

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

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DATA PROCESSING SYSTEM FOR MONITORING OF CLIMATE VARIABLES AND PROCESSES,  
INVOLVING MULTI-SPECTRAL SPACE OBSERVATIONS IN THE VISIBLE AND THERMAL  
INFRARED SPECTRAL RANGE

**Abstract**

Global observation of climate variables and processes is important for improved forecasting, weather prediction and climate change. A software system for Earth Observations has been developed to retrieve and monitor key climate variables (surface temperatures, cloud cover, aerosol optical properties) and processes (fluxes) from the Along Track Scanning Radiometer (ATSR2) on board the European Research Satellite (ERS2). A two-source energy balance model has been applied to calculate the fluxes arising from the heterogeneous target, vegetation and soil. 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. 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. The relationship between canopy biophysical properties and evaporation are examined, using the ATSR2 observations. All variables are retrieved from the ATSR2 satellite data corrected for the atmospheric effects. The developed system for monitoring and management of climate variables and 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.