

## Basin characteristics

River Basin / River Basin (according EU-WFD)

Operation (from... to...)

Gauge coordinates / Gauge datum:

Catchment area:

Elevation range:

Basin type:  
( alpine, mountainous, lowland)

Climatic parameters:  
(mean precipitation, temperature and others)

Land use:

Soils:

Geology:

Hydrogeology:  
(Type of aquifers, hydraulic conductivity)

Characteristic water discharges:  
( $Q_{min}$ ,  $Q_{max}$ ,  $Q_{mean}$ )

Celone river basin/Candelaro river basin

flow and nutrient concentration measures from 2009 to 2011

N 41° 23' 43.5", E 15° 19' 57.3"

72 km<sup>2</sup>

60-1150m (a. s. l.)  
Mountainous/lowland

Mean rainfall 730mm; Mean temp 12-14°C

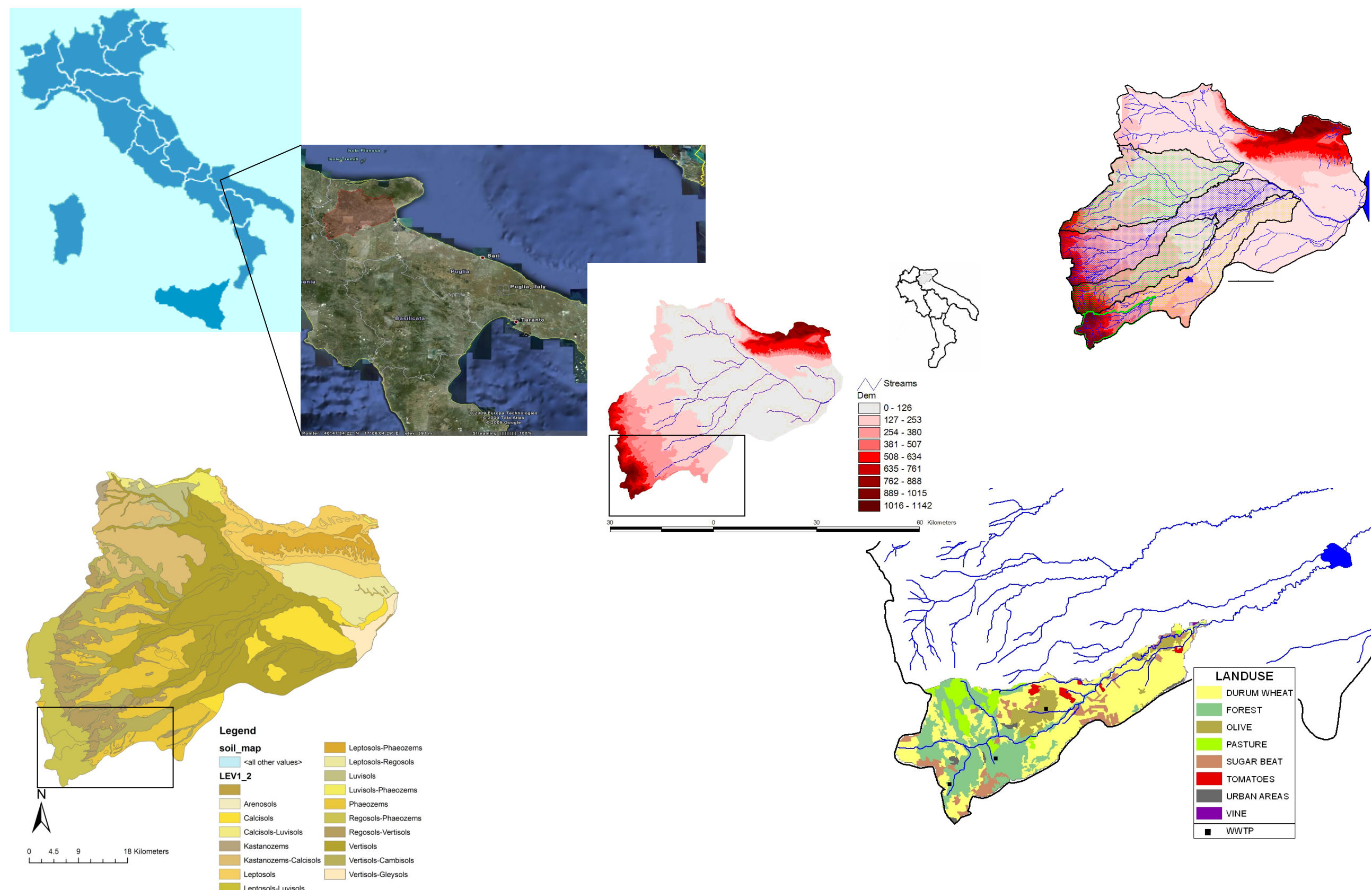
Agricultural land (74.5%), forest (20.5%), pasture (4%), urban (1%)

Loam soils

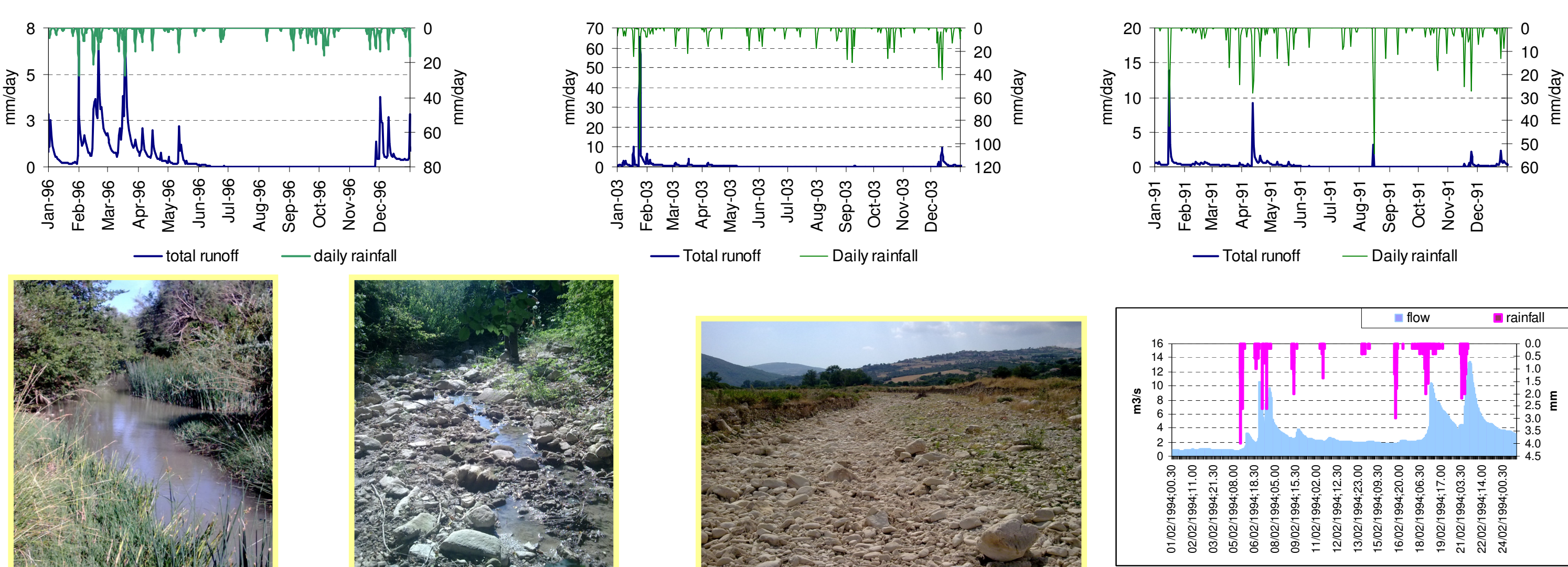
alluvial

0.00; 28.80; 0.49 m<sup>3</sup>/s

## Map of the research basin



## Mean hydrograph / Pardé flow regime



Continuous flow is generally recorded from November to May, after that connected pools appear along the river which gradually becomes dry.

## Instrumentation and data

Measured hydrological parameters	Measuring period	Temporal resolution	Number of stations
Streamflow	July 2010 - to now	15 min	1
Nutrient concentrations (PN; N-NO <sub>3</sub> ; N-NH <sub>4</sub> ; N-NO <sub>2</sub> ; DP; PP; TSS)	July 2010 - to now	One a week (during (mid-range flow and low flow); using different frequency during floods (min 3 samples)	1
Nutrient concentrations	June 2009 - July 2010	One a month	1

## Applied models

- SWAT model
- PESERA Model

## Main scientific results

All the peck flow events were sampled for water quality and streamflow.

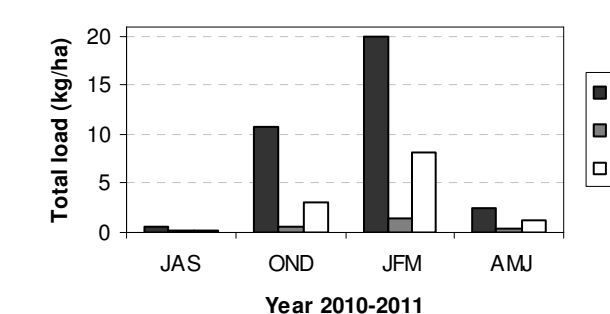
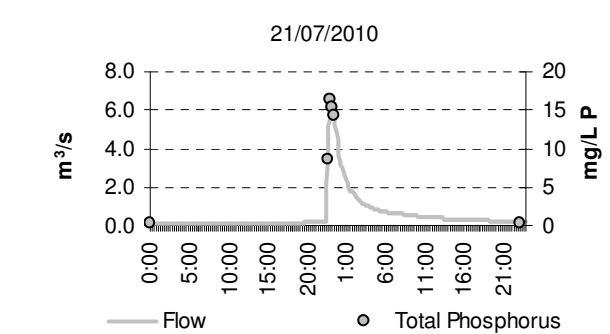
High variability in nutrient concentrations was found.

After a dry period, a high level of nutrient concentrations was recorded in water as a response to a rainfall event. During these “flash” events, the streamflow is not exceptional but sufficient to remobilize nutrients accumulated along the bed of the river.

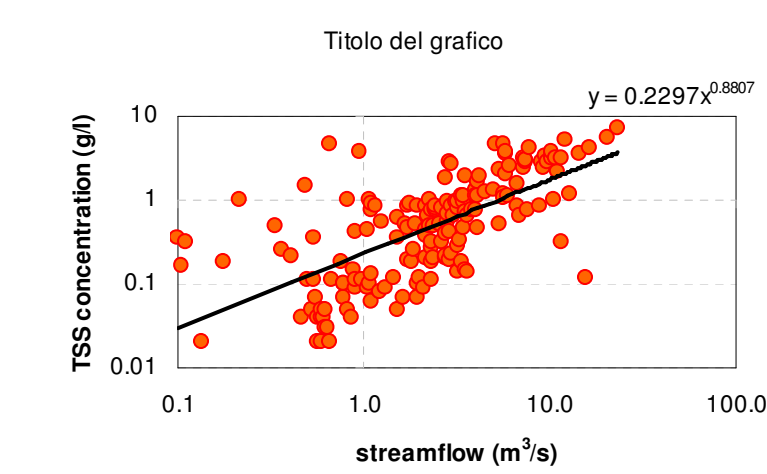
Nitrate and total phosphorus are the main cause of water pollution (research on load and wasteload allocations is ongoing)

Nutrient loads were evaluated on annual, monthly and for flood events. Nutrient losses by surface runoff were essentially a winter process and constitute the main component of total losses.

An attempt to evaluate a sediment rating curve was done.



Seasonal in-stream loads of TN, TP, and Dissolved N. JAS=July, August, September; OND=October, November, December; JFM=January, February, March; AMJ=April, May, June.



Streamflow and TSS concentrations measured at Pirro station

## Key references for the basin

- MIRAGE Project (FP7/2007-2011 under grant agreement 211732)  
[www.mirage-project.eu/](http://www.mirage-project.eu/)

## Contact

De Girolamo Anna Maria [annamaria.degirolamo@ba.irsra.cnr.it](mailto:annamaria.degirolamo@ba.irsra.cnr.it)  
Antonio Lo Porto [antonio.loporto@ba.irsra.cnr.it](mailto:antonio.loporto@ba.irsra.cnr.it)  
Giuseppe Pappagallo [giuseppe.pappagallo@ba.irsra.cnr.it](mailto:giuseppe.pappagallo@ba.irsra.cnr.it)

## Special basin characteristics (hydrogeology, lakes, reservoirs etc.)

Capaccio reservoir



Capacità totale  
mc 25,62 milioni  
Capacità utilizzabile  
mc 16,80 milioni  
Capacità di laminazione  
mc 9,02 milioni  
Capacità residua  
mc 2,9 milioni