



ECMWF Global Data Monitoring Report

January 2018

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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	Dec	Jan	Ident	Time	Dec	Jan
03354	(00)	30	19	01206	(00)	3	21
21432	(00)	28	12	27594	(00)	18	31
21432	(12)	30	16	40841	(12)	19	31
32618	(00)	11	0	40875	(00)	17	30
41256	(00)	11	0	43369	(00)	6	29
42027	(00)	20	8	48407	(00)	0	12
42886	(00)	22	0	48568	(00)	0	14
65344	(12)	20	8	68538	(12)	40	60
67774	(00)	18	7	70219	(00)	13	40
68592	(00)	22	0	76458	(12)	17	30
68994	(00)	20	5	76595	(12)	6	27
70026	(00)	29	16	76644	(12)	14	30
70361	(12)	26	8	76692	(12)	7	30
72250	(12)	31	20	83208	(00)	10	27
72493	(12)	45	25	83208	(12)	14	29
80001	(00)	13	0	83971	(00)	14	30
80001	(12)	12	0	94170	(12)	0	12
82022	(00)	30	15	96645	(00)	6	27
82022	(12)	29	15	96645	(12)	6	29
82400	(00)	17	0	-	-	-	-
82400	(12)	18	0	-	-	-	-
83650	(12)	21	1	-	-	-	-
91948	(00)	31	19	-	-	-	-
93112	(12)	29	12	-	-	-	-

2.2 Drifting Buoys

Surface pressure observations from **1465** drifting buoys were received during the month.

3 Global monitoring statistics

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

3.1 Data Availability

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

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

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

3.2 Data Quality

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

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

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

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

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

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

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

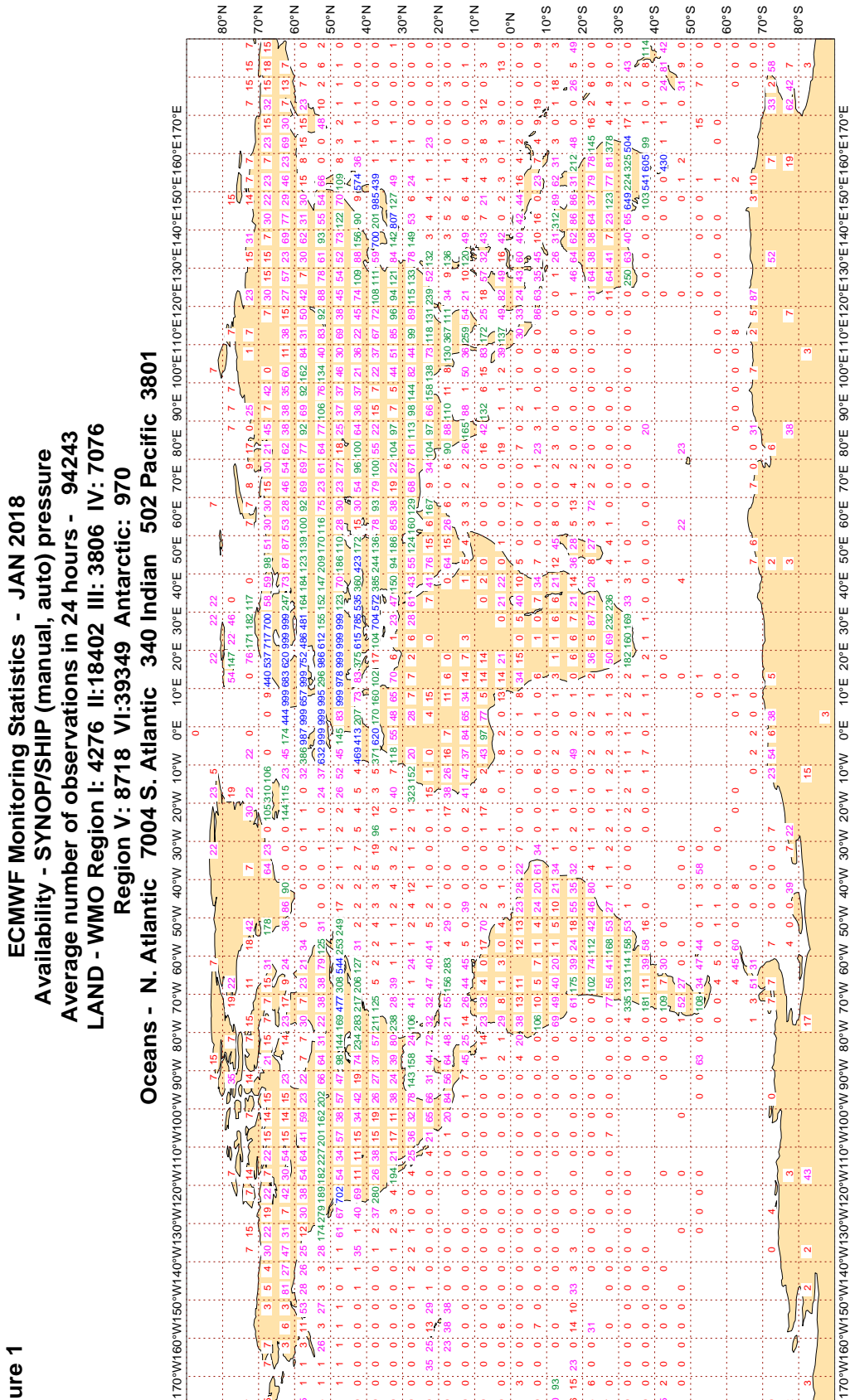
Figures 14-18 show global charts of SATOB and aircraft wind statistics in the form of wind vectors averaged over 5 degree boxes.

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

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

3.2.1 Figure 1 - Availability - SYNOP PRESSURE

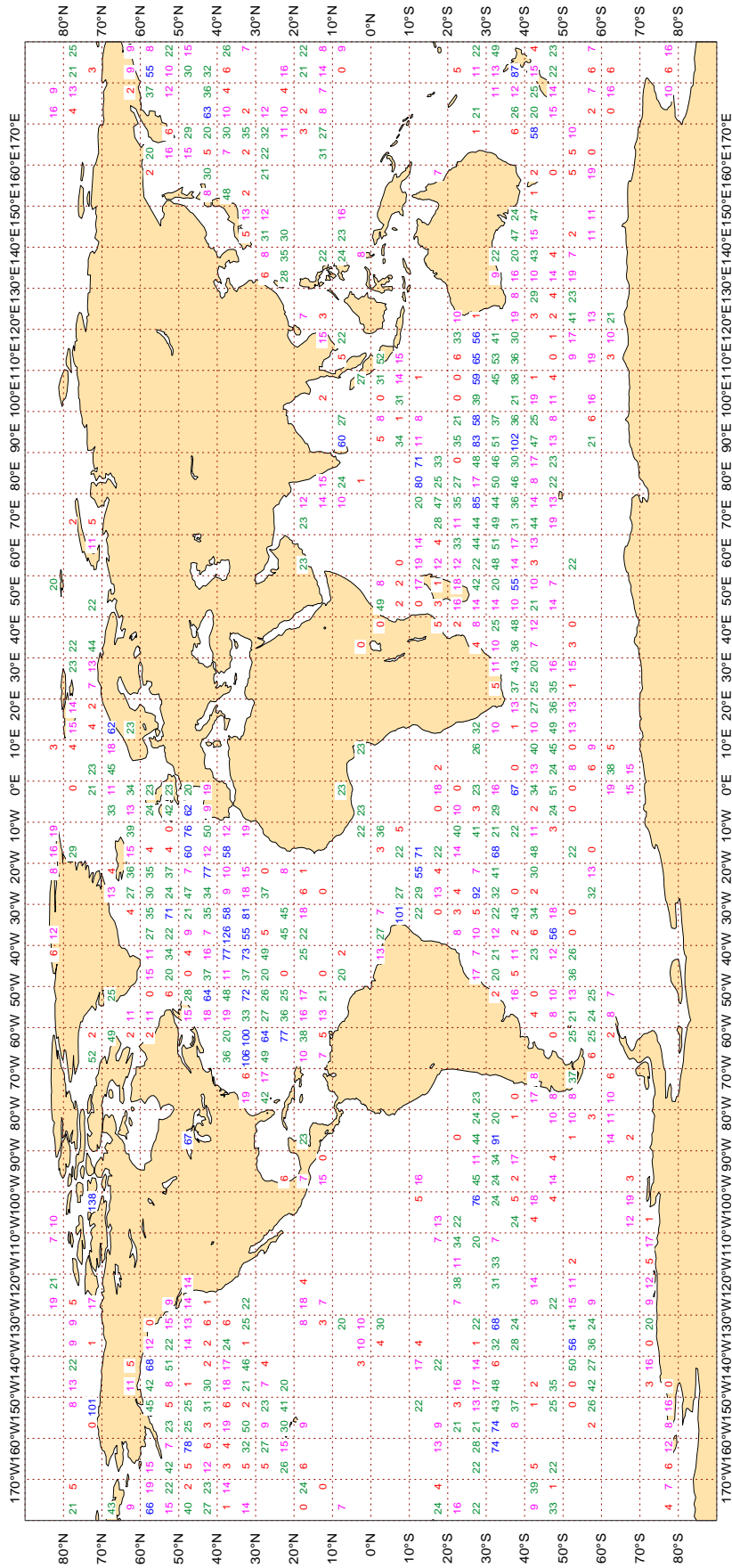
Figure 1



3.2.2 Figure 2 - Availability - DRIFTER PRESSURE

Figure 2

ECMWF Monitoring Statistics - JAN 2018
 Availability - DRIFTER PRESSURE
 Average number of observations in 24 hours - 17529
 Oceans - N. Atlantic 4102 S. Atlantic 2410 Indian 4301 Pacific 6716



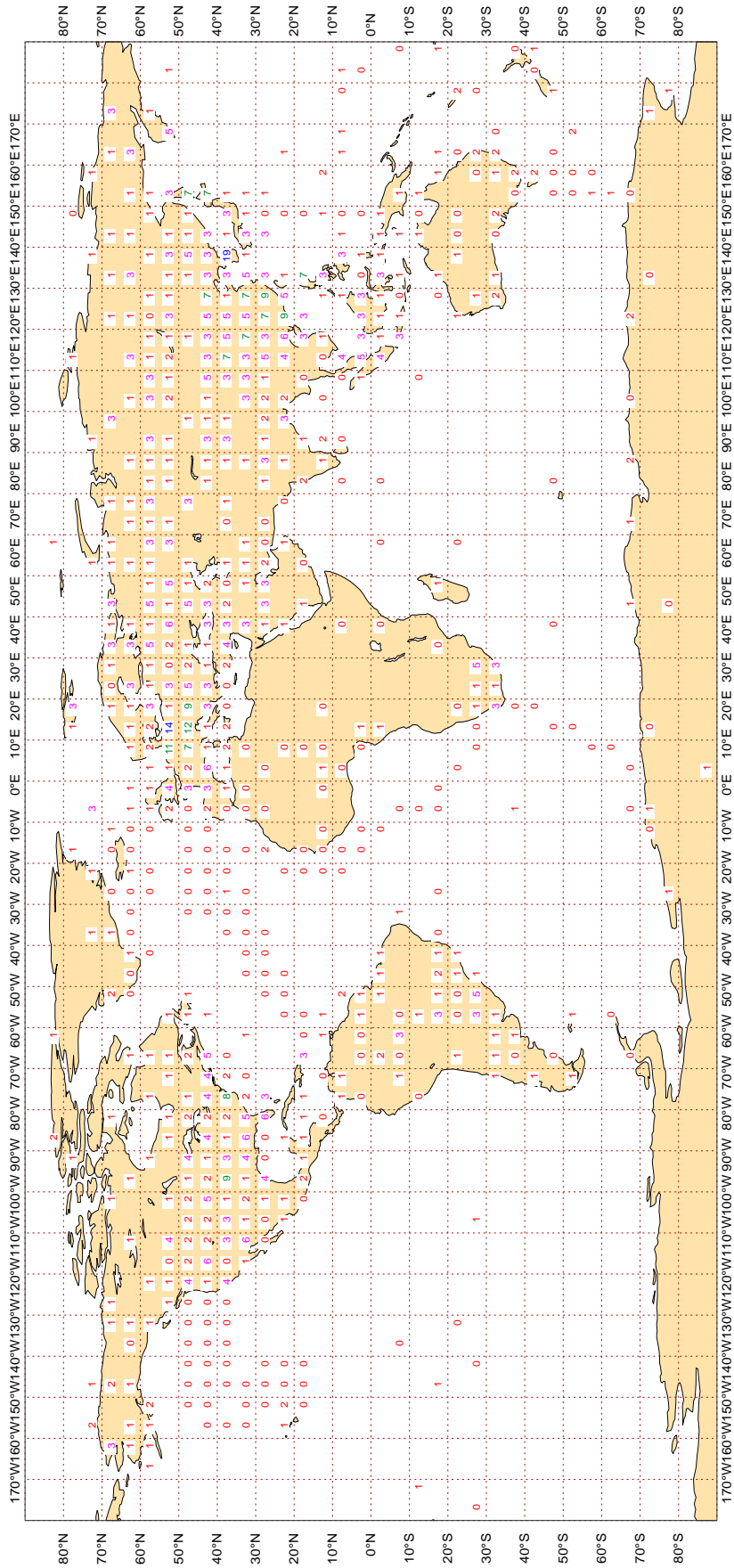
Magicjs 2.24.2 (64 bit)



3.2.3 Figure 3 - Availability - TEMP 500 hPa geopotential

Figure 3

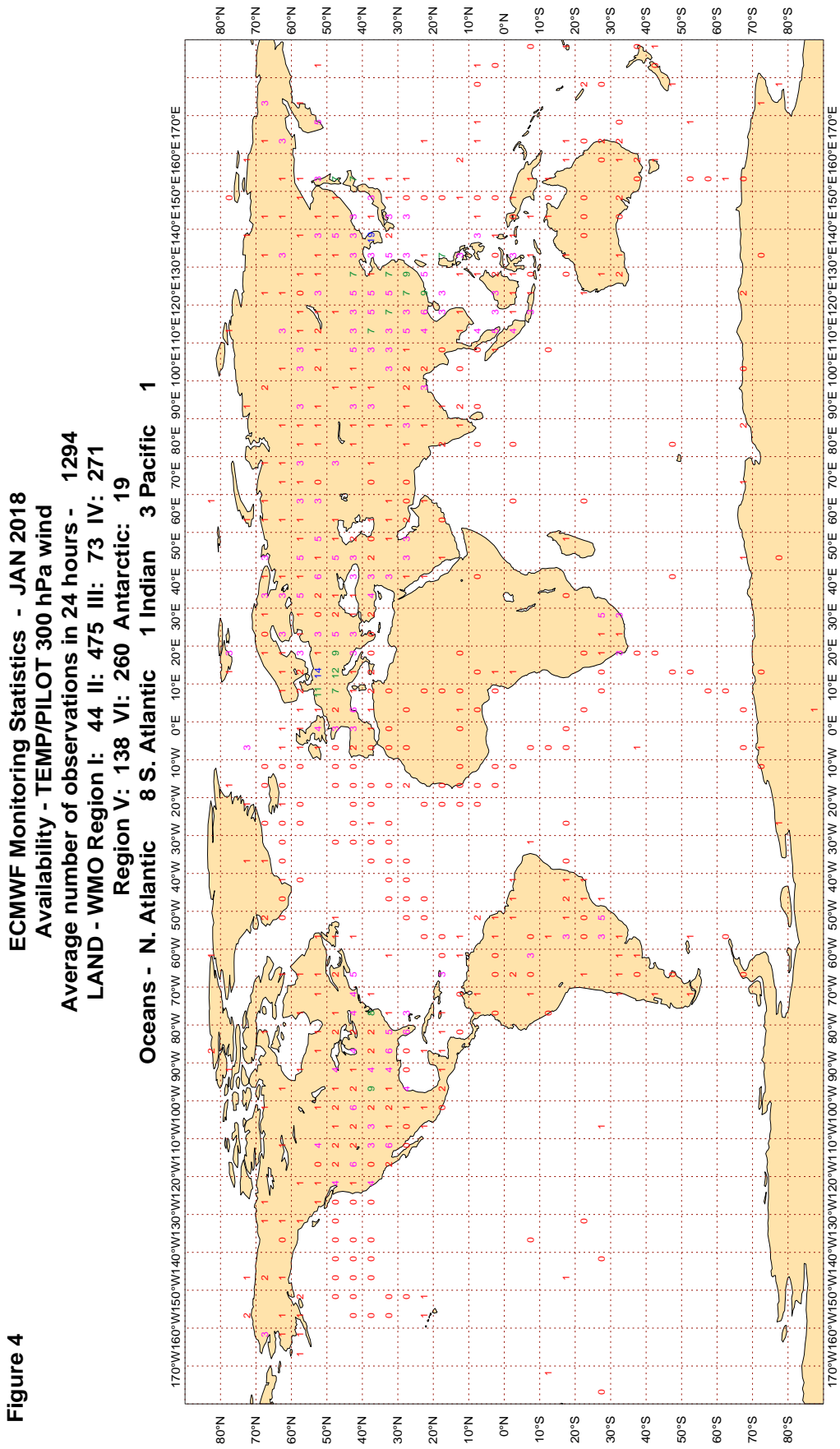
ECMWF Monitoring Statistics - JAN 2018
 Availability - TEMP 500 hPa Geopotential
 Average number of observations in 24 hours - 1313
 LAND - WMO Region I: 45 II: 488 III: 74 IV: 270
 Region V: 140 VI: 263 Antarctic: 19
 Oceans - N. Atlantic 9 S. Atlantic 1 Indian 3 Pacific 1



Magics 2.24.2 (64 bit)



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

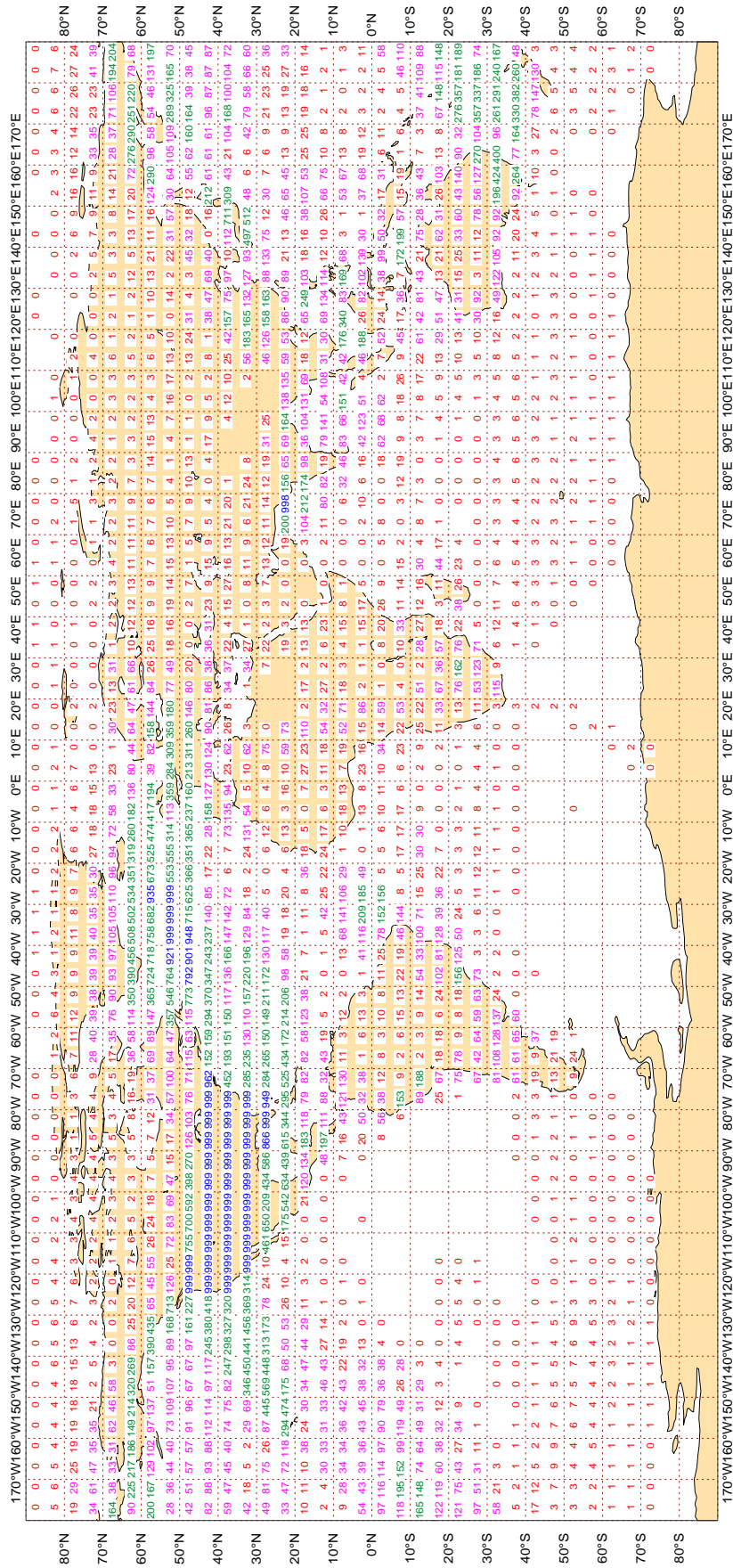


Magics 2.24.2 (64 bit)

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

Figure 5

ECMWF Monitoring Statistics - JAN 2018
Availability - Aircraft winds 300-150 hPa
Average number of observations in 24 hours - 207211



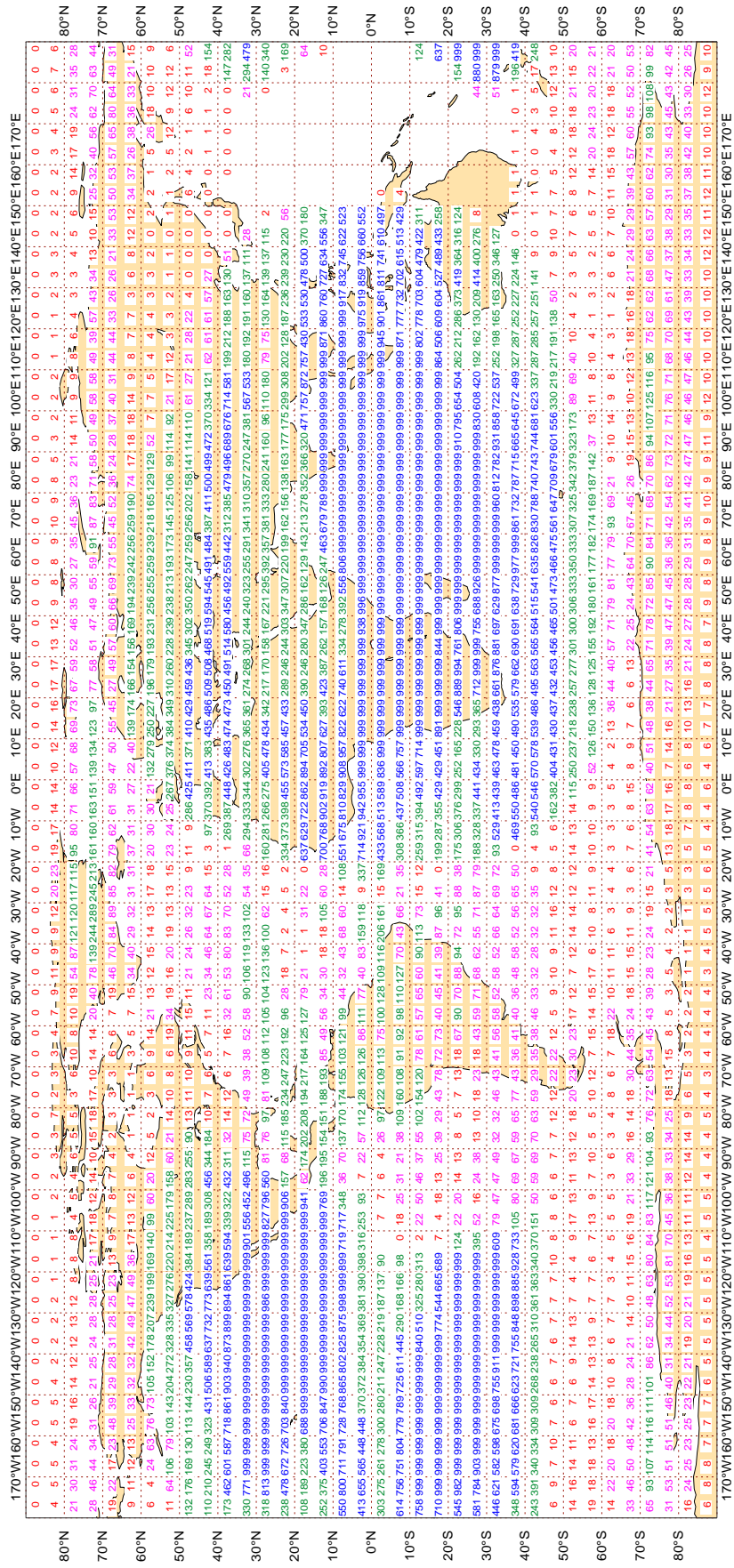
Majics 2.24.2 (64 bit)



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

Figure 6

ECMWF Monitoring Statistics - JAN 2018
Availability - AMV winds 400-150 hPa
Average number of observations in 24 hours - 763371



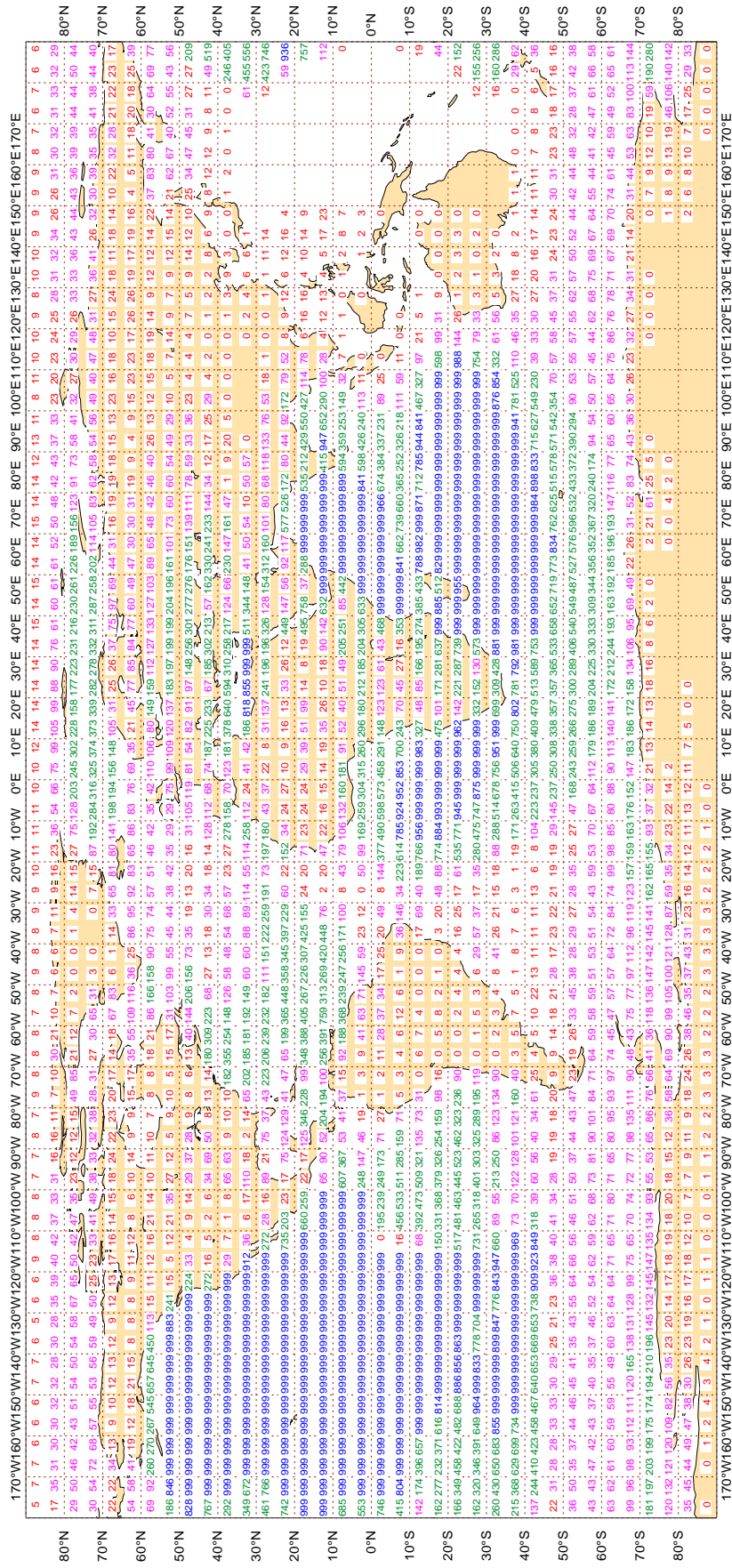
Majics 2.24.2 (64 bit)



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

Figure 7

ECMWF Monitoring Statistics - JAN 2018
Availability - AMV winds 1000-700 hPa
Average number of observations in 24 hours - 966895



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

Figure 8

ECMWF Monitoring Statistics - JAN 2018
Availability - NOAA15 ATOVS : AMSU-A
Average number of observations in 24 hours - 300668

Table with 180 columns representing longitude (170°W to 170°E) and 18 rows representing latitude (80°N to 80°S). The table contains numerical data representing the average number of observations in 24 hours for NOAA15 ATOVS AMSU-A in January 2018.

Majics 2.24.2 (64 bit)



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

Figure 9.1

ECMWF Monitoring Statistics - JAN 2018
Availability - NOAA18 ATOVS : AMSU-A
Average number of observations in 24 hours - 541289

Table with 10 columns representing longitude (170°W to 170°E) and 10 rows representing latitude (80°N to 80°S). The table contains numerical data representing the average number of observations in 24 hours for NOAA18 ATOVS AMSU-A in January 2018.

Magics 2.24.2 (64 bit)



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

Figure 9.2

ECMWF Monitoring Statistics - JAN 2018
Availability - AQUA ATOVS : AMSU-A
Average number of observations in 24 hours - 293664

Table with 180 columns representing longitude (170°W to 170°E) and 18 rows representing latitude (80°N to 70°S). The table contains numerical data representing the average number of observations in 24 hours for AMSU-A.

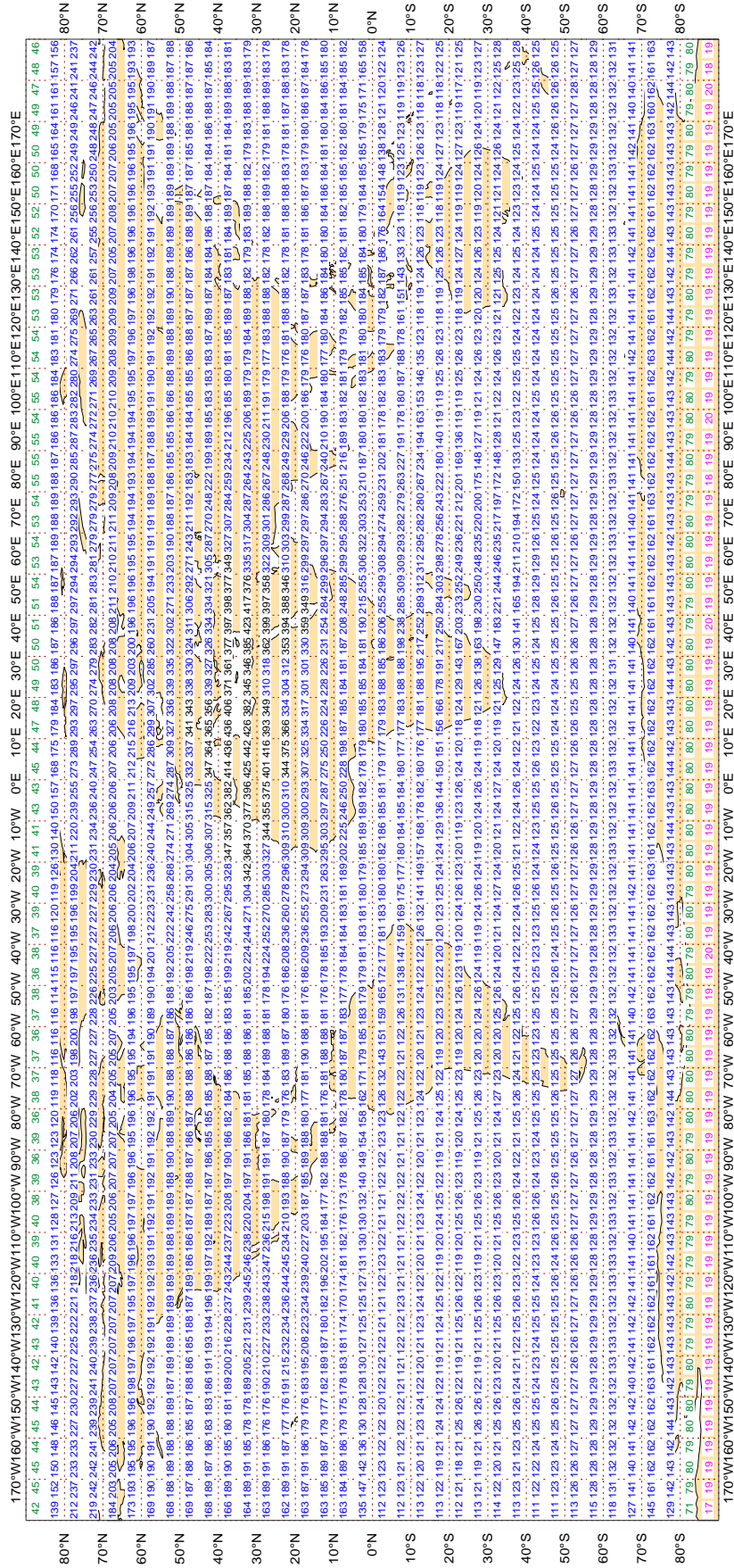
Majics 2.24.2 (64 bit)



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

Figure 9.3

ECMWF Monitoring Statistics - JAN 2018
Availability - METOP ATOVS : AMSU-A
Average number of observations in 24 hours - 439252



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 : JAN 2018
 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
3EUQ8	99	P	SUR	15	0	1.6	5.0	5.3
3FPB5	99	P	SUR	30	0	1.8	3.0	3.5
7JSD	99	P	SUR	18	0	5.1	-9.3	10.6
9HA4638	99	P	SUR	61	5	5.6	4.1	6.9
9HJD9	99	P	SUR	70	1	2.1	-4.2	4.7
9V9725	99	P	SUR	23	2	6.0	0.4	6.0
9V9832	99	P	SUR	55	0	0.5	-3.7	3.7
A8CP7	99	P	SUR	15	0	1.0	-6.4	6.5
A8KX2	99	P	SUR	61	1	1.9	3.2	3.7
AUYI	99	P	SUR	18	0	4.5	3.7	5.8
AUYJ	99	P	SUR	33	0	2.0	3.5	4.0
AUYN	99	P	SUR	37	0	3.5	3.1	4.7
BNSK	99	P	SUR	24	23	0.0	1.5	1.5
C6BR3	99	P	SUR	30	2	1.3	12.7	12.8
C6FW9	99	P	SUR	20	0	1.5	-3.5	3.8
C6UC3	99	P	SUR	66	0	2.4	3.0	3.9
ONCD	99	P	SUR	39	0	1.1	-3.3	3.4
OZ2049	99	P	SUR	21	0	2.3	-3.5	4.2
PFBF	99	P	SUR	25	0	0.5	3.7	3.7
UAEV	99	P	SUR	48	0	2.4	3.3	4.1
UCFT	99	P	SUR	49	0	0.7	-3.0	3.1
UGWJ	99	P	SUR	15	1	3.3	-5.0	6.0
UGYU	99	P	SUR	145	0	1.1	-3.1	3.3
UIZZ	99	P	SUR	28	0	2.9	3.3	4.4
V7SY6	99	P	SUR	39	0	3.8	-3.3	5.1
V7ZZ5	99	P	SUR	80	0	1.3	3.8	4.1
VRID2	99	P	SUR	43	0	1.2	4.1	4.3
VRJF2	99	P	SUR	24	0	2.2	-3.6	4.2
VRNM9	99	P	SUR	23	2	8.2	-0.9	8.2
VROG7	99	P	SUR	23	2	4.0	3.0	5.0
VRWE8	99	P	SUR	19	0	0.6	-4.0	4.0
VTFG	99	P	SUR	84	0	2.1	13.7	13.8

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

WMO IDENT	OBS TIME	ELM	LEVEL	NUM OBS	NUM GROSS	SD	BIAS	RMS
VTXB	99	P	SUR	119	66	6.1	-7.0	9.3
VTXF	99	P	SUR	18	0	1.5	-4.5	4.7
WAIU	99	P	SUR	16	0	2.4	-5.7	6.2
WBN3015	99	P	SUR	40	0	0.7	3.4	3.5
WCF3012	99	P	SUR	37	0	0.8	-3.5	3.6
WDC6925	99	P	SUR	22	0	0.8	4.1	4.2
WDE4432	99	P	SUR	17	0	0.9	-4.9	5.0
WDG8555	99	P	SUR	62	0	1.9	5.4	5.8
WDI6469	99	P	SUR	15	0	1.6	-7.4	7.6
WECH	99	P	SUR	23	0	0.9	-3.0	3.2
WFAF	99	P	SUR	16	0	1.4	-4.5	4.7
WTAA	99	P	SUR	18	0	1.3	3.5	3.7
WYQ4356	99	P	SUR	75	1	5.3	0.5	5.4
ZDNC6	99	P	SUR	21	0	0.8	5.8	5.9

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

LIST OF SUSPECT STATIONS : SHIPS + FIXED MARINE PLATFORMS
 MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : WIND SPEED (M/S)
 AREA : GLOBAL
 PERIOD : JAN 2018
 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
42365	99	SPEED	SUR	191	0	0	4.1	-4.4	6.0

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 : JAN 2018
 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
34002	99	DIRN	SUR	213	55	0	135.5	103.8	170.7
42044	99	DIRN	SUR	99	0	0	29.0	-33.5	44.4
42360	99	DIRN	SUR	110	3	0	66.2	34.9	74.8
42365	99	DIRN	SUR	70	0	0	21.1	-30.1	36.8
44030	99	DIRN	SUR	40	1	0	44.0	40.2	59.6
44037	99	DIRN	SUR	114	0	0	9.3	30.8	32.2
44042	99	DIRN	SUR	127	0	0	60.5	-59.5	84.9
46120	99	DIRN	SUR	133	0	0	36.9	-71.9	80.8
46207	99	DIRN	SUR	118	0	0	12.9	41.0	43.0

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 : JAN 2018
 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
1501517	99	P	SUR	-37	-12	734	0	0.6	-5.4	5.4
2101577	99	P	SUR	20	123	1187	0	2.1	4.8	5.3
2200185	99	P	SUR	37	125	725	358	5.5	-6.2	8.3
2301708	99	P	SUR	6	80	835	136	4.2	-5.3	6.7
3301530	99	P	SUR	-47	-42	510	1	2.2	5.0	5.5
4101579	99	P	SUR	19	-43	81	0	2.7	9.5	9.8
4401525	99	P	SUR	13	-60	79	0	6.0	-3.9	7.2
4401609	99	P	SUR	36	-43	537	219	5.3	-1.4	5.5
4401756	99	P	SUR	62	-61	81	3	6.1	7.3	9.5
4500509	99	P	SUR	45	-88	1379	1379	0.0	0.0	0.0
45509	99	P	SUR	45	-88	1467	1467	0.0	0.0	0.0
4700552	99	P	SUR	68	-63	604	604	0.0	0.0	0.0
4701659	99	P	SUR	71	-104	351	351	0.0	0.0	0.0
4701674	99	P	SUR	70	-67	702	0	0.6	-6.6	6.6
47552	99	P	SUR	68	-63	740	740	0.0	0.0	0.0
4800790	99	P	SUR	80	166	433	433	0.0	0.0	0.0
4801622	99	P	SUR	77	175	596	262	8.6	-3.9	9.5
4801626	99	P	SUR	77	179	456	456	0.0	0.0	0.0
4801711	99	P	SUR	78	170	702	232	4.1	-6.8	7.9
4802502	99	P	SUR	84	-110	632	83	7.1	0.8	7.1
48790	99	P	SUR	80	166	476	476	0.0	0.0	0.0
5201578	99	P	SUR	8	134	661	0	2.0	8.5	8.7
5301603	99	P	SUR	11	93	66	66	0.0	0.0	0.0
5600942	99	P	SUR	-27	85	695	76	3.5	-6.1	7.1
5600946	99	P	SUR	-30	87	698	698	0.0	0.0	0.0
5601607	99	P	SUR	-21	105	44	0	2.4	5.8	6.3
5601611	99	P	SUR	-11	96	697	0	0.6	6.0	6.0
56942	99	P	SUR	-27	85	740	81	3.6	-6.1	7.1
56946	99	P	SUR	-30	87	741	741	0.0	0.0	0.0

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

LIST OF SUSPECT STATIONS : DRIFTER
 MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : WIND SPEED (M/S)
 AREA : GLOBAL
 PERIOD : JAN 2018
 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
46082	99	SPEED	SUR	60	-143	38	0	0	6.2	-6.3	8.8

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

LIST OF SUSPECT STATIONS : DRIFTER
 MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : WIND DIRECTION (DEGREES)
 PERIOD : JAN 2018
 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
23092	99	DIRN	SUR	17	89	135	0	0	68.4	-119.5	137.7
23093	99	DIRN	SUR	16	88	167	0	0	15.6	25.0	29.5
23170	99	DIRN	SUR	15	74	33	0	0	50.3	71.4	87.3
23453	99	DIRN	SUR	8	73	37	0	0	55.8	30.1	63.4
23454	99	DIRN	SUR	10	73	50	0	0	29.6	35.0	45.8
23492	99	DIRN	SUR	11	72	74	0	0	90.6	24.2	93.8
23497	99	DIRN	SUR	11	72	62	0	0	67.3	1.1	67.3
3100231	99	DIRN	SUR	-27	-47	155	0	0	79.2	82.5	114.4
3100262	99	DIRN	SUR	-23	-43	65	0	0	38.3	-28.1	47.5
31231	99	DIRN	SUR	-27	-47	152	0	0	77.8	83.8	114.3
31262	99	DIRN	SUR	-23	-43	69	1	0	43.4	-27.6	51.4
34002	99	DIRN	SUR	-55	-90	1962	506	0	143.9	90.6	170.1
42044	99	DIRN	SUR	26	-97	636	0	0	26.3	-32.8	42.1
42085	99	DIRN	SUR	18	-67	792	0	0	14.4	26.2	29.9
42360	99	DIRN	SUR	27	-91	658	14	0	68.5	31.2	75.2
42361	99	DIRN	SUR	28	-93	659	2	0	13.5	27.5	30.6
42365	99	DIRN	SUR	28	-89	287	0	0	22.4	-27.3	35.3
44030	99	DIRN	SUR	43	-70	240	5	0	45.5	42.7	62.4
44037	99	DIRN	SUR	44	-68	661	0	0	11.3	31.3	33.3
44042	99	DIRN	SUR	38	-76	668	0	0	71.9	-51.7	88.6
46060	99	DIRN	SUR	61	-147	494	0	0	30.8	20.4	36.9
46120	99	DIRN	SUR	48	-122	574	0	0	42.5	-72.1	83.7
46207	99	DIRN	SUR	51	-130	707	0	0	14.6	40.4	42.9
5200313	99	DIRN	SUR	-5	-180	624	0	0	33.7	31.0	45.8
52313	99	DIRN	SUR	-5	-180	602	0	0	33.6	31.1	45.8
5300040	99	DIRN	SUR	-8	95	280	0	0	157.2	41.8	162.7
5300056	99	DIRN	SUR	-5	95	276	0	0	165.2	30.3	168.0
53040	99	DIRN	SUR	-8	95	268	0	0	155.1	47.3	162.2
53056	99	DIRN	SUR	-5	95	264	0	0	164.4	33.7	167.8
6101003	99	DIRN	SUR	40	25	115	0	0	66.7	2.2	66.7
6200200	99	DIRN	SUR	36	-8	226	6	0	169.2	-15.3	169.9

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 : JAN 2018
 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	24	0	30.6	19.5	36.3
01400	12	Z	1000	57	3	23	0	38.3	44.6	58.8
04360	12	Z	1000	66	-38	10	0	7.4	38.5	39.2
04360	00	Z	850	66	-38	32	0	10.2	42.5	43.7
21946	12	Z	70	71	148	21	1	86.2	-173.8	194.0
21946	00	Z	150	71	148	29	0	31.4	-98.1	103.0
23205	12	Z	50	68	53	16	1	97.9	-234.9	254.5
23205	00	Z	50	68	53	12	0	81.4	-208.9	224.2
24125	00	Z	70	69	112	16	0	166.9	-73.8	182.5
24125	12	Z	50	69	112	10	0	95.2	-129.1	160.4
24726	00	Z	70	63	114	23	0	76.6	-156.0	173.8
24726	12	Z	30	63	114	11	1	111.5	-287.0	307.9
24944	12	Z	30	60	120	18	0	82.5	-211.9	227.4
24944	00	Z	50	60	120	25	0	70.2	-170.4	184.3
27707	00	Z	30	54	35	25	0	64.8	-203.1	213.2
34300	00	Z	50	50	36	24	0	47.4	-126.4	135.0
34858	00	Z	30	46	43	20	2	96.8	-233.0	252.3
47122	12	Z	1000	37	127	30	0	15.9	-43.8	46.6
47122	00	Z	1000	37	127	30	0	3.1	-49.5	49.6
65046	12	Z	500	12	9	10	0	6.3	49.0	49.4
68842	00	Z	1000	-34	26	56	0	27.0	19.1	33.1
96147	12	Z	925	4	108	28	0	4.1	42.2	42.4

LIST OF SUSPECT STATIONS (CONTINUED)

WMO IDENT	OBS TIME	ELM	LEV	LAT	LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
96147	00	Z	925	4	108	30	3	21.5	51.7	56.0
98223	00	Z	30	18	121	28	1	63.3	270.4	277.7

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 : JAN 2018
 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
42182	12	V	100	29	77	31	0	-14.3	0.2	15.8

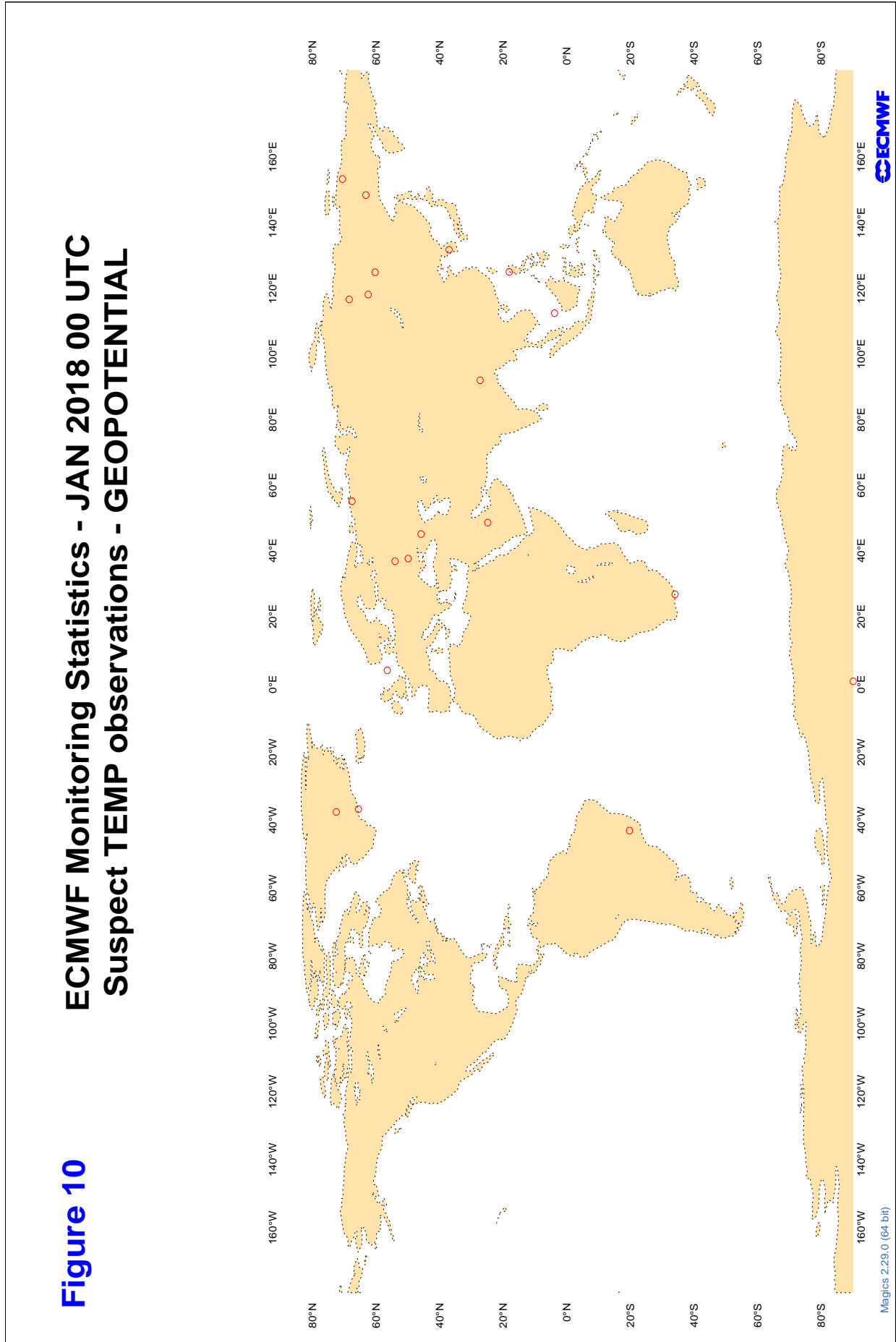
3.2.20 Table 9 - Suspect radiosondes: Wind direction (degrees)

LIST OF SUSPECT STATIONS : RADIOSONDES
 MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : WIND DIRECTION (DEGREES)
 AREA : GLOBAL
 PERIOD : JAN 2018
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

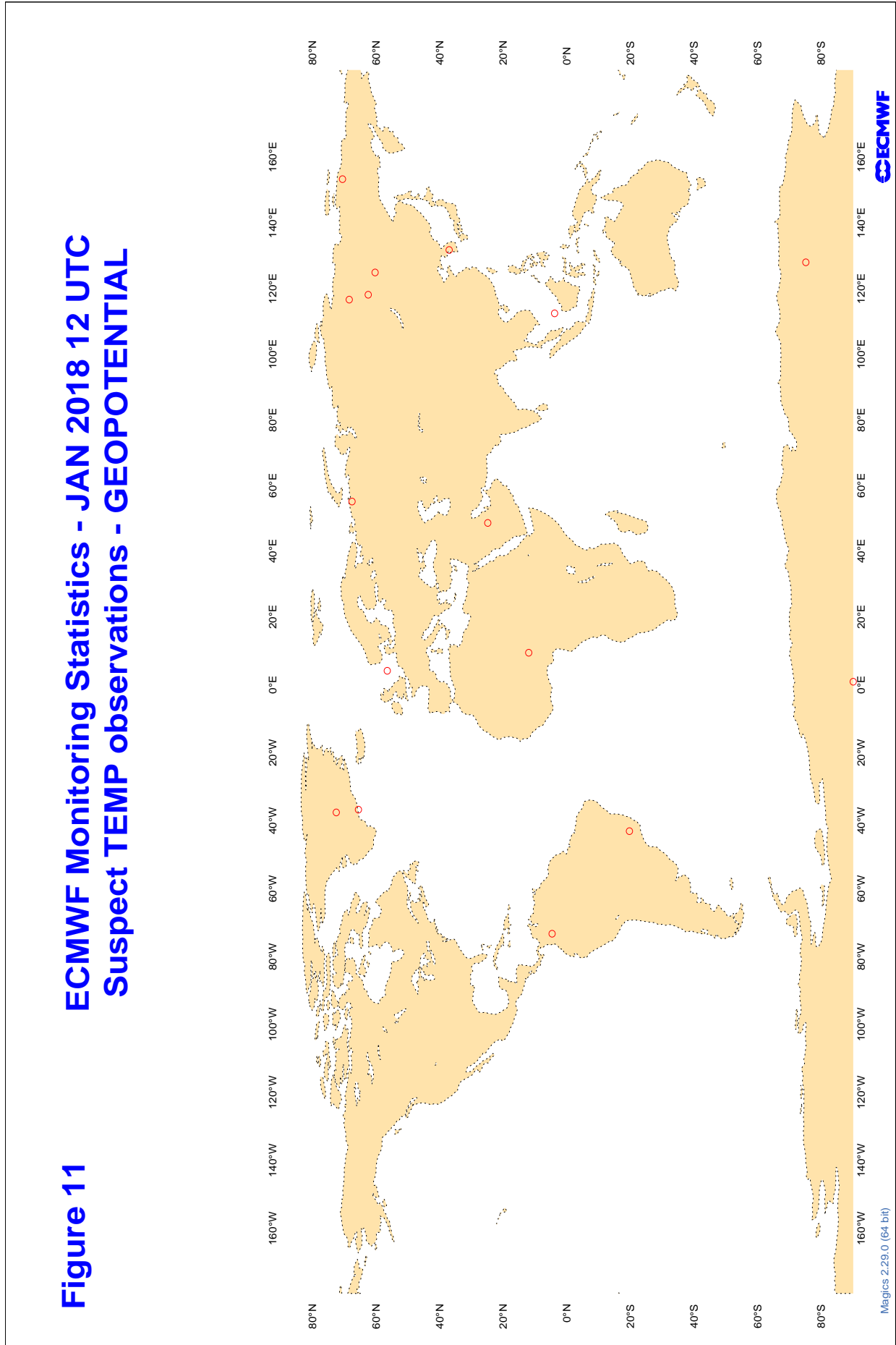
SELECTION CRITERIA: OBSERVED/FORECAST WIND SPEEDS \geq 5 M/S
 NO. OF OBSERVATIONS \geq 5, AND,
 ABSOLUTE BIAS \geq 10 DEGREES, WITH
 STANDARD DEVIATION $<$ 30 DEGREES, AND,
 VERTICAL SPREAD $<$ 10 DEGREES
 (AVERAGE BETWEEN 500 AND 150 HPA)

WMO IDENT	OBS TIME	ELM	LAT	LONG	NUM OBS	BIAS	MAX SPREAD	SD
57972	12	DD	26	113	31	10.0	1.5	3.8
57972	00	DD	26	113	31	10.5	3.2	5.3

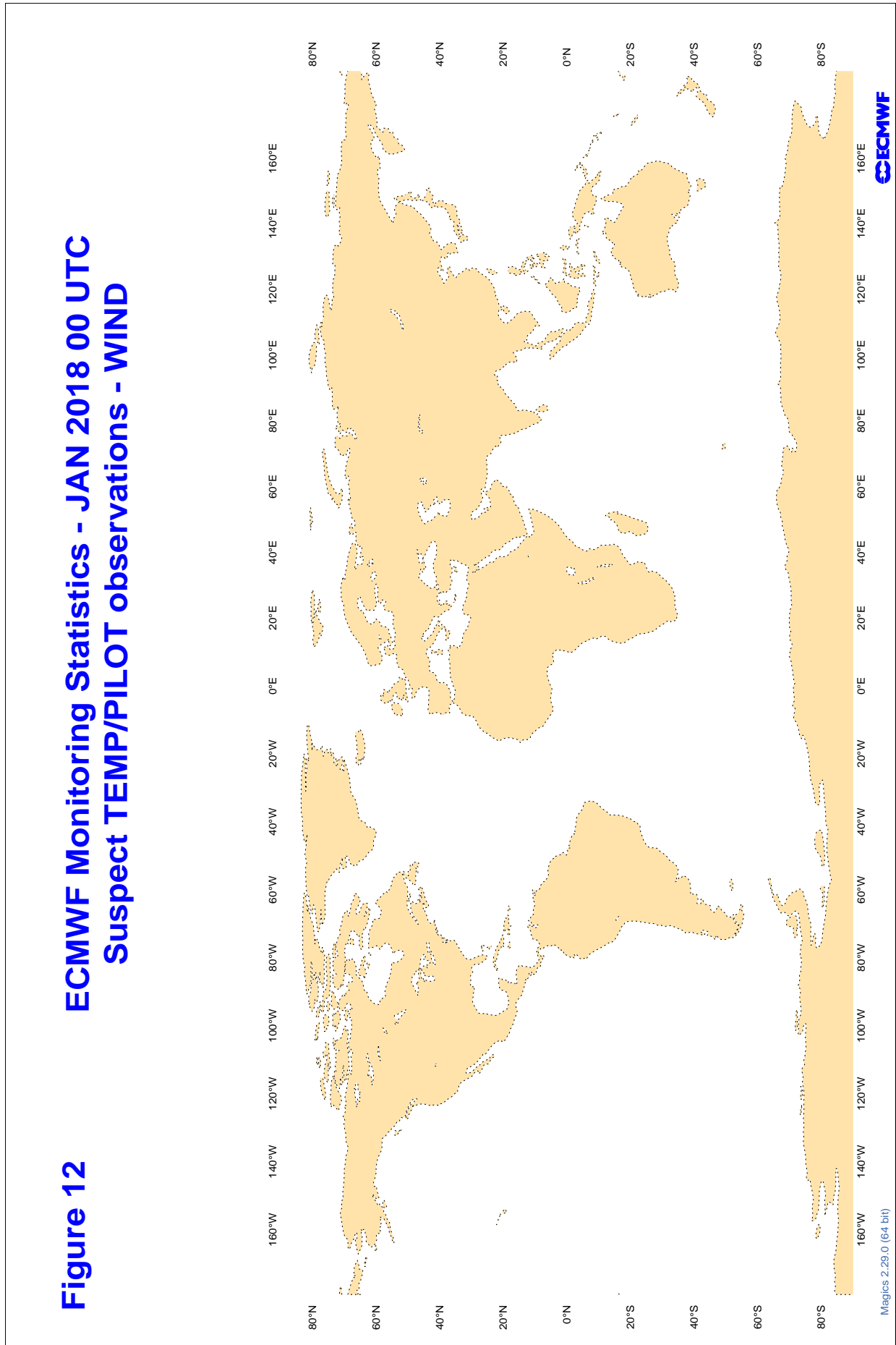
3.2.21 Figure 10 - Suspect TEMP observations - geopotential : 00 UTC



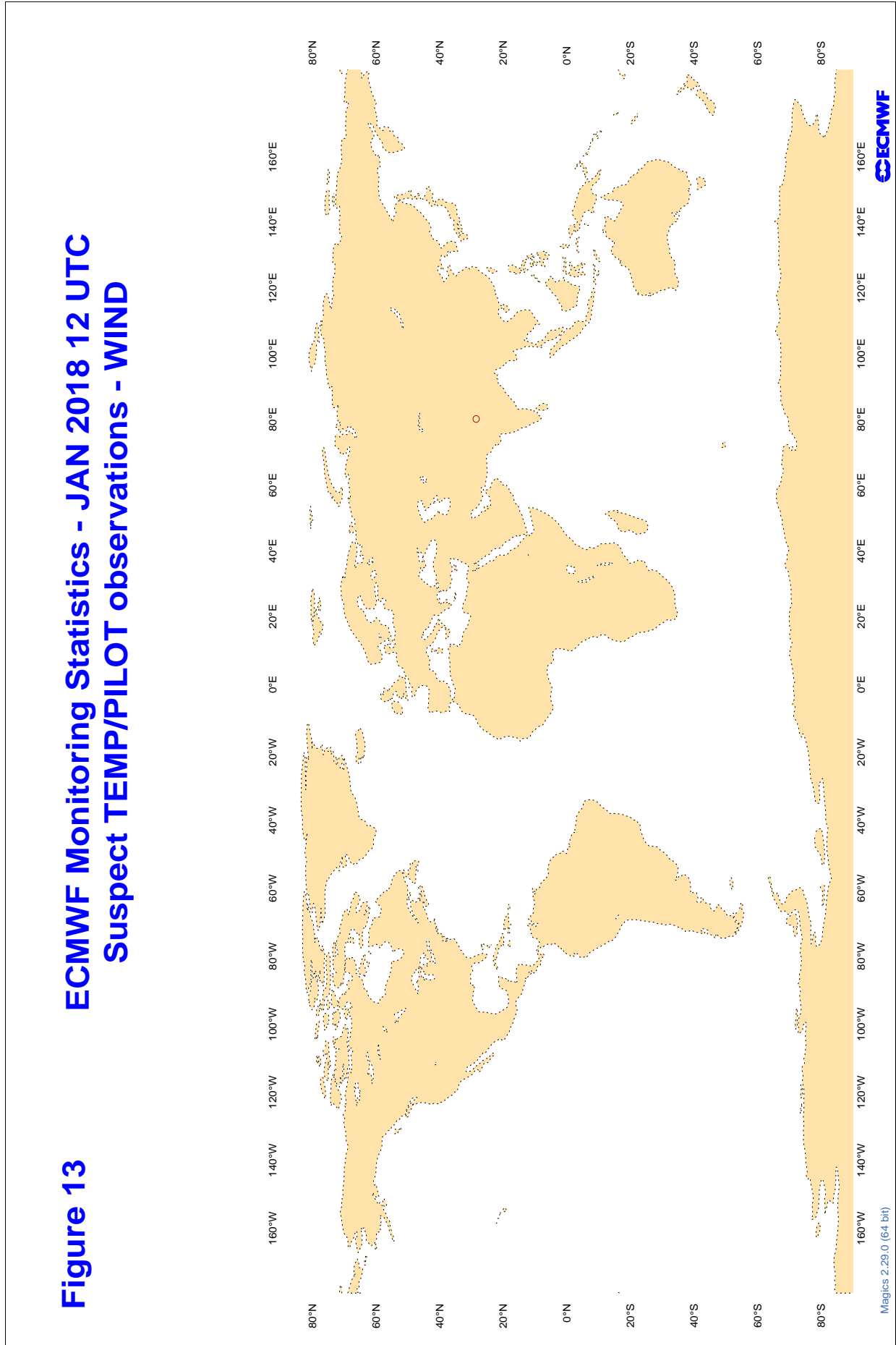
3.2.22 Figure 11 - Suspect TEMP observations - geopotential : 12 UTC



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 : JAN 2018
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
5QPW8X	12	Z	100	6	25.2	24.6
5QPW8X	00	Z	100	7	19.8	7.7
ASDE09	12	Z	100	2	44.5	44.4
ASFR1	12	Z	100	10	33.3	28.0
ASFR1	00	Z	100	9	13.1	8.6
ASFR2	12	Z	100	7	32.5	31.9
ASFR2	00	Z	100	3	31.4	29.4
ASFR3	12	Z	100	11	25.8	23.9
ASFR3	00	Z	100	12	27.1	25.5
ASFR4	12	Z	100	8	28.8	27.6
ASFR4	00	Z	100	9	23.4	22.4
DBLK	12	Z	100	23	12.0	6.7
FHM5H	12	Z	100	2	6.3	-2.1
FHM5H	00	Z	100	2	10.0	0.8
FHM5UJ	12	Z	100	13	17.1	3.1
FHM5UJ	00	Z	100	20	16.4	3.4
FPUW5G	00	Z	100	3	7.2	6.9
FPUW5G	12	Z	100	38	11.3	10.1
FPUWN	12	Z	100	2	11.0	11.0
JGQH	12	Z	100	16	11.3	4.0
JGQH	00	Z	100	18	15.9	15.2
JNKN7J	12	Z	100	4	39.7	38.5
JNKN7J	00	Z	100	4	33.3	32.6
JNSR	12	Z	100	8	6.4	5.2
JNSR	00	Z	100	8	15.7	10.6
KMPLHP	12	Z	100	8	13.3	8.5
KMPLHP	00	Z	100	6	14.2	-5.6
RCOSSE	12	Z	100	9	27.1	-26.3
RCOSSE	00	Z	100	13	19.6	-19.0
SOCR3	12	Z	100	10	28.8	-27.8
SOCR3	00	Z	100	17	20.9	-19.8
VKB4L5	12	Z	100	6	41.6	39.2
VKB4L5	00	Z	100	4	40.2	40.1
XQFJRG	12	Z	100	1	3.0	3.0
XQFJRG	00	Z	100	3	3.7	3.2
YLV96W	00	Z	100	1	6.1	6.1
YLV96W	12	Z	100	6	76.9	61.2
ZVQEQC	12	Z	100	9	7.4	-4.1

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

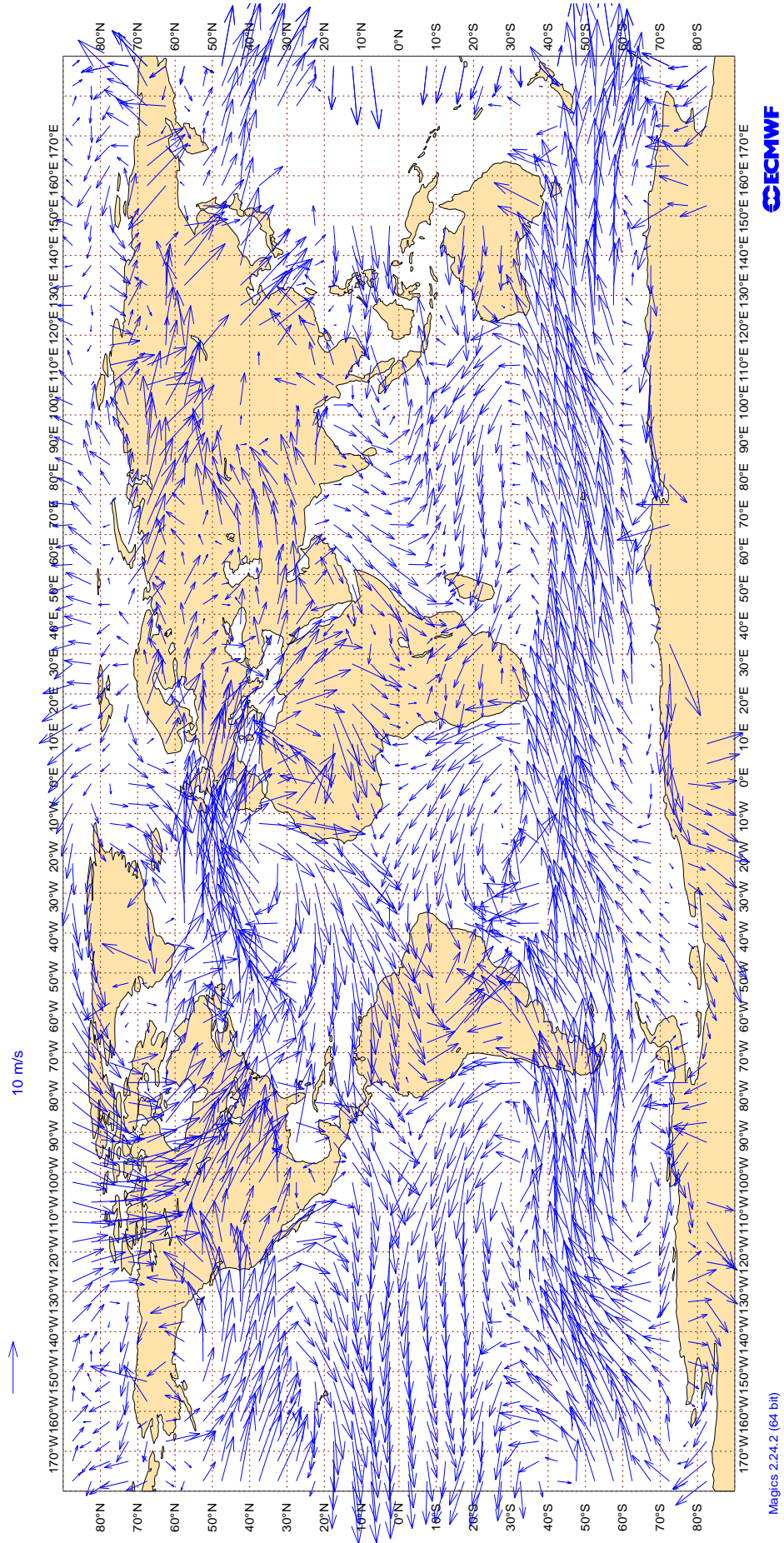
RADIOSONDE MONITORING STATISTICS (SHIPS)

MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : WIND (M/S)
 LEVEL : 100 HPA
 AREA : GLOBAL
 PERIOD : JAN 2018
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
5QPW8X	12	V	100	4	1.4	-0.7	0.6
5QPW8X	00	V	100	5	2.7	0.2	-1.5
ASDE09	12	V	100	2	3.4	0.7	-0.1
ASFR1	12	V	100	9	5.3	-1.5	1.0
ASFR1	00	V	100	7	5.0	0.2	-0.7
ASFR2	12	V	100	6	3.1	-0.8	-1.3
ASFR2	00	V	100	3	5.1	2.9	-1.0
ASFR3	12	V	100	10	2.8	-0.3	1.3
ASFR3	00	V	100	10	3.3	0.3	-0.7
ASFR4	12	V	100	8	3.2	-0.6	1.4
ASFR4	00	V	100	8	4.2	1.7	0.3
DBLK	12	V	100	23	4.2	-1.1	0.7
FHM5H	12	V	100	2	3.8	2.3	0.9
FHM5H	00	V	100	2	4.5	-1.2	-2.6
FHM5UJ	12	V	100	8	3.1	0.0	-0.1
FHM5UJ	00	V	100	14	3.3	-0.3	-1.5
FPUW5G	00	V	100	2	3.3	-2.2	-0.2
FPUW5G	12	V	100	30	5.4	-1.7	0.7
FPUWN	12	V	100	2	3.6	-1.0	-1.2
JGQH	12	V	100	5	3.9	1.3	0.5
JGQH	00	V	100	6	4.4	-0.5	0.6
JNKN7J	12	V	100	3	2.3	0.4	1.6
JNKN7J	00	V	100	4	3.3	-1.2	0.4
JNSR	12	V	100	6	5.2	-1.6	-0.4
JNSR	00	V	100	5	6.5	1.0	1.2
KMPLHP	12	V	100	6	5.1	-0.6	-0.5
KMPLHP	00	V	100	6	2.3	0.0	-0.2
RCOSSE	12	V	100	7	2.3	1.2	0.2
RCOSSE	00	V	100	7	3.0	1.2	0.6
SOCR3	12	V	100	8	2.0	0.5	1.0
SOCR3	00	V	100	9	2.3	0.5	-0.2
VKB4L5	12	V	100	5	3.4	0.2	0.3
VKB4L5	00	V	100	3	5.0	1.1	0.4
XQFJRG	12	V	100	1	3.0	-0.7	-2.9
XQFJRG	00	V	100	2	4.5	2.0	-3.1
YLV96W	00	V	100	1	0.4	0.2	-0.4
YLV96W	12	V	100	3	3.6	-1.5	0.9
ZVQEQC	12	V	100	9	4.7	2.9	0.3

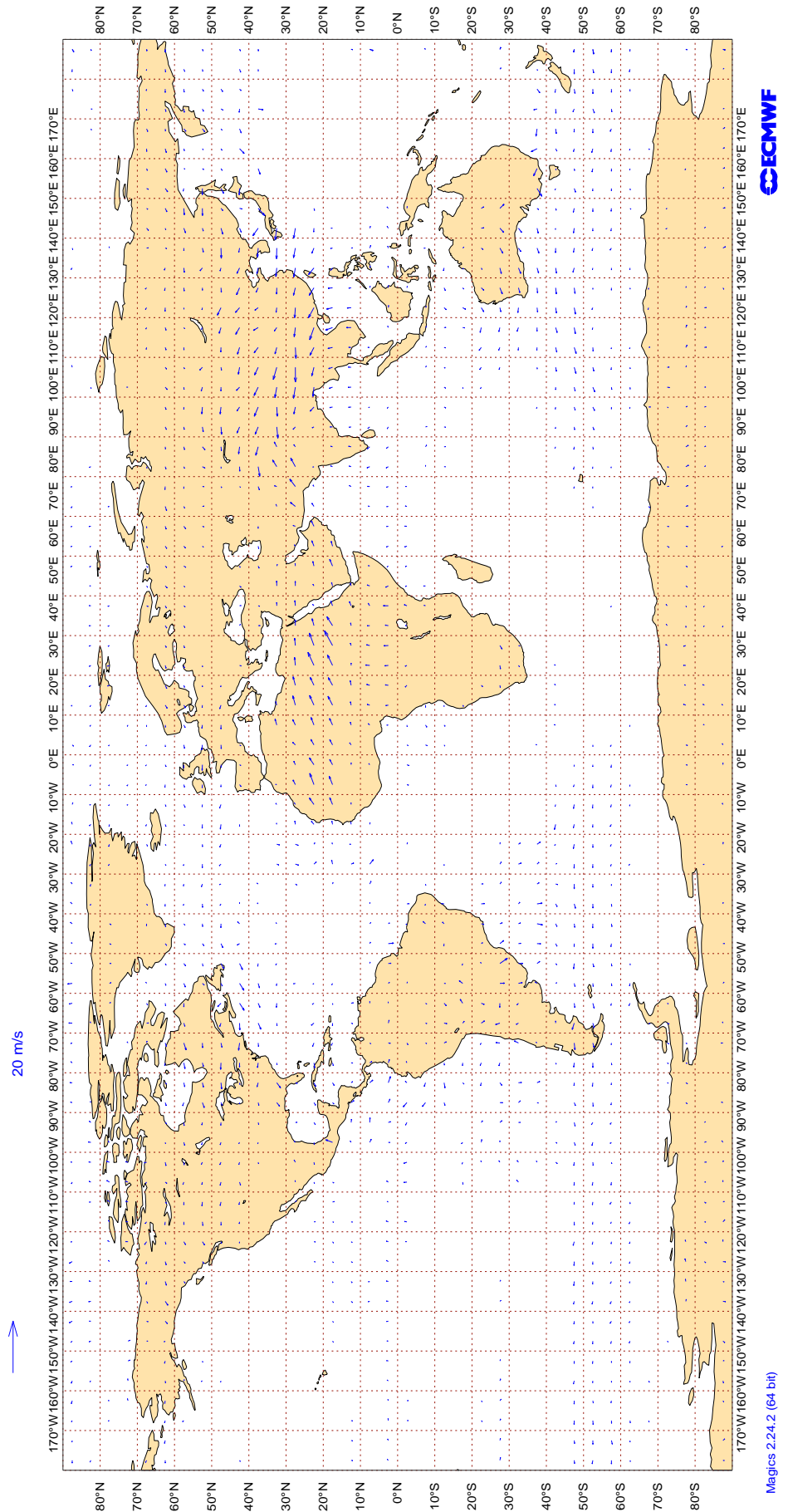
3.2.27 Figure 14 - SATOB Winds: 700-1000hPa

Figure 14
ECMWF Monitoring Statistics: Jan 2018
AMV Winds: 700-1000hPa
Mean Observed Wind



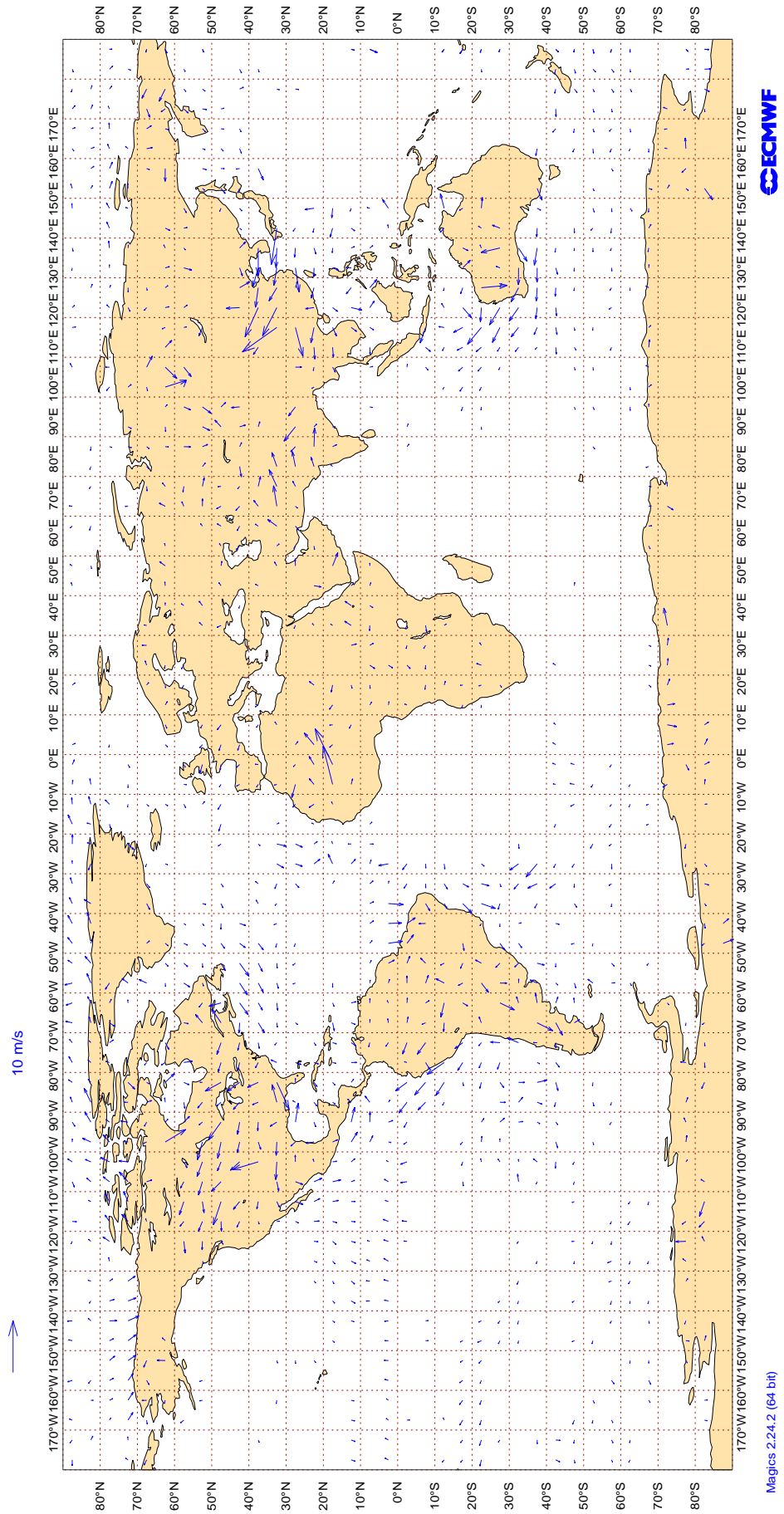
3.2.28 Figure 15 - SATOB Winds: 150- 400hPa

Figure 15
ECMWF Monitoring Statistics: Jan 2018
AMV Winds: 150- 400hPa
Wind bias: Observation - FG



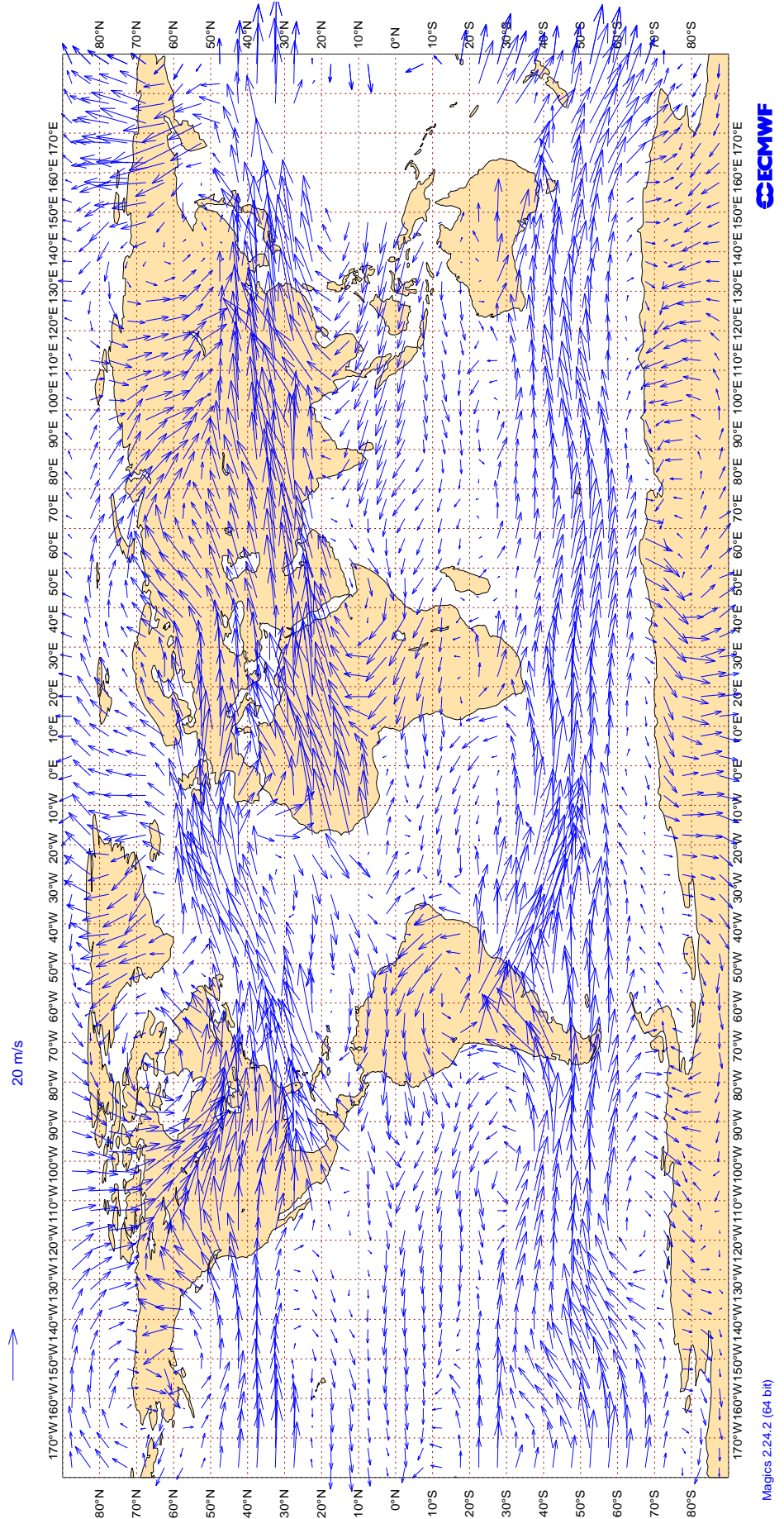
3.2.29 Figure 16 - SATOB Winds: 700-1000hPa

Figure 16
ECMWF Monitoring Statistics: Jan 2018
AMV Winds: 700-1000hPa
Wind bias: Observation - FG



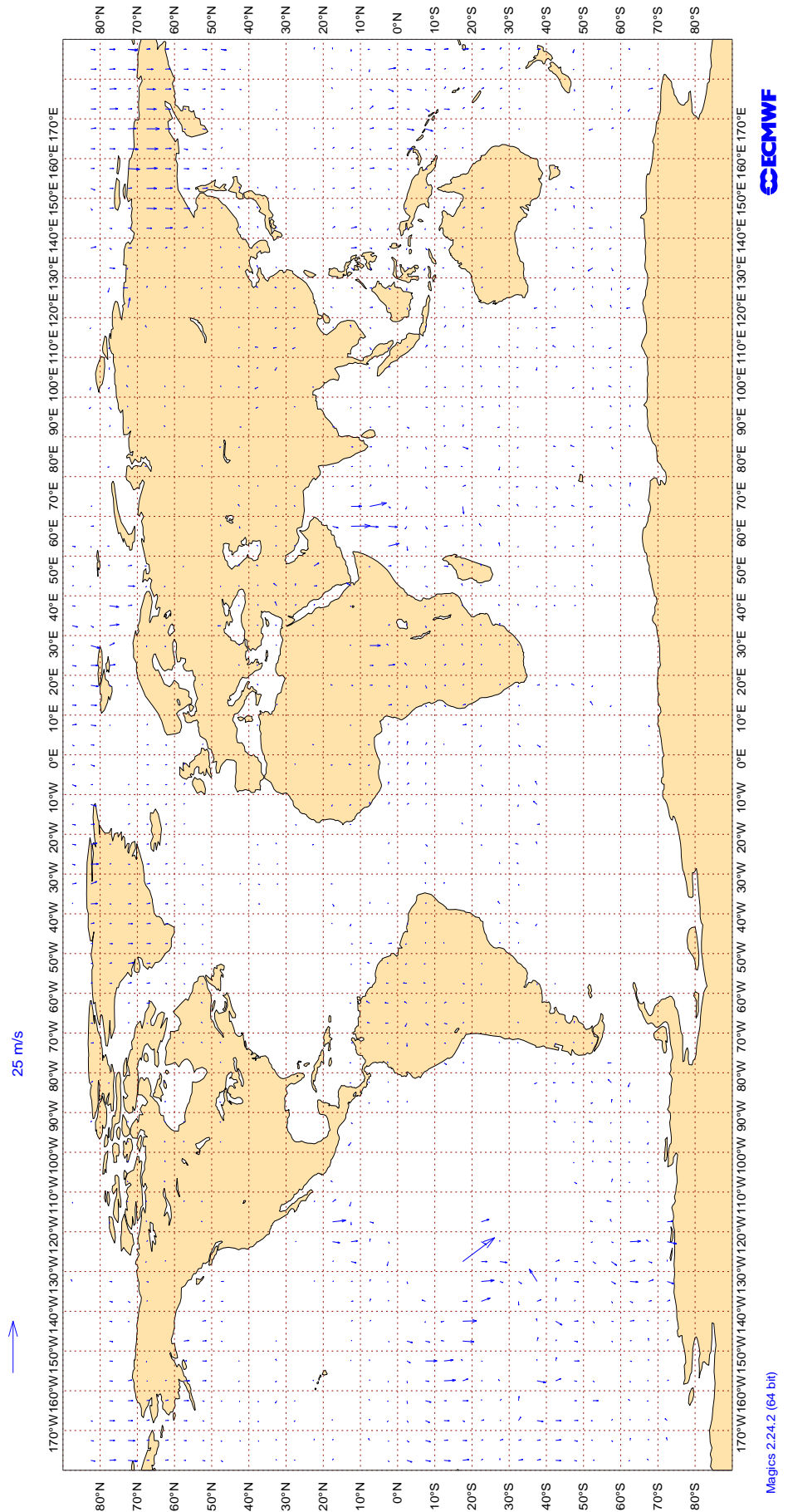
3.2.30 Figure 17 - SATOB Winds: 150- 400hPa

Figure 17
ECMWF Monitoring Statistics: Jan 2018
AMV Winds: 150- 400hPa
Mean Observed Wind



3.2.31 Figure 18 - AIRCRAFT Winds: 150- 300hPa

Figure 18
ECMWF Monitoring Statistics: Jan 2018
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 : JAN 2018
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

SELECTION CRITERIA: NO. OF OBS. >= 20

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

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
AAB	99	V	300-150	104	0	0	4.6	-0.9
AAL	99	V	300-150	36927	2	0	6.8	0.2
AAR	99	V	300-150	231	0	0	4.8	-1.8
ABD	99	V	300-150	174	0	0	4.9	-0.5
ABW	99	V	300-150	1018	0	0	4.3	-0.7
ACA	99	V	300-150	23908	5	0	7.7	0.2
ACI	99	V	300-150	2934	0	0	5.0	0.8
AEA	99	V	300-150	757	5	0	4.5	-0.2
AFL	99	V	300-150	2920	0	0	3.4	0.6
AFR	99	V	300-150	22624	2	0	4.4	0.1
AHY	99	V	300-150	240	13	0	9.3	0.1
AIC	99	V	300-150	2226	4	0	6.5	-0.0
ALK	99	V	300-150	891	0	0	3.2	0.5
AMX	99	V	300-150	2922	13	0	8.9	0.1
ANZ	99	V	300-150	23927	3	1	7.7	0.6
AOJ	99	V	300-150	49	0	0	4.6	1.0
ASA	99	V	300-150	587	1	0	6.4	0.3
ASL	99	V	300-150	455	0	0	3.6	0.1
ASY	99	V	300-150	452	0	0	5.9	1.6
ATN	99	V	300-150	157	1	1	5.0	1.0
AUA	99	V	300-150	2807	0	0	4.8	-0.7
AVA	99	V	300-150	326	4	0	5.8	0.0
AXM	99	V	300-150	251	0	2	5.5	0.1
AXY	99	V	300-150	27	0	0	4.6	0.1
AZA	99	V	300-150	4010	0	0	4.2	0.4

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
AZG	99	V	300-150	273	0	0	3.5	0.1
BAW	99	V	300-150	48520	3	0	5.2	0.0
BBC	99	V	300-150	276	0	0	3.5	0.7
BEL	99	V	300-150	1470	0	0	3.9	0.3
BMW	99	V	300-150	85	0	0	3.8	-0.1
BOX	99	V	300-150	1504	0	0	4.0	-0.2
BOX	99	V	300-150	55	0	0	2.5	-0.0
CAL	99	V	300-150	444	0	0	4.7	0.3
CAZ	99	V	300-150	142	0	0	3.7	-0.4
CCA	99	V	300-150	1767	4	0	9.9	1.1
CEB	99	V	300-150	119	0	0	3.1	0.3
CES	99	V	300-150	1095	0	0	4.1	0.7
CFC	99	V	300-150	290	0	1	4.8	-0.1
CFG	99	V	300-150	4456	0	0	4.5	-0.6
CHH	99	V	300-150	195	0	1	4.4	0.5
CJT	99	V	300-150	188	0	0	4.9	-0.9
CKS	99	V	300-150	1442	0	0	4.2	-0.4
CLE	99	V	300-150	32	0	0	2.9	0.8
CLF	99	V	300-150	40	0	0	4.1	0.4
CLU	99	V	300-150	353	0	0	4.2	-0.3
CLX	99	V	300-150	2901	0	0	4.4	-0.5
CMB	99	V	300-150	634	0	0	4.6	-1.0
CNV	99	V	300-150	174	0	0	4.3	0.5
CPA	99	V	300-150	1697	0	0	4.0	0.7
CRK	99	V	300-150	1313	0	0	4.0	0.7
CRL	99	V	300-150	887	0	0	4.3	0.3
CSC	99	V	300-150	195	0	0	4.5	0.3
CSN	99	V	300-150	1267	5	0	6.2	0.5
CTM	99	V	300-150	43	0	0	3.7	0.8
CXA	99	V	300-150	38	3	0	8.2	0.3
CXB	99	V	300-150	75	0	0	4.4	1.7
DAH	99	V	300-150	660	0	0	4.3	0.2
DAL	99	V	300-150	48964	0	0	4.1	-0.0
DCM	99	V	300-150	29	0	3	5.9	1.0
DCS	99	V	300-150	64	0	0	4.2	0.4
DGX	99	V	300-150	31	0	0	3.9	0.7
DHK	99	V	300-150	1145	0	0	4.8	-0.7
DJT	99	V	300-150	1419	0	0	4.4	0.0
DLH	99	V	300-150	24466	0	0	4.0	0.1
DSO	99	V	300-150	37	0	0	3.4	-0.4
DUB	99	V	300-150	128	0	0	3.7	-0.0
EAU	99	V	300-150	41	0	0	3.6	-0.5
EDC	99	V	300-150	80	3	0	3.8	0.0

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
EDG	99	V	300-150	43	2	0	6.0	-0.0
EDW	99	V	300-150	976	0	0	4.1	0.2
EIN	99	V	300-150	10045	0	0	4.1	0.3
EJM	99	V	300-150	610	0	0	4.3	0.0
ELY	99	V	300-150	2848	3	0	5.7	-0.2
ESW	99	V	300-150	40	0	0	3.8	-0.9
ETD	99	V	300-150	7137	2	0	5.0	0.1
ETH	99	V	300-150	2931	5	0	8.2	0.1
EVE	99	V	300-150	42	0	0	3.2	-0.3
EWG	99	V	300-150	2008	0	0	4.3	0.6
FDX	99	V	300-150	5443	0	0	4.0	0.2
FIN	99	V	300-150	1326	0	0	3.5	0.3
FJI	99	V	300-150	5748	0	1	4.8	0.9
FLA	99	V	300-150	40	0	0	3.7	-0.4
FPG	99	V	300-150	22	0	0	2.7	-0.1
FWI	99	V	300-150	1740	0	0	4.2	0.4
FYG	99	V	300-150	54	0	0	3.7	0.5
FYL	99	V	300-150	38	0	0	5.4	-0.2
GAF	99	V	300-150	108	0	0	4.4	0.4
GCK	99	V	300-150	20	0	0	3.6	1.8
GCR	99	V	300-150	188	0	1	3.7	0.4
GEC	99	V	300-150	1522	0	0	4.1	-0.1
GES	99	V	300-150	54	0	0	3.3	-0.2
GFA	99	V	300-150	629	0	0	2.8	0.3
GHO	99	V	300-150	112	0	0	7.6	3.1
GIA	99	V	300-150	395	0	0	3.2	0.4
GLJ	99	V	300-150	25	0	0	3.7	1.4
GLO	99	V	300-150	29	3	3	7.8	-0.2
GMA	99	V	300-150	68	0	0	3.6	-0.7
GOL	99	V	300-150	109	0	0	5.2	-0.6
GTH	99	V	300-150	95	0	0	4.2	-0.3
GTI	99	V	300-150	2465	0	0	4.5	-0.7
HAL	99	V	300-150	3918	0	0	4.8	1.1
HFY	99	V	300-150	52	0	0	3.2	-0.4
HRT	99	V	300-150	78	47	0	3.8	0.8
HZM	99	V	300-150	76	0	0	4.4	0.8
HZS	99	V	300-150	33	0	0	5.3	1.0
HZS	99	V	300-150	62	0	0	4.3	1.0
IBE	99	V	300-150	1887	0	0	4.0	0.3
IBK	99	V	300-150	202	0	1	3.5	0.4
ICL	99	V	300-150	468	0	0	5.1	-0.4
ICV	99	V	300-150	238	0	0	7.2	-2.4
IFA	99	V	300-150	43	81	0	28.2	-0.6

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
ISS	99	V	300-150	351	0	0	4.8	-1.0
IXR	99	V	300-150	20	0	0	3.5	-1.3
JAF	99	V	300-150	1072	2	0	5.2	-0.2
JAI	99	V	300-150	1489	0	0	4.0	0.2
JAS	99	V	300-150	143	0	0	4.1	0.6
JET	99	V	300-150	109	0	0	4.4	-0.6
JJA	99	V	300-150	46	2	0	6.2	-0.8
JME	99	V	300-150	156	0	0	4.0	0.7
JSI	99	V	300-150	20	0	0	6.1	-2.1
JST	99	V	300-150	2564	5	0	12.9	0.9
KAC	99	V	300-150	1488	0	0	3.9	0.3
KAI	99	V	300-150	95	1	0	4.9	0.4
KAL	99	V	300-150	2086	0	0	5.0	0.8
KAY	99	V	300-150	59	0	0	3.7	0.2
KCE	99	V	300-150	21	0	0	3.0	-0.3
KFE	99	V	300-150	28	0	0	4.8	-0.2
KIW	99	V	300-150	91	0	0	4.3	-0.2
KLM	99	V	300-150	15944	2	0	5.1	-0.1
KQA	99	V	300-150	165	4	0	17.4	0.3
LAN	99	V	300-150	2276	14	0	11.3	0.2
LCO	99	V	300-150	152	0	0	3.2	-0.6
LNI	99	V	300-150	171	0	0	3.0	0.4
LOT	99	V	300-150	2383	11	0	10.5	-0.3
LUC	99	V	300-150	57	0	0	4.8	0.8
LXG	99	V	300-150	34	0	0	3.3	-0.4
LXJ	99	V	300-150	44	0	0	9.1	-0.7
MAS	99	V	300-150	867	0	0	3.6	0.5
MAU	99	V	300-150	128	0	0	4.5	0.7
MJF	99	V	300-150	48	0	0	3.8	-0.4
MLM	99	V	300-150	56	0	0	4.9	-0.1
MMD	99	V	300-150	425	0	0	3.9	-0.2
MPH	99	V	300-150	767	0	0	4.3	-1.1
MSR	99	V	300-150	1266	0	0	4.1	-0.2
NAF	99	V	300-150	74	0	0	4.1	-1.2
NAX	99	V	300-150	11899	12	0	7.8	-0.1
NCA	99	V	300-150	259	0	0	4.5	-0.8
NJE	99	V	300-150	386	0	0	4.3	0.0
NOS	99	V	300-150	690	4	0	6.7	-1.1
NSH	99	V	300-150	33	0	0	2.1	-0.2
NWS	99	V	300-150	539	0	0	3.9	0.4
OAE	99	V	300-150	963	0	0	4.4	0.1
OMA	99	V	300-150	716	11	0	8.3	0.8
PAC	99	V	300-150	289	0	0	5.3	0.2

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
PAL	99	V	300-150	1039	0	0	4.0	0.3
PEG	99	V	300-150	24	0	0	4.2	0.9
PIA	99	V	300-150	251	0	0	3.9	-0.1
PLM	99	V	300-150	38	0	0	4.5	-2.4
PRD	99	V	300-150	20	0	0	5.3	-3.1
PVJ	99	V	300-150	32	0	0	3.6	-0.4
QAF	99	V	300-150	40	0	0	3.6	0.0
QFA	99	V	300-150	20774	0	0	6.1	0.7
QID	99	V	300-150	49	0	0	5.3	1.2
QQE	99	V	300-150	116	20	0	5.6	0.8
QTR	99	V	300-150	14212	1	0	5.0	0.2
RAM	99	V	300-150	514	12	0	4.6	-0.0
RBA	99	V	300-150	144	17	0	12.5	0.5
RCH	99	V	300-150	4410	0	0	4.8	0.2
RJA	99	V	300-150	1274	13	0	10.7	-0.1
ROJ	99	V	300-150	39	41	0	11.0	0.3
ROU	99	V	300-150	270	0	3	4.8	-0.2
RRR	99	V	300-150	157	0	0	3.8	0.7
RSY	99	V	300-150	286	0	0	4.0	0.0
SAM	99	V	300-150	352	0	0	4.1	0.1
SAS	99	V	300-150	4068	0	0	3.5	0.3
SDM	99	V	300-150	292	0	0	3.7	-0.2
SHE	99	V	300-150	22	0	0	9.6	7.6
SIA	99	V	300-150	3131	0	0	4.0	0.2
SLM	99	V	300-150	179	0	0	3.6	0.3
SOO	99	V	300-150	568	0	0	4.6	-0.3
SPA	99	V	300-150	29	0	0	4.4	1.3
SQC	99	V	300-150	635	0	0	4.8	-0.7
SVA	99	V	300-150	5202	2	0	4.8	0.2
SVW	99	V	300-150	239	0	0	4.3	0.2
SWR	99	V	300-150	9454	0	0	4.1	0.3
SXN	99	V	300-150	29	0	0	4.2	-1.4
TAM	99	V	300-150	241	0	0	4.0	0.4
TAP	99	V	300-150	1375	0	0	4.1	0.2
TAR	99	V	300-150	221	0	0	3.5	0.1
TAY	99	V	300-150	601	0	0	4.9	-0.6
TCX	99	V	300-150	2112	0	0	4.0	0.2
TFF	99	V	300-150	22	0	0	6.3	-0.1
TFL	99	V	300-150	1930	8	0	6.7	-0.2
TGW	99	V	300-150	71	20	0	14.8	0.7
THA	99	V	300-150	433	11	0	10.7	0.7
THT	99	V	300-150	3533	0	0	4.5	0.9
THY	99	V	300-150	7641	0	0	4.1	-0.0

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
TMN	99	V	300-150	60	2	33	5.1	1.4
TOM	99	V	300-150	5177	9	0	7.0	0.1
TOW	99	V	300-150	66	0	0	3.7	-0.7
TSC	99	V	300-150	3263	0	0	4.3	0.1
TVP	99	V	300-150	130	0	0	4.1	-0.0
TWB	99	V	300-150	46	0	2	4.3	-0.2
TWY	99	V	300-150	220	0	1	3.8	-0.5
UAE	99	V	300-150	16636	0	0	3.9	0.2
UAL	99	V	300-150	61188	1	3	6.7	0.2
ULC	99	V	300-150	119	0	0	3.9	-0.1
UPS	99	V	300-150	4481	0	0	4.6	-0.0
UZB	99	V	300-150	70	9	0	17.3	-0.7
VAL	99	V	300-150	24	0	0	6.1	-0.2
VIR	99	V	300-150	16378	3	0	5.4	0.0
VJT	99	V	300-150	847	50	0	15.6	0.4
VKG	99	V	300-150	681	0	0	4.1	0.2
VMP	99	V	300-150	57	0	0	2.8	-0.4
VOZ	99	V	300-150	6874	0	0	4.5	0.7
WAY	99	V	300-150	43	0	0	5.5	-0.2
WJA	99	V	300-150	3040	1	0	5.9	-0.2
WOW	99	V	300-150	1772	0	0	3.8	0.2
WWI	99	V	300-150	32	0	0	4.2	1.4
XAX	99	V	300-150	687	0	0	3.9	0.5
XLF	99	V	300-150	1071	0	0	4.0	0.4

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 : JAN 2018
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	00	Z	50	23	16.6	13.1
01001	12	Z	50	25	19.6	12.3
01028	00	Z	50	25	13.9	9.4
01028	12	Z	50	24	17.5	10.1
01400	00	Z	50	23	52.6	39.0
01400	12	Z	50	21	79.4	64.7
01415	00	Z	50	31	19.8	9.3
01415	12	Z	50	31	18.8	12.1
02365	12	Z	50	26	17.0	10.5
02365	00	Z	50	23	15.7	8.4
02591	00	Z	50	22	19.1	11.8
02591	12	Z	50	21	24.1	18.1
02836	00	Z	50	18	18.3	10.2
02836	12	Z	50	25	14.7	6.9
02963	12	Z	50	29	26.0	17.9
02963	00	Z	50	29	17.5	12.1
03005	00	Z	50	30	17.6	8.7
03005	12	Z	50	30	18.9	8.6
03238	12	Z	50	2	11.0	10.1
03238	00	Z	50	31	29.4	19.7
03808	12	Z	50	27	24.6	20.7
03808	00	Z	50	27	22.5	16.6
03918	00	Z	50	27	28.1	17.8
03918	12	Z	50	5	42.5	38.2
03953	00	Z	50	27	29.2	12.6
03953	12	Z	50	28	30.3	24.6
04018	12	Z	50	41	17.8	4.3
04018	00	Z	50	39	16.2	-1.2
04220	00	Z	50	31	13.9	11.4
04220	12	Z	50	30	11.1	6.5
04270	00	Z	50	29	26.6	12.3
04270	12	Z	50	27	27.8	9.5
04320	00	Z	50	25	15.8	14.8
04320	12	Z	50	26	14.3	13.2
04339	00	Z	50	26	21.6	10.5
04339	12	Z	50	26	13.8	8.5
04360	00	Z	50	17	52.5	50.6
04360	12	Z	50	14	44.7	42.9
06011	12	Z	50	23	21.0	11.5

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06011	00	Z	50	25	18.1	2.4
06260	12	Z	50	5	24.3	4.5
06260	00	Z	50	30	19.5	14.9
06610	00	Z	50	28	25.1	17.1
06610	12	Z	50	29	37.7	24.4
07110	00	Z	50	23	40.5	37.5
07110	12	Z	50	31	45.8	41.5
07510	12	Z	50	29	52.3	49.0
07510	00	Z	50	27	68.8	48.8
07645	12	Z	50	32	32.2	30.5
07645	00	Z	50	30	33.2	27.2
07761	00	Z	50	29	46.1	43.8
07761	12	Z	50	31	53.0	52.0
08001	00	Z	50	23	25.3	22.9
08001	12	Z	50	29	41.5	38.6
08221	12	Z	50	30	23.6	22.7
08221	00	Z	50	30	23.4	22.4
08302	00	Z	50	29	16.4	14.1
08302	12	Z	50	28	14.9	10.7
08508	12	Z	50	31	37.3	33.9
08522	12	Z	50	31	36.9	34.3
08579	12	Z	50	26	47.7	44.6
10035	00	Z	50	28	27.9	25.1
10035	12	Z	50	30	32.4	28.4
10393	00	Z	50	29	20.8	16.0
10393	12	Z	50	31	20.8	15.9
10410	12	Z	50	31	22.2	16.9
10410	00	Z	50	29	19.0	12.7
10739	00	Z	50	29	17.9	10.6
10739	12	Z	50	30	20.4	12.1
11035	12	Z	50	31	24.8	21.6
11035	00	Z	50	31	27.2	21.7
12982	12	Z	50	31	50.3	42.3
12982	00	Z	50	28	17.7	13.4
16080	00	Z	50	31	20.0	11.0
16080	12	Z	50	30	19.0	12.9
16245	00	Z	50	29	15.6	9.7
16245	12	Z	50	30	22.4	18.1
16320	12	Z	50	27	29.5	27.0
16320	00	Z	50	24	27.6	25.1
16429	12	Z	50	28	18.3	15.6
16429	00	Z	50	33	13.6	10.0
16622	00	Z	50	25	26.7	24.4

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
16754	00	Z	50	22	22.8	18.8
17607	12	Z	50	30	29.3	27.9
26435	00	Z	50	15	14.3	12.0
5QPW8X	12	Z	50	3	35.8	35.0
5QPW8X	00	Z	50	3	18.8	13.7
60018	12	Z	50	31	22.5	21.4
60018	00	Z	50	31	22.1	20.6
ASDE09	12	Z	50	1	60.2	60.2
ASFR1	12	Z	50	9	51.2	45.5
ASFR1	00	Z	50	5	28.7	27.0
ASFR2	12	Z	50	6	43.5	43.1
ASFR2	00	Z	50	2	52.1	51.9
ASFR3	12	Z	50	9	36.9	34.8
ASFR3	00	Z	50	9	41.5	39.7
ASFR4	12	Z	50	6	51.7	50.3
ASFR4	00	Z	50	7	48.7	47.8
DBLK	12	Z	50	22	19.5	16.0
FHM5H	12	Z	50	2	12.8	12.2
FHM5H	00	Z	50	2	10.8	8.5
FHM5UJ	12	Z	50	6	18.7	10.6
FHM5UJ	00	Z	50	12	27.7	4.9
FPUW5G	00	Z	50	3	21.8	21.5
FPUW5G	12	Z	50	36	13.5	12.2
FPUWN	12	Z	50	3	5.8	3.9
JNKN7J	12	Z	50	0	0.0	0.0
JNKN7J	00	Z	50	2	42.8	40.4
KMPLHP	12	Z	50	4	42.5	39.3
KMPLHP	00	Z	50	3	8.9	2.4
VKB4L5	12	Z	50	5	53.1	52.1
VKB4L5	00	Z	50	3	56.4	56.1
XQFJRG	12	Z	50	1	25.2	25.2
XQFJRG	00	Z	50	3	15.9	15.3
YLV96W	00	Z	50	0	0.0	0.0
YLV96W	12	Z	50	3	113.2	84.4
ZVQEQC	12	Z	50	9	6.4	1.9

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 : JAN 2018
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	00	V	50	19	2.9	0.2	-0.1
01001	12	V	50	20	2.6	0.4	0.3
01028	00	V	50	18	3.1	-0.1	-1.1
01028	12	V	50	18	3.3	0.3	-0.4
01400	00	V	50	20	5.2	0.1	0.1
01400	12	V	50	18	2.9	0.8	0.1
01415	00	V	50	31	4.2	-0.4	0.0
01415	12	V	50	31	4.6	0.7	-0.3
02365	12	V	50	20	3.9	0.0	-1.0
02365	00	V	50	21	4.2	0.4	-0.1
02591	00	V	50	19	3.7	-0.1	0.1
02591	12	V	50	20	3.7	0.5	-1.3
02836	00	V	50	12	2.6	0.1	0.6
02836	12	V	50	23	3.2	0.2	0.3
02963	12	V	50	29	4.1	-1.1	0.5
02963	00	V	50	27	4.1	0.0	-1.0
03005	00	V	50	30	5.0	0.2	0.1
03005	12	V	50	30	4.8	1.0	-0.8
03238	12	V	50	2	3.1	0.6	-0.2
03238	00	V	50	30	6.3	-0.7	-0.4
03808	12	V	50	27	4.0	-0.4	-0.3
03808	00	V	50	25	4.7	1.6	-0.1
03918	00	V	50	26	4.6	1.4	-0.3
03918	12	V	50	4	7.8	-0.8	1.7
03953	00	V	50	25	4.7	-0.1	-0.2
03953	12	V	50	28	4.5	-0.1	-0.5
04018	12	V	50	21	4.1	-1.0	0.1
04018	00	V	50	21	5.3	0.8	-0.2
04220	00	V	50	31	3.6	-0.8	-0.8
04220	12	V	50	30	3.0	-0.1	0.0
04270	00	V	50	29	6.2	-2.0	-0.6
04270	12	V	50	25	4.5	-1.2	-0.9
04320	00	V	50	25	2.8	-0.6	-0.3
04320	12	V	50	26	2.6	-0.6	0.2
04339	00	V	50	26	3.1	0.3	0.7
04339	12	V	50	26	3.3	0.5	0.5
04360	00	V	50	17	3.5	-0.8	-0.5
04360	12	V	50	14	3.5	1.0	-1.3
06011	12	V	50	23	4.5	-0.7	-0.4

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06011	00	V	50	25	3.8	0.3	-0.3
06260	12	V	50	5	5.9	2.4	-0.4
06260	00	V	50	30	5.2	0.8	-0.7
06610	00	V	50	28	7.3	-0.8	2.8
06610	12	V	50	29	6.8	-1.7	0.1
07110	00	V	50	22	4.4	0.3	-0.2
07110	12	V	50	28	3.5	-0.4	-0.6
07510	12	V	50	29	4.3	0.8	0.9
07510	00	V	50	27	4.1	-0.3	0.5
07645	12	V	50	29	4.4	1.0	-0.5
07645	00	V	50	28	5.5	0.1	0.2
07761	00	V	50	28	5.7	-0.1	1.1
07761	12	V	50	31	4.4	0.5	0.1
08001	00	V	50	20	4.4	0.1	0.3
08001	12	V	50	28	4.0	0.4	0.3
08221	12	V	50	30	4.7	-0.7	2.1
08221	00	V	50	30	4.5	-0.3	0.5
08302	00	V	50	28	3.7	-0.1	0.7
08302	12	V	50	28	4.5	0.6	1.0
08508	12	V	50	28	4.3	1.2	0.4
08522	12	V	50	31	3.5	-0.2	0.4
08579	12	V	50	26	4.7	-0.2	0.6
10035	00	V	50	24	4.0	0.7	-0.2
10035	12	V	50	30	3.7	0.2	-0.1
10393	00	V	50	29	4.5	0.4	0.3
10393	12	V	50	30	3.8	-0.2	0.0
10410	12	V	50	31	4.0	0.2	-0.2
10410	00	V	50	28	3.6	-0.8	-0.2
10739	00	V	50	28	4.5	-0.7	1.1
10739	12	V	50	30	6.1	0.4	0.5
11035	12	V	50	31	5.2	0.0	0.0
11035	00	V	50	30	7.4	0.1	-0.7
12982	12	V	50	31	4.1	0.6	-0.8
12982	00	V	50	26	5.3	1.3	0.4
16080	00	V	50	31	5.6	0.5	0.2
16080	12	V	50	30	5.1	-0.1	-0.3
16245	00	V	50	29	4.2	0.1	0.8
16245	12	V	50	30	5.0	0.2	1.2
16320	12	V	50	26	4.5	1.2	0.3
16320	00	V	50	22	4.3	0.9	-0.3
16429	12	V	50	28	4.5	1.2	-0.1
16429	00	V	50	31	4.7	1.3	-0.1
16622	00	V	50	16	3.9	0.1	0.1

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
16754	00	V	50	19	4.5	-0.1	-0.1
17607	12	V	50	24	4.1	0.5	-0.7
26435	00	V	50	15	3.4	-0.1	1.2
5QPW8X	12	V	50	3	2.2	0.7	-1.6
5QPW8X	00	V	50	3	2.6	1.3	-1.3
60018	12	V	50	31	3.7	-0.1	0.0
60018	00	V	50	30	3.6	0.4	1.9
ASDE09	12	V	50	1	1.9	1.0	-1.6
ASFR1	12	V	50	9	3.3	-0.1	0.1
ASFR1	00	V	50	5	2.3	0.5	0.7
ASFR2	12	V	50	6	2.7	-0.7	0.0
ASFR2	00	V	50	2	4.8	-0.9	3.9
ASFR3	12	V	50	9	4.1	-1.6	-0.3
ASFR3	00	V	50	9	2.4	0.0	-0.4
ASFR4	12	V	50	6	2.0	-1.2	-0.3
ASFR4	00	V	50	7	2.5	0.7	0.2
DBLK	12	V	50	22	4.3	-0.2	0.0
FHM5H	12	V	50	2	4.5	-1.3	1.0
FHM5H	00	V	50	2	3.5	2.6	-1.5
FHM5UJ	12	V	50	6	3.2	1.0	0.9
FHM5UJ	00	V	50	10	3.3	1.2	1.0
FPUW5G	00	V	50	2	2.6	1.0	-2.4
FPUW5G	12	V	50	30	3.7	-0.2	0.3
FPUWN	12	V	50	3	3.5	0.1	-0.3
JNKN7J	12	V	50	0	0.0	0.0	0.0
JNKN7J	00	V	50	2	5.8	-3.6	2.8
KMPLHP	12	V	50	4	3.9	1.0	0.4
KMPLHP	00	V	50	3	4.5	-0.9	2.8
VKB4L5	12	V	50	4	1.8	0.7	-0.8
VKB4L5	00	V	50	3	2.5	0.3	1.7
XQFJRG	12	V	50	1	3.1	3.0	0.8
XQFJRG	00	V	50	2	2.8	-1.3	1.6
YLV96W	00	V	50	0	0.0	0.0	0.0
YLV96W	12	V	50	2	5.9	2.4	0.9
ZVQEQC	12	V	50	9	3.0	0.3	-0.4

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

RADIOSONDE MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : GEOPOTENTIAL HEIGHT (METRES)
 LEVEL : 100 HPA
 AREA : 0 - 90N, 100W - 40E
 PERIOD : JAN 2018
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	00	Z	100	29	8.1	2.6
01001	12	Z	100	29	10.7	2.7
01028	00	Z	100	30	5.1	0.1
01028	12	Z	100	30	16.1	2.7
01400	00	Z	100	24	39.5	23.1
01400	12	Z	100	22	66.0	51.6
01415	00	Z	100	31	11.3	-1.3
01415	12	Z	100	31	8.9	2.6
02365	12	Z	100	30	7.6	1.5
02365	00	Z	100	30	7.1	1.8
02591	00	Z	100	22	9.3	4.0
02591	12	Z	100	22	10.5	5.0
02836	00	Z	100	23	6.7	0.6
02836	12	Z	100	29	6.8	0.8
02963	12	Z	100	29	16.8	5.1
02963	00	Z	100	30	7.8	0.7
03005	00	Z	100	31	8.7	0.4
03005	12	Z	100	30	9.5	2.0
03238	12	Z	100	2	1.6	-1.3
03238	00	Z	100	31	12.4	5.1
03808	12	Z	100	31	12.4	7.9
03808	00	Z	100	32	8.5	4.7
03918	00	Z	100	28	20.8	14.8
03918	12	Z	100	5	25.7	24.6
03953	00	Z	100	29	17.6	-0.4
03953	12	Z	100	29	12.3	5.9
04018	12	Z	100	23	11.5	-3.8
04018	00	Z	100	23	11.3	-5.3
04220	00	Z	100	31	7.4	4.1
04220	12	Z	100	30	6.7	2.4
04270	00	Z	100	30	20.9	-6.1
04270	12	Z	100	30	12.2	-3.8
04320	00	Z	100	26	8.5	6.6
04320	12	Z	100	26	6.3	5.0
04339	00	Z	100	27	16.4	5.9
04339	12	Z	100	27	9.9	2.3
04360	00	Z	100	28	39.5	38.7
04360	12	Z	100	26	38.9	38.4
06011	12	Z	100	27	10.9	2.6

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06011	00	Z	100	29	13.7	-2.5
06260	12	Z	100	5	10.3	-2.4
06260	00	Z	100	30	8.8	2.1
06610	00	Z	100	31	18.8	4.7
06610	12	Z	100	31	22.4	8.4
07110	00	Z	100	27	18.2	13.8
07110	12	Z	100	32	22.1	18.1
07510	12	Z	100	32	31.9	28.8
07510	00	Z	100	29	39.8	24.0
07645	12	Z	100	34	17.5	11.9
07645	00	Z	100	33	16.9	8.9
07761	00	Z	100	30	29.3	25.4
07761	12	Z	100	31	38.0	35.0
08001	00	Z	100	26	12.2	9.5
08001	12	Z	100	30	20.4	16.9
08221	12	Z	100	31	12.3	9.5
08221	00	Z	100	30	12.8	10.1
08302	00	Z	100	30	7.5	2.2
08302	12	Z	100	29	10.2	-2.2
08508	12	Z	100	31	21.4	17.0
08522	12	Z	100	31	19.8	17.2
08579	12	Z	100	26	28.7	22.8
10035	00	Z	100	33	14.8	10.4
10035	12	Z	100	31	16.8	14.2
10393	00	Z	100	31	7.7	1.1
10393	12	Z	100	31	6.6	0.4
10410	12	Z	100	31	8.4	2.8
10410	00	Z	100	31	10.3	-2.4
10739	00	Z	100	32	7.4	0.0
10739	12	Z	100	31	10.6	2.1
11035	12	Z	100	32	14.3	8.4
11035	00	Z	100	31	11.7	8.6
12982	12	Z	100	31	21.1	18.5
12982	00	Z	100	30	11.0	4.1
16080	00	Z	100	31	11.6	-1.9
16080	12	Z	100	31	17.6	1.7
16245	00	Z	100	31	11.0	-3.4
16245	12	Z	100	30	8.9	4.0
16320	12	Z	100	30	17.4	15.4
16320	00	Z	100	28	12.6	10.6
16429	12	Z	100	32	10.7	4.5
16429	00	Z	100	33	11.2	0.6
16622	00	Z	100	31	12.5	9.9

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
16754	00	Z	100	29	13.3	5.1
17607	12	Z	100	31	13.4	10.9
26435	00	Z	100	15	6.3	-2.5
5QPW8X	12	Z	100	6	25.2	24.6
5QPW8X	00	Z	100	7	19.8	7.7
60018	12	Z	100	31	15.2	12.3
60018	00	Z	100	31	14.2	10.7
ASDE09	12	Z	100	2	44.5	44.4
ASFR1	12	Z	100	10	33.3	28.0
ASFR1	00	Z	100	9	13.1	8.6
ASFR2	12	Z	100	7	32.5	31.9
ASFR2	00	Z	100	3	31.4	29.4
ASFR3	12	Z	100	11	25.8	23.9
ASFR3	00	Z	100	12	27.1	25.5
ASFR4	12	Z	100	8	28.8	27.6
ASFR4	00	Z	100	9	23.4	22.4
DBLK	12	Z	100	23	12.0	6.7
FHM5H	12	Z	100	2	6.3	-2.1
FHM5H	00	Z	100	2	10.0	0.8
FHM5UJ	12	Z	100	13	17.1	3.1
FHM5UJ	00	Z	100	20	16.4	3.4
FPUW5G	00	Z	100	3	7.2	6.9
FPUW5G	12	Z	100	38	11.3	10.1
FPUWN	12	Z	100	2	11.0	11.0
JNKN7J	12	Z	100	4	39.7	38.5
JNKN7J	00	Z	100	4	33.3	32.6
KMPLHP	12	Z	100	8	13.3	8.5
KMPLHP	00	Z	100	6	14.2	-5.6
VKB4L5	12	Z	100	6	41.6	39.2
VKB4L5	00	Z	100	4	40.2	40.1
XQFJRG	12	Z	100	1	3.0	3.0
XQFJRG	00	Z	100	3	3.7	3.2
YLV96W	00	Z	100	1	6.1	6.1
YLV96W	12	Z	100	6	76.9	61.2
ZVQEQC	12	Z	100	9	7.4	-4.1

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 : JAN 2018
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	00	V	100	28	3.0	0.5	-0.5
01001	12	V	100	29	2.7	0.1	0.2
01028	00	V	100	30	2.5	-0.6	-0.8
01028	12	V	100	29	2.5	0.3	-0.2
01400	00	V	100	24	3.7	-0.1	-0.1
01400	12	V	100	20	4.3	0.6	0.3
01415	00	V	100	31	3.6	0.2	-0.2
01415	12	V	100	31	3.2	0.0	0.4
02365	12	V	100	28	4.0	0.1	-0.1
02365	00	V	100	28	3.3	0.0	-0.9
02591	00	V	100	22	3.5	0.0	-1.1
02591	12	V	100	21	3.3	0.2	-0.2
02836	00	V	100	22	3.6	1.0	0.4
02836	12	V	100	26	2.5	0.1	0.0
02963	12	V	100	29	3.3	-0.4	0.2
02963	00	V	100	30	3.4	0.0	0.2
03005	00	V	100	31	3.4	0.4	-0.3
03005	12	V	100	30	3.3	0.0	-0.2
03238	12	V	100	2	4.8	-2.4	2.2
03238	00	V	100	30	5.0	-0.5	0.3
03808	12	V	100	28	3.3	-0.8	0.4
03808	00	V	100	30	4.6	-0.7	-0.3
03918	00	V	100	28	5.3	-0.7	-0.9
03918	12	V	100	5	6.3	-1.6	0.5
03953	00	V	100	27	4.5	-0.4	0.0
03953	12	V	100	29	4.7	-0.1	0.5
04018	12	V	100	21	2.8	-0.1	0.1
04018	00	V	100	22	3.5	-0.2	-0.4
04220	00	V	100	31	3.0	-0.1	0.7
04220	12	V	100	30	2.5	-0.8	0.2
04270	00	V	100	30	5.6	1.3	-0.5
04270	12	V	100	30	5.4	1.3	0.0
04320	00	V	100	26	3.6	-0.5	-1.1
04320	12	V	100	26	3.2	-0.1	0.5
04339	00	V	100	27	1.9	0.1	-0.1
04339	12	V	100	27	3.2	0.5	0.8
04360	00	V	100	28	3.3	-0.4	-0.3
04360	12	V	100	26	3.4	-0.4	-0.5
06011	12	V	100	27	2.8	0.1	1.0

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06011	00	V	100	29	2.8	-1.1	0.2
06260	12	V	100	5	4.6	1.8	-1.5
06260	00	V	100	30	4.5	-0.6	0.0
06610	00	V	100	31	7.0	1.4	-0.1
06610	12	V	100	30	5.0	0.3	0.7
07110	00	V	100	26	3.4	-1.2	-0.7
07110	12	V	100	29	3.8	-0.8	0.6
07510	12	V	100	31	5.1	-0.3	0.2
07510	00	V	100	29	4.1	-0.8	-0.3
07645	12	V	100	30	6.2	0.0	-0.6
07645	00	V	100	31	6.5	0.3	-0.3
07761	00	V	100	29	6.1	-0.4	0.6
07761	12	V	100	30	6.4	0.6	0.2
08001	00	V	100	24	4.1	0.6	-0.6
08001	12	V	100	30	4.5	-0.5	0.2
08221	12	V	100	31	4.0	0.1	1.1
08221	00	V	100	30	3.8	-0.6	0.2
08302	00	V	100	28	5.1	0.6	1.0
08302	12	V	100	29	4.9	0.8	0.5
08508	12	V	100	31	3.3	-0.6	-0.3
08522	12	V	100	31	4.4	-0.6	-0.2
08579	12	V	100	26	4.4	-0.3	0.2
10035	00	V	100	30	3.5	-0.4	0.3
10035	12	V	100	31	3.8	-0.2	0.6
10393	00	V	100	31	4.4	-0.3	-0.8
10393	12	V	100	31	3.7	0.7	0.9
10410	12	V	100	31	3.7	-0.3	0.4
10410	00	V	100	31	3.6	0.9	0.2
10739	00	V	100	30	4.6	-0.1	1.1
10739	12	V	100	31	3.7	0.5	0.2
11035	12	V	100	31	5.2	0.6	0.1
11035	00	V	100	31	5.6	-0.4	0.8
12982	12	V	100	31	3.6	0.1	0.3
12982	00	V	100	28	4.8	0.2	0.2
16080	00	V	100	31	6.1	-1.0	2.2
16080	12	V	100	31	6.5	0.4	0.0
16245	00	V	100	31	4.2	0.6	0.1
16245	12	V	100	30	4.3	1.0	-0.3
16320	12	V	100	30	4.0	-0.2	-0.7
16320	00	V	100	26	4.5	0.2	-0.3
16429	12	V	100	31	5.1	1.1	0.3
16429	00	V	100	31	5.7	-0.3	0.6
16622	00	V	100	30	4.0	0.2	-0.3

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
16754	00	V	100	28	4.7	0.1	-0.5
17607	12	V	100	25	5.6	1.0	-0.3
26435	00	V	100	15	3.4	0.6	0.1
5QPW8X	12	V	100	4	1.4	-0.7	0.6
5QPW8X	00	V	100	5	2.7	0.2	-1.5
60018	12	V	100	31	5.8	0.6	0.3
60018	00	V	100	31	3.5	-0.2	0.6
ASDE09	12	V	100	2	3.4	0.7	-0.1
ASFR1	12	V	100	9	5.3	-1.5	1.0
ASFR1	00	V	100	7	5.0	0.2	-0.7
ASFR2	12	V	100	6	3.1	-0.8	-1.3
ASFR2	00	V	100	3	5.1	2.9	-1.0
ASFR3	12	V	100	10	2.8	-0.3	1.3
ASFR3	00	V	100	10	3.3	0.3	-0.7
ASFR4	12	V	100	8	3.2	-0.6	1.4
ASFR4	00	V	100	8	4.2	1.7	0.3
DBLK	12	V	100	23	4.2	-1.1	0.7
FHM5H	12	V	100	2	3.8	2.3	0.9
FHM5H	00	V	100	2	4.5	-1.2	-2.6
FHM5UJ	12	V	100	8	3.1	0.0	-0.1
FHM5UJ	00	V	100	14	3.3	-0.3	-1.5
FPUW5G	00	V	100	2	3.3	-2.2	-0.2
FPUW5G	12	V	100	30	5.4	-1.7	0.7
FPUWN	12	V	100	2	3.6	-1.0	-1.2
JNKN7J	12	V	100	3	2.3	0.4	1.6
JNKN7J	00	V	100	4	3.3	-1.2	0.4
KMPLHP	12	V	100	6	5.1	-0.6	-0.5
KMPLHP	00	V	100	6	2.3	0.0	-0.2
VKB4L5	12	V	100	5	3.4	0.2	0.3
VKB4L5	00	V	100	3	5.0	1.1	0.4
XQFJRG	12	V	100	1	3.0	-0.7	-2.9
XQFJRG	00	V	100	2	4.5	2.0	-3.1
YLV96W	00	V	100	1	0.4	0.2	-0.4
YLV96W	12	V	100	3	3.6	-1.5	0.9
ZVQEQC	12	V	100	9	4.7	2.9	0.3

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 : JAN 2018
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	00	Z	500	31	4.7	1.8
01001	12	Z	500	30	6.9	3.6
01028	00	Z	500	31	3.8	-0.2
01028	12	Z	500	32	13.8	1.2
01400	00	Z	500	24	37.8	19.4
01400	12	Z	500	23	59.0	46.1
01415	00	Z	500	31	4.8	3.4
01415	12	Z	500	32	6.3	1.9
02365	12	Z	500	31	5.6	3.3
02365	00	Z	500	31	6.4	4.1
02591	00	Z	500	22	7.4	5.9
02591	12	Z	500	22	6.9	6.1
02836	00	Z	500	31	3.6	1.9
02836	12	Z	500	31	3.5	1.2
02963	12	Z	500	30	18.4	4.2
02963	00	Z	500	30	3.3	1.6
03005	00	Z	500	31	4.9	-0.5
03005	12	Z	500	30	7.0	-1.4
03238	12	Z	500	2	1.9	1.0
03238	00	Z	500	32	7.8	0.6
03808	12	Z	500	32	7.5	5.8
03808	00	Z	500	32	5.7	3.2
03918	00	Z	500	28	12.4	9.7
03918	12	Z	500	5	12.7	12.4
03953	00	Z	500	32	11.5	-5.0
03953	12	Z	500	33	8.3	4.4
04018	12	Z	500	23	3.9	0.7
04018	00	Z	500	23	4.4	1.6
04220	00	Z	500	31	4.4	1.0
04220	12	Z	500	31	4.6	1.8
04270	00	Z	500	31	9.0	-3.6
04270	12	Z	500	31	5.3	-1.9
04320	00	Z	500	26	5.3	3.4
04320	12	Z	500	26	3.7	2.9
04339	00	Z	500	27	16.5	5.8
04339	12	Z	500	27	5.8	1.6
04360	00	Z	500	30	37.6	37.4
04360	12	Z	500	30	38.0	37.8
06011	12	Z	500	30	6.4	3.4

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06011	00	Z	500	31	10.8	4.2
06260	12	Z	500	5	5.8	0.2
06260	00	Z	500	31	4.9	0.5
06610	00	Z	500	31	4.7	0.7
06610	12	Z	500	31	4.6	1.9
07110	00	Z	500	27	7.1	1.4
07110	12	Z	500	32	8.7	5.0
07510	12	Z	500	32	14.1	12.8
07510	00	Z	500	30	9.8	6.1
07645	12	Z	500	36	9.3	5.4
07645	00	Z	500	34	10.5	-1.4
07761	00	Z	500	30	12.2	8.1
07761	12	Z	500	31	15.8	13.8
08001	00	Z	500	30	5.4	3.7
08001	12	Z	500	31	9.3	7.5
08221	12	Z	500	31	8.1	6.6
08221	00	Z	500	30	8.2	6.4
08302	00	Z	500	30	4.0	-1.0
08302	12	Z	500	30	6.0	-1.2
08508	12	Z	500	31	9.7	7.2
08522	12	Z	500	31	9.4	8.5
08579	12	Z	500	26	18.9	11.5
10035	00	Z	500	33	13.8	13.0
10035	12	Z	500	31	14.0	13.4
10393	00	Z	500	31	3.9	-0.2
10393	12	Z	500	33	4.9	-1.2
10410	12	Z	500	31	5.1	1.1
10410	00	Z	500	32	3.9	0.6
10739	00	Z	500	33	5.0	-1.1
10739	12	Z	500	31	5.6	-0.1
11035	12	Z	500	33	7.5	5.8
11035	00	Z	500	31	7.0	5.9
12982	12	Z	500	31	6.4	5.0
12982	00	Z	500	31	4.7	1.7
16080	00	Z	500	31	4.5	-2.2
16080	12	Z	500	31	6.1	-2.9
16245	00	Z	500	31	4.5	-0.9
16245	12	Z	500	31	4.1	-0.4
16320	12	Z	500	31	13.9	12.0
16320	00	Z	500	32	12.6	10.3
16429	12	Z	500	32	5.7	4.4
16429	00	Z	500	33	3.9	1.4
16622	00	Z	500	31	9.5	8.5

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
16754	00	Z	500	30	5.6	2.1
17607	12	Z	500	31	8.0	7.2
26435	00	Z	500	15	5.3	-0.9
5QPW8X	12	Z	500	6	20.7	20.1
5QPW8X	00	Z	500	7	24.9	11.3
60018	12	Z	500	31	9.0	7.6
60018	00	Z	500	31	8.5	6.6
ASDE09	12	Z	500	6	32.1	31.5
ASFR1	12	Z	500	11	10.8	8.2
ASFR1	00	Z	500	13	9.7	-3.6
ASFR2	12	Z	500	12	14.8	14.4
ASFR2	00	Z	500	9	17.4	16.7
ASFR3	12	Z	500	11	10.8	9.9
ASFR3	00	Z	500	15	8.1	6.4
ASFR4	12	Z	500	9	7.2	5.6
ASFR4	00	Z	500	11	8.2	4.7
DBLK	12	Z	500	23	6.4	4.5
FHM5H	12	Z	500	2	6.8	-4.9
FHM5H	00	Z	500	2	11.3	6.7
FHM5UJ	12	Z	500	13	8.4	5.5
FHM5UJ	00	Z	500	20	10.2	7.2
FPUW5G	00	Z	500	3	0.6	-0.3
FPUW5G	12	Z	500	40	3.9	2.3
FPUWN	12	Z	500	2	5.2	-0.7
JNKN7J	12	Z	500	4	32.5	32.1
JNKN7J	00	Z	500	4	35.0	34.5
KMPLHP	12	Z	500	12	9.3	-2.4
KMPLHP	00	Z	500	7	12.2	6.3
VKB4L5	12	Z	500	6	33.3	32.0
VKB4L5	00	Z	500	4	32.4	31.2
XQFJRG	12	Z	500	1	8.7	-8.7
XQFJRG	00	Z	500	5	3.7	-2.6
YLV96W	00	Z	500	1	4.7	4.7
YLV96W	12	Z	500	6	4.6	0.1
ZVQEQC	12	Z	500	10	4.0	-3.0

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

RADIOSONDE MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : WIND (M/S)
 LEVEL : 500 HPA
 AREA : 0 - 90N, 100W - 40E
 PERIOD : JAN 2018
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	00	V	500	31	2.4	0.0	0.3
01001	12	V	500	30	3.4	-0.4	-0.1
01028	00	V	500	31	2.8	-0.7	0.0
01028	12	V	500	31	2.5	-0.4	-0.4
01400	00	V	500	24	2.8	-0.4	0.3
01400	12	V	500	23	3.0	0.6	0.0
01415	00	V	500	31	2.8	-0.3	0.4
01415	12	V	500	31	3.8	0.5	0.0
02365	12	V	500	31	3.0	-0.1	-0.3
02365	00	V	500	31	2.7	-0.1	-0.4
02591	00	V	500	22	2.5	-0.3	0.0
02591	12	V	500	21	2.3	0.8	-0.1
02836	00	V	500	31	3.0	0.0	-0.3
02836	12	V	500	31	3.0	0.1	-0.2
02963	12	V	500	30	2.6	0.2	0.5
02963	00	V	500	30	2.5	0.0	0.0
03005	00	V	500	31	3.5	-0.1	0.0
03005	12	V	500	30	3.5	0.0	-0.3
03238	12	V	500	2	2.4	-0.3	-1.0
03238	00	V	500	31	2.6	-0.4	0.1
03808	12	V	500	31	3.4	0.4	0.3
03808	00	V	500	31	4.0	1.5	0.0
03918	00	V	500	28	4.5	-0.3	0.3
03918	12	V	500	5	4.9	-0.4	0.4
03953	00	V	500	29	4.1	0.2	0.0
03953	12	V	500	31	3.5	0.6	0.8
04018	12	V	500	22	3.2	0.4	0.2
04018	00	V	500	22	3.6	-0.2	-0.7
04220	00	V	500	31	3.3	0.5	0.4
04220	12	V	500	31	3.2	-0.2	-0.6
04270	00	V	500	31	4.7	0.3	0.1
04270	12	V	500	31	3.6	0.4	0.0
04320	00	V	500	26	2.8	-0.2	0.3
04320	12	V	500	26	2.2	-0.1	0.6
04339	00	V	500	27	2.4	0.4	-0.2
04339	12	V	500	27	2.9	0.2	-0.5
04360	00	V	500	30	3.6	0.3	0.8
04360	12	V	500	30	3.2	0.8	0.2
06011	12	V	500	30	3.9	-0.2	-0.6

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06011	00	V	500	31	3.5	-1.1	0.1
06260	12	V	500	5	2.6	-1.1	-1.4
06260	00	V	500	31	3.7	-0.2	-0.2
06610	00	V	500	31	2.6	0.4	0.0
06610	12	V	500	31	3.7	0.7	0.1
07110	00	V	500	26	3.8	0.4	0.5
07110	12	V	500	29	3.1	0.9	-0.4
07510	12	V	500	31	4.0	0.2	0.4
07510	00	V	500	30	2.7	0.2	-0.3
07645	12	V	500	31	3.0	0.8	-0.1
07645	00	V	500	31	3.4	0.6	-0.6
07761	00	V	500	30	3.2	-0.4	0.1
07761	12	V	500	31	4.5	-0.6	0.5
08001	00	V	500	29	3.2	0.3	0.4
08001	12	V	500	31	2.8	0.2	0.7
08221	12	V	500	31	3.3	0.2	0.5
08221	00	V	500	30	4.1	0.6	0.0
08302	00	V	500	29	3.4	0.2	-0.3
08302	12	V	500	29	3.5	0.3	-0.5
08508	12	V	500	31	2.7	0.3	0.4
08522	12	V	500	31	3.1	0.6	0.1
08579	12	V	500	26	2.6	-0.3	0.0
10035	00	V	500	31	3.6	0.2	-0.7
10035	12	V	500	31	3.5	-0.2	0.0
10393	00	V	500	31	3.2	0.2	-1.1
10393	12	V	500	31	3.1	0.1	0.7
10410	12	V	500	31	3.4	0.9	-0.7
10410	00	V	500	31	3.4	1.0	0.3
10739	00	V	500	31	3.2	1.2	-0.9
10739	12	V	500	31	3.5	0.7	-0.3
11035	12	V	500	31	3.8	0.0	0.8
11035	00	V	500	31	3.4	1.2	-0.6
12982	12	V	500	31	3.0	0.1	-0.3
12982	00	V	500	29	3.0	-0.2	-0.2
16080	00	V	500	31	2.9	0.2	-1.0
16080	12	V	500	31	3.8	0.4	-0.2
16245	00	V	500	31	3.1	0.4	0.3
16245	12	V	500	31	3.2	-0.1	-0.2
16320	12	V	500	31	2.8	0.1	0.5
16320	00	V	500	30	2.9	0.4	0.1
16429	12	V	500	31	3.2	-0.1	0.4
16429	00	V	500	31	3.4	-0.1	0.5
16622	00	V	500	30	3.0	0.0	-0.6

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
16754	00	V	500	30	3.3	0.4	1.1
17607	12	V	500	27	3.3	0.1	-0.8
26435	00	V	500	15	2.9	-0.5	0.4
5QPW8X	12	V	500	4	3.0	0.1	-1.4
5QPW8X	00	V	500	6	4.5	1.4	-0.5
60018	12	V	500	31	3.0	0.6	0.7
60018	00	V	500	31	3.5	0.1	-0.5
ASDE09	12	V	500	4	2.8	1.2	1.2
ASFR1	12	V	500	10	3.6	0.1	-0.6
ASFR1	00	V	500	11	2.8	-0.2	-0.7
ASFR2	12	V	500	11	2.8	0.1	1.0
ASFR2	00	V	500	9	2.3	-1.1	1.1
ASFR3	12	V	500	10	3.3	-0.3	-1.4
ASFR3	00	V	500	13	3.1	0.0	-0.2
ASFR4	12	V	500	9	2.7	0.4	-0.8
ASFR4	00	V	500	10	2.1	0.3	-0.1
DBLK	12	V	500	23	2.4	-0.1	0.1
FHM5H	12	V	500	2	1.9	-0.2	-0.6
FHM5H	00	V	500	2	3.2	2.0	2.5
FHM5UJ	12	V	500	9	4.0	0.3	-1.0
FHM5UJ	00	V	500	14	3.3	0.0	0.8
FPUW5G	00	V	500	2	1.9	0.9	1.2
FPUW5G	12	V	500	31	2.7	-0.2	-0.1
FPUWN	12	V	500	2	2.4	0.6	-1.0
JNKN7J	12	V	500	4	6.1	-3.1	2.5
JNKN7J	00	V	500	4	2.7	0.3	-0.4
KMPLHP	12	V	500	10	3.4	-0.4	0.8
KMPLHP	00	V	500	7	5.0	1.3	-0.1
VKB4L5	12	V	500	5	2.7	0.7	0.6
VKB4L5	00	V	500	3	1.6	-0.3	-1.0
XQFJRG	12	V	500	1	5.4	-4.9	2.2
XQFJRG	00	V	500	3	1.8	-0.8	0.1
YLV96W	00	V	500	1	0.5	-0.4	-0.3
YLV96W	12	V	500	4	2.8	-1.0	-0.2
ZVQEQC	12	V	500	10	2.2	0.2	0.9

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 : JAN 2018
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	00	Z	850	31	4.3	0.1
01001	12	Z	850	30	4.2	0.7
01028	00	Z	850	31	4.5	-1.0
01028	12	Z	850	32	15.1	-0.5
01400	00	Z	850	24	36.0	19.2
01400	12	Z	850	23	59.4	45.6
01415	00	Z	850	31	4.1	3.1
01415	12	Z	850	32	4.8	3.5
02365	12	Z	850	31	7.0	6.6
02365	00	Z	850	31	7.2	6.7
02591	00	Z	850	22	7.5	6.9
02591	12	Z	850	22	8.0	7.5
02836	00	Z	850	31	3.6	2.7
02836	12	Z	850	31	3.8	2.0
02963	12	Z	850	30	3.3	2.6
02963	00	Z	850	30	3.3	2.3
03005	00	Z	850	31	4.3	-1.0
03005	12	Z	850	30	4.5	-0.3
03238	12	Z	850	2	0.4	0.3
03238	00	Z	850	32	5.1	2.5
03808	12	Z	850	32	4.3	3.0
03808	00	Z	850	32	3.9	2.1
03918	00	Z	850	28	9.7	9.2
03918	12	Z	850	5	13.5	13.3
03953	00	Z	850	32	4.7	0.7
03953	12	Z	850	33	5.8	3.3
04018	12	Z	850	23	3.8	0.5
04018	00	Z	850	23	3.2	-0.2
04220	00	Z	850	31	3.4	1.7
04220	12	Z	850	31	4.9	1.9
04270	00	Z	850	32	6.7	-1.8
04270	12	Z	850	31	4.0	0.2
04320	00	Z	850	26	3.7	-0.8
04320	12	Z	850	26	3.4	-0.6
04339	00	Z	850	27	15.1	4.6
04339	12	Z	850	27	7.0	2.2
04360	00	Z	850	32	43.7	42.5
04360	12	Z	850	31	40.8	39.0
06011	12	Z	850	31	5.7	3.8

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06011	00	Z	850	31	10.5	6.0
06260	12	Z	850	5	3.5	1.5
06260	00	Z	850	31	3.8	1.4
06610	00	Z	850	31	3.7	2.6
06610	12	Z	850	31	3.3	1.6
07110	00	Z	850	27	3.2	1.5
07110	12	Z	850	32	4.7	3.7
07510	12	Z	850	32	7.9	7.5
07510	00	Z	850	30	5.9	4.3
07645	12	Z	850	36	8.0	6.9
07645	00	Z	850	34	5.2	4.3
07761	00	Z	850	30	5.8	4.6
07761	12	Z	850	31	8.3	7.2
08001	00	Z	850	30	4.2	2.9
08001	12	Z	850	31	5.0	4.1
08221	12	Z	850	31	6.2	5.4
08221	00	Z	850	30	7.2	6.1
08302	00	Z	850	30	3.3	-0.8
08302	12	Z	850	30	4.9	-3.5
08508	12	Z	850	31	4.3	2.1
08522	12	Z	850	31	4.9	4.4
08579	12	Z	850	26	17.0	7.5
10035	00	Z	850	33	14.1	13.8
10035	12	Z	850	31	14.8	14.7
10393	00	Z	850	31	3.4	0.9
10393	12	Z	850	33	3.0	0.9
10410	12	Z	850	31	3.1	1.3
10410	00	Z	850	32	2.9	0.8
10739	00	Z	850	33	3.1	0.4
10739	12	Z	850	31	3.2	-0.2
11035	12	Z	850	33	8.6	7.4
11035	00	Z	850	31	7.4	6.4
12982	12	Z	850	31	5.2	4.2
12982	00	Z	850	33	4.0	3.1
16080	00	Z	850	31	3.0	-1.0
16080	12	Z	850	31	4.9	-1.3
16245	00	Z	850	31	2.6	-0.2
16245	12	Z	850	31	2.7	-0.5
16320	12	Z	850	31	15.2	12.9
16320	00	Z	850	32	13.2	10.3
16429	12	Z	850	32	4.5	2.2
16429	00	Z	850	33	5.0	2.1
16622	00	Z	850	31	7.6	7.1

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
16754	00	Z	850	31	4.2	0.8
17607	12	Z	850	31	3.7	3.1
26435	00	Z	850	15	3.1	-0.6
5QPW8X	12	Z	850	6	26.6	26.5
5QPW8X	00	Z	850	7	28.9	11.9
60018	12	Z	850	31	4.6	3.7
60018	00	Z	850	31	4.2	2.9
ASDE09	12	Z	850	7	34.6	33.9
ASFR1	12	Z	850	13	4.7	0.5
ASFR1	00	Z	850	14	7.8	-3.5
ASFR2	12	Z	850	15	10.2	9.3
ASFR2	00	Z	850	11	10.6	9.8
ASFR3	12	Z	850	11	5.0	3.1
ASFR3	00	Z	850	15	4.1	2.5
ASFR4	12	Z	850	9	4.7	-2.7
ASFR4	00	Z	850	11	2.6	-1.2
DBLK	12	Z	850	23	5.0	1.9
FHM5H	12	Z	850	2	8.2	5.3
FHM5H	00	Z	850	2	17.7	12.7
FHM5UJ	12	Z	850	13	8.9	3.1
FHM5UJ	00	Z	850	20	10.7	7.1
FPUW5G	00	Z	850	3	6.2	-6.2
FPUW5G	12	Z	850	40	4.5	-3.6
FPUWN	12	Z	850	2	4.7	4.6
JNKN7J	12	Z	850	5	38.1	38.0
JNKN7J	00	Z	850	4	37.7	37.6
KMPLHP	12	Z	850	11	9.5	-2.2
KMPLHP	00	Z	850	7	16.3	5.1
VKB4L5	12	Z	850	6	25.5	24.1
VKB4L5	00	Z	850	4	30.4	29.2
XQFJRG	12	Z	850	1	16.2	-16.2
XQFJRG	00	Z	850	5	6.8	-5.1
YLV96W	00	Z	850	1	4.9	4.9
YLV96W	12	Z	850	6	5.4	-2.3
ZVQEQC	12	Z	850	10	6.2	-5.4

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 : JAN 2018
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	00	V	850	31	4.7	0.5	0.1
01001	12	V	850	30	3.9	1.0	0.7
01028	00	V	850	31	3.8	0.4	-0.2
01028	12	V	850	31	2.9	-0.1	0.2
01400	00	V	850	24	2.4	0.5	0.3
01400	12	V	850	23	2.2	0.3	0.2
01415	00	V	850	31	2.8	-0.3	0.1
01415	12	V	850	31	2.9	0.2	-0.2
02365	12	V	850	31	3.0	0.1	-0.8
02365	00	V	850	31	2.5	0.1	-0.2
02591	00	V	850	22	2.7	-0.7	-0.4
02591	12	V	850	21	2.9	-0.2	-0.2
02836	00	V	850	31	2.5	0.0	0.7
02836	12	V	850	31	2.5	0.0	0.2
02963	12	V	850	30	2.0	-0.1	-0.4
02963	00	V	850	30	2.3	0.2	0.0
03005	00	V	850	31	2.6	0.2	0.3
03005	12	V	850	30	3.4	-0.7	0.3
03238	12	V	850	2	1.7	1.5	-0.1
03238	00	V	850	31	3.7	0.8	-0.1
03808	12	V	850	31	3.3	-0.1	0.2
03808	00	V	850	31	3.6	-0.5	-0.2
03918	00	V	850	28	3.4	-0.2	-0.1
03918	12	V	850	5	2.8	1.4	-0.7
03953	00	V	850	29	4.3	0.2	-0.7
03953	12	V	850	31	2.7	0.1	0.6
04018	12	V	850	22	3.0	0.3	-0.2
04018	00	V	850	22	3.8	1.0	-0.6
04220	00	V	850	31	3.8	1.0	-0.9
04220	12	V	850	31	3.5	-0.1	0.6
04270	00	V	850	31	5.9	-1.9	0.3
04270	12	V	850	31	4.6	0.2	0.5
04320	00	V	850	26	3.2	-0.9	1.0
04320	12	V	850	26	3.1	0.4	0.1
04339	00	V	850	27	4.1	0.6	1.0
04339	12	V	850	27	6.5	0.3	1.4
04360	00	V	850	30	7.2	4.4	2.0
04360	12	V	850	30	6.3	3.4	1.0
06011	12	V	850	31	3.8	-0.4	-0.8

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06011	00	V	850	31	2.8	-0.5	-0.5
06260	12	V	850	5	2.9	0.9	1.4
06260	00	V	850	31	2.5	-0.1	-0.4
06610	00	V	850	31	3.8	0.1	1.2
06610	12	V	850	31	3.9	1.0	1.2
07110	00	V	850	26	2.9	-0.7	0.2
07110	12	V	850	29	3.7	-0.5	0.0
07510	12	V	850	31	3.4	-0.2	0.1
07510	00	V	850	30	3.5	0.5	0.1
07645	12	V	850	31	4.8	-1.3	0.7
07645	00	V	850	31	3.8	-0.9	0.8
07761	00	V	850	30	3.4	-0.7	0.0
07761	12	V	850	31	4.3	0.0	1.5
08001	00	V	850	29	3.7	0.3	-0.5
08001	12	V	850	31	3.4	-0.1	0.2
08221	12	V	850	31	3.7	0.6	0.8
08221	00	V	850	30	3.3	-0.7	1.0
08302	00	V	850	29	4.4	0.3	-0.2
08302	12	V	850	29	3.4	0.2	-0.2
08508	12	V	850	31	3.3	-0.2	-0.7
08522	12	V	850	31	4.2	-0.3	0.8
08579	12	V	850	26	2.3	-0.2	0.2
10035	00	V	850	31	2.9	0.0	-0.4
10035	12	V	850	31	2.3	-0.2	0.1
10393	00	V	850	31	2.6	-0.1	0.3
10393	12	V	850	31	2.4	0.4	0.0
10410	12	V	850	31	2.8	0.1	0.2
10410	00	V	850	31	2.9	-0.1	-0.3
10739	00	V	850	31	4.1	-0.4	-1.0
10739	12	V	850	31	3.5	-0.8	0.0
11035	12	V	850	31	3.9	1.0	1.1
11035	00	V	850	31	3.7	0.7	-0.3
12982	12	V	850	31	3.6	-0.2	0.1
12982	00	V	850	31	3.2	0.0	0.0
16080	00	V	850	31	3.2	0.1	0.6
16080	12	V	850	31	3.6	0.4	-0.6
16245	00	V	850	31	3.4	-0.1	-0.1
16245	12	V	850	31	3.4	0.1	0.3
16320	12	V	850	31	3.2	-0.1	-0.2
16320	00	V	850	30	3.0	-0.2	-1.0
16429	12	V	850	31	3.7	-0.8	0.3
16429	00	V	850	31	4.0	0.6	-0.3
16622	00	V	850	30	2.7	0.4	0.1

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
16754	00	V	850	31	3.3	0.6	-0.1
17607	12	V	850	31	3.3	0.7	-0.6
26435	00	V	850	15	2.0	-0.3	0.7
5QPW8X	12	V	850	4	2.9	1.2	-0.8
5QPW8X	00	V	850	6	3.9	0.8	0.8
60018	12	V	850	31	3.4	-0.2	0.1
60018	00	V	850	31	5.2	-1.8	0.1
ASDE09	12	V	850	5	3.4	1.0	-0.6
ASFR1	12	V	850	12	2.2	-0.5	0.8
ASFR1	00	V	850	12	5.3	1.8	0.4
ASFR2	12	V	850	14	3.5	1.6	-0.8
ASFR2	00	V	850	11	3.0	-1.7	0.2
ASFR3	12	V	850	10	3.1	0.7	0.0
ASFR3	00	V	850	13	2.6	-1.6	-0.1
ASFR4	12	V	850	9	3.2	-0.3	0.5
ASFR4	00	V	850	10	2.3	-0.8	-0.1
DBLK	12	V	850	23	2.7	-0.3	0.0
FHM5H	12	V	850	2	3.2	0.6	0.2
FHM5H	00	V	850	2	5.1	-1.7	2.3
FHM5UJ	12	V	850	9	2.8	-0.3	-0.2
FHM5UJ	00	V	850	14	2.6	-0.7	0.1
FPUW5G	00	V	850	2	2.5	-1.8	-1.3
FPUW5G	12	V	850	31	2.5	0.4	0.3
FPUWN	12	V	850	2	2.8	2.4	0.0
JNKN7J	12	V	850	5	3.2	-0.6	1.2
JNKN7J	00	V	850	4	3.4	-0.4	1.4
KMPLHP	12	V	850	9	3.9	0.1	0.4
KMPLHP	00	V	850	7	2.9	-0.7	0.4
VKB4L5	12	V	850	5	2.5	1.5	-1.0
VKB4L5	00	V	850	3	4.6	-1.9	0.1
XQFJRG	12	V	850	1	2.4	2.0	1.4
XQFJRG	00	V	850	3	4.0	-1.1	3.0
YLV96W	00	V	850	1	1.7	0.2	1.7
YLV96W	12	V	850	4	3.0	1.0	0.8
ZVQEQC	12	V	850	10	2.8	-0.1	-0.9

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 : JAN 2018
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

TIME = 99 => AVERAGE OF ALL OBSERVATIONS

GROSS ERROR LIMIT = 15 HPA

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
03380	99	P	SUR	54	0	685	0	0.4	-0.2	0.5
1300001	99	P	SUR	11	-23	631	0	0.3	-0.1	0.3
1300008	99	P	SUR	15	-38	714	0	0.3	-0.3	0.4
1300130	99	P	SUR	28	-16	744	0	0.4	0.0	0.4
1300131	99	P	SUR	28	-17	744	0	0.6	0.1	0.6
1300869	99	P	SUR	25	-60	733	0	0.3	-0.2	0.4
1300872	99	P	SUR	36	-53	743	0	0.7	0.2	0.7
1301603	99	P	SUR	20	-33	743	0	0.3	0.3	0.4
1301604	99	P	SUR	14	-28	744	0	0.3	0.4	0.5
1301605	99	P	SUR	22	-33	743	0	0.3	0.2	0.3
1301606	99	P	SUR	15	-30	744	0	0.3	0.4	0.5
1301607	99	P	SUR	16	-25	49	0	0.5	0.2	0.6
1301608	99	P	SUR	20	-21	293	0	0.3	0.8	0.9
1301609	99	P	SUR	27	-23	35	0	0.3	0.4	0.5
1301610	99	P	SUR	27	-26	12	0	0.2	0.3	0.3
1301611	99	P	SUR	27	-29	8	0	0.2	-0.1	0.2
13869	99	P	SUR	25	-60	732	0	0.3	-0.2	0.4
13872	99	P	SUR	36	-53	732	0	0.7	0.2	0.7
1501529	99	P	SUR	28	-28	734	0	0.3	0.4	0.5
1501531	99	P	SUR	20	-37	734	0	0.3	0.0	0.3
1501534	99	P	SUR	21	-36	735	0	0.3	-0.2	0.4
1501607	99	P	SUR	11	-47	743	0	0.3	0.2	0.4
1501609	99	P	SUR	15	-61	743	0	1.0	1.0	1.4
2500622	99	P	SUR	57	-51	646	0	0.9	-0.5	1.1
25622	99	P	SUR	57	-51	645	0	0.9	-0.5	1.1
3100735	99	P	SUR	20	-62	743	0	0.3	0.2	0.3
31735	99	P	SUR	20	-62	732	0	0.3	0.2	0.3
4100139	99	P	SUR	20	-38	699	0	0.3	-0.3	0.4
4100597	99	P	SUR	33	-39	743	0	0.4	0.4	0.6
4100729	99	P	SUR	37	-33	743	0	0.3	0.4	0.5
4100730	99	P	SUR	39	-52	336	31	2.8	-0.0	2.8
4101529	99	P	SUR	35	-65	703	0	0.9	0.4	1.0
4101530	99	P	SUR	39	-38	701	0	0.4	0.3	0.5
4101538	99	P	SUR	38	-60	668	0	0.5	0.2	0.6
4101539	99	P	SUR	32	-67	702	0	0.4	0.3	0.5
4101554	99	P	SUR	30	-61	729	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
4101556	99	P	SUR	36	-39	743	0	0.4	0.5	0.7
4101557	99	P	SUR	39	-43	743	0	0.4	0.2	0.4
4101558	99	P	SUR	46	-37	742	0	0.5	0.3	0.6
4101560	99	P	SUR	34	-54	735	0	0.4	0.6	0.8
4101561	99	P	SUR	34	-65	741	0	0.5	-0.0	0.5
4101562	99	P	SUR	38	-42	722	0	0.4	0.6	0.7
4101564	99	P	SUR	33	-46	723	0	0.5	0.1	0.5
4101566	99	P	SUR	30	-70	29	0	0.4	0.1	0.4
4101569	99	P	SUR	30	-70	33	0	0.4	0.0	0.4
4101573	99	P	SUR	36	-67	694	0	0.5	0.2	0.5
4101574	99	P	SUR	36	-60	650	0	0.6	0.5	0.7
4101575	99	P	SUR	35	-69	702	0	0.4	0.0	0.4
4101576	99	P	SUR	13	-52	741	0	0.3	0.5	0.5
4101577	99	P	SUR	19	-42	743	0	0.3	0.4	0.5
4101579	99	P	SUR	19	-43	81	0	2.7	9.5	9.8
4101580	99	P	SUR	16	-53	733	0	0.3	0.2	0.3
4101700	99	P	SUR	31	-32	743	0	0.3	0.5	0.6
4101702	99	P	SUR	33	-58	518	0	2.4	-0.6	2.4
4101703	99	P	SUR	22	-62	743	0	0.3	0.5	0.6
4101705	99	P	SUR	32	-42	743	0	0.4	0.2	0.5
4101706	99	P	SUR	34	-41	743	0	0.7	-0.2	0.7
4101707	99	P	SUR	39	-33	743	0	0.5	0.2	0.6
4101708	99	P	SUR	35	-26	743	0	0.5	0.4	0.7
4101709	99	P	SUR	40	-24	743	0	0.7	0.8	1.0
4101710	99	P	SUR	35	-54	742	0	0.6	0.1	0.6
4101712	99	P	SUR	39	-60	726	0	0.8	0.1	0.8
4101713	99	P	SUR	33	-55	742	0	0.5	-0.1	0.5
4101714	99	P	SUR	34	-41	12	0	0.2	-0.1	0.3
4101741	99	P	SUR	21	-60	743	0	0.3	0.4	0.5
4101742	99	P	SUR	21	-60	397	12	2.3	-0.2	2.3
4101743	99	P	SUR	21	-51	743	0	0.4	0.8	0.8
4101744	99	P	SUR	18	-63	743	0	0.3	-0.6	0.7
4101746	99	P	SUR	21	-60	743	0	0.3	-0.0	0.3
41040	99	P	SUR	15	-53	894	0	0.4	-0.5	0.6
41041	99	P	SUR	14	-46	1193	0	0.4	0.2	0.5
41043	99	P	SUR	21	-65	1193	0	0.4	-0.4	0.5
41044	99	P	SUR	22	-59	1227	0	0.3	0.1	0.3
41046	99	P	SUR	24	-68	1187	0	0.4	0.3	0.5
41048	99	P	SUR	32	-70	1211	0	0.5	-0.2	0.6
41049	99	P	SUR	28	-63	742	0	0.5	0.0	0.5
41052	99	P	SUR	18	-65	1894	0	0.4	-1.8	1.8
41053	99	P	SUR	19	-66	1858	0	0.4	-0.9	1.0
41056	99	P	SUR	18	-66	1621	0	0.4	-0.2	0.4

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
41597	99	P	SUR	33	-39	732	0	0.4	0.4	0.6
41729	99	P	SUR	37	-33	732	0	0.4	0.4	0.5
41730	99	P	SUR	39	-52	336	31	2.8	-0.0	2.8
42059	99	P	SUR	15	-68	943	0	0.4	-0.2	0.5
42085	99	P	SUR	18	-67	812	0	0.3	-1.0	1.0
4400510	99	P	SUR	45	-8	1212	3	1.2	0.6	1.3
4400513	99	P	SUR	54	-10	732	0	0.8	-0.6	1.0
4400517	99	P	SUR	25	-42	733	0	0.5	0.2	0.5
4400521	99	P	SUR	35	-40	718	0	0.3	-0.8	0.9
4400746	99	P	SUR	32	-33	743	0	0.4	0.5	0.7
4400765	99	P	SUR	64	10	738	0	0.7	-0.2	0.7
4400776	99	P	SUR	28	-54	733	0	0.3	0.5	0.6
4400777	99	P	SUR	29	-44	743	0	0.4	0.3	0.5
4400778	99	P	SUR	33	-33	733	0	0.2	0.3	0.4
44008	99	P	SUR	41	-69	744	0	0.6	-0.8	1.1
4400857	99	P	SUR	31	-27	743	0	0.3	0.6	0.7
4400874	99	P	SUR	30	-40	743	0	0.5	0.5	0.8
4400887	99	P	SUR	33	-51	743	0	0.4	-0.2	0.4
4400891	99	P	SUR	31	-59	743	0	0.6	-1.0	1.2
44011	99	P	SUR	41	-67	745	0	0.8	-1.1	1.4
4401501	99	P	SUR	52	-4	725	0	0.6	-0.2	0.7
4401503	99	P	SUR	32	-66	732	0	0.4	-0.1	0.4
4401525	99	P	SUR	13	-60	79	0	6.0	-3.9	7.2
4401527	99	P	SUR	27	-63	729	0	0.4	-0.1	0.4
4401529	99	P	SUR	28	-68	728	0	0.4	-0.1	0.4
4401530	99	P	SUR	30	-53	36	0	0.5	-0.6	0.8
4401536	99	P	SUR	48	-32	718	0	0.5	0.2	0.6
4401537	99	P	SUR	35	-30	569	0	0.3	-0.6	0.6
4401538	99	P	SUR	42	-25	22	0	0.5	-1.9	2.0
4401539	99	P	SUR	35	-52	733	0	0.5	-0.2	0.5
4401540	99	P	SUR	32	-65	731	0	0.4	0.1	0.4
4401541	99	P	SUR	40	-50	731	0	0.6	0.1	0.6
4401542	99	P	SUR	34	-67	732	0	0.4	0.3	0.5
4401543	99	P	SUR	28	-66	731	0	0.4	-0.2	0.4
4401544	99	P	SUR	33	-62	731	0	0.4	-0.7	0.8
4401546	99	P	SUR	46	-15	731	0	0.5	0.6	0.8
4401548	99	P	SUR	47	-3	28	0	2.0	-0.5	2.1
4401550	99	P	SUR	50	-24	735	0	0.7	-0.2	0.8
4401551	99	P	SUR	38	-39	670	40	2.4	-0.2	2.4
4401552	99	P	SUR	42	-17	743	0	0.5	0.3	0.6
4401553	99	P	SUR	56	-36	743	0	0.7	0.3	0.7
4401554	99	P	SUR	54	-34	730	0	0.6	0.6	0.8
4401555	99	P	SUR	56	-21	743	0	0.6	-0.5	0.8

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
4401556	99	P	SUR	35	-36	743	0	0.6	0.4	0.8
4401557	99	P	SUR	37	-40	743	0	0.5	0.4	0.6
4401558	99	P	SUR	48	-42	743	0	0.5	0.3	0.6
4401559	99	P	SUR	45	-27	742	0	1.0	0.8	1.3
4401560	99	P	SUR	41	-25	742	0	0.8	0.7	1.0
4401561	99	P	SUR	43	-54	743	0	0.5	0.2	0.6
4401562	99	P	SUR	41	-30	743	0	0.8	0.3	0.8
4401563	99	P	SUR	31	-30	743	0	0.4	0.4	0.5
4401564	99	P	SUR	40	-35	743	0	1.1	1.3	1.7
4401565	99	P	SUR	49	-39	741	0	0.6	0.3	0.7
4401566	99	P	SUR	51	-39	742	0	0.5	0.4	0.7
4401601	99	P	SUR	55	-47	705	0	0.5	0.2	0.5
4401602	99	P	SUR	44	-55	704	0	0.6	0.5	0.8
4401603	99	P	SUR	54	-27	703	0	0.5	0.2	0.6
4401605	99	P	SUR	55	-36	698	0	0.5	-0.3	0.6
4401606	99	P	SUR	48	-11	698	10	2.0	0.4	2.0
4401609	99	P	SUR	36	-43	537	219	5.3	-1.4	5.5
4401611	99	P	SUR	45	-53	700	0	0.5	0.6	0.8
4401613	99	P	SUR	48	-21	703	24	1.7	0.2	1.7
4401616	99	P	SUR	40	-34	702	0	0.7	0.3	0.8
4401631	99	P	SUR	50	-11	697	0	1.0	-0.1	1.0
4401633	99	P	SUR	48	-22	694	0	0.6	-0.1	0.6
4401752	99	P	SUR	65	-25	536	0	0.7	0.9	1.1
4401755	99	P	SUR	62	-13	598	0	0.6	0.7	0.9
4401756	99	P	SUR	62	-61	81	3	6.1	7.3	9.5
4401757	99	P	SUR	68	-6	688	0	0.5	0.7	0.9
4401802	99	P	SUR	43	-55	702	0	0.8	0.8	1.1
44027	99	P	SUR	44	-67	925	0	0.7	-0.5	0.8
44032	99	P	SUR	44	-69	628	0	0.7	-1.0	1.2
44033	99	P	SUR	44	-69	522	0	0.7	-0.6	0.9
44034	99	P	SUR	44	-68	50	0	0.9	-0.6	1.0
44037	99	P	SUR	44	-68	564	6	1.1	-1.2	1.6
44137	99	P	SUR	42	-62	773	0	0.8	-0.3	0.9
44139	99	P	SUR	44	-57	364	0	0.5	-0.1	0.5
44150	99	P	SUR	43	-64	708	0	0.6	-0.1	0.6
44510	99	P	SUR	45	-8	1190	3	1.2	0.6	1.3
44513	99	P	SUR	54	-10	731	0	0.8	-0.6	1.0
44517	99	P	SUR	25	-42	732	0	0.5	0.2	0.5
44521	99	P	SUR	35	-40	708	0	0.3	-0.8	0.9
44746	99	P	SUR	32	-33	732	0	0.4	0.5	0.7
44765	99	P	SUR	64	10	727	0	0.7	-0.2	0.7
44776	99	P	SUR	28	-54	732	0	0.3	0.5	0.6
44777	99	P	SUR	29	-44	732	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
44778	99	P	SUR	33	-33	732	0	0.2	0.3	0.4
44857	99	P	SUR	31	-27	732	0	0.3	0.6	0.7
44874	99	P	SUR	30	-40	732	0	0.5	0.5	0.8
44887	99	P	SUR	33	-51	732	0	0.4	-0.2	0.4
44891	99	P	SUR	32	-59	732	0	0.7	-1.0	1.2
4700546	99	P	SUR	41	-26	710	8	2.3	0.8	2.5
4700551	99	P	SUR	57	-6	39	8	2.4	-0.1	2.4
4700552	99	P	SUR	68	-63	604	604	0.0	0.0	0.0
4700555	99	P	SUR	41	-15	700	0	0.4	0.5	0.6
4700560	99	P	SUR	65	12	700	0	0.5	0.3	0.6
4700568	99	P	SUR	45	-7	701	0	0.7	0.8	1.0
4700574	99	P	SUR	37	-17	706	0	0.6	0.6	0.9
4701661	99	P	SUR	84	-41	609	0	0.7	0.5	0.9
4701662	99	P	SUR	70	-67	609	0	0.5	-1.3	1.4
4701668	99	P	SUR	46	-55	702	0	0.6	0.9	1.1
4701669	99	P	SUR	43	-50	700	0	0.7	0.8	1.1
4701673	99	P	SUR	71	-67	703	0	0.5	-1.8	1.9
4701674	99	P	SUR	70	-67	702	0	0.6	-6.6	6.6
4701676	99	P	SUR	58	-62	82	1	2.5	0.5	2.6
4701677	99	P	SUR	53	-55	272	24	3.2	1.5	3.5
47546	99	P	SUR	41	-26	740	8	2.3	0.8	2.5
47551	99	P	SUR	57	-6	37	0	0.5	-0.8	1.0
47552	99	P	SUR	68	-63	740	740	0.0	0.0	0.0
47555	99	P	SUR	41	-15	736	0	0.4	0.5	0.6
47560	99	P	SUR	65	12	737	0	0.5	0.3	0.6
47568	99	P	SUR	45	-7	738	0	0.7	0.8	1.0
47574	99	P	SUR	37	-17	740	0	0.6	0.7	0.9
4800510	99	P	SUR	84	-22	707	0	0.6	-0.1	0.6
4800770	99	P	SUR	79	-18	471	0	0.5	0.3	0.6
4802004	99	P	SUR	71	-20	531	2	2.9	-0.4	3.0
4802009	99	P	SUR	68	-28	171	10	4.7	1.7	5.0
48510	99	P	SUR	84	-22	740	0	0.6	-0.1	0.7
48770	99	P	SUR	79	-18	484	0	0.5	0.3	0.6
6100001	99	P	SUR	43	8	744	0	0.6	0.1	0.6
6100002	99	P	SUR	42	5	722	0	0.5	0.3	0.6
61001	99	P	SUR	43	8	733	0	0.6	0.1	0.6
6100196	99	P	SUR	42	4	682	0	0.5	-0.0	0.5
6100197	99	P	SUR	40	4	744	0	0.5	0.0	0.5
6100198	99	P	SUR	37	-2	464	0	0.5	0.0	0.5
61002	99	P	SUR	42	5	711	0	0.5	0.3	0.6
6100280	99	P	SUR	41	1	744	0	0.5	-0.0	0.5
6100281	99	P	SUR	40	0	738	0	0.5	0.0	0.5
6100417	99	P	SUR	38	0	744	0	0.5	0.0	0.5

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
6100430	99	P	SUR	40	2	744	0	0.4	-0.2	0.5
6101001	99	P	SUR	38	24	223	0	0.7	0.4	0.8
6101003	99	P	SUR	40	25	216	0	0.5	0.3	0.6
6101007	99	P	SUR	36	25	222	0	0.6	2.9	3.0
6101008	99	P	SUR	37	22	175	0	0.6	0.0	0.6
6200024	99	P	SUR	44	-3	744	0	0.6	-0.3	0.6
6200025	99	P	SUR	44	-6	175	0	0.4	0.1	0.4
6200082	99	P	SUR	44	-8	188	0	0.6	-0.3	0.7
6200083	99	P	SUR	43	-9	744	0	0.5	-0.2	0.5
6200084	99	P	SUR	42	-9	744	0	0.5	-0.1	0.5
6200085	99	P	SUR	36	-7	744	0	0.5	0.1	0.5
6200091	99	P	SUR	53	-5	13	0	0.3	-0.5	0.6
6200093	99	P	SUR	55	-10	454	0	1.3	-0.9	1.6
6200094	99	P	SUR	52	-7	299	3	1.5	-0.4	1.5
62001	99	P	SUR	45	-5	738	0	0.6	-0.1	0.6
6200191	99	P	SUR	41	-10	280	0	0.5	-0.2	0.6
6200192	99	P	SUR	40	-10	280	0	0.4	-0.8	0.9
6200199	99	P	SUR	40	-9	281	0	0.5	0.4	0.6
6200200	99	P	SUR	36	-8	281	0	0.3	0.0	0.3
6200513	99	P	SUR	62	-21	743	0	0.6	-0.2	0.6
6200554	99	P	SUR	37	-21	739	0	0.5	0.6	0.8
6200559	99	P	SUR	56	-6	705	0	0.9	0.1	0.9
6200940	99	P	SUR	29	-40	743	0	0.4	-0.2	0.5
6200941	99	P	SUR	27	-60	729	0	0.4	-0.5	0.6
6201030	99	P	SUR	44	-4	368	0	0.6	0.6	0.9
6201070	99	P	SUR	43	-9	211	0	0.6	-0.7	0.9
62023	99	P	SUR	51	-8	692	0	0.7	-0.0	0.7
62027	99	P	SUR	49	-2	117	0	0.6	-0.2	0.7
62029	99	P	SUR	49	-12	1481	4	0.6	-0.3	0.7
6203503	99	P	SUR	29	-40	734	0	0.4	-0.9	1.0
6203504	99	P	SUR	24	-47	730	0	0.3	0.1	0.3
6203510	99	P	SUR	19	-54	735	0	0.3	0.1	0.3
6203523	99	P	SUR	64	-10	701	0	0.6	-0.1	0.6
6203524	99	P	SUR	68	-54	77	0	1.1	1.1	1.6
6203526	99	P	SUR	65	1	697	0	0.4	0.5	0.6
6203528	99	P	SUR	35	-14	728	0	0.4	0.5	0.6
6203529	99	P	SUR	16	-37	728	0	0.3	0.0	0.3
6203600	99	P	SUR	47	-15	742	0	0.6	0.4	0.7
6203601	99	P	SUR	49	-18	743	0	0.5	0.3	0.6
6203602	99	P	SUR	64	-27	743	0	0.6	0.6	0.8
6203603	99	P	SUR	55	-35	743	0	0.6	0.2	0.6
6203604	99	P	SUR	50	-32	743	0	0.5	0.2	0.6
6203605	99	P	SUR	58	-34	742	0	0.7	0.4	0.8

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
6203606	99	P	SUR	48	-15	743	0	1.6	0.5	1.7
6203607	99	P	SUR	38	-33	37	0	0.3	0.5	0.6
62050	99	P	SUR	50	-4	744	0	0.7	0.1	0.7
62081	99	P	SUR	51	-13	743	0	0.7	-0.5	0.8
62095	99	P	SUR	53	-16	1148	0	0.7	-0.5	0.8
62102	99	P	SUR	58	2	740	0	0.7	0.3	0.8
62103	99	P	SUR	50	-3	744	0	0.7	0.3	0.8
62104	99	P	SUR	57	1	687	0	0.5	-0.1	0.5
62107	99	P	SUR	50	-6	1485	0	0.8	0.1	0.8
62111	99	P	SUR	58	0	741	0	0.5	1.2	1.3
62112	99	P	SUR	58	0	741	0	0.5	0.2	0.5
62113	99	P	SUR	58	0	741	0	0.6	0.4	0.7
62114	99	P	SUR	58	0	1480	0	0.6	0.0	0.6
62116	99	P	SUR	58	1	728	0	0.7	0.1	0.7
62118	99	P	SUR	58	1	741	0	0.4	0.4	0.6
62119	99	P	SUR	57	2	740	0	0.5	0.3	0.6
62120	99	P	SUR	56	2	741	0	0.5	-0.2	0.6
62121	99	P	SUR	54	3	742	0	0.6	0.4	0.7
62122	99	P	SUR	57	2	1474	0	0.4	0.2	0.5
62124	99	P	SUR	54	-4	738	0	0.5	-0.0	0.5
62127	99	P	SUR	54	1	740	0	0.5	0.5	0.7
62129	99	P	SUR	58	0	742	0	0.6	0.3	0.7
62130	99	P	SUR	59	1	736	0	0.5	-0.2	0.5
62131	99	P	SUR	54	1	553	0	0.5	0.5	0.7
62132	99	P	SUR	56	2	741	0	0.5	0.5	0.8
62133	99	P	SUR	57	1	741	0	0.7	0.2	0.7
62134	99	P	SUR	58	1	734	0	0.4	0.4	0.6
62135	99	P	SUR	54	2	741	0	0.5	0.3	0.6
62136	99	P	SUR	54	3	741	0	0.5	0.7	0.8
62138	99	P	SUR	54	0	1478	0	0.6	1.1	1.2
62139	99	P	SUR	53	2	1478	0	0.5	0.3	0.5
62140	99	P	SUR	57	1	1461	0	0.5	0.1	0.5
62141	99	P	SUR	58	-4	741	0	0.7	-2.3	2.4
62143	99	P	SUR	58	2	742	0	0.6	0.8	1.0
62144	99	P	SUR	53	2	741	0	0.6	0.4	0.7
62145	99	P	SUR	53	3	1036	0	0.6	0.5	0.8
62146	99	P	SUR	57	2	742	0	0.6	0.4	0.7
62148	99	P	SUR	54	2	587	0	0.6	1.1	1.2
62149	99	P	SUR	54	1	739	0	0.4	0.7	0.8
62150	99	P	SUR	54	1	741	0	0.5	1.3	1.4
62151	99	P	SUR	57	2	1472	0	0.4	0.3	0.5
62152	99	P	SUR	57	2	741	0	0.5	0.5	0.7
62153	99	P	SUR	57	2	1478	0	0.5	0.3	0.5

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
62154	99	P	SUR	56	2	741	0	0.4	0.0	0.4
62155	99	P	SUR	58	1	662	0	0.4	0.6	0.7
62157	99	P	SUR	58	0	741	0	0.5	-0.1	0.5
62160	99	P	SUR	57	2	1473	0	0.5	0.3	0.6
62161	99	P	SUR	58	1	738	0	0.7	0.2	0.7
62162	99	P	SUR	57	1	742	0	0.5	-0.1	0.5
62163	99	P	SUR	48	-8	740	0	0.6	0.1	0.6
62164	99	P	SUR	57	1	742	0	0.4	0.2	0.4
62165	99	P	SUR	54	1	740	0	0.5	0.5	0.7
62168	99	P	SUR	58	1	740	0	0.4	0.1	0.4
62170	99	P	SUR	51	2	744	0	0.4	0.4	0.6
62296	99	P	SUR	53	2	739	0	0.5	0.1	0.5
62297	99	P	SUR	59	2	1464	0	0.5	0.0	0.5
62302	99	P	SUR	61	-2	741	0	0.6	0.0	0.6
62304	99	P	SUR	51	2	677	5	0.5	0.3	0.6
62305	99	P	SUR	50	0	723	2	0.5	0.3	0.6
62442	99	P	SUR	49	-16	741	0	0.6	-0.4	0.7
62513	99	P	SUR	62	-21	732	0	0.6	-0.2	0.6
62554	99	P	SUR	37	-21	728	0	0.5	0.6	0.8
62559	99	P	SUR	56	-6	694	0	0.9	0.1	0.9
62940	99	P	SUR	29	-40	732	0	0.4	-0.2	0.5
62941	99	P	SUR	27	-60	718	0	0.4	-0.5	0.6
6301552	99	P	SUR	79	27	743	0	0.5	-0.2	0.5
6301553	99	P	SUR	78	-4	17	17	0.0	0.0	0.0
6301554	99	P	SUR	71	24	619	0	1.1	-0.2	1.1
6301555	99	P	SUR	75	30	743	0	0.5	0.7	0.8
6301556	99	P	SUR	72	0	743	0	0.9	0.4	1.0
6301557	99	P	SUR	76	12	743	0	0.5	0.7	0.9
63055	99	P	SUR	61	2	741	0	0.8	-0.1	0.8
63056	99	P	SUR	60	2	739	0	0.6	0.5	0.8
63057	99	P	SUR	59	2	741	0	0.5	-0.1	0.5
63058	99	P	SUR	53	2	2220	0	0.5	0.3	0.6
63059	99	P	SUR	58	-1	741	0	0.5	0.3	0.6
63101	99	P	SUR	61	1	741	0	0.7	0.4	0.8
63102	99	P	SUR	61	1	742	0	0.6	0.1	0.6
63103	99	P	SUR	61	1	741	0	0.6	0.2	0.6
63104	99	P	SUR	61	2	741	0	0.5	0.5	0.7
63105	99	P	SUR	61	2	742	0	0.5	-0.2	0.6
63108	99	P	SUR	61	2	741	0	0.7	-0.1	0.7
63109	99	P	SUR	60	2	742	0	0.5	-0.1	0.5
63110	99	P	SUR	60	2	741	0	0.6	0.0	0.6
63111	99	P	SUR	61	2	1465	0	0.6	-0.5	0.8
63112	99	P	SUR	61	1	741	0	0.5	-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
63115	99	P	SUR	62	1	740	0	0.6	-0.0	0.6
63117	99	P	SUR	61	1	1480	0	0.9	0.8	1.2
63118	99	P	SUR	57	1	742	0	0.7	-0.1	0.7
63120	99	P	SUR	54	2	674	0	0.6	0.6	0.8
6400526	99	P	SUR	50	-18	546	0	2.3	-0.5	2.4
6400562	99	P	SUR	64	-5	743	0	0.5	0.1	0.5
6401501	99	P	SUR	65	8	703	0	0.5	0.6	0.8
6401507	99	P	SUR	74	12	704	0	0.5	0.5	0.7
6401550	99	P	SUR	68	12	743	0	0.5	0.1	0.6
6401555	99	P	SUR	66	-5	743	0	0.5	0.7	0.9
6401556	99	P	SUR	64	-9	743	0	0.5	0.6	0.8
6401557	99	P	SUR	60	-56	742	0	1.0	0.5	1.1
6401560	99	P	SUR	59	-2	743	0	0.5	0.5	0.7
6401561	99	P	SUR	57	-30	743	0	0.7	0.3	0.7
6401562	99	P	SUR	62	-11	743	0	0.7	-0.1	0.7
6401563	99	P	SUR	62	-19	743	0	0.8	0.5	1.0
6401564	99	P	SUR	63	-12	62	0	0.4	0.6	0.7
6401565	99	P	SUR	63	-17	62	0	0.7	0.1	0.7
64041	99	P	SUR	61	-3	741	0	0.6	-0.1	0.7
64045	99	P	SUR	59	-12	1030	0	0.7	-0.2	0.7
64046	99	P	SUR	61	-4	744	0	0.5	-0.1	0.5
64526	99	P	SUR	50	-18	535	0	2.3	-0.5	2.4
64562	99	P	SUR	64	-5	732	0	0.5	0.1	0.5
6500519	99	P	SUR	70	33	743	0	0.6	-0.3	0.7
6500596	99	P	SUR	74	-4	697	2	2.1	0.4	2.2
6500599	99	P	SUR	74	29	743	0	0.6	0.3	0.7
6500602	99	P	SUR	66	3	743	0	0.5	0.4	0.7
6501551	99	P	SUR	50	-44	743	0	0.6	0.3	0.7
6501553	99	P	SUR	54	-32	743	0	0.6	0.1	0.6
6501555	99	P	SUR	65	-52	742	0	0.5	-0.5	0.7
6501556	99	P	SUR	54	-28	743	0	0.5	0.3	0.6
65519	99	P	SUR	70	33	732	0	0.6	-0.3	0.7
65596	99	P	SUR	74	-4	686	2	2.0	0.5	2.0
65599	99	P	SUR	74	29	732	0	0.6	0.3	0.7
65602	99	P	SUR	66	3	732	0	0.5	0.4	0.7

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

DRIFTER MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : WIND SPEED (M/S)
 AREA : 10N - 90N, 70W - 40E
 PERIOD : JAN 2018
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

TIME = 99 => AVERAGE OF ALL OBSERVATIONS

GROSS ERROR LIMIT FOR VECTOR WIND = 25 M/S

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
1300001	99	SPEED	SUR	11	-23	631	0	0	1.0	1.0	1.5
1300002	99	SPEED	SUR	20	-23	699	0	0	0.8	0.6	1.0
1300008	99	SPEED	SUR	15	-38	714	0	0	0.9	0.0	0.9
1300130	99	SPEED	SUR	28	-16	742	0	0	1.1	-0.5	1.2
1300131	99	SPEED	SUR	28	-17	741	0	0	2.2	2.0	3.0
4100026	99	SPEED	SUR	12	-38	317	0	0	0.7	-0.6	1.0
4100139	99	SPEED	SUR	20	-38	699	0	0	1.0	0.1	1.0
4100300	99	SPEED	SUR	16	-57	549	0	0	0.9	-0.6	1.1
41026	99	SPEED	SUR	12	-38	314	0	0	0.8	-0.6	1.0
41040	99	SPEED	SUR	15	-53	1157	0	0	1.1	-0.1	1.1
41041	99	SPEED	SUR	14	-46	1193	0	0	1.0	-0.3	1.1
41043	99	SPEED	SUR	21	-65	585	0	0	0.9	-0.4	1.0
41044	99	SPEED	SUR	22	-59	1227	0	0	1.1	-0.3	1.2
41046	99	SPEED	SUR	24	-68	1187	0	0	1.1	-0.1	1.1
41048	99	SPEED	SUR	32	-70	1210	0	0	1.5	-0.1	1.5
41049	99	SPEED	SUR	28	-63	742	0	0	1.5	-0.2	1.5
41052	99	SPEED	SUR	18	-65	1894	0	0	1.0	-0.7	1.2
41053	99	SPEED	SUR	19	-66	1858	0	0	1.5	0.5	1.6
41056	99	SPEED	SUR	18	-66	1625	0	0	1.2	-1.0	1.5
41300	99	SPEED	SUR	16	-57	537	0	0	1.0	-0.5	1.1
42059	99	SPEED	SUR	15	-68	969	0	0	0.9	-0.1	0.9
42085	99	SPEED	SUR	18	-67	812	0	0	1.2	-0.2	1.2
44032	99	SPEED	SUR	44	-69	695	0	0	1.6	-0.4	1.7
44033	99	SPEED	SUR	44	-69	599	2	0	1.7	-0.1	1.7
44034	99	SPEED	SUR	44	-68	114	0	0	1.6	-0.9	1.8
44037	99	SPEED	SUR	44	-68	685	0	0	1.4	-0.2	1.4
44137	99	SPEED	SUR	42	-62	771	0	0	1.7	0.1	1.7
44139	99	SPEED	SUR	44	-57	372	0	0	1.6	-0.0	1.6
44150	99	SPEED	SUR	43	-64	719	0	0	2.0	-0.4	2.0
6100001	99	SPEED	SUR	43	8	744	0	0	1.9	-0.2	1.9
6100002	99	SPEED	SUR	42	5	742	0	0	1.7	0.1	1.7
61001	99	SPEED	SUR	43	8	733	0	0	2.4	-1.3	2.7
6100197	99	SPEED	SUR	40	4	738	0	0	1.7	-0.3	1.7
61002	99	SPEED	SUR	42	5	731	0	0	1.8	-0.6	1.9

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
6100280	99	SPEED	SUR	41	1	733	0	0	1.9	-0.8	2.0
6100281	99	SPEED	SUR	40	0	735	0	0	2.2	1.1	2.5
6100417	99	SPEED	SUR	38	0	742	0	0	1.4	-0.2	1.5
6100430	99	SPEED	SUR	40	2	728	0	0	1.9	-0.6	2.0
6101001	99	SPEED	SUR	38	24	223	0	0	1.9	-0.9	2.1
6101003	99	SPEED	SUR	40	25	216	0	0	3.0	-2.4	3.9
6101007	99	SPEED	SUR	36	25	222	0	0	2.0	-1.2	2.4
6101008	99	SPEED	SUR	37	22	175	0	0	1.8	-1.0	2.1
6200024	99	SPEED	SUR	44	-3	744	0	0	1.8	-0.4	1.9
6200025	99	SPEED	SUR	44	-6	175	0	0	1.3	-0.7	1.5
6200082	99	SPEED	SUR	44	-8	188	0	0	1.2	-0.9	1.5
6200083	99	SPEED	SUR	43	-9	742	0	0	1.3	-0.2	1.3
6200084	99	SPEED	SUR	42	-9	743	0	0	1.5	-0.9	1.8
6200085	99	SPEED	SUR	36	-7	742	0	0	1.3	0.2	1.4
6200092	99	SPEED	SUR	51	-11	416	0	0	1.9	-0.6	2.0
6200093	99	SPEED	SUR	55	-10	733	0	0	1.7	-0.7	1.9
6200094	99	SPEED	SUR	52	-7	284	0	0	2.5	-0.2	2.5
62001	99	SPEED	SUR	45	-5	738	0	0	1.5	0.9	1.7
6200191	99	SPEED	SUR	41	-10	280	0	0	1.3	-0.2	1.3
6200192	99	SPEED	SUR	40	-10	280	0	0	1.2	0.3	1.2
6200199	99	SPEED	SUR	40	-9	281	0	0	1.5	0.3	1.6
6200200	99	SPEED	SUR	36	-8	281	6	0	1.3	-0.0	1.3
6201030	99	SPEED	SUR	44	-4	368	0	0	1.9	-0.5	2.0
6201070	99	SPEED	SUR	43	-9	211	0	0	1.6	-0.2	1.6
62023	99	SPEED	SUR	51	-8	691	0	0	2.2	0.3	2.2
62027	99	SPEED	SUR	49	-2	118	0	0	1.8	-0.1	1.8
62029	99	SPEED	SUR	49	-12	1481	0	0	1.6	0.1	1.6
62050	99	SPEED	SUR	50	-4	743	0	0	1.6	0.2	1.6
62081	99	SPEED	SUR	51	-13	743	0	0	1.4	-0.2	1.4
62095	99	SPEED	SUR	53	-16	1148	0	0	1.5	0.5	1.6
62102	99	SPEED	SUR	58	2	740	0	0	1.6	-0.3	1.6
62103	99	SPEED	SUR	50	-3	743	0	0	1.9	1.3	2.4
62104	99	SPEED	SUR	57	1	716	0	0	1.3	-0.6	1.4
62107	99	SPEED	SUR	50	-6	1485	0	0	2.1	1.0	2.3
62111	99	SPEED	SUR	58	0	741	0	0	1.6	0.0	1.6
62112	99	SPEED	SUR	58	0	741	0	0	2.4	-1.6	2.8
62113	99	SPEED	SUR	58	0	742	0	0	1.7	0.3	1.8
62114	99	SPEED	SUR	58	0	1480	0	0	1.5	0.5	1.6
62118	99	SPEED	SUR	58	1	741	0	0	1.6	0.5	1.6
62119	99	SPEED	SUR	57	2	740	0	0	1.9	-0.6	2.0
62120	99	SPEED	SUR	56	2	741	0	0	1.4	0.0	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
62121	99	SPEED	SUR	54	3	742	0	0	1.5	-0.0	1.5
62122	99	SPEED	SUR	57	2	1474	0	0	1.3	-0.3	1.3
62129	99	SPEED	SUR	58	0	742	0	0	1.4	-0.2	1.4
62131	99	SPEED	SUR	54	1	553	0	0	2.6	-0.7	2.7
62132	99	SPEED	SUR	56	2	741	0	0	1.7	-1.3	2.1
62133	99	SPEED	SUR	57	1	741	0	0	1.4	-0.1	1.4
62134	99	SPEED	SUR	58	1	734	0	0	1.5	-0.0	1.5
62140	99	SPEED	SUR	57	1	1437	0	0	1.4	-0.1	1.4
62143	99	SPEED	SUR	58	2	742	0	0	2.4	-0.7	2.5
62144	99	SPEED	SUR	53	2	741	0	0	1.8	-0.5	1.8
62145	99	SPEED	SUR	53	3	1478	0	0	1.8	0.7	2.0
62146	99	SPEED	SUR	57	2	742	0	0	1.6	-0.3	1.6
62148	99	SPEED	SUR	54	2	741	0	0	2.4	-1.0	2.6
62149	99	SPEED	SUR	54	1	739	0	0	1.4	0.2	1.4
62150	99	SPEED	SUR	54	1	741	0	0	1.8	-0.8	2.0
62152	99	SPEED	SUR	57	2	741	0	0	1.7	-1.5	2.3
62153	99	SPEED	SUR	57	2	1478	0	0	3.0	-2.2	3.8
62154	99	SPEED	SUR	56	2	741	0	0	1.3	-0.6	1.4
62155	99	SPEED	SUR	58	1	622	0	0	1.8	0.4	1.8
62163	99	SPEED	SUR	48	-8	740	0	0	1.3	-0.3	1.3
62164	99	SPEED	SUR	57	1	742	0	0	1.5	-1.4	2.1
62165	99	SPEED	SUR	54	1	740	0	0	2.4	-1.2	2.7
62170	99	SPEED	SUR	51	2	744	0	0	2.1	1.8	2.8
62304	99	SPEED	SUR	51	2	673	1	0	2.3	1.5	2.7
62305	99	SPEED	SUR	50	0	720	1	0	2.0	1.1	2.3
62442	99	SPEED	SUR	49	-16	741	0	0	1.7	-1.5	2.2
63055	99	SPEED	SUR	61	2	741	0	0	1.5	-0.9	1.8
63056	99	SPEED	SUR	60	2	739	0	0	1.4	-0.4	1.4
63057	99	SPEED	SUR	59	2	741	0	0	2.0	-0.5	2.1
63058	99	SPEED	SUR	53	2	1478	0	0	1.5	0.1	1.5
63101	99	SPEED	SUR	61	1	741	0	0	1.6	-0.7	1.8
63103	99	SPEED	SUR	61	1	741	0	0	2.1	-0.3	2.1
63104	99	SPEED	SUR	61	2	741	0	0	1.6	-0.7	1.8
63105	99	SPEED	SUR	61	2	742	0	0	1.9	-0.4	1.9
63106	99	SPEED	SUR	61	2	740	0	0	1.6	-0.8	1.8
63108	99	SPEED	SUR	61	2	741	0	0	1.8	-0.3	1.8
63109	99	SPEED	SUR	60	2	733	0	0	1.6	-0.2	1.6
63110	99	SPEED	SUR	60	2	740	0	0	1.6	-0.6	1.7
63112	99	SPEED	SUR	61	1	741	0	0	1.5	-1.0	1.8
63113	99	SPEED	SUR	61	2	734	0	0	1.6	-0.8	1.8
63115	99	SPEED	SUR	62	1	740	0	0	1.7	-0.8	1.8

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
63117	99	SPEED	SUR	61	1	1480	0	0	1.6	-0.7	1.8
64041	99	SPEED	SUR	61	-3	741	0	0	1.6	-0.5	1.7
64045	99	SPEED	SUR	59	-12	1030	0	0	1.6	-0.1	1.6
64046	99	SPEED	SUR	61	-4	744	0	0	1.4	0.4	1.5
66021	99	SPEED	SUR	55	14	206	0	0	1.4	0.8	1.6
66024	99	SPEED	SUR	55	13	208	0	0	1.5	0.8	1.8

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 : JAN 2018
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

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

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
1300001	99	DIRN	SUR	11	-23	631	0	0	6.7	-0.1	6.7
1300002	99	DIRN	SUR	20	-23	699	0	0	6.1	1.5	6.2
1300008	99	DIRN	SUR	15	-38	713	0	0	9.0	2.4	9.3
1300130	99	DIRN	SUR	28	-16	693	0	0	11.5	1.3	11.6
1300131	99	DIRN	SUR	28	-17	511	0	0	31.4	-3.7	31.6
4100026	99	DIRN	SUR	12	-38	317	0	0	7.8	-1.8	8.0
4100139	99	DIRN	SUR	20	-38	698	0	0	9.1	3.5	9.7
41002	99	DIRN	SUR	32	-75	682	0	0	18.9	8.0	20.5
4100300	99	DIRN	SUR	16	-57	545	0	0	9.7	-14.1	17.1
41004	99	DIRN	SUR	33	-79	1066	0	0	14.8	4.8	15.5
41008	99	DIRN	SUR	31	-81	764	0	0	23.6	8.8	25.2
41009	99	DIRN	SUR	29	-80	1048	0	0	22.7	8.7	24.3
41013	99	DIRN	SUR	33	-78	1021	0	0	19.3	4.2	19.8
41024	99	DIRN	SUR	34	-79	433	0	0	14.9	-11.7	18.9
41025	99	DIRN	SUR	35	-75	1095	0	0	27.5	5.7	28.1
41026	99	DIRN	SUR	12	-38	314	0	0	8.4	-2.6	8.8
41029	99	DIRN	SUR	33	-80	775	5	0	19.4	0.2	19.5
41033	99	DIRN	SUR	32	-80	565	4	0	22.9	2.6	23.0
41037	99	DIRN	SUR	34	-77	630	0	0	22.8	-4.2	23.2
41038	99	DIRN	SUR	34	-78	514	0	0	17.2	-0.8	17.2
41040	99	DIRN	SUR	15	-53	1140	0	0	13.0	-10.2	16.5
41041	99	DIRN	SUR	14	-46	1193	0	0	11.5	-12.6	17.1
41043	99	DIRN	SUR	21	-65	569	0	0	10.4	-4.7	11.4
41044	99	DIRN	SUR	22	-59	1154	0	0	13.9	2.8	14.2
41046	99	DIRN	SUR	24	-68	1033	0	0	11.1	2.0	11.2
41047	99	DIRN	SUR	28	-72	1100	0	0	13.2	-1.3	13.3
41048	99	DIRN	SUR	32	-70	1125	0	0	18.2	-3.6	18.5
41049	99	DIRN	SUR	28	-63	647	0	0	17.4	6.7	18.6
41052	99	DIRN	SUR	18	-65	1882	0	0	10.0	4.8	11.1
41053	99	DIRN	SUR	19	-66	1446	0	0	14.7	-4.5	15.4
41056	99	DIRN	SUR	18	-66	1590	0	0	12.2	2.8	12.5
41063	99	DIRN	SUR	35	-76	742	0	0	22.9	-6.0	23.6

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

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
41064	99	DIRN	SUR	34	-77	603	0	0	22.8	-12.4	25.9
41300	99	DIRN	SUR	16	-57	534	0	0	9.7	-14.0	17.1
42013	99	DIRN	SUR	27	-83	960	0	0	17.5	-0.9	17.6
42056	99	DIRN	SUR	20	-85	1161	0	0	13.6	5.8	14.8
42057	99	DIRN	SUR	17	-81	1131	0	0	11.0	4.0	11.7
42058	99	DIRN	SUR	15	-75	1254	0	0	8.3	6.7	10.6
42059	99	DIRN	SUR	15	-68	969	0	0	7.8	1.1	7.9
42085	99	DIRN	SUR	18	-67	792	0	0	14.4	26.2	29.9
44007	99	DIRN	SUR	44	-70	779	0	0	20.6	4.0	21.0
44009	99	DIRN	SUR	39	-75	661	0	0	14.1	17.2	22.2
44013	99	DIRN	SUR	42	-71	831	0	0	19.2	11.7	22.5
44014	99	DIRN	SUR	37	-75	646	0	0	16.2	3.1	16.5
44020	99	DIRN	SUR	41	-70	648	0	0	12.6	7.1	14.5
44022	99	DIRN	SUR	41	-74	109	0	0	21.7	13.5	25.6
44025	99	DIRN	SUR	40	-73	819	0	0	17.7	2.6	17.9
44029	99	DIRN	SUR	43	-71	415	0	0	47.9	4.3	48.1
44030	99	DIRN	SUR	43	-70	240	5	0	45.5	42.7	62.4
44032	99	DIRN	SUR	44	-69	627	0	0	17.9	8.6	19.9
44033	99	DIRN	SUR	44	-69	506	2	0	44.3	-4.0	44.5
44034	99	DIRN	SUR	44	-68	108	0	0	11.5	9.4	14.8
44037	99	DIRN	SUR	44	-68	661	0	0	11.3	31.3	33.3
44039	99	DIRN	SUR	41	-73	509	0	0	15.1	3.9	15.6
44040	99	DIRN	SUR	41	-74	252	0	0	10.8	3.9	11.5
44041	99	DIRN	SUR	37	-77	42	0	0	11.9	-9.2	15.0
44042	99	DIRN	SUR	38	-76	668	0	0	71.9	-51.7	88.6
44058	99	DIRN	SUR	38	-76	658	0	0	22.7	-18.2	29.1
44062	99	DIRN	SUR	39	-76	731	0	0	25.9	-12.5	28.8
44064	99	DIRN	SUR	37	-76	798	0	0	14.3	-17.9	22.9
44065	99	DIRN	SUR	40	-74	633	0	0	15.8	7.3	17.4
44066	99	DIRN	SUR	40	-73	733	0	0	13.5	0.4	13.5
44072	99	DIRN	SUR	37	-76	737	0	0	16.6	-10.3	19.6
44137	99	DIRN	SUR	42	-62	750	0	0	12.7	-16.2	20.5
44139	99	DIRN	SUR	44	-57	352	0	0	10.9	6.3	12.6
44150	99	DIRN	SUR	43	-64	673	0	0	13.1	10.6	16.9
6100281	99	DIRN	SUR	40	0	457	0	0	30.0	-1.8	30.1
6100417	99	DIRN	SUR	38	0	634	0	0	20.4	9.5	22.5
6200024	99	DIRN	SUR	44	-3	607	0	0	21.0	8.0	22.4
6200025	99	DIRN	SUR	44	-6	128	0	0	19.7	1.3	19.7
6200082	99	DIRN	SUR	44	-8	174	0	0	14.4	7.8	16.3
6200083	99	DIRN	SUR	43	-9	674	0	0	15.9	11.1	19.4
6200084	99	DIRN	SUR	42	-9	579	0	0	18.9	11.1	21.9

DRIFTER MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF

ELEMENT MONITORED : WIND DIRECTION (DEGREES)

(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
6200085	99	DIRN	SUR	36	-7	601	0	0	17.6	-1.2	17.6
6200092	99	DIRN	SUR	51	-11	395	0	0	18.0	6.5	19.1
6200093	99	DIRN	SUR	55	-10	692	0	0	16.8	-1.3	16.8
6200094	99	DIRN	SUR	52	-7	254	0	0	24.1	-0.6	24.1
62001	99	DIRN	SUR	45	-5	661	0	0	13.4	5.8	14.7
6200191	99	DIRN	SUR	41	-10	238	0	0	16.2	0.7	16.2
6200192	99	DIRN	SUR	40	-10	233	0	0	15.9	3.1	16.2
6200199	99	DIRN	SUR	40	-9	212	0	0	21.8	0.6	21.8
6200200	99	DIRN	SUR	36	-8	226	6	0	169.2	-15.3	169.9
6201030	99	DIRN	SUR	44	-4	330	0	0	17.4	-14.0	22.3
6201070	99	DIRN	SUR	43	-9	179	0	0	20.0	8.8	21.9
62023	99	DIRN	SUR	51	-8	665	0	0	14.0	11.5	18.1
62027	99	DIRN	SUR	49	-2	105	0	0	13.9	-7.4	15.8
62029	99	DIRN	SUR	49	-12	1455	0	0	14.7	9.4	17.5
62050	99	DIRN	SUR	50	-4	717	0	0	14.1	0.7	14.1
62081	99	DIRN	SUR	51	-13	693	0	0	12.0	11.9	16.9
62095	99	DIRN	SUR	53	-16	1108	0	0	15.0	7.2	16.7
62103	99	DIRN	SUR	50	-3	716	0	0	15.9	4.2	16.5
62107	99	DIRN	SUR	50	-6	1437	0	0	21.1	-1.0	21.1
62111	99	DIRN	SUR	58	0	668	0	0	11.7	1.3	11.8
62112	99	DIRN	SUR	58	0	639	0	0	12.6	3.6	13.1
62114	99	DIRN	SUR	58	0	1384	0	0	11.9	1.9	12.0
62163	99	DIRN	SUR	48	-8	718	0	0	12.9	-4.1	13.5
62305	99	DIRN	SUR	50	0	675	1	0	17.3	3.3	17.6
62442	99	DIRN	SUR	49	-16	729	0	0	11.4	-10.7	15.6
64041	99	DIRN	SUR	61	-3	663	0	0	15.1	9.5	17.8
64045	99	DIRN	SUR	59	-12	953	0	0	16.0	6.4	17.2
64046	99	DIRN	SUR	61	-4	680	0	0	14.3	-3.7	14.8

4.12 Table 24 - List of Assimilated BUFR Encoded Radiosonde Stations

	ASDE09	ASFR1	ASFR2	ASFR3	ASFR4	DBLK	FHM5UJH	FPUW5GN
JGQH	JNKN7JF	KMPLHPW	SOCRATES		VKB4L5Q	XQFJRGX	YLV96WM	ZVQEQCM
5QPW8XG	01001	01004	01010	01028	01241	01400	01415	01492
02185	02365	02527	02591	02836	02963	03005	03238	03354
03502	03743	03808	03882	03918	03953	04018	04089	04220
04270	04320	04339	04360	06011	06260	06610	07101	07110
07145	07510	07645	07761	08001	08023	08190	08221	08302
08430	08508	08522	08579	10035	10113	10184	10238	10304
10393	10410	10548	10618	10739	10771	10868	10954	10962
11010	11035	11120	11240	11520	11747	11952	12120	12374
12425	12843	12982	13388	16045	16080	16113	16144	16245
16320	16429	16546	16622	16716	16754	17030	17064	17095
17220	17281	17351	17516	17607	33008	40179	40186	43599
47102	47104	47138	47155	47169	47186	60018	61901	61980
61998	67083	68263	68424	68442	68512	68538	68816	68842
70026	70200	70219	70231	70261	70316	70326	70350	70361
70398	71109	71600	71603	71722	71802	71811	71836	71845
71867	71906	71909	71913	71924	71925	71934	71945	71957
71964	72201	72206	72208	72210	72214	72233	72240	72248
72251	72261	72265	72274	72293	72317	72327	72363	72364
72365	72426	72440	72451	72476	72489	72493	72501	72518
72520	72528	72558	72562	72572	72632	72634	72645	72649
72659	72662	72672	72681	72694	72712	72747	72764	72768
72776	72786	72797	74389	74494	74560	76612	76679	76692
76743	76805	76903	78897	78954	81405	85442	85469	85586
85799	85934	88889	89002	89564	89571	89611	89642	89859
91212	91592	91925	91938	91948	91958	93112	93417	93817
93844	93997	94120	94150	94170	94203	94294	94299	94302
94312	94326	94332	94374	94403	94430	94461	94510	94578
94610	94637	94638	94653	94659	94672	94711	94767	94776
94802	94821	94866	94910	94975	94995	94996	94998	95527
96996								

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

	ASDE09	ASFR1	ASFR2	ASFR3	ASFR4	FHM5UJH	FPUW5GN	JNKN7JF
KMPLHPW	SOCRATES		VKB4L5Q	XQFJRGX	YLV96WM	ZVQEQCM	5QPW8XG	01206
07101	08098	14101	15105	17607	19099	40186	47155	67083
73033	76743	76903	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 TEMPSHIPS and PILOTSHIPS this position is obtained from the first report of the month. The gross error limits for first-guess deviations of geopotential in table 7 are as follows:

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

The corresponding limits for wind (table 8) are:

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

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

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

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

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

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

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

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

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