

**MAPPING SURFACE SOIL MOISTURE OVER KORI DIANTANDOU SITE
(NIGER) WITH ASAR/ENVISAT RADAR DATA**

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The analysis of continent and atmosphere feedbacks is one of the key questions of the AMMA project to understand Monsoon dynamics. For this reason, the monitoring of surface parameters, particularly vegetation characteristics and soil moisture are very important. Satellite remote sensing seems to be well adapted for providing these parameters. This paper presents a methodology to map and monitor surface soil moisture over Kori Diantandou site in Niger with the ASAR/ENVISAT radar satellite data.

This study is based on ASAR/ENVISAT C band radar data (8 images) acquired during 2004 rainy season. Radar data is sensitive to surface soil moisture, vegetation and soil roughness. Therefore, soil moisture estimation is made only over bare soils and scarced vegetation. A vegetation index map derived from SPOT/HRV optical images, a mapping of pools and a digital model have been used to identify the regions of interest. A normalisation of multi-incidence radar data to one incidence angle was made in order to increase the database used to monitor surface parameters.

Simultaneously to radar measurements, surface soil moisture measurements are made in different localisations over the studied site. A semi-empirical model is developed to estimate surface soil moisture from processed signals and ground truth data.

A surface soil moisture map is proposed for all the Kori site. The results are in good agreement with ground truth data. This study shows the high potential of ASAR-ENVISAT for surface soil moisture monitoring with a high repetition frequency (about 5 days).

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Convective wind system with aerosols, named "haboob", Hombori in Mali, West Africa.