

3rd Asia Water Cycle Symposium (AWCI) International Task Team (ITT)

September 9, 2007

Bali, Indonesia



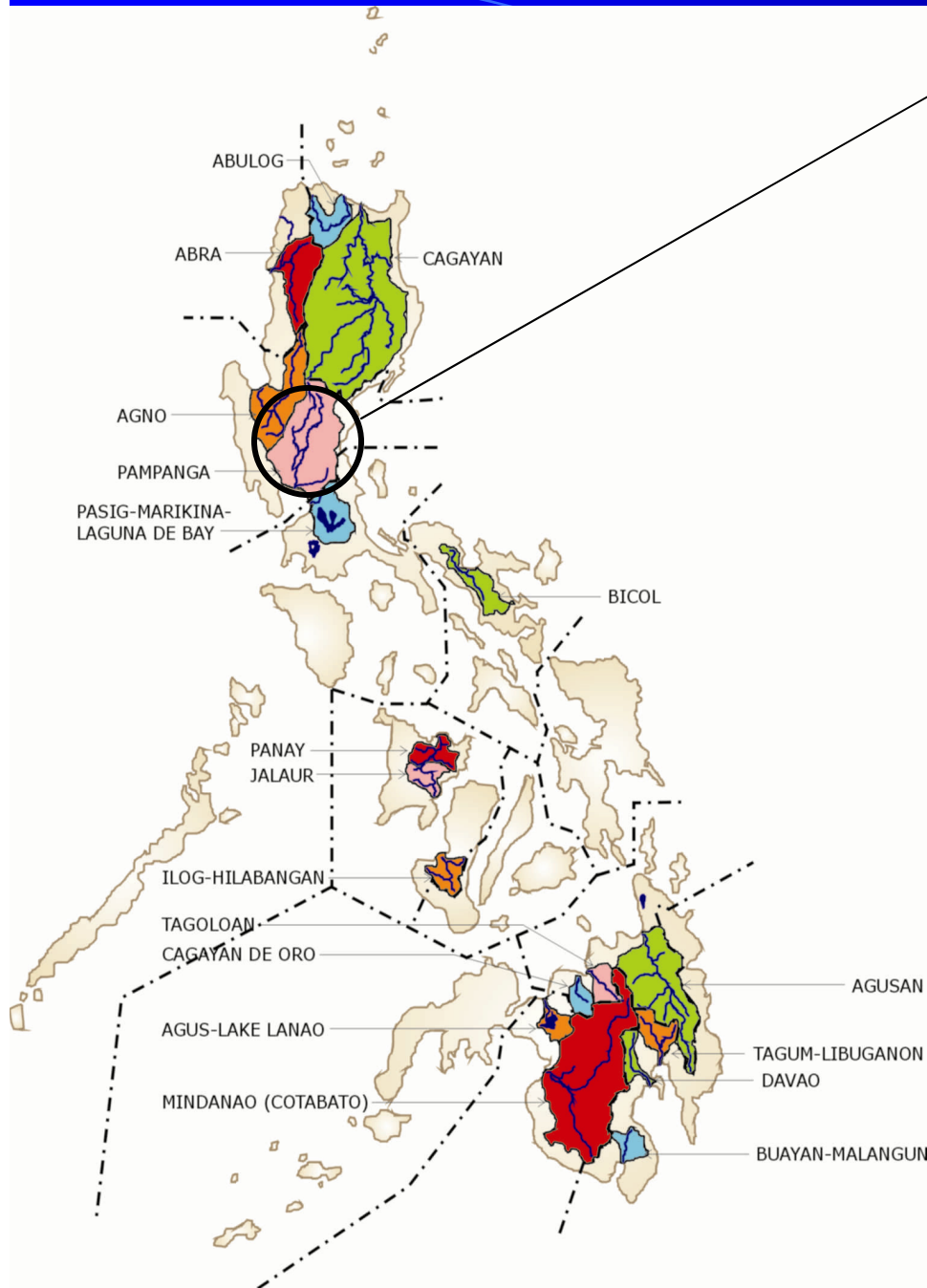
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Pampanga River Basin



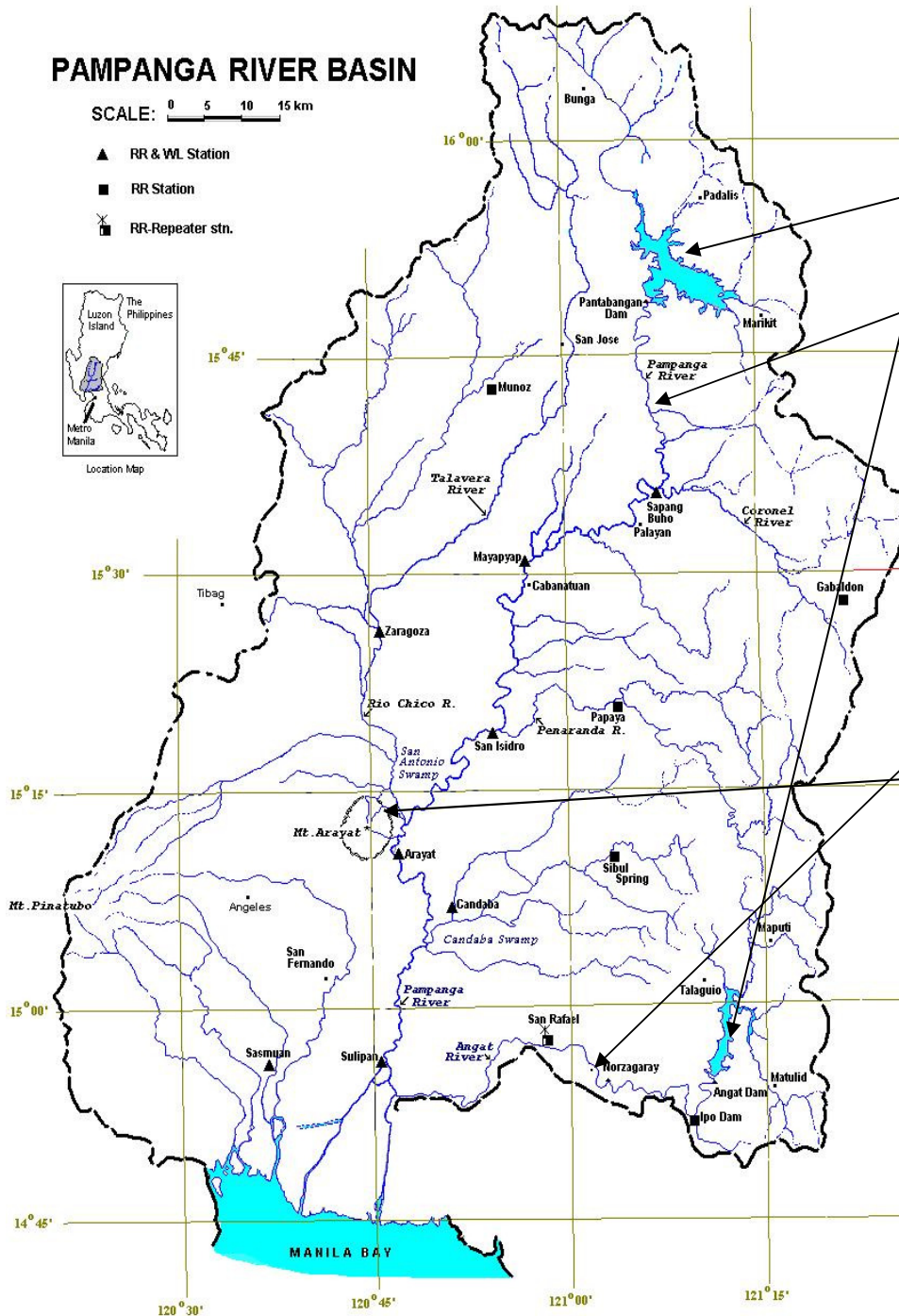
- Fourth largest basin in the Phil.
- Covers an approx aggregate area of 10,540 sq.km
- The basin extends over the southern slopes of the Caraballo Mountains, the western slopes of the Sierra Madre range and the major portions of the Central Plain of Luzon
- It encompasses the provinces of Nueva Ecija, part of Bulacan, Tarlac and Quezon, and almost whole of Pampanga



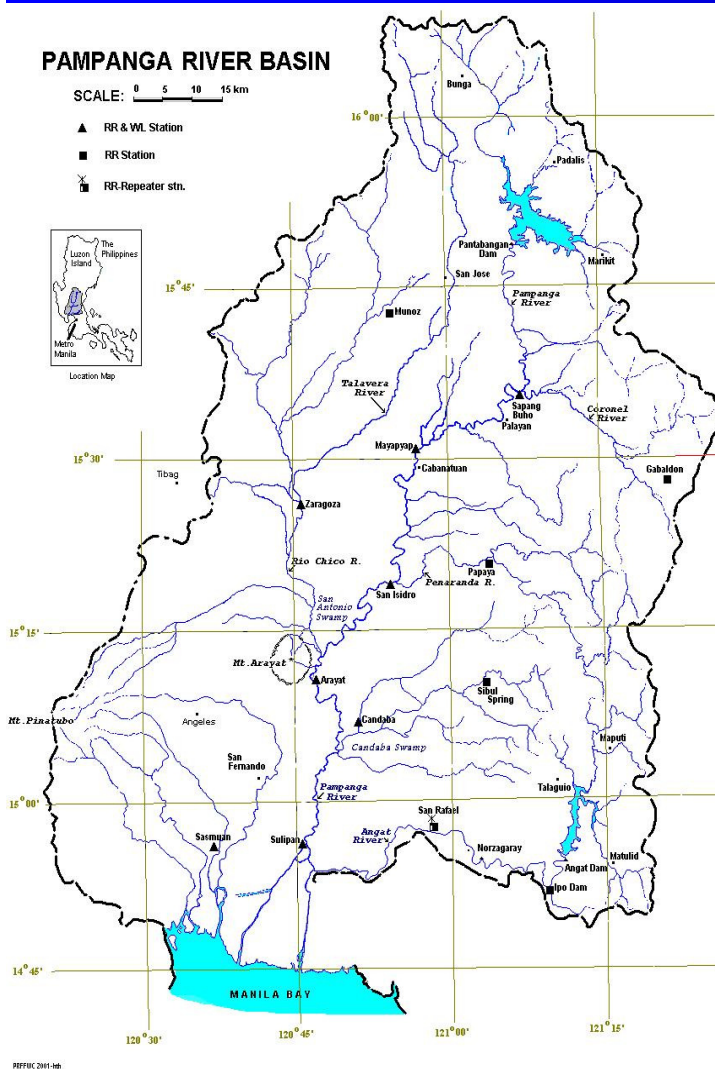
PAMPANGA RIVER BASIN

SCALE: 0 5 10 15 km

- ▲ RR & WL Station
- RR Station
- ✕ RR-Repeater stn.



- There are two dam within the basin: Angat and Pantabangan dams.
- The total length of the main river, the Pampanga River, is about 260 kilometers
- The basin is drained through the Pampanga River and via the Labangan Channel into the Manila Bay
- The Angat River joins the Pampanga River at Calumpit in Bulacan via the Bagbag River
- Between the middle and lower portion of the basin stands Mount Arayat, about 1,026 meters in elevation



- The basin experiences, on an average, at least one flooding in a year.
- The dry season generally occurs from December to May, and wet the rest of the year.
- The wettest months are from July to September.
- The frequency of tropical cyclone passage over the basin is about 5 in 3 years.

- The principal river, Angat River, originates from the western flank of the Sierra Madre Mountains. It then cuts through the mountainous terrain in a westerly direction to the dam site.
- The elevation within the watershed rises to a maximum of 1,115 meters at the Sierra Madre Mountain range and is lowest at the dam site at 100 meters.
- It has three major tributaries, namely, the Talaguio, Catmon and Matulid Rivers. The Angat Watershed has a moderate to intensive forest cover and has a drainage area of about 568 square kilometers, which receives an average annual rainfall of about 4,200 millimeters.
- The Angat Dam is a rockfill dam with a spillway equipped with three gates at a spilling level of 219 meters. Its storage capacity is about 850 million cubic meters. Water supply to the MWSS is released through five auxiliary turbines where it is diverted to the two tunnels of the Ipo Dam.



ANGAT BASIN

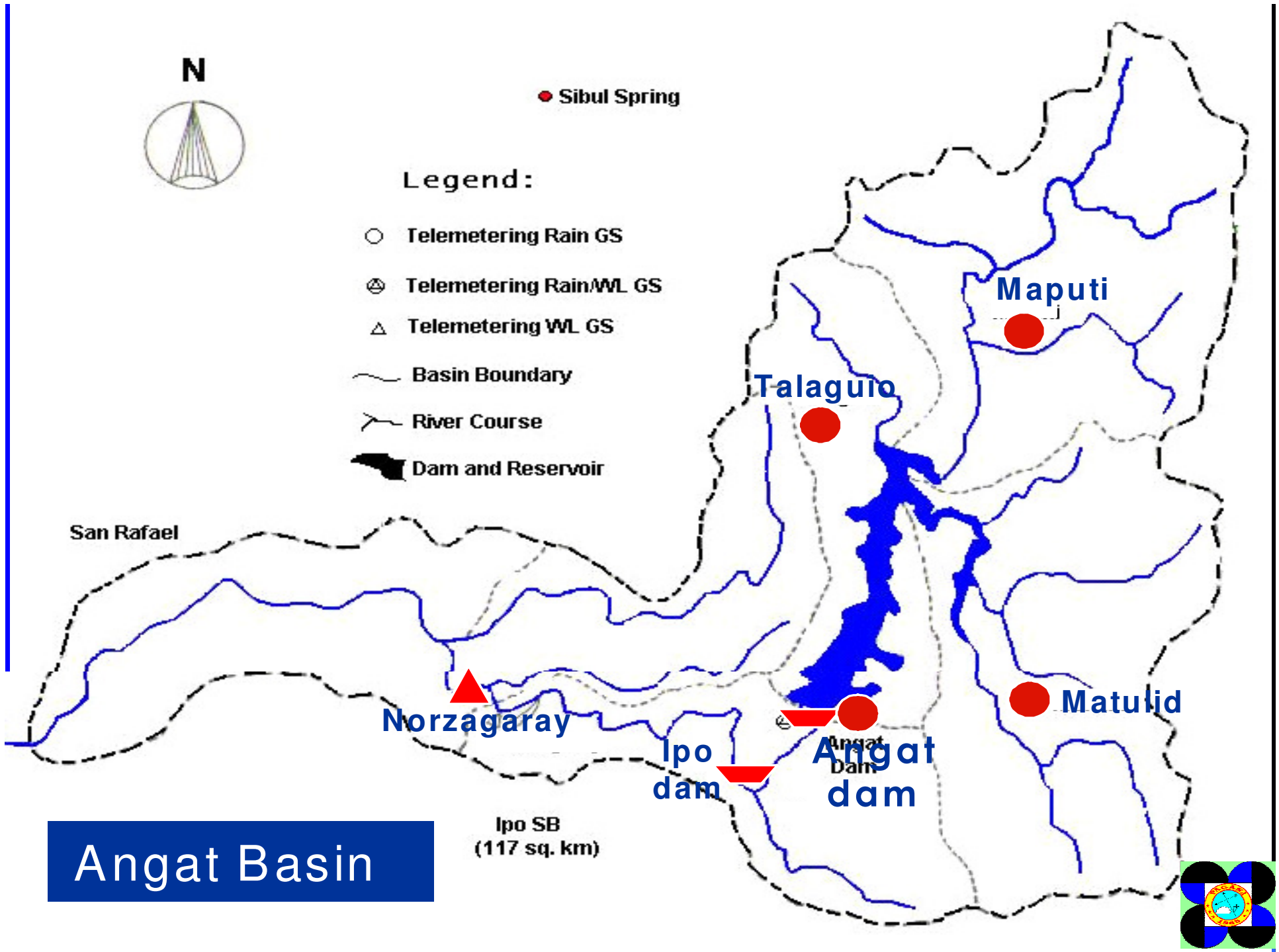


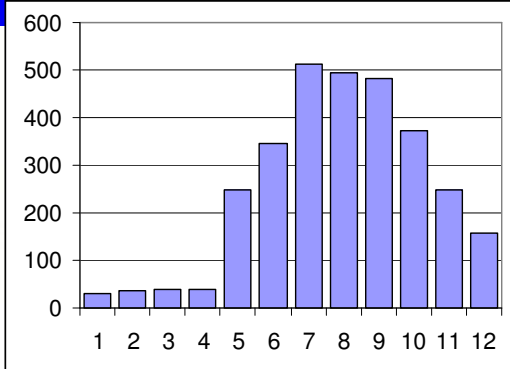
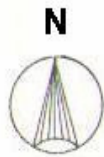
Angat Dam

The Angat Reservoir and Dam are located at the Angat River in San Lorenzo, Norzagaray, Bulacan. The facilities were constructed from 1964 to 1967 and have been operational since 1968. They have multi-purpose functions:

1. To provide irrigation to about 31,000 hectares of land in 20 municipalities and towns in Pampanga and Bulacan;
2. To supply the domestic and industrial water requirements of residents in Metro Manila;
3. To generate hydroelectric power to feed the Luzon Grid; and
4. To reduce flooding to downstream towns and villages.







△ Telemetering WL GS

— Basin Boundary

— River Course

■ Dam and Reservoir

San Rafael

Norzagaray

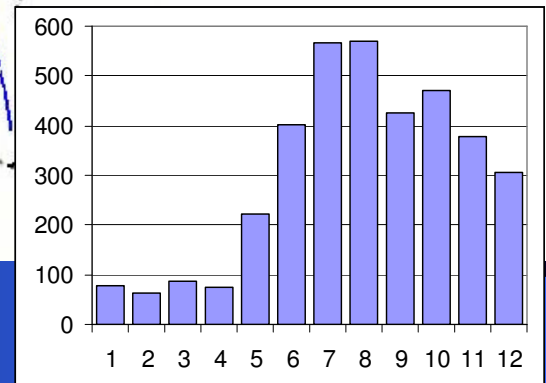
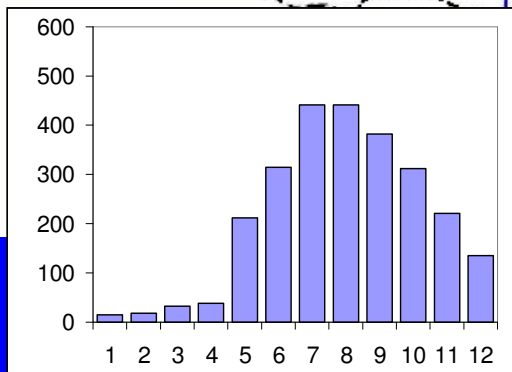
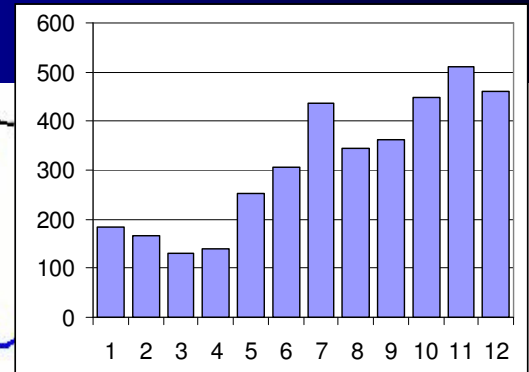
Talambuhay

Angat Dam

Ipo

Muti

Wabait



AVAILABLE OBSERVATIONS AND EXISTING DATA SETS

a) rainfall stations

Angat— 1968- present

Maputi – May,1986 - present

Talaguio – May,1986 - present

Matulid – May,1986 - present

b) dam elevation -- 1968 - present

c) inflow -- 1968 - present

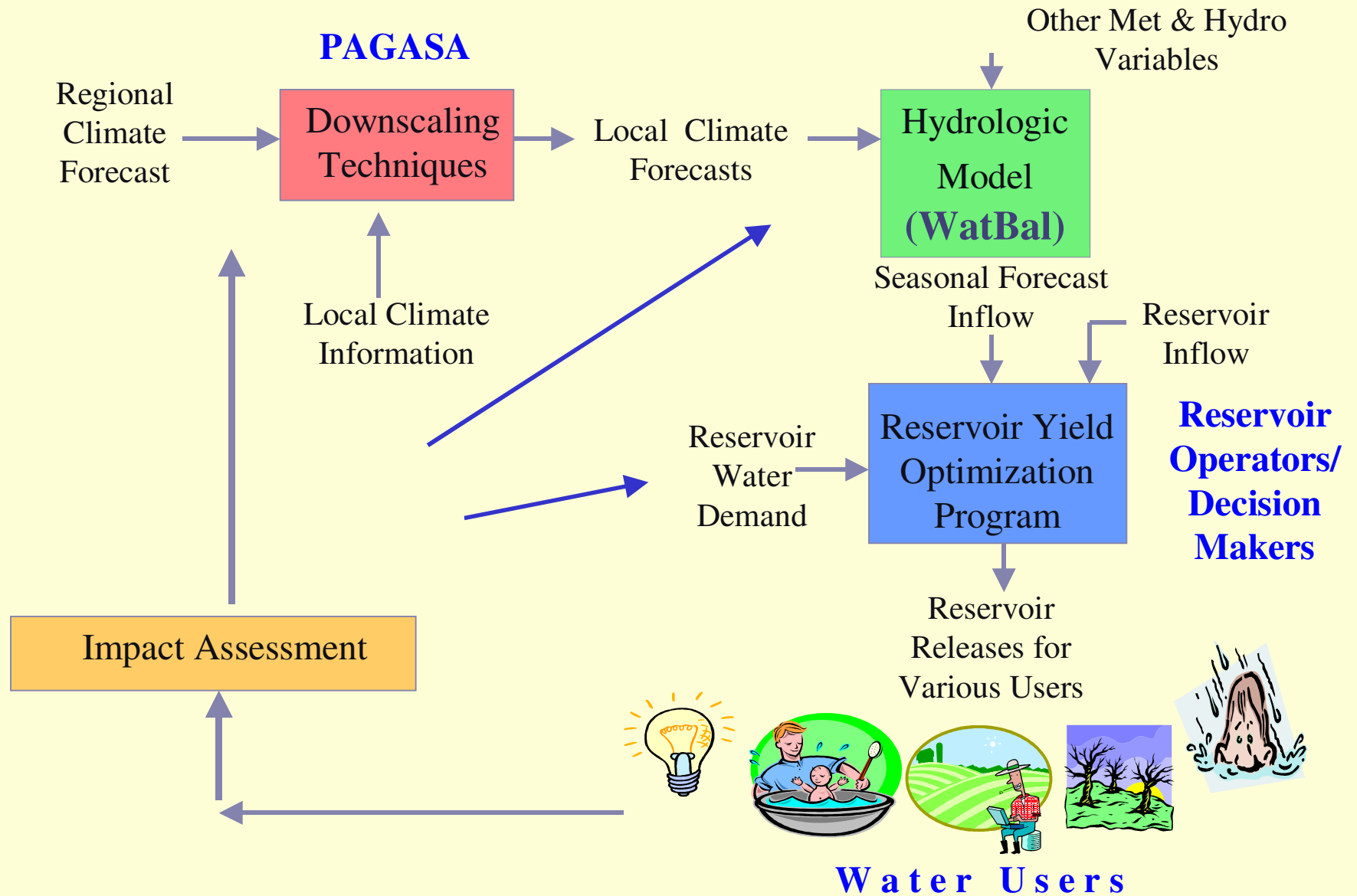


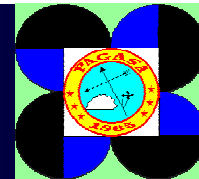
MAJOR ISSUES AND NEEDS RELATED TO THE WATER CYCLE AND WATER RESOURCES MANAGEMENT IN ANGAT BASIN

- a) Development of a more accurate short and long-term weather/climate forecast model**
- b) Streamflow forecast model for the basin/watershed**
- c) Decision support system for the management of the water resource of the basin/watershed**



An End-to-End Approach in Water Resources Management of a Multi-Purpose Reservoir





Thank You!

“tracking the sky . . . helping the country”