

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

**Exercise - application of the linear reservoir rainfall-runoff model**

In a catchment whose area is 1214 km<sup>2</sup> 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/hours can be downloaded at the web address:

<https://www.albertomontanari.it/sites/default/files/didattica/rain-evaposynt.txt>

The observed hourly river flows, in m<sup>3</sup>/s, can be downloaded at the address:

<https://www.albertomontanari.it/sites/default/files/didattica/dischargesynt.txt>

By assuming that the runoff coefficient is equal to 0.5, it is required to model the rainfall-runoff transformation for the catchment by applying the linear reservoir method.

Note that evapotranspiration data are included in the above file which are not necessary to apply the linear reservoir if a runoff coefficient of 0.5 is assumed.

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