

Contents lists available at [ScienceDirect](https://www.sciencedirect.com)

Physics and Chemistry of the Earth

journal homepage: www.elsevier.com/locate/pce

Editorial



This Special Issue covers the themes and subthemes discussed during the 4th International Conference on Ecohydrology, Soil and Climate Change, EcoHCC'2017, held in Figueira da Foz, Portugal in September 2017. The subthemes involved overall water issues, such as Water quality, Water resources and management, Operational and dynamical hydrology, Ecohydrology and hydrobiology, Environmental policies and social impacts, and the Water framework directory.

Due to the vulnerability of ecosystems to climate change, the availability and quality of fresh water is a defiant challenge and requires new management and governance strategies from both society and politicians. A case study in Bangladesh portrays the problem of water quality supplied for primary school children, in which arsenic content exceeded the maximum World Health Organization guideline value (Rahman and Hashem in this issue). In fact, water pollution and environmental policies were subject of discussion and different techniques for the removal of specific pollutants were presented. The efficiency of wastewater treatment from fish processing technologies in different types of biological reactors was used as an example to effectively reduce the organic pollutants and nutrients concentration in treated effluents (Nowak et al. in this issue). New joint effect drip irrigation systems for small and marginal farmers are presented as a proposal to balance production and the use of water in agriculture in India (Nigam et al. in this issue). More technical issues were also addressed, such as combining a thermal tracer with a transport model to estimate shallow flow velocities as an alternative to predictive numerical methodologies (Abrantes et al. in this issue). Also, a case study for the

Dez River Basin in Iran, considered the rainfall-runoff response of the catchments given by a Watershed Modelling System (WMS) software that allowed flood simulation in dry mountain catchments (Samadi et al. in this issue). In fact, when considering hydrology modelling at a local scale the lack of high resolution gridded daily datasets is key to reproduce e.g. specific flash flood events. For this purpose, a case study regarding the application of a new very high-resolution climatological dataset in Portugal to hydrological modelling in a mountainous watershed was presented (Fonseca and Santos, in this issue).

The subthemes Soil degradation and soil quality; Soil function and land use; and Desertification Processes; allowed to address mainly soil loss and land degradation problems. A case study was discussed regarding Seirós gullies in the Northern region of Portugal, for which control measures were proposed (Castro et al. in this issue).

Overall, the new techniques and approaches in geosciences, such as remotely sensed data, are becoming increasingly applied to wildfires and agroforestry systems, management of water resources, monitoring of anthropogenic activities and land and ecosystems degradation. Despite the increasing number of studies, the lack of information regarding vulnerability to climate change, particularly in developing countries is still a reality in the abovementioned areas. The impacts of climate change on environment, water resources and biodiversity at a regional scale highlight the need of further discussion on climate change mitigation and adaptation policies.

Cristina Andrade, João A. Santos, Samantha Hughes