

ASAP Data Monitoring at ECMWF

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Outline

- **Data reception at ECMWF**
- **Troubleshooting**
- **ASAP Data Monitoring at ECMWF**
- **Conclusions**

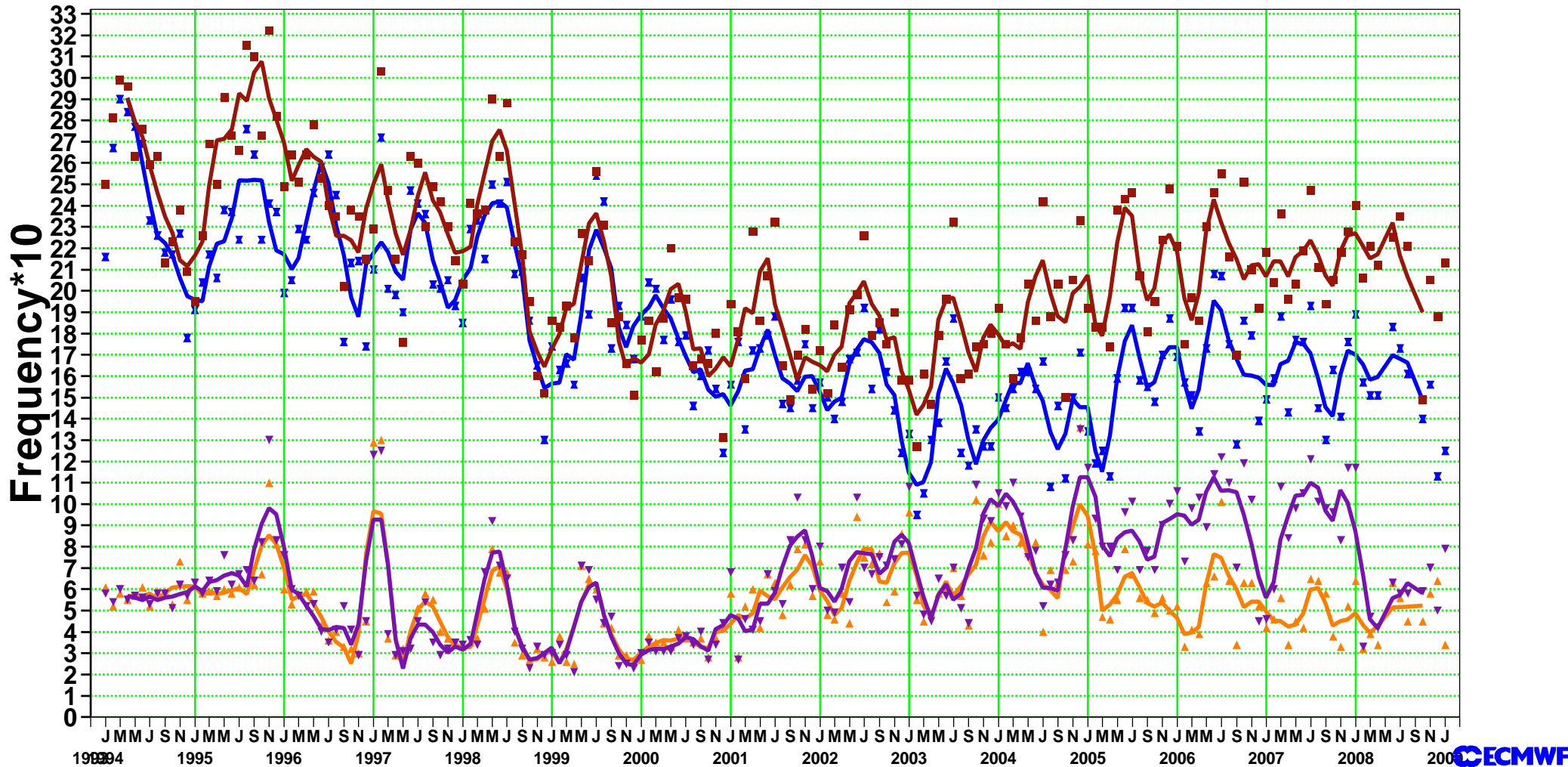
Outline

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- ASAP Data Monitoring at ECMWF
- Conclusions

Monthly counts of ASAP received at ECMWF

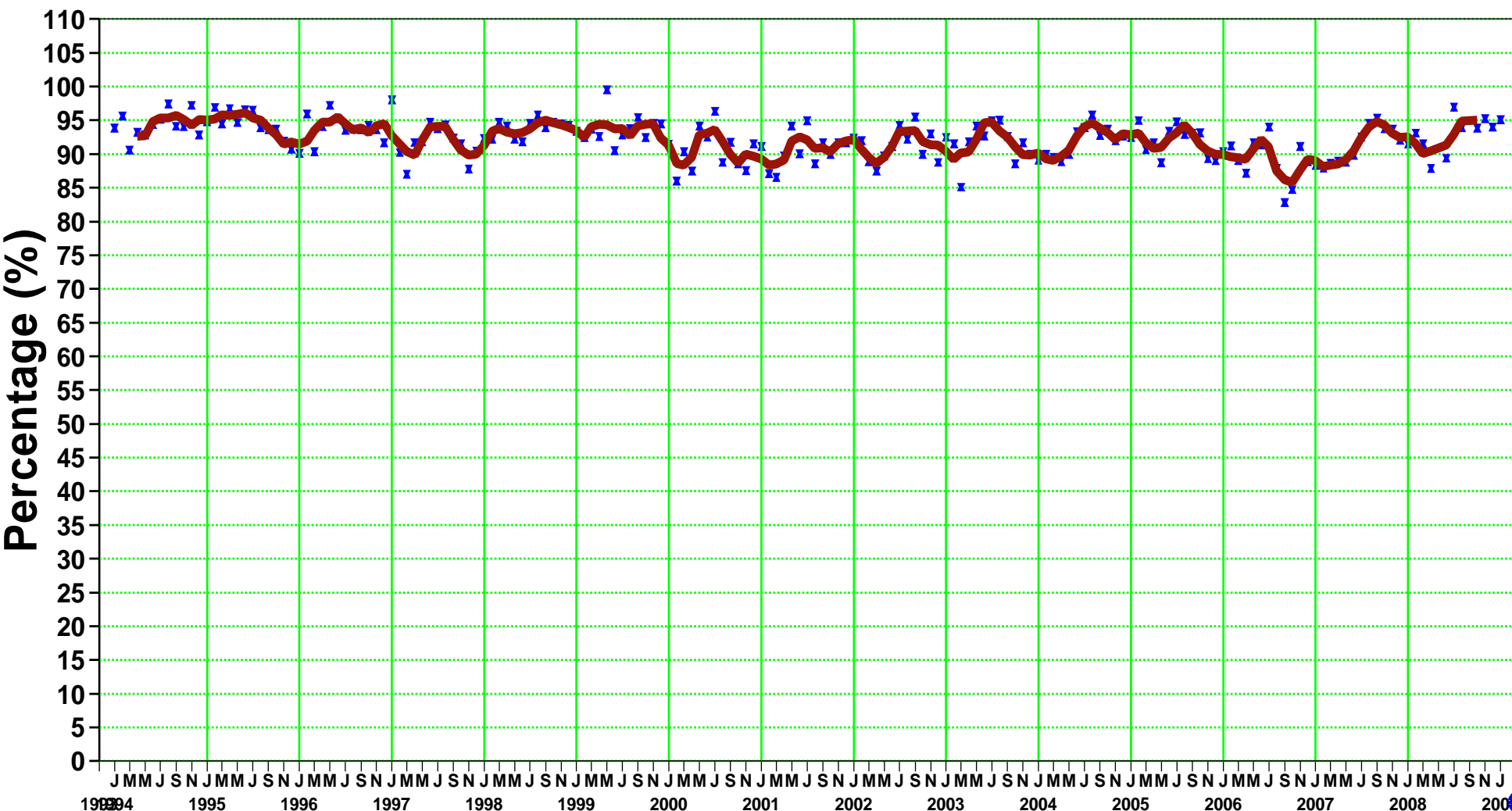
Temperature 500 hPa - GLOBAL

✕ 00 UTC ■ 12 UTC ▲ 06 UTC ▼ 18 UTC



Monthly counts of ASAP received at ECMWF Temperature reports reaching 100 hPa - GLOBAL

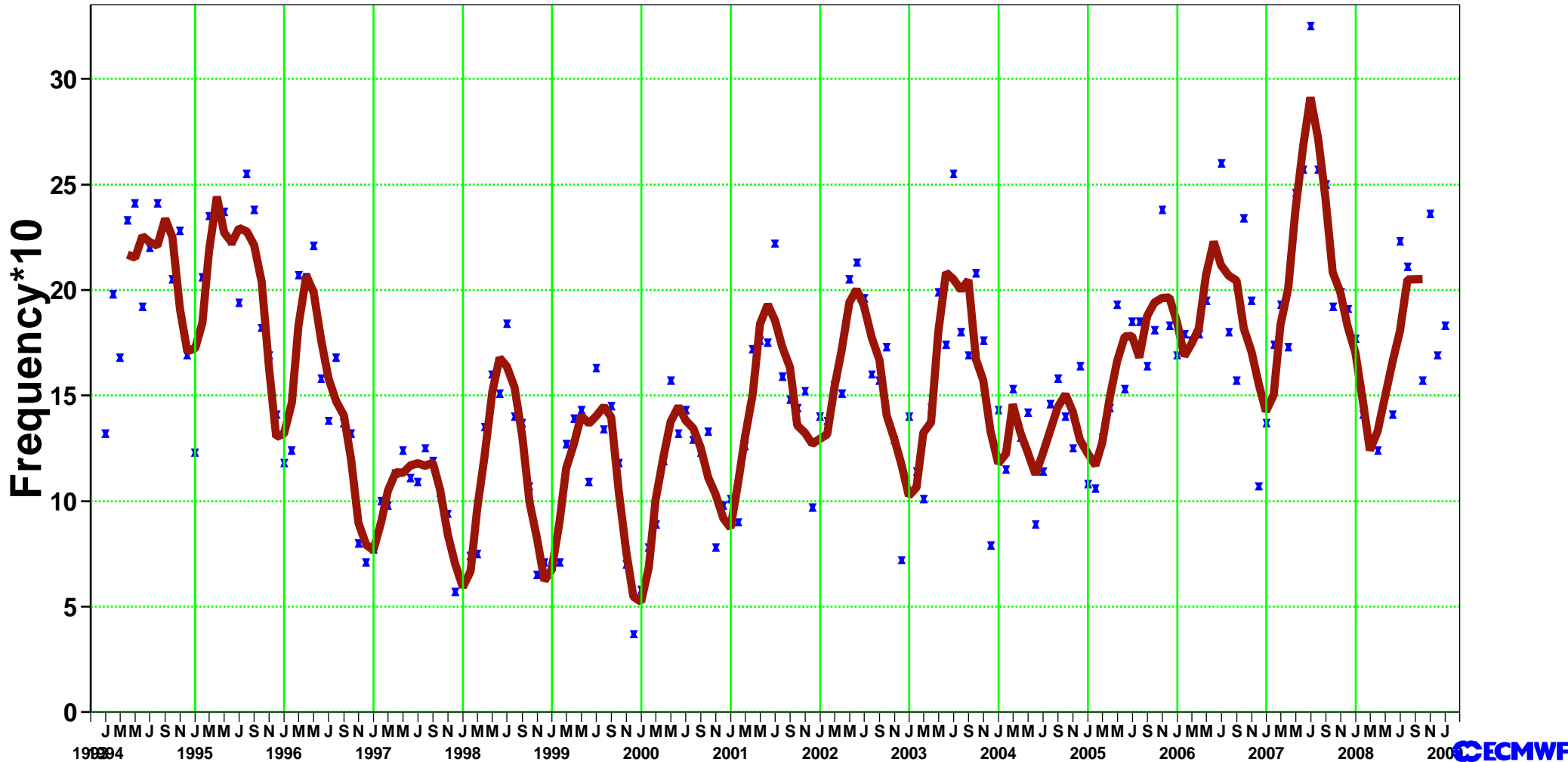
× All cycles — Moving average



Monthly counts of ASAP received at ECMWF

Temperature 20 hPa - GLOBAL

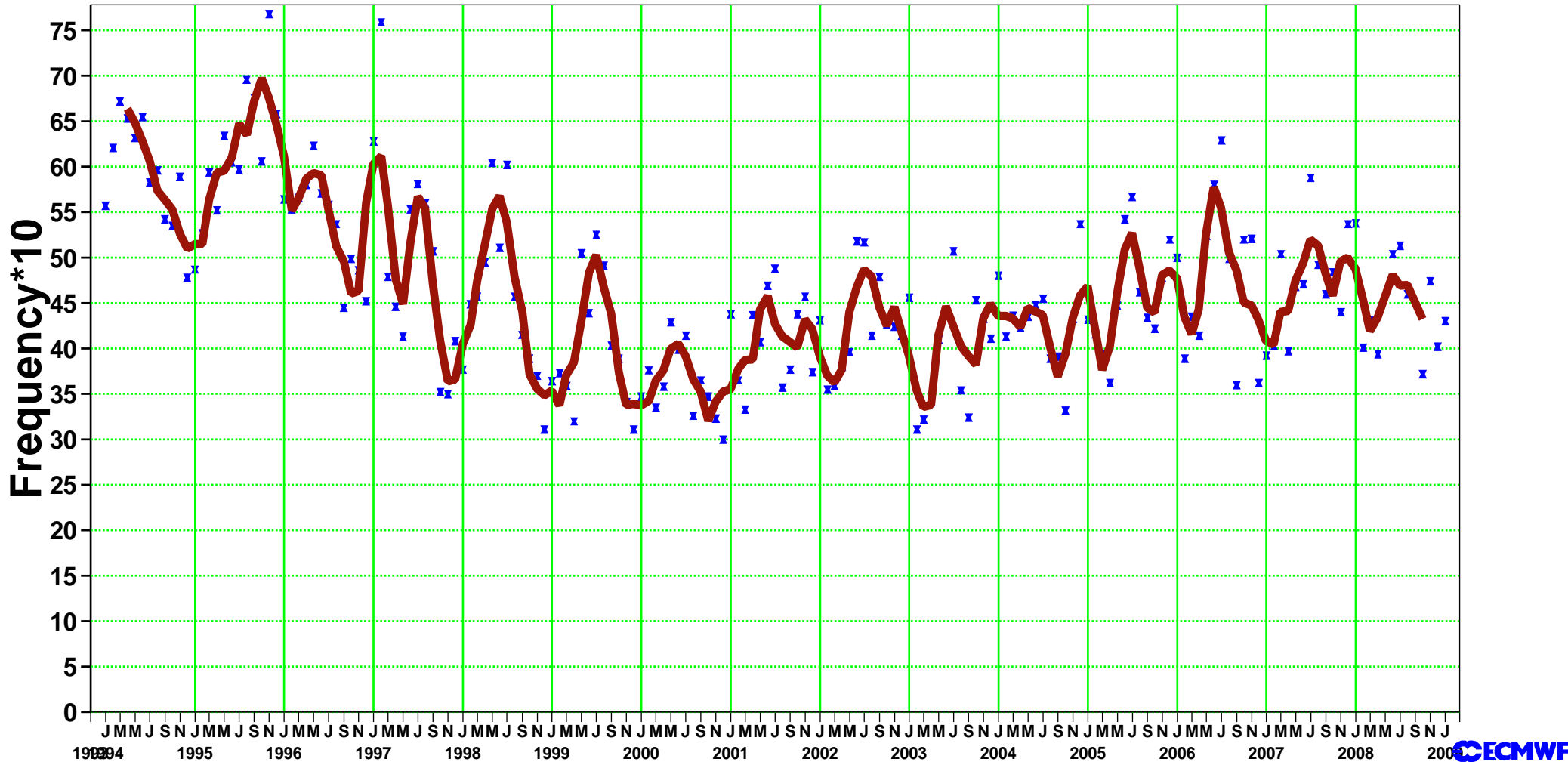
x All cycles — Moving average



Monthly counts of ASAP received at ECMWF

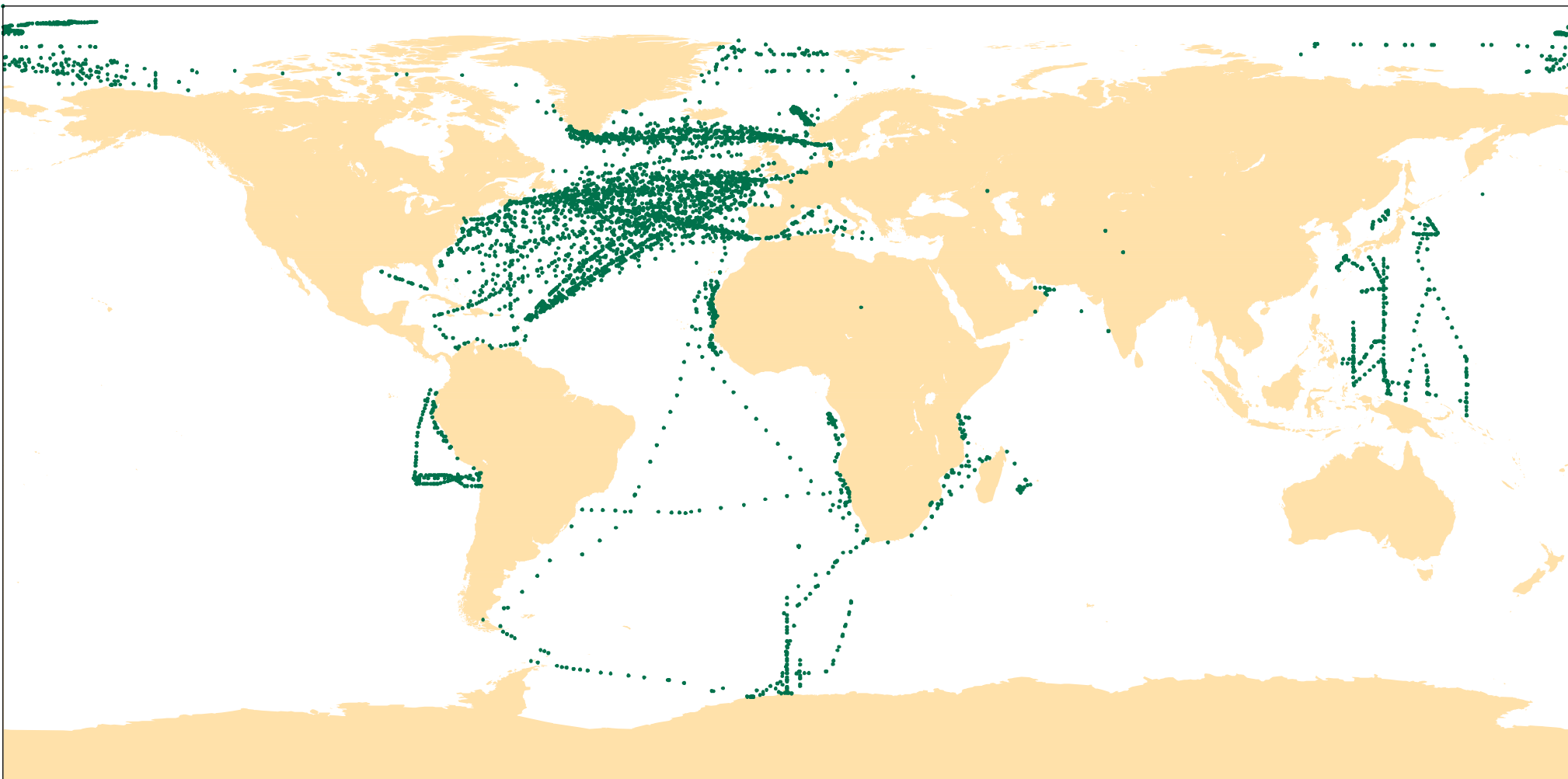
Wind 250 hPa - GLOBAL

x All cycles — Moving average



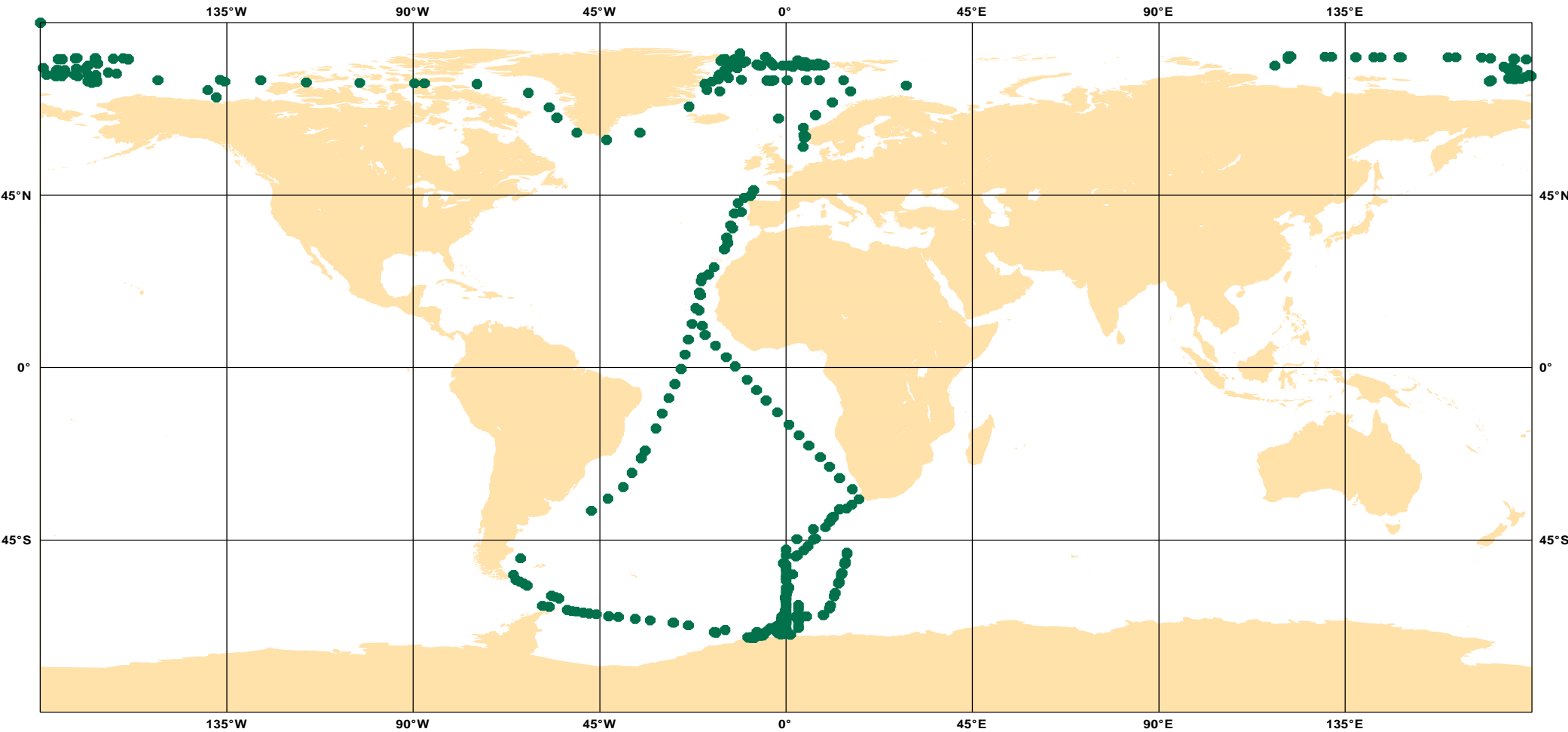
ASAP

1 JAN-31 DEC 2008



ASAP DBLK

1 JAN-31 DEC 2008



OBS: 359 (188/ 187 levels rejected WIND/TEMP ELEMENTS)

Outline

- Data reception at ECMWF
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ASAP wrong positions detected January-December 2008

ID:ASDE3

| Date | Lat | Lon | Speed (*) |
|---------------------|------|-----------|----------------|
| 2008-02-14 23: 0:00 | 43.7 | -20.9 --> | 34.1 Km/hr |
| 2008-02-15 05: 0:00 | 36.2 | -4.0 --> | 277.4 Km/hr ← |
| 2008-02-15 23: 0:00 | 40.3 | -29.4 --> | 33.3 Km/hr |
| 2008-02-16 11: 0:00 | 36.2 | -16.3 --> | 102.6 Km/hr ← |
| 2008-07-25 11: 0:00 | 46.0 | -48.0 --> | 27.6 Km/hr |
| 2008-07-25 17: 0:00 | 47.1 | 46.0 --> | 1198.2 Km/hr ← |
| 2008-08-13 11: 0:00 | 39.6 | -70.0 --> | 25.3 Km/hr |
| 2008-08-13 23: 0:00 | 37.8 | 73.1 --> | 1035.0 Km/hr ← |
| 2008-08-23 23: 0:00 | 30.5 | -79.5 --> | 1.8 Km/hr |
| 2008-08-24 11: 0:00 | 32.8 | 77.2 --> | 1236.2 Km/hr ← |

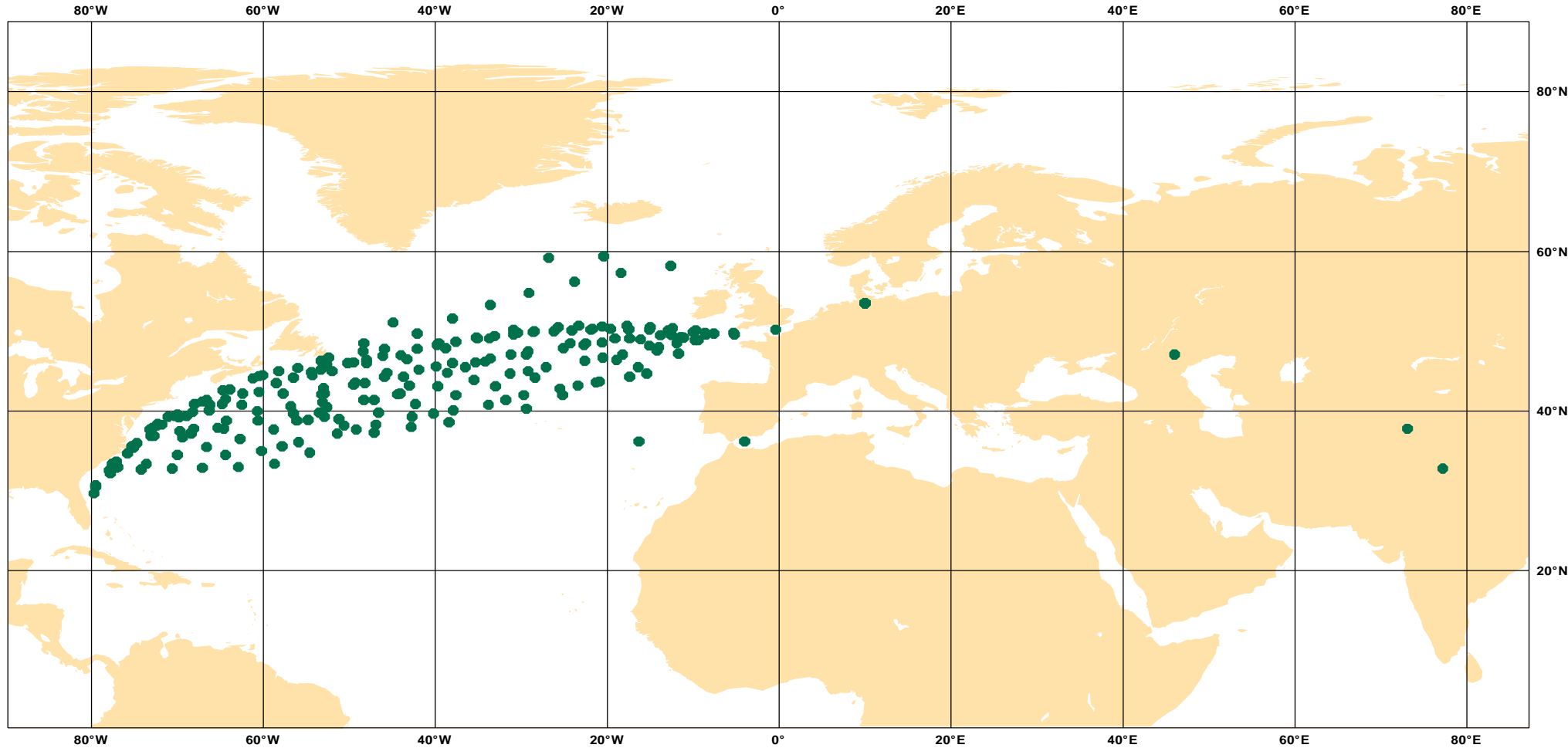
ID:ASDK2

| Date | Lat | Lon | Speed (*) |
|---------------------|------|-----------|---------------|
| 2008-04-01 11: 0:00 | 61.0 | -48.7 --> | 8.7 Km/hr |
| 2008-04-01 17: 0:00 | 58.4 | -30.8 --> | 174.2 Km/hr ← |
| 2008-04-05 11: 0:00 | 58.4 | -30.8 --> | 13.3 Km/hr |
| 2008-04-05 23: 0:00 | 60.4 | -18.2 --> | 62.3 Km/hr ← |
| 2008-04-06 11: 0:00 | 58.4 | -30.8 --> | 62.3 Km/hr |
| 2008-04-06 23: 0:00 | 59.9 | -6.8 --> | 114.9 Km/hr ← |
| 2008-06-15 17: 0:00 | 59.6 | -3.1 --> | 27.6 Km/hr |
| 2008-06-15 23: 0:00 | 58.4 | -30.8 --> | 265.3 Km/hr ← |
| 2008-08-26 05: 0:00 | 60.1 | -45.3 --> | 12.0 Km/hr |
| 2008-08-26 11: 0:00 | 57.0 | 10.1 --> | 538.8 Km/hr ← |
| 2008-09-01 17: 0:00 | 63.7 | -51.9 --> | 7.6 Km/hr |
| 2008-09-02 11: 0:00 | 57.0 | 10.1 --> | 193.9 Km/hr ← |
| 2008-09-02 17: 0:00 | 60.2 | -45.8 --> | 543.0 Km/hr |
| 2008-09-03 11: 0:00 | 57.0 | 10.1 --> | 181.0 Km/hr ← |
| 2008-09-03 17: 0:00 | 60.3 | -38.0 --> | 467.8 Km/hr |
| 2008-09-03 23: 0:00 | 57.0 | 10.1 --> | 467.8 Km/hr ← |
| 2008-09-25 11: 0:00 | 58.9 | -25.1 --> | 27.8 Km/hr |
| 2008-09-25 23: 0:00 | 57.0 | 10.1 --> | 174.0 Km/hr ← |
| 2008-11-05 11: 0:00 | 61.7 | -49.7 --> | 2.0 Km/hr |
| 2008-11-06 05: 0:00 | 57.0 | 10.1 --> | 190.5 Km/hr ← |
| 2008-11-08 23: 0:00 | 59.5 | -12.7 --> | 24.5 Km/hr |
| 2008-11-09 11: 0:00 | 57.0 | 10.1 --> | 113.6 Km/hr ← |
| 2008-11-25 23: 0:00 | 60.5 | -48.1 --> | 0.3 Km/hr |
| 2008-11-26 11: 0:00 | 57.0 | 10.1 --> | 281.6 Km/hr ← |
| 2008-11-30 05: 0:00 | 59.3 | -1.6 --> | 27.5 Km/hr |
| 2008-11-30 11: 0:00 | 57.0 | 10.1 --> | 122.1 Km/hr ← |
| 2008-12-07 11: 0:00 | 61.3 | -27.5 --> | 19.2 Km/hr |
| 2008-12-07 23: 0:00 | 57.0 | 10.1 --> | 183.1 Km/hr ← |
| 2008-12-08 11: 0:00 | 57.0 | 10.1 --> | 0.0 Km/hr ← |
| 2008-12-09 11: 0:00 | 59.9 | -44.7 --> | 27.8 Km/hr |
| 2008-12-09 17: 0:00 | 57.0 | 10.1 --> | 534.1 Km/hr ← |



ASAP ASDE3

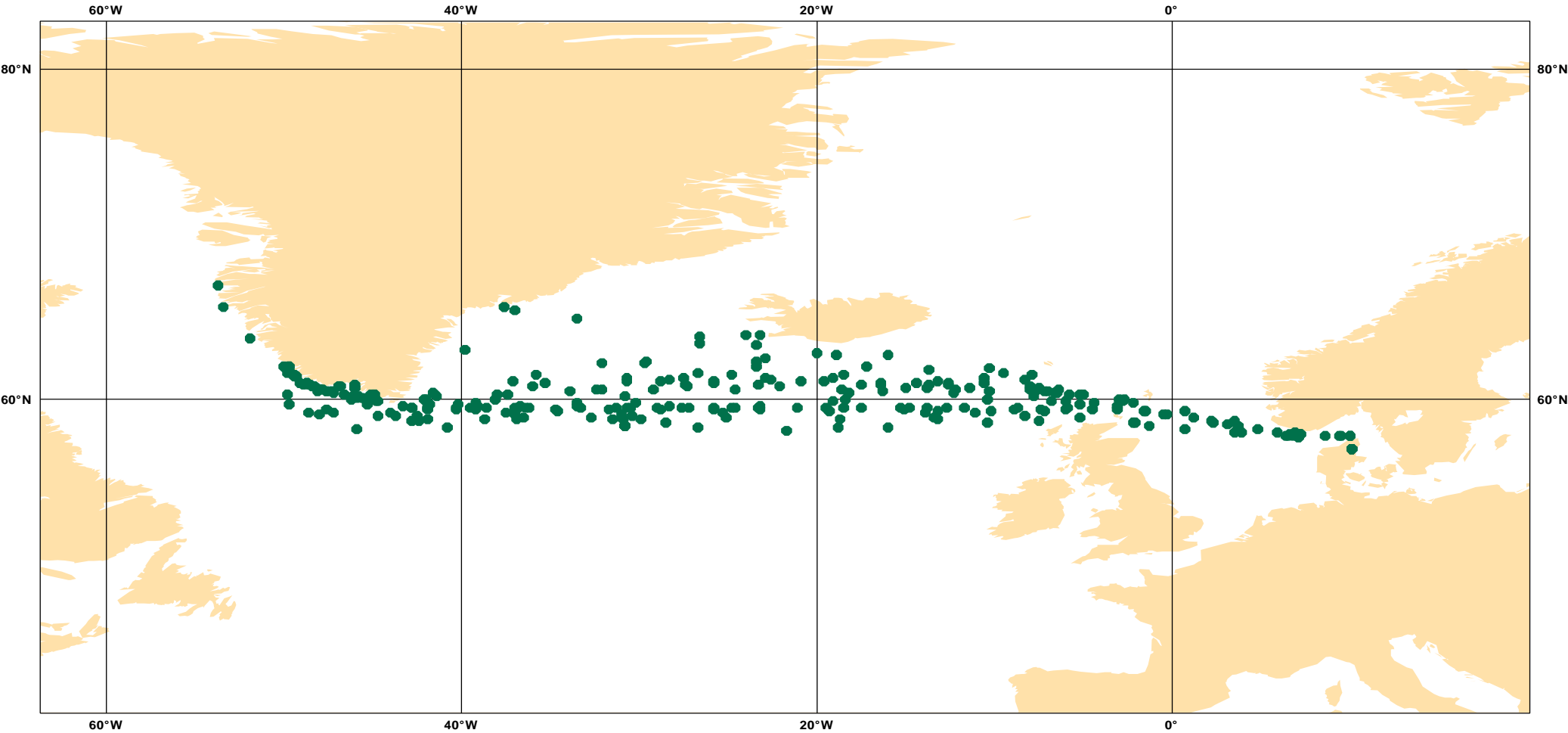
1 JAN-31 DEC 2008



OBS: 248 (56/ 75 levels rejected WIND/TEMP ELEMENTS)

ASAP ASDK2

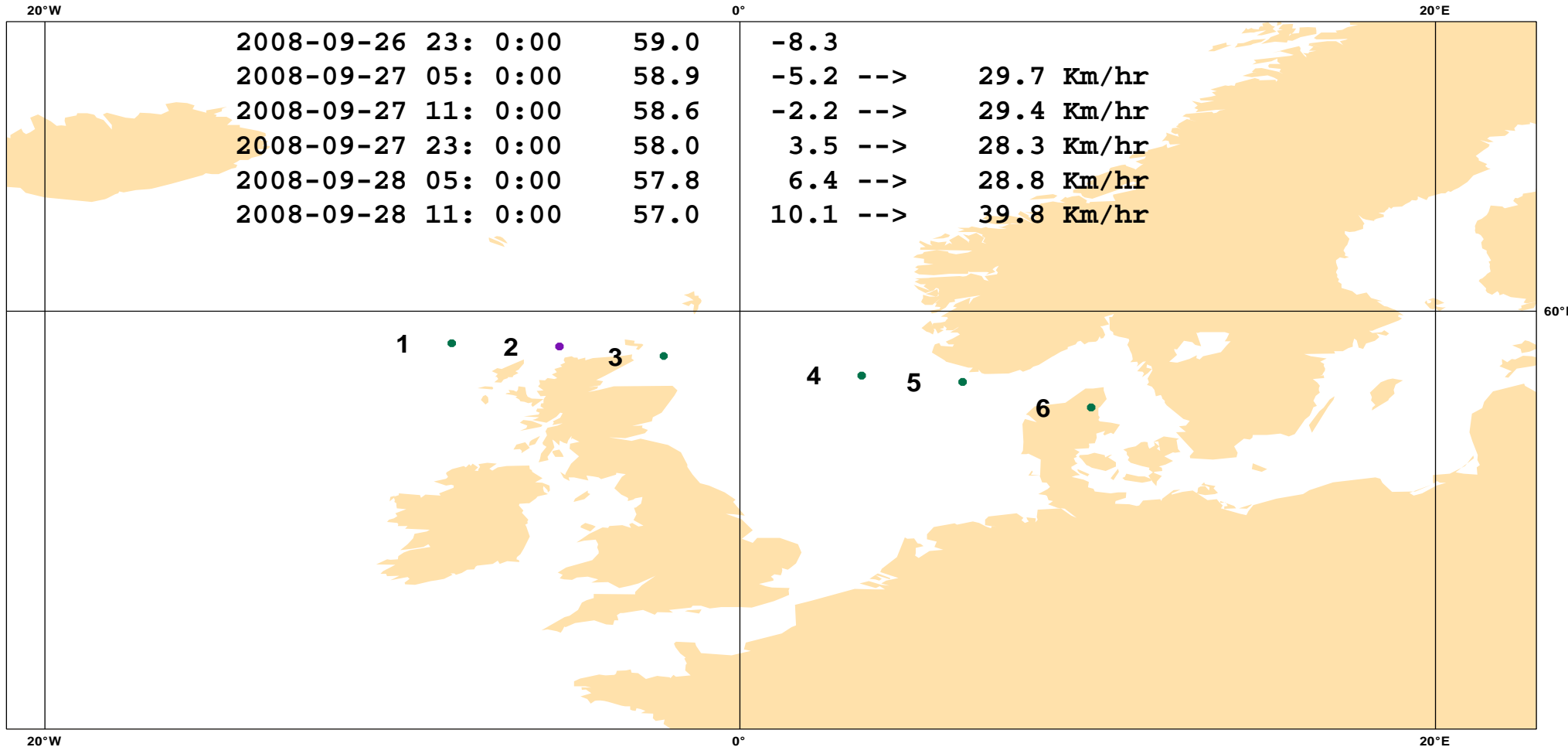
1 JAN-31 DEC 2008



OBS: 324 (467/ 438 levels rejected WIND/TEMP ELEMENTS)

ASAP ASDK2

26-28 SEP 2008

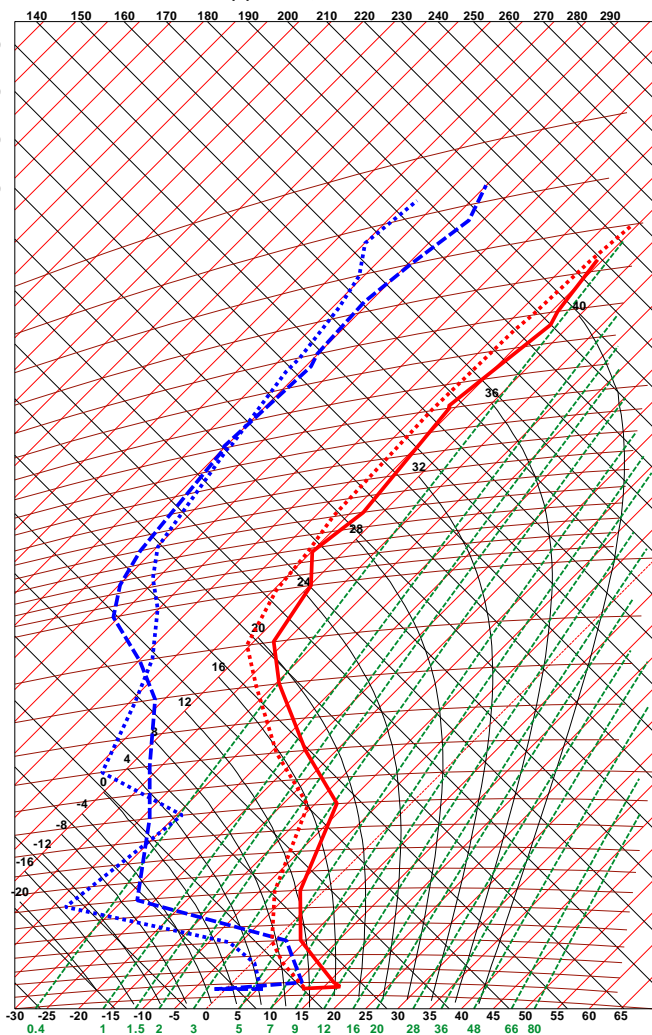


OBS: 6 (3/ 14 levels rejected WIND/TEMP ELEMENTS)

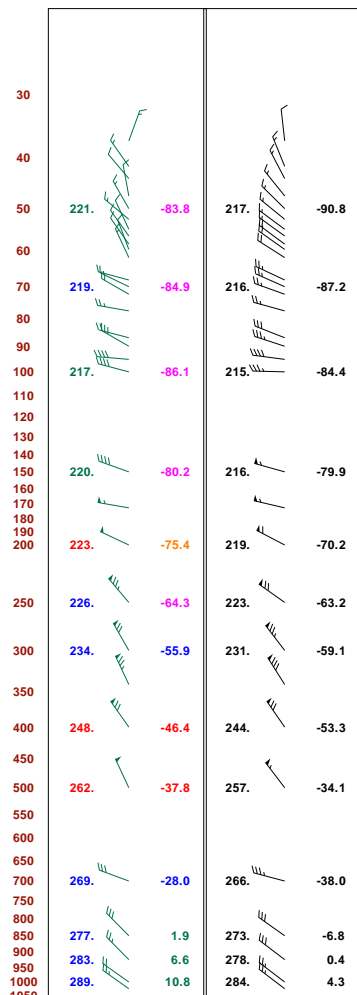
OBSERVED
 CAPEmax= 120.0 J/Kg at level 1000.0 hPa
 DCAPEmax=1189.4 J/Kg at level 100.0 hPa
 LIFTED INDEX= 15
 SHOWALTER= 17
 PWCobs= 66.7 Kg/m2

FG 4DVAR
 CAPEmax= 0.0 J/Kg at level 925.0 hPa
 DCAPEmax=2552.5 J/Kg at level 100.0 hPa
 LIFTED INDEX= 16
 SHOWALTER= 13
 PWCmod= 12.9 Kg/m2

TEMP ASDK2 (-) 58.0N, 3.5E 27 SEP 2008 23 UTC



OBSERVED FG 4DVAR



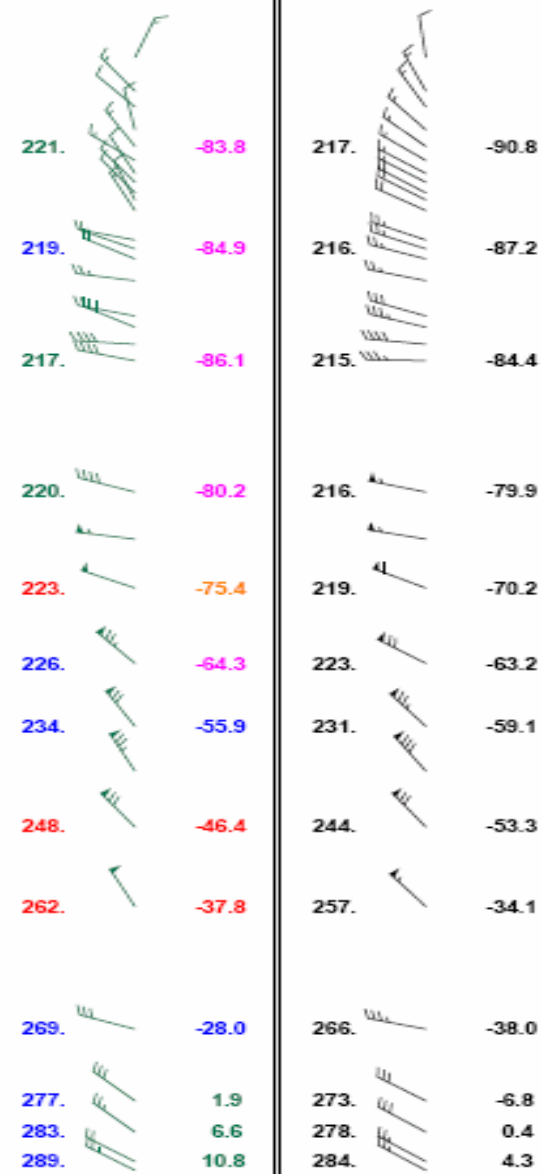
- Temperature & Humidity profiles rejected below 100 hPa except humidity below 850 hPa

- Wind accepted

30
40
50
60
70
80
90
100
110
120
130
140
150
160
170
180
190
200
250
300
350
400
450
500
550
600
650
700
750
800
850
900
950
1000
1050

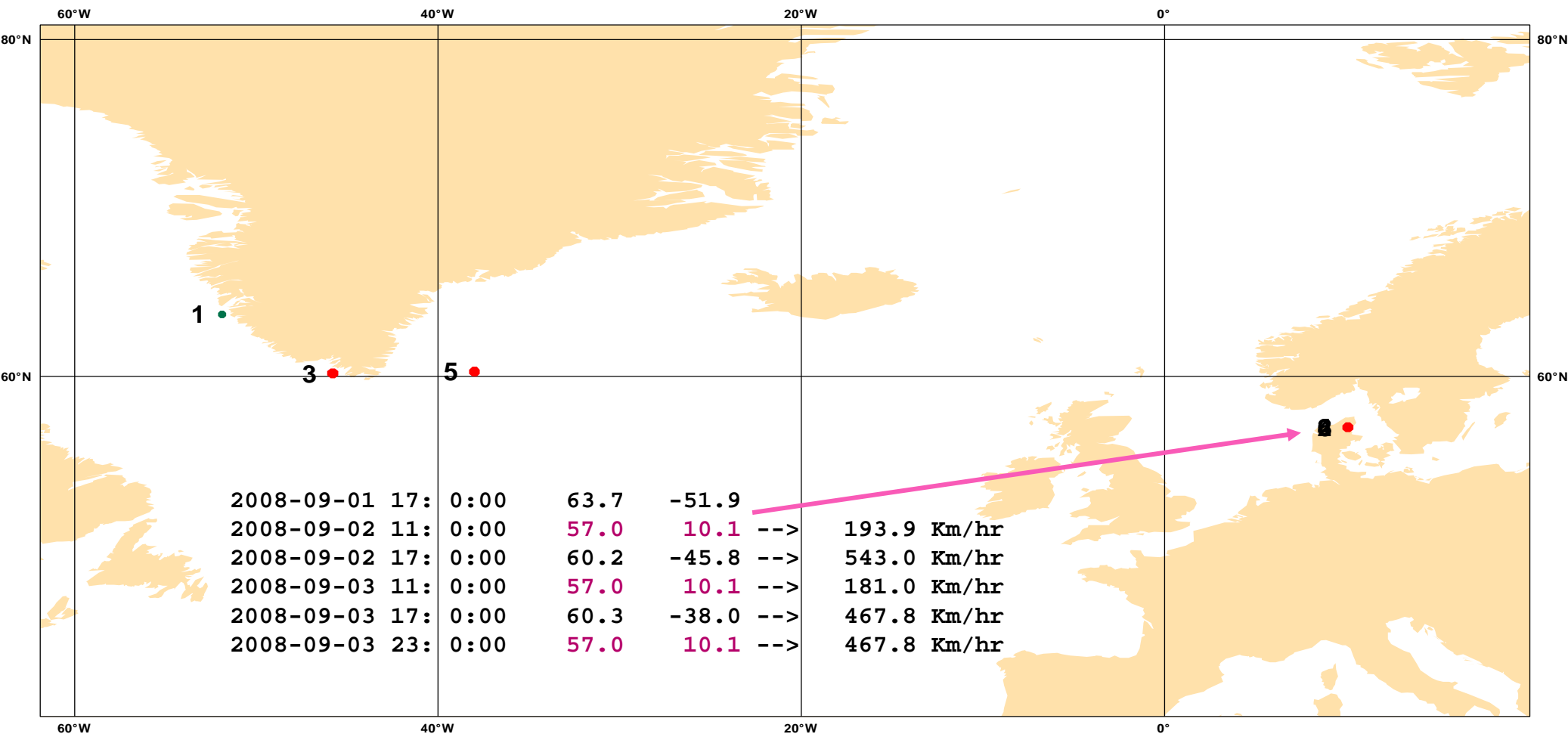
OBSERVED

FG 4DVAR



ASAP ASDK2

1- 4 SEP 2008

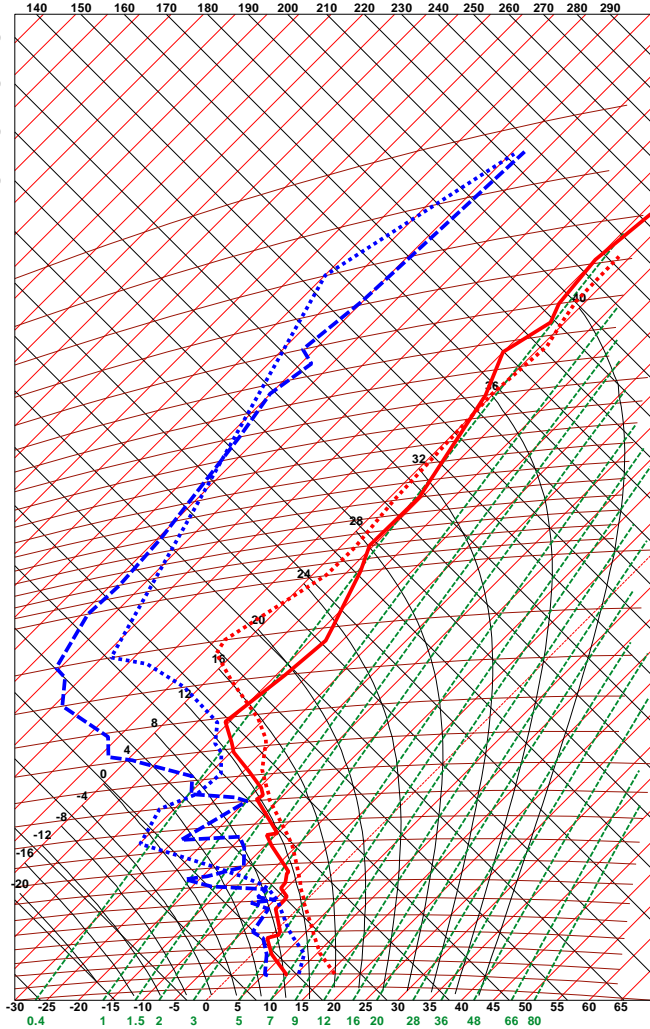


OBS: 6 (96/ 49 levels rejected WIND/TEMP ELEMENTS)

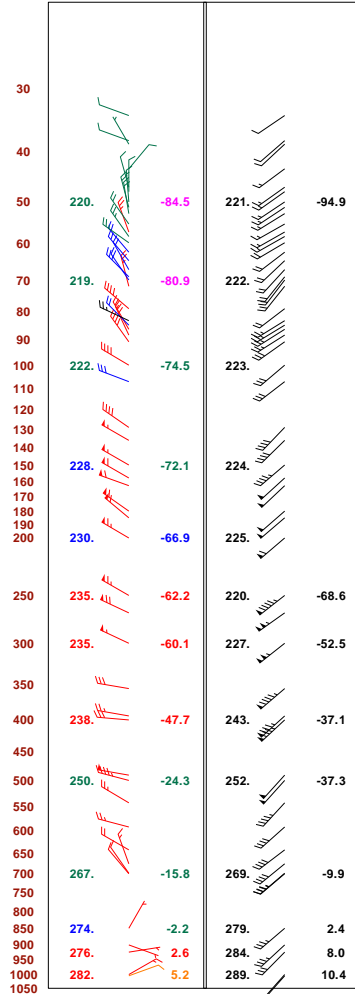
OBSERVED
 CAPEmax= 5.0 J/Kg at level 1000.0 hPa
 DCAPEmax=1590.9 J/Kg at level 100.0 hPa
 LIFTED INDEX= 8
 SHOWALTER= 4
 PWCobs= 17.1 Kg/m2

FG 4DVAR
 CAPEmax= 65.1 J/Kg at level 1000.0 hPa
 DCAPEmax= 636.3 J/Kg at level 574.0 hPa
 LIFTED INDEX= 0
 SHOWALTER= 2
 PWCmod= 22.0 Kg/m2

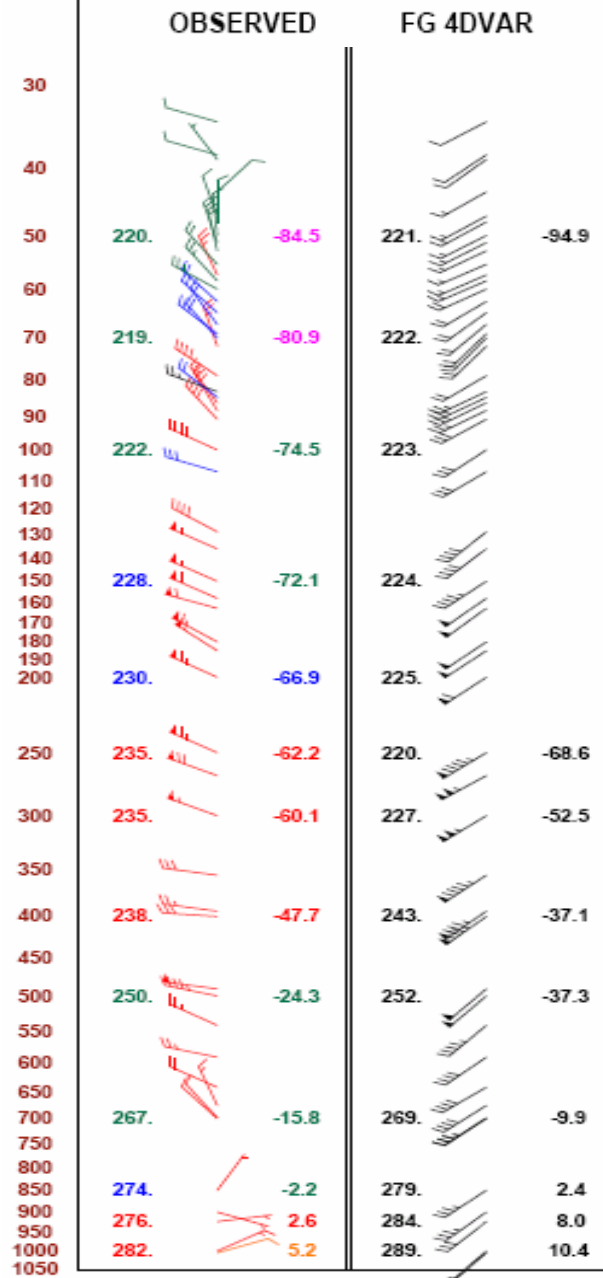
TEMP ASDK2 (80) 57.0N, 10.1E 3 SEP 2008 11 UTC



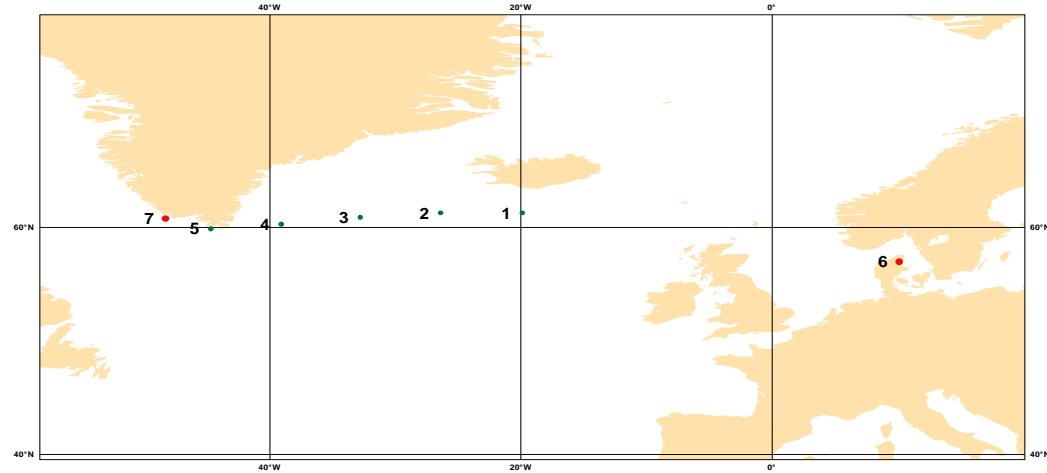
OBSERVED FG 4DVAR



A few temperature, humidity and wind levels still accepted by the 4DVAR QC



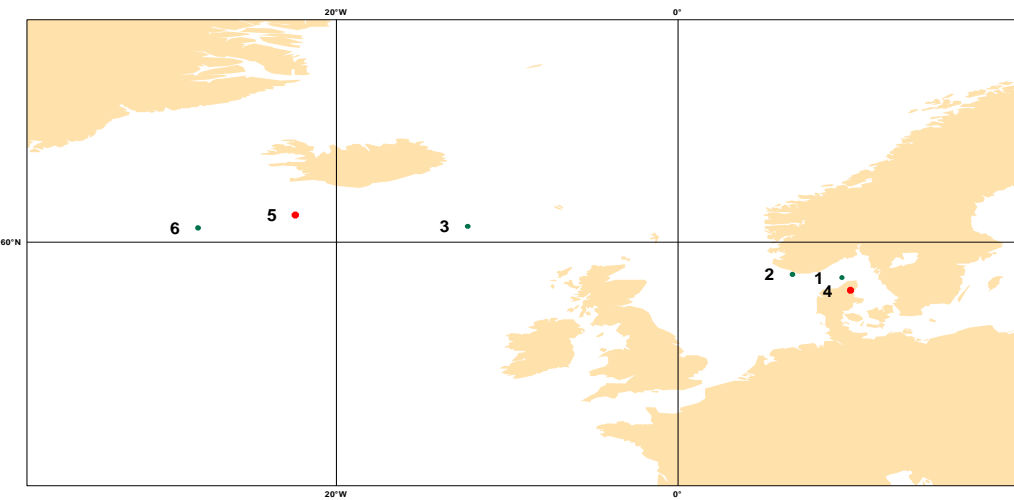
ASAP ASDK2 1- 5 JAN 2009



OBS: 7 (49/ 24 levels rejected WIND/TEMP ELEMENTS)

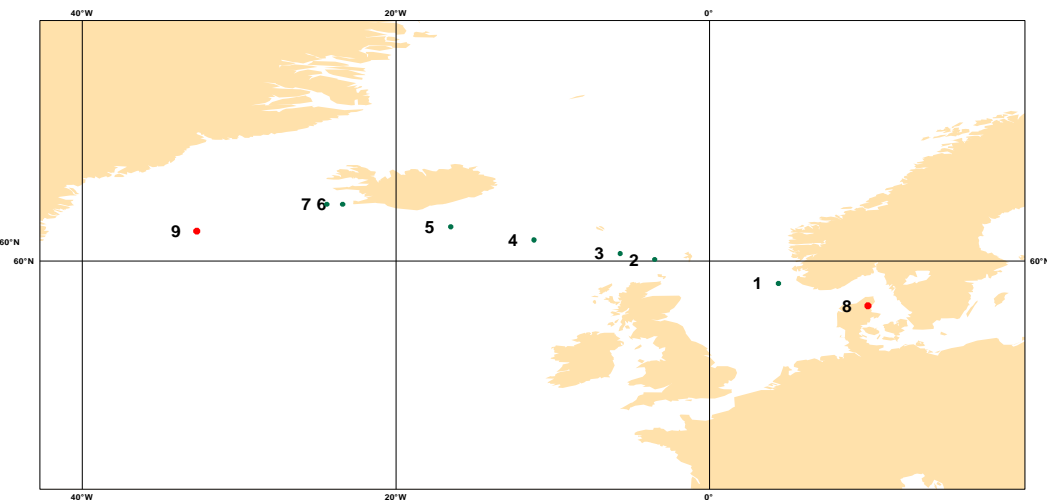
ECMWF

ASAP ASDK2 21-25 JAN 2009



OBS: 6 (0/ 10 levels rejected WIND/TEMP ELEMENTS)

ASAP ASDK2 4- 9 MAR 2009



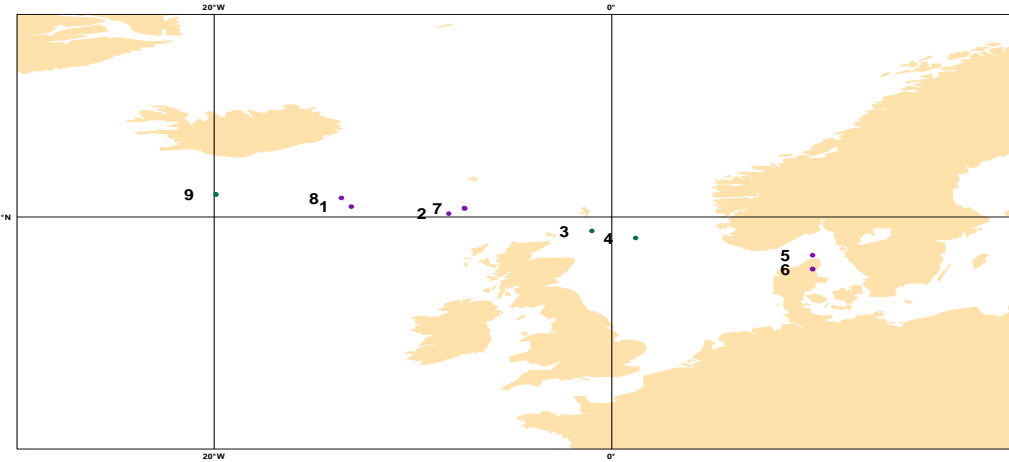
ECMWF OBS: 9 (24/ 8 levels rejected WIND/TEMP ELEMENTS)

ECMWF

ASAP ASDK2 5-14 FEB 2009

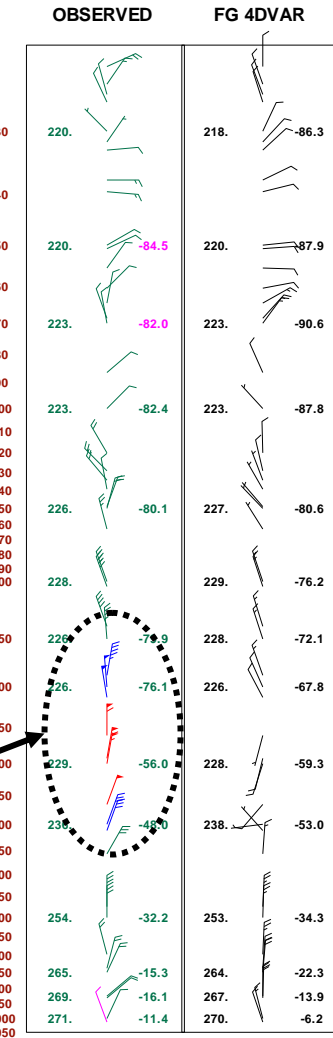
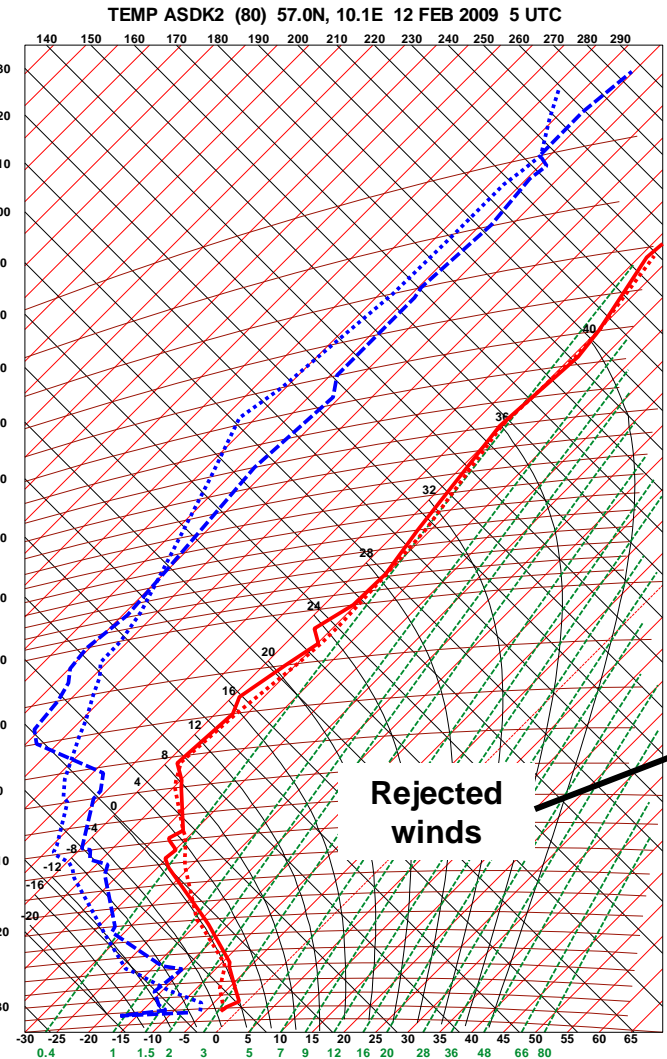
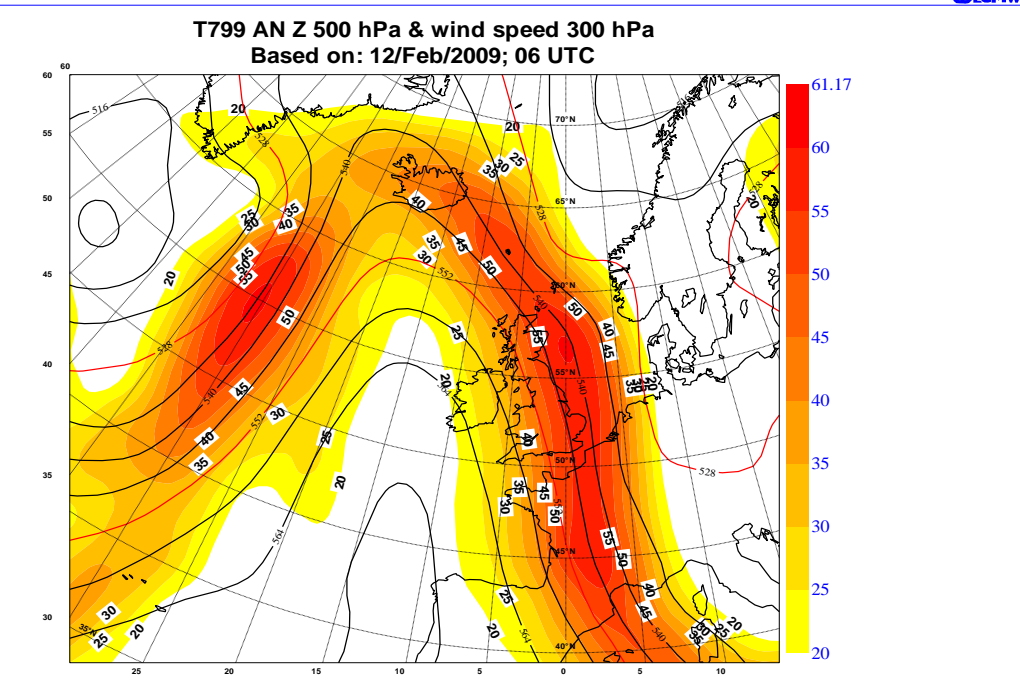
OBSERVED
 CAPEmax= 0.0 J/Kg at level 1012.0 hPa
 DCAPEmax=1150.6 J/Kg at level 100.0 hPa
 LIFTED INDEX= 5
 SHOWALTER= 5
 PWCobs= 4.3 Kg/m2

FG 4DVAR
 CAPEmax= 0.0 J/Kg at level 1010.0 hPa
 DCAPEmax=1300.1 J/Kg at level 100.0 hPa
 LIFTED INDEX= 11
 SHOWALTER= 7
 PWCmod= 4.4 Kg/m2



OBS: 9 (37/ 5 levels rejected WIND/TEMP ELEMENTS)

ECMWF



Rejected winds



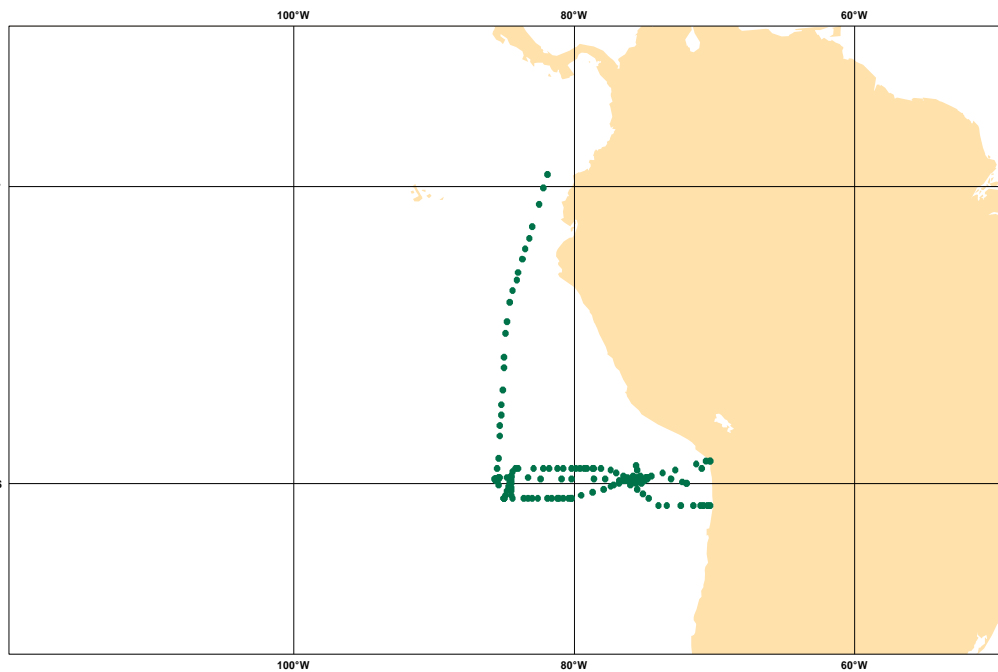
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VOCALS

VAMOS Ocean Cloud Atmosphere Land Study

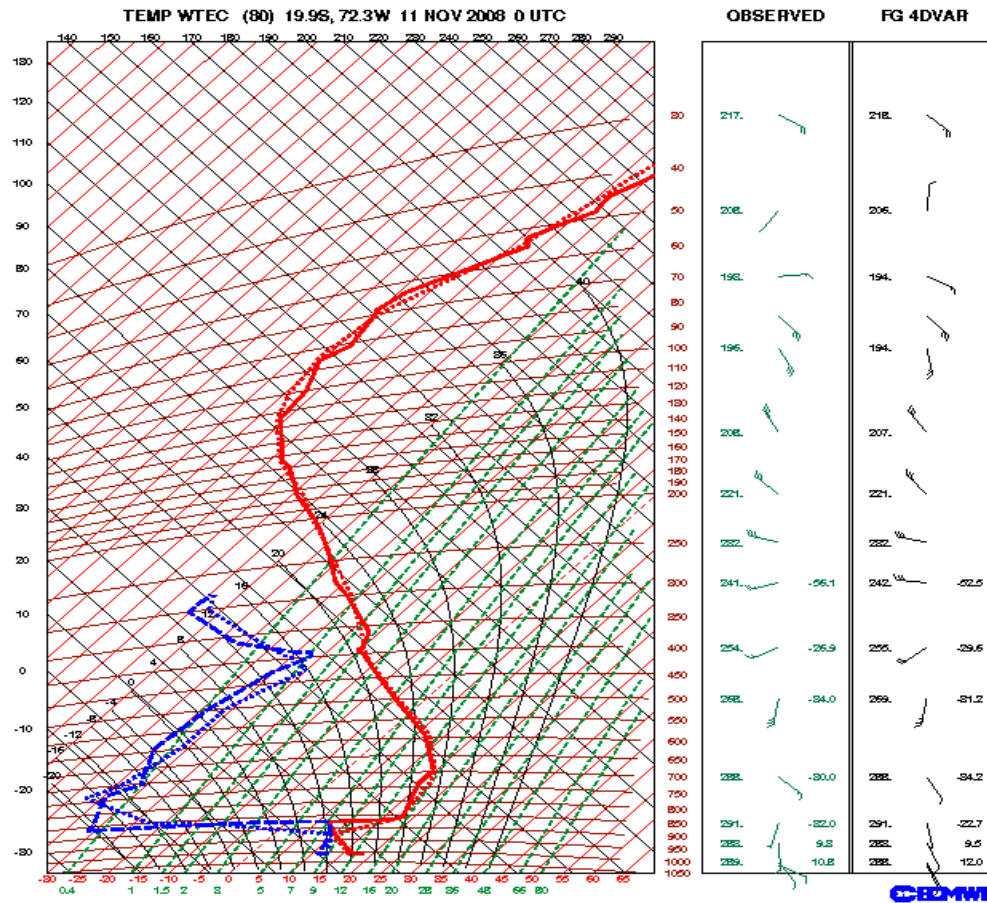
ASAP WTEC 1 OCT-30 NOV 2008



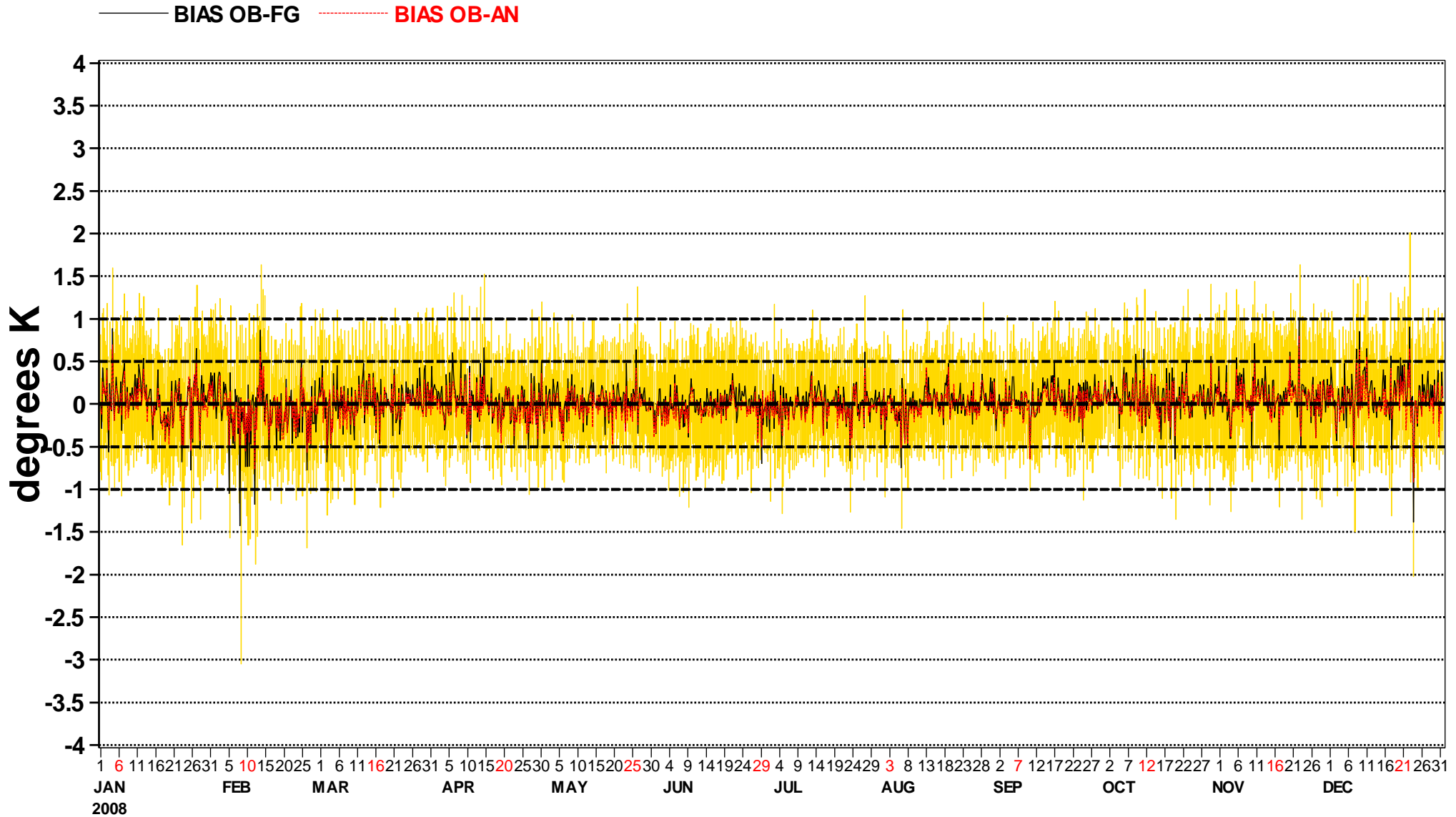
OBS: 166 (21/ 440 levels rejected WIND/TEMP ELEMENTS)

OBSERVED
 CAPE_{max}= 71.1 J/Kg at level 1014.0 hPa
 DCAPE_{max}=1434.0 J/Kg at level 500.0 hPa
 LIFTED INDEX= 15
 SHOWALTER= 30
 PWC_{obs}= 18.3 Kg/m²

FG 4 DVAR
 CAPE_{max}= 4.8 J/Kg at level 1012.0 hPa
 DCAPE_{max}=1498.1 J/Kg at level 500.0 hPa
 LIFTED INDEX= 15
 SHOWALTER= 1
 PWC_{mod}= 15.5 Kg/m²

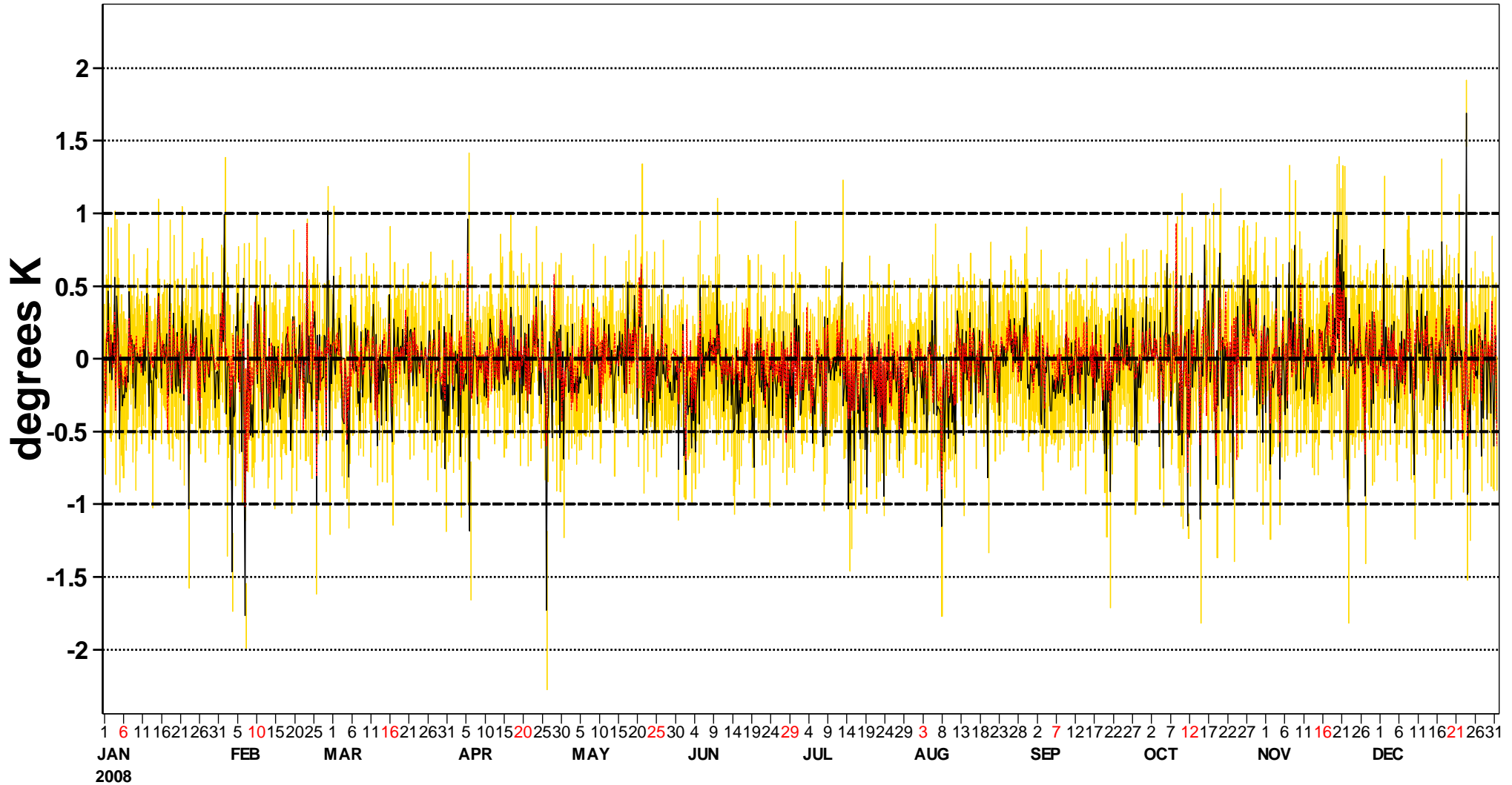


ASAP temperature used data above 400 hPa



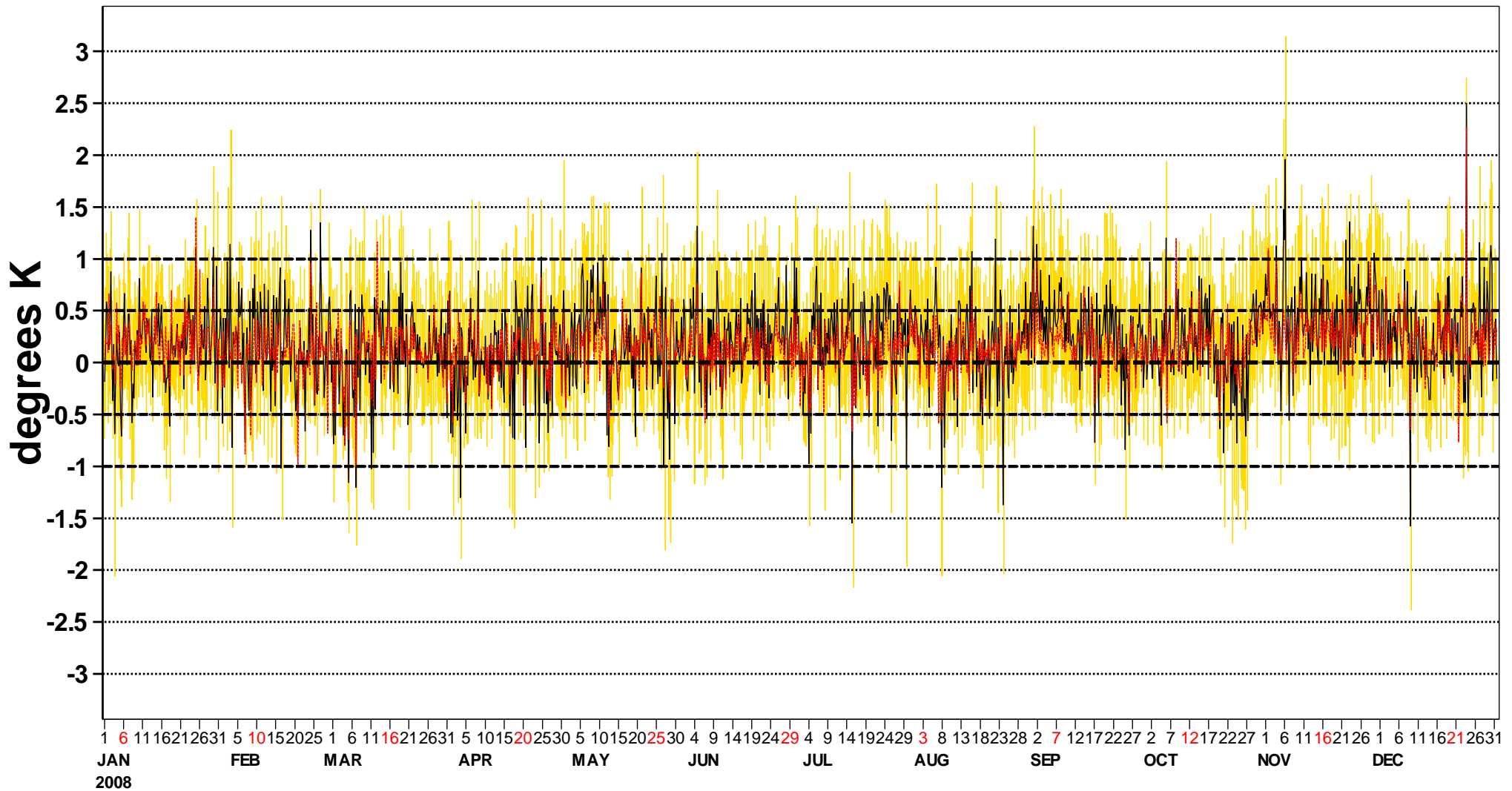
ASAP temperature used data 700-400 hPa

— BIAS OB-FG - - - - BIAS OB-AN



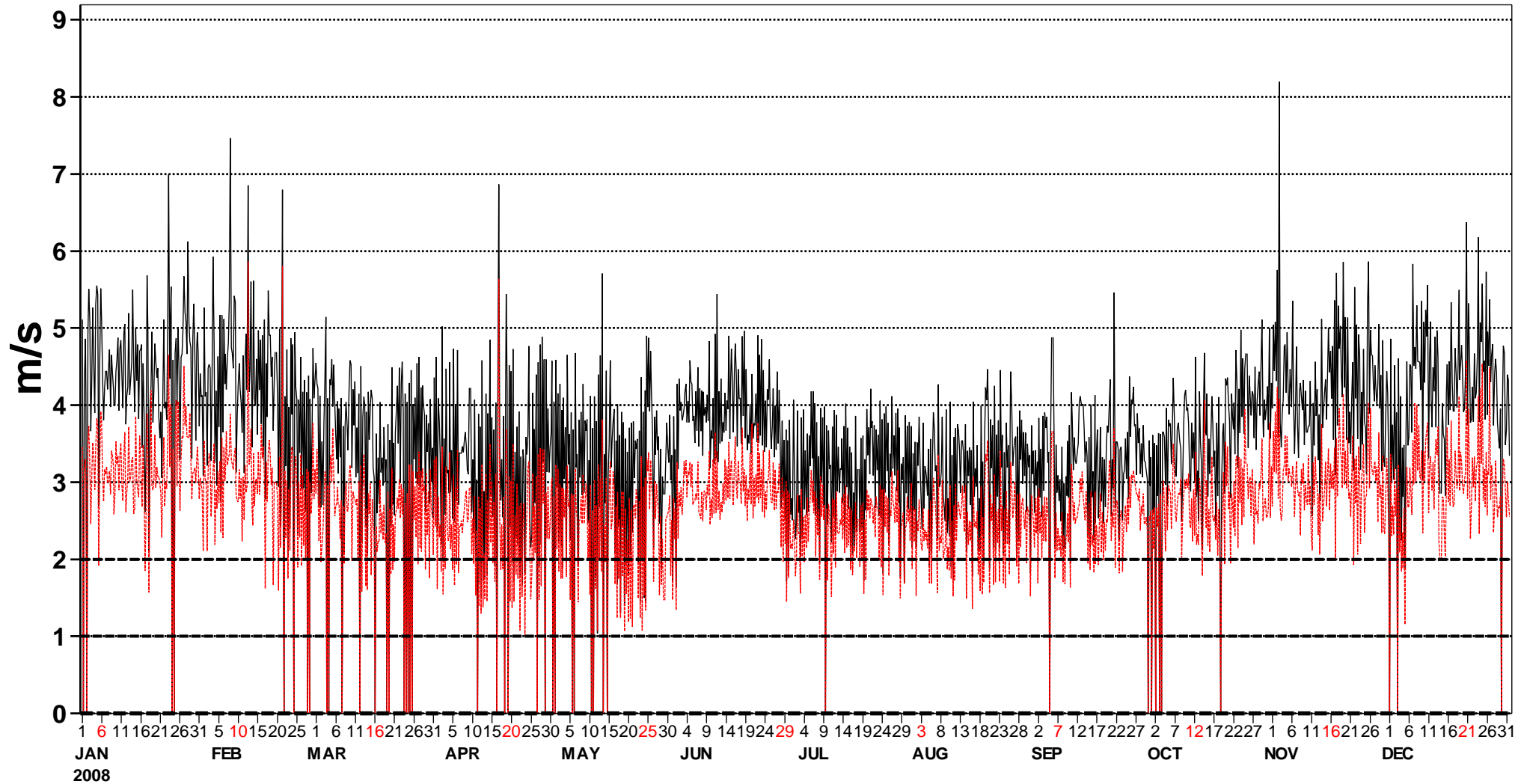
ASAP temperature used data below 700 hPa

— BIAS OB-FG - - - - BIAS OB-AN

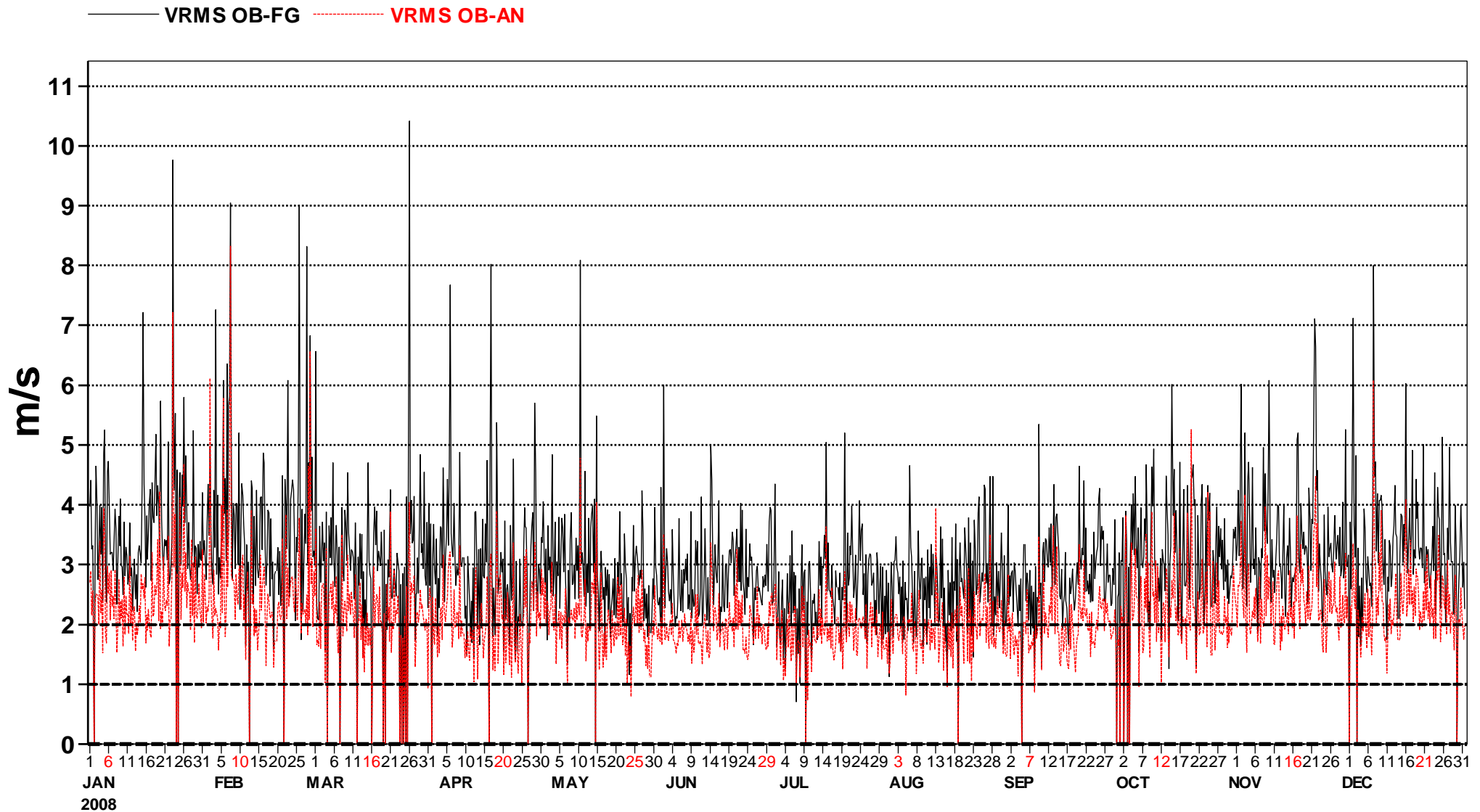


ASAP wind used data above 400 hPa

— VRMS OB-FG - - - - - VRMS OB-AN

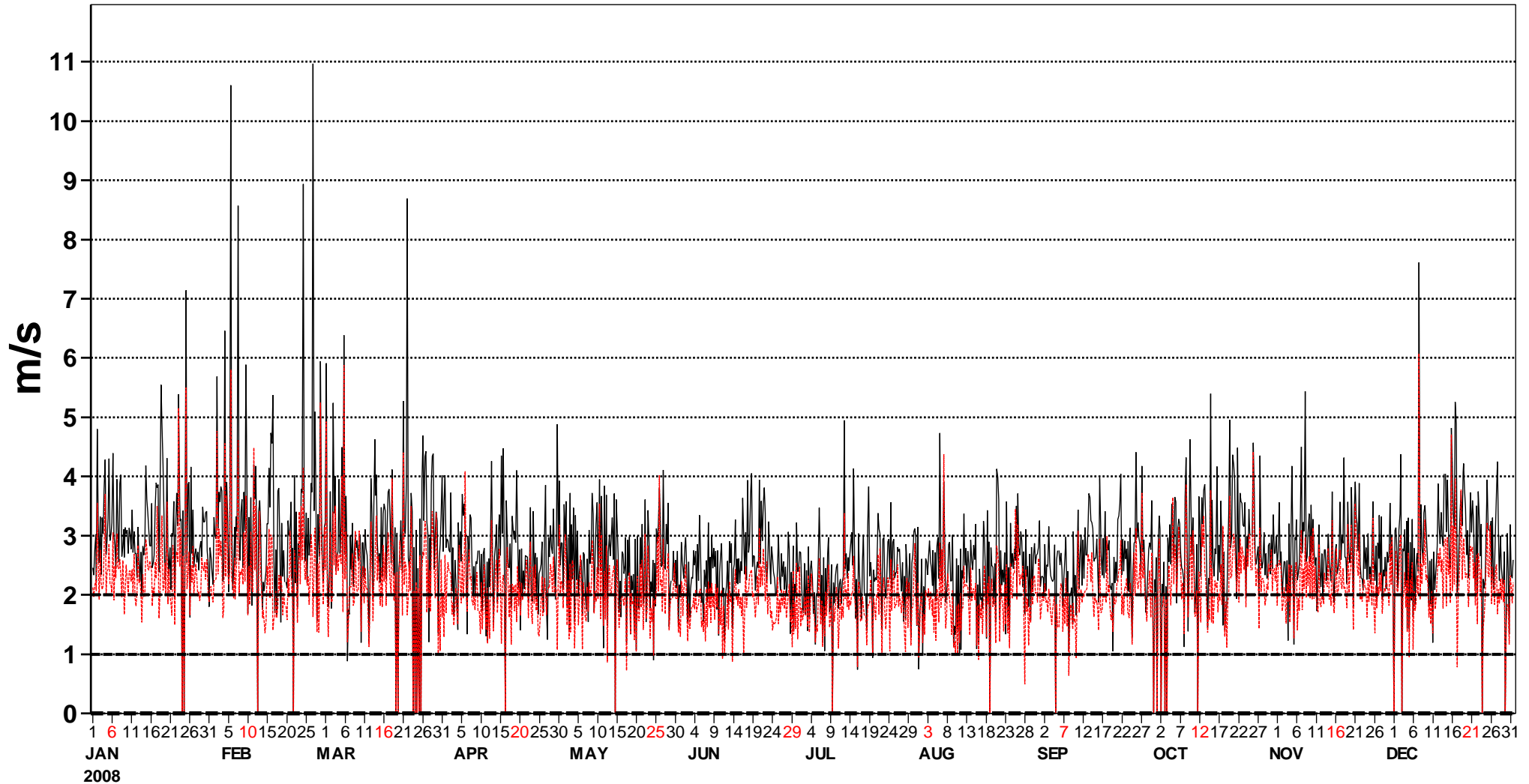


ASAP wind used data 700-400 hPa



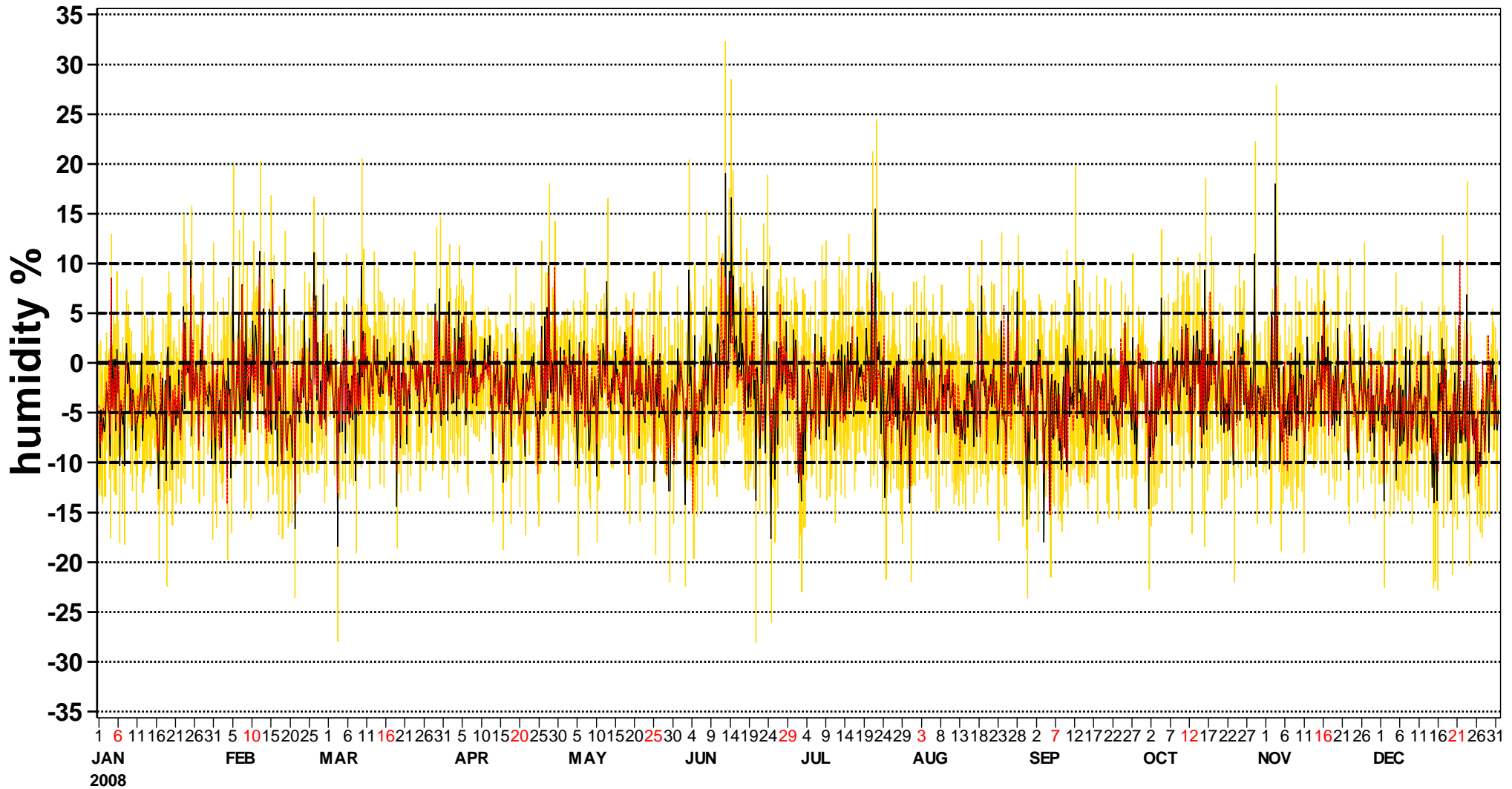
ASAP wind used data below 700 hPa

— VRMS OB-FG - - - - - VRMS OB-AN

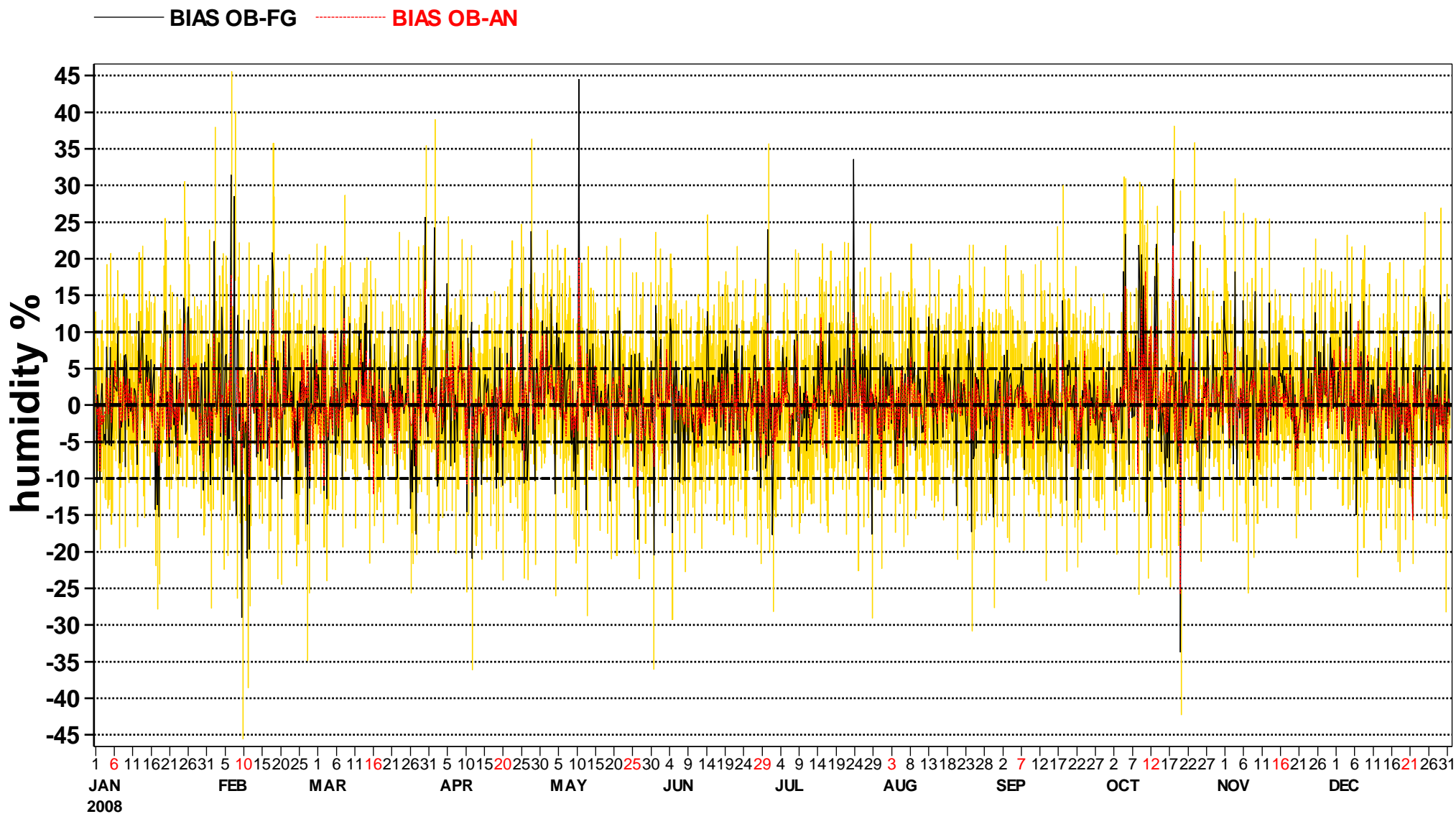


ASAP humidity used data above 400 hPa

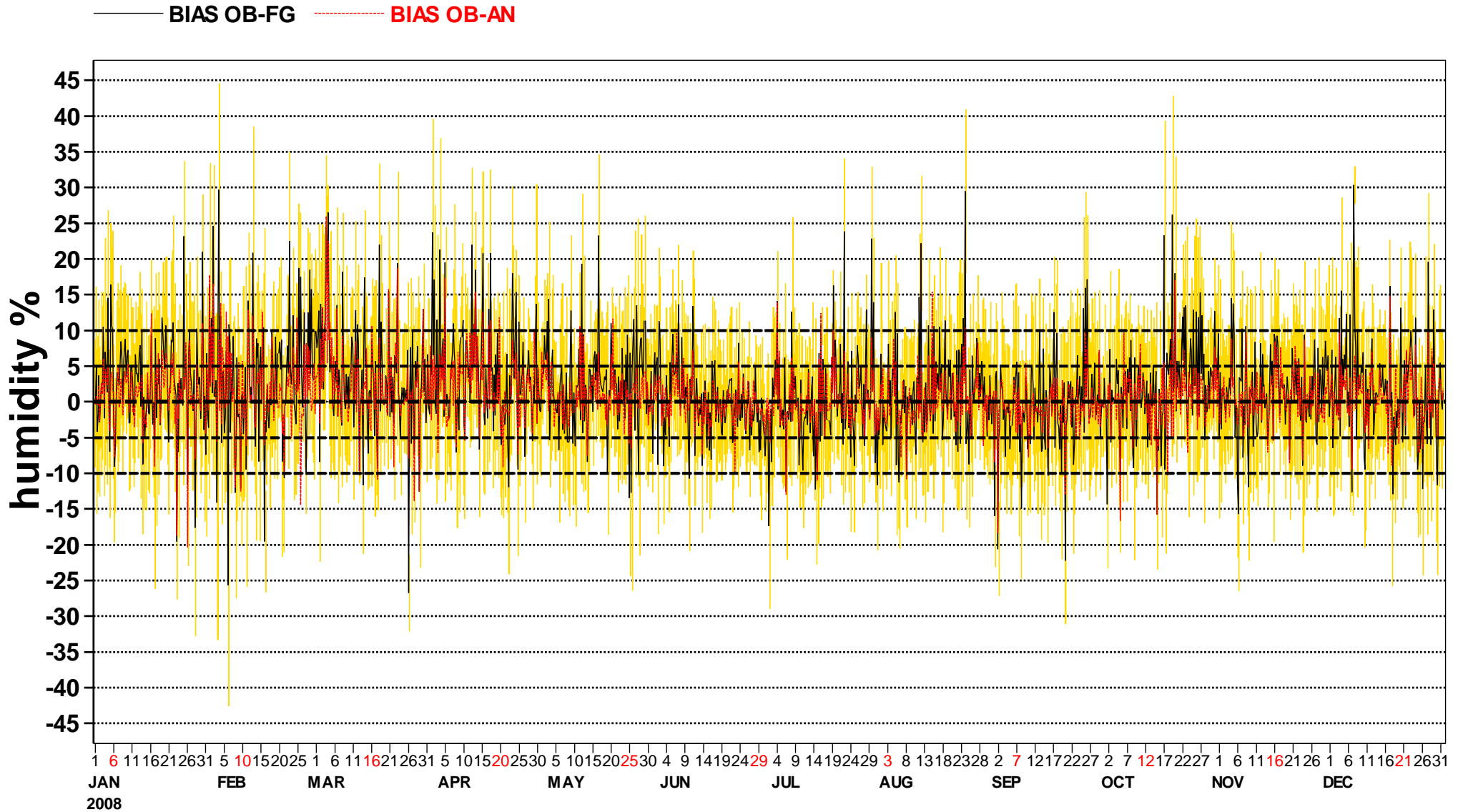
— BIAS OB-FG - - - - BIAS OB-AN



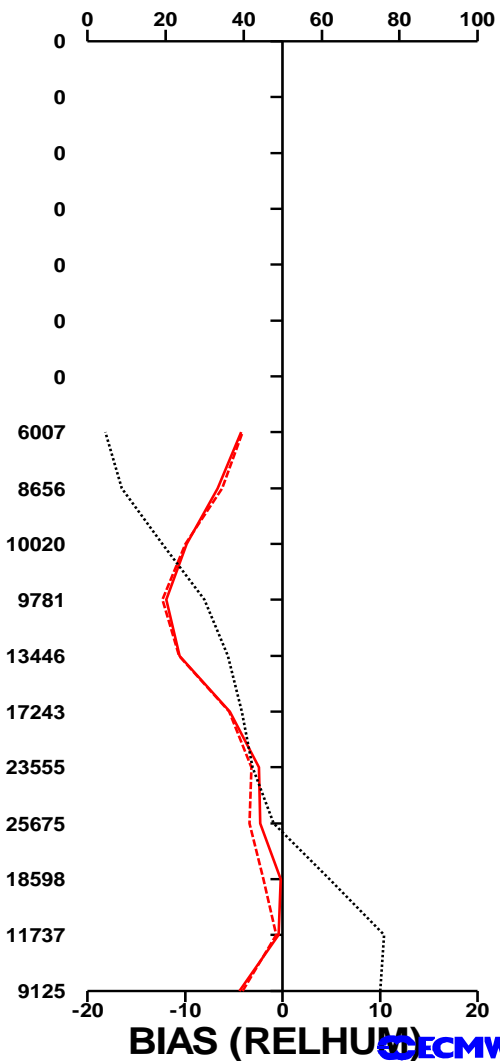
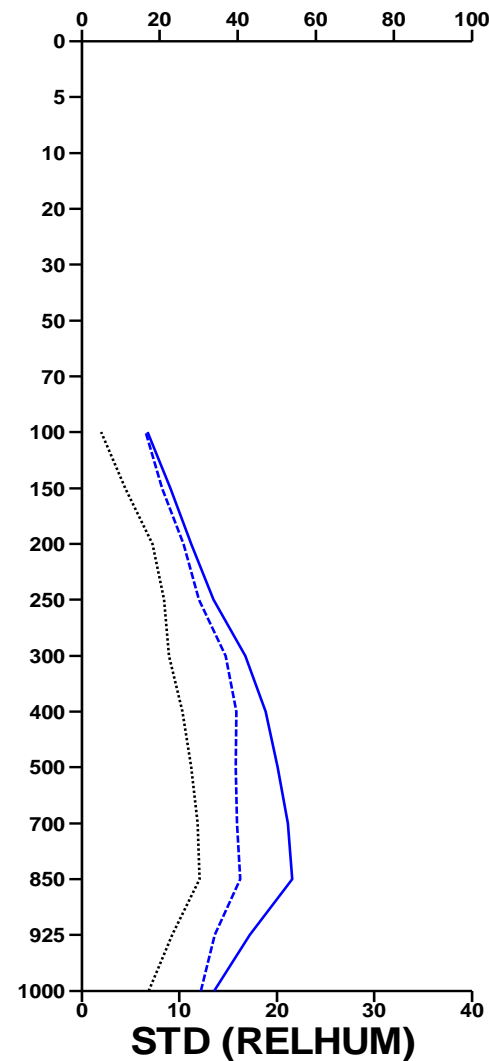
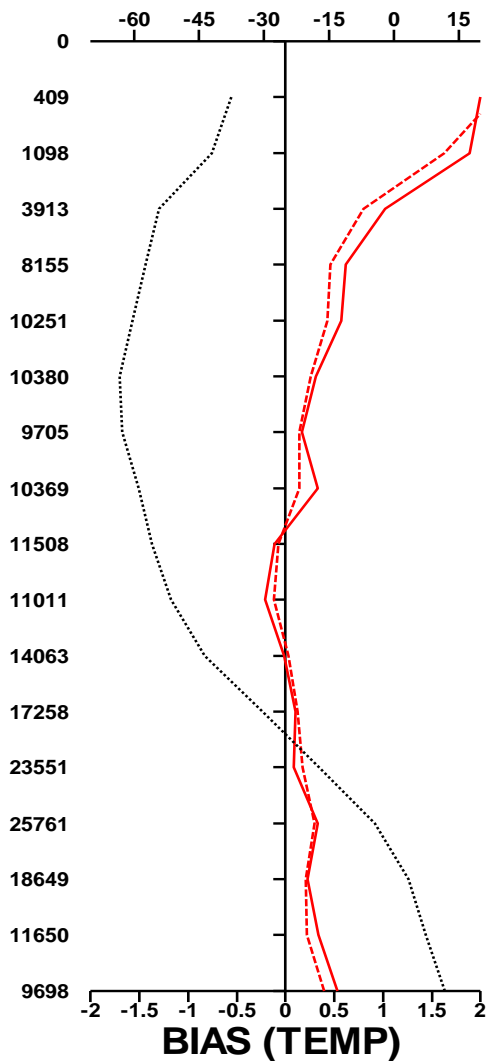
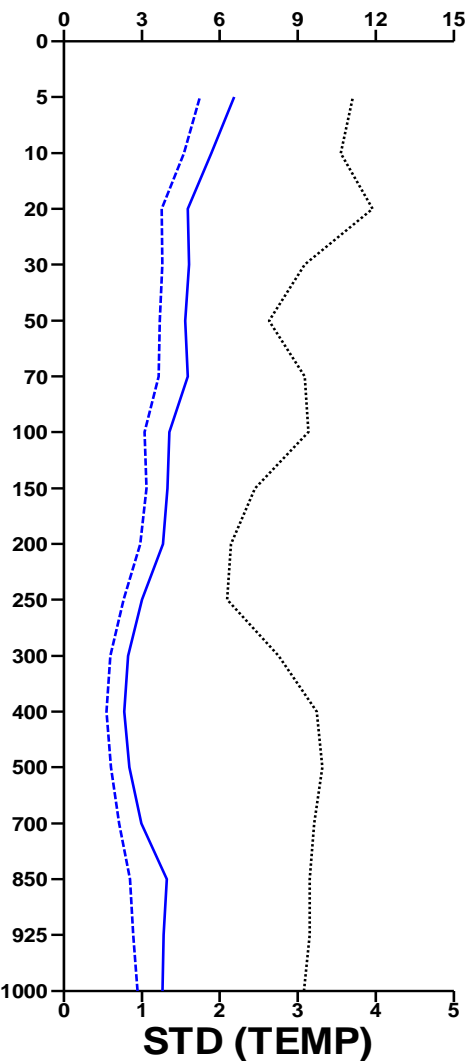
ASAP humidity used data 700-400 hPa



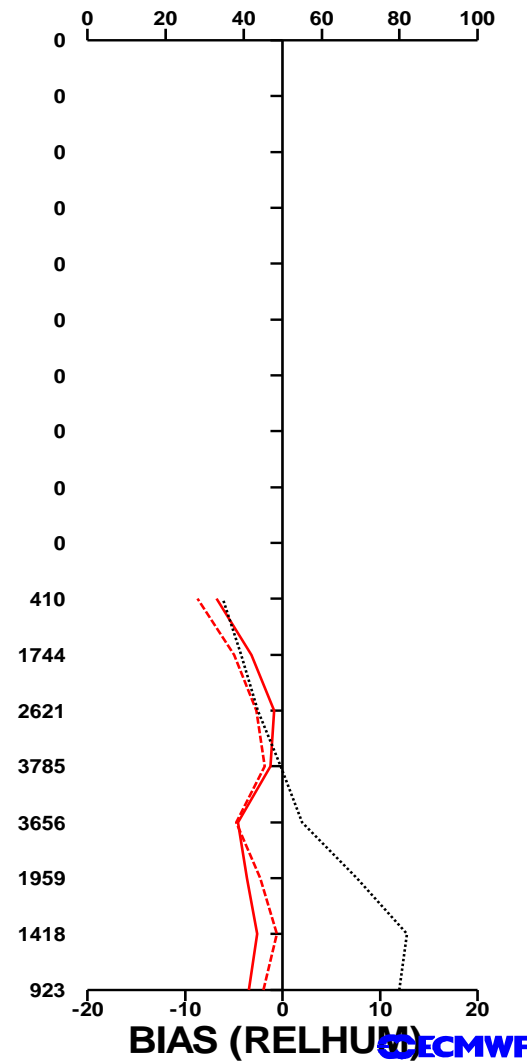
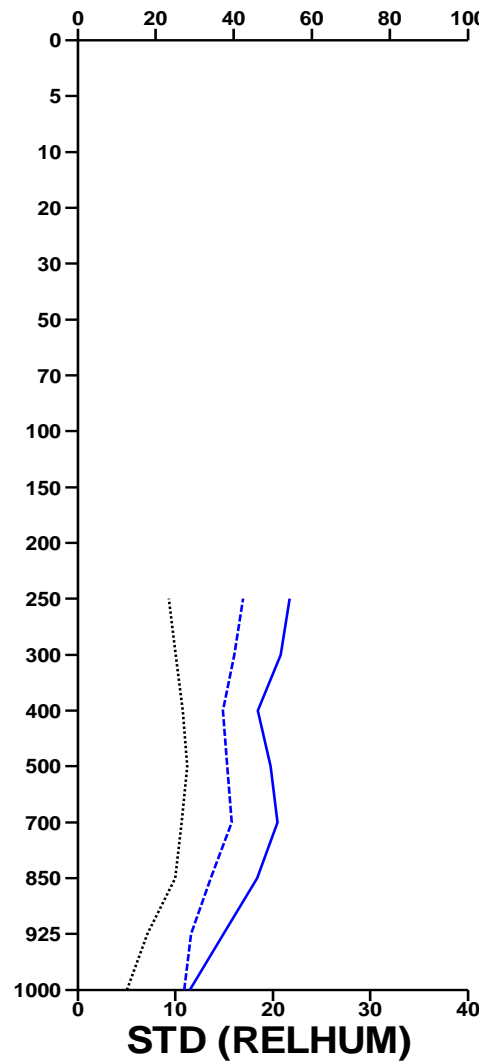
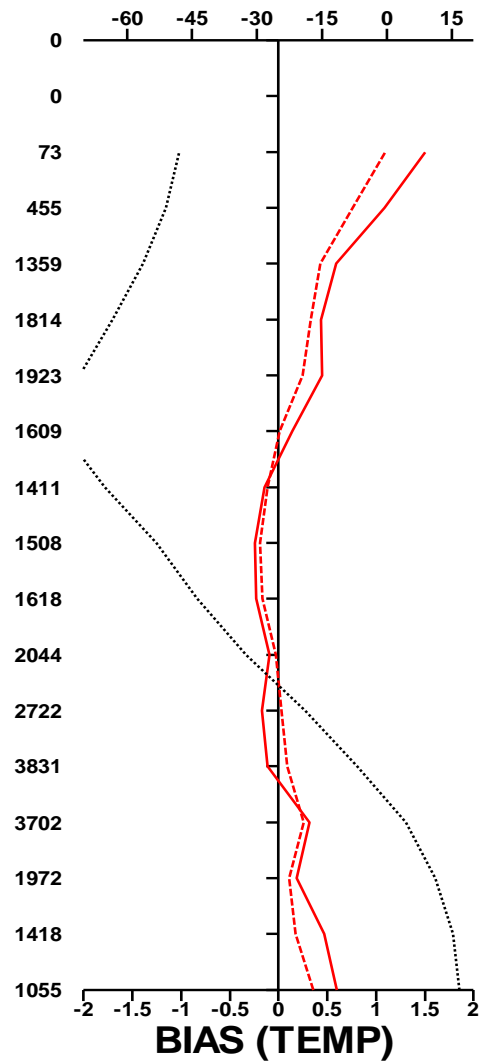
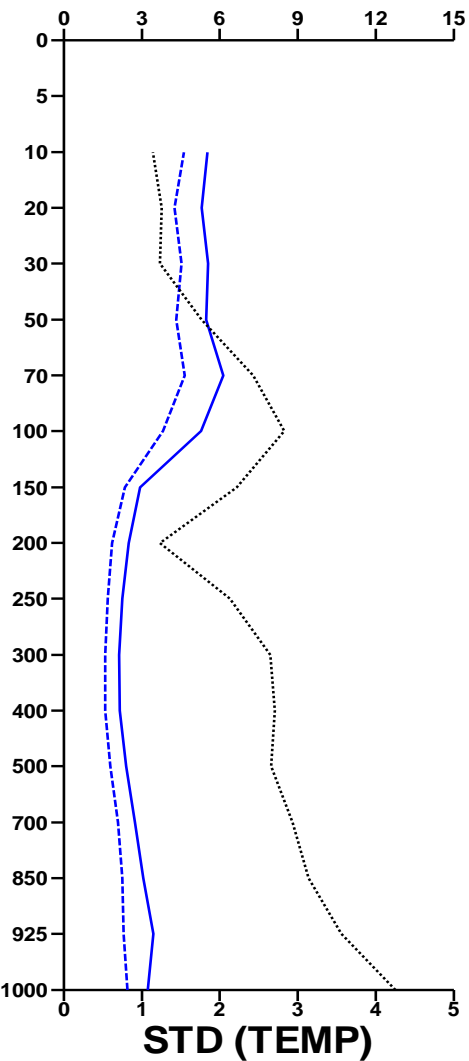
ASAP humidity used data below 700 hPa



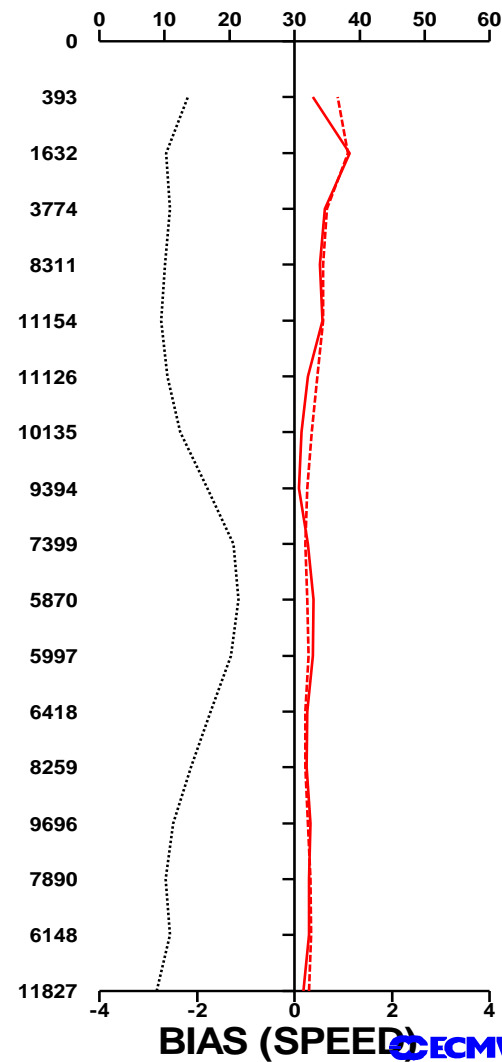
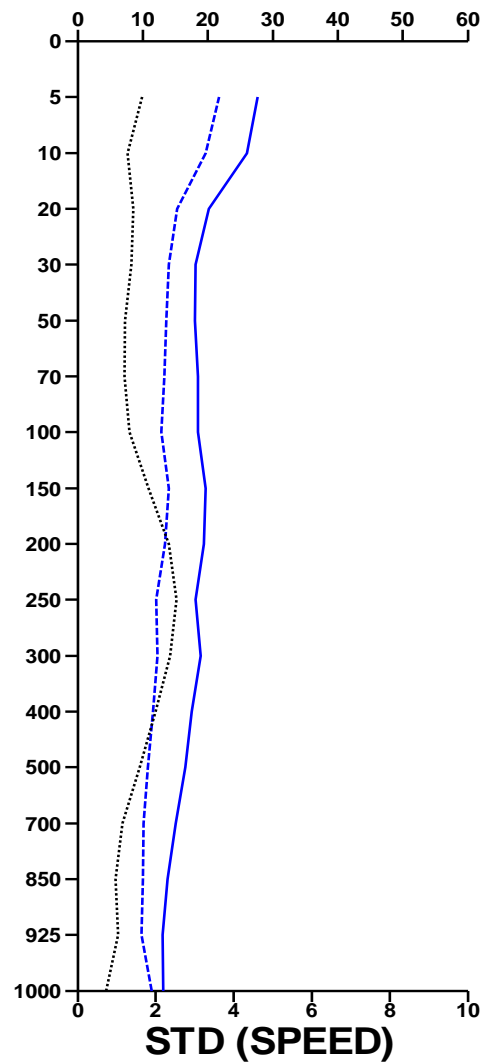
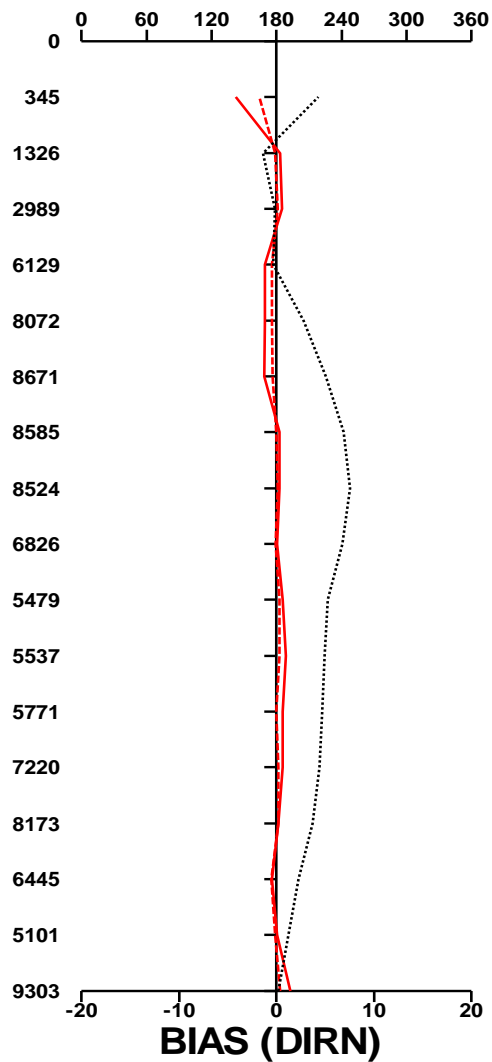
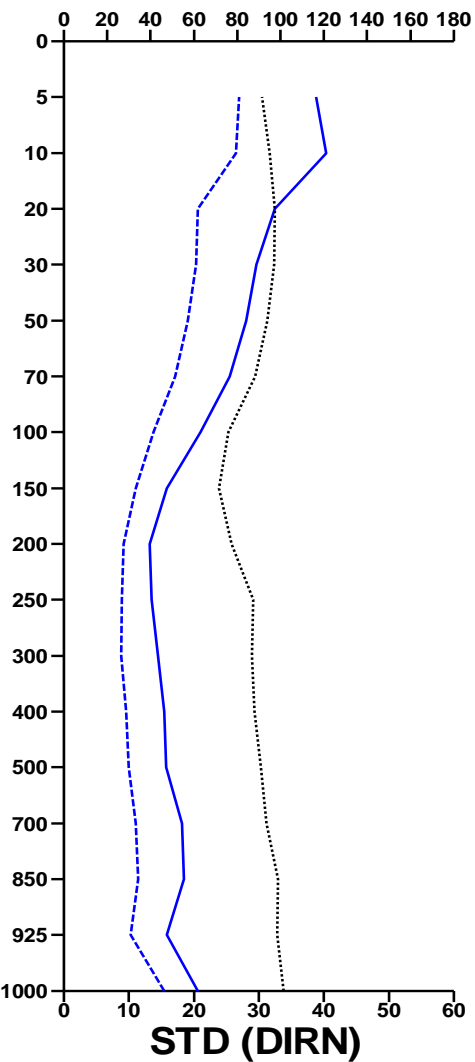
ASAP used data
ASAP not Japan
1 JAN-31 DEC 2008
90S-180W/90N-180E
00/06/12/18 UTC uncorrected data combined



ASAP used data
ASAP Japan
1 JAN-31 DEC 2008
90S-180W/90N-180E
00/06/12/18 UTC uncorrected data combined

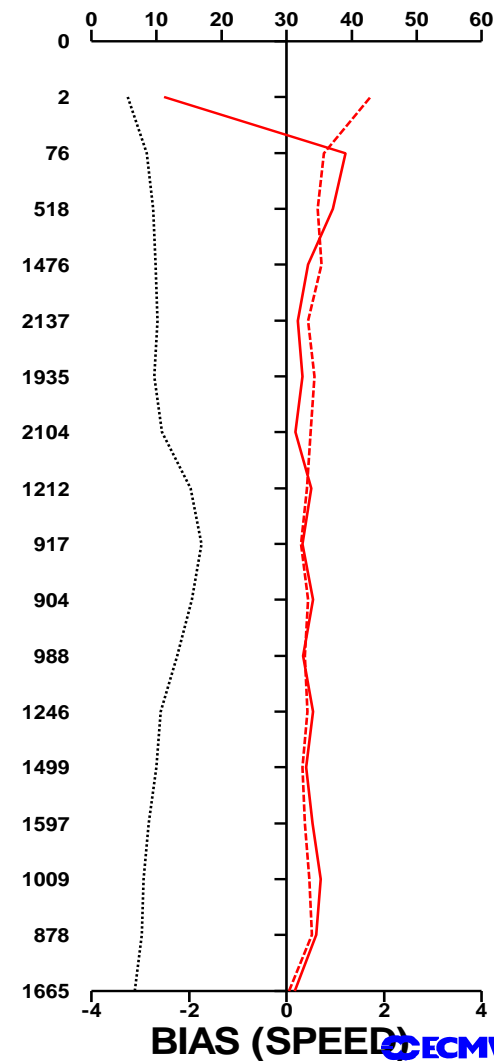
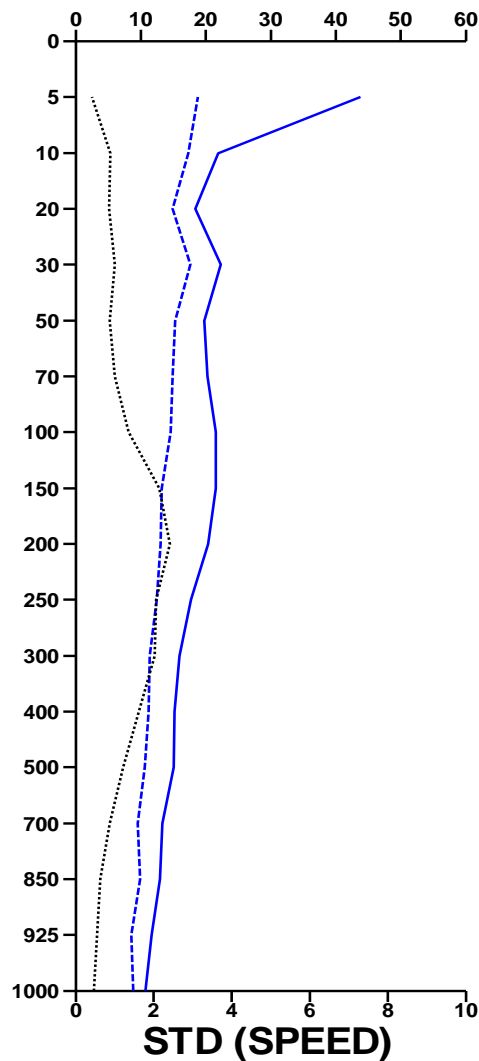
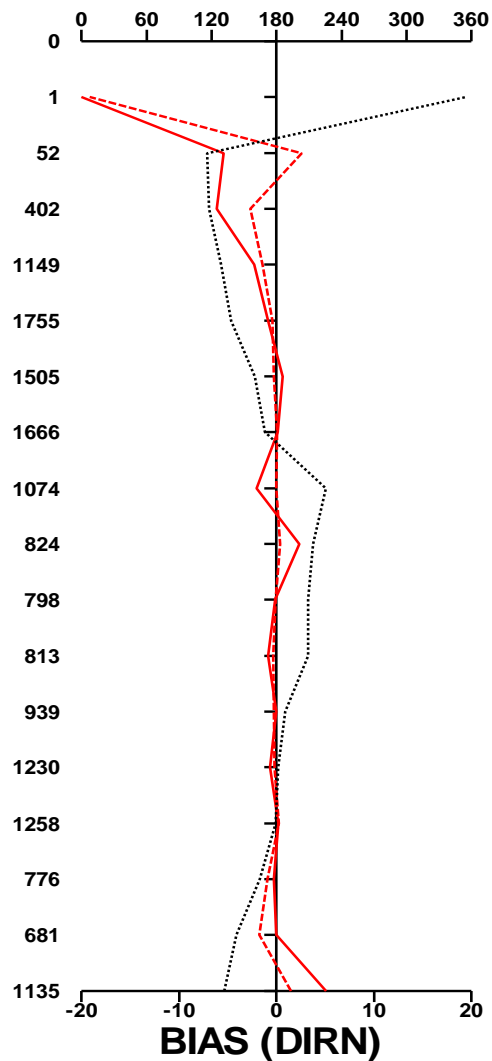
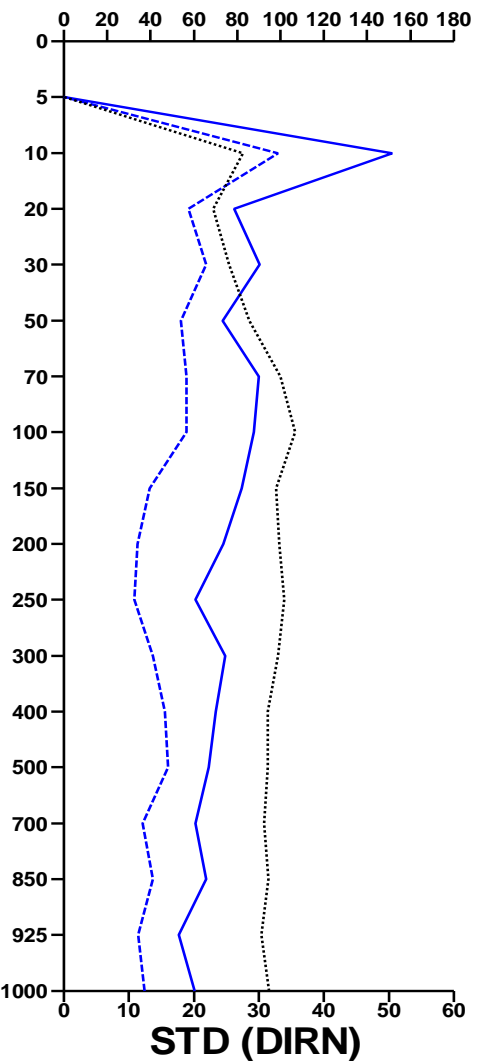


ASAP used data
ASAP not Japan
1 JAN-31 DEC 2008
90S-180W/90N-180E
00/06/12/18 UTC uncorrected data combined

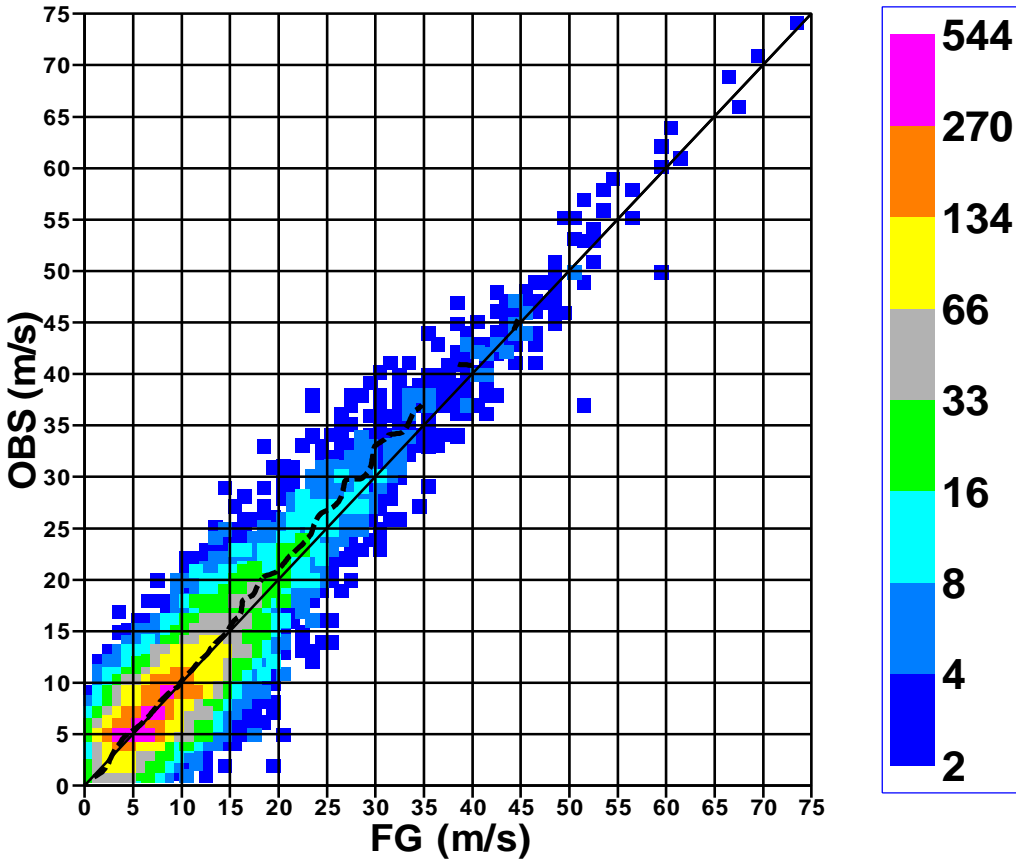


345
 1326
 2989
 6129
 8072
 8671
 8585
 8524
 6826
 5479
 5537
 5771
 7220
 8173
 6445
 5101
 9303

ASAP used data
ASAP Japan
1 JAN-31 DEC 2008
90S-180W/90N-180E
00/06/12/18 UTC uncorrected data combined



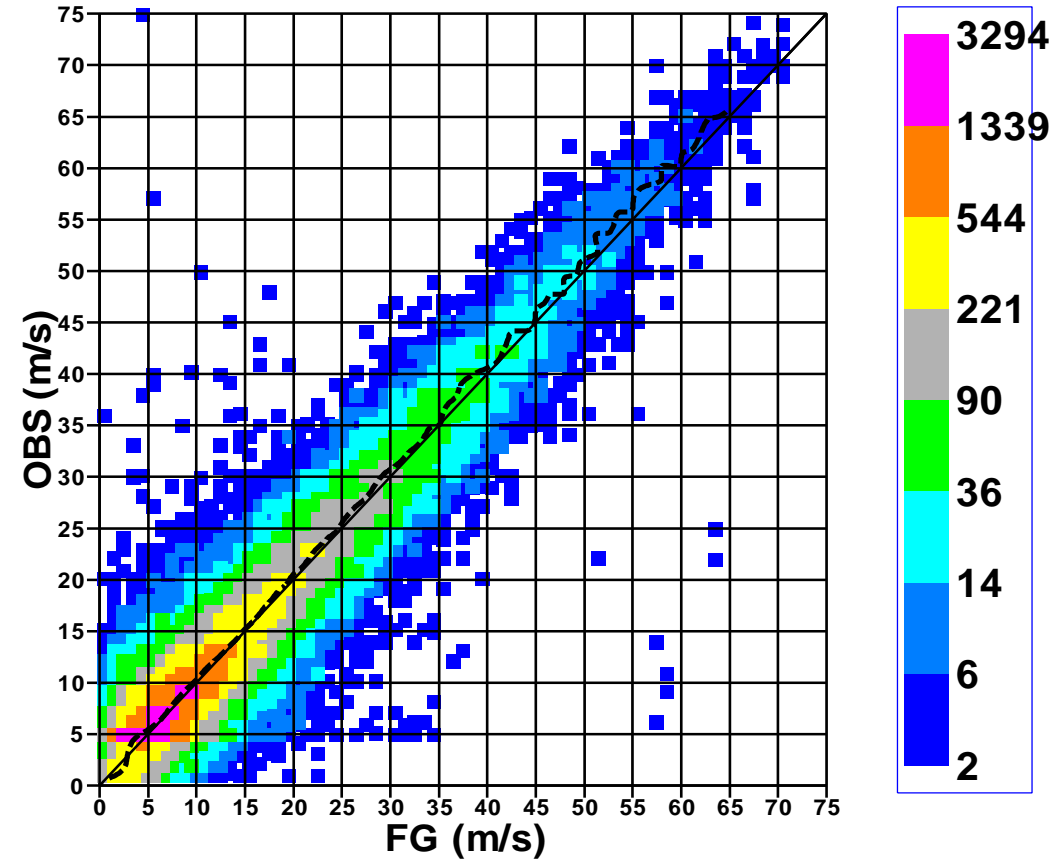
UPPER AIR SOUNDINGS
1 JAN - 31 DEC 2008
WINDSPEED



NO. OF OBS: 27087 BIAS: 0.4 STD: 3.2
NO. OF USED OBS: 26931 (99 %)

ASAP Japan

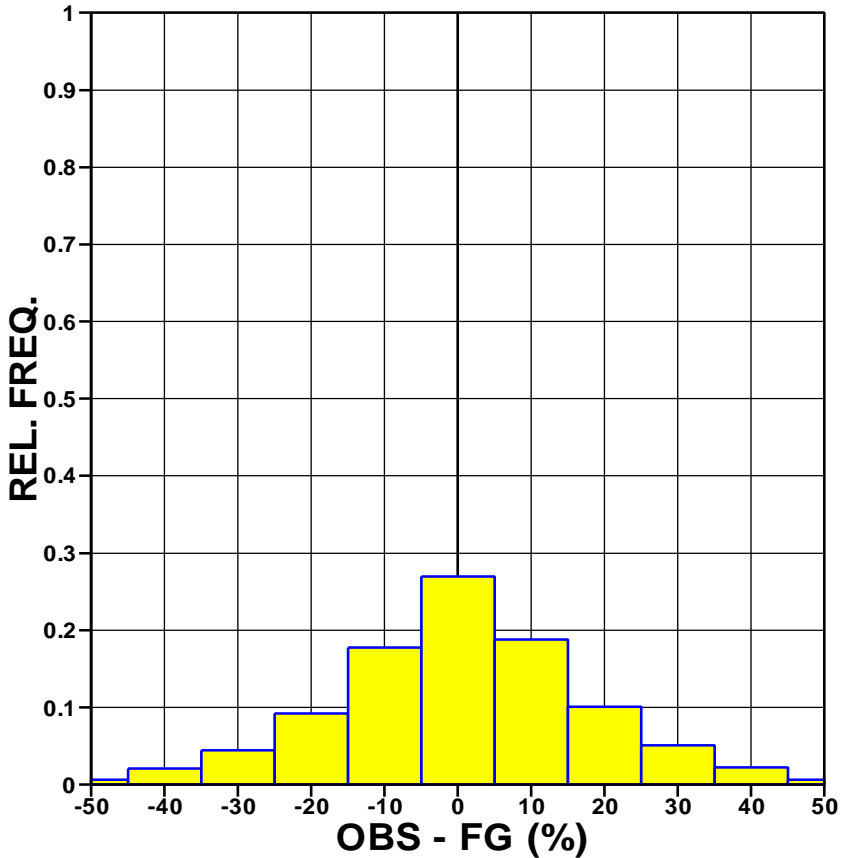
UPPER AIR SOUNDINGS
1 JAN - 31 DEC 2008
WINDSPEED



NO. OF OBS: 182469 BIAS: 0.4 STD: 3.9
NO. OF USED OBS: 168510 (92 %)

ASAP

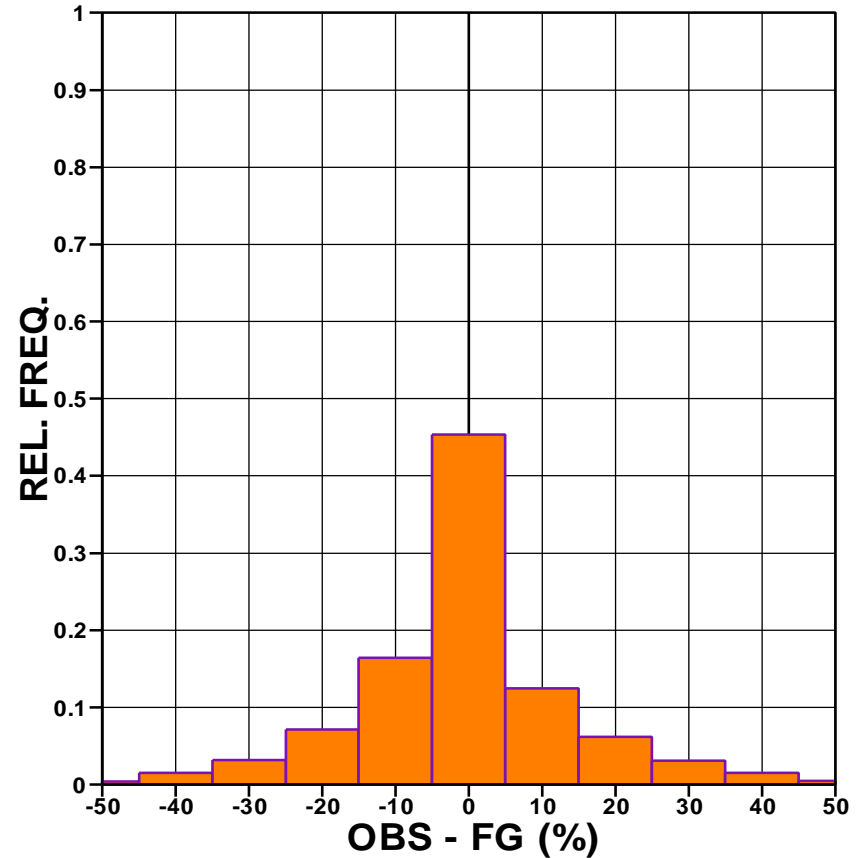
**UPPER AIR SOUNDINGS
1 JAN - 31 DEC 2008
RELATIVE HUMIDITY**



**NO. OF OBS: 12874 BIAS: 0.3 STD: 19.1
NO. OF USED OBS: 12124 (94 %)**

ASAP Japan

**UPPER AIR SOUNDINGS
1 JAN - 31 DEC 2008
RELATIVE HUMIDITY**



**NO. OF OBS: 147713 BIAS: -0.5 STD: 17.1
NO. OF USED OBS: 113231 (77 %)**

ASAP

Outline

- Data reception at ECMWF
- Troubleshooting
- ASAP Data Monitoring at ECMWF
- **Conclusions**

Conclusions

- **The number of ASAP reports received at ECMWF in 2008 show a slight reduction compared to 2007.**
- **The percentage of ascents reaching 100 hPa back to values of around 95% in the second half of 2008.**
- **The number of corrupted call-signs reduced in 2008.**
- **The problem of wrongly located reports is still there although less severe than in 2007. This problem is absent in the Japanese ASAP.**
- **The quality of the ASAP data has continued to be good.**