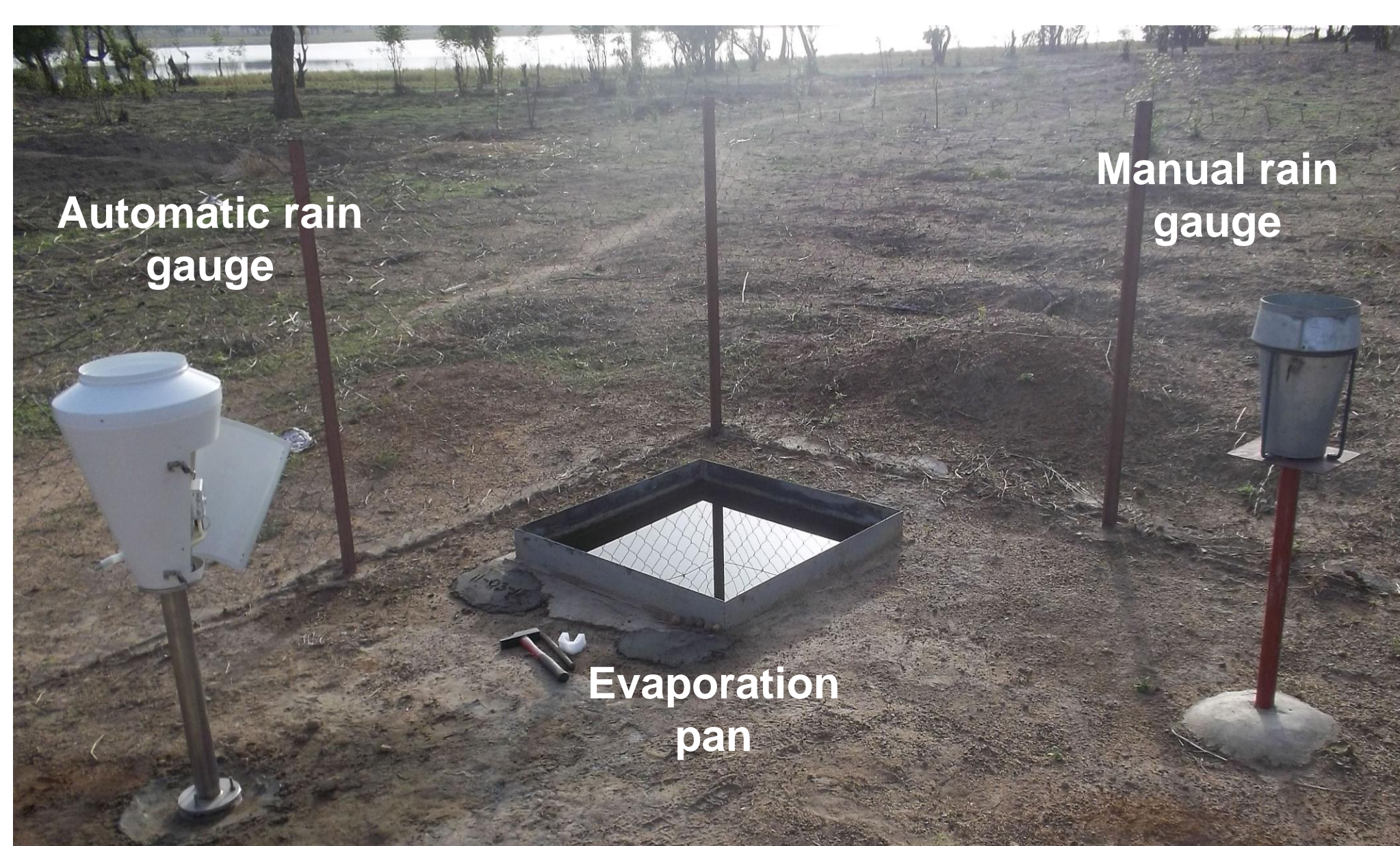


FOWE T., KARAMBIRI H., PATUREI J-E., POUSSIN J-C., CECCHI P.

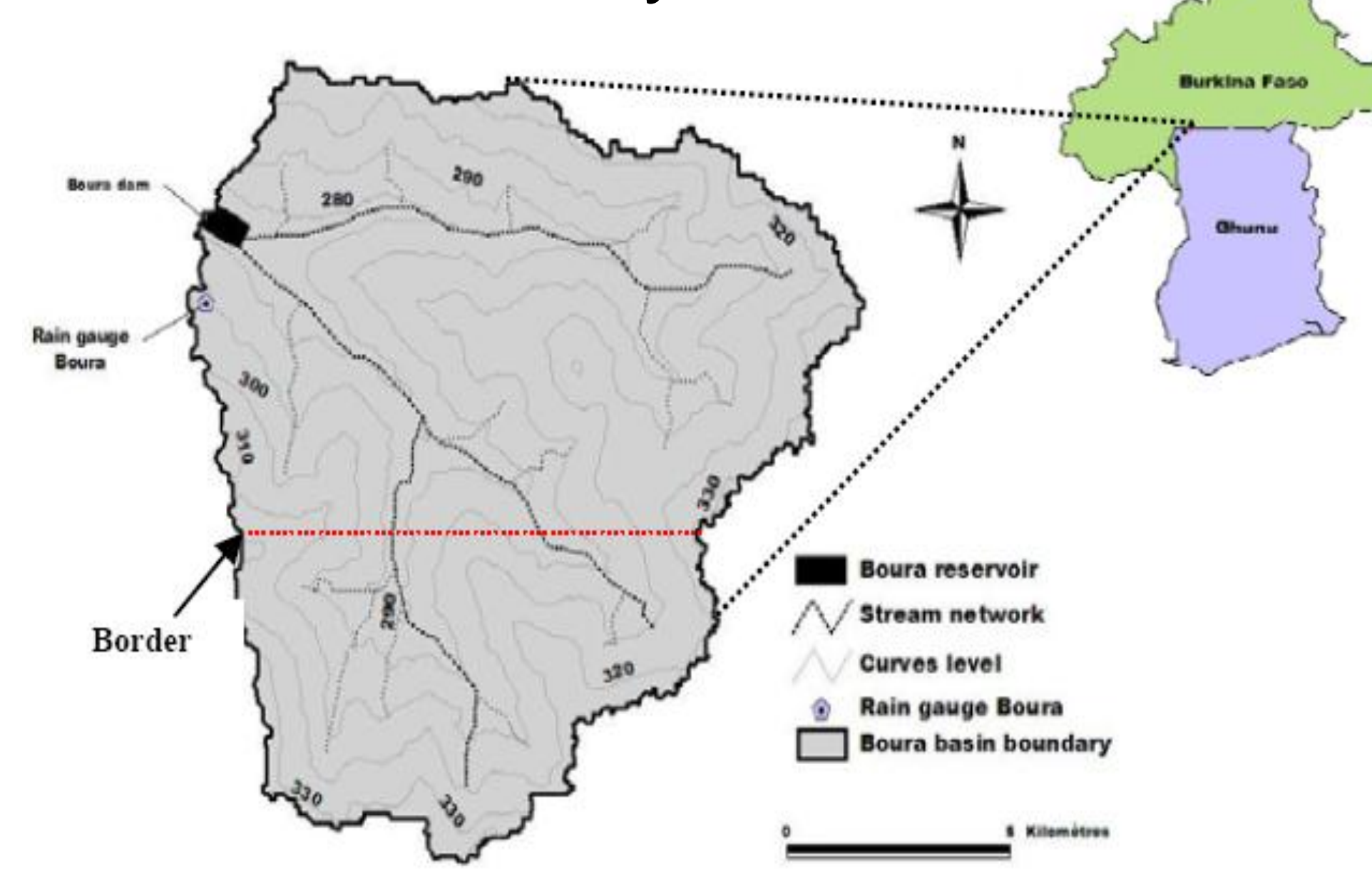
Main message

In developing countries, where many basins are ungauged or poorly gauged, small reservoirs could be used as hydrometric stations for estimating runoff of small watersheds upstream of the dams. Thus, hydrological monitoring of dam is essential in water resources management by predicting where there may be shortages or surplus water.

Boura meteorological station

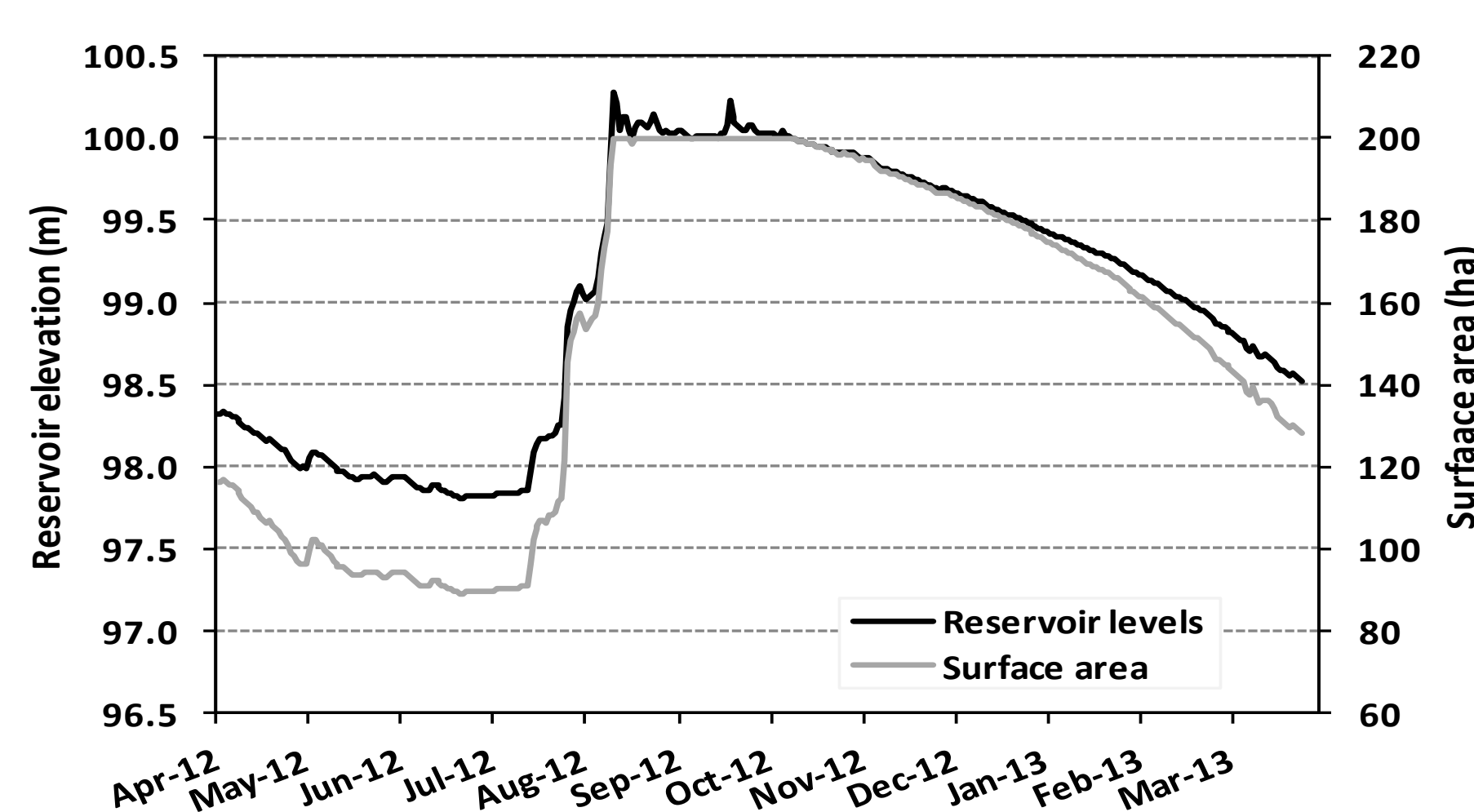


Study area



Purpose

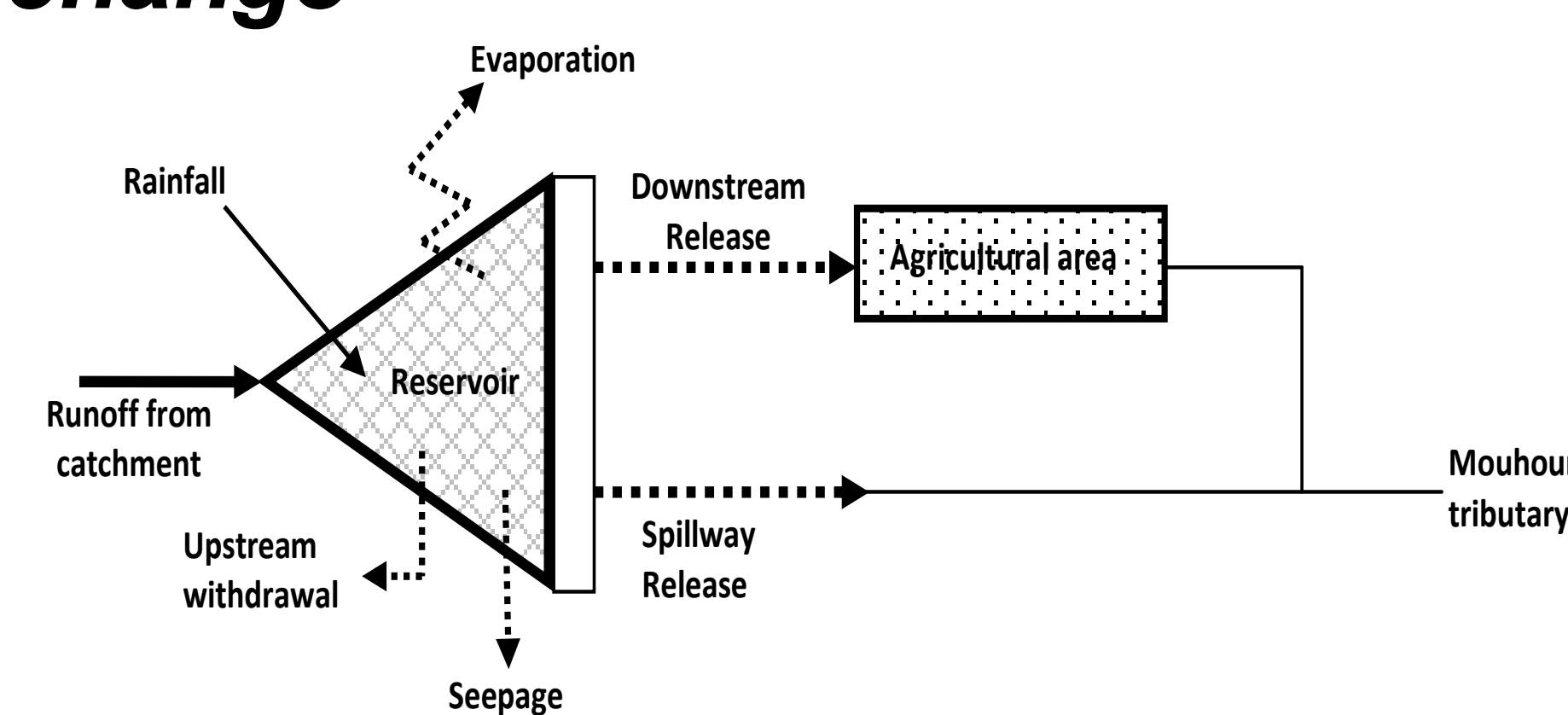
- Monitoring of hydrological balance of Boura dam;
- Estimate the components of water balance of Boura reservoir in the context of the scarcity data;
- Contribute to hydrological modeling at local scale of watersheds which reside in headwater areas of major river basins ;



Method

Based on the principle of mass conservation, often referred to as the continuity.

$$\text{Inflows} - \text{Outflows} = \text{Storage change}$$



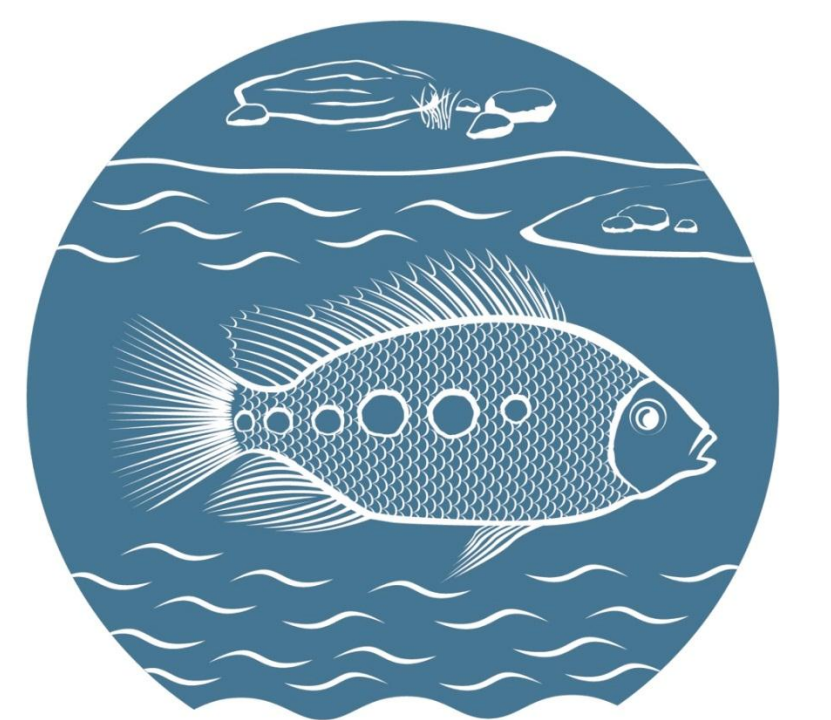
Schematic drawing of the Boura reservoir

Some components were measured by using simple valid approaches while others were considered as residuals of the water balance equation.

Conclusions (lessons and Recommendations for defined stakeholder)

Knowledge of water reservoir changes is a central task to support water management authorities and stakeholders in operational irrigation and water supply strategies. So, the local folks must be better organized for maximum valorizing the water potential available in the reservoirs.

August 2013



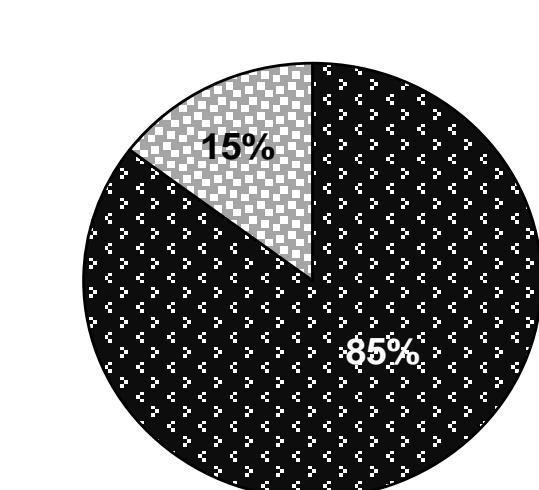
Volta

Findings

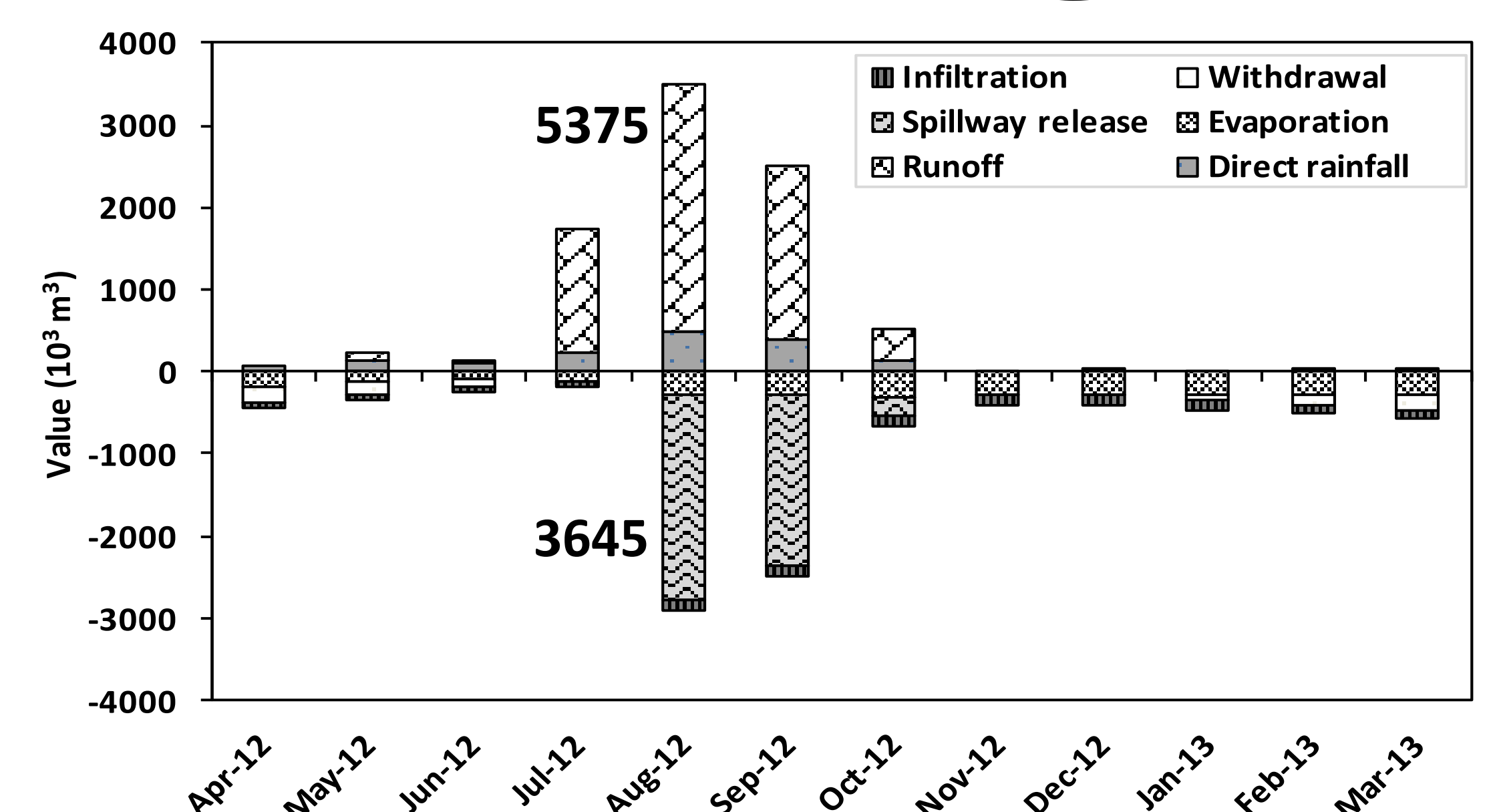
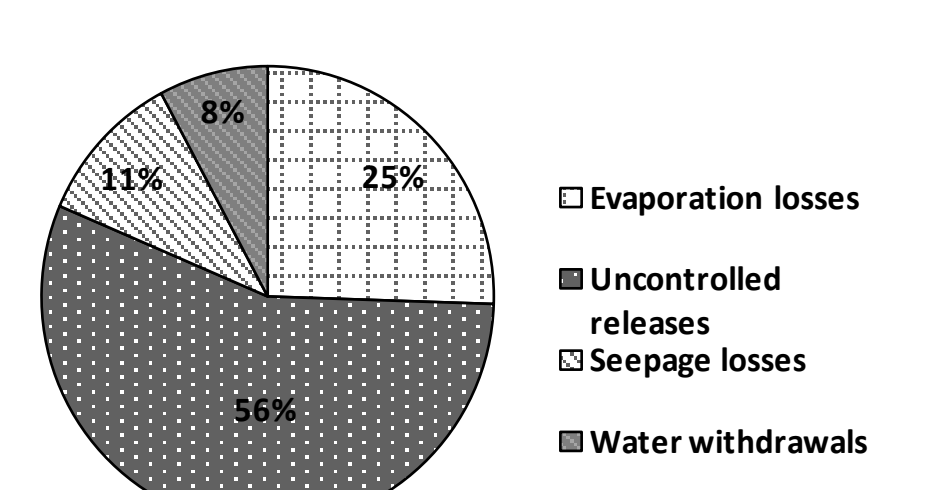
Over the monitoring period of one year, from April 2012 to March 2013, the water budget of reservoir was composed as follow:

- Amount of rainfall falling directly in the reservoir was 1.64 Mm³ in 67 rainy days;
- Amount of evaporative water loss was 2.76 Mm³;
- 85% of annual inflow (11.14 Mm³) into the reservoir coming from the surface runoff;
- Uncontrolled water releases through the spillway represented 56% of total output (From August to mid-October);
- Less than 10% of annual inflow was withdrawn for various uses (20% of reservoir storage capacity);
- More than 2 m of water are lost from the end of spillway discharge until the dam reaches its minimum storage.

Inflows components



Outflows components



Histogram of different water fluxes at Boura reservoir in monthly time step: Inputs (positive part) and outputs (negative part)

About CPWF

The CGIAR Challenge Program on Water and Food was launched in 2002. CPWF aims to increase the resilience of social and ecological systems through better water management for food production (crops, fisheries and livestock). CPWF currently works in six river basins globally: Andes, Ganges, Limpopo, Mekong, Nile and Volta.

CPWF is a member of the CGIAR Water, Land and Ecosystems Research Program. The program focuses on the three critical issues of water scarcity, land degradation and ecosystem services, as well as sustainable natural resource management. CGIAR is a global agriculture research partnership for a food secure future. Its science is carried out by the 15 research centers who are members of the CGIAR Consortium in collaboration with hundreds of partner organizations.

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