REPORT ABOUT ENVISAT SCIAMACHY NRT OZONE PRODUCT (SCI_RV__2P) FOR MARCH 2006

Rossana Dragani, Vanda da Costa Bechtold

ECMWF, Shinfield Park, Reading, RG2 9AX, United Kingdom,
Emails: Rossana.Dragani@ecmwf.int, Vanda.Bechtold@ecmwf.int,
Tel: 0044 118 9499259

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1. Key points for March 2006

- SCIAMACHY SCI_RV__2P data quality is mainly stable.
- SCIAMACHY data about 10 DU lower than ECMWF values in the global mean until the 23^{th} of March. Slightly smaller departures were found during the last week of March.
- Large scatter of SCIAMACHY ozone data, in particular at high latitudes in the northern hemisphere.
- The monitoring statistics for March were produced with the operational ECMWF model, CY30R1.

2. Quality and amount of received data

This report covers SCIAMACHY NRT total column ozone data for March 2006. Amount of received data and their quality are shown in Figures 1-6 for various latitude bands. Geographical distributions and zonal means timeseries of number of data, observation values, first-guess departures, and of observations and first-guess departures standard deviations are presented in Figures 7-11 and Figures 12-16, respectively. Figures 17-19 present the scatter diagrams of SCIAMACHY ozone values against first-guess and latitude values, as well as the scatter diagram of first-guess departures of SCIAMACHY ozone values against latitude.

The timeseries plots show that SCIAMACHY data quality was mainly stable during March. In the global mean, the timeseries plots of the first-guess and analysis departures do not exhibit any noticeable offset until 23 March and later during the two day period 30-31 March, compared with those obtained for February. Over these two periods, the global mean first-guess departures are still about -10 DU, as in February. A slight reduction in the global mean first-guess departure can be noticed during the week from 23 to 30 March, probably as consequence of the Trim Heater adjustment adopted on the 23^{th} of March. The increase in the global mean first-guess departure to the values noticed before the 23^{th} of March (-10 DU), that was found during the last two days of March, is still under investigation. Smaller first-guess departures are seen in the northern mid-latitudes, whereas slightly larger departures are observed in the southern hemisphere, in particular in the mid-latidudes.

The standard deviations of the global mean departures have not changed and are still about 15 DU. A reduction of about 10DU and 5DU can be seen in the standard deviations of SCIAMACHY data in the northern and southern mid-ltitudes, respectively, compared with the values which has been seen in February; a 5DU increase can be seen in the tropical region.

The geographical distribution of the mean first-guess departures (Fig. 10) shows large positive bias (20-30DU) between 45°-70°N, in particular over Canada and western Europe. Large negative bias (about -40DU) are seen at high latidudes in the northern hemisphere between 0° and 60°E. The mean first-guess departures are found to be about -20DU elsewhere.

The Hovmoeller diagram of the zonal mean first-guess departures (Fig. 15) further illustrates the large positive departures north of 45°N and at the northern end of the orbits.

The scatter plot of SCIAMACHY ozone values against the first-guess (Fig. 17) shows, in general, a good agreement.

The scatter plot of the first-guess departures against latitude (Fig. 19) shows that while the data agree well in the tropical region, the differences are larger in the extratropics, especially at high latitudes in the northen hemisphere where the departures range from -120 to +120DU.

3. Remarks

This monitoring report was produced with the operational ECMWF model (CY30R1). Ozone layers from SBUV/2 on NOAA-16 and SCIAMACHY total column ozone data produced by KNMI are actively assimilated. The comparison of SCI_RV__2P data against the ECMWF ozone field does not give an independent validation.

All ozone values are in Dobson Units (DU).

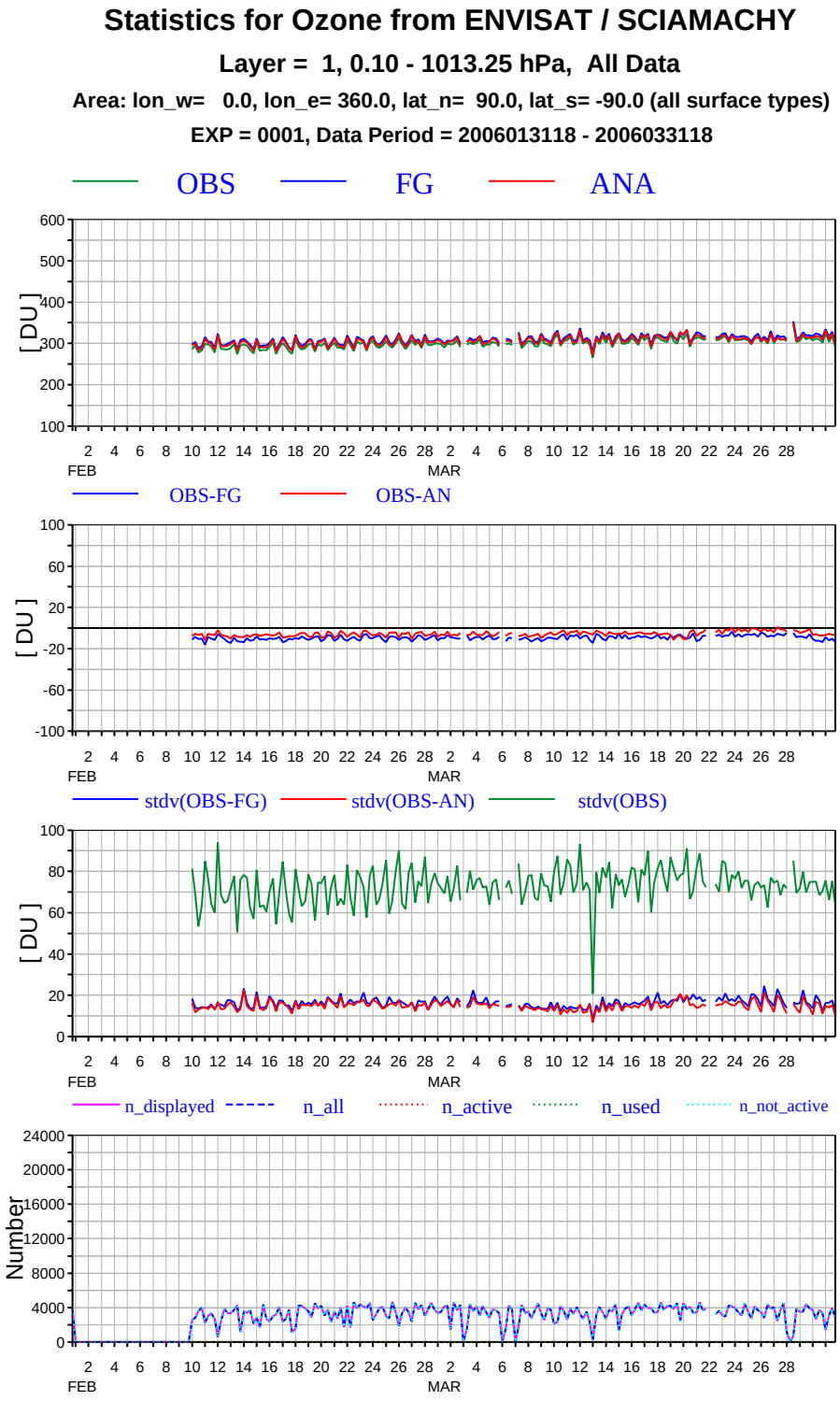

Fig. 1. Time series of mean observations, first guess and analysis values (top panel), first-guess and analysis departures (second panel), standard deviations (third panel) and number of data (bottom panel) per 6-hour cycle for ENVISAT SCIAMACHY NRT ozone data for February and March 2006 (Global means).

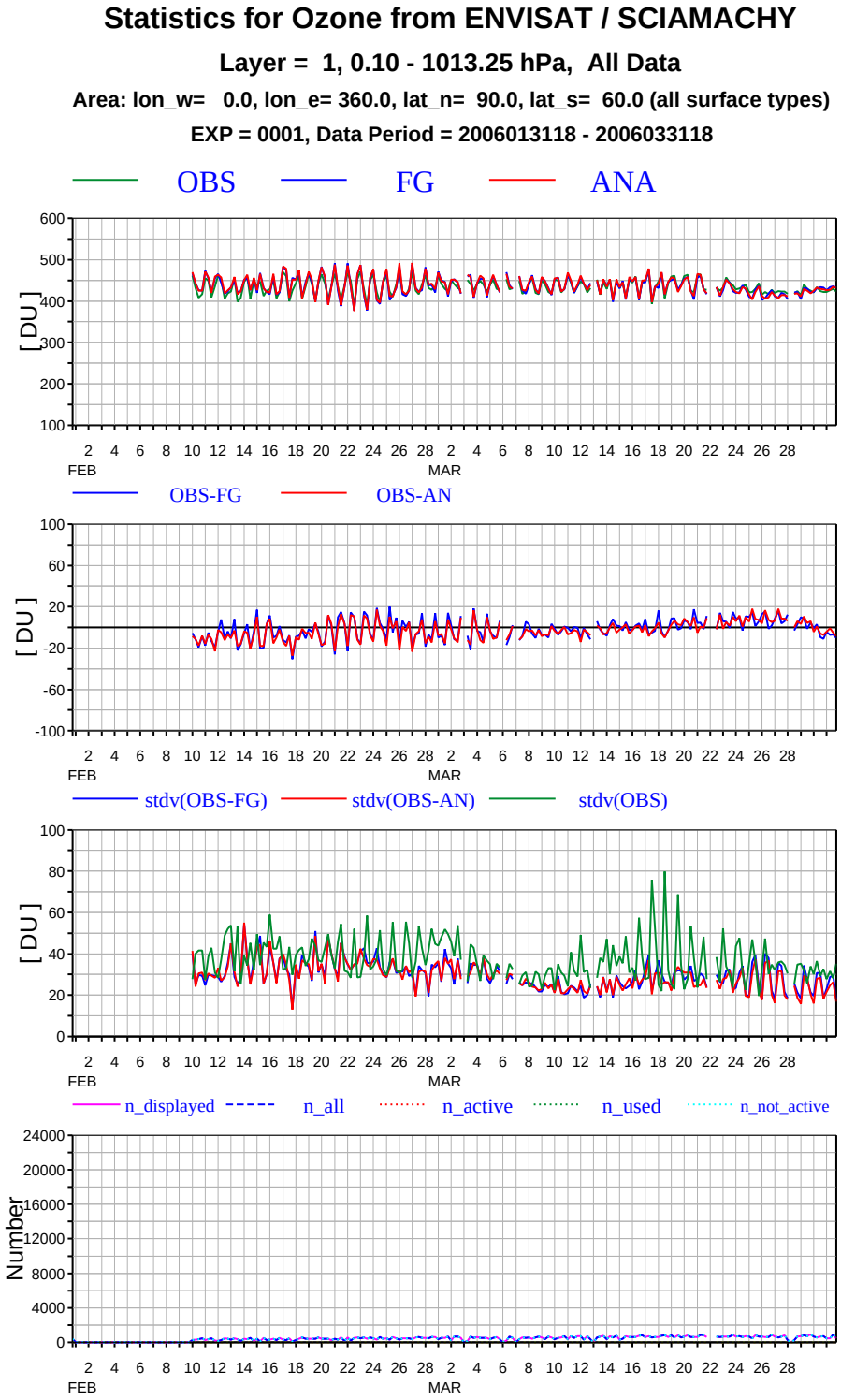

Fig. 2. As Fig.1 but for 90-60N.

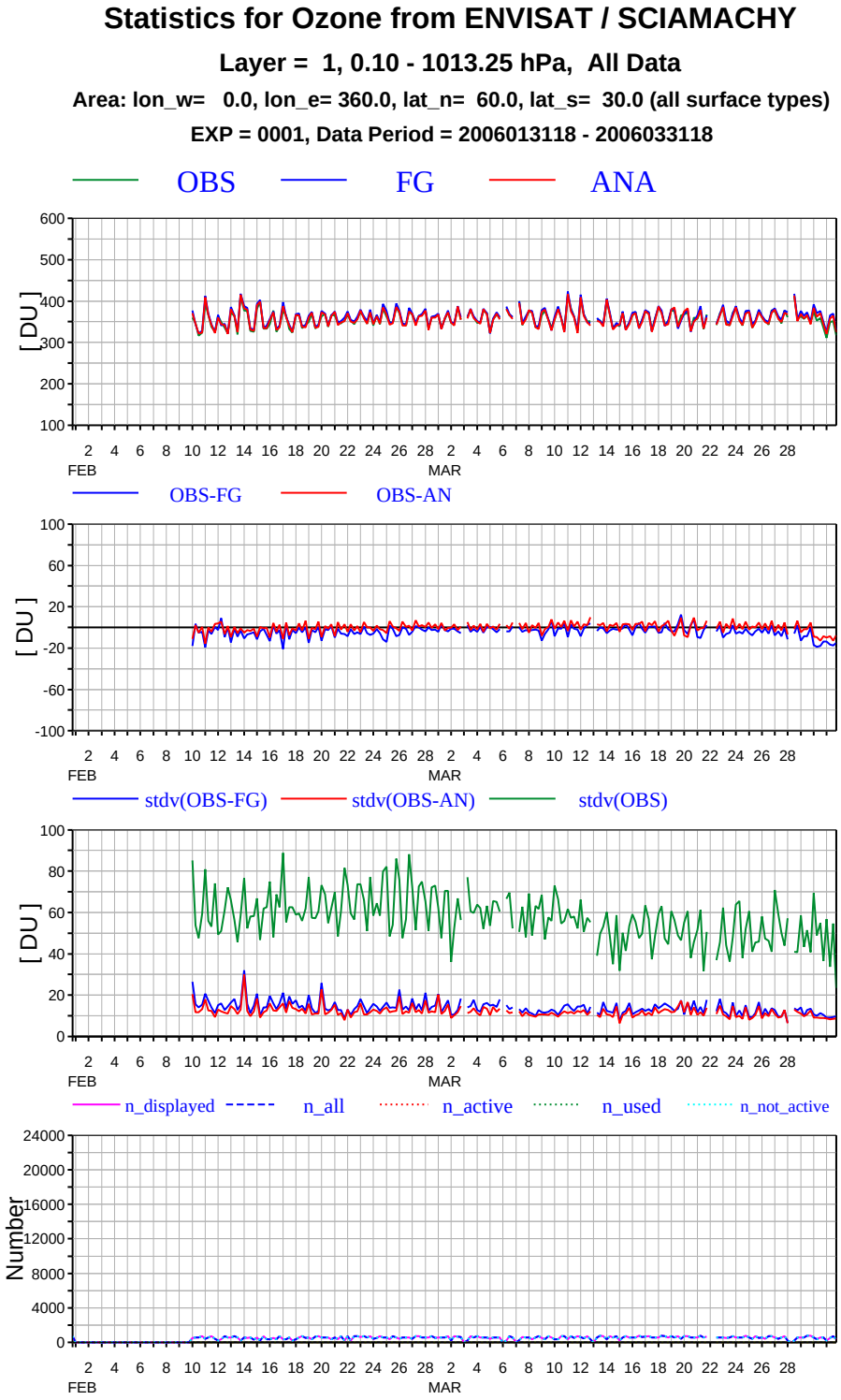

Fig. 3. As Fig. 1 but for 60-30N.

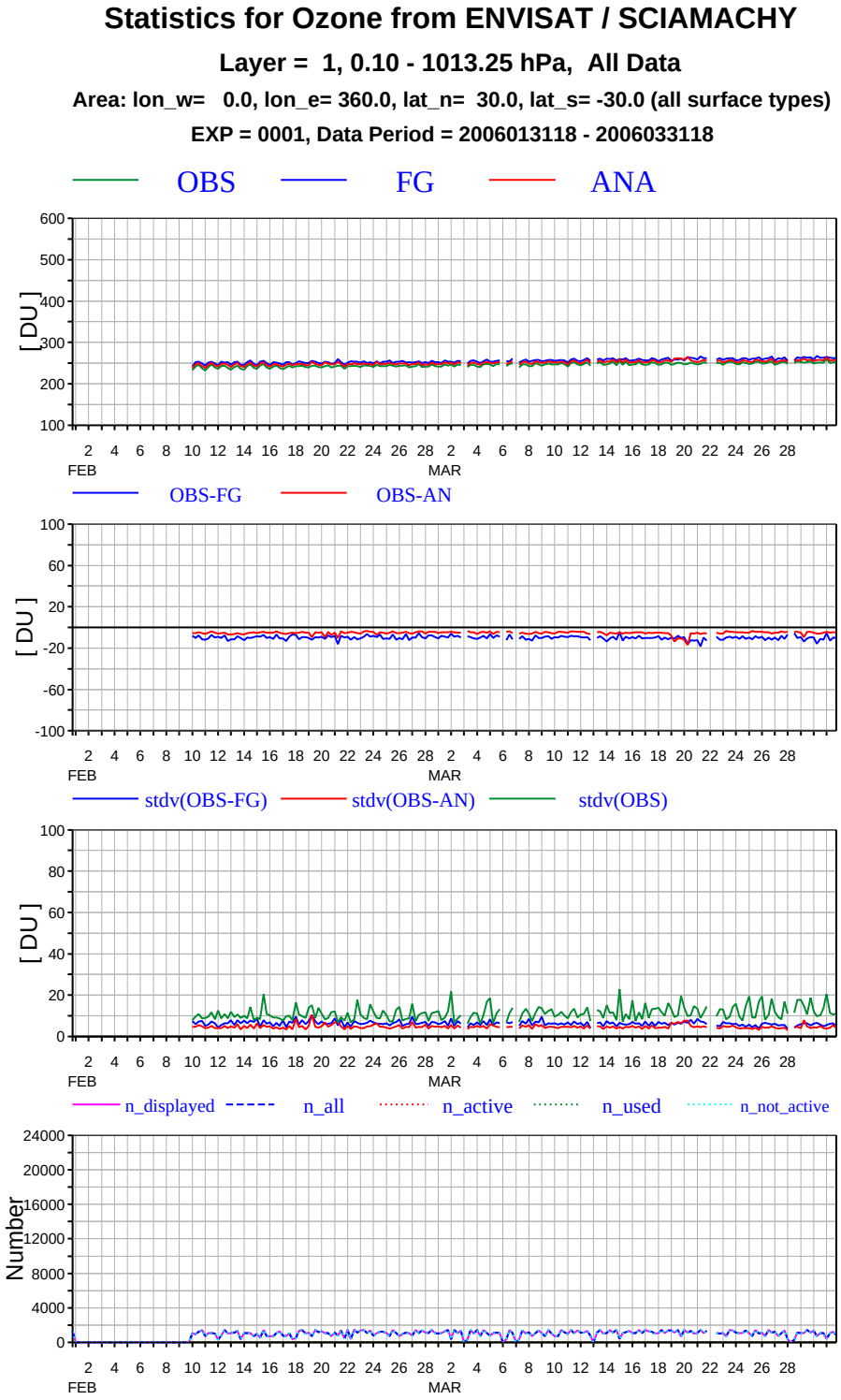

Fig. 4. As Fig. 1 but for 30N-30S.

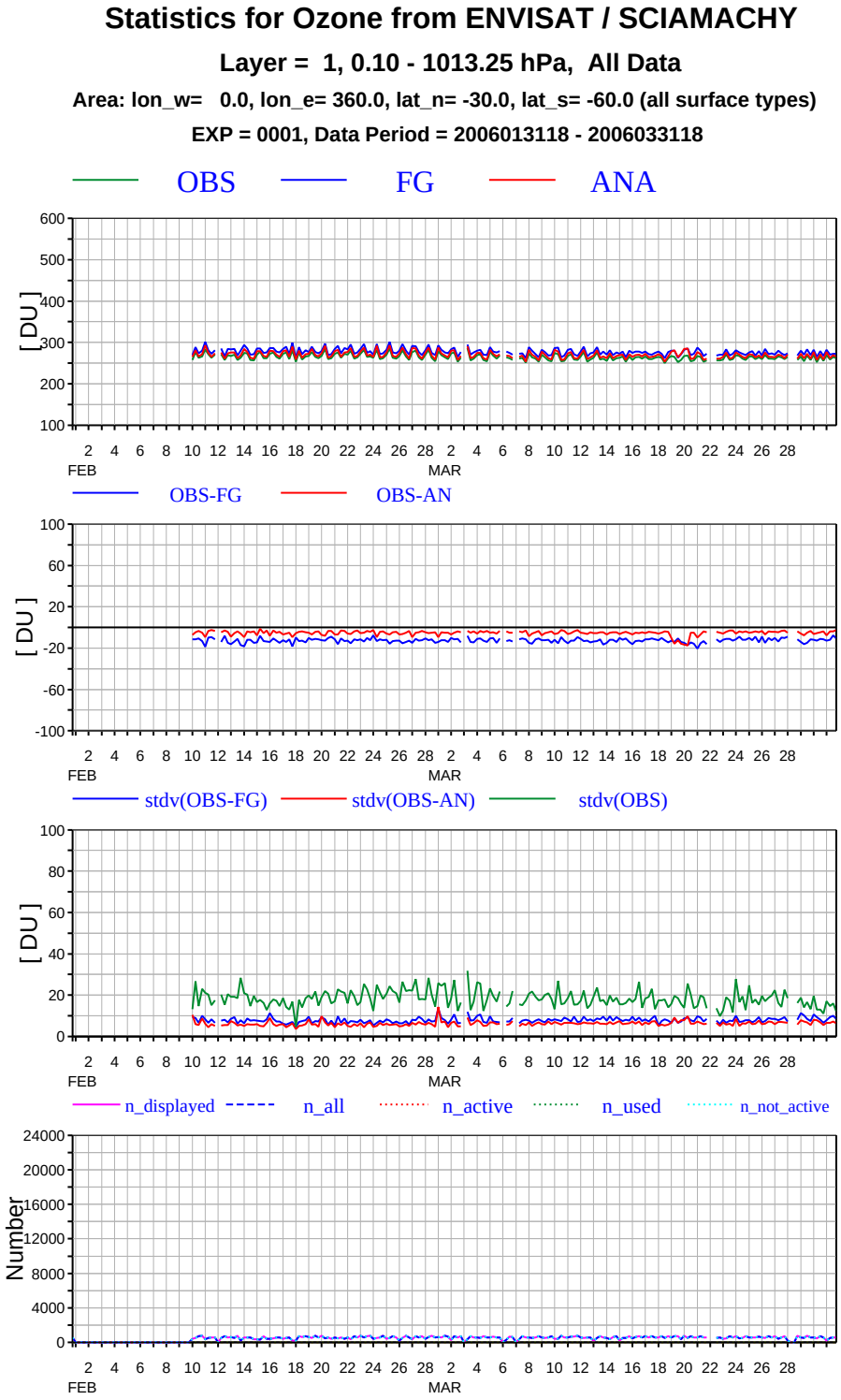

Fig. 5. As Fig. 1 but for 30-60S.

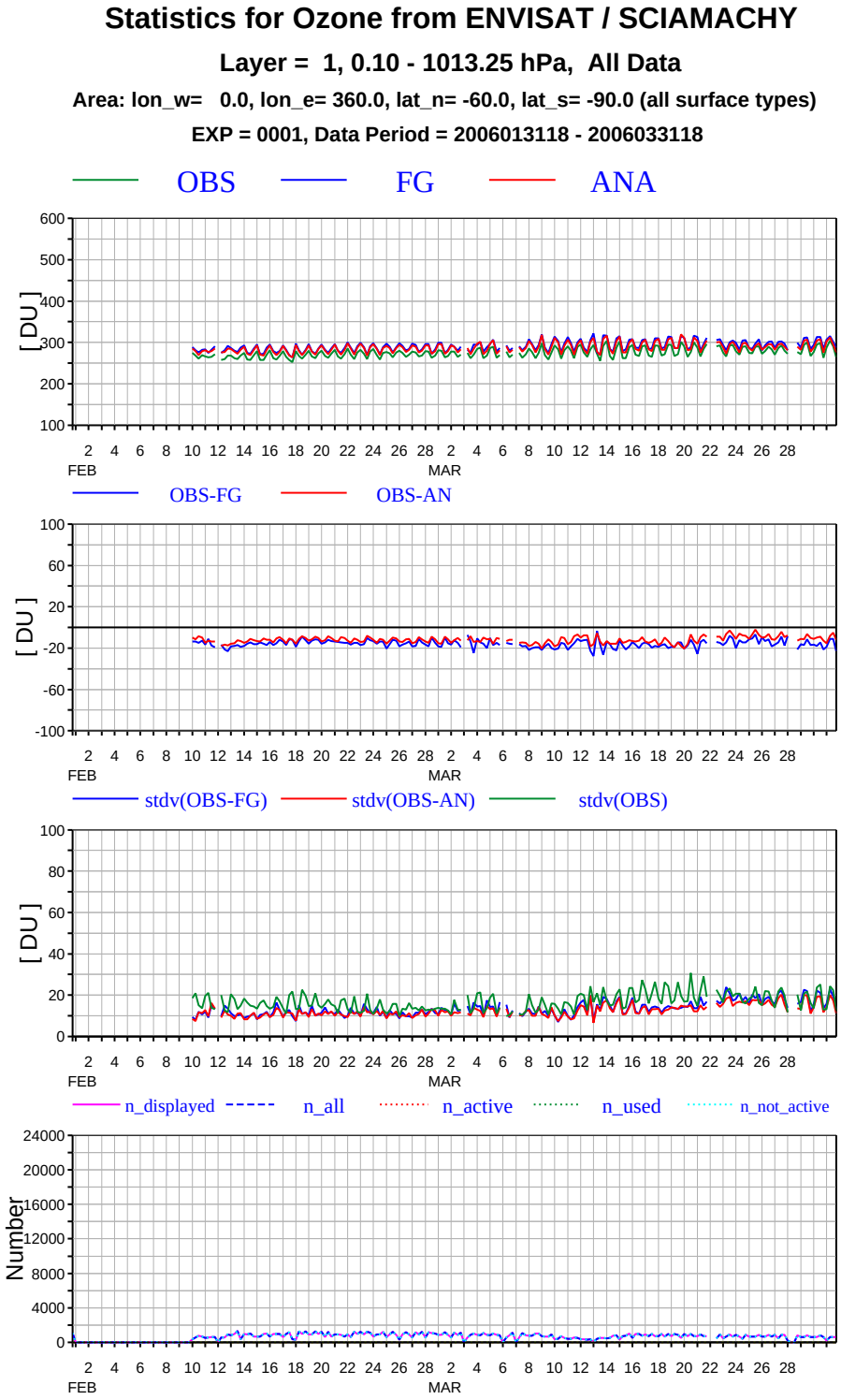

Fig. 6. As Fig. 1 but for 60-90S.

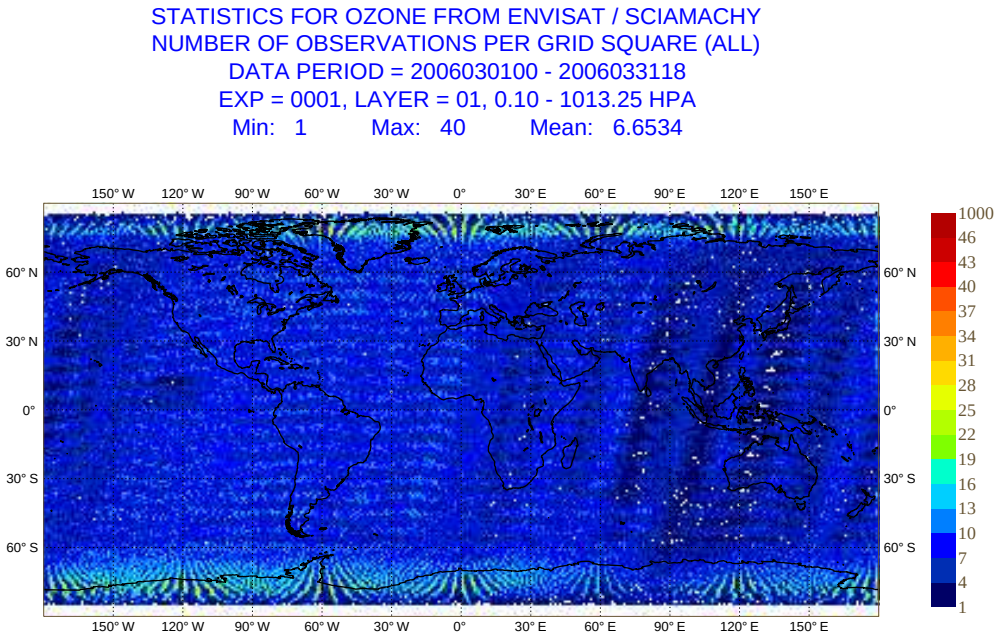

Fig. 7. Geographical distribution of mean number of data for ENVISAT SCIAMACHY NRT ozone data for March 2006.

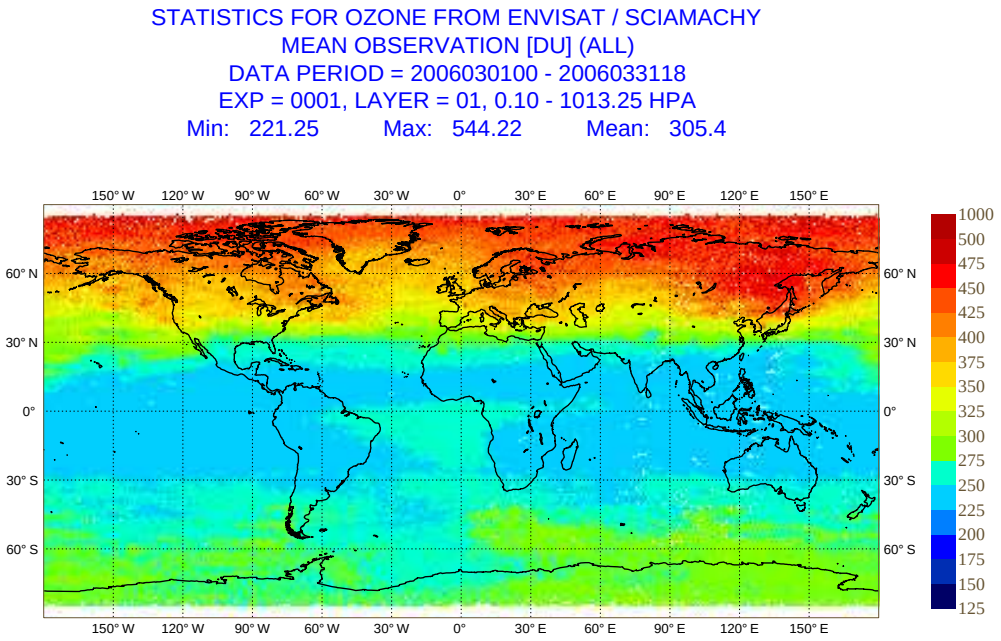

Fig. 8. Geographical distribution of mean observation values for ENVISAT SCIAMACHY NRT ozone data for March 2006.

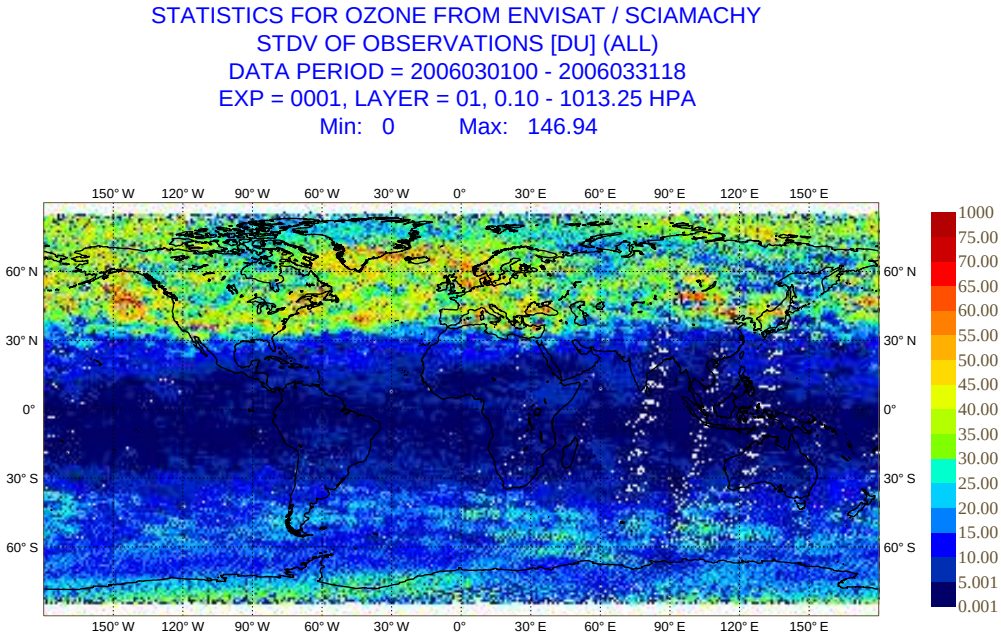

Fig. 9. Geographical distribution of the standard deviation of the mean observation values for ENVISAT SCIAMACHY NRT ozone data for March 2006.

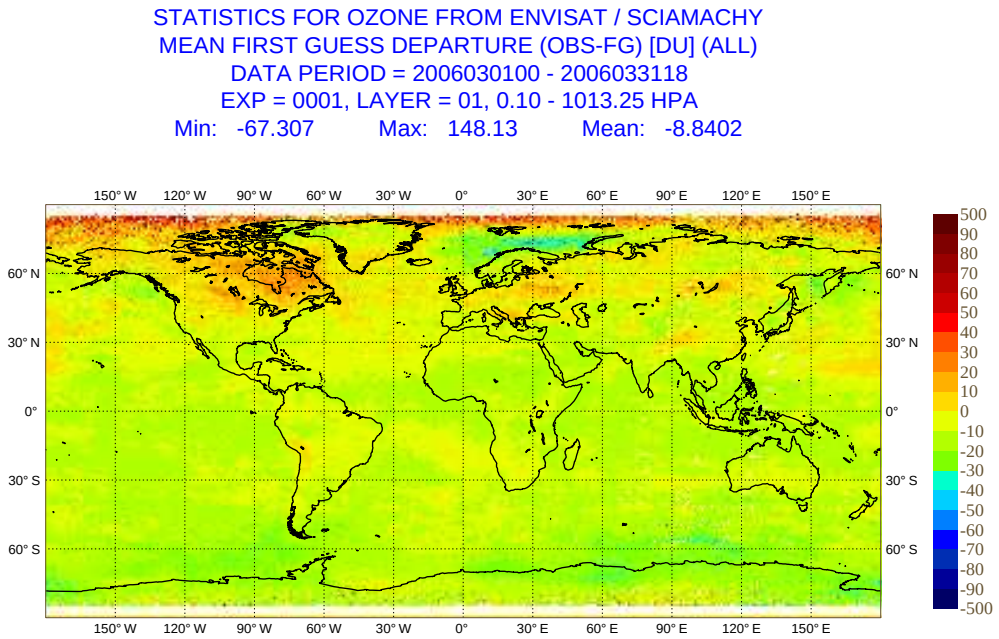

Fig. 10. Geographical distribution of mean first-guess departures for ENVISAT SCIAMACHY NRT ozone data for March 2006.

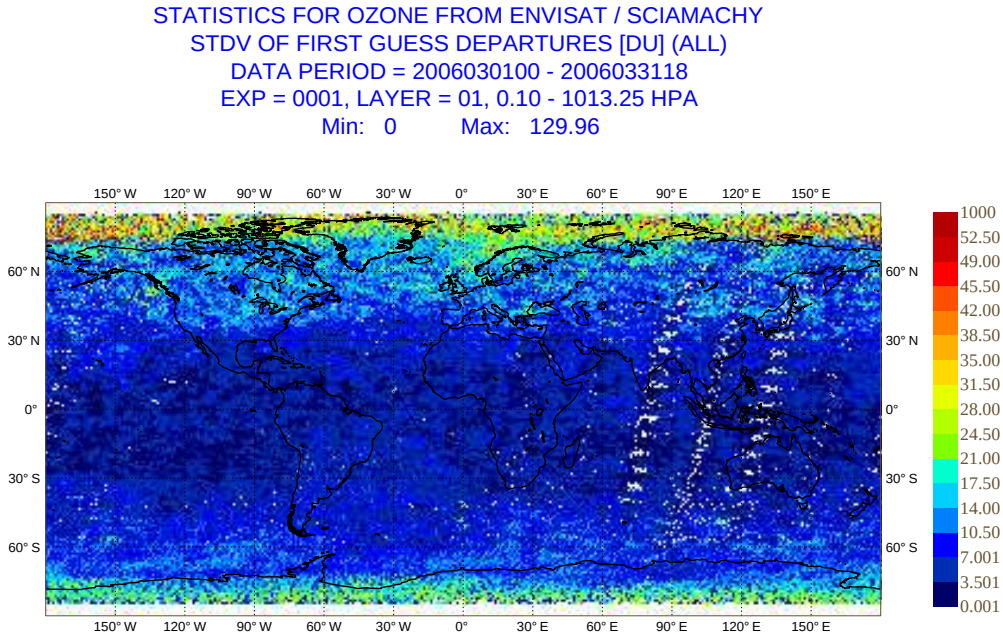

Fig. 11. Geographical distribution of the standard deviation of the mean first-guess departures for ENVISAT SCIAMACHY NRT ozone data for March 2006.

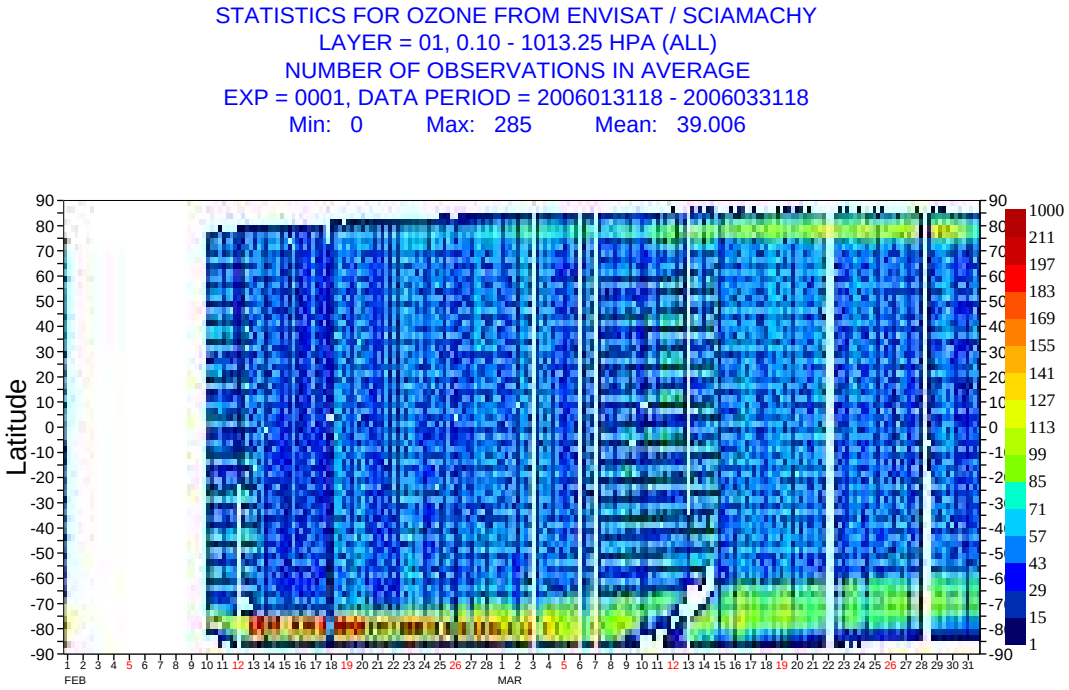

Fig. 12. Hovmoeller diagram of zonal mean number of data for ENVISAT SCIAMACHY NRT ozone data per 6-hour cycle for February and March 2006.

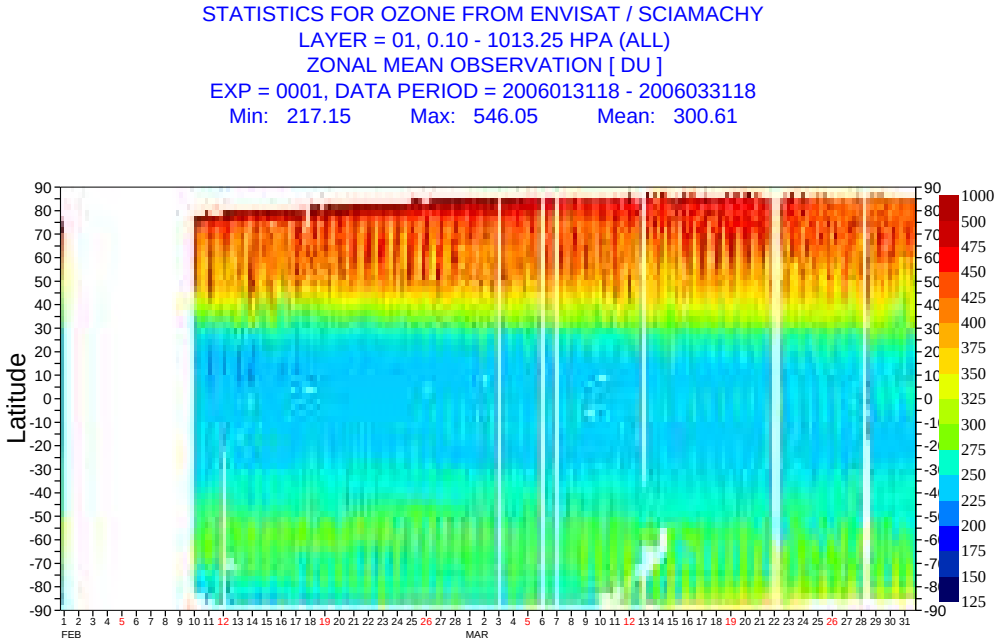

Fig. 13. Hovmoeller diagram of zonal mean observation values for ENVISAT SCIAMACHY NRT ozone data per 6-hour cycle for February and March 2006.

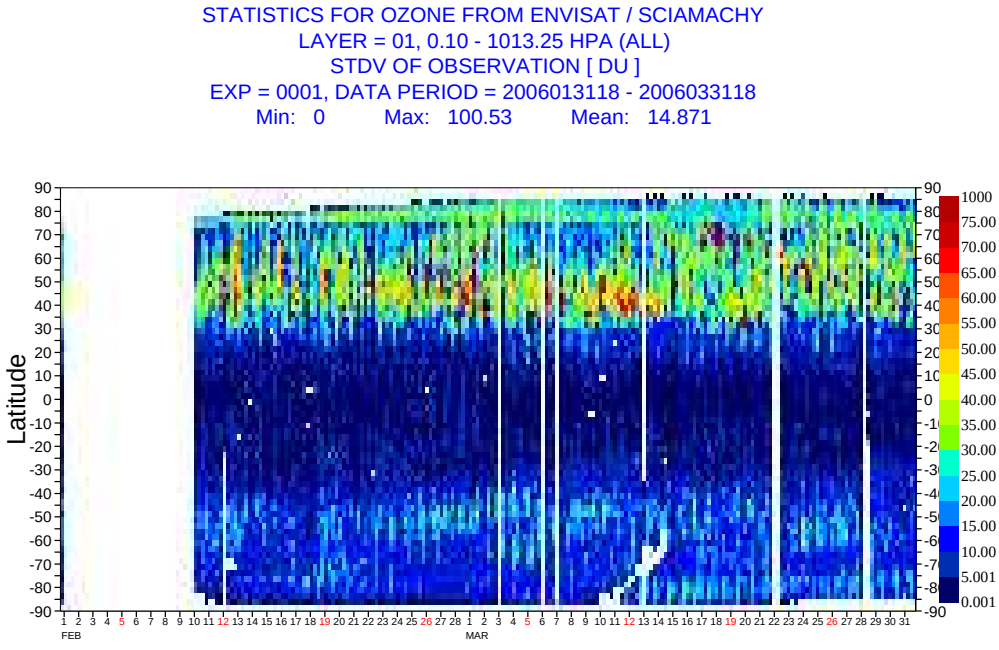

Fig. 14. Hovmoeller diagram of the zonal mean observation standard deviations for ENVISAT SCIAMACHY NRT ozone data per 6-hour cycle for February and March 2006.

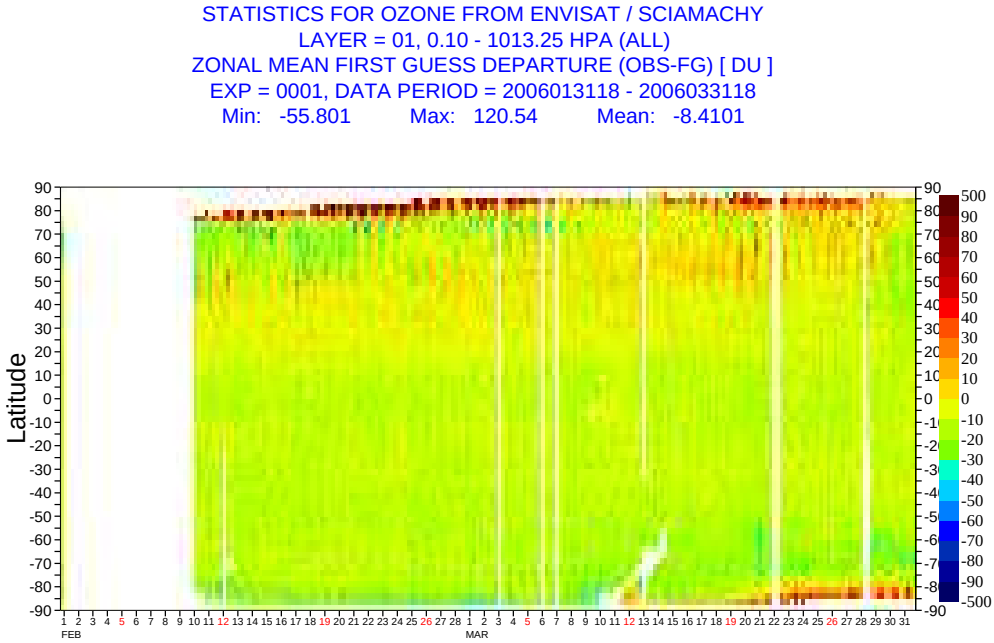

Fig. 15. Hovmoeller diagram of zonal mean first-guess departures for ENVISAT SCIAMACHY NRT ozone data per 6-hour cycle for February and March 2006.

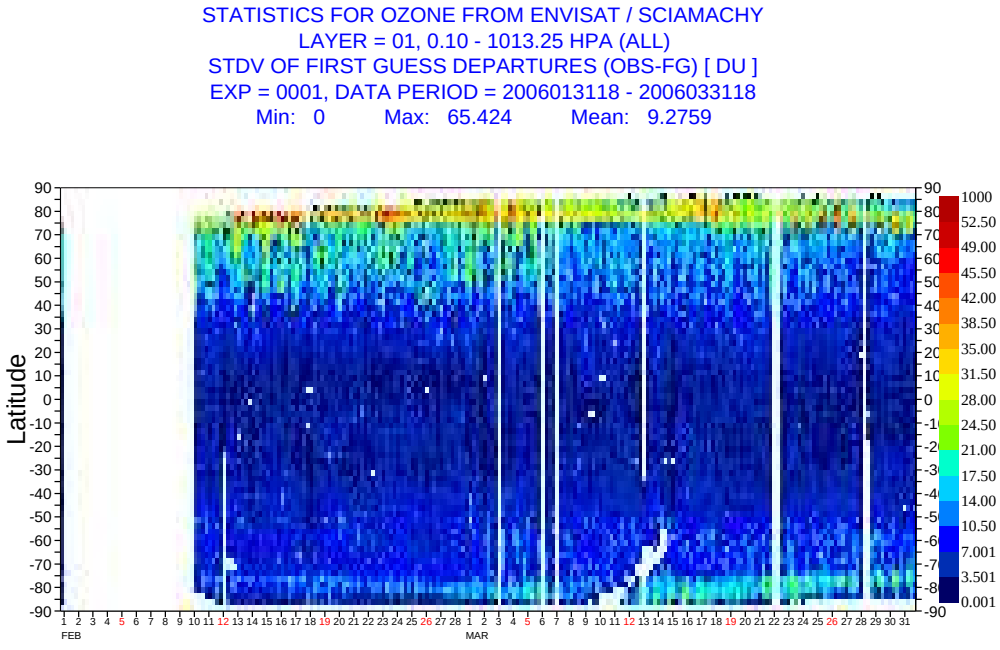

Fig. 16. Hovmoeller diagram of zonal mean first-guess departure standard deviations for ENVISAT SCIAMACHY NRT ozone data per 6-hour cycle for February and March 2006.

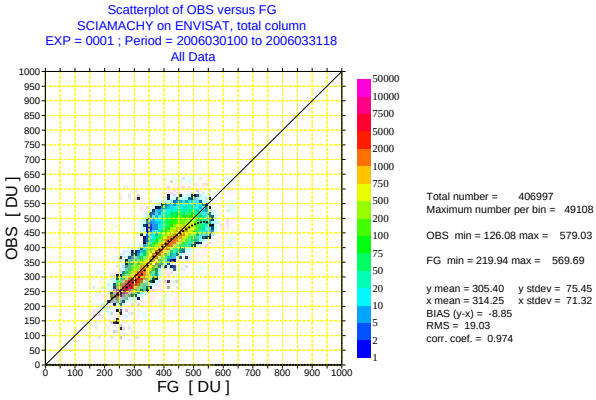

Fig. 17. Scatter plot of ENVISAT SCIAMACHY ozone values against first-guess for March 2006. The colours show the number per bin, the black dots the mean values per bin.

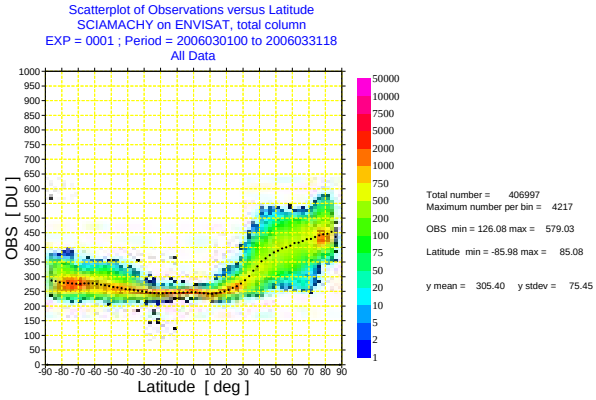

Fig. 18. Scatter plot of ENVISAT SCIAMACHY ozone values against latitude for March 2006. The colours show the number per bin, the black dots the mean values per bin.

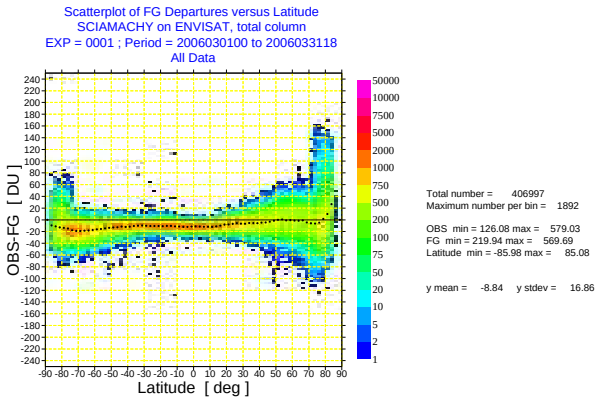

Fig. 19. Scatter plot of first-guess departures of ENVISAT SCIAMACHY ozone against latitude for March 2006. The colours show the number per bin, the black dots the mean values per bin.