Lao People's Democratic Republic



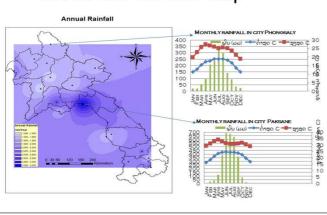


OUTLINES

I. CHALLENGES IN RAINFALL OBSERVATION II. ANNUAL RAINFALL MAP III. MAJOR RECENT RAINFALL: RELATED DISASTER IV. RAIN GAUGE NETWORK V. APPLICATION AND USERS VI. QUALITY MANAGEMENT

VII. EXPECTATION FOR THIS WORKSHOP

II. Annual rainfall map



IV. Rain gauge network

- Style of Pacific Storm on Law FOR

 Style of Pacific
- The manual rain gauge posts = 119
- The bucket rain gauge is used in manned station
- Observers read the rainfall value every 3 hour and report the data once a day.
- Minimum observation unit is 0.1 mm.
- Statistical data in some station are stored since 1951



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- The automatic rain gauge station = 43
- Tipping bucket rain gauge is used the station
- It Observes rainfall every 10 minutes and transmit the data every 1 hour.
- Minimum observation unit is 0.2 mm. Statistical data are stored since 2015

I. Challenges in rainfall observation

- Lack of the skilled experts for the maintenance to keep the accuracy of rainfall observation
- Raw data rainfall observation report every 3 hours in synoptic message send to telecommunication center at headquarter by phone or phony of each stations of the country
- Rainfall observation report for observational recording book received at the beginning of each month
 - Rainfall observation data input of each stations to the computer by staff
 - Lack of the knowledge for the quality control after the observation
 - Mostly synoptic stations operated only five times observation per day.

III. Major recent rainfall-related disaster



- In Lao PDR droughts and floods are
- Floods have the greatest macroeconomic impact on the country and affect a greater number of people, as the areas affected are the primary locations of economic activity and contain 63% of the country population.
- Floods mostly affected central and southern provinces of the country, 27 major floods have occurred over the past 35 years with an average reoccurrence of one every 1.5 years
- Flash flood is also common natural disaster mostly affected northern and central parts.



In March 2017, local hail storm caused severe damages by heavy hail and strong winds in some areas of northwestern and central parts of Lao PDR.



- In July 2017, heavy rainfall caused severe damages on landslides in northern and central provinces such as: Six people were killed in landslide in northern Laos at province Phongsal after almost two weeks of rainfall hit the region and 2 people in Muang Med, Vientiane province. The landslides ont only affected to the people but also affected to transportation and agriculture sectors.
- During the tropical cyclones passed over Lao PDR (in July to September), its brought the heavy rainfall with wind gusts in Lao PDR caused severe damages on flash flood, landslides and flood plain such as:
- Two people were killed by flash flood and many severely impacted as heavy rain lashed multiple districts in Oudomxay Province.

V.

V. Applications and users

DMH's headquarters

Manned observed rain gauge data are reported to headquarters Once a

> DATA CENT IN

vation data
to DMH's web

Nation data
Application of the agricultural organization of

NAFRI

Observation data upload to DMH's web

Automatic rain gauge

data are transmitted

to headquarters every 1 hour

VII. Expectation for this workshop

- Knowing how to adopt quality management
- Getting some skills of quality control for observation data
- Getting some materials for lecturing about quality management in my office
- Making firm relationships between participants to exchange useful information after the workshop

VI. Quality management

- Rain gauge inspection once or two a year
- Site environmental check once in every two vears
- Daily site appearance check
- Limited value check for the observation data
- Training course for the observer up to budget