Land Surface Temperature from Satellite Data and distributed Hydrological Model to assess Water Resources Availability in the upper Yangtze Basin

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The synergic use of remote sensing data and distributed hydrological model allows innovative approaches to control mass and energy fluxes exchange between atmosphere and land surface in "quasi real time" for large river basin at detailed spatial scale.
In this context a distributed hydrological water balance model for water resources assessing has been developed and implemented over the Upper Yangtze River basin (China). In particular this work investigates the potentiality to control evapotranspiration and its spatial and temporal variability through the detection of land surface temperature (LST) from satellite remote sensing (MODIS and AATSR) due to the simpler information and availability of the infrared satellite images respect to the microwave ones and through the distributed hydrological model (FEST-EWB). Snow cover dynamic is also analysed through the comparison with satellite data (MODIS and MERIS) for the validation of the hydrological model. This combined use of satellite data and hydrological model based on energy and mass balance seems crucial to asses water resources. Infact the only use of satellite to asses the hydrological water balance seems be still not operative. Here in is presented the computation of water balance using precipitation from TRMM, Water storage from Grace, and streamflow data from traditional ground measures These analyses are performed for the Upper Yangtze River basin (China) with an extent of about 1,000,000 Km2 in framework of MOST-ESA DRAGON-2 Programme.