3rd GEOSS Asian Water Cycle Symposium

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Beppu, Oita, Japan

PAMPANGA RIVER BASIN

(Angat Basin)

Demonstration Project

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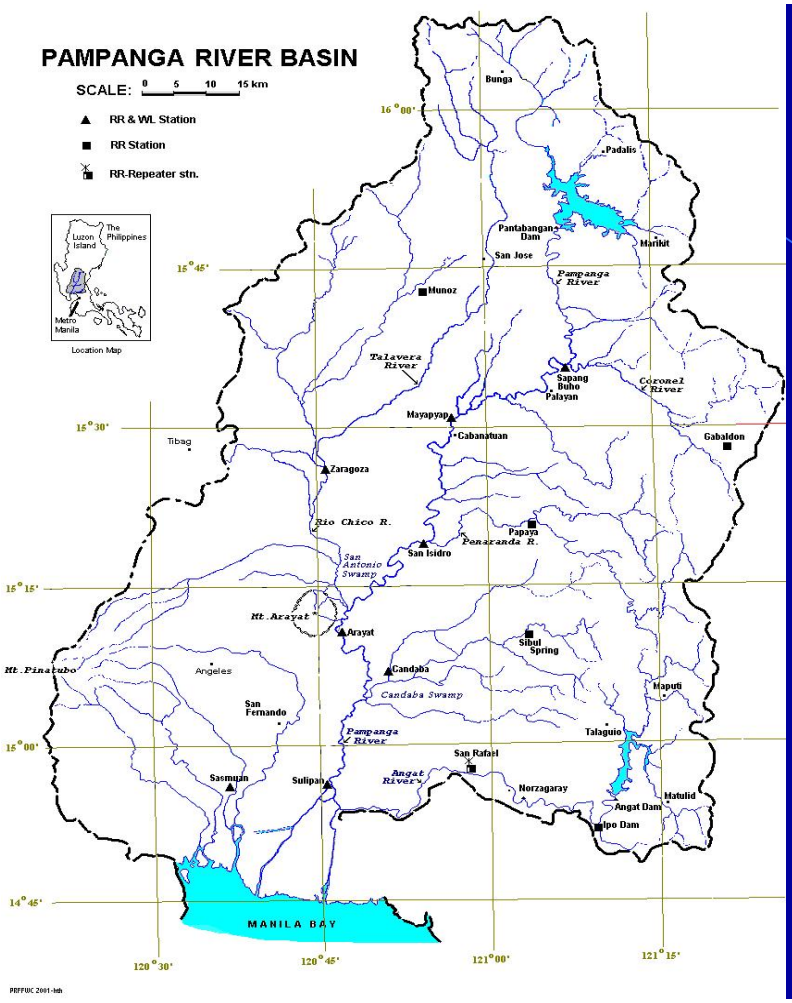
PAGASA / DOST



•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.

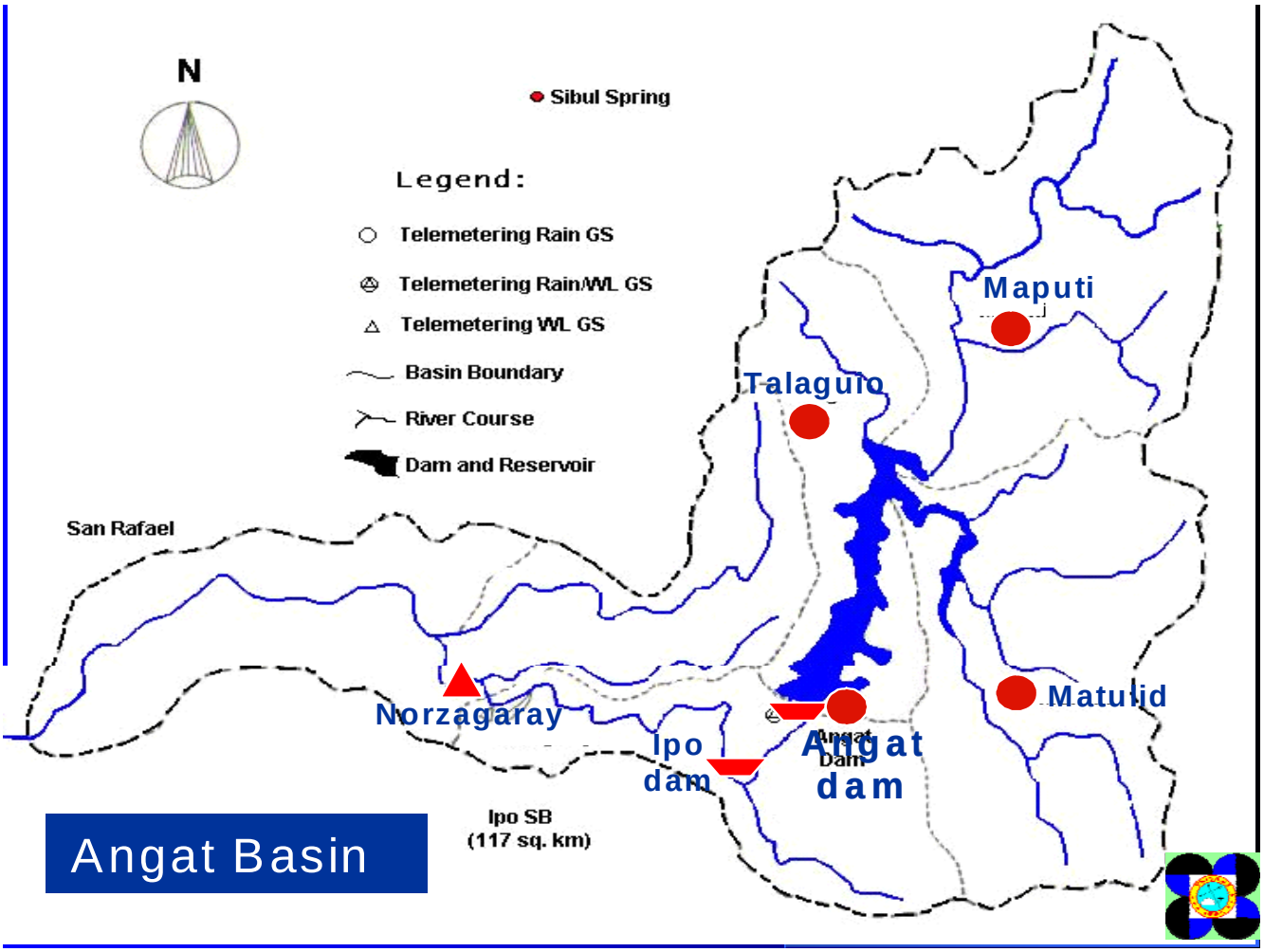
•The Angat Dam is a rockfill dam with a spillway equipped with three gates at a spilling level of 219 meters. Its storage capacity is about 850 million cubic meters. Water supply to the MWSS is released through five auxiliary turbines where it is diverted to the two tunnels going to the Ipo Dam.

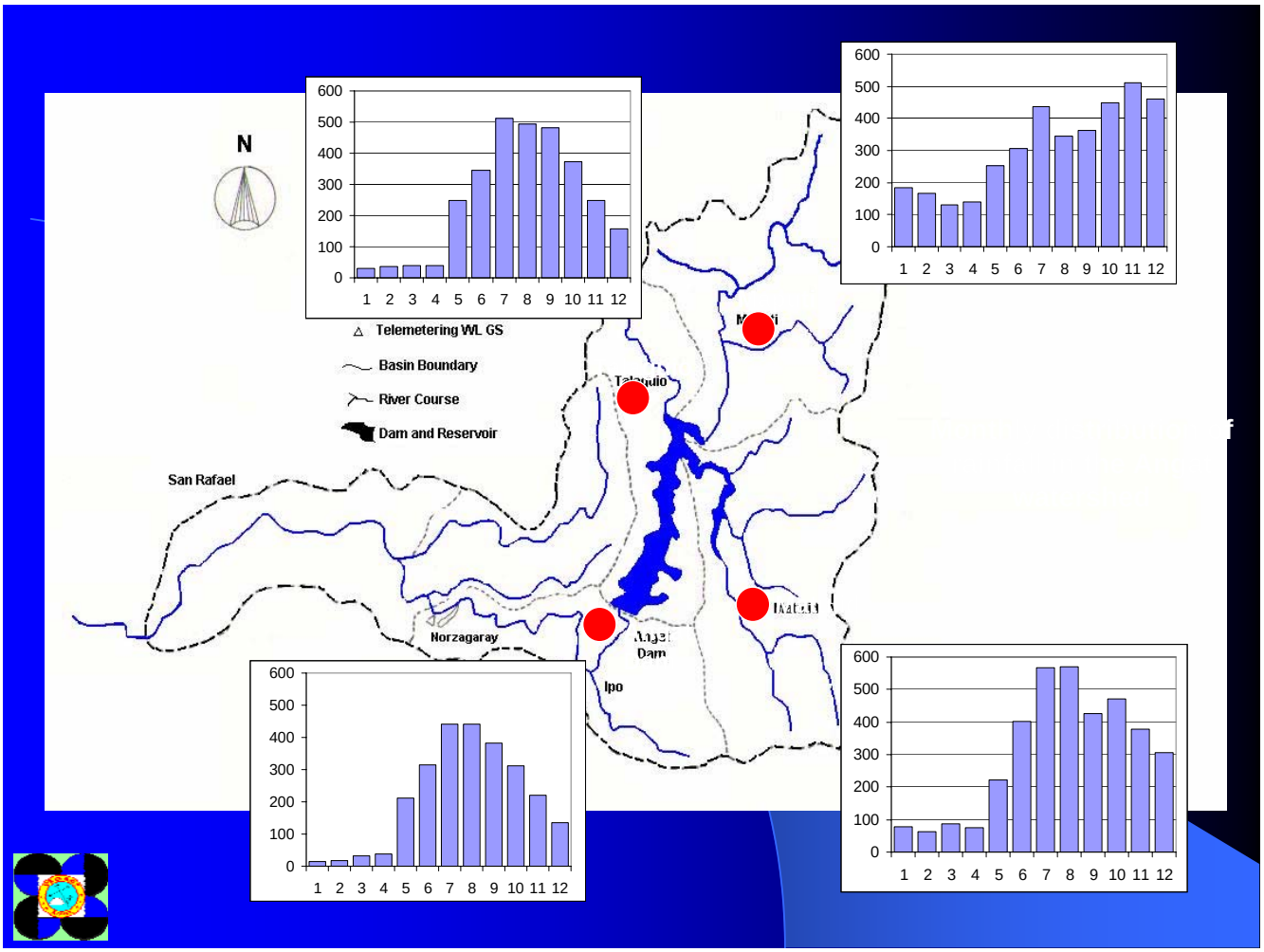
ANGAT BASIN

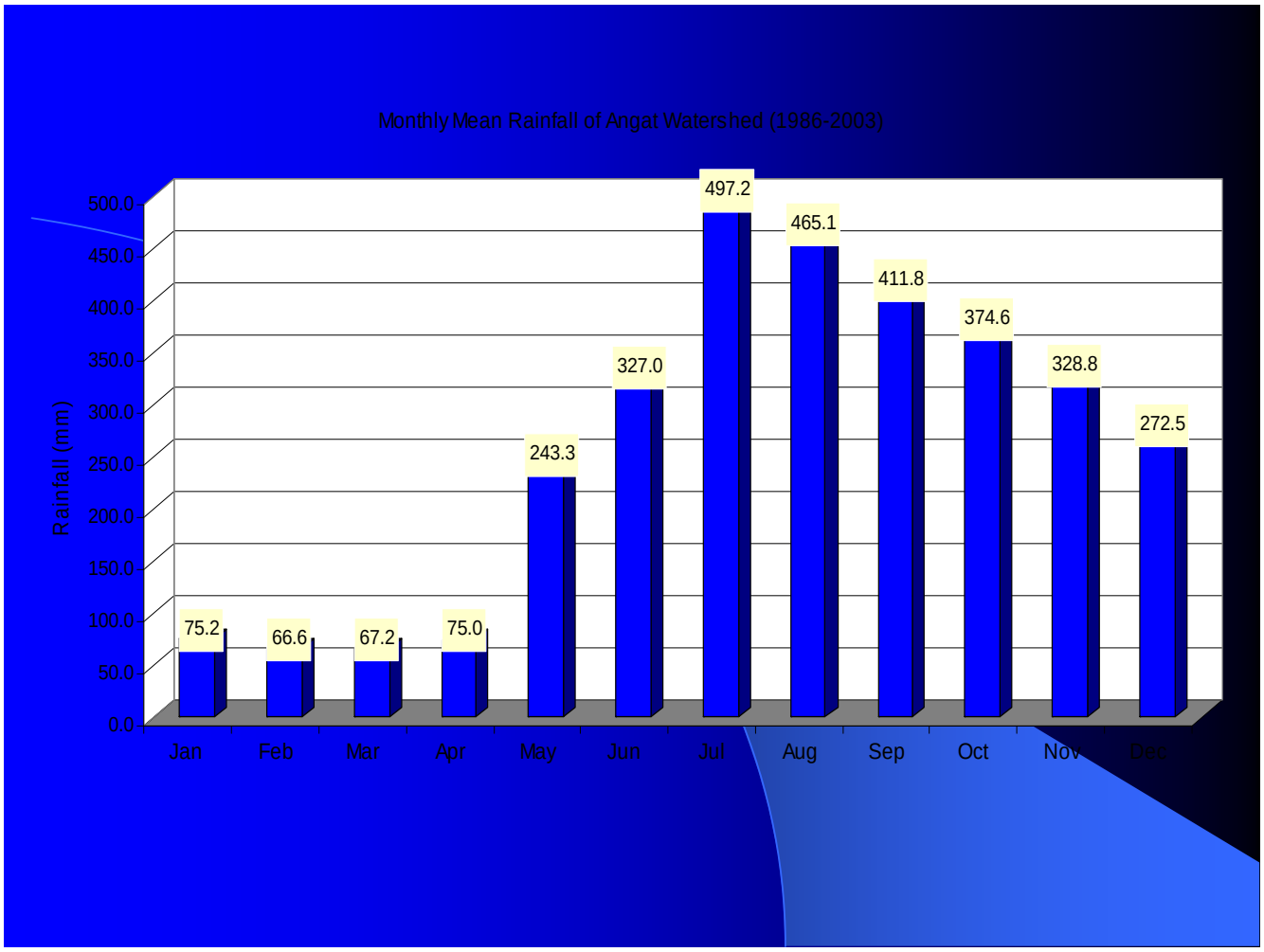
Angat Dam

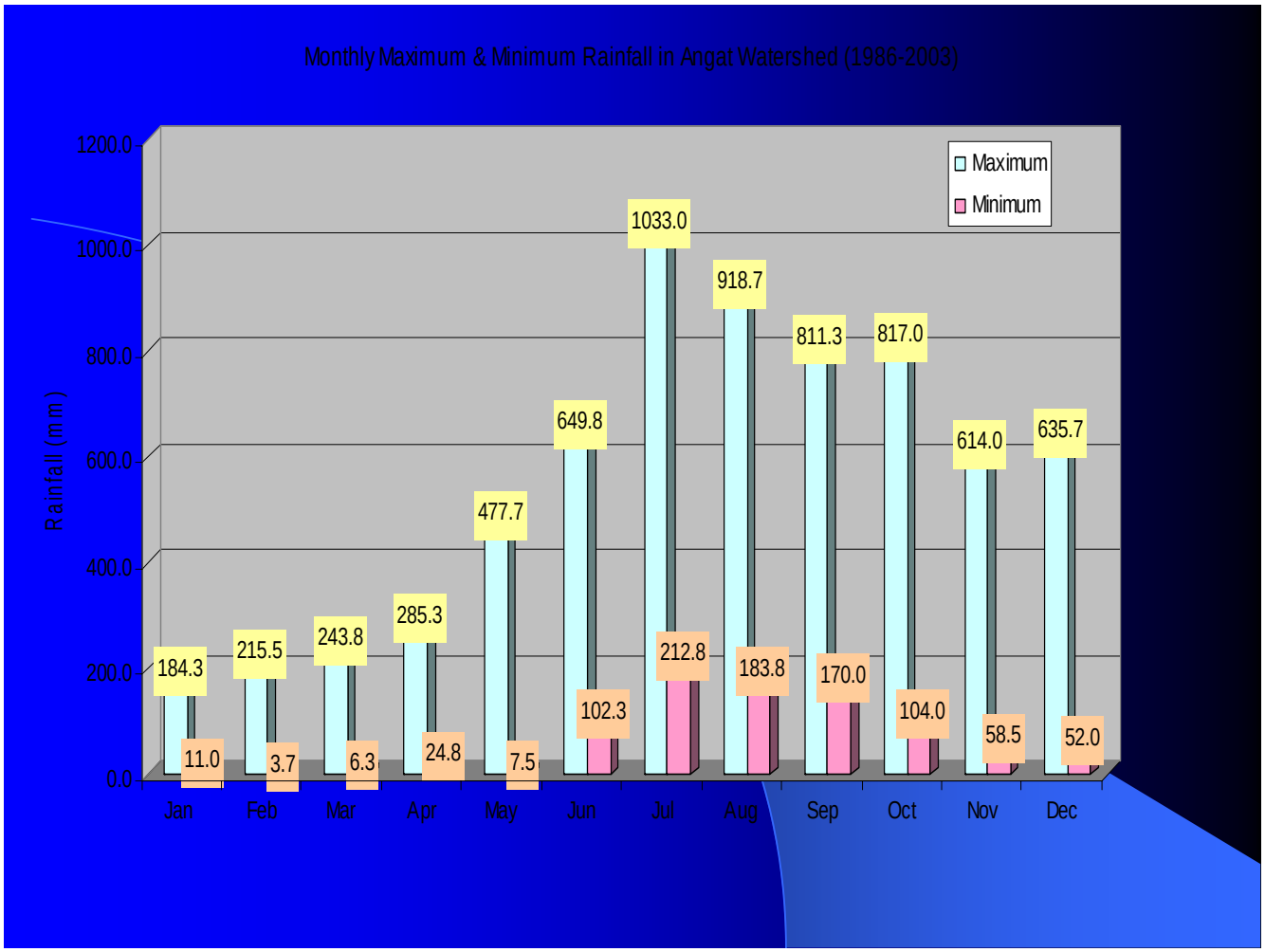
The Angat Reservoir and Dam are located at the Angat River in San Lorenzo, Norzagaray, Bulacan. The facilities were constructed from 1964 to 1967 and have been operational since 1968. They have multi-purpose functions:

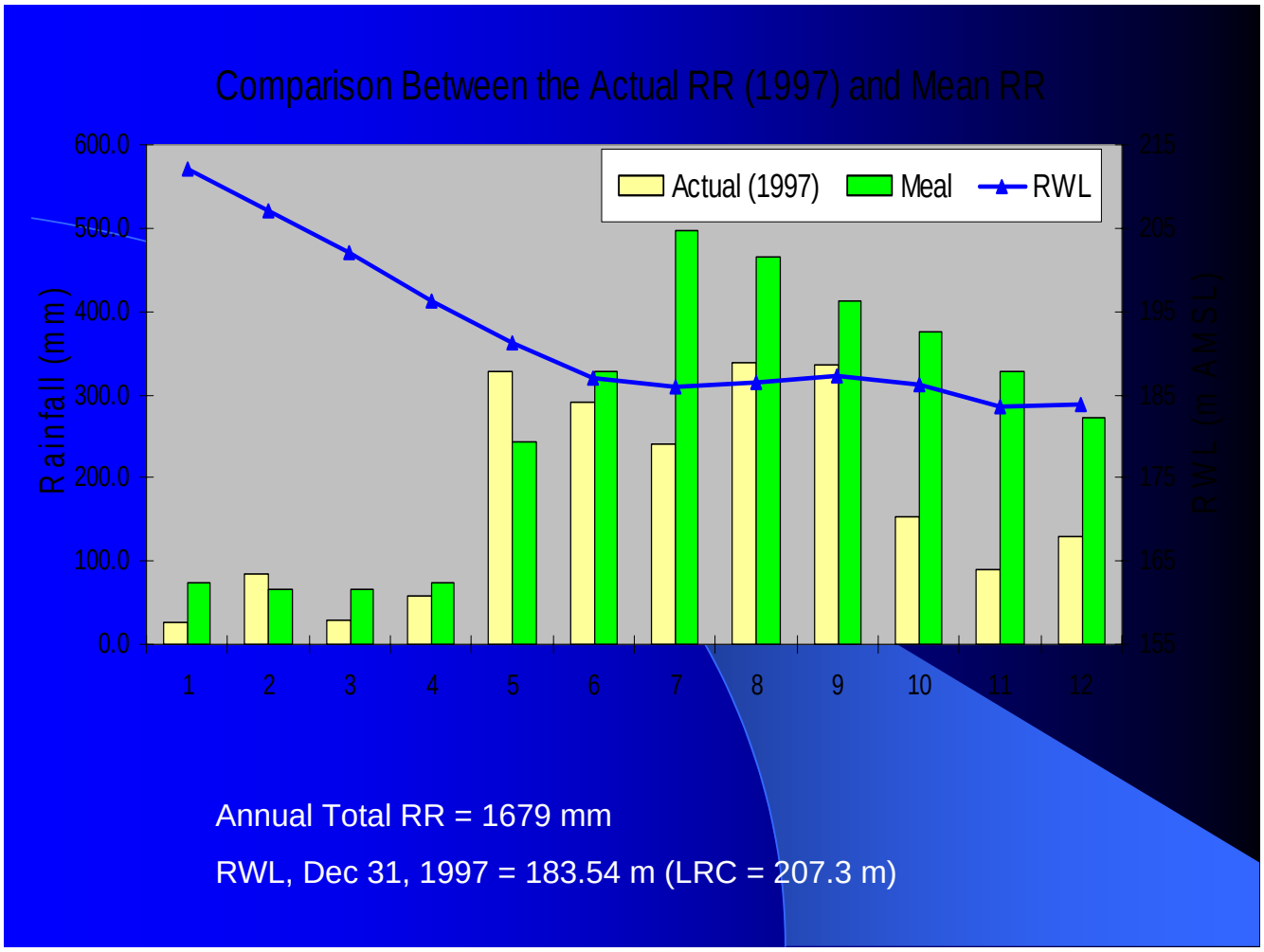
1. To provide irrigation to about 31,000 hectares of land in 20 municipalities and towns in Pampanga and Bulacan;
2. To supply the domestic and industrial water requirements of residents in Metro Manila;
3. To generate hydroelectric power to feed the Luzon Grid; and
4. To reduce flooding to downstream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

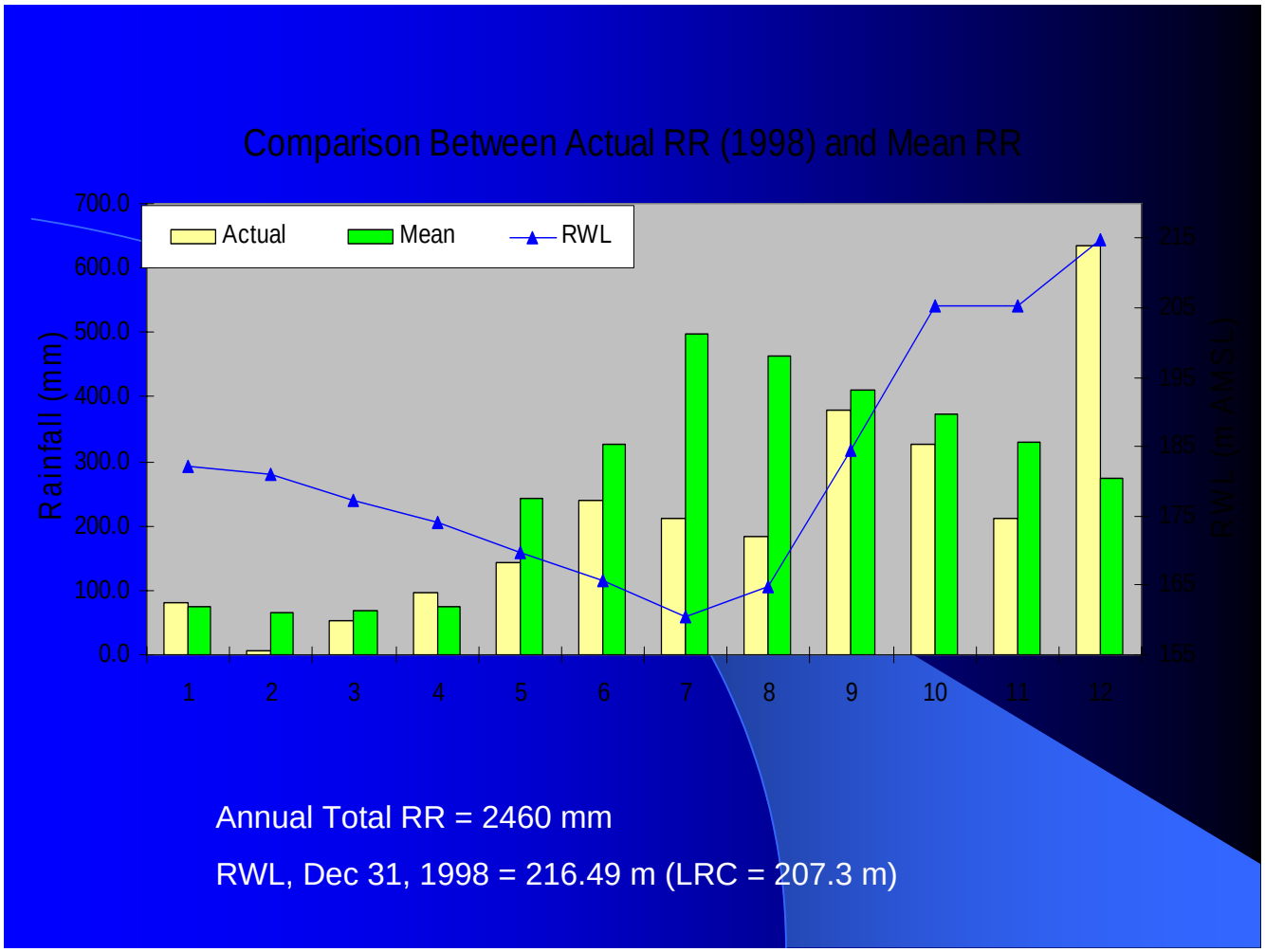

N
Sibul Spring
Legend:
Telemetering Rain GS
Telemetering Rain/WL GS
Telemetering WL GS
Basin Boundary
River Course
Dam and Reservoir
Maputi
Talaguio
San Rafael
Norzagaray
Ipo dam
Angat dam
Matulid
Ipo SB
(117 sq. km)
Angat Basin


N
600
500
400
300
200
100
0
1 2 3 4 5 6 7 8 9 10 11 12
Telemetering WL GS
Basin Boundary
River Course
Dam and Reservoir
San Rafael
Norzagaray
Ipo

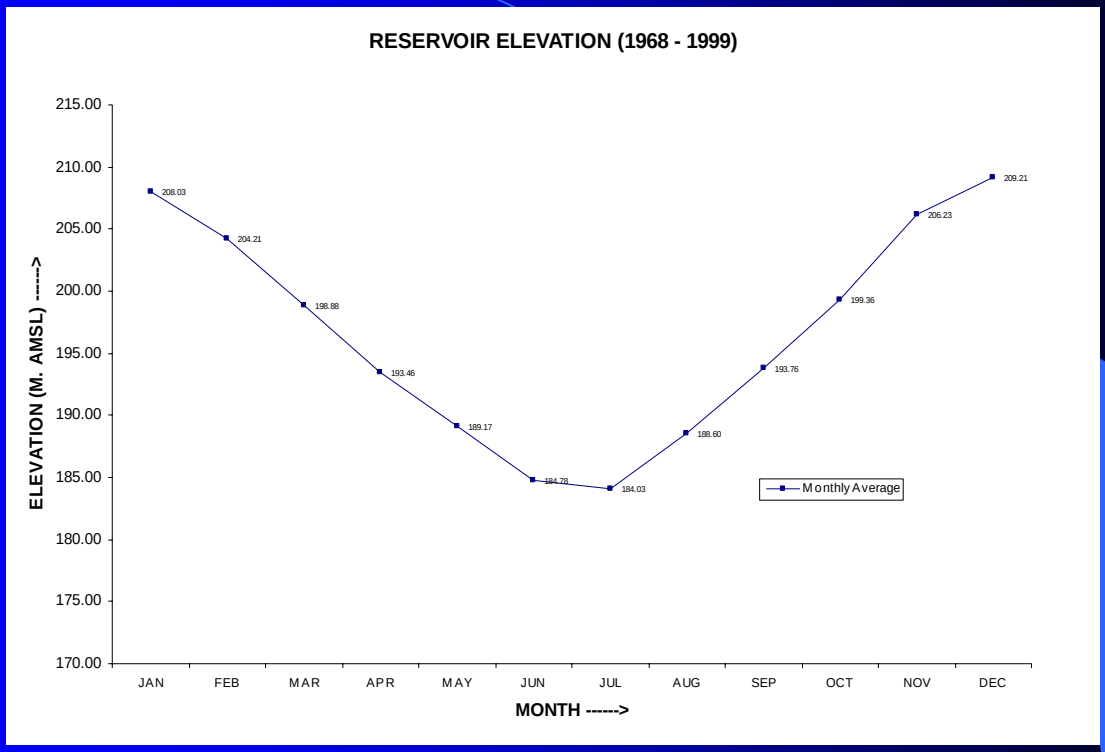

Monthly Mean Rainfall of Angat Watershed (1986-2003)
Rainfall (mm)
500.0
450.0
400.0
350.0
300.0
250.0
200.0
150.0
100.0
50.0
0.0
75.2
66.6
67.2
75.0
243.3
327.0
497.2
465.1
411.8
374.6
328.8
272.5
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec


Monthly Maximum & Minimum Rainfall in Angat Watershed (1986-2003)
Rainfall (mm)
1200.0
1000.0
800.0
600.0
400.0
200.0
0.0
Maximum
Minimum
184.3
11.0
215.5
3.7
243.8
6.3
285.3
24.8
477.7
7.5
649.8
102.3
1033.0
212.8
918.7
183.8
811.3
170.0
817.0
104.0
614.0
58.5
635.7
52.0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec

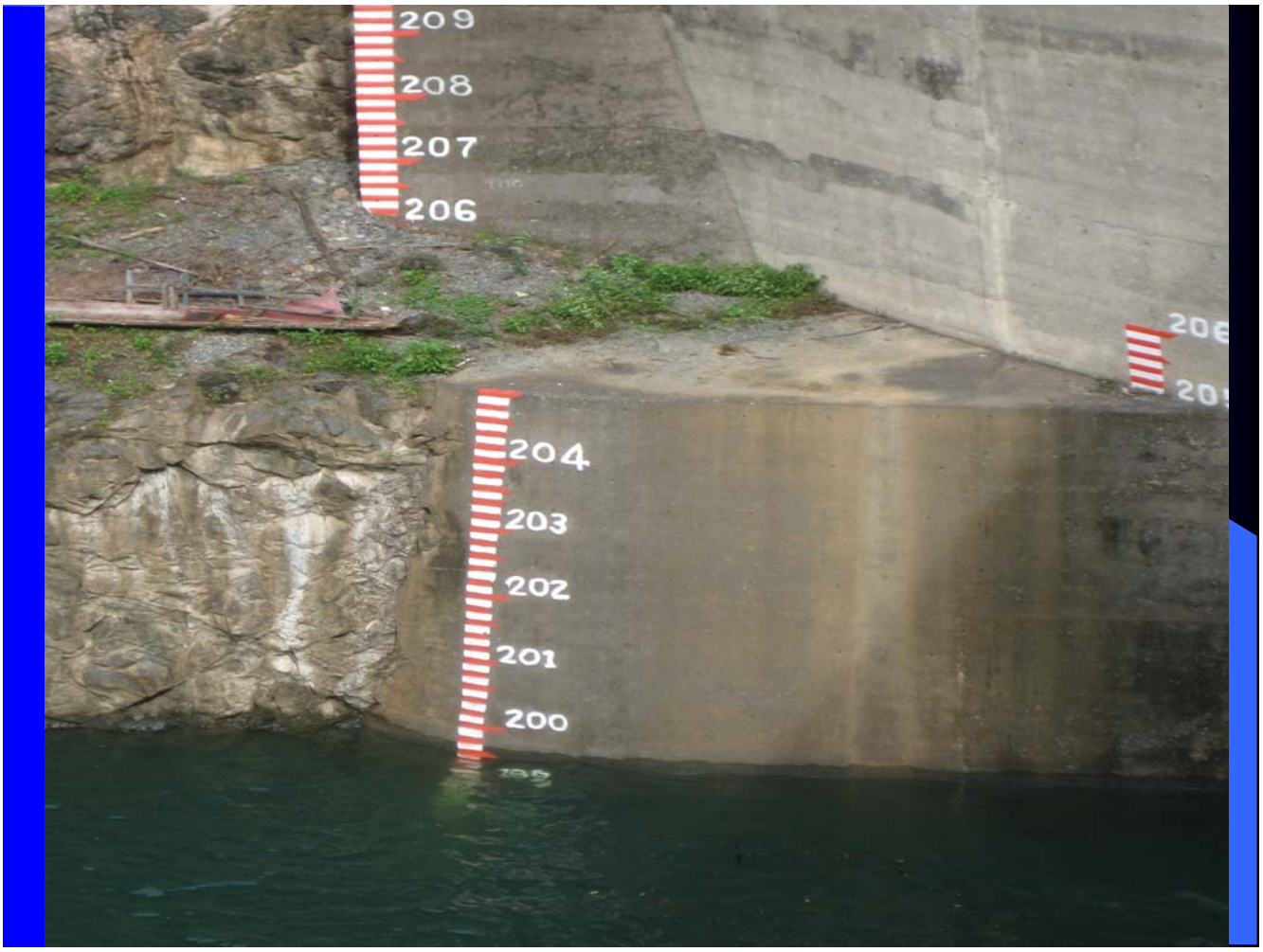

Comparison Between the Actual RR (1997) and Mean RR
Actual (1997)
Meal
RWL
Rainfall (mm)
RWL (m AMSL)
600.0
500.0
400.0
300.0
200.0
100.0
0.0
215
205
195
185
175
165
155
1
2
3
4
5
6
7
8
9
10
11
12
Annual Total RR = 1679 mm
RWL, Dec 31, 1997 = 183.54 m (LRC = 207.3 m)


Comparison Between Actual RR (1998) and Mean RR
Actual
Mean
RWL
Rainfall (mm)
RWL (m AMSL)
700.0
600.0
500.0
400.0
300.0
200.0
100.0
0.0
215
205
195
185
175
165
155
1
2
3
4
5
6
7
8
9
10
11
12
Annual Total RR = 2460 mm
RWL, Dec 31, 1998 = 216.49 m (LRC = 207.3 m)

Angat Dam Average Monthly Elevation



Angat Dam Water Level Oct. 17, 2007



Thank You!

“tracking the sky . . . helping the country”