



ECMWF Global Data Monitoring Report

December 2014

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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 25 (Dec 14) - Coverage chart for ATOVS AMSU-A for Noaa_16 removed
- 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, Operations Department
Shinfield Park
Reading, Berkshire, RG2 9AX
United Kingdom

2 Data summary - History of events

2.1 Radiosondes

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

Ident	Time	Nov	Dec	Ident	Time	Nov	Dec
01152	(00)	25	0	01010	(00)	5	31
01152	(12)	25	0	01010	(12)	5	31
08522	(12)	30	0	03810	(00)	0	25
31300	(00)	19	0	03810	(12)	0	29
31300	(12)	20	0	04339	(12)	16	30
60760	(12)	21	0	32477	(00)	6	24
76394	(00)	26	0	32477	(12)	7	18
76394	(12)	26	0	33041	(00)	0	21
76692	(00)	28	1	33041	(12)	0	22
78384	(00)	25	0	40706	(00)	0	19
78486	(00)	14	0	41024	(00)	10	28
78897	(00)	29	1	41024	(12)	11	26
82900	(12)	22	0	43333	(00)	0	19
83208	(12)	30	6	48327	(00)	20	31
84008	(12)	11	0	48407	(00)	0	15
-	-	-	-	48568	(00)	4	29
-	-	-	-	48839	(00)	15	30
-	-	-	-	48855	(00)	20	31
-	-	-	-	48900	(00)	19	30
-	-	-	-	48900	(12)	19	30
-	-	-	-	64400	(00)	5	20
-	-	-	-	68098	(12)	14	29
-	-	-	-	68424	(00)	0	18
-	-	-	-	74004	(00)	17	28
-	-	-	-	80398	(12)	19	31
-	-	-	-	82281	(00)	12	30
-	-	-	-	82281	(12)	16	31
-	-	-	-	83229	(12)	15	30
-	-	-	-	83827	(00)	13	31
-	-	-	-	83827	(12)	13	31
-	-	-	-	85469	(00)	20	31
-	-	-	-	89625	(12)	16	30
-	-	-	-	89662	(00)	14	29
-	-	-	-	89662	(12)	14	25
-	-	-	-	94332	(12)	1	13
-	-	-	-	94510	(12)	3	15
-	-	-	-	97502	(00)	0	12
-	-	-	-	98444	(00)	19	30
-	-	-	-	98444	(12)	16	29

2.2 Drifting Buoys

Surface pressure observations from **1477** drifting buoys were received during the month.

3 Global monitoring statistics

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

3.1 Data Availability

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

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

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

3.2 Data Quality

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

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

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

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

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

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

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

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

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

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

3.2.1 Figure 1 - Availability - SYNOP PRESSURE

Figure 1

ECMWF Monitoring Statistics - DEC 2014

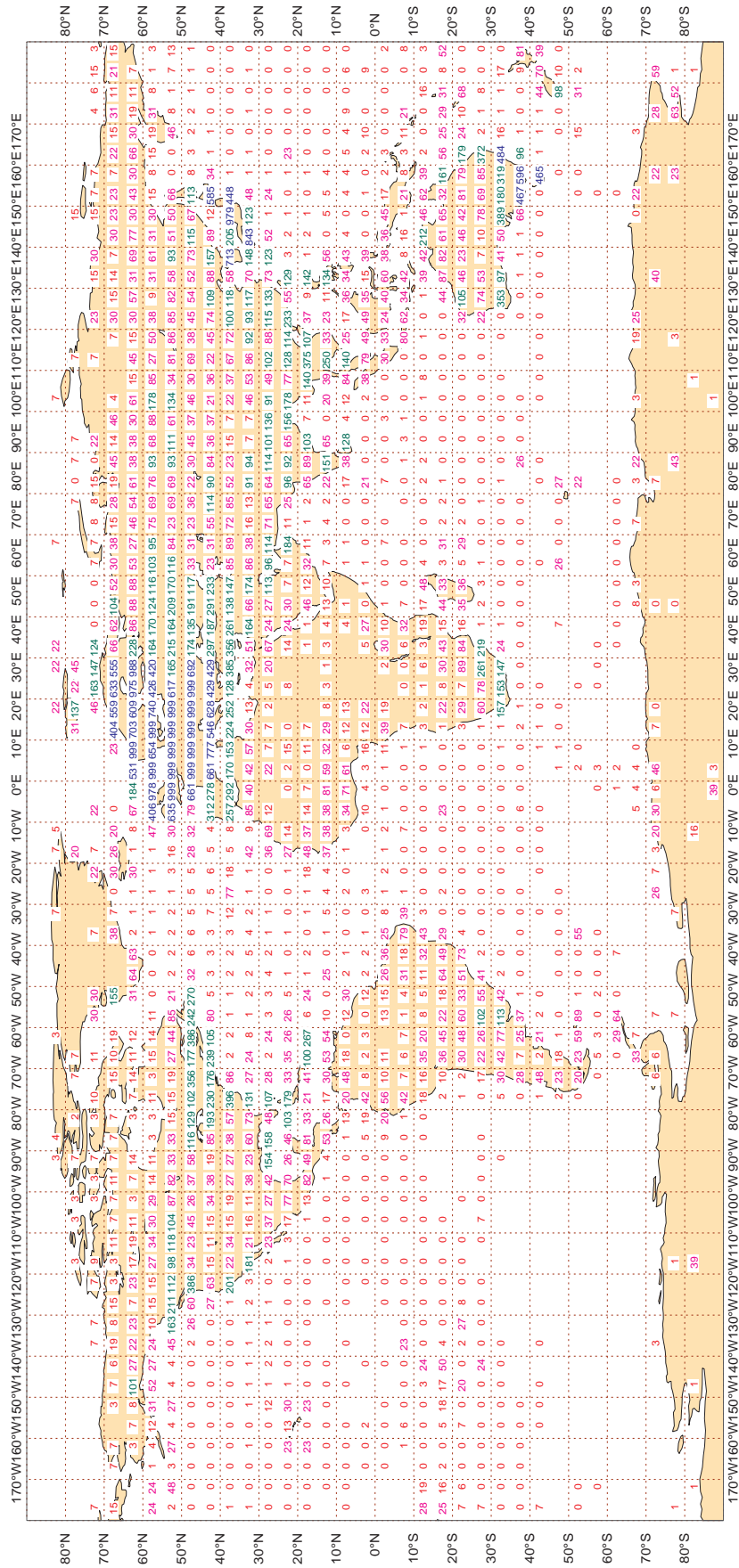
Availability - SYNOP/SHIP (manual, auto) pressure

Average number of observations in 24 hours - 96461

LAND - WMO Region I: 3735 II:18299 III: 2455 IV: 4805

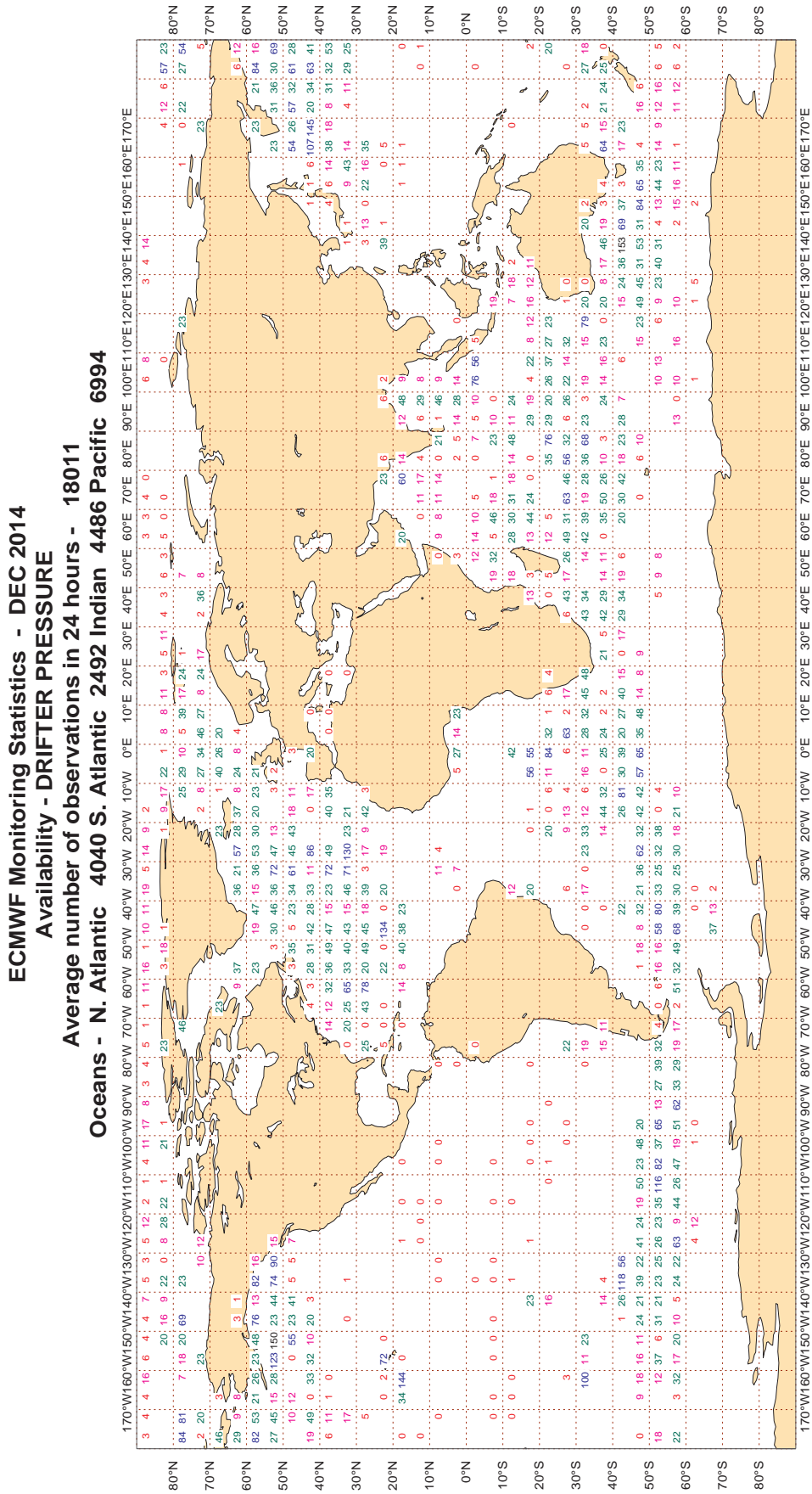
Region V: 8450 VI:46062 Antarctic: 840

Oceans - N. Atlantic 7885 S. Atlantic 262 Indian 353 Pacific 3316



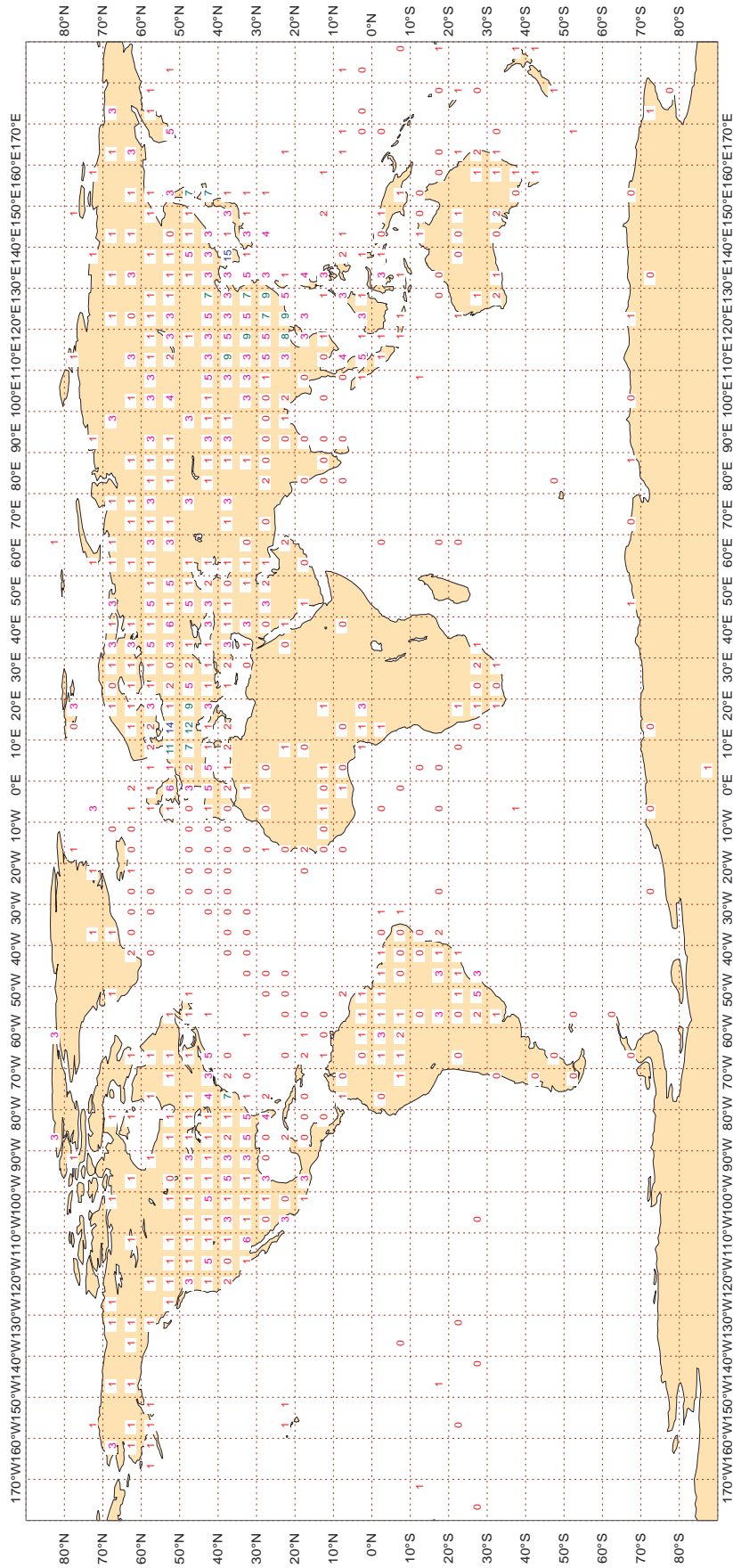
3.2.2 Figure 2 - Availability - DRIFTER PRESSURE

Figure 2



3.2.3 Figure 3 - Availability - TEMP 500 hPa geopotential

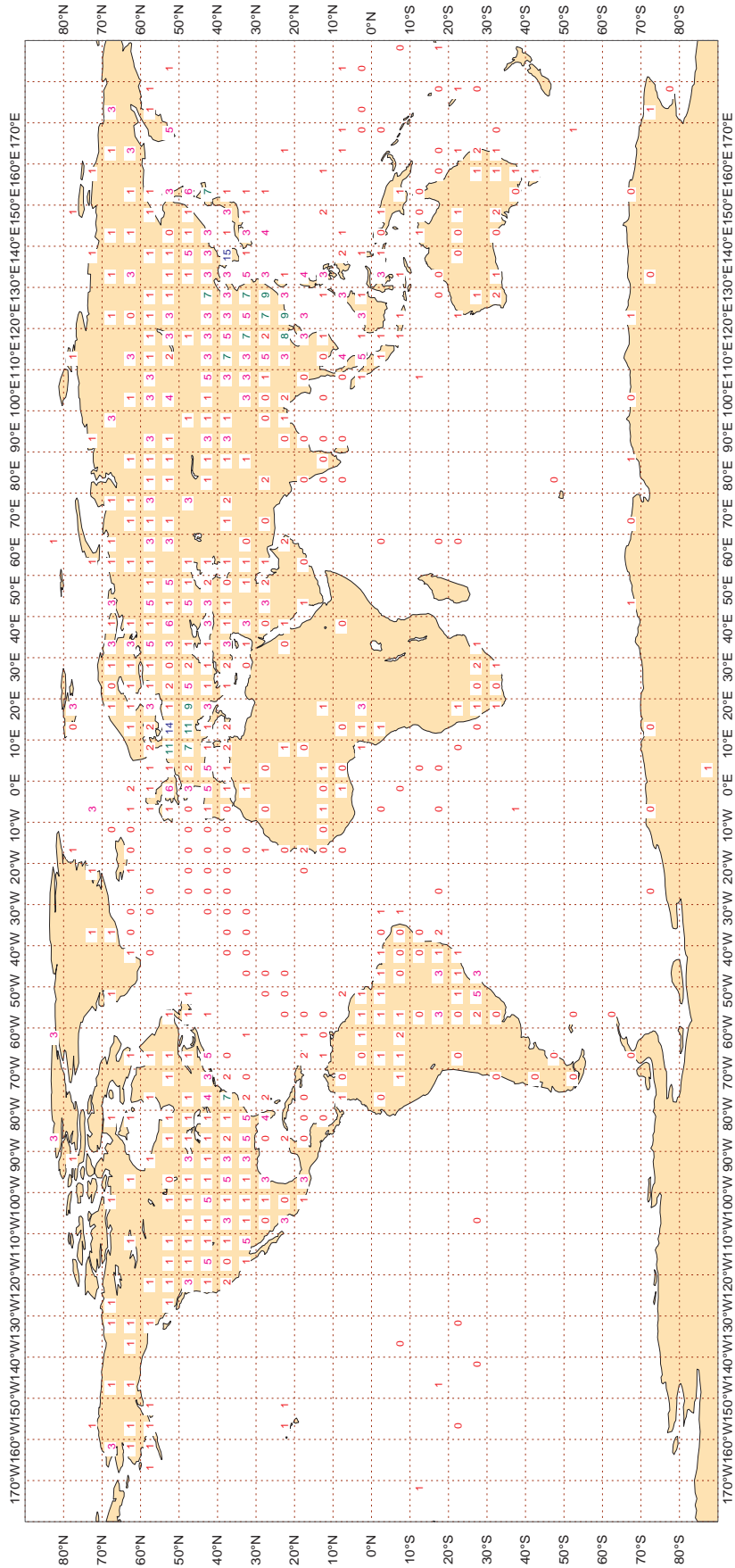
Figure 3
 ECMWF Monitoring Statistics - DEC 2014
 Availability - TEMP 500 hPa Geopotential
 Average number of observations in 24 hours - 1258
 LAND - WMO Region I: 27 II: 236 III: 40 IV: 125
 Region V: 62 VI: 127 Antarctic: 8
 Oceans - N. Atlantic 168 S. Atlantic 40 Indian 55 Pacific 369



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

Figure 4

ECMWF Monitoring Statistics - DEC 2014
 Availability - TEMP/PILOT 300 hPa wind
 Average number of observations in 24 hours - 1219
 LAND - WMO Region I: 27 II: 226 III: 38 IV: 124
 Region V: 58 VI: 126 Antarctic: 9
 Oceans - N. Atlantic 165 S. Atlantic 38 Indian 53 Pacific 355



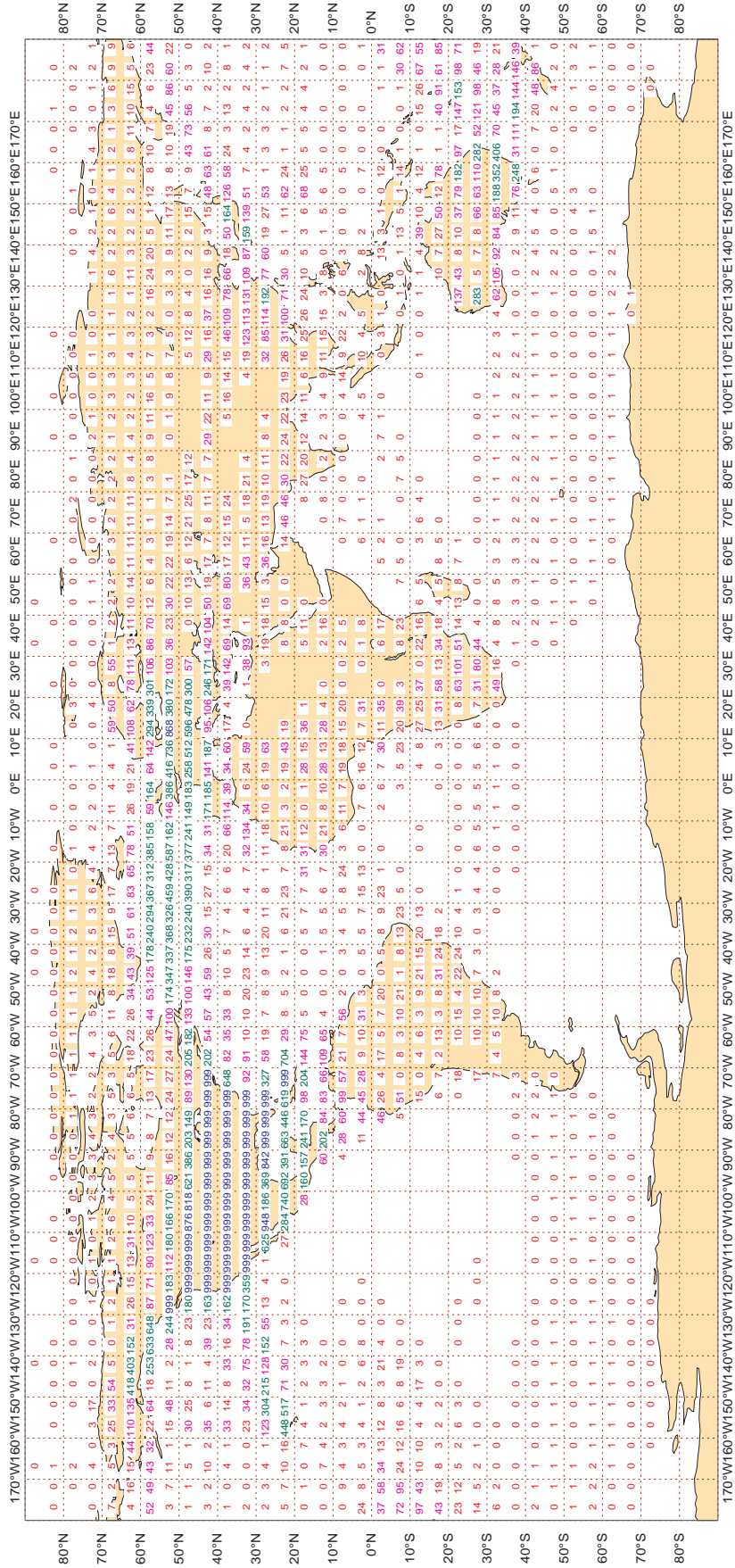
Magics 2.22.7 (64 bit)



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

Figure 5

ECMWF Monitoring Statistics - DEC 2014
Availability - Aircraft winds 300-150 hPa
Average number of observations in 24 hours - 222112



Magics 2.22.7 (64 bit)



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

Figure 6

ECMWF Monitoring Statistics - DEC 2014
Availability - AMV winds 400-150 hPa
Average number of observations in 24 hours - 977596

Table with columns for latitude (80°N to 170°W) and a grid of numerical values representing wind availability statistics. The table is organized into 10-degree latitude bands, with each band containing 18 columns of data points.

Majics 2.22.7 (64 bit)



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

Figure 7

ECMWF Monitoring Statistics - DEC 2014
Availability - AMV winds 1000-700 hPa
Average number of observations in 24 hours - 1350430

Table with columns for latitude (80°N to 80°S) and longitude (0° to 170°E) and rows for wind speed (4 to 17) and direction (0 to 17). The table contains numerical data representing the average number of observations in 24 hours for each grid cell.



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

Figure 8

ECMWF Monitoring Statistics - DEC 2014
Availability - NOAA15 ATOVS : AMSU-A
Average number of observations in 24 hours - 333675

Table with 18 columns representing longitude (170°W to 170°E) and 18 rows representing latitude (80°N to 80°S). Each cell contains a numerical value representing the average number of observations in 24 hours for that specific geographic location.



Magicis 2.22.7 (64 bit)

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

Figure 9.1

ECMWF Monitoring Statistics - DEC 2014
Availability - NOAA18 ATOVS : AMSU-A
Average number of observations in 24 hours - 509043

Table with 180 columns (representing 5-degree longitude bins from 170°W to 170°E) and 18 rows (representing 5-degree latitude bins from 80°N to 80°S). The table contains numerical data representing the average number of observations per 24 hours for NOAA18 ATOVS AMSU-A in December 2014.

Magics 2.22.7 (64 bit)



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

Figure 9.2

ECMWF Monitoring Statistics - DEC 2014
Availability - AQUA ATOVS : AMSU-A
Average number of observations in 24 hours - 303056

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 AMSU-A.

Majics 2.22.7 (64 bit)



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

Figure 9.3

ECMWF Monitoring Statistics - DEC 2014
Availability - METOP ATOVS : AMSU-A
Average number of observations in 24 hours - 446977

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 each geographic grid cell.

Majics 2.2.7 (64 bit)



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

LIST OF SUSPECT STATIONS : SHIPS + FIXED MARINE PLATFORMS
 MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : SURFACE PRESSURE (HPA)
 AREA : GLOBAL
 PERIOD : DEC 2014
 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 00, 06, 12 AND 18 UTC OBSERVATIONS

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

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

LIST OF SUSPECT STATIONS : SHIPS + FIXED MARINE PLATFORMS
 MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : WIND SPEED (M/S)
 AREA : GLOBAL
 PERIOD : DEC 2014
 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 00, 06, 12 AND 18 UTC OBSERVATIONS

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

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

LIST OF SUSPECT STATIONS : SHIPS + FIXED MARINE PLATFORMS
 MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : WIND DIRECTION (DEGREES)
 AREA : GLOBAL
 PERIOD : DEC 2014
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

SELECTION CRITERIA: NO. OF OBS. >= 20 (WIND SPEEDS > 3M/S), AND ,
 ABSOLUTE BIAS >= 30 DEGREES, OR,
 STANDARD DEVIATION >= 80 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
--------------	-------------	-----	-------	------------	--------------	------------	----	------	-----

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

LIST OF SUSPECT STATIONS : DRIFTER
 MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : SURFACE PRESSURE (HPA)
 AREA : GLOBAL
 PERIOD : DEC 2014
 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
13600	99	P	SUR	25	-76	28	8	4.0	0.0	4.0
23991	99	P	SUR	2	91	212	200	2.9	-2.6	3.9
25524	99	P	SUR	79	105	217	180	9.4	1.0	9.5
26535	99	P	SUR	77	21	25	6	5.3	-7.5	9.2
47579	99	P	SUR	60	-37	217	104	6.0	-3.6	7.0

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 : DEC 2014
 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
51752	99	SPEED	SUR	16	-162	66	16	71	0.8	14.1	14.1
51753	99	SPEED	SUR	21	-157	38	0	100	0.0	0.0	0.0
51754	99	SPEED	SUR	20	-156	63	21	100	0.0	0.0	0.0

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

LIST OF SUSPECT STATIONS : DRIFTER
 MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : WIND DIRECTION (DEGREES)
 PERIOD : DEC 2014
 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
23002	99	DIRN	SUR	2	81	76	0	29	27.5	24.3	36.7
23092	99	DIRN	SUR	18	90	54	0	0	14.9	23.1	27.5
23095	99	DIRN	SUR	11	94	68	0	0	14.1	23.4	27.3
23460	99	DIRN	SUR	7	88	49	0	0	20.9	20.6	29.4
31002	99	DIRN	SUR	4	-38	36	0	3	27.3	-49.2	56.3
31053	99	DIRN	SUR	-32	-50	166	2	30	25.9	62.9	68.0
31262	99	DIRN	SUR	-23	-43	22	2	9	44.4	-37.7	58.2
31374	99	DIRN	SUR	-25	-45	159	0	13	43.6	-34.8	55.8
31375	99	DIRN	SUR	-29	-47	58	0	3	8.9	-75.2	75.8
32303	99	DIRN	SUR	5	-95	106	0	0	28.7	28.6	40.6
41025	99	DIRN	SUR	35	-75	51	0	0	23.5	28.4	36.9
42361	99	DIRN	SUR	28	-93	208	0	1	12.1	28.2	30.6
51754	99	DIRN	SUR	20	-156	57	21	37	42.2	-36.8	56.0
62140	99	DIRN	SUR	57	1	405	0	0	11.5	-25.3	27.8

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

LIST OF SUSPECT STATIONS : RADIOSONDES
 MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : GEOPOTENTIAL HEIGHT (METRES)
 AREA : GLOBAL
 PERIOD : DEC 2014
 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	12	Z	1000	57	3	28	0	21.7	20.0	29.5
04417	12	Z	1000	73	-38	31	23	17.0	-84.2	85.9
04417	00	Z	1000	73	-38	30	21	15.5	-79.4	80.9
14240	00	Z	500	46	16	30	0	52.5	34.7	62.9
33393	00	Z	200	50	24	10	0	46.2	77.0	89.8
40800	00	Z	1000	33	52	20	1	37.8	11.6	39.5
42182	00	Z	500	29	77	27	3	45.6	-56.4	72.5
42410	00	Z	400	26	92	18	0	53.6	-51.2	74.1
43003	00	Z	700	19	73	13	1	28.1	-54.7	61.5
76654	00	Z	700	19	-104	30	6	30.0	34.1	45.4
83566	00	Z	1000	-20	-44	29	0	10.4	-59.9	60.8
83566	12	Z	1000	-20	-44	30	0	8.2	-56.4	57.0
91680	00	Z	1000	-18	177	30	0	3.5	30.2	30.4
ASDK2	12	Z	1000	47	-8	15	1	12.9	38.3	40.4

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

LIST OF SUSPECT STATIONS : RADIOSONDES
 MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : WIND (M/S)
 AREA : GLOBAL
 PERIOD : DEC 2014
 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
57993	00	V	100	26	115	27	0	-1.6	0.3	15.2

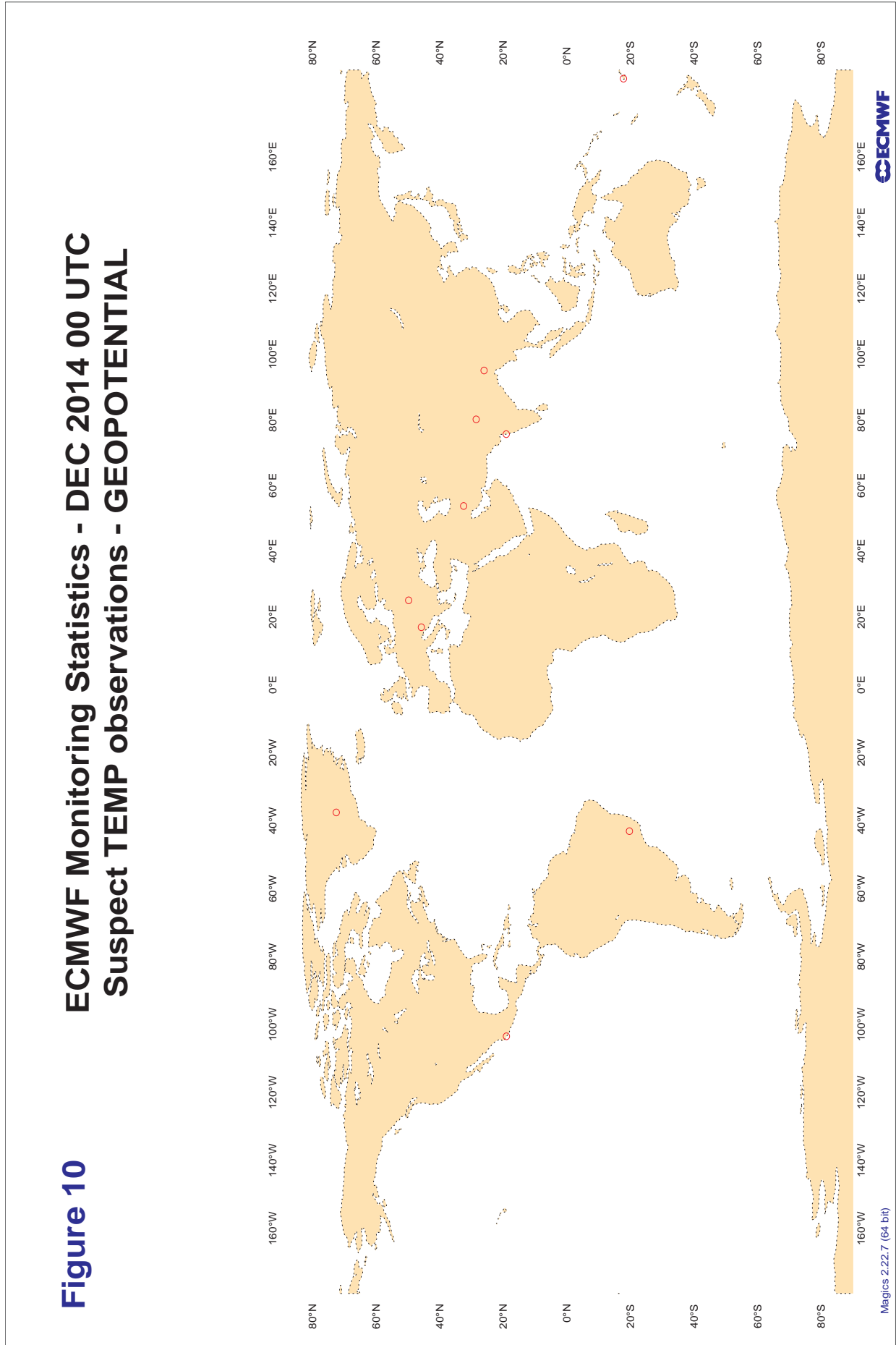
3.2.20 Table 9 - Suspect radiosondes: Wind direction (degrees)

LIST OF SUSPECT STATIONS : RADIOSONDES
 MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : WIND DIRECTION (DEGREES)
 AREA : GLOBAL
 PERIOD : DEC 2014
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

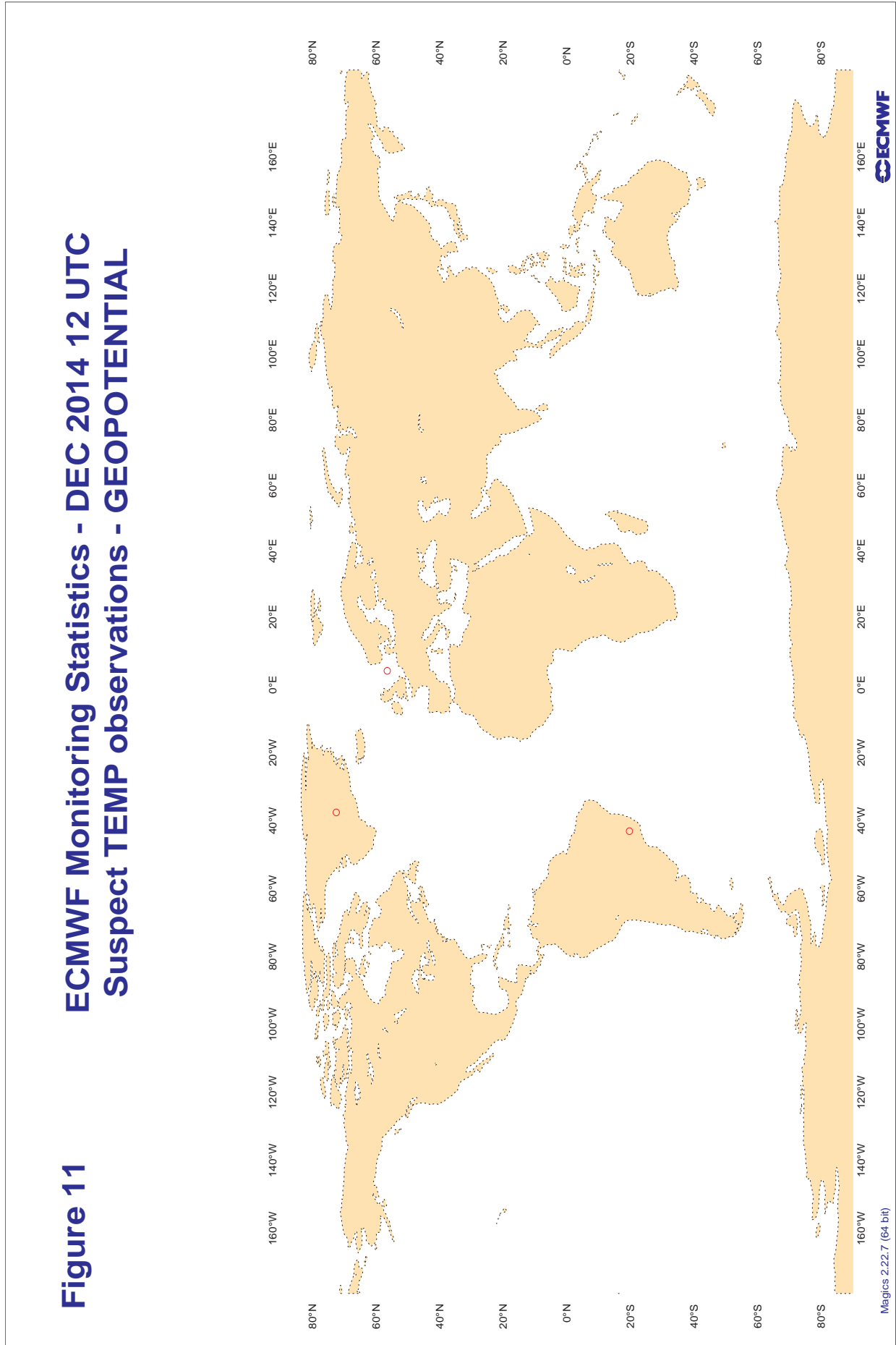
SELECTION CRITERIA: OBSERVED/FORECAST WIND SPEEDS \geq 5 M/S
 NO. OF OBSERVATIONS \geq 5, AND,
 ABSOLUTE BIAS \geq 10 DEGREES, WITH
 STANDARD DEVIATION $<$ 30 DEGREES, AND,
 VERTICAL SPREAD $<$ 10 DEGREES
 (AVERAGE BETWEEN 500 AND 150 HPA)

WMO IDENT	OBS TIME	ELM	LAT	LONG	NUM OBS	BIAS	MAX SPREAD	SD
53772	00	DD	38	113	30	10.0	0.9	5.0

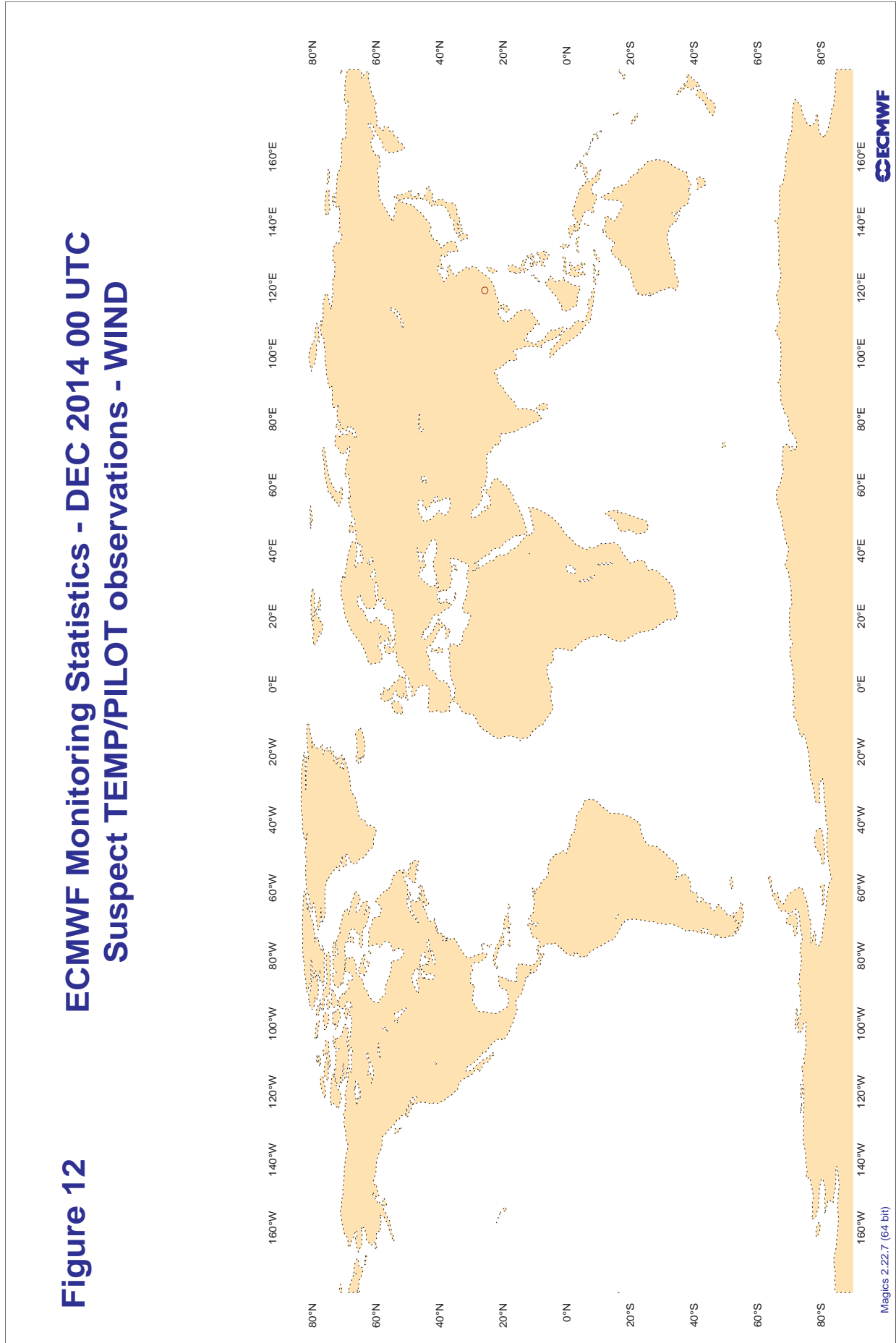
3.2.21 Figure 10 - Suspect TEMP observations - geopotential : 00 UTC



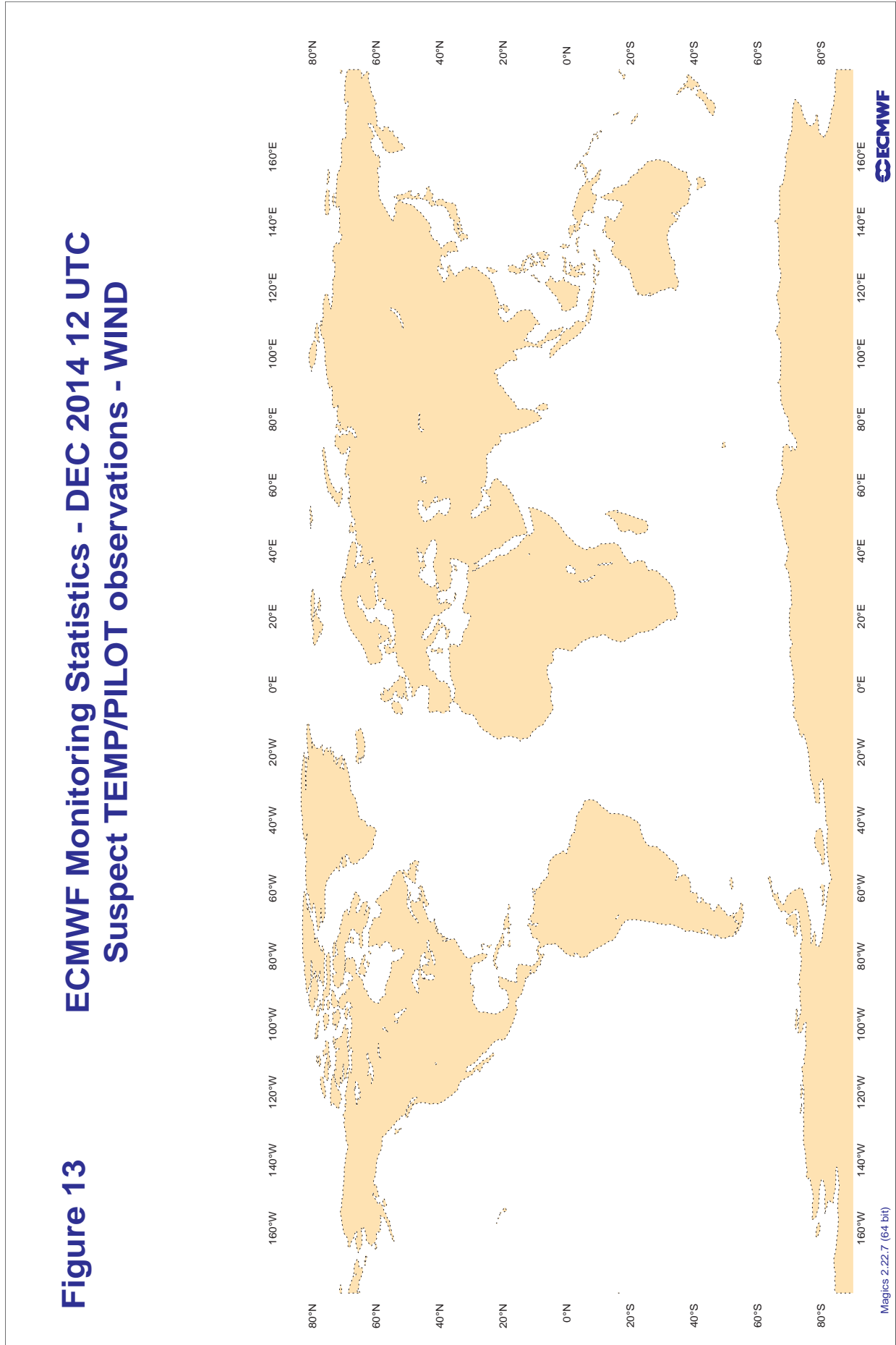
3.2.22 Figure 11 - Suspect TEMP observations - geopotential : 12 UTC



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



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



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

RADIOSONDE MONITORING STATISTICS (SHIPS)

MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : GEOPOTENTIAL HEIGHT (METRES)
 LEVEL : 100 HPA
 AREA : GLOBAL
 PERIOD : DEC 2014
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
ASDK1	12	Z	100	2	25.9	24.9
ASDK1	00	Z	100	0	0.0	0.0
ASDK2	00	Z	100	7	47.0	46.6
ASDK2	12	Z	100	13	61.2	57.3
ASDK3	12	Z	100	4	44.8	35.4
ASDK3	00	Z	100	8	36.4	27.6
ASFR1	12	Z	100	13	10.1	-0.4
ASFR1	00	Z	100	11	6.7	-0.4
ASFR2	00	Z	100	8	22.1	21.3
ASFR2	12	Z	100	8	25.5	23.2
ASFR3	12	Z	100	10	7.9	2.9
ASFR3	00	Z	100	13	12.7	9.2
ASFR4	12	Z	100	12	13.1	7.6
ASFR4	00	Z	100	6	18.6	18.5
JNSR	00	Z	100	5	9.1	6.7
JNSR	12	Z	100	2	1.2	0.4

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

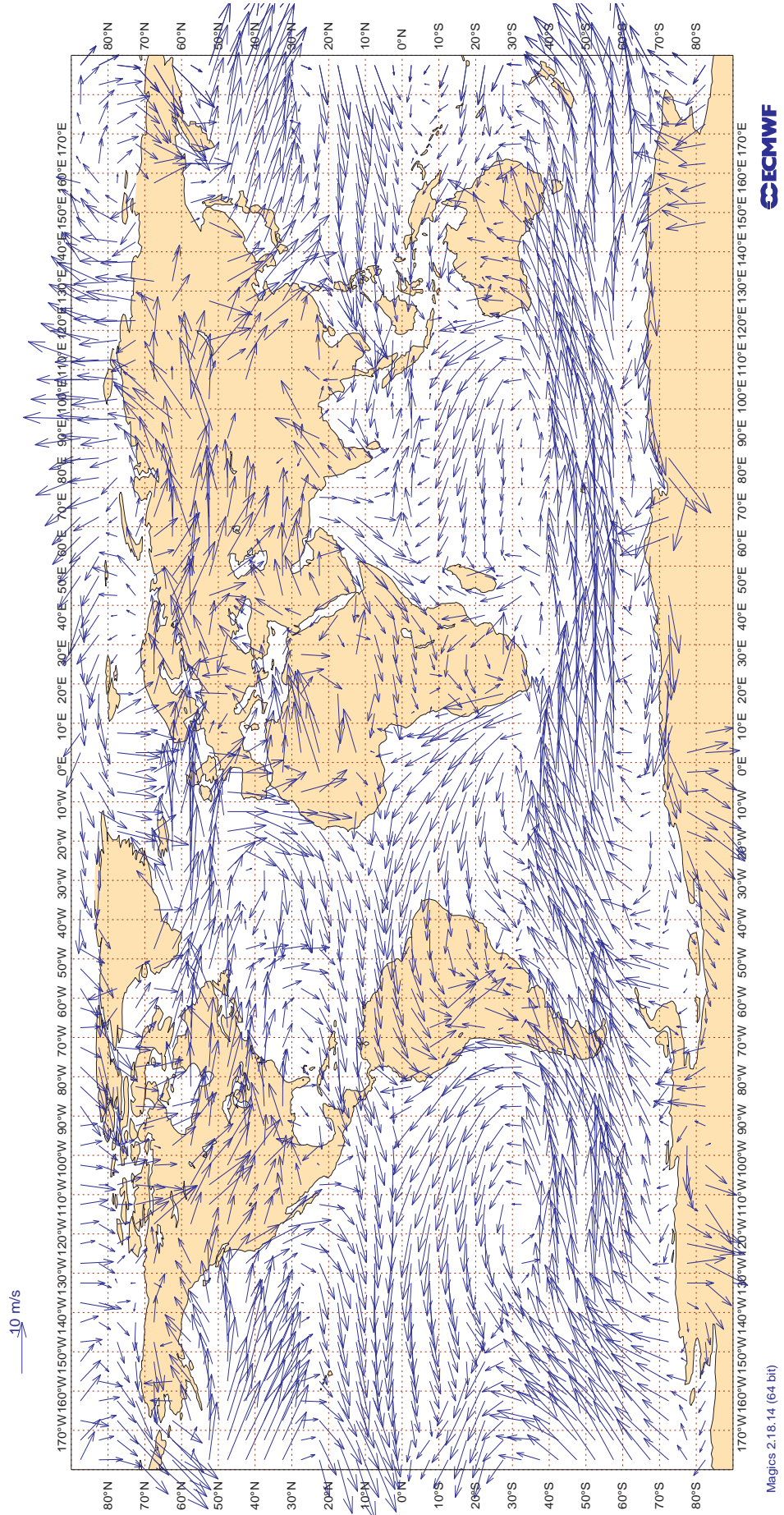
RADIOSONDE MONITORING STATISTICS (SHIPS)

MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : WIND (M/S)
 LEVEL : 100 HPA
 AREA : GLOBAL
 PERIOD : DEC 2014
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
ASDK1	12	V	100	2	7.2	5.0	0.8
ASDK1	00	V	100	0	0.0	0.0	0.0
ASDK2	00	V	100	7	4.9	-0.5	1.7
ASDK2	12	V	100	13	3.7	0.3	0.4
ASDK3	12	V	100	4	3.0	0.6	1.6
ASDK3	00	V	100	8	3.6	0.6	0.7
ASFR1	12	V	100	13	3.1	-0.5	0.5
ASFR1	00	V	100	10	3.3	-1.0	1.2
ASFR2	00	V	100	8	3.6	1.2	-0.6
ASFR2	12	V	100	7	3.3	-1.0	0.5
ASFR3	12	V	100	9	4.2	0.3	2.1
ASFR3	00	V	100	11	3.4	0.7	-0.7
ASFR4	12	V	100	11	4.5	1.7	-0.8
ASFR4	00	V	100	5	2.7	-0.4	0.3
JNSR	00	V	100	4	6.2	0.7	2.3
JNSR	12	V	100	2	11.9	-5.2	-10.2

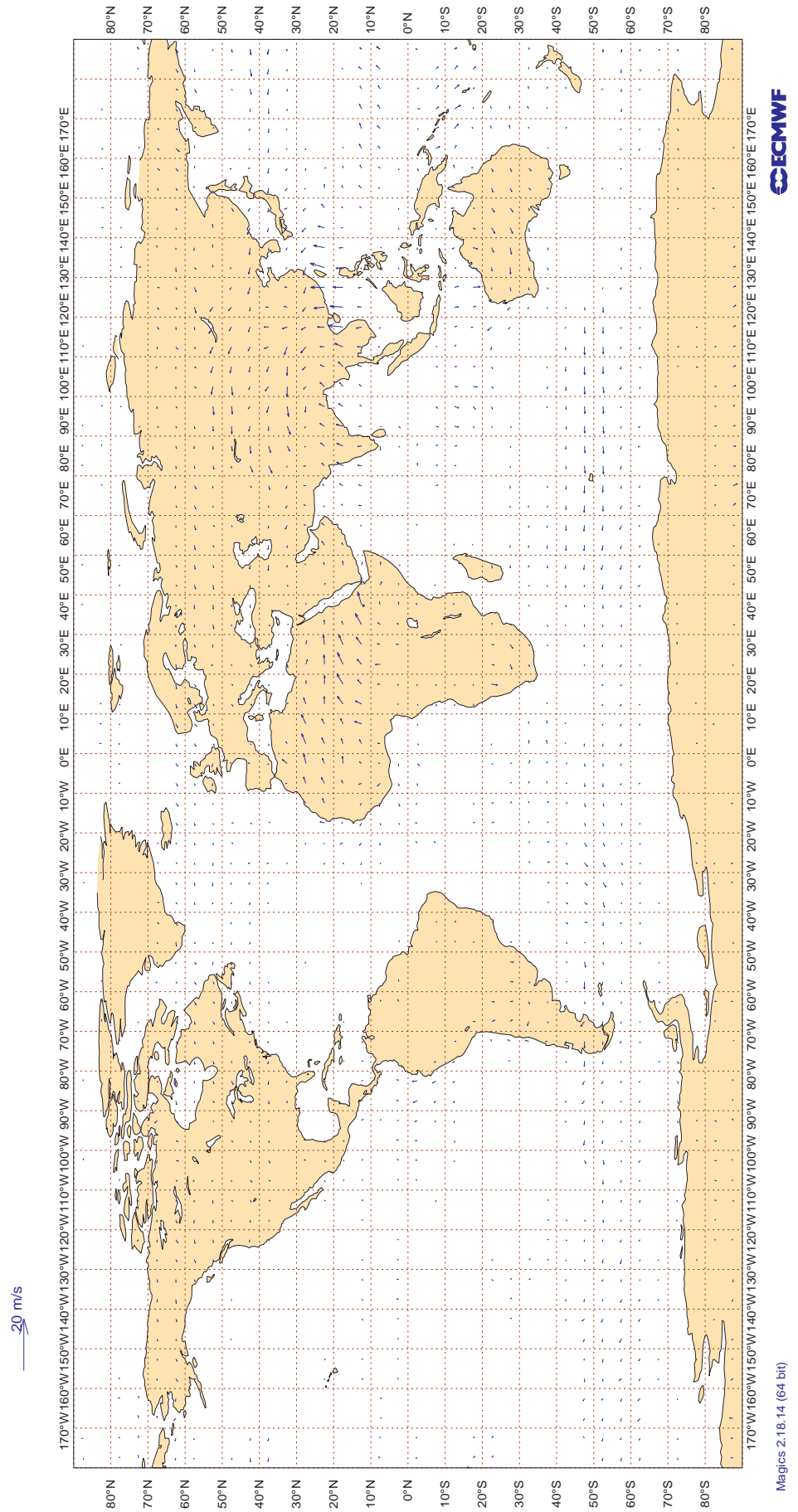
3.2.27 Figure 14 - SATOB Winds: 700-1000hPa

Figure 14
ECMWF Monitoring Statistics: Dec 2014
AMV Winds: 700-1000hPa
Mean Observed Wind



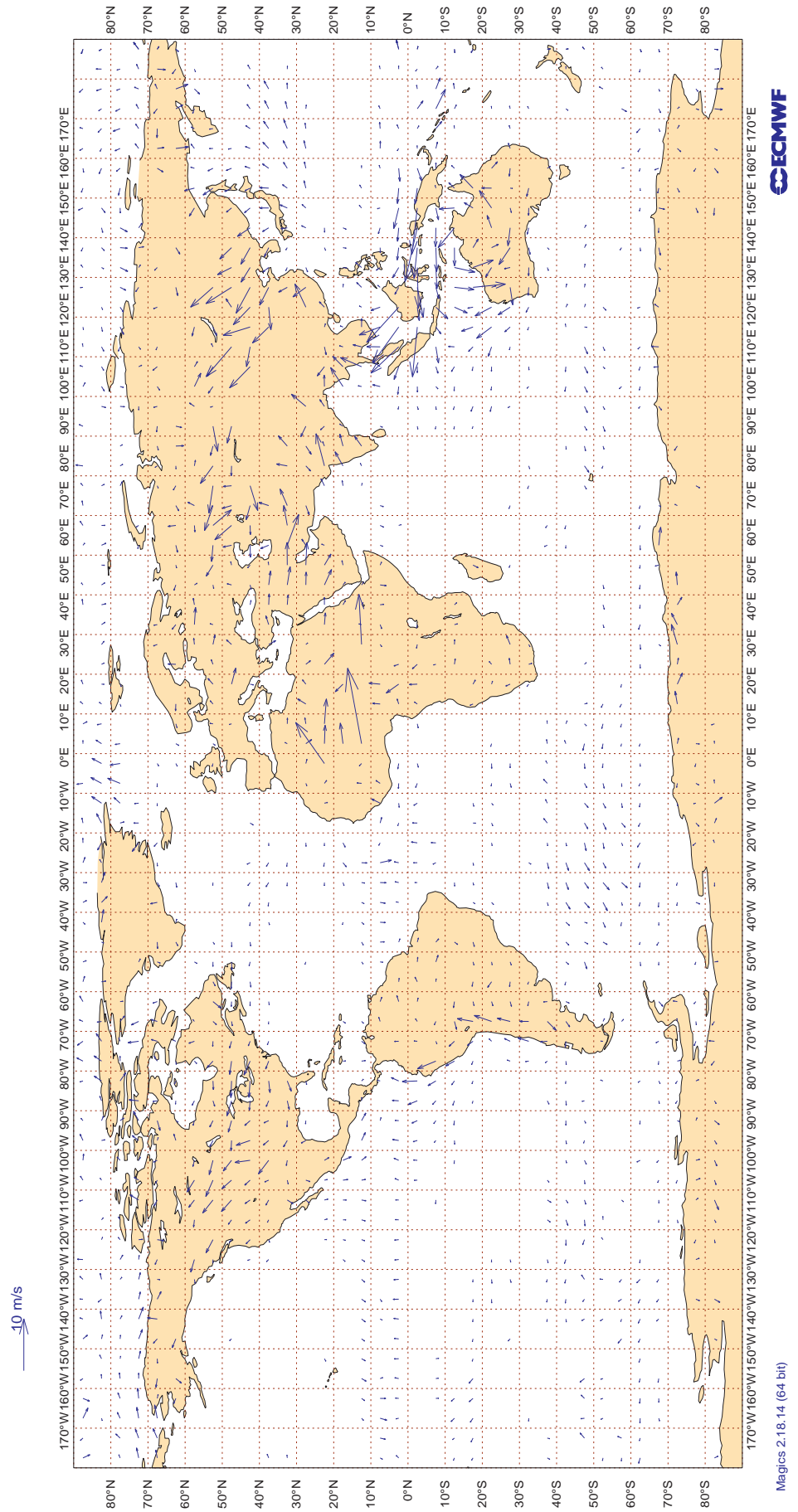
3.2.28 Figure 15 - SATOB Winds: 150- 400hPa

Figure 15
ECMWF Monitoring Statistics: Dec 2014
AMV Winds: 150- 400hPa
Wind bias: Observation - FG



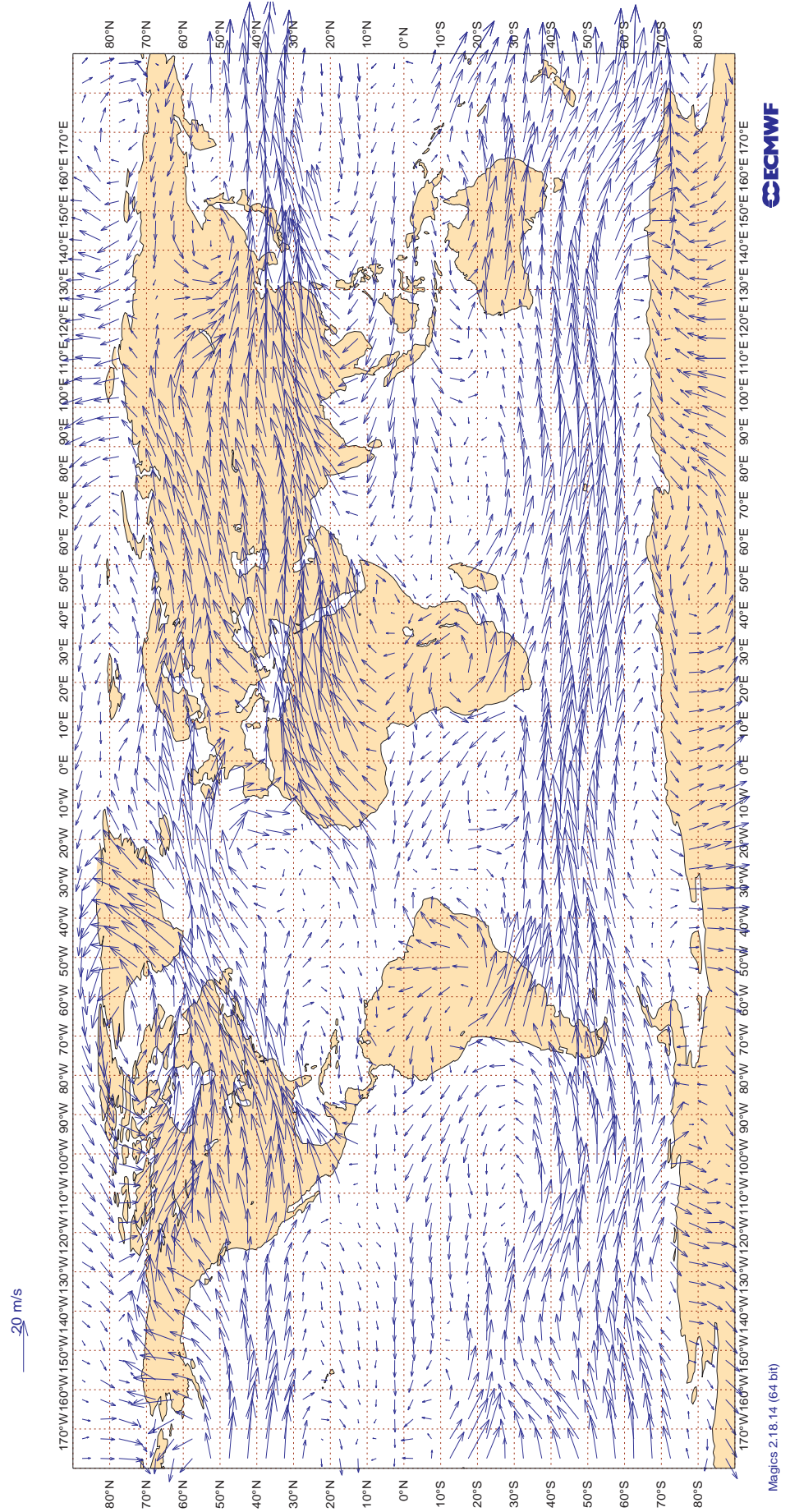
3.2.29 Figure 16 - SATOB Winds: 700-1000hPa

Figure 16
ECMWF Monitoring Statistics: Dec 2014
AMV Winds: 700-1000hPa
Wind bias: Observation - FG



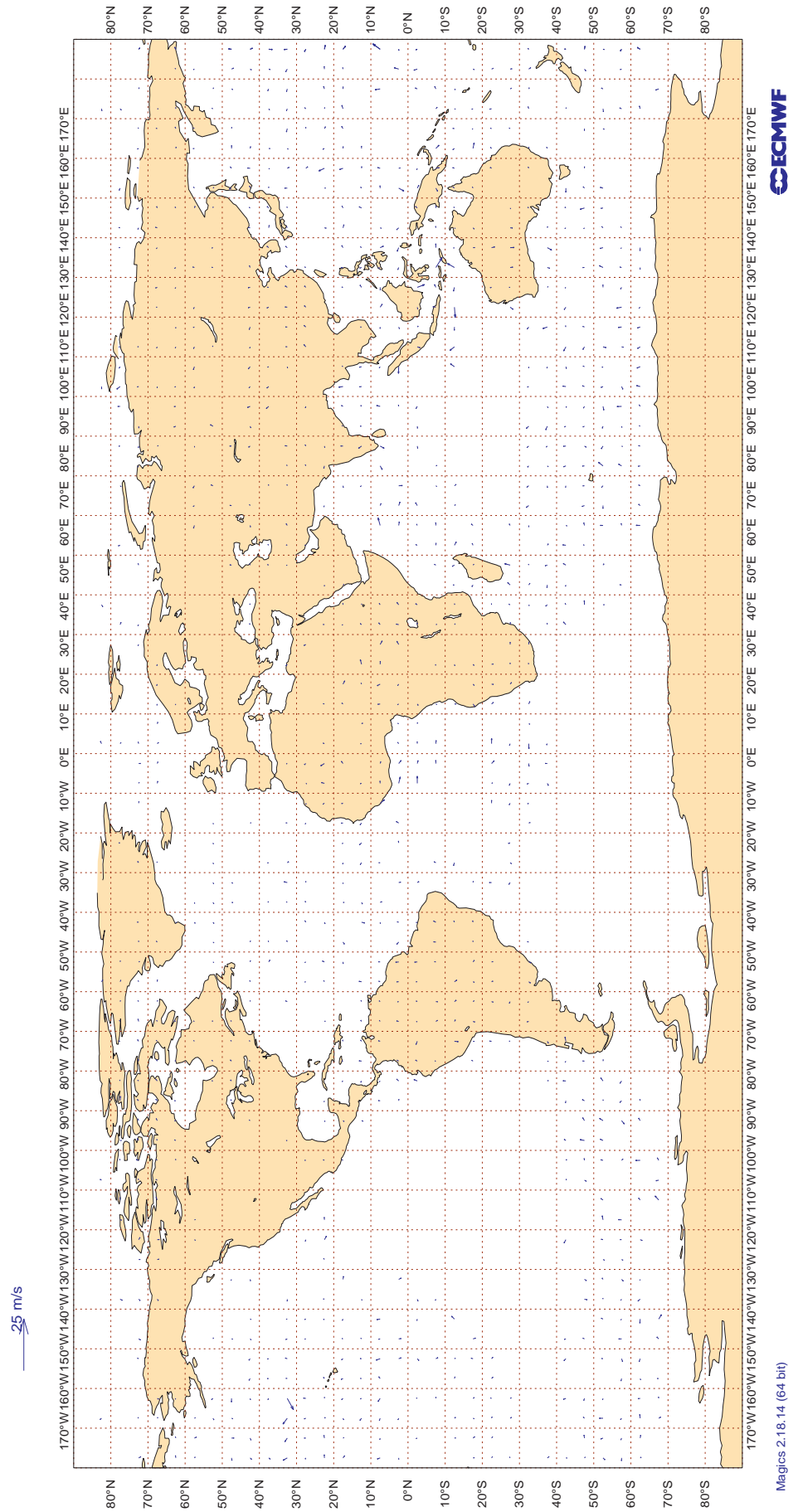
3.2.30 Figure 17 - SATOB Winds: 150- 400hPa

Figure 17
ECMWF Monitoring Statistics: Dec 2014
AMV Winds: 150- 400hPa
Mean Observed Wind



3.2.31 Figure 18 - AIRCRAFT Winds: 150- 300hPa

Figure 18
ECMWF Monitoring Statistics: Dec 2014
Aircraft Winds: 150- 300hPa
Wind bias: Observation - FG



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

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS

MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : VECTOR WIND (M/S)
 AREA : GLOBAL
 PERIOD : DEC 2014
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

SELECTION CRITERIA: NO. OF OBS. >= 20

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

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
AAL	99	V	300-150	1952	0	0	4.9	-0.8
AAY	99	V	300-150	227	1	0	6.7	0.0
ABW	99	V	300-150	31	0	0	3.9	1.1
ABX	99	V	300-150	36	0	0	5.4	-0.9
ACA	99	V	300-150	1660	1	0	4.3	0.0
ACI	99	V	300-150	769	0	0	4.5	0.4
AFL	99	V	300-150	359	0	0	3.4	0.4
AFR	99	V	300-150	2073	0	0	4.4	0.1
AHY	99	V	300-150	40	0	0	4.1	0.9
AIC	99	V	300-150	748	0	0	3.6	-0.1
AMX	99	V	300-150	329	14	0	10.0	0.3
ANZ	99	V	300-150	3590	2	0	6.8	0.6
ASA	99	V	300-150	2940	1	0	5.8	0.2
ASY	99	V	300-150	100	0	2	3.9	-0.2
AUA	99	V	300-150	773	0	0	4.4	-1.2
AVN	99	V	300-150	79	0	0	5.6	-0.3
AWE	99	V	300-150	1401	0	0	4.8	0.8
AXM	99	V	300-150	44	0	0	6.7	1.9
AZA	99	V	300-150	523	0	0	4.4	0.8
BAW	99	V	300-150	3198	1	0	4.7	-0.4
BEL	99	V	300-150	207	0	0	4.6	-0.4
BER	99	V	300-150	1478	0	0	4.6	0.3
BLX	99	V	300-150	23	0	0	4.8	-1.3
BOX	99	V	300-150	28	0	0	3.0	0.6
CAL	99	V	300-150	61	0	0	5.0	0.2
CES	99	V	300-150	181	0	0	5.1	1.1
CFG	99	V	300-150	376	0	0	4.4	-1.1
CGD	99	V	300-150	22	100	0	0.0	0.0
CKS	99	V	300-150	350	0	0	5.9	0.2
CLX	99	V	300-150	403	0	0	3.9	-0.7
CNV	99	V	300-150	66	0	0	4.1	0.5

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
CSN	99	V	300-150	223	8	0	11.1	0.1
DAH	99	V	300-150	81	0	0	3.8	0.6
DAL	99	V	300-150	5781	0	0	4.5	-0.5
DHK	99	V	300-150	150	0	0	4.2	0.2
DLH	99	V	300-150	2655	0	0	4.3	-0.3
EIN	99	V	300-150	893	0	0	4.6	-0.5
EJM	99	V	300-150	42	55	0	11.3	0.9
ELY	99	V	300-150	357	0	0	3.8	-0.3
ETD	99	V	300-150	141	0	0	3.7	0.8
ETH	99	V	300-150	83	0	0	6.3	-0.5
FDX	99	V	300-150	1009	0	0	4.0	0.0
FIN	99	V	300-150	196	0	0	3.6	0.3
FJI	99	V	300-150	1490	0	0	4.6	0.5
FWI	99	V	300-150	54	0	0	4.4	-0.1
GEC	99	V	300-150	237	0	0	3.5	0.0
GLO	99	V	300-150	22	0	0	11.7	0.0
GTI	99	V	300-150	300	0	0	3.6	-0.2
HAL	99	V	300-150	723	0	0	5.7	0.4
IAF	99	V	300-150	51	0	0	4.5	-0.5
IBE	99	V	300-150	437	0	0	4.3	0.4
ICV	99	V	300-150	51	0	0	4.7	0.5
JAF	99	V	300-150	24	4	0	11.5	-0.7
JAI	99	V	300-150	369	0	0	4.9	0.7
JAS	99	V	300-150	31	77	0	2.6	-1.1
JST	99	V	300-150	1367	0	0	5.2	0.4
KAI	99	V	300-150	70	0	0	6.1	-0.8
KAL	99	V	300-150	282	0	0	5.2	0.9
KLM	99	V	300-150	1464	0	0	4.6	-0.5
LAN	99	V	300-150	108	0	0	4.8	0.2
LOT	99	V	300-150	148	17	0	10.5	0.2
MAS	99	V	300-150	85	1	0	4.8	1.1
MMN	99	V	300-150	29	0	0	4.8	-1.3
MSR	99	V	300-150	232	0	0	4.3	0.1
NAX	99	V	300-150	159	8	0	8.0	0.0
NCA	99	V	300-150	33	0	0	4.7	-2.6
NWS	99	V	300-150	72	0	0	4.5	0.1
OAE	99	V	300-150	87	0	0	5.1	0.4
OOE	99	V	300-150	22	0	0	4.5	0.3
PAC	99	V	300-150	31	0	0	9.2	1.1
PAL	99	V	300-150	23	4	0	7.5	1.5
PIA	99	V	300-150	38	0	0	3.0	-0.2
QFA	99	V	300-150	1760	0	0	4.8	0.0
QTR	99	V	300-150	254	0	0	3.8	-0.1

AIREP MONITORING STATISTICS FOR AIRLINE CARRIERS
(CONTINUED)

IDENT	OBS TIME	ELM	LEVEL	NUM OBS	% GROSS	% CALM	VECTOR RMS	SPEE D BIAS
RCH	99	V	300-150	512	0	0	4.5	0.0
RJA	99	V	300-150	102	10	0	6.6	-0.5
RON	99	V	300-150	27	0	0	3.6	-0.7
SAS	99	V	300-150	646	0	0	3.8	0.0
SIA	99	V	300-150	302	0	0	5.1	0.5
SVA	99	V	300-150	320	0	0	4.6	0.2
SWR	99	V	300-150	742	0	0	4.3	0.3
TAM	99	V	300-150	68	0	0	3.1	-0.5
TAP	99	V	300-150	87	0	0	5.7	1.4
TAY	99	V	300-150	55	0	0	3.3	-0.3
TCK	99	V	300-150	22	0	0	4.8	-1.6
TCV	99	V	300-150	23	0	0	5.4	-0.2
TCX	99	V	300-150	52	2	0	5.9	-0.4
TFL	99	V	300-150	35	11	0	10.4	-0.2
THA	99	V	300-150	101	0	1	4.5	0.8
THT	99	V	300-150	162	0	0	5.2	1.4
THY	99	V	300-150	394	0	0	3.8	0.3
TOM	99	V	300-150	268	9	0	6.1	-1.1
TSC	99	V	300-150	39	0	0	4.0	0.5
TSO	99	V	300-150	186	0	0	4.2	-1.1
TWY	99	V	300-150	23	0	0	6.9	1.3
UAE	99	V	300-150	784	0	0	4.3	-0.1
UAL	99	V	300-150	7749	1	0	5.3	-0.5
UPS	99	V	300-150	851	0	0	4.5	0.5
VHT	99	V	300-150	23	26	0	25.9	0.9
VIR	99	V	300-150	1331	2	0	4.7	0.0
VJT	99	V	300-150	22	73	0	28.0	-1.5
VKG	99	V	300-150	24	0	0	4.2	0.4
VOZ	99	V	300-150	848	0	0	4.6	-0.7
VPB	99	V	300-150	22	0	0	8.2	-1.8
VPC	99	V	300-150	39	3	0	4.8	1.5
WJA	99	V	300-150	497	1	0	6.0	0.6
XLF	99	V	300-150	63	0	0	4.1	-0.3

4 EUCOS Area Monitoring Statistics

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

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

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

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

RADIOSONDE MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : GEOPOTENTIAL HEIGHT (METRES)
 LEVEL : 50 HPA
 AREA : 0 - 90N, 100W - 40E
 PERIOD : DEC 2014
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	12	Z	50	29	13.0	0.6
01001	00	Z	50	30	14.3	1.2
01028	00	Z	50	29	12.7	3.7
01028	12	Z	50	28	10.2	2.5
01400	12	Z	50	23	61.6	50.7
01400	00	Z	50	20	34.8	31.1
01415	12	Z	50	30	23.0	14.4
01415	00	Z	50	30	20.3	9.9
02365	12	Z	50	31	18.0	10.3
02365	00	Z	50	31	13.7	2.5
02591	00	Z	50	29	21.5	19.4
02591	12	Z	50	29	27.5	25.7
02836	12	Z	50	29	10.7	-2.4
02836	00	Z	50	31	12.2	1.6
02963	00	Z	50	29	14.3	6.4
02963	12	Z	50	29	17.3	9.8
03005	12	Z	50	30	16.7	10.0
03005	00	Z	50	30	16.5	9.8
03238	00	Z	50	27	22.1	17.8
03238	12	Z	50	6	22.4	13.3
03808	12	Z	50	31	19.0	15.8
03808	00	Z	50	28	14.4	10.2
03918	00	Z	50	28	20.6	13.8
03918	12	Z	50	18	25.6	20.0
03953	00	Z	50	30	23.9	20.6
03953	12	Z	50	31	29.0	24.3
04018	00	Z	50	5	18.2	-1.3
04018	12	Z	50	12	21.3	3.6
04220	00	Z	50	28	25.2	-20.7
04220	12	Z	50	29	24.3	-14.9
04270	12	Z	50	27	37.5	-4.2
04270	00	Z	50	28	39.6	-17.4
04320	12	Z	50	30	19.1	-13.5
04320	00	Z	50	30	23.8	-14.5
04339	12	Z	50	30	40.1	26.4
04339	00	Z	50	26	22.1	12.5
04360	12	Z	50	15	22.8	-7.6
04360	00	Z	50	15	12.9	-5.7
06011	00	Z	50	22	23.2	8.3

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06011	12	Z	50	27	30.2	5.9
06260	00	Z	50	30	21.4	18.0
06260	12	Z	50	4	27.2	25.7
06610	12	Z	50	31	27.7	10.0
06610	00	Z	50	31	28.0	12.9
07110	00	Z	50	29	31.7	26.9
07110	12	Z	50	28	28.4	25.1
07510	00	Z	50	25	13.6	3.9
07510	12	Z	50	28	20.1	8.4
07645	12	Z	50	24	50.9	42.0
07645	00	Z	50	22	55.4	47.9
07761	00	Z	50	28	20.3	6.0
07761	12	Z	50	27	17.1	13.1
08001	12	Z	50	27	29.9	28.5
08001	00	Z	50	23	21.0	10.5
08221	12	Z	50	30	25.9	23.1
08221	00	Z	50	31	18.5	15.8
08302	12	Z	50	31	14.7	9.7
08302	00	Z	50	31	12.4	9.8
08508	12	Z	50	29	22.5	19.6
08579	12	Z	50	30	27.3	25.9
10035	00	Z	50	30	15.2	9.1
10035	12	Z	50	29	16.1	10.1
10393	00	Z	50	30	14.4	8.0
10393	12	Z	50	31	13.0	7.0
10410	12	Z	50	31	17.5	13.0
10410	00	Z	50	31	13.5	6.0
10739	12	Z	50	31	20.4	18.1
10739	00	Z	50	31	16.0	10.2
11035	12	Z	50	32	11.8	3.9
11035	00	Z	50	32	15.5	-0.2
12982	12	Z	50	6	39.0	37.8
12982	00	Z	50	29	12.2	4.9
16044	12	Z	50	31	12.9	8.7
16044	00	Z	50	30	16.9	12.0
16080	12	Z	50	29	13.9	6.5
16080	00	Z	50	28	29.2	2.2
16245	00	Z	50	28	10.7	3.5
16245	12	Z	50	31	10.8	0.1
16320	12	Z	50	30	11.2	2.2
16320	00	Z	50	31	12.3	2.0
16429	12	Z	50	31	12.8	4.5
16429	00	Z	50	31	11.9	4.9

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
16622	00	Z	50	23	38.7	34.7
16754	00	Z	50	24	18.1	14.4
17607	12	Z	50	15	17.8	-14.1
26435	00	Z	50	15	13.5	7.6
60018	12	Z	50	30	13.1	11.5
60018	00	Z	50	31	16.2	14.1
ASDK1	12	Z	50	2	41.4	40.4
ASDK1	00	Z	50	0	0.0	0.0
ASDK2	00	Z	50	7	58.4	57.1
ASDK2	12	Z	50	13	69.0	65.3
ASDK3	12	Z	50	8	64.2	52.8
ASDK3	00	Z	50	6	47.1	32.8
ASFR1	12	Z	50	9	13.3	9.7
ASFR1	00	Z	50	11	10.9	7.6
ASFR2	00	Z	50	0	0.0	0.0
ASFR2	12	Z	50	0	0.0	0.0
ASFR3	12	Z	50	8	12.1	9.1
ASFR3	00	Z	50	10	19.3	16.3
ASFR4	12	Z	50	11	21.6	19.5
ASFR4	00	Z	50	7	24.8	23.0

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

RADIOSONDE MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : WIND (M/S)
 LEVEL : 50 HPA
 AREA : 0 - 90N, 100W - 40E
 PERIOD : DEC 2014
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	12	V	50	26	4.0	-0.8	-0.2
01001	00	V	50	29	3.9	0.9	-2.0
01028	00	V	50	28	3.8	0.1	-0.1
01028	12	V	50	28	3.7	0.1	0.1
01400	12	V	50	14	4.9	1.2	-0.9
01400	00	V	50	7	4.3	1.5	-1.1
01415	12	V	50	29	5.0	0.4	0.7
01415	00	V	50	28	5.6	-0.1	-0.1
02365	12	V	50	31	4.5	0.5	1.4
02365	00	V	50	29	5.1	0.7	-1.4
02591	00	V	50	28	4.2	0.2	0.3
02591	12	V	50	29	4.5	-0.1	-0.2
02836	12	V	50	28	4.9	0.2	-0.6
02836	00	V	50	28	5.1	-1.2	-1.4
02963	00	V	50	27	4.0	-0.1	-0.6
02963	12	V	50	25	4.7	-0.7	0.4
03005	12	V	50	30	4.5	0.5	0.3
03005	00	V	50	28	6.3	-0.5	1.3
03238	00	V	50	24	6.1	-1.8	1.6
03238	12	V	50	6	4.7	1.6	3.1
03808	12	V	50	31	4.6	0.8	0.1
03808	00	V	50	26	3.8	-0.8	-0.4
03918	00	V	50	27	5.4	-0.8	-0.2
03918	12	V	50	18	5.7	1.2	1.4
03953	00	V	50	28	3.7	0.1	0.6
03953	12	V	50	31	3.3	0.9	0.0
04018	00	V	50	3	6.4	1.4	-4.5
04018	12	V	50	11	5.7	2.3	-0.8
04220	00	V	50	27	4.0	-0.3	0.7
04220	12	V	50	29	4.1	-0.3	1.2
04270	12	V	50	27	10.1	-0.9	1.3
04270	00	V	50	27	8.5	-1.8	0.8
04320	12	V	50	30	3.6	0.2	-1.0
04320	00	V	50	29	3.7	-0.6	-0.3
04339	12	V	50	29	4.2	-0.5	0.0
04339	00	V	50	24	4.4	0.5	-0.3
04360	12	V	50	15	4.2	-0.7	0.6
04360	00	V	50	15	4.0	-0.2	0.9
06011	00	V	50	22	4.4	0.3	-0.3

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06011	12	V	50	27	4.7	-0.4	0.5
06260	00	V	50	30	4.6	-0.8	0.4
06260	12	V	50	4	6.1	1.6	0.2
06610	12	V	50	31	4.9	1.6	0.4
06610	00	V	50	30	6.1	-0.1	0.6
07110	00	V	50	26	3.8	-0.7	0.5
07110	12	V	50	28	3.7	0.5	0.9
07510	00	V	50	24	3.8	0.0	0.4
07510	12	V	50	28	4.4	1.3	0.9
07645	12	V	50	24	4.6	0.3	0.3
07645	00	V	50	18	5.4	0.1	0.3
07761	00	V	50	25	5.0	1.5	0.6
07761	12	V	50	27	5.1	2.2	0.2
08001	12	V	50	21	4.6	0.6	-0.6
08001	00	V	50	21	3.5	0.3	0.5
08221	12	V	50	30	3.7	0.0	0.5
08221	00	V	50	30	4.0	-0.5	0.5
08302	12	V	50	31	4.0	0.9	-0.3
08302	00	V	50	30	4.0	1.5	-0.4
08508	12	V	50	28	4.3	0.1	0.1
08579	12	V	50	29	3.6	0.4	0.9
10035	00	V	50	28	4.5	0.4	0.1
10035	12	V	50	29	4.3	0.1	0.7
10393	00	V	50	25	3.5	1.1	-0.4
10393	12	V	50	31	4.2	0.1	-0.6
10410	12	V	50	31	4.1	0.9	0.0
10410	00	V	50	29	4.6	-0.8	0.7
10739	12	V	50	31	4.5	0.7	0.7
10739	00	V	50	30	4.2	0.4	-0.3
11035	12	V	50	31	4.4	0.5	-0.1
11035	00	V	50	31	6.1	1.9	-0.3
12982	12	V	50	6	3.5	2.5	-0.6
12982	00	V	50	29	4.7	-0.8	1.5
16044	12	V	50	31	4.3	1.1	0.2
16044	00	V	50	29	4.0	0.7	0.8
16080	12	V	50	29	4.5	1.0	0.2
16080	00	V	50	26	4.5	0.2	1.2
16245	00	V	50	27	4.2	0.6	0.2
16245	12	V	50	31	3.5	1.1	0.7
16320	12	V	50	30	3.5	1.3	0.1
16320	00	V	50	29	3.6	1.0	0.0
16429	12	V	50	31	3.5	1.3	0.5
16429	00	V	50	28	3.8	1.2	-0.1

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
16622	00	V	50	12	3.3	0.0	0.2
16754	00	V	50	19	3.4	0.1	-0.6
17607	12	V	50	14	4.4	0.9	-1.5
26435	00	V	50	15	3.9	-0.7	0.4
60018	12	V	50	29	3.7	0.1	-0.1
60018	00	V	50	31	4.2	0.3	0.7
ASDK1	12	V	50	2	4.0	-2.2	0.7
ASDK1	00	V	50	0	0.0	0.0	0.0
ASDK2	00	V	50	6	4.4	-0.1	-0.1
ASDK2	12	V	50	13	4.6	1.6	-1.7
ASDK3	12	V	50	8	5.4	1.5	-0.3
ASDK3	00	V	50	6	4.0	0.1	0.7
ASFR1	12	V	50	9	4.4	-0.7	2.2
ASFR1	00	V	50	11	4.5	-0.2	0.0
ASFR2	00	V	50	0	0.0	0.0	0.0
ASFR2	12	V	50	0	0.0	0.0	0.0
ASFR3	12	V	50	8	3.7	-0.4	0.9
ASFR3	00	V	50	10	4.0	-0.2	0.2
ASFR4	12	V	50	10	3.8	1.8	0.3
ASFR4	00	V	50	7	4.3	0.2	1.3

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

RADIOSONDE MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : GEOPOTENTIAL HEIGHT (METRES)
 LEVEL : 100 HPA
 AREA : 0 - 90N, 100W - 40E
 PERIOD : DEC 2014
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	12	Z	100	29	7.8	2.0
01001	00	Z	100	28	9.5	-0.8
01028	00	Z	100	30	9.5	2.1
01028	12	Z	100	28	6.0	0.3
01400	12	Z	100	25	41.8	34.7
01400	00	Z	100	22	35.0	31.4
01415	12	Z	100	30	17.1	4.0
01415	00	Z	100	30	11.0	3.1
02365	12	Z	100	31	12.5	5.7
02365	00	Z	100	31	9.7	2.4
02591	00	Z	100	30	16.6	14.9
02591	12	Z	100	30	20.0	19.1
02836	12	Z	100	31	7.3	-1.6
02836	00	Z	100	31	8.2	-1.3
02963	00	Z	100	31	10.1	3.7
02963	12	Z	100	31	8.8	3.8
03005	12	Z	100	31	12.4	-0.4
03005	00	Z	100	31	12.9	2.4
03238	00	Z	100	30	17.2	13.8
03238	12	Z	100	9	16.9	13.3
03808	12	Z	100	31	12.6	10.2
03808	00	Z	100	31	8.9	4.7
03918	00	Z	100	29	18.4	13.3
03918	12	Z	100	18	15.9	13.9
03953	00	Z	100	31	15.6	13.1
03953	12	Z	100	30	16.7	13.2
04018	00	Z	100	15	12.1	5.0
04018	12	Z	100	16	15.9	-0.2
04220	00	Z	100	28	20.5	-15.5
04220	12	Z	100	30	21.2	-9.8
04270	12	Z	100	28	23.2	-3.0
04270	00	Z	100	30	29.6	-11.1
04320	12	Z	100	31	14.5	-11.0
04320	00	Z	100	30	16.4	-9.0
04339	12	Z	100	30	29.5	14.9
04339	00	Z	100	28	17.2	9.1
04360	12	Z	100	21	13.1	-0.4
04360	00	Z	100	20	11.2	-1.7
06011	00	Z	100	27	17.2	1.2

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06011	12	Z	100	28	18.5	1.5
06260	00	Z	100	31	13.8	11.1
06260	12	Z	100	4	18.2	17.3
06610	12	Z	100	31	16.1	6.3
06610	00	Z	100	31	17.3	10.2
07110	00	Z	100	31	15.6	11.7
07110	12	Z	100	31	18.1	14.4
07510	00	Z	100	26	7.7	0.0
07510	12	Z	100	30	11.9	1.0
07645	12	Z	100	29	36.6	29.5
07645	00	Z	100	29	33.9	28.7
07761	00	Z	100	30	17.6	2.8
07761	12	Z	100	31	12.6	7.4
08001	12	Z	100	31	20.2	18.7
08001	00	Z	100	30	17.5	5.3
08221	12	Z	100	29	20.3	17.2
08221	00	Z	100	31	13.0	10.6
08302	12	Z	100	31	9.3	5.0
08302	00	Z	100	31	7.3	3.6
08508	12	Z	100	29	16.5	12.1
08579	12	Z	100	30	16.5	14.0
10035	00	Z	100	31	10.4	3.8
10035	12	Z	100	31	10.2	1.1
10393	00	Z	100	30	8.7	3.5
10393	12	Z	100	32	6.7	-1.7
10410	12	Z	100	31	7.7	3.8
10410	00	Z	100	31	8.3	1.1
10739	12	Z	100	31	12.5	10.9
10739	00	Z	100	31	12.1	6.9
11035	12	Z	100	32	10.2	-1.4
11035	00	Z	100	33	9.7	-1.8
12982	12	Z	100	6	22.7	21.2
12982	00	Z	100	29	9.1	0.2
16044	12	Z	100	31	8.9	3.9
16044	00	Z	100	30	11.4	7.9
16080	12	Z	100	30	8.9	0.0
16080	00	Z	100	28	29.1	-4.2
16245	00	Z	100	29	8.5	0.1
16245	12	Z	100	31	11.2	-5.5
16320	12	Z	100	30	10.7	-1.7
16320	00	Z	100	31	9.1	1.3
16429	12	Z	100	30	10.3	-3.1
16429	00	Z	100	31	8.6	0.0

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
16622	00	Z	100	28	28.1	24.1
16754	00	Z	100	26	12.5	8.2
17607	12	Z	100	30	13.1	-8.4
26435	00	Z	100	15	5.1	1.8
60018	12	Z	100	30	10.0	7.5
60018	00	Z	100	31	12.5	10.5
ASDK1	12	Z	100	2	25.9	24.9
ASDK1	00	Z	100	0	0.0	0.0
ASDK2	00	Z	100	7	47.0	46.6
ASDK2	12	Z	100	13	61.2	57.3
ASDK3	12	Z	100	4	44.8	35.4
ASDK3	00	Z	100	8	36.4	27.6
ASFR1	12	Z	100	13	10.1	-0.4
ASFR1	00	Z	100	11	6.7	-0.4
ASFR2	00	Z	100	8	22.1	21.3
ASFR2	12	Z	100	8	25.5	23.2
ASFR3	12	Z	100	10	7.9	2.9
ASFR3	00	Z	100	13	12.7	9.2
ASFR4	12	Z	100	12	13.1	7.6
ASFR4	00	Z	100	6	18.6	18.5

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

RADIOSONDE MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : WIND (M/S)
 LEVEL : 100 HPA
 AREA : 0 - 90N, 100W - 40E
 PERIOD : DEC 2014
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	12	V	100	29	3.8	0.9	-0.6
01001	00	V	100	28	4.5	-0.4	-1.1
01028	00	V	100	29	3.3	-0.8	0.1
01028	12	V	100	28	3.7	0.3	-0.6
01400	12	V	100	16	3.0	1.6	0.1
01400	00	V	100	15	4.2	-0.4	-0.5
01415	12	V	100	30	4.1	0.7	1.2
01415	00	V	100	28	4.4	1.1	0.6
02365	12	V	100	31	4.3	0.3	-0.7
02365	00	V	100	30	5.1	-1.3	-0.5
02591	00	V	100	30	3.5	-0.1	-0.2
02591	12	V	100	30	4.0	0.1	0.6
02836	12	V	100	31	3.6	-0.3	-0.2
02836	00	V	100	31	3.9	-0.2	0.1
02963	00	V	100	31	4.1	-0.8	-0.7
02963	12	V	100	31	4.1	-1.2	-0.7
03005	12	V	100	31	4.3	0.3	-1.1
03005	00	V	100	29	4.1	-0.7	0.2
03238	00	V	100	27	5.1	0.1	-1.4
03238	12	V	100	9	5.5	-0.7	0.5
03808	12	V	100	31	4.3	-0.6	0.8
03808	00	V	100	28	4.6	0.1	1.2
03918	00	V	100	28	4.8	-0.8	-0.9
03918	12	V	100	18	4.2	-1.8	0.1
03953	00	V	100	30	4.2	-0.1	0.0
03953	12	V	100	29	3.8	0.0	-0.7
04018	00	V	100	11	4.4	-2.1	1.4
04018	12	V	100	15	4.0	0.3	1.5
04220	00	V	100	27	3.3	0.0	-0.1
04220	12	V	100	30	2.8	0.3	0.3
04270	12	V	100	28	6.4	0.2	0.0
04270	00	V	100	29	7.0	0.7	-1.0
04320	12	V	100	31	2.3	0.0	-0.5
04320	00	V	100	29	2.8	-0.7	-0.3
04339	12	V	100	30	2.8	0.4	0.1
04339	00	V	100	26	4.3	0.5	-0.8
04360	12	V	100	21	4.0	0.7	0.2
04360	00	V	100	20	4.3	-0.1	0.0
06011	00	V	100	26	4.1	-0.1	-0.5

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06011	12	V	100	28	4.7	-0.2	-0.9
06260	00	V	100	31	4.2	-0.5	1.1
06260	12	V	100	4	2.6	-0.5	1.9
06610	12	V	100	31	3.8	1.2	0.2
06610	00	V	100	30	5.7	0.4	-0.2
07110	00	V	100	27	3.9	0.3	0.4
07110	12	V	100	31	3.7	0.6	1.0
07510	00	V	100	23	3.3	0.6	0.0
07510	12	V	100	30	3.3	-0.8	0.1
07645	12	V	100	29	5.3	0.0	-0.3
07645	00	V	100	22	4.0	0.0	0.6
07761	00	V	100	28	3.9	0.7	1.4
07761	12	V	100	30	3.6	1.1	0.4
08001	12	V	100	30	4.0	0.0	1.6
08001	00	V	100	29	2.8	0.0	0.9
08221	12	V	100	29	4.3	1.4	0.2
08221	00	V	100	30	4.7	0.4	-1.0
08302	12	V	100	31	4.1	-0.4	-0.1
08302	00	V	100	30	4.1	0.5	1.6
08508	12	V	100	29	3.4	0.0	0.0
08579	12	V	100	29	4.0	0.1	-0.3
10035	00	V	100	30	4.0	-0.3	1.0
10035	12	V	100	31	4.3	1.0	-0.2
10393	00	V	100	27	3.8	0.0	0.2
10393	12	V	100	31	3.2	-0.2	0.9
10410	12	V	100	31	3.7	0.5	0.0
10410	00	V	100	30	4.3	0.0	0.7
10739	12	V	100	31	3.0	0.4	0.3
10739	00	V	100	30	3.7	0.3	-0.4
11035	12	V	100	31	4.2	1.0	-0.2
11035	00	V	100	31	4.5	0.7	0.0
12982	12	V	100	6	3.1	1.1	-0.3
12982	00	V	100	29	4.2	0.2	0.1
16044	12	V	100	31	3.9	0.5	1.2
16044	00	V	100	30	3.8	-0.1	0.6
16080	12	V	100	30	5.5	0.7	0.0
16080	00	V	100	26	3.5	0.0	0.1
16245	00	V	100	27	3.6	0.8	1.0
16245	12	V	100	31	3.5	0.4	-0.3
16320	12	V	100	30	4.0	0.5	-0.2
16320	00	V	100	29	3.1	0.4	0.4
16429	12	V	100	30	5.0	1.1	0.2
16429	00	V	100	28	4.6	0.2	0.2

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
16622	00	V	100	17	3.5	0.4	-0.3
16754	00	V	100	25	4.7	0.7	-0.1
17607	12	V	100	17	4.7	0.5	-0.4
26435	00	V	100	15	2.4	0.7	-0.4
60018	12	V	100	29	4.4	0.3	-0.1
60018	00	V	100	31	3.9	1.0	0.0
ASDK1	12	V	100	2	7.2	5.0	0.8
ASDK1	00	V	100	0	0.0	0.0	0.0
ASDK2	00	V	100	7	4.9	-0.5	1.7
ASDK2	12	V	100	13	3.7	0.3	0.4
ASDK3	12	V	100	4	3.0	0.6	1.6
ASDK3	00	V	100	8	3.6	0.6	0.7
ASFR1	12	V	100	13	3.1	-0.5	0.5
ASFR1	00	V	100	10	3.3	-1.0	1.2
ASFR2	00	V	100	8	3.6	1.2	-0.6
ASFR2	12	V	100	7	3.3	-1.0	0.5
ASFR3	12	V	100	9	4.2	0.3	2.1
ASFR3	00	V	100	11	3.4	0.7	-0.7
ASFR4	12	V	100	11	4.5	1.7	-0.8
ASFR4	00	V	100	5	2.7	-0.4	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 : DEC 2014
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	12	Z	500	29	8.9	3.9
01001	00	Z	500	29	8.8	2.5
01028	00	Z	500	31	6.6	2.6
01028	12	Z	500	28	8.8	2.2
01400	12	Z	500	28	34.2	26.4
01400	00	Z	500	28	31.6	25.8
01415	12	Z	500	30	6.5	3.4
01415	00	Z	500	30	8.2	5.3
02365	12	Z	500	31	7.0	4.9
02365	00	Z	500	31	6.1	3.3
02591	00	Z	500	30	12.5	11.7
02591	12	Z	500	30	13.5	13.1
02836	12	Z	500	31	5.3	-0.8
02836	00	Z	500	31	5.9	2.3
02963	00	Z	500	31	6.0	3.5
02963	12	Z	500	31	5.8	3.2
03005	12	Z	500	31	6.5	-2.0
03005	00	Z	500	31	5.4	1.3
03238	00	Z	500	30	10.2	8.7
03238	12	Z	500	9	7.2	4.4
03808	12	Z	500	32	6.3	4.9
03808	00	Z	500	33	7.1	5.5
03918	00	Z	500	29	10.6	9.6
03918	12	Z	500	18	13.5	12.6
03953	00	Z	500	31	10.8	10.2
03953	12	Z	500	31	10.2	8.3
04018	00	Z	500	19	6.2	4.1
04018	12	Z	500	19	7.8	4.9
04220	00	Z	500	30	12.4	2.0
04220	12	Z	500	31	14.6	4.5
04270	12	Z	500	31	5.9	-0.7
04270	00	Z	500	31	9.1	-1.7
04320	12	Z	500	31	6.1	3.3
04320	00	Z	500	30	7.3	3.5
04339	12	Z	500	30	12.6	4.8
04339	00	Z	500	28	7.8	-0.2
04360	12	Z	500	24	7.4	4.6
04360	00	Z	500	24	7.8	2.6
06011	00	Z	500	30	10.2	2.1

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06011	12	Z	500	28	15.1	3.3
06260	00	Z	500	31	7.7	4.3
06260	12	Z	500	4	7.4	6.9
06610	12	Z	500	31	8.1	6.5
06610	00	Z	500	31	9.6	7.3
07110	00	Z	500	32	7.2	0.1
07110	12	Z	500	31	6.4	2.5
07510	00	Z	500	29	7.0	-4.2
07510	12	Z	500	31	8.1	-2.9
07645	12	Z	500	31	15.6	12.1
07645	00	Z	500	33	14.3	10.5
07761	00	Z	500	32	5.9	-0.1
07761	12	Z	500	31	5.2	3.1
08001	12	Z	500	31	11.4	9.6
08001	00	Z	500	31	15.3	3.5
08221	12	Z	500	30	14.5	13.3
08221	00	Z	500	31	11.2	10.3
08302	12	Z	500	31	6.0	2.0
08302	00	Z	500	31	6.6	3.5
08508	12	Z	500	29	9.2	6.4
08579	12	Z	500	31	11.8	11.0
10035	00	Z	500	31	5.8	0.9
10035	12	Z	500	31	5.1	1.3
10393	00	Z	500	34	3.8	-0.9
10393	12	Z	500	32	4.1	-2.1
10410	12	Z	500	31	3.5	0.6
10410	00	Z	500	31	5.5	-1.6
10739	12	Z	500	31	9.2	8.4
10739	00	Z	500	31	8.9	7.6
11035	12	Z	500	33	6.0	-0.1
11035	00	Z	500	34	4.9	-1.4
12982	12	Z	500	8	7.1	5.7
12982	00	Z	500	31	7.1	3.4
16044	12	Z	500	31	5.8	0.7
16044	00	Z	500	31	5.5	2.8
16080	12	Z	500	30	4.8	-1.5
16080	00	Z	500	28	25.6	-4.1
16245	00	Z	500	31	6.6	-2.6
16245	12	Z	500	31	9.9	-7.2
16320	12	Z	500	30	8.7	-2.8
16320	00	Z	500	31	7.8	1.4
16429	12	Z	500	30	6.2	-0.3
16429	00	Z	500	31	6.7	-0.3

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
16622	00	Z	500	29	20.5	18.0
16754	00	Z	500	26	11.0	6.3
17607	12	Z	500	30	5.6	3.7
26435	00	Z	500	15	5.8	2.7
60018	12	Z	500	30	7.6	6.5
60018	00	Z	500	31	8.9	7.4
ASDK1	12	Z	500	5	7.2	-2.2
ASDK1	00	Z	500	1	16.5	-16.5
ASDK2	00	Z	500	7	46.1	44.7
ASDK2	12	Z	500	14	53.2	48.1
ASDK3	12	Z	500	5	30.1	24.9
ASDK3	00	Z	500	8	40.8	21.5
ASFR1	12	Z	500	15	8.1	-4.8
ASFR1	00	Z	500	11	7.6	-6.0
ASFR2	00	Z	500	8	7.1	4.2
ASFR2	12	Z	500	8	8.1	6.8
ASFR3	12	Z	500	11	7.8	2.3
ASFR3	00	Z	500	15	5.8	2.9
ASFR4	12	Z	500	14	9.8	-4.7
ASFR4	00	Z	500	7	2.8	-0.2

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

RADIOSONDE MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : WIND (M/S)
 LEVEL : 500 HPA
 AREA : 0 - 90N, 100W - 40E
 PERIOD : DEC 2014
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	12	V	500	29	3.7	-0.2	-0.5
01001	00	V	500	29	3.8	0.8	-0.8
01028	00	V	500	31	3.2	0.4	-0.3
01028	12	V	500	28	3.1	0.4	0.1
01400	12	V	500	28	3.8	1.1	-0.4
01400	00	V	500	28	3.2	0.2	-0.6
01415	12	V	500	30	3.5	1.3	0.3
01415	00	V	500	28	4.3	-0.4	-0.4
02365	12	V	500	31	3.8	-0.3	0.5
02365	00	V	500	30	2.8	0.2	-0.5
02591	00	V	500	30	2.9	-0.1	0.4
02591	12	V	500	30	3.1	-0.3	0.4
02836	12	V	500	31	3.2	-0.8	0.1
02836	00	V	500	31	2.8	-0.6	-0.3
02963	00	V	500	31	2.6	0.1	0.1
02963	12	V	500	31	2.8	0.2	-0.1
03005	12	V	500	31	3.5	-0.1	-0.3
03005	00	V	500	29	3.5	-1.2	-0.2
03238	00	V	500	27	4.1	-0.4	-0.5
03238	12	V	500	9	3.4	1.8	-0.5
03808	12	V	500	31	3.5	-0.1	-0.2
03808	00	V	500	30	2.8	0.1	0.5
03918	00	V	500	28	2.8	-0.1	-0.1
03918	12	V	500	18	3.7	0.9	-0.1
03953	00	V	500	31	3.7	-0.7	0.4
03953	12	V	500	31	3.7	-0.1	-0.3
04018	00	V	500	17	4.3	-0.3	0.3
04018	12	V	500	19	4.2	1.4	0.3
04220	00	V	500	29	3.6	-0.6	0.4
04220	12	V	500	31	3.2	0.7	-0.2
04270	12	V	500	31	3.5	0.0	0.4
04270	00	V	500	30	3.8	0.0	-0.3
04320	12	V	500	31	2.8	0.2	0.3
04320	00	V	500	29	2.9	0.2	0.5
04339	12	V	500	30	3.8	-1.1	0.2
04339	00	V	500	26	4.1	0.8	-0.1
04360	12	V	500	24	4.4	-0.7	0.9
04360	00	V	500	24	4.1	-0.2	0.6
06011	00	V	500	29	4.1	0.6	0.6

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06011	12	V	500	28	3.3	0.3	0.6
06260	00	V	500	31	3.2	0.2	0.1
06260	12	V	500	4	5.2	2.1	-1.6
06610	12	V	500	31	2.5	0.3	-0.3
06610	00	V	500	30	2.9	0.5	0.0
07110	00	V	500	29	2.6	-0.2	0.3
07110	12	V	500	31	3.3	0.5	0.8
07510	00	V	500	27	3.4	0.4	-0.6
07510	12	V	500	31	3.5	0.3	0.9
07645	12	V	500	31	3.1	-0.1	-0.1
07645	00	V	500	27	3.6	0.4	-0.7
07761	00	V	500	30	3.7	0.3	0.4
07761	12	V	500	31	3.7	-0.5	-0.1
08001	12	V	500	31	2.7	-1.0	-0.2
08001	00	V	500	31	2.9	-0.1	0.0
08221	12	V	500	30	3.1	-0.4	0.0
08221	00	V	500	31	2.8	0.0	0.3
08302	12	V	500	31	3.4	-0.6	-0.9
08302	00	V	500	30	3.5	0.1	0.2
08508	12	V	500	29	2.8	0.3	0.0
08579	12	V	500	31	2.2	0.5	0.2
10035	00	V	500	30	2.6	-0.1	-0.2
10035	12	V	500	31	3.3	0.5	0.3
10393	00	V	500	30	2.8	-0.3	0.3
10393	12	V	500	31	3.0	0.2	0.1
10410	12	V	500	31	3.0	0.1	-0.2
10410	00	V	500	30	2.8	0.3	-0.2
10739	12	V	500	31	3.2	0.5	-0.7
10739	00	V	500	30	2.5	0.6	-0.5
11035	12	V	500	31	3.2	0.6	0.3
11035	00	V	500	31	2.9	-0.4	0.3
12982	12	V	500	8	4.8	-0.8	-0.3
12982	00	V	500	31	2.8	0.6	0.0
16044	12	V	500	30	3.0	0.0	-0.3
16044	00	V	500	30	3.6	-0.3	-0.1
16080	12	V	500	30	3.5	0.0	-0.5
16080	00	V	500	26	2.4	0.0	-0.2
16245	00	V	500	30	3.2	0.2	0.6
16245	12	V	500	31	3.8	0.8	0.0
16320	12	V	500	30	2.4	0.5	-0.2
16320	00	V	500	29	2.3	0.1	0.0
16429	12	V	500	30	2.6	0.4	0.5
16429	00	V	500	28	3.3	-0.3	0.4

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
16622	00	V	500	19	4.0	-0.8	-0.2
16754	00	V	500	26	3.5	0.5	0.5
17607	12	V	500	17	3.3	-0.1	-0.7
26435	00	V	500	15	2.7	0.2	0.5
60018	12	V	500	29	2.5	0.8	-0.2
60018	00	V	500	31	3.0	0.0	-0.3
ASDK1	12	V	500	2	1.8	1.7	-0.6
ASDK1	00	V	500	1	4.1	3.8	-1.6
ASDK2	00	V	500	7	3.0	0.6	1.2
ASDK2	12	V	500	14	3.6	1.2	0.5
ASDK3	12	V	500	5	4.9	0.8	1.0
ASDK3	00	V	500	8	5.6	0.3	0.9
ASFR1	12	V	500	15	3.5	0.6	0.0
ASFR1	00	V	500	11	4.0	-0.7	-1.6
ASFR2	00	V	500	8	4.0	1.0	0.7
ASFR2	12	V	500	8	3.5	-0.1	-0.5
ASFR3	12	V	500	11	2.3	0.2	0.8
ASFR3	00	V	500	15	3.9	0.2	1.8
ASFR4	12	V	500	13	3.1	0.0	0.2
ASFR4	00	V	500	7	3.0	-0.6	0.5

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

RADIOSONDE MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : GEOPOTENTIAL HEIGHT (METRES)
 LEVEL : 850 HPA
 AREA : 0 - 90N, 100W - 40E
 PERIOD : DEC 2014
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
01001	12	Z	850	29	6.2	0.5
01001	00	Z	850	31	5.7	0.6
01028	00	Z	850	31	4.5	0.6
01028	12	Z	850	29	5.9	0.5
01400	12	Z	850	28	30.4	21.7
01400	00	Z	850	28	28.2	23.0
01415	12	Z	850	30	3.7	1.0
01415	00	Z	850	30	3.8	2.7
02365	12	Z	850	31	4.0	2.2
02365	00	Z	850	31	4.3	2.4
02591	00	Z	850	30	9.6	9.1
02591	12	Z	850	30	10.5	10.2
02836	12	Z	850	31	2.8	0.1
02836	00	Z	850	31	2.7	1.0
02963	00	Z	850	31	3.8	2.0
02963	12	Z	850	31	3.5	1.5
03005	12	Z	850	31	5.0	-1.0
03005	00	Z	850	31	3.3	-0.5
03238	00	Z	850	30	6.8	5.8
03238	12	Z	850	9	5.6	4.9
03808	12	Z	850	32	3.5	1.9
03808	00	Z	850	33	3.3	1.5
03918	00	Z	850	29	8.5	8.0
03918	12	Z	850	18	8.5	8.3
03953	00	Z	850	31	5.9	5.0
03953	12	Z	850	31	6.9	5.9
04018	00	Z	850	19	4.2	2.1
04018	12	Z	850	19	5.4	2.5
04220	00	Z	850	31	12.5	2.8
04220	12	Z	850	31	14.3	5.4
04270	12	Z	850	32	4.8	-1.0
04270	00	Z	850	31	3.1	-0.6
04320	12	Z	850	31	5.7	4.3
04320	00	Z	850	30	4.9	3.9
04339	12	Z	850	30	5.0	-1.8
04339	00	Z	850	29	5.9	-2.0
04360	12	Z	850	26	5.6	0.0
04360	00	Z	850	26	5.2	-2.4
06011	00	Z	850	31	10.9	3.8

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
06011	12	Z	850	28	9.0	6.3
06260	00	Z	850	31	5.3	2.4
06260	12	Z	850	4	4.1	3.2
06610	12	Z	850	31	4.1	3.0
06610	00	Z	850	31	4.4	2.4
07110	00	Z	850	32	4.0	-0.1
07110	12	Z	850	31	3.5	1.2
07510	00	Z	850	29	3.7	-2.5
07510	12	Z	850	31	3.8	-2.2
07645	12	Z	850	31	4.4	2.8
07645	00	Z	850	33	4.2	1.6
07761	00	Z	850	32	3.0	-1.7
07761	12	Z	850	31	2.7	0.8
08001	12	Z	850	31	5.6	3.4
08001	00	Z	850	31	14.8	-2.8
08221	12	Z	850	30	7.5	6.9
08221	00	Z	850	31	6.2	5.4
08302	12	Z	850	31	2.5	0.8
08302	00	Z	850	31	3.0	0.4
08508	12	Z	850	29	5.1	1.0
08579	12	Z	850	31	6.8	6.2
10035	00	Z	850	31	4.4	-0.9
10035	12	Z	850	31	4.4	0.1
10393	00	Z	850	34	3.1	-2.5
10393	12	Z	850	32	3.1	-2.3
10410	12	Z	850	31	2.3	-0.7
10410	00	Z	850	31	3.9	-2.9
10739	12	Z	850	31	8.3	7.9
10739	00	Z	850	31	7.2	6.9
11035	12	Z	850	33	4.0	-2.6
11035	00	Z	850	34	4.6	-3.4
12982	12	Z	850	8	3.7	1.4
12982	00	Z	850	31	2.8	-0.2
16044	12	Z	850	31	5.8	-4.2
16044	00	Z	850	31	5.2	-2.5
16080	12	Z	850	30	6.2	-5.2
16080	00	Z	850	28	5.9	-3.9
16245	00	Z	850	31	7.6	-5.7
16245	12	Z	850	31	10.5	-9.2
16320	12	Z	850	31	6.4	-3.1
16320	00	Z	850	31	5.1	0.1
16429	12	Z	850	30	6.2	-3.5
16429	00	Z	850	31	5.0	-1.7

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	BIAS
16622	00	Z	850	29	12.1	10.6
16754	00	Z	850	28	7.3	2.4
17607	12	Z	850	30	4.5	3.4
26435	00	Z	850	15	3.4	1.7
60018	12	Z	850	30	2.7	0.3
60018	00	Z	850	31	2.4	0.2
ASDK1	12	Z	850	7	6.9	0.4
ASDK1	00	Z	850	6	11.8	-0.2
ASDK2	00	Z	850	7	39.6	38.3
ASDK2	12	Z	850	14	41.7	39.2
ASDK3	12	Z	850	5	23.4	17.7
ASDK3	00	Z	850	9	36.4	16.0
ASFR1	12	Z	850	15	8.9	-8.4
ASFR1	00	Z	850	12	8.0	-7.2
ASFR2	00	Z	850	8	6.1	-2.0
ASFR2	12	Z	850	8	6.3	-2.0
ASFR3	12	Z	850	11	5.7	-3.3
ASFR3	00	Z	850	15	3.9	-1.6
ASFR4	12	Z	850	14	9.1	-7.0
ASFR4	00	Z	850	8	9.0	-7.1

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

RADIOSONDE MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : WIND (M/S)
 LEVEL : 850 HPA
 AREA : 0 - 90N, 100W - 40E
 PERIOD : DEC 2014
 STANDARD OF COMPARISON: FIRST-GUESS FIELD

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
01001	12	V	850	29	6.0	1.7	0.8
01001	00	V	850	30	4.4	0.5	0.5
01028	00	V	850	31	3.4	0.3	-0.3
01028	12	V	850	29	3.6	0.0	0.3
01400	12	V	850	28	2.4	0.4	0.0
01400	00	V	850	28	3.1	-0.1	-0.6
01415	12	V	850	30	2.9	0.4	-0.3
01415	00	V	850	28	3.2	-0.3	-0.4
02365	12	V	850	31	3.1	0.0	0.1
02365	00	V	850	30	3.0	0.2	0.2
02591	00	V	850	30	2.5	-0.5	-0.2
02591	12	V	850	30	2.8	-0.1	-0.2
02836	12	V	850	31	3.7	-0.1	-0.3
02836	00	V	850	31	2.6	0.1	-0.4
02963	00	V	850	31	2.1	0.1	0.0
02963	12	V	850	31	2.5	-0.3	-0.6
03005	12	V	850	31	2.8	-0.2	0.0
03005	00	V	850	29	2.5	-0.5	-0.5
03238	00	V	850	27	2.8	0.5	0.6
03238	12	V	850	9	3.1	0.8	0.1
03808	12	V	850	31	2.7	1.0	-0.3
03808	00	V	850	30	2.9	0.4	0.0
03918	00	V	850	28	3.0	-0.6	0.2
03918	12	V	850	18	3.2	0.5	0.4
03953	00	V	850	31	3.0	0.1	0.3
03953	12	V	850	31	3.5	0.6	1.2
04018	00	V	850	17	2.8	-0.1	0.2
04018	12	V	850	19	2.4	0.0	-0.7
04220	00	V	850	30	4.3	0.5	-0.7
04220	12	V	850	31	2.8	0.0	-0.6
04270	12	V	850	31	5.3	0.3	0.6
04270	00	V	850	30	4.8	1.0	1.4
04320	12	V	850	31	4.1	0.4	0.8
04320	00	V	850	29	3.5	0.4	0.9
04339	12	V	850	30	7.4	2.1	2.7
04339	00	V	850	27	8.1	3.1	3.0
04360	12	V	850	26	5.7	2.3	0.8
04360	00	V	850	26	8.3	2.5	0.5
06011	00	V	850	30	2.8	0.1	-0.2

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
06011	12	V	850	28	3.4	0.0	-0.5
06260	00	V	850	31	2.6	-0.4	-0.7
06260	12	V	850	4	2.3	-1.3	-1.1
06610	12	V	850	31	3.6	0.7	-0.6
06610	00	V	850	30	3.0	0.8	-0.1
07110	00	V	850	29	3.2	0.5	0.4
07110	12	V	850	31	2.5	-0.1	-0.4
07510	00	V	850	27	3.7	-0.3	0.0
07510	12	V	850	31	3.3	-0.2	0.6
07645	12	V	850	31	4.2	0.9	0.8
07645	00	V	850	27	4.9	-0.6	0.2
07761	00	V	850	30	3.5	0.0	-0.5
07761	12	V	850	31	4.5	-0.6	1.2
08001	12	V	850	31	2.9	0.0	-0.4
08001	00	V	850	31	3.1	-0.3	-0.4
08221	12	V	850	30	3.7	0.5	-0.4
08221	00	V	850	31	3.1	0.2	1.1
08302	12	V	850	31	3.6	-0.2	0.4
08302	00	V	850	31	3.8	0.5	1.4
08508	12	V	850	29	3.6	-0.2	-0.9
08579	12	V	850	31	3.8	-0.2	-1.6
10035	00	V	850	30	2.3	-0.4	0.1
10035	12	V	850	31	3.2	0.1	-0.2
10393	00	V	850	30	2.3	0.5	-0.2
10393	12	V	850	31	2.3	-0.3	-0.3
10410	12	V	850	31	2.9	0.3	-0.8
10410	00	V	850	30	2.3	0.1	0.1
10739	12	V	850	31	3.4	0.3	-0.7
10739	00	V	850	30	2.8	0.0	0.6
11035	12	V	850	31	3.0	0.6	-0.3
11035	00	V	850	31	3.1	-0.4	0.4
12982	12	V	850	8	3.2	0.1	0.3
12982	00	V	850	31	3.8	-0.2	-0.5
16044	12	V	850	31	3.7	0.8	0.9
16044	00	V	850	30	3.7	0.1	0.4
16080	12	V	850	30	3.5	0.3	-0.7
16080	00	V	850	26	3.9	0.4	-0.9
16245	00	V	850	30	3.4	-0.3	1.0
16245	12	V	850	31	4.3	1.2	-0.8
16320	12	V	850	30	3.0	0.2	-0.3
16320	00	V	850	29	3.3	0.5	-0.4
16429	12	V	850	30	2.8	0.1	0.2
16429	00	V	850	28	3.1	0.4	0.2

RADIOSONDE MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	OBS RECD	RMS	UBIAS	VBIAS
16622	00	V	850	19	4.3	0.8	-1.0
16754	00	V	850	27	3.4	0.1	0.1
17607	12	V	850	17	3.4	-0.4	-0.4
26435	00	V	850	15	2.5	-0.3	0.7
60018	12	V	850	29	3.7	0.4	-0.5
60018	00	V	850	31	3.5	0.2	-0.7
ASDK1	12	V	850	5	4.2	-0.2	2.4
ASDK1	00	V	850	2	4.5	-3.3	-1.4
ASDK2	00	V	850	7	3.6	-1.1	-0.1
ASDK2	12	V	850	14	2.5	-0.1	0.3
ASDK3	12	V	850	5	4.1	-1.1	2.0
ASDK3	00	V	850	9	3.7	-0.7	0.8
ASFR1	12	V	850	15	3.2	0.1	0.0
ASFR1	00	V	850	12	3.0	-0.3	-0.3
ASFR2	00	V	850	8	3.0	0.9	-0.8
ASFR2	12	V	850	8	3.1	0.2	0.3
ASFR3	12	V	850	11	1.9	-0.6	0.2
ASFR3	00	V	850	15	3.0	-0.3	0.4
ASFR4	12	V	850	13	2.8	-0.2	-0.7
ASFR4	00	V	850	7	3.4	0.4	-1.2

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

DRIFTER MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : SURFACE PRESSURE (HPA)
 AREA : 10N - 90N, 70W - 40E
 PERIOD : DEC 2014
 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	217	0	0.3	-0.4	0.5
1234	99	P	SUR	38	-23	1	0	0.0	0.2	0.2
13001	99	P	SUR	11	-23	138	0	0.4	-0.1	0.4
13008	99	P	SUR	15	-38	93	0	0.3	0.0	0.3
13569	99	P	SUR	32	-29	193	0	0.4	-0.1	0.4
13570	99	P	SUR	35	-29	213	0	0.4	0.6	0.7
13572	99	P	SUR	36	-29	217	0	0.4	0.0	0.4
13590	99	P	SUR	35	-31	209	0	0.4	0.6	0.7
13633	99	P	SUR	33	-31	212	0	0.4	-0.4	0.6
13659	99	P	SUR	25	-48	217	0	0.3	-0.2	0.4
13660	99	P	SUR	33	-56	217	0	1.4	-0.5	1.5
13662	99	P	SUR	25	-39	217	0	0.3	-0.2	0.4
13664	99	P	SUR	24	-46	210	0	0.3	0.2	0.4
13868	99	P	SUR	36	-11	217	0	0.3	0.2	0.3
13869	99	P	SUR	26	-18	217	0	0.4	0.3	0.5
14046	99	P	SUR	13	-60	3	0	0.1	0.2	0.2
2086	99	P	SUR	55	6	1	0	0.0	-0.7	0.7
21942	99	P	SUR	32	-26	210	0	0.5	0.3	0.5
25624	99	P	SUR	82	9	152	3	3.2	-1.0	3.4
25648	99	P	SUR	83	25	217	0	0.5	-0.4	0.6
26535	99	P	SUR	77	21	25	6	5.3	-7.5	9.2
31717	99	P	SUR	16	-50	217	0	0.4	0.0	0.4
31863	99	P	SUR	20	-48	217	0	0.4	0.5	0.6
41040	99	P	SUR	15	-53	218	0	0.3	0.2	0.3
41041	99	P	SUR	14	-46	216	0	0.4	0.2	0.4
41043	99	P	SUR	21	-65	215	0	0.3	0.3	0.4
41044	99	P	SUR	22	-59	217	0	0.4	-0.4	0.6
41046	99	P	SUR	24	-68	217	0	0.4	-0.5	0.6
41048	99	P	SUR	32	-70	217	0	0.5	-0.6	0.8
41049	99	P	SUR	28	-63	217	0	0.5	-0.5	0.7
41051	99	P	SUR	18	-65	428	0	0.3	-0.4	0.5
41052	99	P	SUR	18	-65	571	0	0.3	0.2	0.4
41053	99	P	SUR	19	-66	558	0	0.4	-0.5	0.6
41056	99	P	SUR	18	-66	519	0	0.5	-0.4	0.6
41139	99	P	SUR	20	-38	92	0	0.2	-0.3	0.3
41560	99	P	SUR	35	-19	212	0	0.4	0.6	0.7

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
41564	99	P	SUR	29	-40	208	0	0.4	0.3	0.5
41580	99	P	SUR	18	-42	179	0	0.3	0.2	0.3
41590	99	P	SUR	16	-51	159	0	0.3	0.1	0.3
41591	99	P	SUR	16	-45	136	0	0.3	0.2	0.3
41596	99	P	SUR	21	-58	214	0	0.4	-0.2	0.4
41597	99	P	SUR	21	-49	217	0	0.4	0.1	0.4
41598	99	P	SUR	22	-47	217	0	0.4	0.0	0.4
41599	99	P	SUR	16	-59	217	0	0.3	0.3	0.4
41600	99	P	SUR	15	-53	217	0	0.3	0.5	0.6
41612	99	P	SUR	31	-67	201	0	0.3	0.0	0.3
41632	99	P	SUR	25	-62	210	0	0.3	-0.2	0.4
41705	99	P	SUR	31	-53	216	0	0.4	-0.2	0.4
41706	99	P	SUR	27	-66	217	0	0.3	-0.3	0.4
41709	99	P	SUR	30	-66	217	0	0.3	0.1	0.3
41711	99	P	SUR	30	-51	210	0	0.4	0.0	0.4
41737	99	P	SUR	26	-54	210	0	0.5	0.3	0.6
41800	99	P	SUR	23	-47	214	0	0.4	0.3	0.5
41933	99	P	SUR	34	-62	217	0	0.3	-0.4	0.5
41936	99	P	SUR	30	-65	176	0	0.4	-0.7	0.8
41938	99	P	SUR	36	-62	214	0	0.5	-0.7	0.9
41969	99	P	SUR	24	-28	217	0	0.7	-0.4	0.8
41970	99	P	SUR	28	-62	217	0	0.3	0.1	0.3
41971	99	P	SUR	30	-33	196	0	0.3	-0.1	0.3
41972	99	P	SUR	25	-38	182	0	0.3	0.0	0.3
41975	99	P	SUR	37	-49	196	0	0.5	-0.2	0.5
42060	99	P	SUR	16	-63	218	0	0.3	-0.4	0.4
44005	99	P	SUR	43	-69	228	0	0.7	-0.6	0.9
44024	99	P	SUR	42	-66	197	0	0.7	-0.2	0.7
44027	99	P	SUR	44	-67	217	0	0.7	-0.5	0.9
44032	99	P	SUR	44	-69	216	0	0.7	-0.4	0.8
44033	99	P	SUR	44	-69	217	0	0.7	-0.4	0.8
44034	99	P	SUR	44	-68	212	0	0.8	-0.5	0.9
44037	99	P	SUR	44	-68	140	0	0.7	-0.6	1.0
44137	99	P	SUR	42	-62	207	0	0.5	-0.3	0.6
44139	99	P	SUR	44	-57	208	0	0.4	0.0	0.4
44141	99	P	SUR	43	-58	205	0	0.5	-0.1	0.5
44150	99	P	SUR	43	-64	211	0	0.6	-0.6	0.8
44176	99	P	SUR	48	-65	106	0	0.9	-0.1	0.9
44251	99	P	SUR	46	-53	207	0	0.5	0.3	0.5
44255	99	P	SUR	47	-57	264	0	0.6	-0.1	0.6
44258	99	P	SUR	45	-63	203	0	0.6	-0.3	0.6
44505	99	P	SUR	43	-31	399	0	1.4	0.7	1.5
44516	99	P	SUR	28	-58	199	0	0.4	0.0	0.4

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
44546	99	P	SUR	31	-22	217	0	0.4	-0.2	0.4
44547	99	P	SUR	53	-43	217	0	0.4	-0.1	0.4
44548	99	P	SUR	55	-46	214	0	0.5	0.0	0.5
44549	99	P	SUR	48	-33	217	0	0.5	0.3	0.6
44550	99	P	SUR	52	-37	217	0	0.5	0.2	0.5
44551	99	P	SUR	52	-43	217	0	0.5	0.3	0.6
44554	99	P	SUR	31	-39	201	0	0.4	0.1	0.4
44558	99	P	SUR	32	-61	215	0	0.3	0.4	0.5
44560	99	P	SUR	42	-47	212	0	0.7	0.0	0.7
44601	99	P	SUR	49	-41	217	0	0.4	-0.2	0.5
44602	99	P	SUR	53	-35	217	0	0.4	-0.4	0.6
44603	99	P	SUR	42	-58	215	0	0.4	0.0	0.4
44604	99	P	SUR	46	-52	122	4	0.8	0.0	0.8
44605	99	P	SUR	45	-5	217	0	0.3	-0.4	0.5
44606	99	P	SUR	47	-32	217	0	0.4	-0.1	0.4
44608	99	P	SUR	46	-30	216	10	0.4	0.2	0.4
44610	99	P	SUR	56	-13	217	0	0.6	0.1	0.6
44612	99	P	SUR	51	-40	207	0	0.6	-0.3	0.6
44613	99	P	SUR	37	-15	217	0	0.3	-0.2	0.4
44614	99	P	SUR	49	-23	217	0	0.5	0.1	0.5
44615	99	P	SUR	61	-34	217	0	0.9	-0.2	0.9
44620	99	P	SUR	55	-36	217	0	0.4	0.2	0.5
44621	99	P	SUR	55	-36	217	0	0.4	0.3	0.5
44622	99	P	SUR	56	-13	205	0	0.5	0.0	0.5
44624	99	P	SUR	29	-15	216	0	0.3	0.1	0.3
44625	99	P	SUR	55	-31	188	1	0.4	0.0	0.4
44725	99	P	SUR	28	-64	217	0	0.8	-0.2	0.8
44739	99	P	SUR	44	-53	217	0	0.6	0.4	0.7
44740	99	P	SUR	26	-44	162	0	0.4	-0.3	0.4
44747	99	P	SUR	62	-39	185	0	0.9	-0.4	0.9
44765	99	P	SUR	42	-13	199	0	0.4	0.3	0.4
44773	99	P	SUR	22	-37	188	0	0.3	0.0	0.3
44774	99	P	SUR	39	-68	217	0	0.5	-0.1	0.5
44775	99	P	SUR	33	-62	217	0	0.3	0.2	0.4
44776	99	P	SUR	39	-58	217	0	0.5	0.2	0.5
44777	99	P	SUR	40	-49	217	0	0.5	0.0	0.5
44778	99	P	SUR	41	-50	217	0	1.2	0.2	1.2
44779	99	P	SUR	42	-46	217	0	0.5	0.2	0.5
44835	99	P	SUR	36	-32	217	0	0.4	-0.3	0.5
44836	99	P	SUR	51	-34	217	0	0.4	-0.1	0.4
44837	99	P	SUR	46	-23	217	0	0.4	-0.2	0.4
44839	99	P	SUR	38	-28	217	0	0.4	0.1	0.4
44840	99	P	SUR	53	-11	51	0	0.4	-0.1	0.5

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
44846	99	P	SUR	31	-29	217	0	0.4	0.6	0.7
44847	99	P	SUR	41	-38	217	0	0.6	0.4	0.7
44848	99	P	SUR	38	-41	217	0	0.7	0.1	0.7
44863	99	P	SUR	30	-31	203	0	0.4	-0.1	0.4
44866	99	P	SUR	56	-45	215	0	0.5	-0.5	0.7
44867	99	P	SUR	51	-48	217	0	0.4	-0.3	0.5
44868	99	P	SUR	28	-50	217	0	0.4	-0.4	0.6
44871	99	P	SUR	49	-41	217	0	0.4	-0.1	0.4
44872	99	P	SUR	44	-54	217	0	0.5	-0.4	0.6
44876	99	P	SUR	35	-53	216	0	0.5	0.4	0.6
44877	99	P	SUR	40	-27	217	0	0.3	0.1	0.3
44878	99	P	SUR	40	-27	217	0	0.4	0.1	0.4
44880	99	P	SUR	45	-50	217	0	0.4	-0.3	0.5
44885	99	P	SUR	42	-29	217	0	0.4	-0.1	0.4
44887	99	P	SUR	38	-54	217	0	0.5	-0.2	0.5
44888	99	P	SUR	38	-32	217	0	0.4	-0.1	0.4
44889	99	P	SUR	33	-46	217	0	0.3	-0.1	0.3
44890	99	P	SUR	36	-57	203	0	0.5	-0.4	0.7
44891	99	P	SUR	31	-30	213	0	0.4	-0.1	0.4
44892	99	P	SUR	42	-48	217	0	0.5	-0.4	0.7
44896	99	P	SUR	36	-37	191	0	0.3	-0.2	0.3
47503	99	P	SUR	87	-31	217	0	0.6	0.2	0.6
47577	99	P	SUR	84	-50	217	0	0.5	-0.2	0.5
47579	99	P	SUR	60	-37	217	104	6.0	-3.6	7.0
47585	99	P	SUR	68	-67	216	0	0.6	-0.3	0.7
47586	99	P	SUR	64	-59	217	0	2.4	-0.7	2.5
48568	99	P	SUR	80	-5	217	0	0.6	-0.1	0.6
48597	99	P	SUR	86	-56	217	0	0.5	-0.1	0.5
48627	99	P	SUR	88	-49	36	8	0.6	0.4	0.8
48778	99	P	SUR	87	-41	217	0	0.4	-0.4	0.5
48779	99	P	SUR	86	-21	217	0	0.5	-0.4	0.7
61001	99	P	SUR	43	8	214	0	0.7	-0.5	0.8
61002	99	P	SUR	42	5	217	1	0.4	0.5	0.7
62001	99	P	SUR	45	-5	220	0	0.3	0.1	0.3
62023	99	P	SUR	51	-8	217	0	0.6	0.2	0.6
62027	99	P	SUR	49	-2	93	0	0.5	0.0	0.5
62029	99	P	SUR	49	-12	230	0	0.5	-0.1	0.5
62030	99	P	SUR	50	-4	169	0	0.4	0.1	0.4
62050	99	P	SUR	50	-4	107	0	0.4	0.1	0.4
62081	99	P	SUR	51	-13	218	0	0.5	-0.2	0.5
62086	99	P	SUR	55	6	14	0	0.4	-0.5	0.6
62091	99	P	SUR	53	-5	216	0	0.5	-0.2	0.5
62092	99	P	SUR	51	-11	210	0	0.6	-0.4	0.7

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
62093	99	P	SUR	55	-10	77	0	0.6	-0.4	0.7
62094	99	P	SUR	52	-7	216	0	0.7	-0.4	0.8
62095	99	P	SUR	53	-16	125	1	0.6	-0.5	0.7
62102	99	P	SUR	58	2	217	0	0.4	-0.3	0.5
62103	99	P	SUR	50	-3	219	0	0.5	0.3	0.6
62104	99	P	SUR	57	1	217	0	0.4	-0.3	0.5
62105	99	P	SUR	55	-13	230	0	0.5	-0.2	0.5
62107	99	P	SUR	50	-6	227	0	0.5	0.2	0.5
62111	99	P	SUR	58	0	210	0	0.7	0.1	0.7
62112	99	P	SUR	58	0	217	0	0.4	0.0	0.4
62113	99	P	SUR	58	0	217	0	0.7	0.3	0.7
62114	99	P	SUR	58	0	423	0	0.5	-0.4	0.6
62115	99	P	SUR	58	-3	216	0	0.5	-0.4	0.6
62116	99	P	SUR	58	1	217	0	0.5	-0.2	0.5
62117	99	P	SUR	58	0	217	0	0.4	-0.1	0.4
62118	99	P	SUR	58	1	217	0	0.4	0.3	0.5
62119	99	P	SUR	57	2	217	0	0.7	0.5	0.9
62120	99	P	SUR	56	2	217	0	0.5	-0.2	0.5
62121	99	P	SUR	54	3	217	0	0.6	0.5	0.8
62122	99	P	SUR	57	2	423	0	0.7	0.2	0.7
62123	99	P	SUR	56	2	423	0	0.5	-0.2	0.5
62124	99	P	SUR	54	-4	217	0	0.4	-0.3	0.5
62127	99	P	SUR	54	1	217	0	0.4	0.2	0.5
62128	99	P	SUR	59	1	217	0	0.6	-0.1	0.6
62129	99	P	SUR	58	0	217	0	0.7	0.2	0.7
62130	99	P	SUR	59	1	210	0	0.4	-0.4	0.6
62131	99	P	SUR	54	1	197	0	0.4	0.1	0.5
62132	99	P	SUR	56	2	217	0	0.6	0.4	0.7
62133	99	P	SUR	57	1	217	0	0.5	-0.2	0.5
62134	99	P	SUR	58	1	217	0	0.5	0.2	0.5
62135	99	P	SUR	54	2	199	0	0.5	0.1	0.5
62137	99	P	SUR	57	2	217	0	0.4	-0.3	0.5
62138	99	P	SUR	54	0	193	0	0.6	0.9	1.1
62139	99	P	SUR	53	2	415	0	0.4	0.1	0.4
62140	99	P	SUR	57	1	423	0	0.5	0.0	0.5
62141	99	P	SUR	57	1	193	0	0.4	0.2	0.5
62143	99	P	SUR	58	2	217	0	0.9	0.3	1.0
62144	99	P	SUR	53	2	217	0	0.5	0.5	0.7
62145	99	P	SUR	53	3	423	0	0.4	0.3	0.5
62146	99	P	SUR	57	2	203	0	0.7	0.2	0.7
62147	99	P	SUR	58	-4	203	1	4.5	1.4	4.7
62148	99	P	SUR	54	2	217	0	0.7	0.2	0.7
62149	99	P	SUR	54	1	147	0	0.5	0.7	0.8

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
62150	99	P	SUR	54	1	210	0	0.6	0.2	0.7
62151	99	P	SUR	57	2	423	0	0.4	-0.1	0.4
62152	99	P	SUR	57	2	217	0	0.6	0.5	0.8
62153	99	P	SUR	57	2	423	0	0.4	0.0	0.4
62154	99	P	SUR	56	2	217	0	0.4	-0.2	0.4
62155	99	P	SUR	58	1	217	0	0.6	0.4	0.8
62156	99	P	SUR	57	1	217	0	0.4	-0.3	0.5
62157	99	P	SUR	58	0	182	0	0.4	-0.4	0.6
62159	99	P	SUR	57	2	215	0	0.4	-0.1	0.4
62161	99	P	SUR	58	1	217	0	0.6	-0.1	0.6
62162	99	P	SUR	57	1	217	0	0.4	-0.3	0.5
62163	99	P	SUR	48	-8	218	0	0.4	0.0	0.4
62164	99	P	SUR	57	1	217	0	0.4	0.2	0.5
62165	99	P	SUR	54	1	217	0	0.6	0.3	0.6
62167	99	P	SUR	53	2	415	0	0.4	0.0	0.4
62168	99	P	SUR	58	1	217	0	0.4	-0.1	0.4
62170	99	P	SUR	51	2	167	0	1.0	-0.6	1.2
62296	99	P	SUR	53	2	1	0	0.0	0.3	0.3
62297	99	P	SUR	59	2	423	0	0.5	-0.1	0.5
62298	99	P	SUR	49	-9	217	0	0.4	0.1	0.4
62301	99	P	SUR	52	-5	218	0	0.4	0.0	0.4
62304	99	P	SUR	51	2	295	1	0.7	0.4	0.8
62305	99	P	SUR	50	0	261	0	0.4	0.3	0.6
62442	99	P	SUR	49	-16	219	0	0.4	-0.2	0.4
62514	99	P	SUR	66	-11	217	0	1.1	0.2	1.2
62516	99	P	SUR	37	-17	217	0	0.3	0.4	0.5
62536	99	P	SUR	54	-29	217	0	0.4	-0.7	0.8
62537	99	P	SUR	54	-32	215	0	0.4	-0.5	0.7
62539	99	P	SUR	55	-31	217	0	0.4	0.1	0.4
62551	99	P	SUR	56	-30	217	0	0.4	-0.2	0.5
62552	99	P	SUR	51	-27	216	0	0.4	0.0	0.4
62553	99	P	SUR	72	1	217	0	0.5	-0.1	0.5
62681	99	P	SUR	47	-17	217	0	0.3	-0.3	0.4
62687	99	P	SUR	77	10	216	0	1.0	-0.2	1.0
62695	99	P	SUR	27	-24	214	0	0.6	0.1	0.6
62713	99	P	SUR	26	-49	217	0	0.4	-0.4	0.5
62714	99	P	SUR	24	-46	208	0	0.3	-0.3	0.4
62940	99	P	SUR	33	-29	217	0	0.4	0.1	0.4
62941	99	P	SUR	35	-35	217	0	0.4	-0.1	0.4
63055	99	P	SUR	61	2	217	0	0.6	0.1	0.6
63056	99	P	SUR	60	2	217	0	0.5	0.0	0.5
63057	99	P	SUR	59	2	217	0	0.4	-0.4	0.6
63058	99	P	SUR	53	2	641	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
63059	99	P	SUR	58	-1	217	0	0.4	0.1	0.5
63101	99	P	SUR	61	1	217	0	0.6	-0.3	0.6
63102	99	P	SUR	61	1	217	0	0.6	0.1	0.7
63103	99	P	SUR	61	1	217	0	0.6	0.3	0.6
63104	99	P	SUR	61	2	217	0	0.6	-0.3	0.6
63105	99	P	SUR	61	2	217	0	0.5	-0.3	0.6
63107	99	P	SUR	61	2	217	0	0.4	-0.3	0.5
63108	99	P	SUR	61	2	217	0	0.7	0.0	0.7
63109	99	P	SUR	60	2	217	0	0.4	-0.4	0.6
63110	99	P	SUR	60	2	217	0	0.6	-0.5	0.8
63111	99	P	SUR	61	2	423	0	0.6	-0.5	0.8
63112	99	P	SUR	61	1	217	0	0.5	-0.5	0.7
63114	99	P	SUR	61	2	423	0	0.5	-0.3	0.6
63115	99	P	SUR	62	1	217	0	0.6	-0.1	0.6
63116	99	P	SUR	61	1	217	0	0.7	0.1	0.7
63117	99	P	SUR	61	1	423	0	0.7	0.1	0.7
63118	99	P	SUR	61	-3	216	0	0.8	-0.3	0.8
63119	99	P	SUR	58	-1	21	0	1.4	0.3	1.4
63120	99	P	SUR	54	2	213	0	0.6	0.4	0.7
63546	99	P	SUR	81	6	217	14	3.0	-0.4	3.0
63640	99	P	SUR	73	38	202	0	2.5	-0.4	2.6
63644	99	P	SUR	71	36	217	0	1.4	-0.3	1.4
64041	99	P	SUR	61	-3	217	0	0.5	-0.2	0.5
64045	99	P	SUR	59	-12	232	0	0.5	-0.2	0.6
64046	99	P	SUR	61	-4	219	0	0.9	0.4	1.0
64049	99	P	SUR	57	1	217	0	0.6	-0.4	0.7
64516	99	P	SUR	76	12	105	0	4.1	-0.5	4.1
64517	99	P	SUR	59	-24	213	0	0.5	0.2	0.6
64518	99	P	SUR	59	-21	201	0	0.4	-0.1	0.4
64520	99	P	SUR	71	-5	217	0	2.5	-0.6	2.6
64521	99	P	SUR	74	0	217	1	1.3	-0.3	1.3
64522	99	P	SUR	64	-10	205	0	0.5	-0.1	0.5
64523	99	P	SUR	63	-18	217	0	0.7	-0.1	0.7
64524	99	P	SUR	63	-13	217	0	0.5	-0.2	0.5
64525	99	P	SUR	69	-7	217	0	1.8	-0.1	1.8
64526	99	P	SUR	60	-33	205	0	0.6	0.1	0.6
64527	99	P	SUR	60	-30	192	0	0.5	0.4	0.7
64532	99	P	SUR	79	-2	217	0	0.6	-0.5	0.8
64533	99	P	SUR	83	-12	217	0	0.7	0.3	0.8
64534	99	P	SUR	80	-7	217	0	0.6	0.0	0.6
64535	99	P	SUR	85	-23	217	0	1.5	0.7	1.6
64607	99	P	SUR	75	15	217	6	3.3	-1.1	3.5
64613	99	P	SUR	71	14	217	0	0.5	-0.2	0.5

DRIFTER MONITORING STATISTICS (EUCOS)
(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS
64614	99	P	SUR	57	-47	217	0	0.5	-0.4	0.6
64615	99	P	SUR	73	18	217	0	0.5	0.4	0.6
64622	99	P	SUR	66	-4	217	0	0.6	0.0	0.6
64623	99	P	SUR	75	18	217	0	0.7	0.1	0.7
64665	99	P	SUR	72	2	217	0	1.2	0.1	1.3
64666	99	P	SUR	71	0	217	0	0.9	0.0	0.9
64667	99	P	SUR	63	-29	176	2	2.8	-0.5	2.8
64668	99	P	SUR	74	11	182	7	4.0	-0.1	4.0
64669	99	P	SUR	65	-23	217	0	0.9	0.0	0.9
64691	99	P	SUR	59	-59	217	0	0.6	0.1	0.6
64692	99	P	SUR	66	2	217	0	0.5	0.2	0.5
65595	99	P	SUR	62	-59	217	0	1.5	-0.3	1.5
65596	99	P	SUR	54	-51	217	0	0.7	0.2	0.8
65597	99	P	SUR	60	-40	217	0	0.8	-0.3	0.9
65598	99	P	SUR	48	-36	197	0	2.3	0.1	2.3

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

DRIFTER MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : WIND SPEED (M/S)
 AREA : 10N - 90N, 70W - 40E
 PERIOD : DEC 2014
 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
1234	99	SPEED	SUR	38	-23	1	0	0	0.0	0.8	0.8
13001	99	SPEED	SUR	11	-23	125	0	0	1.4	1.1	1.8
13002	99	SPEED	SUR	20	-23	139	0	0	1.0	0.3	1.1
13008	99	SPEED	SUR	15	-38	93	0	0	0.7	0.3	0.8
14046	99	SPEED	SUR	13	-60	3	0	0	0.4	-2.9	2.9
2086	99	SPEED	SUR	55	6	1	0	0	0.0	3.3	3.3
41026	99	SPEED	SUR	12	-38	77	0	0	1.0	0.4	1.0
41040	99	SPEED	SUR	15	-53	218	0	0	0.9	0.0	0.9
41041	99	SPEED	SUR	14	-46	216	0	0	0.9	0.0	0.9
41043	99	SPEED	SUR	21	-65	215	0	0	1.3	-0.1	1.3
41044	99	SPEED	SUR	22	-59	217	0	0	1.3	0.2	1.3
41046	99	SPEED	SUR	24	-68	217	0	0	1.1	0.0	1.1
41048	99	SPEED	SUR	32	-70	217	0	0	1.3	-0.3	1.3
41049	99	SPEED	SUR	28	-63	217	0	0	1.0	-0.1	1.0
41051	99	SPEED	SUR	18	-65	428	0	0	1.2	-0.4	1.3
41052	99	SPEED	SUR	18	-65	571	0	0	1.1	-0.3	1.1
41053	99	SPEED	SUR	19	-66	558	0	0	1.4	0.3	1.4
41056	99	SPEED	SUR	18	-66	522	0	0	1.1	0.1	1.1
41139	99	SPEED	SUR	20	-38	92	0	0	1.0	0.1	1.0
42060	99	SPEED	SUR	16	-63	218	0	0	1.2	-0.1	1.2
44005	99	SPEED	SUR	43	-69	228	0	0	1.7	0.4	1.8
44024	99	SPEED	SUR	42	-66	197	0	0	1.6	0.0	1.6
44027	99	SPEED	SUR	44	-67	217	0	0	1.3	0.5	1.4
44032	99	SPEED	SUR	44	-69	216	0	0	1.7	0.3	1.7
44033	99	SPEED	SUR	44	-69	217	0	0	2.2	1.3	2.5
44034	99	SPEED	SUR	44	-68	213	0	0	1.3	0.2	1.3
44037	99	SPEED	SUR	44	-68	140	0	0	1.4	0.1	1.4
44137	99	SPEED	SUR	42	-62	210	0	0	1.5	0.6	1.6
44139	99	SPEED	SUR	44	-57	211	0	0	1.6	0.0	1.6
44141	99	SPEED	SUR	43	-58	205	0	0	1.6	-0.2	1.6
44150	99	SPEED	SUR	43	-64	210	0	0	1.8	0.5	1.9
44251	99	SPEED	SUR	46	-53	208	0	0	1.5	-0.4	1.5
44255	99	SPEED	SUR	47	-57	269	0	0	1.5	1.0	1.8
44258	99	SPEED	SUR	45	-63	208	0	0	1.5	0.0	1.5

DRIFTER MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF

ELEMENT MONITORED : WIND SPEED (M/S)

(CONTINU

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
61001	99	SPEED	SUR	43	8	214	0	0	2.4	-0.2	2.4
61002	99	SPEED	SUR	42	5	217	0	0	2.3	1.0	2.5
62001	99	SPEED	SUR	45	-5	220	0	0	1.3	-0.1	1.3
62023	99	SPEED	SUR	51	-8	217	0	0	1.9	0.1	1.9
62027	99	SPEED	SUR	49	-2	76	0	0	1.3	0.3	1.3
62029	99	SPEED	SUR	49	-12	230	0	0	1.4	0.8	1.6
62030	99	SPEED	SUR	50	-4	112	0	0	1.6	1.0	1.9
62050	99	SPEED	SUR	50	-4	107	0	0	0.9	0.4	1.0
62081	99	SPEED	SUR	51	-13	218	0	0	1.1	0.3	1.1
62086	99	SPEED	SUR	55	6	14	0	0	3.3	1.8	3.7
62091	99	SPEED	SUR	53	-5	216	0	0	1.1	0.1	1.1
62092	99	SPEED	SUR	51	-11	210	0	0	1.1	-0.6	1.3
62093	99	SPEED	SUR	55	-10	217	0	0	1.4	-0.7	1.6
62094	99	SPEED	SUR	52	-7	216	0	0	1.1	0.2	1.1
62102	99	SPEED	SUR	58	2	217	0	0	1.5	-1.0	1.8
62103	99	SPEED	SUR	50	-3	219	0	0	1.7	1.5	2.3
62104	99	SPEED	SUR	57	1	217	0	0	1.4	-0.9	1.6
62105	99	SPEED	SUR	55	-13	230	0	0	1.5	-0.2	1.5
62107	99	SPEED	SUR	50	-6	226	0	0	1.7	0.8	1.9
62111	99	SPEED	SUR	58	0	210	0	0	1.7	-1.1	2.1
62112	99	SPEED	SUR	58	0	217	0	0	2.2	-1.9	2.9
62113	99	SPEED	SUR	58	0	217	0	0	1.4	-0.7	1.6
62114	99	SPEED	SUR	58	0	405	0	0	1.5	-0.3	1.5
62117	99	SPEED	SUR	58	0	217	0	0	1.2	-0.5	1.3
62118	99	SPEED	SUR	58	1	217	0	0	3.3	-2.5	4.1
62119	99	SPEED	SUR	57	2	217	0	0	1.5	0.0	1.5
62120	99	SPEED	SUR	56	2	217	0	0	1.3	0.0	1.3
62122	99	SPEED	SUR	57	2	423	0	0	1.4	-0.8	1.6
62123	99	SPEED	SUR	56	2	423	0	0	1.4	0.2	1.4
62127	99	SPEED	SUR	54	1	172	0	0	1.4	-0.3	1.4
62128	99	SPEED	SUR	59	1	217	0	0	1.6	-0.2	1.6
62129	99	SPEED	SUR	58	0	39	0	0	1.3	-1.6	2.1
62131	99	SPEED	SUR	54	1	197	0	0	2.0	-2.5	3.1
62132	99	SPEED	SUR	56	2	217	0	0	2.6	-2.6	3.7
62133	99	SPEED	SUR	57	1	215	0	0	1.2	-0.9	1.5
62134	99	SPEED	SUR	58	1	217	0	0	1.3	-0.5	1.4
62140	99	SPEED	SUR	57	1	423	0	0	1.5	-1.1	1.9
62143	99	SPEED	SUR	58	2	217	0	0	2.1	-0.9	2.3
62144	99	SPEED	SUR	53	2	217	0	0	1.6	-0.3	1.6
62145	99	SPEED	SUR	53	3	423	0	0	1.9	-0.9	2.1
62146	99	SPEED	SUR	57	2	203	0	0	3.4	-2.6	4.3

DRIFTER MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF

ELEMENT MONITORED : WIND SPEED (M/S)

(CONTINU

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
62148	99	SPEED	SUR	54	2	217	0	0	2.3	-0.8	2.5
62149	99	SPEED	SUR	54	1	147	0	0	1.3	-0.4	1.4
62150	99	SPEED	SUR	54	1	210	0	0	1.8	-1.2	2.1
62152	99	SPEED	SUR	57	2	217	0	0	1.7	-2.1	2.7
62153	99	SPEED	SUR	57	2	423	0	0	2.5	-1.9	3.1
62154	99	SPEED	SUR	56	2	217	0	0	1.2	-0.9	1.5
62155	99	SPEED	SUR	58	1	217	0	0	1.6	0.2	1.7
62163	99	SPEED	SUR	48	-8	218	0	0	1.0	0.4	1.1
62164	99	SPEED	SUR	57	1	217	0	0	1.8	-1.6	2.4
62165	99	SPEED	SUR	54	1	217	0	0	2.5	-1.6	3.0
62170	99	SPEED	SUR	51	2	144	0	0	2.0	1.2	2.3
62298	99	SPEED	SUR	49	-9	218	0	0	1.1	-0.9	1.4
62301	99	SPEED	SUR	52	-5	212	1	0	1.2	0.7	1.4
62304	99	SPEED	SUR	51	2	243	0	0	1.5	1.8	2.4
62305	99	SPEED	SUR	50	0	257	0	1	1.8	1.8	2.5
62442	99	SPEED	SUR	49	-16	219	0	0	1.1	0.1	1.1
63055	99	SPEED	SUR	61	2	217	0	0	1.6	-1.5	2.2
63056	99	SPEED	SUR	60	2	217	0	0	1.5	-0.7	1.7
63057	99	SPEED	SUR	59	2	217	0	0	2.4	-1.2	2.6
63058	99	SPEED	SUR	53	2	217	0	0	1.3	0.0	1.3
63101	99	SPEED	SUR	61	1	217	0	0	1.8	-1.9	2.6
63103	99	SPEED	SUR	61	1	217	0	0	1.6	-1.2	2.0
63104	99	SPEED	SUR	61	2	153	0	0	1.7	-1.2	2.0
63105	99	SPEED	SUR	61	2	217	0	0	1.9	-0.9	2.0
63106	99	SPEED	SUR	61	2	216	0	0	1.8	-0.8	2.0
63108	99	SPEED	SUR	61	2	217	0	0	2.0	-0.5	2.0
63109	99	SPEED	SUR	60	2	217	0	0	1.6	-0.3	1.6
63110	99	SPEED	SUR	60	2	217	0	0	1.6	-1.3	2.0
63112	99	SPEED	SUR	61	1	217	0	0	1.5	-1.3	2.0
63113	99	SPEED	SUR	61	2	217	0	0	1.9	-1.2	2.2
63114	99	SPEED	SUR	61	2	423	0	0	1.9	-0.4	1.9
63115	99	SPEED	SUR	62	1	216	0	0	1.6	-0.9	1.9
63117	99	SPEED	SUR	61	1	423	0	0	1.7	-1.2	2.0
63119	99	SPEED	SUR	58	-1	21	0	0	1.7	1.6	2.3
64041	99	SPEED	SUR	61	-3	217	0	0	1.5	-1.0	1.8
64045	99	SPEED	SUR	59	-12	111	0	0	1.4	0.3	1.4
64046	99	SPEED	SUR	61	-4	219	0	0	1.7	0.8	1.9
66021	99	SPEED	SUR	55	14	217	0	0	1.2	0.8	1.4
66022	99	SPEED	SUR	54	14	208	0	0	1.2	0.4	1.3
66024	99	SPEED	SUR	55	13	216	0	0	1.6	0.5	1.6

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

DRIFTER MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF
 ELEMENT MONITORED : WIND DIRECTION (DEGREES)
 AREA : 10N - 90N, 70W - 40E
 PERIOD : DEC 2014
 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
13001	99	DIRN	SUR	11	-23	112	0	2	18.1	2.7	18.3
13002	99	DIRN	SUR	20	-23	132	0	0	12.3	0.9	12.3
13008	99	DIRN	SUR	15	-38	88	0	0	9.8	-5.7	11.3
14046	99	DIRN	SUR	13	-60	3	0	0	8.3	53.7	54.3
41002	99	DIRN	SUR	32	-75	151	0	3	14.9	0.3	14.9
41004	99	DIRN	SUR	33	-79	168	0	2	18.0	14.5	23.1
41008	99	DIRN	SUR	31	-81	133	0	2	22.3	13.6	26.1
41009	99	DIRN	SUR	29	-80	170	0	1	17.8	5.8	18.7
41010	99	DIRN	SUR	29	-79	185	0	0	10.6	2.3	10.8
41013	99	DIRN	SUR	33	-78	184	0	1	23.4	9.4	25.2
41024	99	DIRN	SUR	34	-79	115	0	0	25.8	-0.7	25.8
41025	99	DIRN	SUR	35	-75	51	0	0	23.5	28.4	36.9
41026	99	DIRN	SUR	12	-38	76	0	0	13.1	5.2	14.1
41029	99	DIRN	SUR	33	-80	146	0	3	24.3	3.0	24.5
41036	99	DIRN	SUR	34	-77	182	0	0	16.7	6.4	17.9
41037	99	DIRN	SUR	34	-77	156	0	0	16.9	-6.7	18.2
41038	99	DIRN	SUR	34	-78	66	0	0	16.7	1.5	16.8
41040	99	DIRN	SUR	15	-53	211	0	0	10.4	-5.7	11.8
41041	99	DIRN	SUR	14	-46	204	0	0	9.1	1.1	9.2
41043	99	DIRN	SUR	21	-65	188	0	1	15.9	1.4	15.9
41044	99	DIRN	SUR	22	-59	188	0	0	15.3	1.5	15.3
41046	99	DIRN	SUR	24	-68	192	0	0	13.3	-1.9	13.5
41047	99	DIRN	SUR	28	-72	169	0	0	14.8	0.5	14.8
41048	99	DIRN	SUR	32	-70	181	0	0	16.3	7.4	17.9
41049	99	DIRN	SUR	28	-63	142	0	0	14.8	3.8	15.3
41051	99	DIRN	SUR	18	-65	389	0	0	13.2	-16.9	21.4
41052	99	DIRN	SUR	18	-65	511	0	0	10.8	0.1	10.8
41053	99	DIRN	SUR	19	-66	438	0	0	14.5	-5.3	15.4
41056	99	DIRN	SUR	18	-66	455	0	0	15.4	-6.5	16.7
41139	99	DIRN	SUR	20	-38	80	0	0	13.9	3.8	14.4
42036	99	DIRN	SUR	29	-85	168	0	1	17.5	4.1	17.9
42056	99	DIRN	SUR	20	-85	212	0	0	12.2	3.9	12.8

DRIFTER MONITORING STATISTICS (EUCOS)

MONITORING CENTRE : ECMWF

ELEMENT MONITORED : WIND DIRECTION (DEGREES)

(CONTINUED)

WMO IDENT	OBS TIME	ELM	LEVEL	MEAN LAT	MEAN LONG	NUM OBS	NUM GROSS	% GROSS	SD	BIAS	RMS
42057	99	DIRN	SUR	17	-82	217	0	0	10.7	-1.2	10.7
42058	99	DIRN	SUR	15	-75	208	0	0	10.3	-0.7	10.3
42060	99	DIRN	SUR	16	-63	183	0	1	13.4	-4.0	13.9
42089	99	DIRN	SUR	20	-80	657	0	0	10.7	-9.3	14.2
44005	99	DIRN	SUR	43	-69	213	0	2	13.1	5.2	14.1
44007	99	DIRN	SUR	44	-70	195	0	4	26.6	3.6	26.8
44013	99	DIRN	SUR	42	-71	199	0	0	16.7	0.7	16.7
44014	99	DIRN	SUR	37	-75	173	0	0	16.3	2.6	16.5
44020	99	DIRN	SUR	41	-70	211	0	0	14.8	10.5	18.1
44022	99	DIRN	SUR	41	-74	62	0	0	13.6	1.9	13.7
44024	99	DIRN	SUR	42	-66	173	0	0	13.4	0.2	13.4
44025	99	DIRN	SUR	40	-73	4	0	0	2.0	-6.9	7.2
44027	99	DIRN	SUR	44	-67	203	0	0	16.9	5.2	17.7
44029	99	DIRN	SUR	43	-71	283	0	1	15.2	9.8	18.0
44030	99	DIRN	SUR	43	-70	190	0	2	20.5	6.4	21.5
44032	99	DIRN	SUR	44	-69	198	0	1	23.5	2.5	23.6
44033	99	DIRN	SUR	44	-69	193	0	3	25.9	6.1	26.6
44034	99	DIRN	SUR	44	-68	204	0	0	19.5	9.8	21.8
44037	99	DIRN	SUR	44	-68	137	0	0	13.8	5.3	14.8
44039	99	DIRN	SUR	41	-73	249	0	0	17.7	4.5	18.3
44040	99	DIRN	SUR	41	-74	132	0	0	15.5	-2.3	15.6
44042	99	DIRN	SUR	38	-76	227	0	0	17.9	-14.4	23.0
44043	99	DIRN	SUR	39	-76	153	0	1	16.6	-17.7	24.3
44057	99	DIRN	SUR	40	-76	78	0	0	14.1	-16.3	21.6
44058	99	DIRN	SUR	38	-76	228	0	0	18.2	-5.6	19.1
44059	99	DIRN	SUR	37	-76	53	0	0	13.8	-15.8	21.0
44060	99	DIRN	SUR	41	-72	56	0	0	11.9	2.4	12.1
44062	99	DIRN	SUR	39	-76	30	0	67	16.1	-9.6	18.8
44063	99	DIRN	SUR	39	-76	238	0	0	21.2	-11.2	24.0
44064	99	DIRN	SUR	37	-76	262	0	0	24.1	0.8	24.1
44065	99	DIRN	SUR	40	-74	207	0	0	18.3	8.8	20.3
44066	99	DIRN	SUR	40	-73	208	0	1	13.1	3.4	13.5
44068	99	DIRN	SUR	37	-77	50	0	0	9.0	-9.1	12.8
44137	99	DIRN	SUR	42	-62	206	0	0	13.5	9.3	16.5
44139	99	DIRN	SUR	44	-57	196	0	0	12.7	14.2	19.0
44141	99	DIRN	SUR	43	-58	192	0	1	16.8	10.7	20.0
44150	99	DIRN	SUR	43	-64	196	0	0	15.0	2.1	15.2
44251	99	DIRN	SUR	46	-53	192	0	0	14.2	12.4	18.9
44255	99	DIRN	SUR	47	-57	237	0	0	16.4	10.4	19.4
44258	99	DIRN	SUR	45	-63	174	0	0	13.9	6.9	15.5
45003	99	DIRN	SUR	45	-83	91	0	0	14.1	3.5	14.5

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
45008	99	DIRN	SUR	44	-82	118	0	0	10.7	5.8	12.2
62001	99	DIRN	SUR	45	-5	181	0	1	14.0	8.3	16.3
62023	99	DIRN	SUR	51	-8	206	0	0	8.7	-6.2	10.7
62027	99	DIRN	SUR	49	-2	62	0	2	24.8	-1.3	24.8
62029	99	DIRN	SUR	49	-12	215	0	0	14.7	3.0	15.0
62030	99	DIRN	SUR	50	-4	76	0	0	15.4	-15.9	22.2
62050	99	DIRN	SUR	50	-4	107	0	0	11.5	-0.9	11.5
62081	99	DIRN	SUR	51	-13	214	0	0	10.1	5.3	11.4
62091	99	DIRN	SUR	53	-5	206	0	0	9.7	-0.8	9.7
62092	99	DIRN	SUR	51	-11	201	0	0	11.6	-3.3	12.0
62093	99	DIRN	SUR	55	-10	217	0	0	10.3	-6.0	11.9
62094	99	DIRN	SUR	52	-7	200	0	0	7.8	-4.3	9.0
62103	99	DIRN	SUR	50	-3	212	0	0	14.1	1.8	14.2
62105	99	DIRN	SUR	55	-13	225	0	0	11.6	1.0	11.6
62107	99	DIRN	SUR	50	-6	222	0	0	14.2	-1.7	14.3
62111	99	DIRN	SUR	58	0	195	0	0	11.0	-14.8	18.5
62112	99	DIRN	SUR	58	0	199	0	0	12.3	1.1	12.4
62114	99	DIRN	SUR	58	0	380	0	0	11.7	12.7	17.3
62117	99	DIRN	SUR	58	0	203	0	0	9.4	6.7	11.6
62163	99	DIRN	SUR	48	-8	197	0	0	10.0	2.0	10.2
62298	99	DIRN	SUR	49	-9	213	0	0	12.4	1.9	12.5
62301	99	DIRN	SUR	52	-5	199	1	0	11.9	3.8	12.5
62305	99	DIRN	SUR	50	0	247	0	0	12.1	2.6	12.4
62442	99	DIRN	SUR	49	-16	214	0	0	9.4	3.6	10.1
63119	99	DIRN	SUR	58	-1	19	0	0	11.5	-3.2	11.9
64041	99	DIRN	SUR	61	-3	206	0	0	11.9	16.1	20.1
64045	99	DIRN	SUR	59	-12	111	0	0	10.5	9.1	13.9
64046	99	DIRN	SUR	61	-4	217	0	0	14.1	-1.5	14.2

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.