

## The land emissivities database at AMSR-E window frequencies

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The satellite passive microwave measurements, such as SSM/I and AMSR-E, have large atmospheric and surface information contents for the earth observation with high time resolution under all-weather conditions, and they are also known to be very useful for hydrology, water and energy cycle research and the Numerical Weather Prediction (NWP). However, the land surface representation at the microwave spectrum is not so much understood climatologically, even though there are many microwave models which fit for the purified theoretical consideration with a controlled validation locally, this directly induce that the retrievals of geophysical parameters at microwave band over land are more variable than that over the even ocean. Recently, a multi-sensor method has been developed for the instantaneous estimation with the AMSR-E and MODIS aboard on the same satellite AQUA at clear sky condition by eliminating the atmosphere contribution. The instantaneous emissivities differ from the conventional average emissivities over land for 15-days or one month, and could provide a more realistic emissivities dataset for the atmosphere retrieval or the land surface parameters retrievals development.

In this study, the land surface instantaneous microwave emissivities are calculated globally from the daily AMSR-E brightness temperature under clear-sky conditions for the year of 2003 with both orbits. This concrete dataset are used to built up the land emissivity database for different land covers at different latitude zones monthly. The land cover data are from the IGBP-based MODIS land covers yearly and only the relative pure pixels (coverage fraction > 85%) are selected to compose the emissivity database. We will analyse the emission character of different land covers between seasons. Finally, the emissivity database is also evaluated by the theoretical surface microwave emission model for the typical land covers.

This work is useful for the next step of sub-pixel analysis of the microwave emission and parameter retrievals algorithm development.

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