Geophysical Research Abstracts
Vol. 13, EGU2011-12151, 2011
EGU General Assembly 2011

Water resources assessment for the Day river basin (Vietnam) under development and climate change scenarios

Roberto Ranzi (1) and Le Van Chin (2)

(1) Universita' di Brescia, DICATA-Dipartimento di Ingegneria Civile, Architettura, Territorio e Ambiente, Brescia, Italy (ranzi@ing.unibs.it, +39 030 3711312), (2) Water Resources University, Hanoi, Vietnam

Uneven precipitation in space and time together with socio-economic rapid development and climate change, have caused water shortages for water supply to large cities and irrigation areas in many regions of Viet Nam in the dry season. The rainy season (from June to October) provides the 80% of the total annual rainfall, while the water volume of dry season (from November to May of the following year) provides the only 20%. Lack of sufficient water volumes occurs in many areas where the pressure of a fast increasing population (1.0% per year on average in the last decade in Viet Nam), intensive agricultural and industrial uses is one of the major problems facing sustainable development. An accurate water assessment and balance at the river basin scale is first provided to manage the exploitation and appropriate use of water resources and plan future development in the Day riverbasin, which includes a 7,897 km2 area in the south-western part of the Red River in Viet Nam with a total population exceeding 8 millions inhabitants. Agricultural land covered 390,294 ha in 2000 and this area is going to be increased by 14,000 ha in 2010 due to land reclamation and expansion toward the sea. Then, we focused on the study of the water balance assessment and on the analysis of drought problems for the investigated basin by year 2020 to 2050 with means of data projections of socio – economic development scenarios and using the 1990-2004 rainfall and temperature time series. In the third part, we carried out the water balance assessment and analysis of drought problems for the basin under both socio – economic development and climate change scenarios. In this exercise the 1990-2004 rainfall and temperature time series are projected to the 2020 and 2050 time window accounting for percentage precipitation changes and temperature bias for the North Delta in view of high green-house gases emission scenario (SRES.A2) and medium emission scenario (SRES.B2). By the year 2050, with a projected decrease of rainfall by 3-5% in dry season and an increase of temperature of about 1.2-1.5 °C, water deficit would become more serious on severity and intensity, namely, an increase of annual mean deficit severity would be 7-8% and an increase of annual mean deficit intensity would be 2.5-3.0% relative to actual conditions. Both structural measures as an increase of water derived from surface streams for irrigation purposes and non structural ones, as crop management practices adaptation need to be investigated as a countermeasure.