

Comparison between SMOS brightness temperature observations and ECMWF ERA-Interim/Land brightness temperature: long term monitoring and global trend analysis

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In this paper we analyse the reprocessed SMOS Near Real product for a more than 4-year period from January 2010 to March 2013. For the same period the European Centre for Medium-Range Weather Forecasts (ECMWF) produced a global L-band brightness temperature re-analysis at the SMOS resolution using the Community Microwave Emission Modelling Platform (CMEM). The L-band re-analysed product is based on the ECMWF land surface forced by the ERA-Interim reanalysis and coupled to CMEM. The land surface model configuration is fixed to the current version of the operational Integrated Forecasting System, so it is consistent over the re-analysis period. The microwave model configuration was set-up to use the Wang and Schmugge dielectric model combined with the Wigneron vegetation opacity model and the simple Wigneron soil roughness parametrization as detailed in de Rosnay et al., ESA conference (2013) and as currently used for operational monitoring of SMOS data. Time series and anomalies of SMOS TB and ECMWF re-analysed TB are analysed and compared for the 4-year period of SMOS. Results are presented at global and regional scales using RMSE, bias, correlation and anomaly correlation metrics. The analysis is conducted at a range of time scale including daily, monthly, annual time scales and inter-annual time scales.

Key words: SMOS, radiative transfer modelling, re-analysis, long term data set

Preference: poster presentation