	9	4.7	1.6
KMPLHP	00	Z	850	3	45.9	43.1
KMPLHP	12	Z	850	2	14.4	9.7
LRVQE3	12	Z	850	13	6.8	2.6
LRVQE3	00	Z	850	12	8.2	3.8
VKB4L5	12	Z	850	8	36.1	35.9
VKB4L5	00	Z	850	8	31.4	31.1
WDK38H	12	Z	850	3	8.9	-8.1
XKQLWQ	12	Z	850	16	14.9	13.2
XQFJRG	00	Z	850	6	12.1	-11.9
XQFJRG	12	Z	850	8	11.9	-11.5
YLV96W	00	Z	850	5	64.3	58.7
YLV96W	12	Z	850	5	53.1	43.4
ZVQEQC	12	Z	850	19	7.1	2.6

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 : JUL 2020
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	00	V	850	30	3.5	0.0	0.6
01001	12	V	850	25	2.9	0.4	0.2
01028	00	V	850	30	2.5	-0.5	-0.7
01028	12	V	850	31	2.4	0.5	-0.4
01400	00	V	850	27	2.5	0.4	0.2
01400	12	V	850	30	2.3	0.7	0.3
01415	12	V	850	30	2.4	0.1	0.1
01415	00	V	850	30	2.7	0.1	0.8
02365	00	V	850	21	2.5	0.1	0.3
02365	12	V	850	21	3.1	0.0	-0.9
02836	00	V	850	30	1.9	-0.1	0.2
02836	12	V	850	31	2.2	0.1	-0.1
02963	12	V	850	31	2.6	-0.6	0.1
02963	00	V	850	30	1.9	0.0	-0.1
03005	12	V	850	31	2.8	0.1	-0.1
03005	00	V	850	29	2.4	0.4	0.1
03238	00	V	850	30	3.1	-0.1	0.2
03238	12	V	850	31	2.9	0.6	-0.1
03808	00	V	850	30	2.6	0.0	0.1
03808	12	V	850	31	2.3	0.1	-0.5
03918	12	V	850	31	2.3	-0.3	-0.4
03918	00	V	850	30	2.9	0.1	-0.1
03953	12	V	850	31	2.5	-0.5	-0.2
03953	00	V	850	29	2.6	0.2	0.1
04018	00	V	850	29	3.0	-0.6	0.7
04018	12	V	850	30	2.7	-0.1	0.2
04220	00	V	850	30	3.8	-0.4	-0.1
04220	12	V	850	31	2.1	-0.4	0.0
04270	12	V	850	31	2.7	0.3	0.1
04270	00	V	850	30	2.8	0.1	-0.1
04320	12	V	850	31	3.9	0.0	0.5
04320	00	V	850	30	3.3	-0.2	-0.9
04339	00	V	850	30	2.8	-0.9	-0.9
04339	12	V	850	30	3.5	-0.3	0.0
04360	12	V	850	22	2.3	-0.4	-0.2
04360	00	V	850	22	2.3	-0.1	-0.2
06011	00	V	850	29	3.1	-0.4	-0.3
06011	12	V	850	31	2.8	0.2	-0.4
06260	00	V	850	29	2.7	0.0	0.9

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06260	12	V	850	31	2.3	0.6	0.3
06610	00	V	850	30	2.8	1.0	0.0
06610	12	V	850	31	3.0	0.9	0.7
07110	00	V	850	29	2.6	0.2	-0.4
07110	12	V	850	28	2.6	0.4	-0.5
07510	00	V	850	29	2.2	0.0	0.1
07510	12	V	850	28	2.8	0.3	0.2
07645	12	V	850	28	3.0	0.3	0.6
07645	00	V	850	30	3.1	0.2	0.3
07761	12	V	850	30	2.1	0.0	-0.3
07761	00	V	850	28	2.3	0.0	-0.1
08001	00	V	850	30	2.6	0.9	0.2
08001	12	V	850	31	2.7	0.6	-0.1
08221	12	V	850	31	2.5	0.1	0.4
08221	00	V	850	30	4.3	0.5	-0.3
08302	00	V	850	30	3.6	-0.4	0.4
08302	12	V	850	30	2.5	0.3	-0.4
08508	12	V	850	31	2.0	0.1	0.2
08508	00	V	850	9	2.6	0.4	-0.6
08522	12	V	850	31	2.3	-0.4	-0.3
10035	12	V	850	31	2.6	0.1	-0.3
10035	00	V	850	30	2.7	0.5	-0.1
10393	00	V	850	30	2.2	0.1	-0.3
10393	12	V	850	31	2.3	-0.1	0.3
10410	12	V	850	31	2.3	0.1	-0.5
10410	00	V	850	30	1.9	0.4	0.0
10739	12	V	850	31	2.6	-0.1	0.4
10739	00	V	850	30	2.6	1.0	0.1
11035	12	V	850	31	3.3	1.1	0.1
11035	00	V	850	30	2.8	-0.4	0.6
12982	00	V	850	23	3.3	0.5	0.3
12982	12	V	850	26	2.4	0.7	0.1
16080	12	V	850	31	3.1	0.5	-0.7
16080	00	V	850	30	4.0	1.2	-0.4
16245	12	V	850	31	2.6	0.0	-0.1
16245	00	V	850	30	2.3	0.4	-0.3
16320	12	V	850	31	2.6	-0.1	-0.5
16320	00	V	850	30	2.3	-0.1	-0.4
16429	00	V	850	30	1.7	0.2	0.2
16429	12	V	850	31	2.1	0.1	0.0
16622	00	V	850	29	3.3	1.3	-0.9
16754	00	V	850	28	2.0	0.4	0.3
17607	12	V	850	31	2.7	0.4	0.3

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
26435	12	V	850	15	2.4	1.0	0.2
60018	12	V	850	29	3.5	0.8	1.7
60018	00	V	850	29	3.5	1.5	1.6
7JUNA4	12	V	850	11	3.2	-0.7	-0.1
7JUNA4	00	V	850	8	2.6	-0.8	0.0
ASDE09	12	V	850	13	2.4	0.6	1.0
DBLK	12	V	850	30	2.6	-0.3	0.7
DBLK	00	V	850	28	2.5	-0.1	-0.1
FPUW5G	12	V	850	13	2.1	-0.2	0.4
HTXUH4	12	V	850	14	3.0	0.2	-0.6
HTXUH4	00	V	850	17	2.8	0.0	0.7
JNKN7J	00	V	850	9	1.7	0.0	-0.4
JNKN7J	12	V	850	11	2.5	-0.5	-1.1
KJJF9X	00	V	850	8	1.6	0.6	0.2
KJJF9X	12	V	850	9	1.8	0.3	-0.9
KMPLHP	00	V	850	3	1.6	-0.3	0.4
KMPLHP	12	V	850	2	1.8	0.9	0.3
LRYQE3	12	V	850	13	2.8	-0.1	0.0
LRYQE3	00	V	850	12	2.3	0.5	-0.2
VKB4L5	12	V	850	8	3.3	0.2	0.0
VKB4L5	00	V	850	8	2.6	-0.1	-0.4
WDK38H	12	V	850	3	2.6	-1.7	0.8
XKQLWQ	12	V	850	16	1.7	0.0	0.2
XQFJRG	00	V	850	6	2.6	0.0	0.9
XQFJRG	12	V	850	8	1.7	-0.6	0.5
YLV96W	00	V	850	5	1.7	1.0	0.4
YLV96W	12	V	850	5	2.0	-0.1	0.3
ZVQEQC	12	V	850	19	2.5	0.8	0.1

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 : JUL 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
007	99	P	SUR	75	16	1	0	0.0	4.2	4.2
03380	99	P	SUR	54	0	2121	0	0.3	-0.2	0.3
0640046	99	P	SUR	60	-4	732	0	0.3	-0.2	0.4
1300001	99	P	SUR	11	-23	624	0	0.5	0.1	0.5
1300008	99	P	SUR	15	-38	606	0	0.3	0.0	0.3
1300130	99	P	SUR	28	-16	744	0	0.4	0.3	0.5
1300131	99	P	SUR	28	-17	744	0	0.4	0.4	0.5
1301569	99	P	SUR	22	-44	736	0	0.2	-0.3	0.3
1301603	99	P	SUR	33	-53	742	0	0.3	0.1	0.3
1301608	99	P	SUR	30	-49	742	0	0.2	-0.9	0.9
1301612	99	P	SUR	31	-44	738	0	0.2	-0.0	0.2
1301619	99	P	SUR	30	-26	742	0	0.2	0.5	0.5
1301620	99	P	SUR	19	-54	742	0	0.3	0.3	0.4
1501531	99	P	SUR	28	-46	742	0	0.2	-0.1	0.2
1501584	99	P	SUR	18	-64	437	130	3.8	-0.9	4.0
1701631	99	P	SUR	15	-50	742	0	0.3	0.4	0.5
1701632	99	P	SUR	15	-52	737	0	0.3	0.2	0.4
1701633	99	P	SUR	17	-51	736	0	0.3	0.6	0.7
1701634	99	P	SUR	14	-50	736	0	0.3	0.1	0.3
1701635	99	P	SUR	14	-50	662	0	0.5	0.2	0.6
2501538	99	P	SUR	86	-22	712	0	1.4	0.3	1.4
2501543	99	P	SUR	83	26	745	1	0.3	-0.2	0.4
2501544	99	P	SUR	83	20	745	0	0.3	-0.0	0.3
2501647	99	P	SUR	74	-15	732	230	4.8	4.0	6.2
2601625	99	P	SUR	77	17	744	0	3.1	-0.4	3.2
4100040	99	P	SUR	15	-53	3867	0	0.3	-0.2	0.4
4100043	99	P	SUR	21	-65	3412	0	0.3	0.3	0.4
4100044	99	P	SUR	22	-59	3151	0	0.3	0.2	0.3
4100046	99	P	SUR	24	-68	3134	0	0.4	0.2	0.4
4100048	99	P	SUR	32	-70	3080	0	0.3	-0.0	0.3
4100049	99	P	SUR	27	-63	3137	0	0.3	-0.6	0.7
4100052	99	P	SUR	18	-65	168	0	0.3	-0.9	0.9
4100053	99	P	SUR	18	-66	4040	0	0.4	-0.8	0.8
4100056	99	P	SUR	18	-65	4427	0	0.4	-0.8	0.9
4100139	99	P	SUR	20	-38	618	0	0.2	0.1	0.2
4100300	99	P	SUR	16	-57	744	0	0.3	0.1	0.3

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
4100729	99	P	SUR	32	-29	743	0	1.3	4.8	5.0
4101531	99	P	SUR	28	-26	743	0	0.3	0.6	0.7
4101537	99	P	SUR	30	-19	743	0	0.3	-2.4	2.4
4101556	99	P	SUR	29	-70	59	0	0.2	0.7	0.8
4101557	99	P	SUR	26	-49	741	0	0.2	0.4	0.4
4101560	99	P	SUR	30	-15	743	0	0.3	0.8	0.9
4101564	99	P	SUR	27	-44	688	0	0.2	0.2	0.3
4101565	99	P	SUR	26	-49	741	0	0.2	0.5	0.6
4101567	99	P	SUR	30	-34	743	0	0.2	0.6	0.7
4101570	99	P	SUR	27	-68	742	0	0.4	0.4	0.5
4101573	99	P	SUR	31	-40	743	0	0.2	0.3	0.4
4101574	99	P	SUR	31	-45	745	0	0.2	0.5	0.6
4101594	99	P	SUR	13	-60	23	0	0.4	-4.2	4.2
4101595	99	P	SUR	18	-65	23	23	0.0	0.0	0.0
4101598	99	P	SUR	18	-65	59	0	0.4	-0.1	0.4
4101599	99	P	SUR	50	-6	23	0	0.0	-4.1	4.1
4101603	99	P	SUR	15	-61	483	0	0.3	-0.2	0.4
4101609	99	P	SUR	32	-18	743	0	0.3	0.3	0.4
4101610	99	P	SUR	68	2	731	0	0.3	0.3	0.4
4101613	99	P	SUR	29	-21	743	0	0.2	0.7	0.7
4101614	99	P	SUR	30	-19	744	0	0.3	0.2	0.4
4101616	99	P	SUR	36	-18	742	0	0.2	0.2	0.3
4101617	99	P	SUR	27	-26	743	0	0.3	0.6	0.6
4101618	99	P	SUR	32	-30	743	0	0.2	0.3	0.3
4101620	99	P	SUR	53	-5	23	0	0.0	-5.0	5.0
4101621	99	P	SUR	33	-32	743	0	0.2	0.3	0.4
4101622	99	P	SUR	64	-10	742	0	0.3	0.0	0.3
4101623	99	P	SUR	57	-48	742	0	0.3	0.2	0.4
4101627	99	P	SUR	58	-56	743	0	0.4	0.1	0.4
4101632	99	P	SUR	10	-17	742	0	0.7	0.5	0.9
4101653	99	P	SUR	63	-12	612	0	0.3	-0.3	0.4
4101655	99	P	SUR	61	-11	743	0	0.3	-0.1	0.3
4101656	99	P	SUR	63	-15	518	0	0.4	0.0	0.4
4101657	99	P	SUR	63	-17	743	0	0.4	-0.1	0.4
4101658	99	P	SUR	58	-27	743	0	0.4	0.1	0.4
4101659	99	P	SUR	64	10	742	0	0.3	0.1	0.3
4101662	99	P	SUR	72	20	743	0	0.3	0.1	0.3
4101663	99	P	SUR	53	-54	743	0	0.3	0.2	0.4
4101664	99	P	SUR	59	-31	743	0	0.4	0.1	0.5
4101669	99	P	SUR	19	-53	743	0	0.2	0.2	0.3
4101690	99	P	SUR	48	-14	721	0	0.3	0.1	0.3
4101696	99	P	SUR	20	-52	743	0	0.2	0.2	0.3
4101698	99	P	SUR	13	-60	288	0	0.4	-0.7	0.8

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
4101699	99	P	SUR	13	-61	742	0	0.4	-1.0	1.0
4101705	99	P	SUR	29	-35	567	0	1.9	-2.6	3.2
4101707	99	P	SUR	33	-21	743	0	0.2	-0.1	0.2
4101708	99	P	SUR	36	-51	743	0	0.3	-0.5	0.6
4101712	99	P	SUR	37	-14	743	0	0.5	-0.9	1.0
4101714	99	P	SUR	32	-28	743	0	0.2	-0.0	0.2
4101715	99	P	SUR	40	-46	743	0	0.5	-0.4	0.7
4101716	99	P	SUR	24	-67	743	0	0.3	-0.7	0.8
4101717	99	P	SUR	34	-63	743	0	0.4	-0.2	0.4
4101718	99	P	SUR	25	-35	743	0	0.2	0.1	0.2
4101719	99	P	SUR	30	-49	743	0	0.2	0.0	0.2
4101720	99	P	SUR	33	-40	742	0	0.3	0.4	0.5
4101721	99	P	SUR	30	-44	743	0	0.2	0.8	0.9
4101742	99	P	SUR	30	-38	743	0	0.2	0.2	0.3
4101743	99	P	SUR	37	-69	743	0	0.4	0.6	0.7
4101752	99	P	SUR	41	-55	743	0	0.3	-0.0	0.3
4101753	99	P	SUR	26	-36	743	0	0.2	0.4	0.4
4101755	99	P	SUR	20	-40	743	0	0.2	0.3	0.4
4101756	99	P	SUR	11	-48	743	0	0.4	-0.1	0.4
4101757	99	P	SUR	14	-61	1487	0	0.3	0.4	0.5
41040	99	P	SUR	15	-53	1291	0	0.4	-0.2	0.4
41043	99	P	SUR	21	-65	1330	0	0.4	0.3	0.5
41044	99	P	SUR	22	-59	1343	0	0.3	0.1	0.3
41046	99	P	SUR	24	-68	3021	0	0.4	0.3	0.5
41048	99	P	SUR	32	-70	3018	0	0.3	-0.0	0.3
41049	99	P	SUR	28	-63	3055	0	0.3	-0.6	0.7
41052	99	P	SUR	18	-65	171	0	0.3	-0.8	0.9
41053	99	P	SUR	19	-66	1474	0	0.4	-0.8	0.9
41056	99	P	SUR	18	-66	1538	0	0.4	-0.9	1.0
4200059	99	P	SUR	15	-67	3155	0	0.4	-0.1	0.4
4200060	99	P	SUR	16	-63	3370	0	0.3	-0.1	0.4
4200085	99	P	SUR	18	-67	4362	0	0.3	-0.8	0.9
42059	99	P	SUR	15	-68	1264	0	0.4	-0.2	0.4
42060	99	P	SUR	16	-63	1292	0	0.4	-0.1	0.4
42085	99	P	SUR	18	-67	1555	0	0.4	-0.8	0.9
4400008	99	P	SUR	41	-69	3544	0	0.3	0.5	0.6
4400011	99	P	SUR	41	-67	2894	0	0.4	0.2	0.4
4400027	99	P	SUR	44	-67	651	0	0.5	-0.2	0.5
4400032	99	P	SUR	44	-69	724	0	0.4	-1.4	1.5
4400033	99	P	SUR	44	-69	710	0	0.5	-1.4	1.5
4400034	99	P	SUR	44	-68	736	0	0.4	0.7	0.8
4400037	99	P	SUR	43	-68	733	0	0.4	-0.1	0.4
4400777	99	P	SUR	33	-63	743	0	0.3	0.2	0.3

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
44008	99	P	SUR	41	-69	3229	0	0.4	0.5	0.6
4400857	99	P	SUR	29	-28	743	0	0.2	0.4	0.5
44011	99	P	SUR	41	-67	2664	0	0.3	0.2	0.4
4401531	99	P	SUR	28	-20	740	0	0.3	0.5	0.6
4401539	99	P	SUR	26	-43	741	0	0.4	-0.1	0.4
4401540	99	P	SUR	35	-38	741	0	0.2	0.2	0.3
4401541	99	P	SUR	31	-34	741	0	0.2	-0.3	0.3
4401542	99	P	SUR	30	-65	741	0	0.3	0.5	0.5
4401551	99	P	SUR	29	-23	741	0	0.3	0.3	0.4
4401557	99	P	SUR	29	-36	742	0	0.2	0.3	0.4
4401558	99	P	SUR	66	12	743	0	0.3	-0.5	0.6
4401562	99	P	SUR	26	-47	743	0	0.2	-0.3	0.4
4401563	99	P	SUR	34	-31	743	0	0.2	-0.3	0.4
4401565	99	P	SUR	62	-20	743	0	0.4	0.0	0.4
4401569	99	P	SUR	55	-24	742	0	0.5	1.2	1.3
4401572	99	P	SUR	40	-20	732	0	0.2	0.5	0.5
4401574	99	P	SUR	59	-41	742	0	0.5	0.2	0.5
4401576	99	P	SUR	38	-17	742	0	0.2	0.5	0.5
4401577	99	P	SUR	41	-31	741	0	0.3	0.2	0.3
4401578	99	P	SUR	31	-16	742	0	0.2	0.2	0.3
4401580	99	P	SUR	46	-16	743	0	0.3	0.3	0.4
4401581	99	P	SUR	36	-39	743	0	0.2	0.3	0.4
4401582	99	P	SUR	42	-22	738	0	0.2	0.3	0.4
4401611	99	P	SUR	46	-10	14	14	0.0	0.0	0.0
4401613	99	P	SUR	28	-45	695	10	0.7	-0.1	0.7
4401750	99	P	SUR	66	-6	602	0	0.3	-1.4	1.4
4401751	99	P	SUR	71	23	736	0	0.3	-0.0	0.3
4401799	99	P	SUR	29	-69	229	0	0.4	0.2	0.4
4401826	99	P	SUR	41	-58	739	0	0.5	-1.8	1.8
4401827	99	P	SUR	44	-64	317	0	0.3	0.3	0.4
4401828	99	P	SUR	51	-39	721	0	0.5	0.3	0.6
4401829	99	P	SUR	46	-43	735	0	0.6	0.2	0.6
4401830	99	P	SUR	49	-27	254	0	0.4	-0.0	0.4
4401831	99	P	SUR	42	-34	559	0	0.5	0.8	0.9
4401837	99	P	SUR	44	-38	741	0	0.4	0.1	0.4
4401838	99	P	SUR	48	-20	29	0	0.4	-3.1	3.1
4401840	99	P	SUR	51	-44	572	0	0.4	0.8	0.9
4401848	99	P	SUR	42	-63	738	0	0.4	-0.0	0.4
4401850	99	P	SUR	45	-58	737	0	0.4	0.0	0.4
4401851	99	P	SUR	42	-63	739	0	0.3	0.1	0.4
4401854	99	P	SUR	23	-61	743	0	0.3	-0.2	0.3
4401870	99	P	SUR	25	-32	744	0	0.2	0.5	0.5
4401872	99	P	SUR	22	-36	743	0	0.2	0.1	0.3

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
4401873	99	P	SUR	19	-32	743	0	0.3	0.1	0.3
4401874	99	P	SUR	22	-27	743	0	0.3	0.4	0.5
4401894	99	P	SUR	52	-37	732	0	0.4	0.3	0.5
4402687	99	P	SUR	41	-50	740	0	0.6	0.1	0.6
44027	99	P	SUR	44	-67	1224	0	0.5	-0.2	0.5
44032	99	P	SUR	44	-69	1329	0	0.4	-1.4	1.5
44033	99	P	SUR	44	-69	1302	0	0.5	-1.4	1.5
44034	99	P	SUR	44	-68	1349	0	0.5	0.7	0.9
44037	99	P	SUR	44	-68	1346	0	0.4	-0.0	0.4
44078	99	P	SUR	60	-40	920	0	0.4	-0.6	0.7
44137	99	P	SUR	42	-62	1356	0	0.3	0.1	0.4
44139	99	P	SUR	44	-57	1167	0	0.5	-0.1	0.5
44150	99	P	SUR	43	-64	1336	0	0.3	-0.1	0.4
4700546	99	P	SUR	36	-56	727	0	0.4	0.1	0.4
6100001	99	P	SUR	43	8	743	0	0.5	0.4	0.6
6100002	99	P	SUR	42	5	744	0	0.3	0.2	0.4
6100196	99	P	SUR	42	4	743	0	0.5	0.5	0.7
6100197	99	P	SUR	40	4	743	0	0.4	0.6	0.7
6100198	99	P	SUR	37	-2	744	0	0.5	0.4	0.6
6100280	99	P	SUR	41	1	744	0	0.4	0.4	0.6
6100281	99	P	SUR	40	0	744	0	0.4	0.4	0.6
6100417	99	P	SUR	38	0	744	0	0.5	0.6	0.8
6100430	99	P	SUR	40	2	744	0	0.5	0.4	0.6
6101007	99	P	SUR	36	25	209	0	0.4	-0.1	0.4
6101009	99	P	SUR	35	25	108	0	0.4	-0.8	0.9
6102501	99	P	SUR	32	25	21	21	0.0	0.0	0.0
6102504	99	P	SUR	36	1	23	0	0.5	-13.4	13.4
6102507	99	P	SUR	31	30	743	0	0.2	-0.4	0.5
6102508	99	P	SUR	31	34	55	0	0.2	-0.4	0.4
6200024	99	P	SUR	44	-3	744	0	0.4	0.5	0.7
6200025	99	P	SUR	44	-6	744	0	0.3	0.8	0.8
6200082	99	P	SUR	44	-8	744	0	0.4	0.3	0.5
6200083	99	P	SUR	43	-9	744	0	0.4	0.4	0.6
6200084	99	P	SUR	42	-9	744	0	0.4	0.4	0.6
6200085	99	P	SUR	36	-7	744	0	0.4	0.7	0.7
6200091	99	P	SUR	53	-5	743	0	0.4	-0.1	0.5
6200092	99	P	SUR	51	-11	743	0	0.4	-0.3	0.5
6200093	99	P	SUR	55	-10	741	0	0.4	-0.2	0.5
6200094	99	P	SUR	52	-7	743	0	0.4	0.1	0.4
6200095	99	P	SUR	53	-16	743	0	0.5	-0.0	0.5
62001	99	P	SUR	45	-5	2120	0	0.3	0.2	0.3
6200199	99	P	SUR	40	-9	731	0	0.3	-0.3	0.4
6200200	99	P	SUR	36	-8	732	0	0.5	-1.2	1.3

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
6201030	99	P	SUR	44	-4	723	0	0.3	0.4	0.5
6201065	99	P	SUR	54	7	737	0	0.3	1.1	1.2
6201066	99	P	SUR	55	7	718	0	0.2	0.2	0.3
62023	99	P	SUR	51	-8	2227	0	0.4	-0.1	0.4
6202613	99	P	SUR	20	-37	743	0	0.2	0.1	0.3
6202614	99	P	SUR	20	-39	743	0	0.6	1.4	1.5
6202623	99	P	SUR	63	-13	254	0	0.3	-0.2	0.3
6202624	99	P	SUR	59	-25	537	0	0.3	0.0	0.3
6202625	99	P	SUR	50	-9	585	0	0.3	0.1	0.3
6202626	99	P	SUR	52	-15	396	0	0.5	-0.1	0.5
6202628	99	P	SUR	60	-38	202	0	0.3	-0.1	0.3
6202630	99	P	SUR	53	-17	396	0	0.5	-0.1	0.5
6202631	99	P	SUR	56	-23	396	0	0.3	0.0	0.3
6202632	99	P	SUR	53	-22	396	0	0.4	0.1	0.4
6202633	99	P	SUR	58	-31	278	0	0.3	0.1	0.3
6202634	99	P	SUR	63	-13	743	0	0.3	-0.0	0.3
6202637	99	P	SUR	62	-14	743	0	0.3	0.1	0.3
6202638	99	P	SUR	18	-55	743	0	0.3	-0.2	0.3
6202639	99	P	SUR	32	-46	743	0	0.2	0.1	0.2
6202640	99	P	SUR	27	-66	743	0	0.3	0.0	0.3
6202641	99	P	SUR	16	-61	23	0	0.0	-7.1	7.1
6202642	99	P	SUR	24	-59	684	1	0.2	0.0	0.2
6202643	99	P	SUR	23	-68	743	0	0.3	-0.2	0.3
6202644	99	P	SUR	30	-46	743	0	0.2	-1.1	1.1
6202645	99	P	SUR	23	-56	743	0	0.2	0.1	0.2
6202646	99	P	SUR	22	-61	744	0	0.3	0.2	0.3
6202675	99	P	SUR	58	-2	725	0	0.3	0.4	0.5
6202677	99	P	SUR	64	-1	718	0	1.1	0.8	1.4
6202678	99	P	SUR	63	-53	710	0	0.4	0.2	0.4
6202680	99	P	SUR	64	10	732	0	0.4	-0.2	0.4
6202681	99	P	SUR	64	5	726	0	0.2	0.2	0.3
6202683	99	P	SUR	65	7	717	0	0.3	0.4	0.5
6202684	99	P	SUR	66	-11	707	0	0.3	0.4	0.5
6202685	99	P	SUR	39	11	740	0	0.2	0.5	0.5
6202686	99	P	SUR	39	5	737	0	0.4	0.4	0.6
6202687	99	P	SUR	38	15	509	0	0.3	-2.5	2.5
6202688	99	P	SUR	39	7	740	0	0.4	0.4	0.6
6202690	99	P	SUR	41	7	739	0	0.3	-0.0	0.3
6202691	99	P	SUR	40	5	737	0	0.4	0.3	0.5
6203523	99	P	SUR	75	14	516	0	0.3	-0.9	1.0
6203529	99	P	SUR	35	-47	743	0	0.3	-0.6	0.6
6203574	99	P	SUR	50	-48	717	0	0.4	0.6	0.7
6203580	99	P	SUR	65	-8	718	0	0.3	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
6203581	99	P	SUR	77	6	697	0	0.4	0.0	0.4
6203582	99	P	SUR	62	-56	726	0	0.4	0.3	0.5
6203583	99	P	SUR	59	-17	563	0	0.4	0.1	0.4
6203585	99	P	SUR	67	9	733	0	0.3	0.4	0.5
6203587	99	P	SUR	65	2	669	0	0.2	-0.2	0.3
6203588	99	P	SUR	58	-46	720	0	0.4	0.8	0.9
6203601	99	P	SUR	27	-44	743	0	0.2	0.8	0.8
6203607	99	P	SUR	27	-25	743	0	0.3	0.3	0.4
6203609	99	P	SUR	36	-19	743	0	0.2	-0.1	0.2
6203612	99	P	SUR	29	-38	743	0	0.2	0.0	0.2
6203613	99	P	SUR	33	-34	743	0	0.2	0.3	0.3
6203626	99	P	SUR	58	-13	395	0	0.4	0.3	0.5
6203631	99	P	SUR	24	-48	743	0	0.2	-0.1	0.2
6203634	99	P	SUR	45	-16	743	0	0.2	0.1	0.3
6203641	99	P	SUR	47	-4	743	0	0.3	0.3	0.4
6203754	99	P	SUR	52	-13	742	0	0.4	-0.1	0.4
6203755	99	P	SUR	51	-15	687	0	0.4	0.0	0.4
6203756	99	P	SUR	51	-15	691	0	0.4	-0.5	0.6
6203757	99	P	SUR	50	-12	741	0	0.3	-0.2	0.4
6203758	99	P	SUR	55	-12	180	0	0.3	-0.0	0.3
6203759	99	P	SUR	56	-10	19	0	0.2	-0.1	0.2
6203760	99	P	SUR	55	-15	230	0	0.3	0.0	0.3
6203761	99	P	SUR	51	-12	696	0	0.4	-0.1	0.4
62091	99	P	SUR	53	-5	744	0	0.4	-0.1	0.5
62092	99	P	SUR	51	-11	744	0	0.4	-0.3	0.5
62093	99	P	SUR	55	-10	742	0	0.4	-0.2	0.5
62094	99	P	SUR	52	-7	744	0	0.4	0.1	0.4
62095	99	P	SUR	53	-16	744	0	0.5	-0.0	0.5
62102	99	P	SUR	58	2	2120	0	0.3	0.2	0.4
62103	99	P	SUR	50	-3	2076	0	0.3	0.6	0.7
62104	99	P	SUR	57	1	2121	0	0.3	0.0	0.3
62105	99	P	SUR	55	-12	2096	3	0.4	-0.3	0.5
62107	99	P	SUR	50	-6	2811	0	0.3	0.4	0.5
62112	99	P	SUR	58	0	2120	0	0.3	0.4	0.5
62113	99	P	SUR	58	0	2120	0	0.4	0.2	0.4
62114	99	P	SUR	58	0	2811	0	0.4	0.3	0.5
62115	99	P	SUR	58	-3	2112	0	0.3	0.1	0.3
62116	99	P	SUR	58	1	2121	0	0.4	0.1	0.4
62118	99	P	SUR	58	1	2121	0	0.3	0.6	0.6
62119	99	P	SUR	57	2	2115	0	0.5	0.3	0.6
62120	99	P	SUR	56	2	2069	0	0.3	-0.0	0.3
62121	99	P	SUR	54	3	2121	0	0.3	0.4	0.5
62122	99	P	SUR	57	2	2813	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
62124	99	P	SUR	54	-4	2117	0	0.3	0.1	0.3
62127	99	P	SUR	54	1	2081	0	0.3	0.7	0.8
62129	99	P	SUR	58	0	2120	0	0.3	0.1	0.3
62130	99	P	SUR	59	1	2114	0	0.3	0.1	0.3
62131	99	P	SUR	54	1	2072	0	0.2	0.5	0.6
62132	99	P	SUR	56	2	2115	0	0.4	0.6	0.8
62133	99	P	SUR	57	1	2121	0	0.3	0.2	0.4
62134	99	P	SUR	58	1	2120	0	0.3	0.7	0.8
62135	99	P	SUR	54	2	2080	0	0.3	0.4	0.5
62138	99	P	SUR	54	0	2762	0	0.4	0.7	0.8
62140	99	P	SUR	57	1	2813	0	0.4	0.2	0.4
62141	99	P	SUR	58	-4	1822	0	0.4	-2.3	2.4
62143	99	P	SUR	58	2	2116	0	0.5	0.8	1.0
62144	99	P	SUR	53	2	2121	0	0.3	0.4	0.5
62145	99	P	SUR	53	3	2813	0	0.3	0.5	0.6
62146	99	P	SUR	57	2	2087	0	0.6	0.2	0.6
62148	99	P	SUR	54	2	2090	0	0.4	0.8	1.0
62149	99	P	SUR	54	1	2121	0	0.2	0.8	0.9
62150	99	P	SUR	54	1	2121	0	0.3	1.4	1.5
62151	99	P	SUR	57	2	2809	0	0.2	0.3	0.4
62152	99	P	SUR	57	2	2121	0	0.4	0.6	0.7
62153	99	P	SUR	57	2	2813	0	0.3	0.3	0.5
62154	99	P	SUR	56	2	2121	0	0.3	0.2	0.3
62155	99	P	SUR	58	1	2121	0	0.4	0.5	0.7
62157	99	P	SUR	58	0	2120	0	0.4	0.0	0.4
62160	99	P	SUR	57	2	2813	0	0.3	0.4	0.5
62161	99	P	SUR	58	1	2106	0	0.3	-0.1	0.3
62162	99	P	SUR	57	1	2107	0	0.3	0.2	0.4
62163	99	P	SUR	48	-8	2118	0	0.3	0.4	0.5
62164	99	P	SUR	57	1	2080	0	0.3	0.5	0.6
62165	99	P	SUR	54	1	2116	0	0.3	0.7	0.8
62168	99	P	SUR	58	1	2109	0	0.3	0.2	0.4
62296	99	P	SUR	53	2	2121	0	0.3	0.2	0.3
62297	99	P	SUR	59	2	1700	0	0.2	0.2	0.3
62302	99	P	SUR	61	-2	2119	0	0.4	0.0	0.4
62304	99	P	SUR	51	2	2114	0	0.5	0.2	0.5
62305	99	P	SUR	50	0	42	0	0.3	0.1	0.3
6301004	99	P	SUR	72	20	740	0	0.3	0.1	0.3
6301005	99	P	SUR	73	35	741	0	0.4	-0.1	0.4
6301006	99	P	SUR	63	6	375	0	0.3	-0.6	0.7
6301508	99	P	SUR	70	33	523	0	2.3	-0.4	2.4
6301544	99	P	SUR	70	33	738	0	0.4	0.5	0.6
6301564	99	P	SUR	60	-38	743	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
6301566	99	P	SUR	83	16	742	0	0.4	0.2	0.4
6301567	99	P	SUR	81	7	759	0	0.3	-0.1	0.3
6301569	99	P	SUR	80	5	741	0	0.3	0.5	0.6
6301570	99	P	SUR	82	5	742	0	0.3	0.3	0.5
6301571	99	P	SUR	81	6	742	0	0.3	0.2	0.3
63055	99	P	SUR	61	2	2100	0	0.3	0.0	0.3
63056	99	P	SUR	60	2	2120	0	0.3	0.3	0.4
63057	99	P	SUR	59	2	2115	0	0.3	0.0	0.3
63058	99	P	SUR	53	2	1978	0	0.3	0.3	0.4
63059	99	P	SUR	58	-1	2117	0	0.3	0.6	0.7
63101	99	P	SUR	61	1	2089	0	0.3	0.1	0.3
63102	99	P	SUR	61	1	2100	0	0.3	0.1	0.3
63103	99	P	SUR	61	1	2117	0	0.3	0.3	0.4
63104	99	P	SUR	61	2	2120	0	0.3	0.1	0.3
63108	99	P	SUR	61	2	2120	0	0.3	0.0	0.3
63109	99	P	SUR	60	2	2120	0	0.3	-0.2	0.3
63110	99	P	SUR	60	2	2120	0	0.3	-0.1	0.3
63112	99	P	SUR	61	1	2040	0	0.3	-0.2	0.4
63115	99	P	SUR	62	1	2115	0	0.3	0.2	0.4
63117	99	P	SUR	61	1	2811	0	0.3	0.3	0.5
63118	99	P	SUR	58	-4	1563	0	0.4	0.0	0.4
6401506	99	P	SUR	71	1	113	0	0.4	0.3	0.5
6401531	99	P	SUR	61	-42	741	0	0.4	0.1	0.4
6401539	99	P	SUR	49	-14	722	0	0.3	0.6	0.7
6401569	99	P	SUR	66	-22	742	0	0.5	-0.1	0.5
6401784	99	P	SUR	80	7	2952	0	0.4	0.0	0.4
6401795	99	P	SUR	75	-5	726	0	0.3	0.5	0.6
6402539	99	P	SUR	59	-52	739	0	0.3	0.1	0.4
6402540	99	P	SUR	59	-47	696	0	0.3	0.3	0.4
6402541	99	P	SUR	64	-2	700	0	0.3	0.1	0.3
6402542	99	P	SUR	63	-17	729	0	0.4	0.2	0.4
6402543	99	P	SUR	67	-30	732	0	0.4	0.3	0.5
6402544	99	P	SUR	67	-18	731	0	0.3	0.3	0.4
6402545	99	P	SUR	65	-9	736	0	0.3	0.0	0.3
6402546	99	P	SUR	63	-11	729	0	0.4	0.2	0.4
64041	99	P	SUR	61	-3	2120	0	0.3	0.1	0.3
64045	99	P	SUR	59	-12	2120	0	0.4	-0.2	0.5
64046	99	P	SUR	61	-4	2119	0	0.3	-0.0	0.3
66023	99	P	SUR	55	11	231	0	0.3	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 : JUL 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
007	99	SPEED	SUR	75	16	1	0	0	0.0	-2.5	2.5
0640046	99	SPEED	SUR	60	-4	732	0	0	1.2	-0.4	1.2
1300001	99	SPEED	SUR	11	-23	624	0	0	2.0	0.6	2.1
1300002	99	SPEED	SUR	20	-23	624	0	0	0.9	0.1	0.9
1300008	99	SPEED	SUR	15	-38	606	0	0	1.0	0.2	1.0
1300130	99	SPEED	SUR	28	-16	744	0	0	0.7	0.8	1.0
1300131	99	SPEED	SUR	28	-17	743	0	0	2.4	3.5	4.2
4100026	99	SPEED	SUR	12	-38	253	0	0	1.5	0.4	1.6
4100040	99	SPEED	SUR	15	-53	4097	0	0	0.9	0.3	1.0
4100043	99	SPEED	SUR	21	-65	3355	0	0	1.1	0.5	1.2
4100044	99	SPEED	SUR	22	-59	3150	0	0	0.8	0.3	0.8
4100046	99	SPEED	SUR	24	-68	3133	0	0	1.0	0.2	1.0
4100048	99	SPEED	SUR	32	-70	3079	0	0	1.1	0.1	1.1
4100049	99	SPEED	SUR	27	-63	3137	0	0	1.1	0.3	1.1
4100052	99	SPEED	SUR	18	-65	168	0	0	0.8	-0.2	0.8
4100053	99	SPEED	SUR	18	-66	4040	0	0	1.3	1.2	1.8
4100056	99	SPEED	SUR	18	-65	4427	0	0	1.2	-0.9	1.5
4100139	99	SPEED	SUR	20	-38	618	0	0	0.8	-0.2	0.9
4100300	99	SPEED	SUR	16	-57	744	0	0	1.0	-0.3	1.0
41040	99	SPEED	SUR	15	-53	1361	0	0	1.0	0.0	1.0
41043	99	SPEED	SUR	21	-65	1298	0	0	1.1	0.3	1.1
41044	99	SPEED	SUR	22	-59	1342	0	0	0.8	-0.1	0.8
41046	99	SPEED	SUR	24	-68	3020	0	0	1.1	-0.2	1.1
41048	99	SPEED	SUR	32	-70	3016	0	0	1.1	-0.1	1.2
41049	99	SPEED	SUR	28	-63	3055	0	0	1.1	-0.1	1.1
41052	99	SPEED	SUR	18	-65	171	0	0	0.9	-0.1	0.9
41053	99	SPEED	SUR	19	-66	1474	0	0	1.3	0.5	1.4
41056	99	SPEED	SUR	18	-66	1538	0	0	1.2	-0.6	1.4
4200059	99	SPEED	SUR	15	-67	3255	0	0	0.8	0.3	0.9
4200060	99	SPEED	SUR	16	-63	3540	0	0	1.1	0.4	1.1
4200085	99	SPEED	SUR	18	-67	4392	0	0	1.3	-0.4	1.3
42059	99	SPEED	SUR	15	-68	1379	0	0	0.9	0.0	0.9
42060	99	SPEED	SUR	16	-63	1344	0	0	1.1	-0.0	1.1
42085	99	SPEED	SUR	18	-67	1564	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
440008	99	SPEED	SUR	41	-69	4056	0	0	1.4	-0.3	1.5
440027	99	SPEED	SUR	44	-67	651	0	0	1.4	-0.6	1.5
440032	99	SPEED	SUR	44	-69	726	0	0	1.4	-0.6	1.5
440033	99	SPEED	SUR	44	-69	709	0	0	1.4	-0.6	1.6
440034	99	SPEED	SUR	44	-68	737	0	0	1.5	-1.3	2.0
440037	99	SPEED	SUR	43	-68	732	0	0	1.2	-0.3	1.2
44008	99	SPEED	SUR	41	-69	3578	0	0	1.5	-0.4	1.6
44011	99	SPEED	SUR	41	-67	8	0	0	0.5	-2.0	2.1
44027	99	SPEED	SUR	44	-67	1224	0	0	1.4	-0.5	1.5
44032	99	SPEED	SUR	44	-69	1333	0	0	1.4	-0.6	1.6
44033	99	SPEED	SUR	44	-69	1301	0	0	1.4	-0.4	1.5
44034	99	SPEED	SUR	44	-68	1351	0	0	1.5	-1.2	1.9
44037	99	SPEED	SUR	44	-68	1344	0	0	1.2	-0.2	1.3
44137	99	SPEED	SUR	42	-62	1359	0	0	1.3	-0.4	1.4
44139	99	SPEED	SUR	44	-57	1162	0	0	1.4	-0.3	1.5
44150	99	SPEED	SUR	43	-64	1337	0	0	1.3	-0.2	1.3
610001	99	SPEED	SUR	43	8	743	0	0	1.6	-0.3	1.6
610002	99	SPEED	SUR	42	5	744	0	0	1.1	-0.0	1.1
6100196	99	SPEED	SUR	42	4	701	0	0	1.6	-1.4	2.1
6100197	99	SPEED	SUR	40	4	733	0	0	1.2	-0.4	1.3
6100198	99	SPEED	SUR	37	-2	734	0	0	1.6	-0.8	1.8
6100280	99	SPEED	SUR	41	1	732	0	0	1.4	-0.3	1.5
6100281	99	SPEED	SUR	40	0	734	0	0	1.6	0.5	1.7
6100417	99	SPEED	SUR	38	0	743	0	0	1.3	-0.3	1.3
6100430	99	SPEED	SUR	40	2	725	0	0	1.6	0.3	1.6
6101005	99	SPEED	SUR	38	26	143	0	0	2.3	-9.7	10.0
6101007	99	SPEED	SUR	36	25	209	0	0	1.1	0.2	1.2
6101009	99	SPEED	SUR	35	25	108	0	0	1.1	1.7	2.0
6200024	99	SPEED	SUR	44	-3	740	0	0	1.1	-0.2	1.2
6200025	99	SPEED	SUR	44	-6	738	0	0	1.1	-0.8	1.3
6200082	99	SPEED	SUR	44	-8	742	0	0	0.8	-0.3	0.8
6200083	99	SPEED	SUR	43	-9	738	0	0	0.9	-0.2	0.9
6200084	99	SPEED	SUR	42	-9	737	0	0	1.0	-1.0	1.4
6200085	99	SPEED	SUR	36	-7	734	0	0	1.7	-0.5	1.8
6200091	99	SPEED	SUR	53	-5	743	0	0	1.3	0.2	1.3
6200093	99	SPEED	SUR	55	-10	387	0	0	1.1	0.0	1.1
6200094	99	SPEED	SUR	52	-7	743	0	0	1.0	0.1	1.0
6200095	99	SPEED	SUR	53	-16	743	0	0	1.1	-0.1	1.1
62001	99	SPEED	SUR	45	-5	2120	0	0	1.0	0.7	1.2
6200199	99	SPEED	SUR	40	-9	731	0	0	1.5	-1.1	1.9
6200200	99	SPEED	SUR	36	-8	731	0	0	1.3	0.2	1.4

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
6201030	99	SPEED	SUR	44	-4	718	0	0	1.0	-0.2	1.0
6201065	99	SPEED	SUR	54	7	4	0	0	0.0	-1.0	1.0
6201066	99	SPEED	SUR	55	7	697	0	0	1.1	0.1	1.1
62023	99	SPEED	SUR	51	-8	2227	0	0	1.3	0.9	1.6
62091	99	SPEED	SUR	53	-5	744	0	0	1.3	0.2	1.3
62093	99	SPEED	SUR	55	-10	387	0	0	1.1	0.1	1.1
62094	99	SPEED	SUR	52	-7	744	0	0	1.0	0.1	1.0
62095	99	SPEED	SUR	53	-16	744	0	0	1.2	-0.2	1.2
62102	99	SPEED	SUR	58	2	2120	0	0	1.3	0.1	1.3
62103	99	SPEED	SUR	50	-3	2076	0	0	1.4	1.0	1.7
62104	99	SPEED	SUR	57	1	2121	0	0	1.2	-0.3	1.2
62107	99	SPEED	SUR	50	-6	2811	0	0	1.1	0.9	1.4
62112	99	SPEED	SUR	58	0	2120	0	0	1.4	-0.4	1.5
62113	99	SPEED	SUR	58	0	2120	0	0	1.4	-0.0	1.4
62114	99	SPEED	SUR	58	0	2811	0	0	1.5	0.4	1.6
62118	99	SPEED	SUR	58	1	2121	0	0	1.3	0.4	1.4
62119	99	SPEED	SUR	57	2	2115	0	0	1.3	-0.3	1.3
62120	99	SPEED	SUR	56	2	2069	0	0	1.2	0.1	1.2
62121	99	SPEED	SUR	54	3	2121	0	0	1.1	-0.4	1.2
62122	99	SPEED	SUR	57	2	2813	0	0	1.1	-0.0	1.1
62129	99	SPEED	SUR	58	0	2120	0	0	1.3	-0.1	1.3
62131	99	SPEED	SUR	54	1	2072	0	0	1.7	-0.2	1.7
62132	99	SPEED	SUR	56	2	2110	0	0	1.6	-1.5	2.1
62133	99	SPEED	SUR	57	1	2121	0	0	1.4	-0.2	1.5
62134	99	SPEED	SUR	58	1	2120	0	0	1.3	-0.2	1.3
62140	99	SPEED	SUR	57	1	2469	0	0	1.2	0.1	1.2
62143	99	SPEED	SUR	58	2	2116	0	0	2.1	-1.2	2.4
62144	99	SPEED	SUR	53	2	2121	0	0	1.6	-0.2	1.6
62145	99	SPEED	SUR	53	3	2813	0	0	1.5	0.6	1.6
62146	99	SPEED	SUR	57	2	2084	0	0	1.1	0.0	1.1
62148	99	SPEED	SUR	54	2	2090	0	0	1.7	-0.2	1.7
62149	99	SPEED	SUR	54	1	2121	0	0	1.2	0.1	1.2
62150	99	SPEED	SUR	54	1	2121	0	0	1.4	-0.3	1.4
62152	99	SPEED	SUR	57	2	2121	0	0	1.5	-0.9	1.8
62153	99	SPEED	SUR	57	2	2813	0	0	3.0	-1.7	3.4
62154	99	SPEED	SUR	56	2	2121	0	0	1.2	0.0	1.2
62155	99	SPEED	SUR	58	1	2000	0	0	1.4	-0.1	1.4
62163	99	SPEED	SUR	48	-8	2118	0	0	0.8	0.1	0.8
62164	99	SPEED	SUR	57	1	2080	0	0	1.3	-0.5	1.4
62165	99	SPEED	SUR	54	1	2116	0	0	1.7	-0.4	1.7
62304	99	SPEED	SUR	51	2	2114	0	0	1.8	1.5	2.3

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
62305	99	SPEED	SUR	50	0	34	0	0	1.0	0.4	1.1
6301001	99	SPEED	SUR	63	5	743	0	0	2.3	-2.5	3.4
6301004	99	SPEED	SUR	72	20	739	0	0	1.0	-0.9	1.3
6301006	99	SPEED	SUR	63	6	375	0	0	1.4	0.4	1.5
63055	99	SPEED	SUR	61	2	2100	0	0	1.1	-0.8	1.3
63056	99	SPEED	SUR	60	2	2117	0	0	1.1	0.1	1.1
63057	99	SPEED	SUR	59	2	2115	0	0	1.5	-0.3	1.5
63058	99	SPEED	SUR	53	2	1978	0	0	1.3	0.1	1.3
63101	99	SPEED	SUR	61	1	2089	0	0	1.1	-0.5	1.2
63103	99	SPEED	SUR	61	1	2117	0	0	1.2	-0.6	1.3
63104	99	SPEED	SUR	61	2	2120	0	0	1.0	-0.4	1.1
63106	99	SPEED	SUR	61	2	1344	0	0	1.2	-0.7	1.4
63108	99	SPEED	SUR	61	2	2120	0	0	1.3	-0.5	1.4
63109	99	SPEED	SUR	60	2	2068	0	0	1.1	-0.0	1.1
63110	99	SPEED	SUR	60	2	2117	0	0	1.2	-0.5	1.3
63112	99	SPEED	SUR	61	1	2040	0	0	1.0	-0.6	1.2
63115	99	SPEED	SUR	62	1	2115	0	0	1.1	-0.4	1.2
63117	99	SPEED	SUR	61	1	2811	0	0	1.1	-0.4	1.1
64041	99	SPEED	SUR	61	-3	2120	0	0	1.3	-0.2	1.3
64045	99	SPEED	SUR	59	-12	2120	0	0	1.1	0.4	1.2
64046	99	SPEED	SUR	61	-4	2119	0	0	1.1	0.6	1.2
66021	99	SPEED	SUR	55	14	1427	0	0	1.2	0.3	1.2
66023	99	SPEED	SUR	55	11	231	0	0	1.5	1.3	2.0
66024	99	SPEED	SUR	55	13	1405	1	0	1.2	0.8	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 : JUL 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
03204	99	DIRN	SUR	26	-80	1	0	0	0.0	124.2	124.2
0640046	99	DIRN	SUR	60	-4	645	0	0	11.4	2.8	11.7
1300001	99	DIRN	SUR	11	-23	373	0	0	29.0	4.1	29.3
1300002	99	DIRN	SUR	20	-23	606	0	0	9.2	1.3	9.3
1300008	99	DIRN	SUR	15	-38	575	0	0	12.4	6.4	13.9
1300130	99	DIRN	SUR	28	-16	744	0	0	6.3	-5.0	8.1
1300131	99	DIRN	SUR	28	-17	373	0	0	15.6	2.6	15.8
4100001	99	DIRN	SUR	35	-72	2576	0	0	14.7	6.0	15.8
4100002	99	DIRN	SUR	32	-75	2230	0	0	20.2	9.7	22.4
4100004	99	DIRN	SUR	33	-79	1777	0	0	20.7	5.5	21.4
4100008	99	DIRN	SUR	31	-81	512	0	0	16.8	-3.2	17.1
4100009	99	DIRN	SUR	29	-80	2982	0	0	21.0	7.2	22.2
4100010	99	DIRN	SUR	29	-78	2588	0	0	19.9	3.8	20.2
4100013	99	DIRN	SUR	33	-78	2360	0	0	19.8	4.7	20.4
4100024	99	DIRN	SUR	34	-78	489	0	0	27.2	-23.0	35.6
4100025	99	DIRN	SUR	35	-75	1899	0	0	20.0	1.7	20.0
4100026	99	DIRN	SUR	12	-38	189	0	0	20.0	10.8	22.8
4100029	99	DIRN	SUR	33	-80	484	0	0	24.2	-5.1	24.7
4100033	99	DIRN	SUR	32	-80	540	0	0	22.9	-15.6	27.7
4100037	99	DIRN	SUR	34	-77	529	0	0	21.3	-18.9	28.4
4100038	99	DIRN	SUR	34	-78	534	0	0	25.1	-14.2	28.8
4100040	99	DIRN	SUR	15	-53	4015	0	0	9.5	5.7	11.1
4100043	99	DIRN	SUR	21	-65	3328	0	0	12.3	8.0	14.6
4100044	99	DIRN	SUR	22	-59	3144	0	0	7.5	9.2	11.9
4100046	99	DIRN	SUR	24	-68	2910	0	0	14.0	2.5	14.3
4100048	99	DIRN	SUR	32	-70	1845	0	0	15.4	2.4	15.6
4100049	99	DIRN	SUR	27	-63	2589	0	0	13.7	4.5	14.5
4100052	99	DIRN	SUR	18	-65	168	0	0	9.1	7.0	11.5
4100053	99	DIRN	SUR	18	-66	3360	0	0	13.7	1.5	13.8
4100056	99	DIRN	SUR	18	-65	4376	0	0	13.3	4.5	14.1
4100064	99	DIRN	SUR	34	-77	509	0	0	19.5	-16.5	25.6
41001	99	DIRN	SUR	35	-72	2213	0	0	14.8	3.0	15.1

DRIFTER MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF

ELEMENT MONITORED : WIND DIRECTION (DEGREES)

(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
4100139	99	DIRN	SUR	20	-38	613	0	0	9.7	3.2	10.2
41002	99	DIRN	SUR	32	-75	1802	0	0	19.8	9.5	22.0
4100300	99	DIRN	SUR	16	-57	726	0	0	10.4	7.0	12.6
41004	99	DIRN	SUR	33	-79	1535	0	0	20.7	2.2	20.8
41008	99	DIRN	SUR	31	-81	912	0	0	17.4	-4.2	17.9
41009	99	DIRN	SUR	29	-80	2078	0	0	22.4	6.5	23.3
41010	99	DIRN	SUR	29	-79	2325	0	0	19.7	0.1	19.7
41013	99	DIRN	SUR	33	-78	1868	0	0	19.4	0.4	19.4
41024	99	DIRN	SUR	34	-79	906	0	0	26.7	-24.6	36.3
41025	99	DIRN	SUR	35	-75	1569	0	0	20.5	0.5	20.5
41029	99	DIRN	SUR	33	-80	907	0	0	25.1	-6.1	25.9
41033	99	DIRN	SUR	32	-80	913	0	0	22.4	-15.8	27.4
41037	99	DIRN	SUR	34	-77	965	0	0	21.5	-19.0	28.7
41038	99	DIRN	SUR	34	-78	937	0	0	25.4	-14.3	29.1
41040	99	DIRN	SUR	15	-53	1325	0	0	9.9	5.4	11.3
41043	99	DIRN	SUR	21	-65	1289	0	0	12.3	7.2	14.2
41044	99	DIRN	SUR	22	-59	1338	0	0	8.3	5.3	9.8
41046	99	DIRN	SUR	24	-68	2752	0	0	14.1	-2.8	14.4
41048	99	DIRN	SUR	32	-70	1767	0	0	15.4	2.2	15.6
41049	99	DIRN	SUR	28	-63	2334	0	0	13.5	4.8	14.4
41052	99	DIRN	SUR	18	-65	171	0	0	9.6	6.3	11.5
41053	99	DIRN	SUR	19	-66	1339	0	0	13.5	1.3	13.6
41056	99	DIRN	SUR	18	-66	1512	0	0	13.7	4.8	14.5
41064	99	DIRN	SUR	34	-77	930	0	0	20.2	-17.1	26.5
4200013	99	DIRN	SUR	27	-83	1030	0	0	21.0	2.3	21.2
4200022	99	DIRN	SUR	28	-84	1037	0	0	17.5	-7.6	19.1
4200023	99	DIRN	SUR	26	-83	415	0	0	23.5	0.9	23.5
4200026	99	DIRN	SUR	25	-83	180	0	0	15.9	3.7	16.3
4200036	99	DIRN	SUR	29	-85	2929	0	0	17.9	10.5	20.8
4200056	99	DIRN	SUR	20	-85	2624	0	0	15.2	4.3	15.8
4200057	99	DIRN	SUR	17	-81	3002	0	0	12.5	4.3	13.2
4200058	99	DIRN	SUR	15	-75	748	0	0	5.1	3.7	6.3
4200059	99	DIRN	SUR	15	-67	3248	0	0	9.9	6.9	12.1
4200060	99	DIRN	SUR	16	-63	3511	0	0	12.0	7.6	14.2
4200085	99	DIRN	SUR	18	-67	4372	0	0	15.2	15.8	21.9
42013	99	DIRN	SUR	27	-83	1354	0	0	20.7	2.2	20.8
42022	99	DIRN	SUR	28	-84	1377	0	0	17.4	-7.6	19.0
42023	99	DIRN	SUR	26	-83	528	0	0	23.9	-0.1	23.9
42026	99	DIRN	SUR	25	-84	247	0	0	15.4	3.2	15.7
42036	99	DIRN	SUR	29	-85	2458	0	0	18.1	10.5	20.9
42056	99	DIRN	SUR	20	-85	1109	0	0	15.8	3.2	16.1

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

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
42057	99	DIRN	SUR	17	-81	1254	0	0	13.3	3.0	13.6
42058	99	DIRN	SUR	15	-75	306	0	0	6.2	1.0	6.2
42059	99	DIRN	SUR	15	-68	1375	0	0	10.3	2.9	10.7
42060	99	DIRN	SUR	16	-63	1318	0	0	12.7	10.8	16.7
42085	99	DIRN	SUR	18	-67	1544	0	0	14.4	16.1	21.6
4400007	99	DIRN	SUR	44	-70	354	0	0	21.3	1.4	21.4
4400008	99	DIRN	SUR	41	-69	2658	0	0	18.2	13.6	22.7
4400013	99	DIRN	SUR	42	-71	423	0	0	28.5	17.4	33.4
4400014	99	DIRN	SUR	37	-75	2968	0	0	16.7	5.5	17.6
4400017	99	DIRN	SUR	41	-72	3060	0	0	16.6	9.7	19.3
4400018	99	DIRN	SUR	42	-70	456	0	0	21.8	13.6	25.7
4400020	99	DIRN	SUR	41	-70	2795	0	0	18.7	7.8	20.3
4400022	99	DIRN	SUR	41	-74	457	0	0	29.0	14.2	32.3
4400025	99	DIRN	SUR	40	-73	2464	0	0	24.3	6.5	25.1
4400027	99	DIRN	SUR	44	-67	388	0	0	19.6	7.5	21.0
4400029	99	DIRN	SUR	43	-71	516	0	0	21.6	-15.8	26.8
4400030	99	DIRN	SUR	43	-70	426	0	0	22.9	6.3	23.8
4400032	99	DIRN	SUR	44	-69	387	0	0	22.2	7.4	23.4
4400033	99	DIRN	SUR	44	-69	279	0	0	22.9	10.2	25.1
4400034	99	DIRN	SUR	44	-68	332	0	0	20.3	12.6	23.9
4400037	99	DIRN	SUR	43	-68	505	0	0	14.2	5.7	15.3
4400040	99	DIRN	SUR	41	-74	196	0	0	30.1	8.1	31.1
4400058	99	DIRN	SUR	38	-76	4287	0	0	29.1	-9.3	30.6
4400062	99	DIRN	SUR	39	-76	1400	0	0	42.7	-6.8	43.3
4400065	99	DIRN	SUR	40	-74	2289	0	0	25.0	6.8	25.9
4400072	99	DIRN	SUR	37	-76	2540	0	0	28.6	-69.0	74.7
4400073	99	DIRN	SUR	43	-71	417	0	0	19.0	7.7	20.5
4400075	99	DIRN	SUR	40	-71	880	0	0	21.1	-9.3	23.1
4400076	99	DIRN	SUR	40	-71	805	0	0	29.1	-15.2	32.8
4400077	99	DIRN	SUR	40	-71	869	0	0	23.5	-16.5	28.7
44007	99	DIRN	SUR	44	-70	635	0	0	21.8	1.2	21.8
44008	99	DIRN	SUR	41	-69	2224	0	0	19.0	12.1	22.6
44013	99	DIRN	SUR	42	-71	717	0	0	27.4	15.8	31.6
44014	99	DIRN	SUR	37	-75	2620	0	0	18.3	4.5	18.8
44017	99	DIRN	SUR	41	-72	2491	0	0	15.6	6.1	16.8
44018	99	DIRN	SUR	42	-70	806	0	0	21.6	13.2	25.3
44020	99	DIRN	SUR	42	-70	2388	0	0	17.3	6.0	18.3
44022	99	DIRN	SUR	41	-74	393	0	0	25.8	14.6	29.6
44025	99	DIRN	SUR	40	-73	2676	0	0	24.0	6.9	25.0
44027	99	DIRN	SUR	44	-67	677	0	0	18.9	6.7	20.0
44029	99	DIRN	SUR	43	-71	923	0	0	18.6	-16.7	25.0

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
44030	99	DIRN	SUR	43	-70	736	0	0	23.0	4.8	23.5
44032	99	DIRN	SUR	44	-69	641	0	0	21.7	6.2	22.5
44033	99	DIRN	SUR	44	-69	472	0	0	24.0	9.1	25.7
44034	99	DIRN	SUR	44	-68	584	0	0	21.9	13.2	25.6
44037	99	DIRN	SUR	44	-68	900	0	0	15.7	5.3	16.6
44040	99	DIRN	SUR	41	-74	181	0	0	20.9	9.4	22.9
44058	99	DIRN	SUR	38	-76	1829	0	0	29.2	-9.8	30.8
44062	99	DIRN	SUR	39	-76	688	0	0	41.3	-7.2	41.9
44065	99	DIRN	SUR	40	-74	1831	0	0	25.1	6.2	25.8
44069	99	DIRN	SUR	41	-73	299	0	0	24.6	0.1	24.6
44072	99	DIRN	SUR	37	-76	1629	0	0	30.2	-68.7	75.0
44073	99	DIRN	SUR	43	-71	768	0	0	19.7	7.1	21.0
44075	99	DIRN	SUR	40	-71	745	0	0	26.7	-10.2	28.6
44076	99	DIRN	SUR	40	-71	712	0	0	30.9	-18.3	35.9
44077	99	DIRN	SUR	40	-71	680	0	0	24.4	-16.4	29.4
44137	99	DIRN	SUR	42	-62	970	0	0	16.9	-25.1	30.3
44139	99	DIRN	SUR	44	-57	817	0	0	25.8	-26.3	36.8
44150	99	DIRN	SUR	43	-64	993	0	0	14.6	-29.1	32.6
4500003	99	DIRN	SUR	45	-83	693	0	0	20.1	6.4	21.0
4500005	99	DIRN	SUR	42	-82	1113	0	0	20.6	4.3	21.1
4500008	99	DIRN	SUR	44	-82	814	0	0	15.5	7.3	17.2
4500012	99	DIRN	SUR	44	-77	2609	0	0	18.5	7.2	19.9
4500165	99	DIRN	SUR	42	-83	1399	0	0	34.6	-5.6	35.0
4500167	99	DIRN	SUR	42	-80	994	0	0	27.5	-15.4	31.5
4500169	99	DIRN	SUR	42	-82	1256	0	0	39.1	-41.8	57.2
4500175	99	DIRN	SUR	46	-85	1862	0	0	58.0	-36.8	68.7
4500176	99	DIRN	SUR	42	-82	1189	0	0	29.7	-7.4	30.6
4500178	99	DIRN	SUR	45	-73	788	0	0	22.8	-17.2	28.6
4500188	99	DIRN	SUR	44	-73	77	0	0	147.0	-86.7	170.7
45003	99	DIRN	SUR	45	-83	526	0	0	19.0	7.2	20.3
45005	99	DIRN	SUR	42	-82	920	0	0	20.4	4.3	20.9
45008	99	DIRN	SUR	44	-82	695	0	0	15.1	11.7	19.1
45012	99	DIRN	SUR	44	-77	2263	0	0	17.8	8.3	19.7
45132	99	DIRN	SUR	43	-81	655	0	0	23.8	-0.5	23.8
45135	99	DIRN	SUR	44	-77	887	0	0	18.7	5.4	19.4
45137	99	DIRN	SUR	46	-81	731	0	0	21.3	0.5	21.3
45139	99	DIRN	SUR	43	-80	575	0	0	29.0	2.0	29.1
45142	99	DIRN	SUR	43	-79	697	0	0	22.2	-4.3	22.6
45143	99	DIRN	SUR	45	-81	704	0	0	24.3	2.8	24.5
45147	99	DIRN	SUR	42	-83	572	0	0	27.0	7.3	28.0
45149	99	DIRN	SUR	44	-82	666	0	0	20.8	1.2	20.8

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

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
45151	99	DIRN	SUR	45	-79	430	0	0	23.6	-17.0	29.1
45152	99	DIRN	SUR	46	-80	376	0	0	23.5	10.3	25.7
45154	99	DIRN	SUR	46	-83	691	0	0	22.6	-1.3	22.6
45159	99	DIRN	SUR	44	-79	573	0	0	26.5	6.3	27.3
45165	99	DIRN	SUR	42	-83	936	0	0	34.1	-5.8	34.6
45167	99	DIRN	SUR	42	-80	811	0	0	28.2	-16.2	32.6
45169	99	DIRN	SUR	42	-82	858	0	0	38.6	-43.5	58.2
45175	99	DIRN	SUR	46	-85	904	0	0	57.0	-36.6	67.8
45176	99	DIRN	SUR	42	-82	734	0	0	29.6	-9.4	31.0
45178	99	DIRN	SUR	45	-73	973	0	0	25.5	-18.2	31.3
45188	99	DIRN	SUR	44	-73	282	0	0	163.9	-30.4	166.7
6100198	99	DIRN	SUR	37	-2	482	0	0	18.9	-2.1	19.0
6100281	99	DIRN	SUR	40	0	335	0	0	36.2	-10.8	37.8
6100417	99	DIRN	SUR	38	0	574	0	0	14.8	0.6	14.8
6200024	99	DIRN	SUR	44	-3	402	0	0	17.8	5.4	18.6
6200025	99	DIRN	SUR	44	-6	403	0	0	13.8	1.7	14.0
6200082	99	DIRN	SUR	44	-8	614	0	0	11.9	0.8	12.0
6200083	99	DIRN	SUR	43	-9	613	0	0	8.5	-3.9	9.4
6200084	99	DIRN	SUR	42	-9	563	0	0	13.8	5.7	14.9
6200085	99	DIRN	SUR	36	-7	345	0	0	26.9	0.2	26.9
6200091	99	DIRN	SUR	53	-5	577	0	0	13.7	3.2	14.0
6200093	99	DIRN	SUR	55	-10	359	0	0	9.9	4.6	11.0
6200094	99	DIRN	SUR	52	-7	634	0	0	12.5	-0.2	12.5
6200095	99	DIRN	SUR	53	-16	632	0	0	11.4	3.7	12.0
62001	99	DIRN	SUR	45	-5	1974	0	0	11.3	3.5	11.8
6200199	99	DIRN	SUR	40	-9	385	0	0	135.3	100.5	168.5
6200200	99	DIRN	SUR	36	-8	485	0	0	23.4	8.4	24.9
6201030	99	DIRN	SUR	44	-4	414	0	0	15.0	1.7	15.1
62023	99	DIRN	SUR	51	-8	2071	0	0	14.0	5.4	15.0
62091	99	DIRN	SUR	53	-5	566	0	0	13.8	2.4	14.0
62093	99	DIRN	SUR	55	-10	353	0	0	10.3	4.0	11.0
62094	99	DIRN	SUR	52	-7	636	0	0	13.2	-0.6	13.2
62095	99	DIRN	SUR	53	-16	624	0	0	11.6	3.4	12.1
62103	99	DIRN	SUR	50	-3	1809	0	0	14.0	8.0	16.2
62107	99	DIRN	SUR	50	-6	2617	0	0	13.1	-0.0	13.1
62112	99	DIRN	SUR	58	0	1656	0	0	14.0	-3.9	14.5
62114	99	DIRN	SUR	58	0	2199	0	0	13.0	-0.4	13.0
62163	99	DIRN	SUR	48	-8	1721	0	0	11.6	-2.6	11.8
62305	99	DIRN	SUR	50	0	28	0	0	26.5	-11.1	28.7
64041	99	DIRN	SUR	61	-3	1869	0	0	12.9	8.6	15.5
64045	99	DIRN	SUR	59	-12	1873	0	0	13.7	3.2	14.1

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

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
64046	99	DIRN	SUR	61	-4	1839	0	0	11.6	-0.3	11.7

4.12 Table 24 - List of Assimilated BUFR Encoded Radiosonde Stations

ASDE09	DBLK	FPUW5GN	HTXUH4H	JNKN7JF	KJJF9XN	KMPLHPW	LRYQE3U	VKB4L5Q
WDK38HS	XKQLWQB	XQFJRGX	YLV96WM	ZVQEQCM	7JUNA4N	01001	01004	01010
01028	01241	01400	01415	01492	02527	02836	02963	03005
03238	03354	03502	03559	03808	03882	03918	03953	04018
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	11120	11240	11520	11747	11952
12120	12374	12425	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	17516	17607	22008	23205	23472	23884
26038	26435	26850	27707	27713	29612	29698	30673	33008
33041	37789	40179	40186	43599	45004	47102	47104	47138
47155	47169	47186	47401	47412	47418	47582	47600	47646
47678	47741	47778	47807	47827	47909	47918	47945	47971
47991	48698	50527	50557	50774	50953	51076	51243	51431
51463	51644	51656	51709	51777	51828	51839	52203	52267
52323	52418	52533	52652	52681	52818	52836	52866	52983
53068	53463	53513	53543	53614	53772	53845	53915	54102
54135	54161	54218	54292	54374	54511	54662	54727	54857
55299	55591	56029	56046	56080	56137	56187	56492	56651
56691	56739	56778	56964	56985	57083	57127	57131	57178
57245	57447	57494	57687	57816	57957	57993	58027	58203
58238	58362	58424	58606	58633	58665	58725	59023	59134
59211	59265	59280	59293	59316	59431	59758	59981	60018
60390	60571	60630	60656	60680	61901	61980	61998	63612
63741	68263	68424	68442	68512	68538	68816	68842	70026
70133	70200	70219	70231	70261	70308	70316	70326	70350
70361	70398	71043	71081	71082	71109	71119	71603	71722
71802	71811	71815	71816	71823	71836	71845	71867	71906
71907	71908	71909	71917	71924	71925	71926	71934	71945
71957	71964	72206	72208	72210	72214	72215	72230	72233
72235	72240	72248	72249	72250	72251	72265	72274	72293
72305	72317	72340	72363	72364	72365	72376	72388	72413
72426	72440	72451	72476	72489	72493	72501	72518	72520
72528	72558	72562	72572	72582	72597	72632	72634	72645
72649	72659	72662	72672	72694	72712	72747	72764	72768
72776	72786	72797	73033	73110	74389	74494	74560	76225
76256	76394	76405	76458	76526	76595	76612	76644	76654
76679	76692	76743	76805	76903	78897	78954	81405	82983
83525	83768	84384	85442	85586	85799	85934	87155	87344
87576	87623	87715	87860	88889	89002	89062	89564	89571
89611	89625	89642	89859	91212	91285	91592	91610	91765
91925	91938	91948	91958	93112	93417	93817	93844	94120
94150	94170	94203	94299	94302	94312	94326	94332	94374
94403	94430	94510	94578	94610	94637	94638	94653	94659
94672	94711	94767	94776	94802	94821	94866	94910	94975
94996	94998	95527	96996					

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

ASDE09	DBLK	FPUW5GN	HTXUH4H	JNKN7JF	KJJF9XN	KMPLHPW	LRYQE3U	VKB4L5Q
WDK38HS	XKQLWQB	XQFJRGX	YLV96WM	ZVQEQCM	7JUNA4N	01001	01010	01028
01241	01400	01415	01492	02365	02527	02836	02963	06610
07110	07145	07510	07645	07761	08536	11010	11035	11120
11240	17607	40186	47155	51243	51656	52652	53543	56046
56492	56651	57245	59023	59293	61980	61998	72413	76743
76903	78897	81405	84384	89002	89642	89859	91592	91938
93817	94653	94767						

5 Annex - Explanations of figures and tables

5.1 General

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

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

5.2 Data Availability

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

5.3 Data Quality

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

It should be noted that:

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

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

standard pressure level are shown. Units of RMS, standard deviation and bias are hPa in tables 1 and 4, m in table 7 and ms^{-1} in tables 2, 5 and 8. In tables 7 and 8 the station position is indicated; in the case of TEMP Ships and PILOT Ships 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.