

Erratum

The correlation between coronal Doppler shifts and the supergranular network

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Due to a programming error, the separation between the coronal hole and quiet Sun data was not done properly while carrying out the dispersion plots of Figs. 5 and 6. In other words, some of the quiet Sun data was considered to be for the coronal hole and some of the coronal hole data for the quiet Sun. The contamination of these respective parts has had less consequences for the polar data set. A careful inspection of Fig. 4 shows that the ranges of the histograms do not correspond exactly to the ranges of the dispersion plots in Figs. 5 and 6. The programming error has been corrected and the dispersion plots are re-displayed in Figs. 1 and 2 of the current paper.

This error does not change the main conclusions of the original paper, as most of the behavior within the dispersion plots remains the same. Nevertheless one can notice that the coronal hole parts now appear clearly more blueshifted than the quiet Sun parts for both data sets (Figs. 1 and 2).

In Fig. 1b the maximum blueshift (or inflexion point) in the relation between Ne VIII Doppler shifts and the filtered continuum intensity appears at a lower intensity in the coronal hole case ($\log(I/I_0) = 0.1$) than in the quiet Sun case (Fig. 1a).

Furthermore, changes appear in the relation of the Ne VIII Doppler shift with the Ne VIII line intensity, especially for the coronal hole part of the equatorial data (Fig. 2b). For the low intensity range, Fig. 2b shows an increase in blueshift with increasing intensity. The lowest intensity displays a blueshift of approximately -1.5 km s^{-1} . A new behavior appears for the main part of the dispersion plot, which shows also an increase in blueshift with increasing intensity, even though the trend is significantly smaller. This trend is opposite the trend of the main part of the

quiet Sun case (Fig. 2a), and also opposite the trend of the coronal hole part of the polar data (Fig. 2d). This difference in behavior between the equatorial and the polar data appears also for the quiet Sun parts in Figs. 2a and 2c. The behavior of the equatorial data (Figs. 2a and 2b) still agree with the previous conclusion by Wilhelm (2000). The strong blueshifts still appear predominantly in the dark region of the Ne VIII line intensity (i.e. dark areas in quiet, Sun & coronal hole). Moreover, the suggestion of a possible energy balance in the corona between energy lost through the radiation and energy used to accelerate plasma seems to hold for the main part of the Quiet Sun data (Fig. 2a) but no longer for the coronal hole part (Fig. 2b).

The programming error has brought out the importance of the spatial separation of coronal holes from the quiet Sun. The contamination of the different parts (quiet Sun, coronal hole) had artificially broadened the plot range in intensity, especially for the equatorial coronal hole plots, leading to an artificial increase in the contrast. The contrast of the coronal hole in the polar region is twice as strong as the equatorial coronal hole on a logarithmic scale. Furthermore, the brightest areas of the polar region data appear in the polar coronal hole. One can thus wonder whether the separation between coronal hole and quiet Sun used previously by Hassler et al. (1999) and Wilhelm (2000) on the very same data set is adequate. One can also wonder whether the difference in the contrast originates from more fundamental differences between polar and equatorial coronal holes (e.g. magnetic field topology, energy balance, etc.). These are current and crucial questions that need to be addressed in future works.

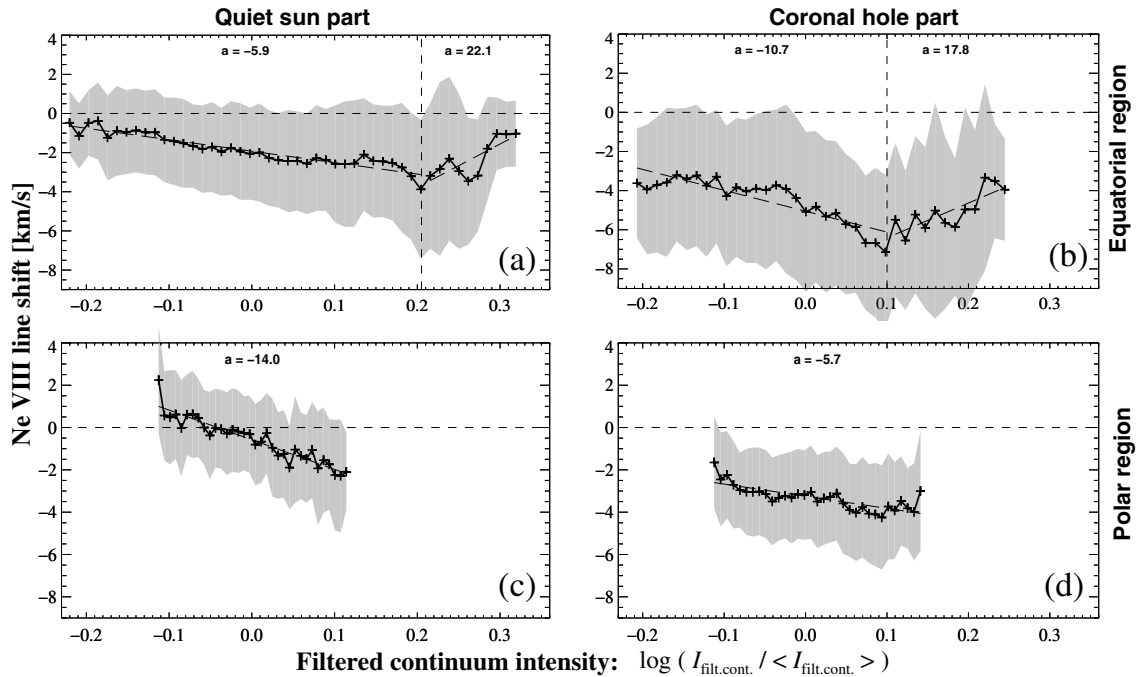


Fig. 1. Dispersion plots showing the relation between *filtered continuum intensity* and Ne VIII Doppler shift, in solid lines. The dispersion plots are fitted by linear fits in long dashed lines, where a is slope of the fit. The left column shows quiet Sun data, the right column coronal hole data. In the first row data from the equatorial region were used, the second row describes the data from the polar region. The standard deviation of the median value is represented by the shaded areas. The vertical long-dashed lines show where the maximum blueshift is reached or a significant inflexion of the trend.

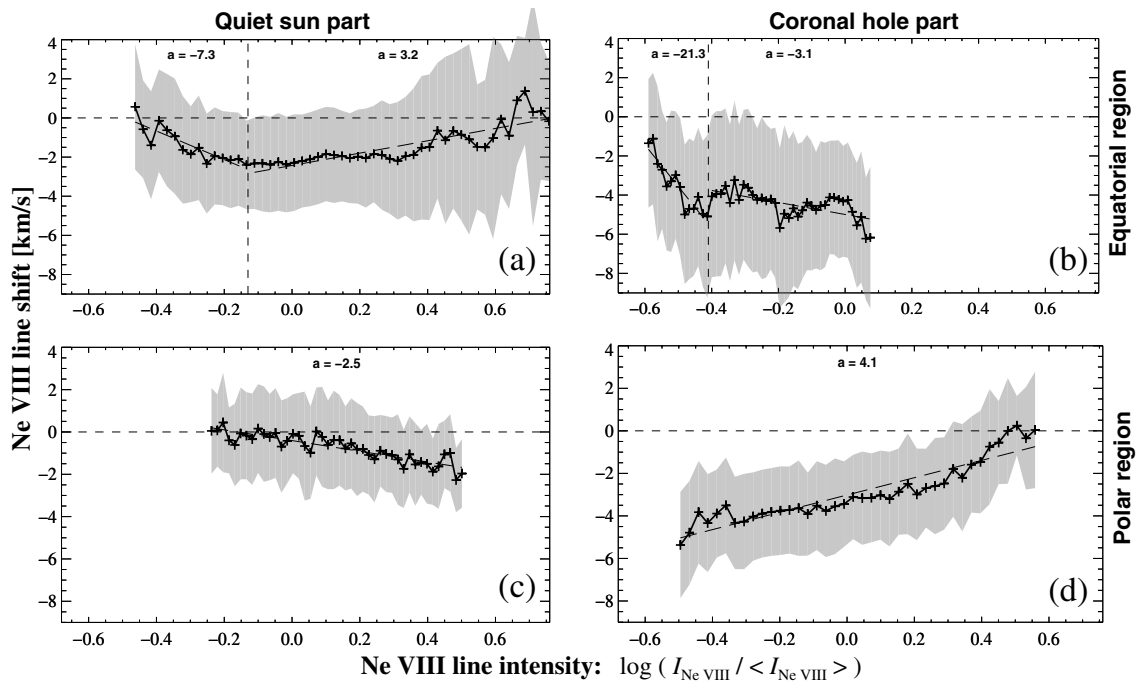


Fig. 2. Same as Fig. 1, but relating the Ne VIII *line intensity* to line shift.

References

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