

Customization Of The OSSEM Model For Application To Annual Data From The Talar Aquifer, Northern Iran

Nazila Sedaei, Abolghasem Akbari, Leila Sedaei and Jonathan Peter Cox

Faculty of Agricultural Engineering, Sari Agricultural Sciences and Natural Resources University, Po.
Box 737, Sari, Iran

Faculty of Civil Engineering and Earth Resources, University Malaysia Pahang, Lebuhraya Tun Razak,
26300 Gambang, Kuantan, Malaysia

Faculty of Natural Resources, Shahrekord University, Shahrekord, Box 890, Shahrekord, Iran
Caribbean Institute for Meteorology and Hydrology, Barbados

ABSTRACT

There are several principal driving forces behind the damaging coastal water resources depletion in many countries, including; high population growth, degrading water resources due to overexploitation and contamination, lack awareness among local beneficiaries regarding sustainable management, and deficient government support and enforcement of conservation programs. To ensure a water resource system is productive in coastal areas, holistic and comprehensive management approaches are required. To address the aforementioned issues, a combined methodology which considers anthropogenic activities, together with environmental problems denominated Overall Susceptibility Socio-Ecological System Environmental Management (OSSEM) has been investigated. The OSSEM model has been applied successfully in Spain based upon daily time series data. This research is ground breaking in that it integrates the OSSEM model in a geographic information system environment to assess the groundwater contamination based on annual time series data and the assessment of system management by means of an overall susceptibility index (OSI). Centered on OSI indicators, the renewal, salinization and water deficit potentials in the Talar aquifer were estimated to be 4.89%, 4.61%, and 3.99%, respectively. This data demonstrates a high susceptibility in terms of environmental pollution, salinization, and water deficit.

Keywords: GIS; OSSEM; overall susceptibility index; talar aquifer

DOI: [10.2166/ws.2015.021](https://doi.org/10.2166/ws.2015.021)