# UNIVERSITY OF BOLOGNA
***Subject: Advanced Hydrology***

**Exercise – application of the Hymod rainfall-runoff model**

In a catchment whose area is 1214 $km^2$ rainfall data have been observed at hourly time scale for a period of 1 year. The related observations of mean areal hourly rainfall in mm/s can be downloaded at the web address:

http://distart119.ing.unibo.it/albertonew/sites/default/files/didattica/rain-evaposynt.txt

The observed hourly river flows, in $m^3/s$, can be downloaded at the address:

http://distart119.ing.unibo.it/albertonew/sites/default/files/didattica/dischargesynt.txt

By using the above data set, the Hymod model should be calibrated by using sum of squares as objective function. A comparison should be made by using the sum of absolute errors as objective function.

Furthermore, model validation should be performed by calibrating the model on the first 6 months of data and verifying the model by using the last six months.

Explain in a brief report the above elaborations with the required graphs.

An example code for the Hymod model can be downloaded at http://distart119.ing.unibo.it/albertonew/sites/default/files/didattica/hymod.r.
Explain in a brief report the above elaborations with the required graphs.