Geophysical Research Abstracts
Vol. 15, EGU2013-12685, 2013
EGU General Assembly 2013

Impact of climate change and sea level rise on a coastal aquifer, Central Vietnam

Ine Beyen (1), Okke Batelaan (1,2,3), and Vu Thanh Tam (4)

(1) Vrije Universiteit Brussel, Department of Hydrology and Hydraulic Engineering, Brussels, Belgium, (2) Flinders University, School of the Environment, Adelaide, Australia, (3) KU Leuven, Department of Earth and Environmental Sciences, Heverlee, Belgium, (4) Center for Water Resources Planning & Investigation, Ministry of Natural Resources & Environment, Hanoi, Vietnam

The Gio Linh district in the Quang Tri province, Central Vietnam has, like many other coastal areas in the world, to deal with negative impacts of Global Climate Change (GCC) and sea level rise (SLR). This research aims at investigating the impact of GCC/SLR and designing an adaptive water use plan till the year 2030 for the local residents of the Gio Linh district. This coastal plain covers an area of about 450 km2 and is situated between the rivers Ben Hai in the North and Thach Han in the South. The elevation varies from 0.5 m at the seaside in the East to 19.5 m further inland. During the rainy season from August to April the precipitation is on average 2000 to 2700 mm.

GCC/SLR scenarios are built and assessed for estimating the changes in hydrometeorological conditions of the study area. Depending on the level of gas emission the sea level is expected to rise 7-9 cm by 2020 and around 11-14 cm by 2030 for low to high gas emission respectively. The salt-freshwater interface is expected to experience an inland shift due to SLR, affecting the amount of exploitable groundwater for drinking and irrigation water production.

Drinking water production mainly comes from shallow aquifers in unconsolidated Quarternary coastal formations. A SEAWAT groundwater model will be built to study the effects on the groundwater system. Data from meteorological stations over a period of about 30 years and data from 63 boreholes in and around the Gio Linh district are available. Historical production records of an operational groundwater production well-field are available to be used for validation of the model. Finally, to achieve a sustainable integrated water resources management in the Gio Linh district different adaptive scenarios will be developed.