Geophysical Research Abstracts
Vol. 12, EGU2010-13321, 2010
EGU General Assembly 2010
© Author(s) 2010

Megacity project: Liwa, climate and water balance modeling

Alejandro Chamorro (1) and Andras Bardossy (2)

(1) (scherzis@gmail.com), Institut für Wasserbau, University of Stuttgart, Stuttagrt, Germany, (2) Institut für Wasserbau, University of Stuttgart, Stuttgart, Germany

Megacity project: Liwa, climate and water balance modeling

Peru uses to face different natural phenomena such as El Nino and La Nina phenomena and, like many cities around the word, the climate change effects. Its capital Lima, located in a region where annual precipitation is about 9 mm, has a high hydrological cycle vulnerability which is demonstrated in periods of drought and extreme drought. Accurate and reliable methodology is requiring studying the impact of all these problems in the water supply of Lima.
A statistical downscaling scheme (Bardossy, 2002) will be used to generate time series of different local climate scenarios in order to be applied in hydrological models. The conceptual model HBV (Bergström, 1995) is used to simulate water discharges at certain points of the catchments under study, water balance groundwater and for the estimation of storage volume in different reservoirs. As already mentioned, El Nino and La Nina currents influence the hydrological cycle. Previous studies have shown that these phenomena have serious impacts in Peru. In order to quantify these impacts in the area of interest we have analyzed the magnitude of the precipitation in several stations in years in which El Nino occurred, and in years where El Nino did not occurred. The next step is to increase the temporal resolution by incorporating new data.
Due to the high vulnerability of the water supply system in Lima, potential new water sources are required. In particular, the catchment of Mantaro (including existing lakes) on the other side of Los Andes Mountains provides potential new alternatives for adding water to the current system. Alternatives for water transportation include using existing long tunnels which connect Mantaro with Rimac, where the majority of the lakes are located. Finally, the global climate models simulations for the coming years, considering different scenarios, will be used as an indicator and to estimate water availability for human use (city water, energy, irrigation).