

EARTH OBSERVATION SYMPOSIUM (B1)
Earth Observation Data Management Systems (4)

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PROCESSING OF MULTI-SPECTRAL AND MULTI-VIEWING REMOTE SENSING DATA OF LAND
SURFACE

Abstract

Multi-spectral and multi-viewing observations of the Earth (ATSR2/ERS2, AATSR/ENVISAT) in the visible and thermal infra-red spectral range provide advantages (e.g. retrieval of land surface bidirectional reflectance, temperatures of component surfaces and aerosol optical properties) for monitoring of land surface processes. A software system for monitoring land surface processes has been developed to process data from the Along Track Scanning Radiometer (ATSR2) on board the European Research Satellite (ERS2) and AATSR/ ENVISAT. The temperatures and albedo of the surface components (vegetation and soil), as well as the aerosol optical properties and cloud cover have been retrieved along the satellite track. A two-source energy balance model has been applied to calculate the fluxes arising from the heterogeneous target, vegetation and soil. The fluxes have been calculated as a function of the aerodynamic temperatures of the components of the surface (vegetation and soil), retrieved from the ATSR2 satellite data. All variables are retrieved from the ATSR2 satellite data corrected for the atmospheric effects. The advantages of the space multi-angular observations for monitoring land surface processes are discussed and the main algorithms, models and results are presented. The developed system for monitoring and management of land surface processes has a long-term application for processing data from the ATSR2/ERS2, the Advanced Along Track Scanning Radiometer (AATSR) on board ENVISAT, ASTER/Terra/NASA and the future high resolution ESA/Land Surface missions.