



Evaluation of IASI derived dust aerosols characteristics over the tropical belt

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IASI-derived monthly mean infrared ($10\ \mu\text{m}$) dust aerosol optical depth (AOD) and altitude are evaluated against ground based AERONET measurements of the 500 nm coarse mode AOD and CALIOP measurements of the altitude at 38 AERONET sites (land and sea) within the tropical belt (30°N - 30°S). The period covered extends from July 2007 to December 2013. The evaluation goes through the analysis of Taylor diagrams and box and whiskers plots, separating situations over sea and over land. Concerning AOD, the overall correlation for the sites over sea comes to 0.88 for 713 items (IASI and AERONET monthly mean bins). The overall normalized standard deviation is of 0.96. Over land, essentially desert, correlation is of 0.74 for 582 items and the normalized standard deviation is of 0.87. This slight but significant degradation over land most probably results from the greater complexity of the surface (heterogeneity, elevation) and, to a lesser extent, to the episodic presence of dust within the boundary layer (particularly for sites close to active sources) to which IASI, as any thermal infrared sounder, is poorly sensitive contrary to AERONET. Concerning altitude over sea, correlation is of 0.78 for 925 items and the normalized standard deviation is of 1.03. Results over land, essentially over deserts, are not satisfactory for a majority of sites. Extension of the approach to extra-tropical sites, in particular the Mediterranean basin, is in progress and preliminary results will be shown.

We conclude that the present results demonstrate the usefulness of IASI data as an additional constraint to a better knowledge of the impact of aerosols on the climate system.