

Deliberation of Daily Evapotranspiration and Evaporative Fraction Based on Remote Sensing Data

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Abstract : Estimation of evapotranspiration is always a major component in water resources management. Traditional techniques of calculating daily evapotranspiration based on field measurements are valid only for local scales. Earth observation satellite sensors are thus used to overcome difficulties in obtaining daily evapotranspiration measurements on regional scale. The Surface Energy Balance System (SEBS) model was adopted to estimate daily evapotranspiration and relative evaporation along with other land surface energy fluxes. The model requires agro-climatic data that improve the model outputs. Advance Along Track Scanning Radiometer (AATSR) and Medium Spectral Resolution Imaging Spectrometer (MERIS) imageries were used to estimate the daily evapotranspiration and relative evaporation over the entire Nile Delta region in Egypt supported by meteorological data collected from six different weather stations located within the study area. Daily evapotranspiration maps derived from SEBS model show a strong agreement with actual ground-truth data taken from 92 points uniformly distributed all over the study area. Moreover, daily evapotranspiration and relative evaporation are strongly correlated. The reliable estimation of daily evapotranspiration supports the decision makers to review the current land use practices in terms of water management, while enabling them to propose proper land use changes.

Keywords : daily evapotranspiration, relative evaporation, SEBS, AATSR, MERIS, Nile Delta

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