

GC8-Hydro-66, updated on 16 Apr 2024

<https://doi.org/10.5194/egusphere-gc8-hydro-66>

A European vision for hydrological observations and experimentation

© Author(s) 2024. This work is distributed under the Creative Commons Attribution 4.0 License.



The role of agriculture irrigation on the Po river basin hydrological balance

Giovanni Ravazzani, **Marco Mancini**, Mouna Feki, and Alessandro Ceppi

Politecnico di Milano, Department of Civil and Environmental Engineering, Milano, Italy

Changes in climate can have profound effects on river systems and cause important variation in availability of water, with significant impacts on uses highly dependent on the hydrological regime, such as hydropower production and agricultural irrigation. Under this circumstances, current amount of water used for irrigation could not be sustainable in the future. This work presents insight into the Po river basin hydrological balance, investigating the impact of irrigation on water resources availability.

The extreme complexity and heterogeneity of processes involved in river basin hydrology requires the use of integrated modelling approaches for water resources planning and management. In this work the FEST-WB model was employed, that is an integrated spatially distributed physically based hydrological model capable to keep into account anthropogenic structures and management practices that interact with natural hydrological cycle such as artificial regulated reservoirs and agricultural irrigation, and interaction of stream and groundwater.

The study is performed in two steps: first, the hydrological model FEST-WB is calibrated and validated against discharge observations; second, the impact of irrigation is assessed through the simulation of different scenario of irrigation strategies.