REPORT ABOUT ENVISAT SCIAMACHY NRT OZONE PRODUCT (SCI_RV__2P) FOR FEBRUARY 2005

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1. Key points for February 2005

- SCIAMACHY data quality is relatively stable in February.
- SCIAMACHY data about 10 DU lower in the global mean than ECMWF ozone values.
- No SCIAMACHY data during the 0z cycles between 1 and 8 February.
- No SCIAMACHY data on 3-4 February.
- This monitoring report was produced with the operational ECMWF model, CY28R4.

2. Quality and amount of received data

This report covers SCIAMACHY NRT total column ozone data for February 2005. Amount of received data and their quality are shown in Figures 1-6 for various latitude bands. Geographical distributions of mean number of data, mean observation values and mean first-guess departures are shown in Figures 7-9. Timeseries of zonal mean number of data, zonal mean observation values and zonal mean first-guess departures are shown in Figures 10-12. Figures 13-15 present the scatter plots of SCIAMACHY ozone values against first-guess ozone values and latitude as well as the scatter plot of first-guess departures of SCIAMACHY ozone values against latitude.

The timeseries plots (Figures 1-6) show that SCIAMACHY data quality is relatively stable this month. The global mean departures (SCIAMACHY-ECMWF) are around -10 DU. Sligtly larger positive and negative departures can be seen in the northern hemisphere (Figures 2-3). Owing to technical problems the data-stream from KNMI to ECMWF was interruped between 7 and 10 February and between 17 and 21 February. For this reason KNMI SCIAMACHY ozone data were not assimilated in the ECMWF system and the analysis is not drawing to the KNMI SCIAMACHY ozone data during those periods.

The standard deviations of the mean departures have been also relatively stable throughout the month. In the global means the standard deviations of the mean departures are roughly around 18 DU. The slight increase compared to the previous month is mainly due to a slight increase in the standard deviations of the mean departures at the southern high latitudes (Fig. 6).

No SCIAMACHY data were available between 3 February 0z and 4 February 12z. Furthermore, due to an anomaly in the Envisat low rate data acquisition chain, located at Esrin, no data were available in the ftp server ftp-ops.pde.envisat.esa.int during the 0z cycles between 1 and 8 February.

The reduction of the SCIAMACHY data coverage to the northern high latitudes (67.5-82.5N) on the 23 February produced a high global averaged ozone value and a high standard deviation of the mean departures in the global mean on that day (Fig. 1, top and third pannels).

The geo plots, the hovmoeller plots and the scatter plots (Figures 7-15) continue to show large positive departures at the northern high latitudes which are likely to occur at high solar zenith angles (SZA). This issue can not be further investigated because NRT SCI_RV__2P data do not include any geolocation information like SZA. The number of relatively large positive departures between 40 and 70N has increased this month as compared to January (Fig. 15).

The scatter of relatively low and high ozone values between 0-30S observed in January is still present this month (Fig. 14). As already pointed out in previous reports, this might be a sign of cloud contamination but as the cloud cover or cloud top height is not available in the NRT SCIA_RV_2P this issue can not be further investigated.

3. Remarks

As ozone layers from SBUV/2 on NOAA-16 and SCIAMACHY total column ozone data produced by KNMI are actively assimilated in the operational ECMWF model, 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).

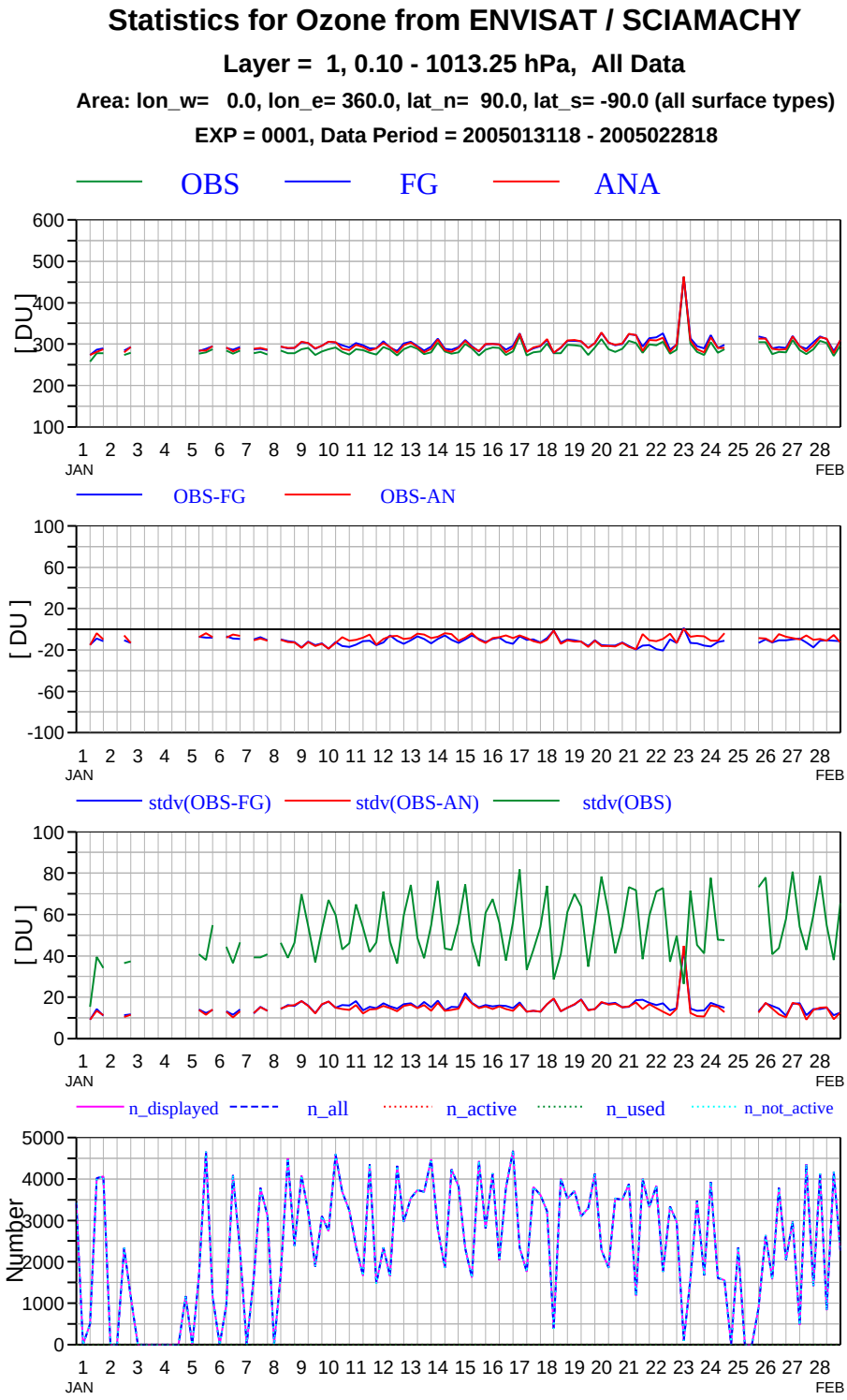

Fig. 1. Time series of mean observations, first guess and analysis values (top panel), first-guess and analysis departures (second panel), standard deviations (third panel) and number of data (bottom panel) per 6-hour cycle for ENVISAT SCIAMACHY NRT ozone data for January and February 2005 (Global means).

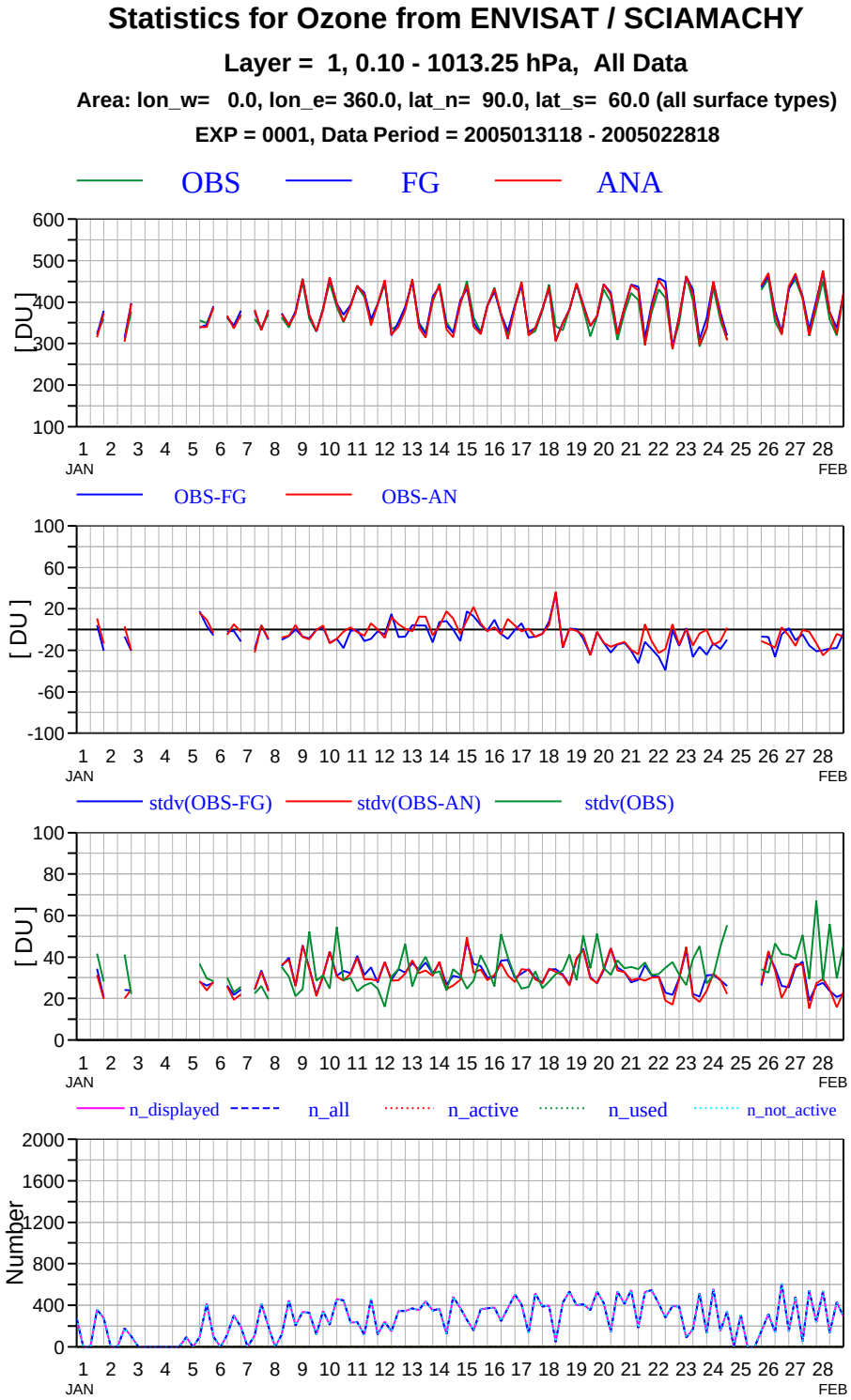

Fig. 2. As Fig.1 but for 90-60N.

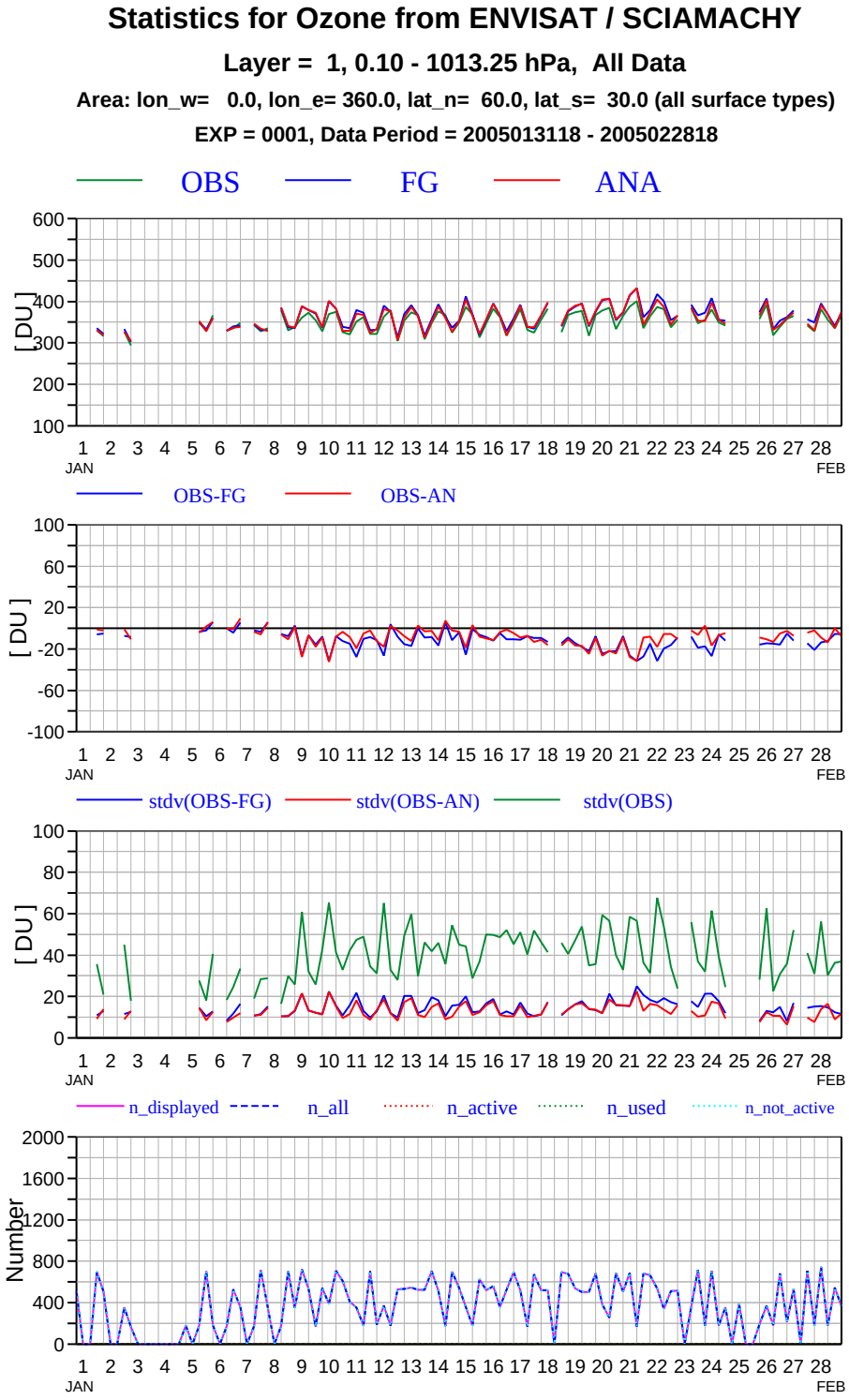

Fig. 3. As Fig. 1 but for 60-30N.

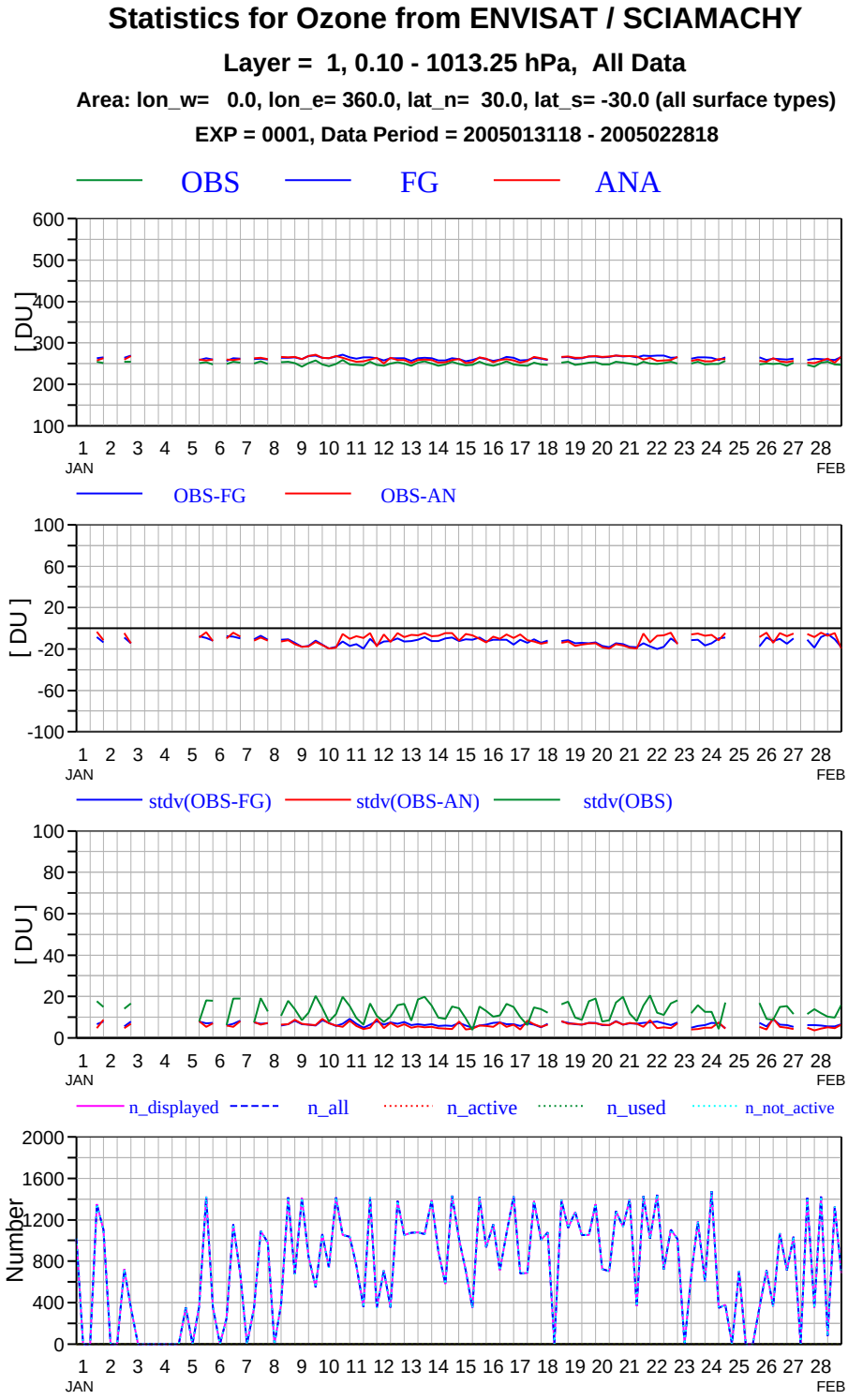

Fig. 4. As Fig. 1 but for 30N-30S.

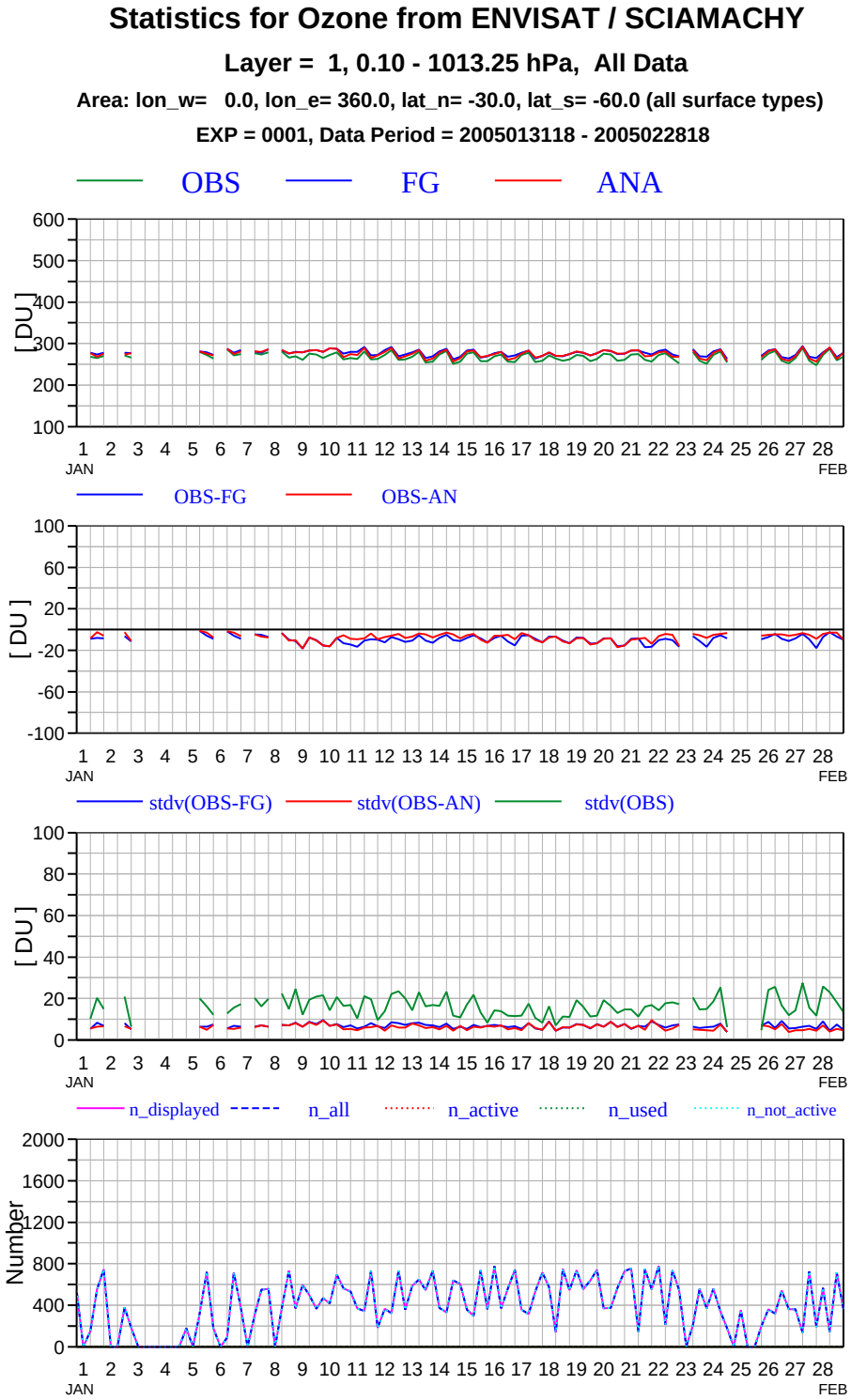

Fig. 5. As Fig. 1 but for 30-60S.

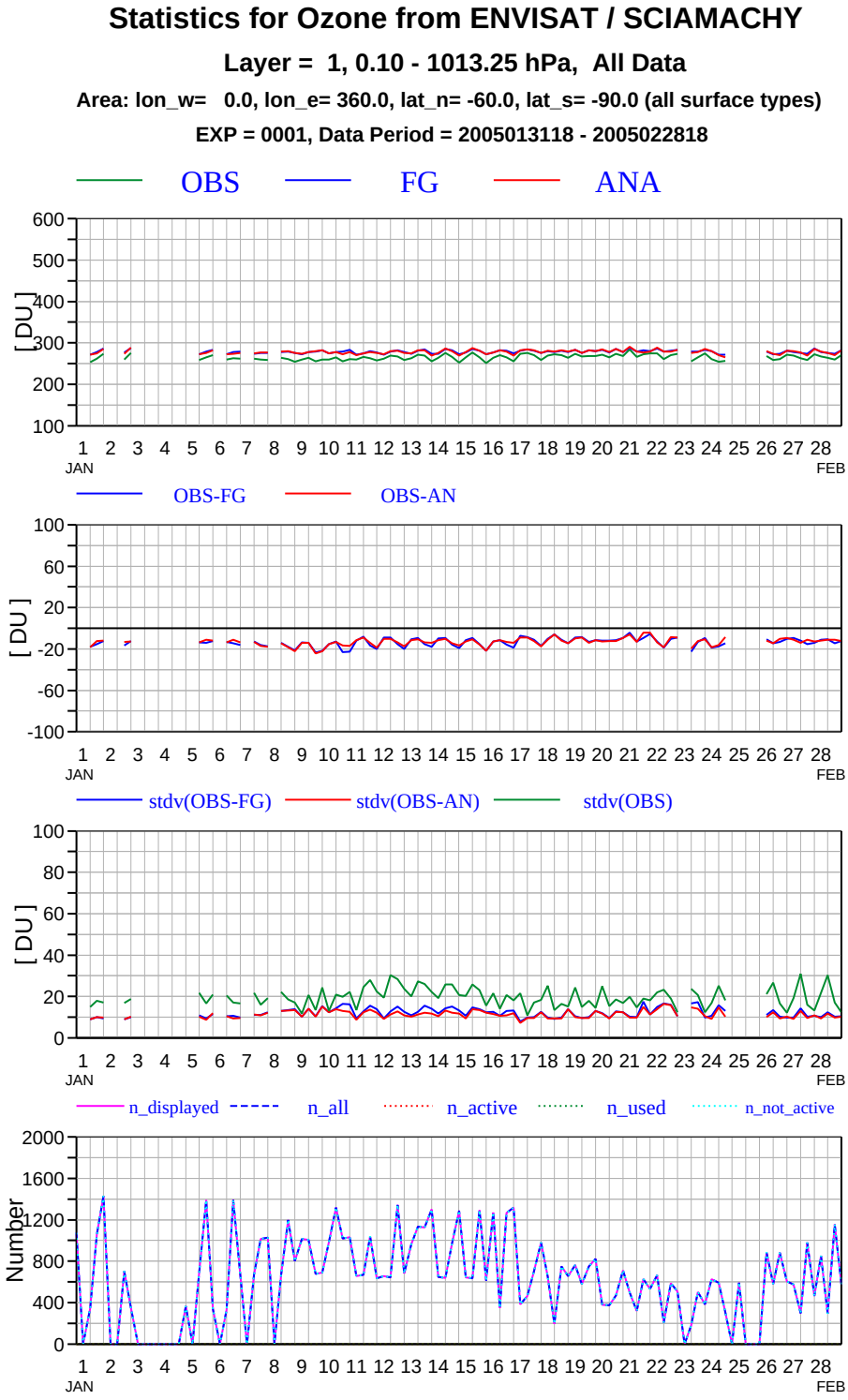

Fig. 6. As Fig. 1 but for 60-90S.

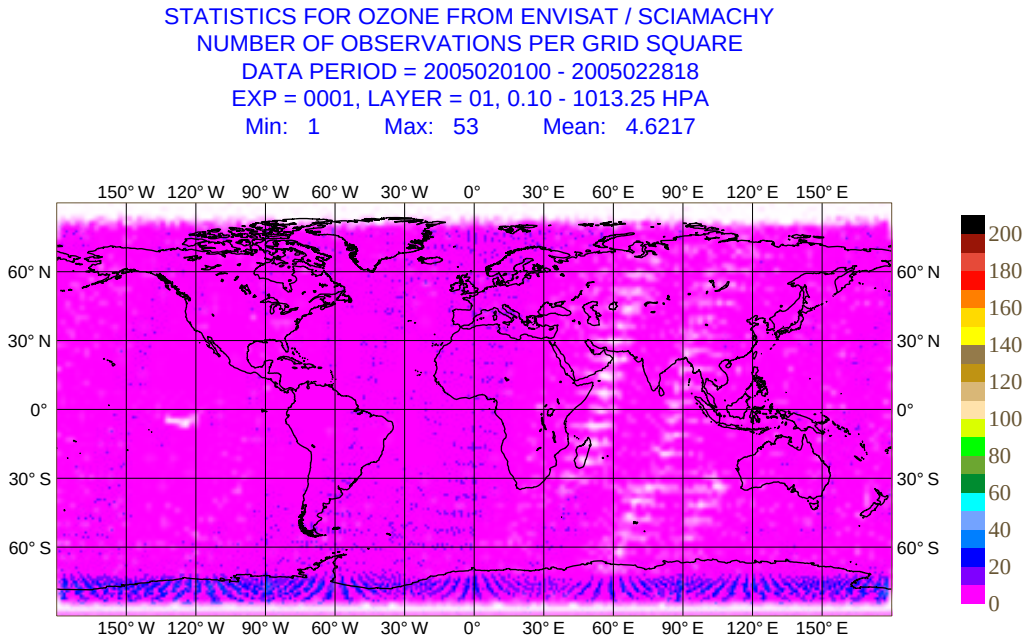

Fig. 7. Geographical distribution of mean number of data for ENVISAT SCIAMACHY NRT ozone data for February 2005.

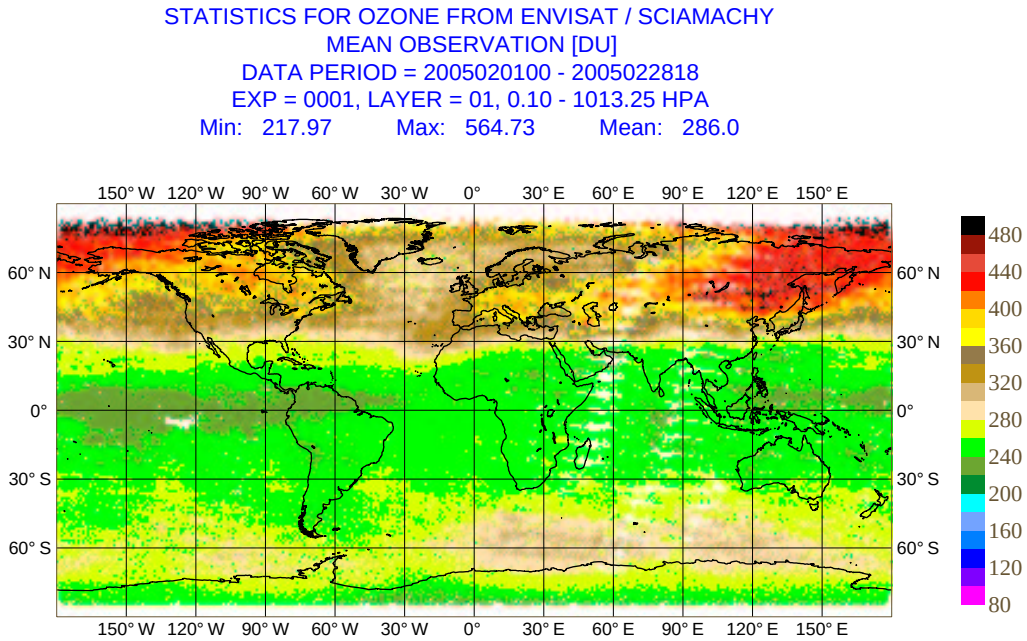

Fig. 8. Geographical distribution of mean observation values for ENVISAT SCIAMACHY NRT ozone data for February 2005.

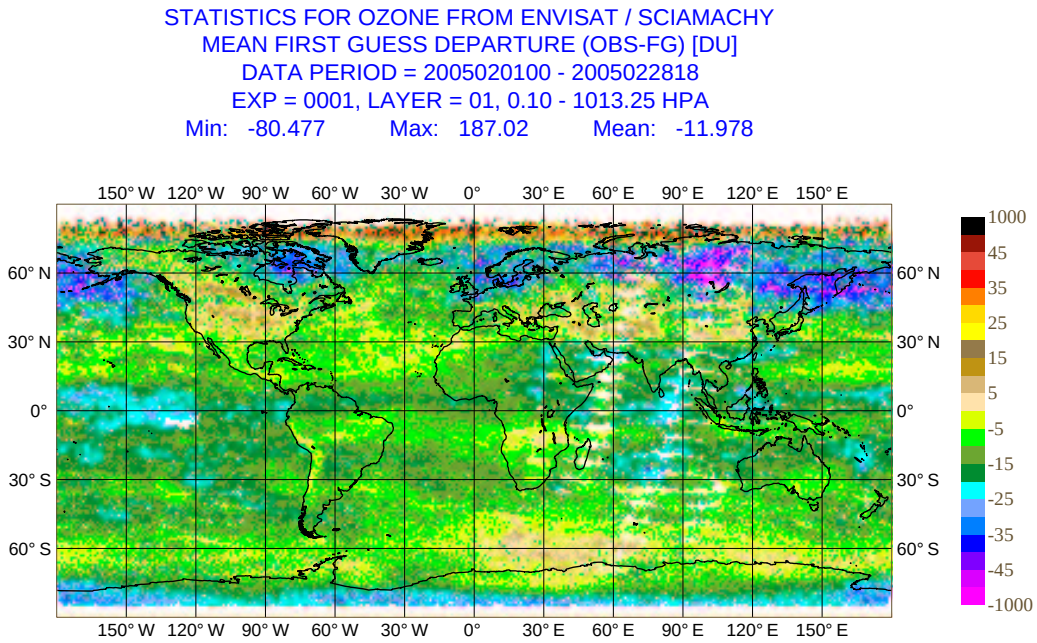

Fig. 9. Geographical distribution of mean first-guess departures for ENVISAT SCIAMACHY NRT ozone data for February 2005.

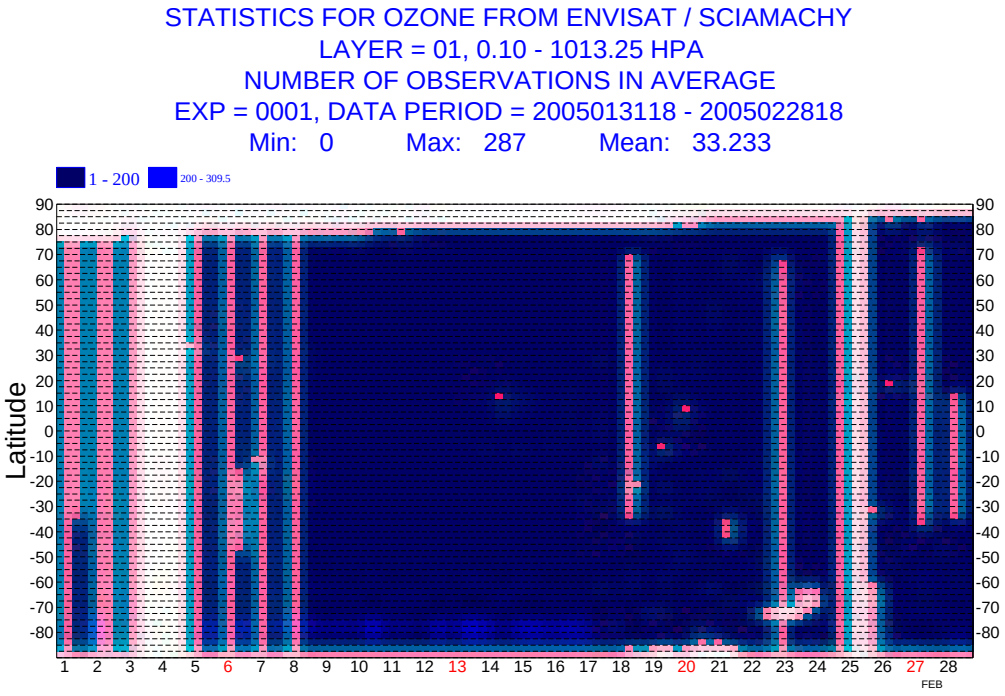

Fig. 10. Hovmoeller diagram of zonal mean number of data for ENVISAT SCIAMACHY NRT ozone data per 6-hour cycle for January and February 2005.

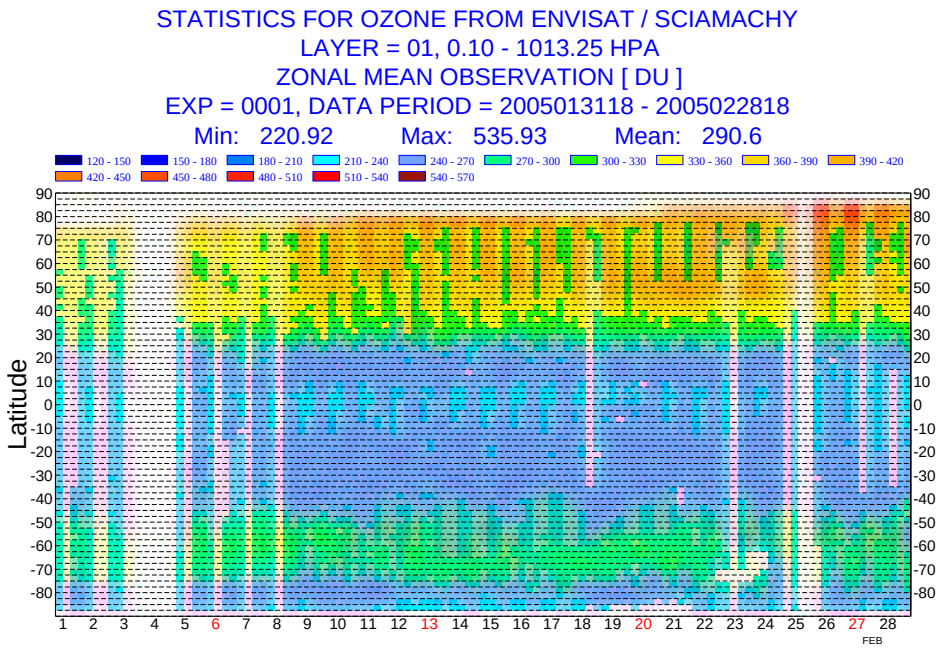

Fig. 11. Hovmoeller diagram of zonal mean observation values for ENVISAT SCIAMACHY NRT ozone data per 6-hour cycle for January and February 2005.

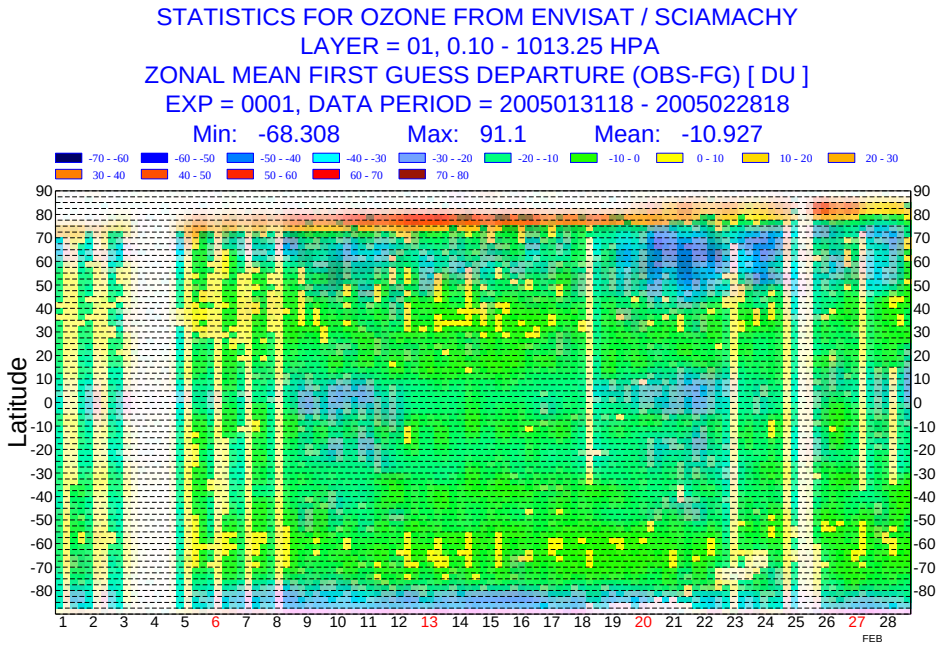

Fig. 12. Hovmoeller diagram of zonal mean first-guess departures for ENVISAT SCIAMACHY NRT ozone data per 6-hour cycle for January and February 2005.

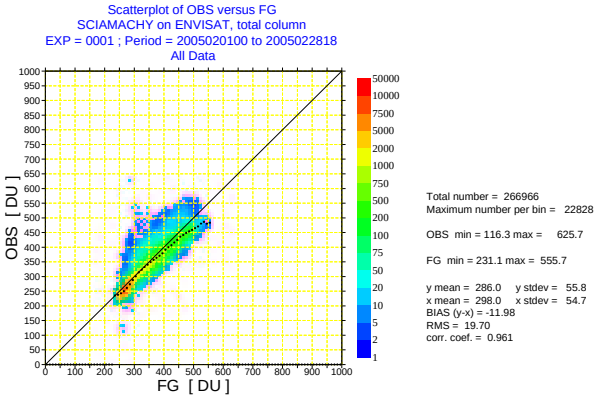

Fig. 13. Scatter plot of ENVISAT SCIAMACHY ozone values against latitude for February 2005. The colours show the number per bin, the black dots the mean values per bin.

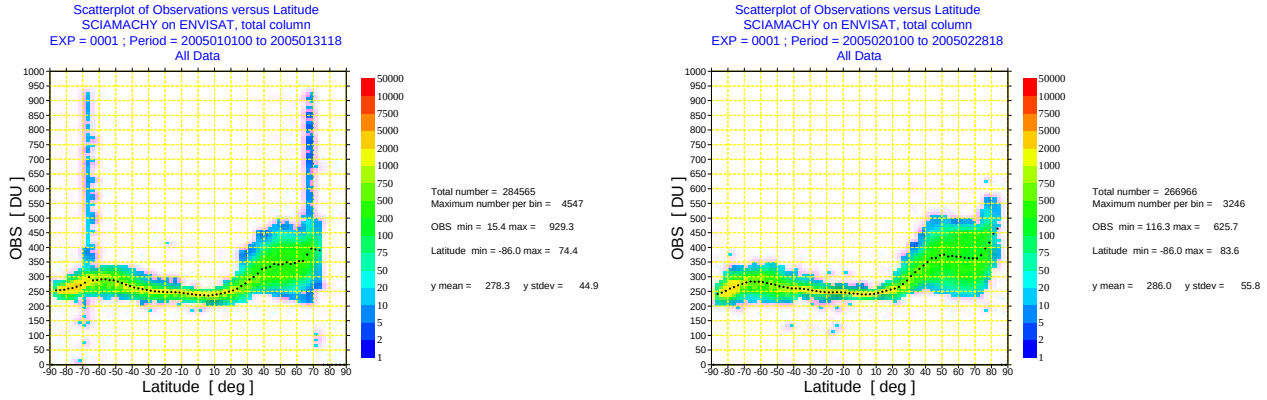

Fig. 14. Scatter plot of ENVISAT SCIAMACHY ozone values against latitude for January (left) and February 2005 (right). The colours show the number per bin, the black dots the mean values per bin.

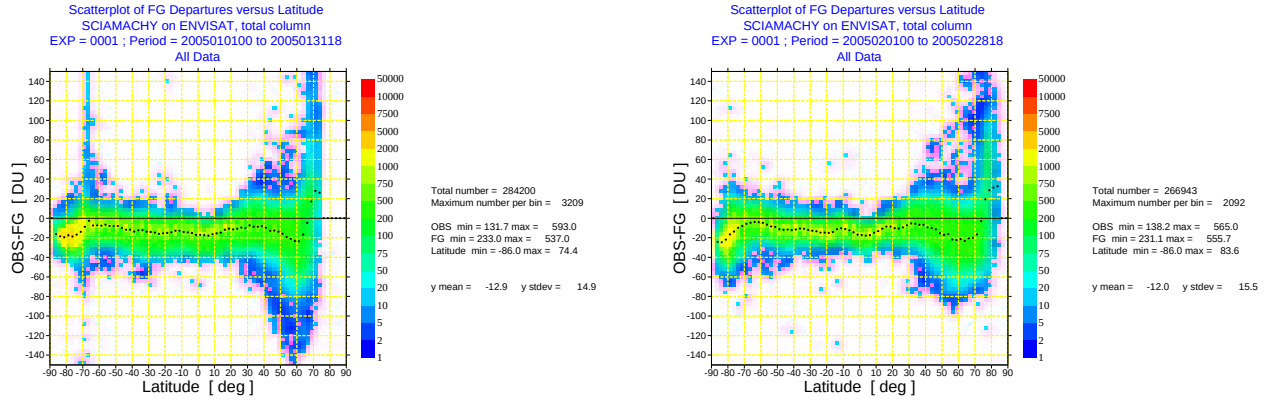

Fig. 15. Scatter plot of first-guess departures of ENVISAT SCIAMACHY ozone against latitude for January (left) and February 2005 (right). The colours show the number per bin, the black dots the mean values per bin.