

# **APPLICATION OF THE SWAT MODEL ON THE MEDJERDA RIVER BASIN (TUNISIA)**

**F. Bouraoui** (1), S. Benabdallah (2), A Jrad (2) and G. Bidoglio (1)

(1) Joint Research Centre of the European Commission, Institute for Environment and Sustainability, Soil & Waste Unit, TP 460, 20120 Ispra (VA) ITALY, (faycal.bouraoui@jrc.it),

(2) CITET, Tunis International Centre for Environmental Technologies, Tunis, Tunisia

Tunisia, like the other North-African countries is affected by limited water supply. In addition to water scarcity, salinity of water resources, both surface and ground water exacerbate the water situation. A collaborative project between the EC and the Tunisian government was launched in view of the sustainable development of the Medjerda river Basin: the largest water resource in Tunisia. This study presents the application of the hydrological model SWAT on an 8,000-km<sup>2</sup> sub-catchment of the Medjerda river basin. Water flow predictions were quite accurate even though some discrepancies were observed due to the occurrence of very intense localised storms that were not detected by the local raingage network or inversely, when detected lead to an overestimation of runoff as this rainfall was assigned to the whole corresponding basin. Predictions for suspended matter, nitrate, and total N were in agreement with the measurements. The model overpredicted ortho-phosphorus losses, probably due to the high retention processes taking place in a large dam and small water holding structures present in the catchment. A scenario analysis was then conducted, showing that an intensification of agriculture with an increased irrigation and nutrient application could increase crop yield while still keeping good water quality.