Sensitivity analysis of various Potential Evapotranspiration formulas for Crete Island in Greece

Spyridon Paparrizos (1), Fotios Maris (2), Orestis Papageorgiou (3), Konstantinos Karagiorgos (4), Sven Fuchs (4), and Andreas Matzarakis (1)

(1) Faculty of Environment and Natural Resources, Albert-Ludwigs University of Freiburg, D-79085 Freiburg, Germany (spipap@gmail.com), (2) Department of Forestry and Management of the Environment and Natural Resources Democritus University of Thrace, Pantazidou str. 192, GR-68200 Orestiada, Greece (fmaris@fmenr.duth.gr), (3) Department of Mathematics, University of Athens, Panepistimiopolis, GR-15784 Athens, Greece (o.papageorgiou@windowslive.com), (4) University of Natural Resources and Life Sciences, Institute of Mountain Risk Engineering, Vienna, Austria (kkaragio@boku.ac.at)

Evapotranspiration is an important component of the hydrologic cycle as it can significantly affect the water budget of the natural (i.e. approximately 62% of all precipitation falling on land is evapotranspirated). In the current study, a sensitivity analysis of various PET formulas was performed for the Crete Island in southern Greece in order to evaluate the influence of the various coefficients in the estimation of PET. Results indicated that some PET formulas perform more accurate results than others. Specifically, the PET equation after Jensen-Haise (PETJen) that is based on mean air temperature (Tmean) and solar radiation (Rs) input data and the 1st version of Hamon (PETHam1) that uses min (Tmin), mean (Tmean), max (Tmax) air temperature data and Day Length (DL) input data during the sensitivity analysis indicated that they can be used in order to estimate with high accuracy the potential evapotranspiration in Crete Island.