



Project thesis: Climate of Egypt.

In cooperation with the Department of Humanities of the University of Salento (Prof. Paola Davoli) we will study the effect of climate change on the hydrological dynamics of the River Nile, with particular attention to the artificial oasis of El Faiyum.

Recent studies showed how climatic variations in the last 10000+ years have impacted hydrological cycle and the morphology of the Nile, with fluctuations in the delta and strong changes in hydrological flow rates.

These variations of runoff and evapotranspiration dynamics have also affected the dynamics of the internal water bodies, including the Faiyum, south of Cairo and one of the largest oasis of Egypt, with a variable extension of up to 1700 km² of cultivated land. The oasis owes its fertility to the Nile floods, with water reaching the oasis through the channel Bahr Yussef, controlling the influx of El Faiyum at least since middle age, and the oscillations of the river affect the extension and availability of water.

The aim of the work is to evaluate the effect of past and potential future climatic changes on the dynamics of the Faiyum, and to hypothesize countermeasures for its maintenance.

Using appropriately calibrated climatic models, local hydro-meteorological data and information on paleo-morphological studies for the area, simulations of hydrological scenario will be developed for the last 10000+ years and the corresponding evolution of the oasis (extension, hydrological balances, water availability for irrigation). Once the simulation model has been validated, scenarios of future evolutions will be used to assess the potential fate of the oasis in the next century and where necessary to benchmark potential adaptation actions.

The thesis BS/MS require a basic preparation in hydrology and a least programming capacity. Contacts: D. Bocchiola, DICA, daniele.bocchiola@polimi.it. Andrea Soncini, DICA. andrea.soncini@polimi.it

