



Soil moisture variability over Europe as seen from satellite observations and an ensemble of regional climate models

Ioanna Kotili, Aristeidis Georgoulas, and Konstantinos Kourtidis

School of Engineering, Demokritus University of Thrace, Lab. of Atmospheric Pollution and Pollution Control Engineering of Atmospheric Pollutants, Dept. of Environmental Engineering, Xanthi, Greece (kourtidi@env.duth.gr)

The spatial and temporal variability of soil moisture over Europe is examined using satellite observations from the Advanced Microwave Scanning Radiometer - EOS (AMSR-E) aboard AQUA and simulations from an ensemble of regional climate models (IPCC SRES A1B). The data have a temporal resolution of 1 day, a spatial resolution of 0.25×0.25 degrees, and cover the period 2003-2010. Maps with the spatial variability of soil moisture and the number of dry days are presented on an annual and seasonal basis. The data are used in order to evaluate 10 high-resolution regional climate model simulations implemented within the framework of the ENSEMBLES project. The simulations were implemented at a spatial resolution of 0.25 km and cover the period 1950-2100. The multi-model ensemble projections are used to examine the predicted changes of soil moisture throughout the 21st century and possible effects of these changes on various sectors are discussed.