REPORT ABOUT ENVISAT SCIAMACHY NRT OZONE PRODUCT (SCI_RV__2P) FOR NOVEMBER 2004

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1. Key points for November 2004

- SCIAMACHY data quality fairly stable in November.
- SCIAMACHY large drift as compared to ECMWF model in the Northern Hemisphere and throughout the month.
- No SCIAMACHY data on 17-18 November.
- SCIAMACHY data about 20 DU higher in the global mean than ECMWF ozone values.
- This monitoring report was produced with the operational ECMWF model, CY28R3.

2. Quality and amount of received Data

This report covers SCIAMACHY NRT total column ozone data for November 2004. Amount of received data and their quality are shown in Figures 1-6 for various latitude bands. Zonal mean values are shown in Figures 10-12. The data gap that was seen prior to August 2004 between about 60-150E is not seen any more.

SCIAMACHY data quality is fairly stable this month. A drift in the mean departures (SCIAMACHY - ECMWF) can be clearly seen throughout the month and for the Northern Hemisphere (North Pole in particular). The global mean analysis departures are around 20 DU. However, mean departures of more than 100 DU (negative bias) or 80 DU (positive bias) can be observed respectively over the North and South poles. Note however the small sample size to compute the mean values over the poles (no data south of 86S and north of 77N. The standard deviations of SCIAMACHY data and of first-guess and analysis departures have been stable as compared to last month.

The geo plots and scatter plots confirm unrealistically large ozone values and large departures south of 60S (Figures 6, 7, 14 and 15). These departures are larger than those seen in previous months.

3. Remarks

This monitoring report was produced with the operational ECMWF model (CY28R3). In CY28R3 ozone layers from SBUV/2 on NOAA-16 and SCIAMACHY total column ozone data produced by KNMI are actively assimilated. Hence, the comparison of SCI_RV__2P data against the ECMWF ozone field does not give an independent validation any more. However, it is worth pointing out that in absolute terms, SCIAMACHY total column ozone data produced by KNMI do not exhibit these unrealistically large values over the Southern Hemisphere.

All ozone values are in Dobson Units (DU).

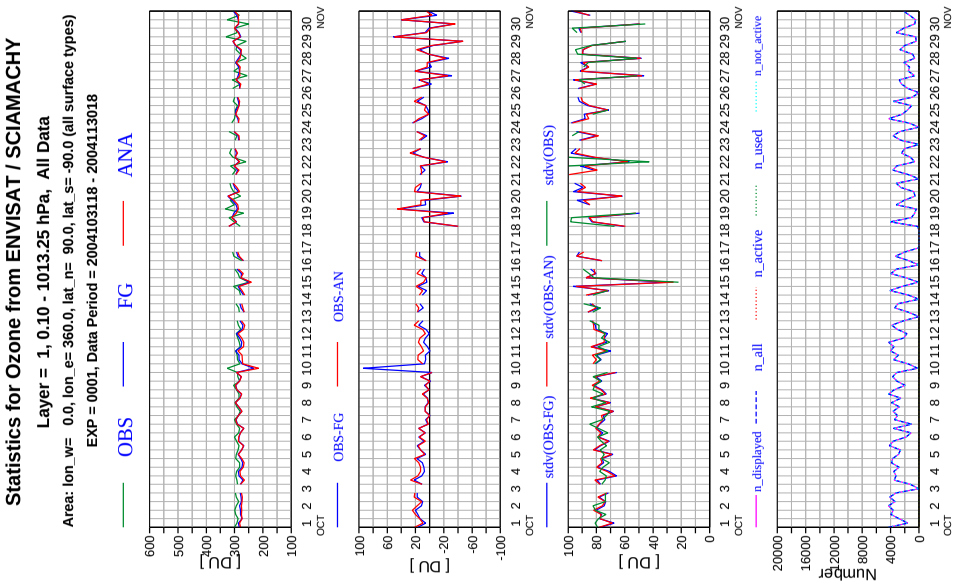

Fig. 1. Time series of mean observations, first guess and analysis values (top panel), first-guess and analysis departures (second panel), standard deviations (third panel) and number of data (bottom panel) per 6-hour cycle for ENVISAT SCIAMACHY NRT ozone data for November 2004 (Global means).

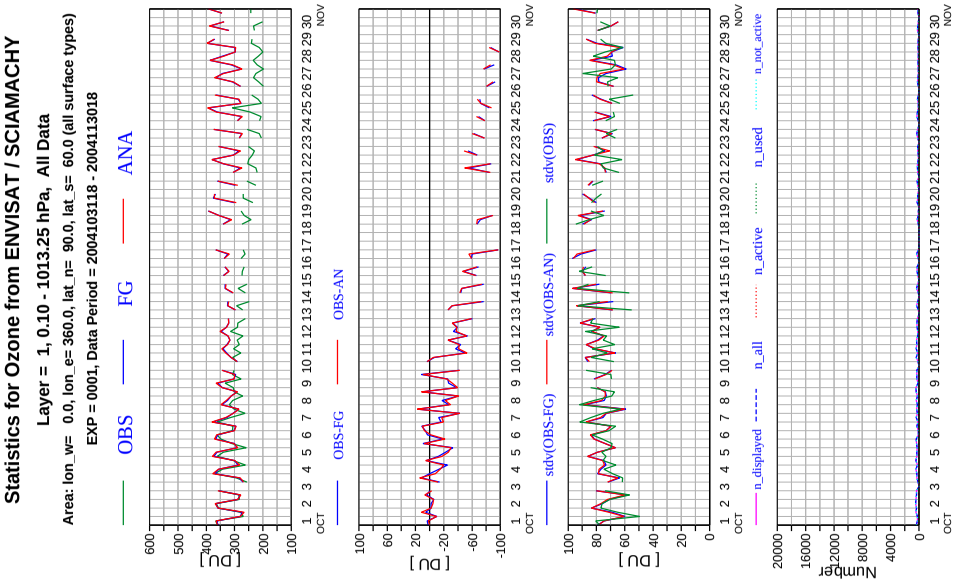

Fig. 2. As Fig.1 but for 90-60N.

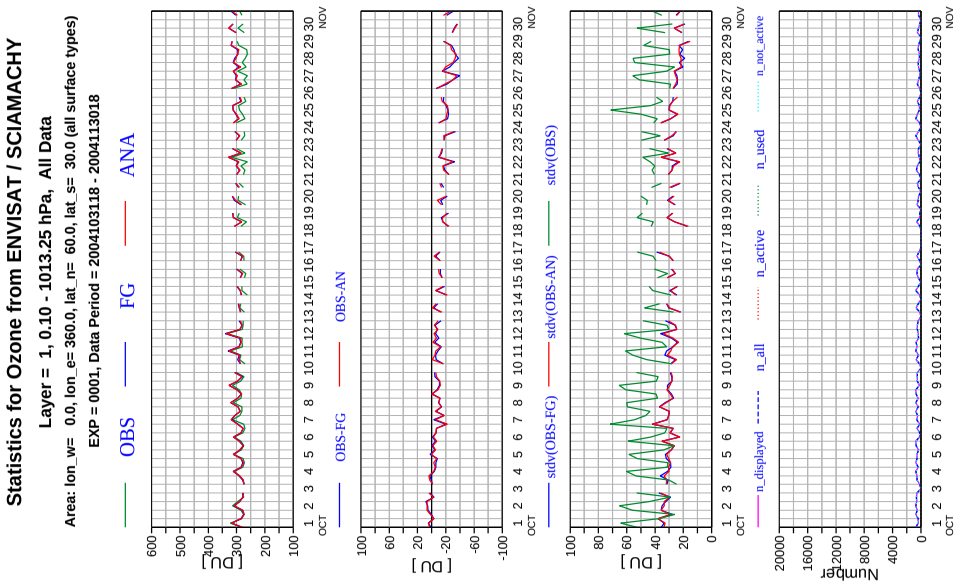

Fig. 3. As Fig. 1 but for 60-30N.

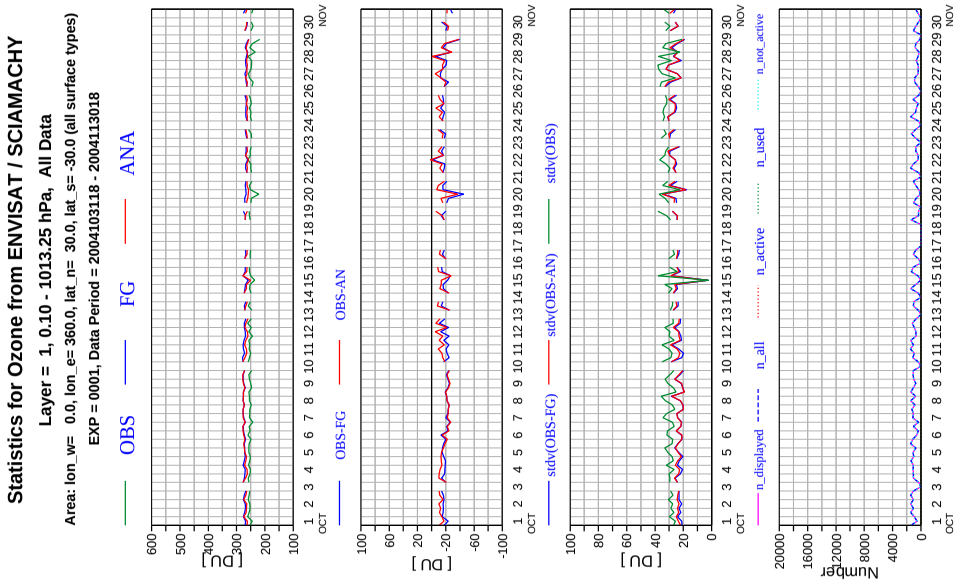

Fig. 4. As Fig. 1 but for 30N-30S.

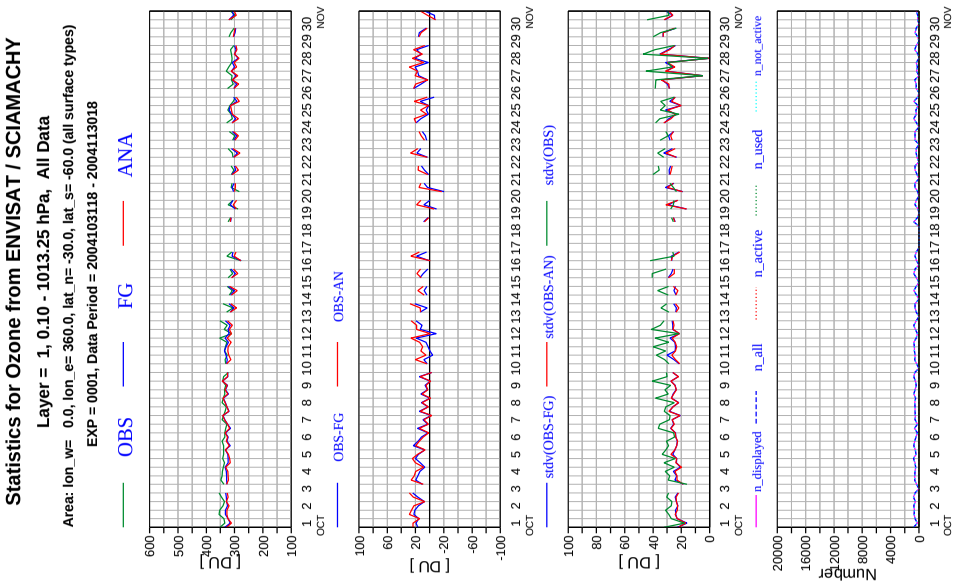

Fig. 5. As Fig. 1 but for 30-60S.

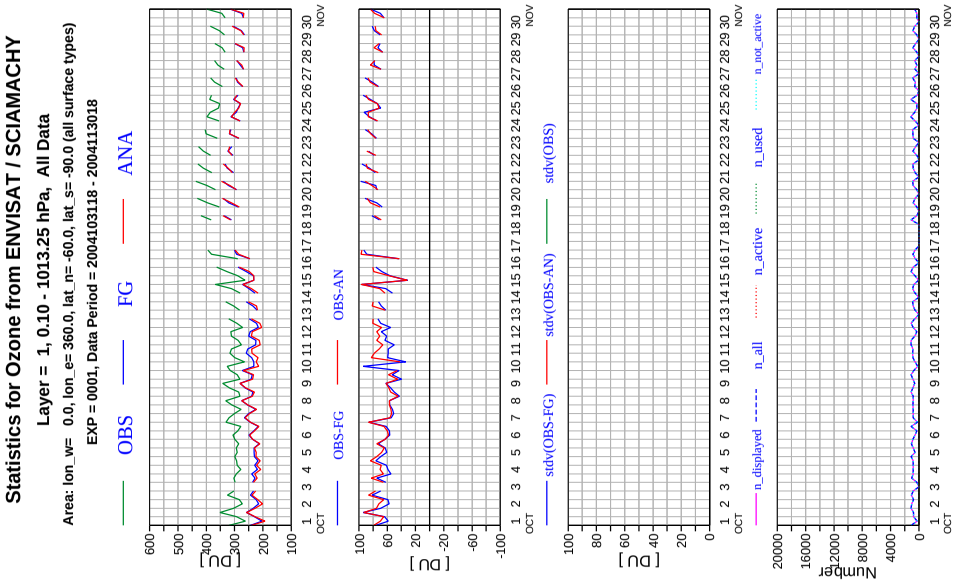

Fig. 6. As Fig. 1 but for 60-90S.

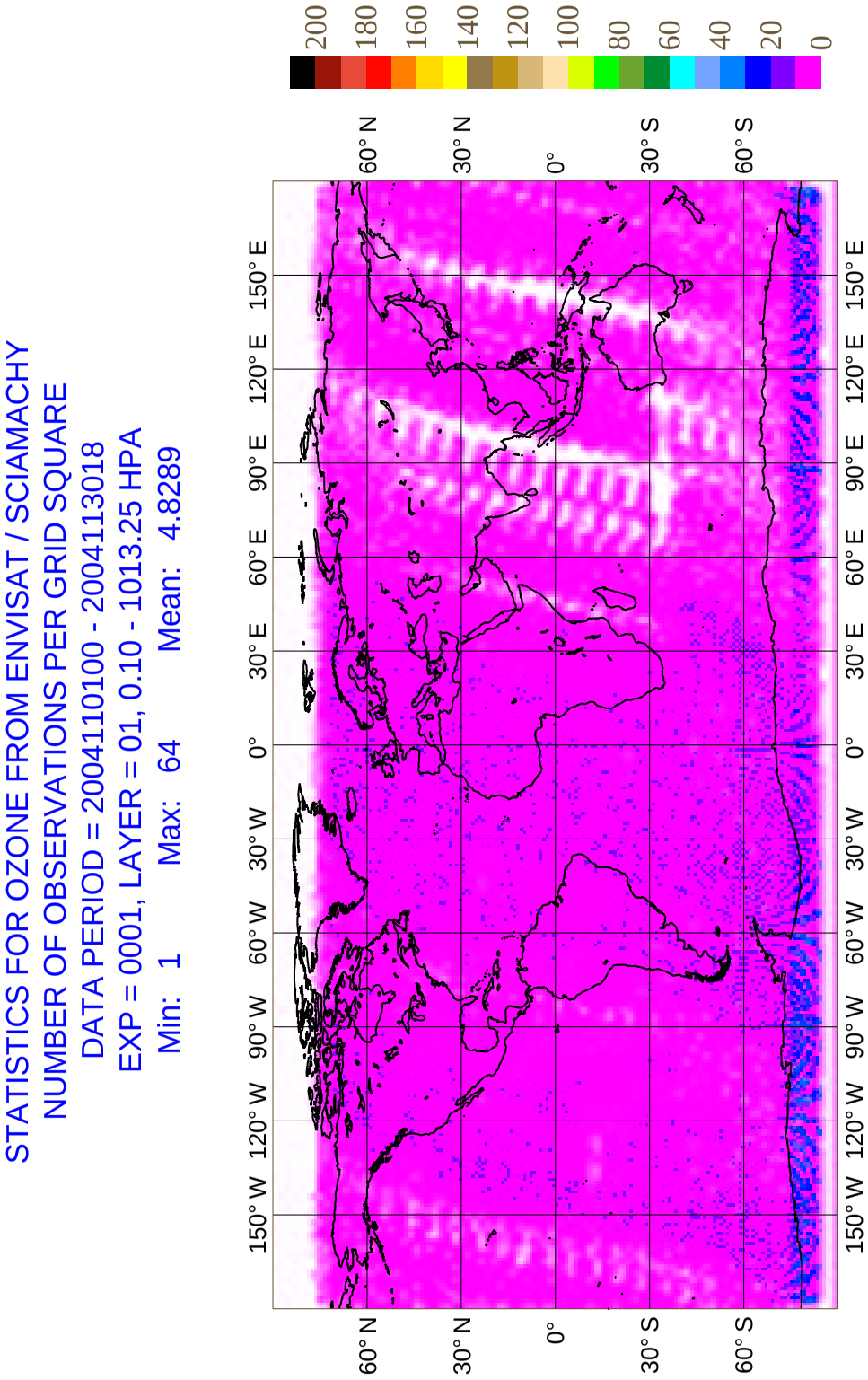

Fig. 7. Geographical distribution of mean number of data for ENVISAT SCIAMACHY NRT ozone data for November.

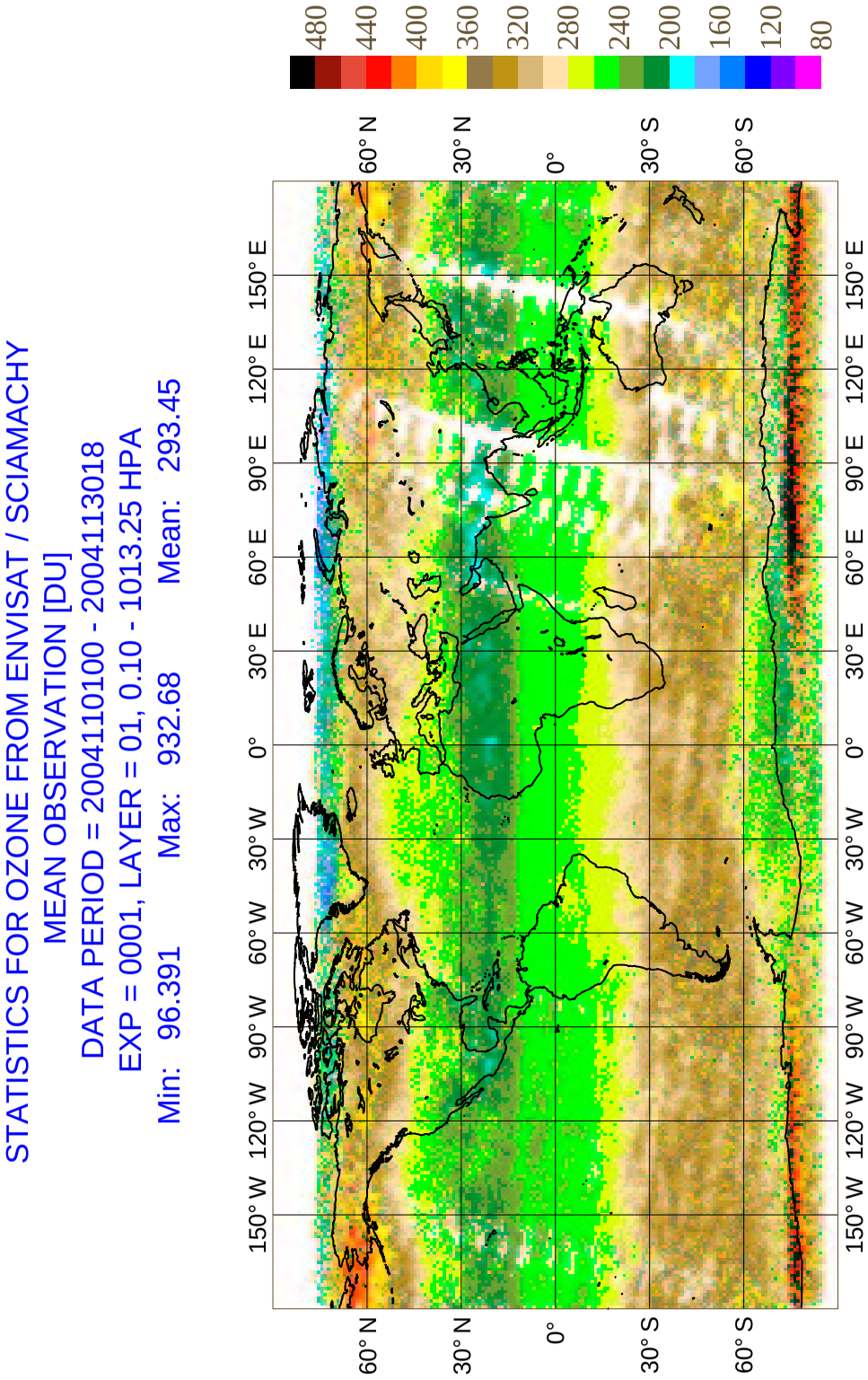

Fig. 8. Geographical distribution of mean observation values for ENVISAT SCIAMACHY NRT ozone data for November.

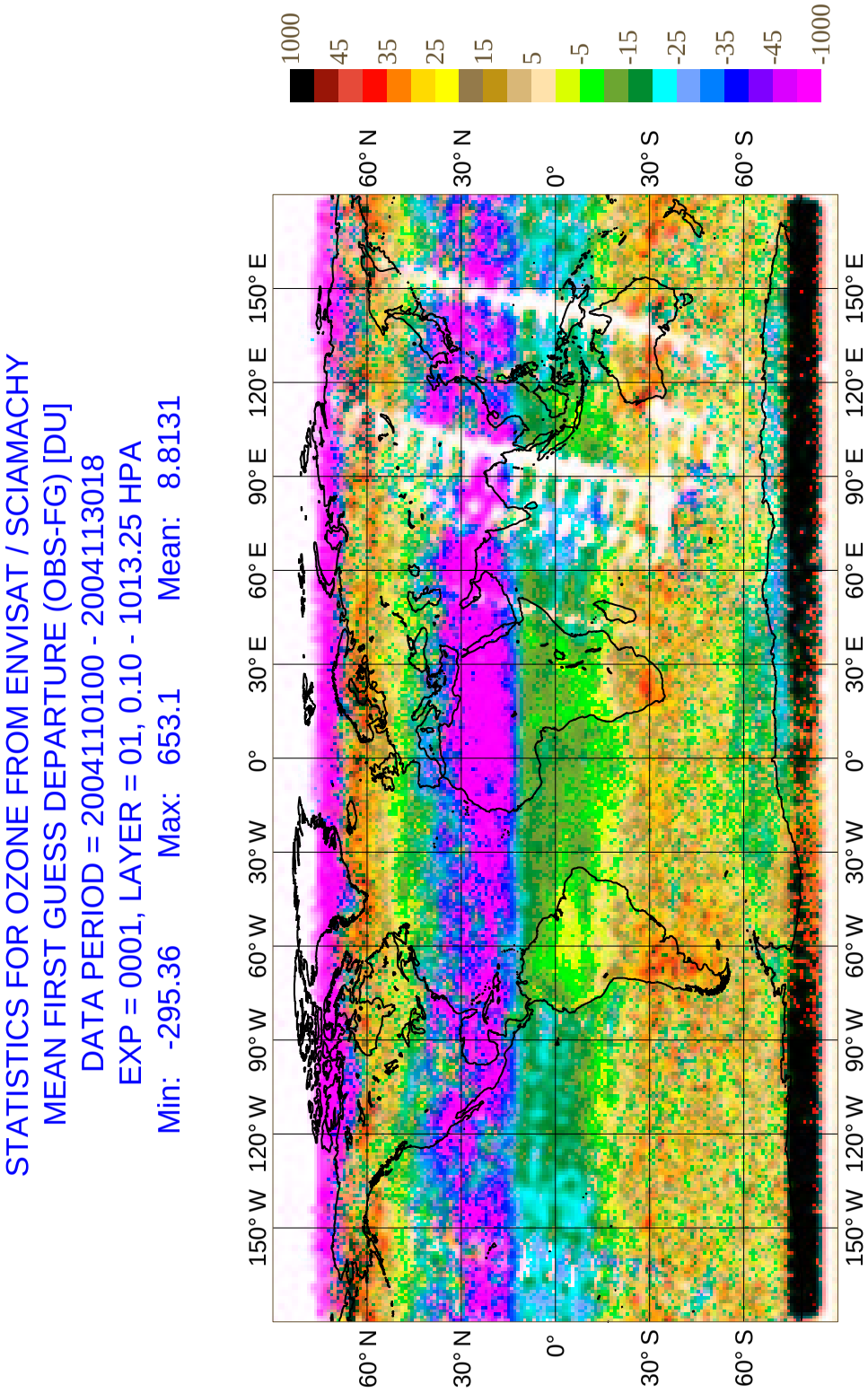

Fig. 9. Geographical distribution of mean first-guess departures for ENVISAT SCIAMACHY NRT ozone data for November.

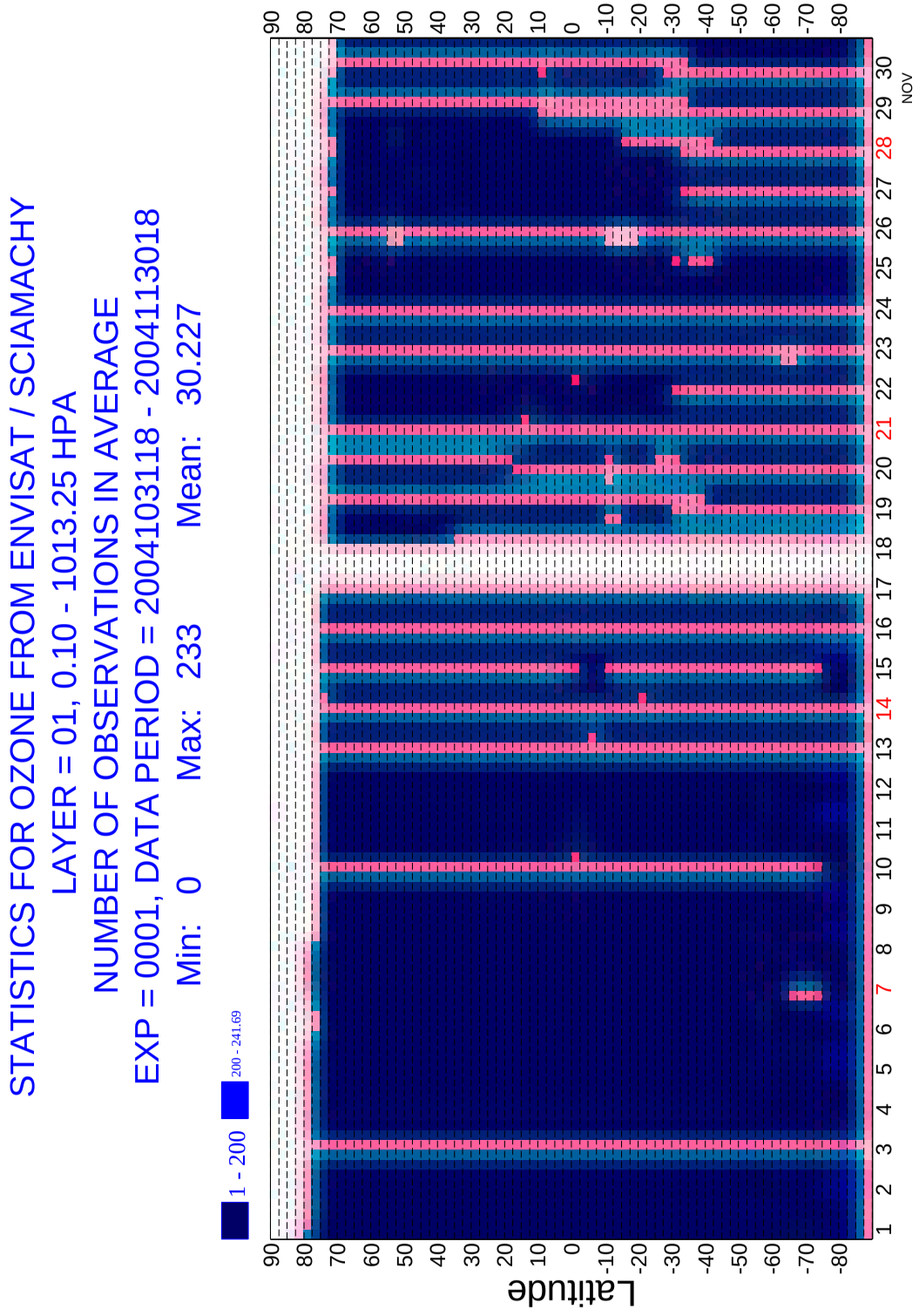

Fig. 10. Hovmoeller diagram of zonal mean number of data for ENVISAT SCIAMACHY NRT ozone data per 6-hour cycle for and November 2004.

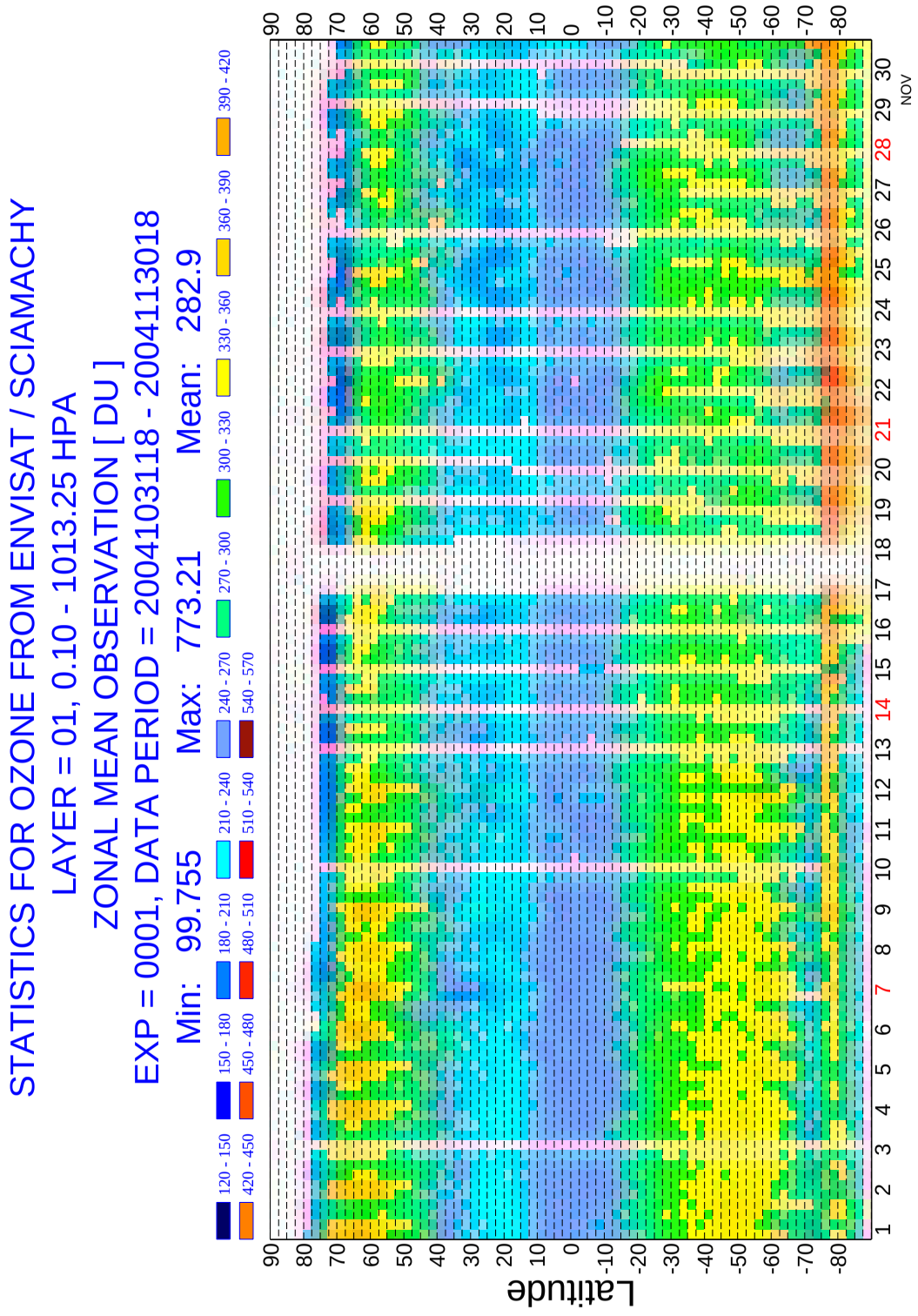

Fig. 11. Hovmoeller diagram of zonal mean observation values for ENVISAT SCIAMACHY NRT ozone data per 6-hour cycle for November 2004.

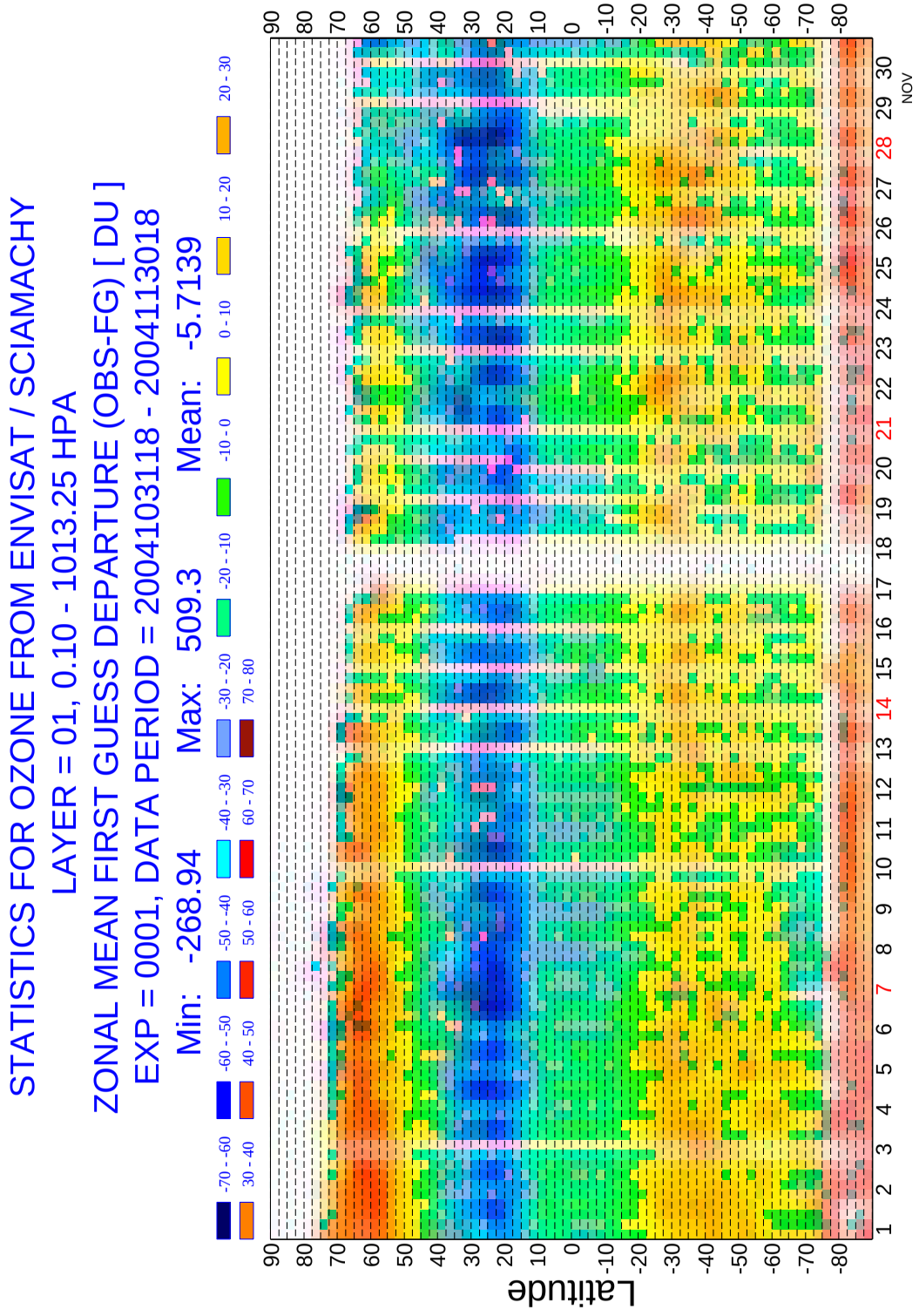

Fig. 12. Hovmoeller diagram of zonal mean first-guess departures for ENVISAT SCIAMACHY NRT ozone data per 6-hour cycle for November 2004.

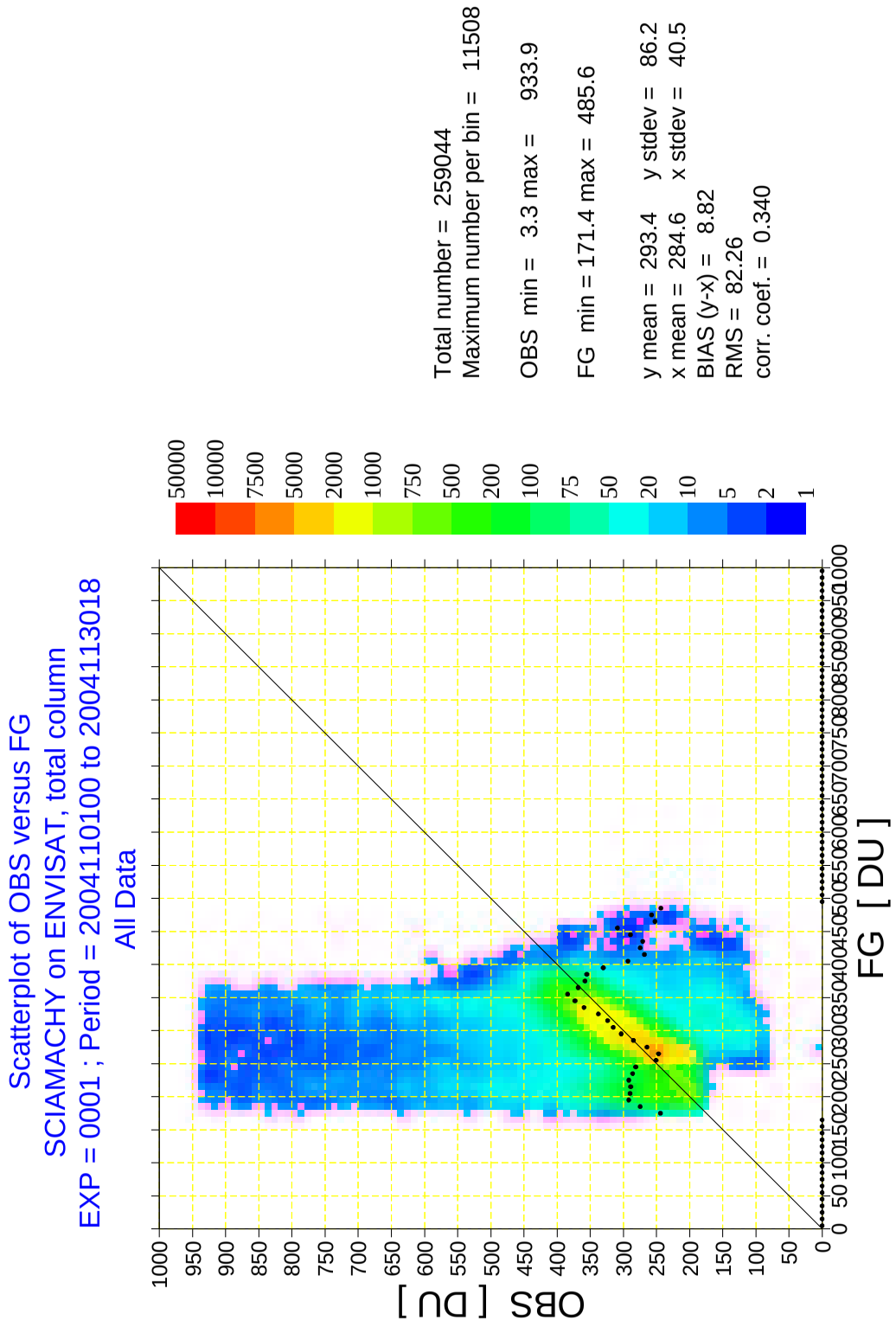

Fig. 13. Scatter plot of ENVISAT SCIAMACHY ozone values against first-guess ozone values for November 2004 (global).

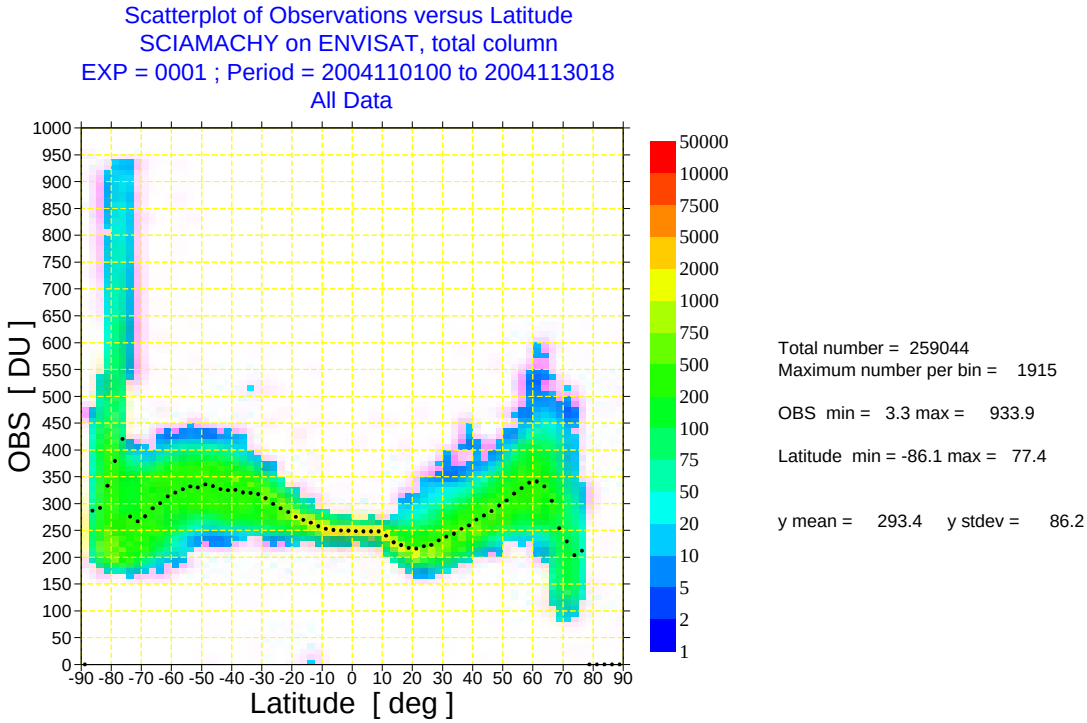

Fig. 14. Scatter plot of ENVISAT SCIAMACHY ozone against latitude for November 2004.The colours show the number per bin, the black dots the mean values per bin.

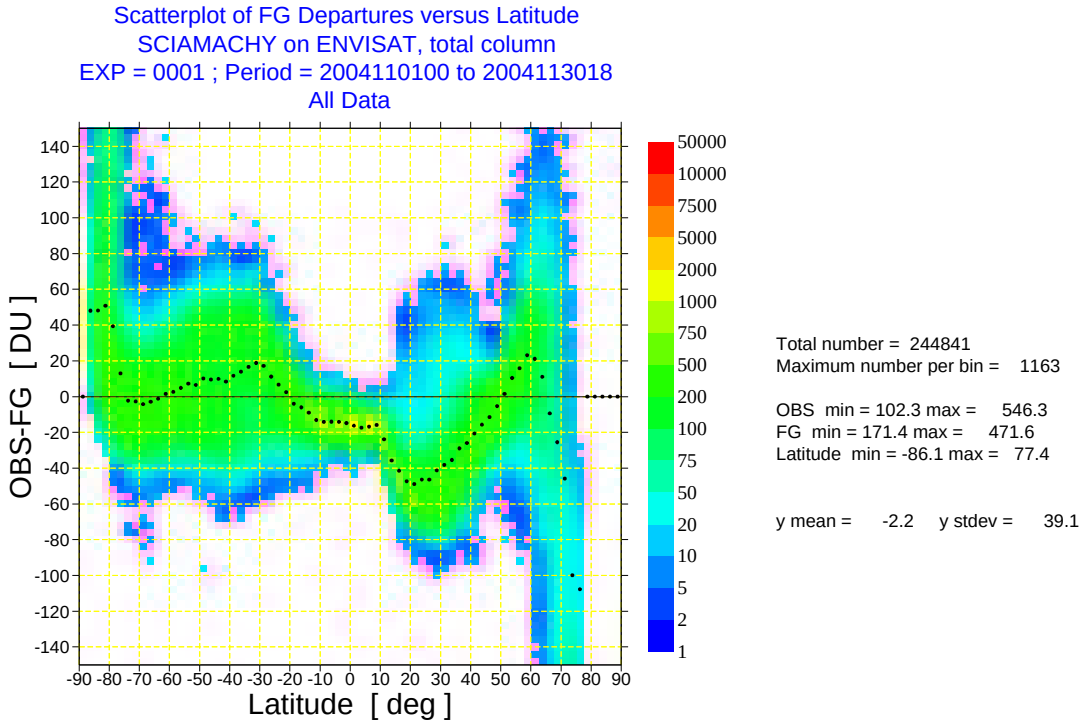

Fig. 15. Scatter plot of first-guess departures of ENVISAT SCIAMACHY ozone against latitude for November 2004.