Democratic Socialist Republic of Sri Lanka

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Sri Lanka
Status of quality management in rainfall observation
by ...... Meteorological Officer

Country report in RAII WIGOS workshop on quality management of observation held in Tokyo, March 2018

2 ## Challenges in rainfall observation
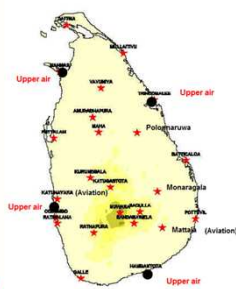
23 Synoptic Stations
4 Pilot Balloon Stations
1 Radiosonde Station

We have 23 synoptic stations in Sri Lanka. Rainfall is measured by a qualified meteorological observer for every 3 hours at those locations. In addition, pluviographs have been installed at same locations.

3 ## Challenges in rainfall observation

37 Automated Weather Systems are installed under JICA aids in 2009. 21 out of 37 are located in our synoptic stations.

Usually, our head office can be received rainfall amount from AWSs for every 10 minutes.

But, these days our satellite communication link has been broken and we will have proceeded IP VPN system.

6 ## Challenges in rainfall observation

10 automated rain gauges have been installed with collaborate other agencies such as tea states. 7 out of 10 is now been working. But, reading cannot be guaranteed because there is no regular maintenance of the rain gauges and sites.

Nowadays we are planning to install 100 automated rain gauges to get real time observations for disaster purpose. Most probably locations will be river basins.

Automated rain gauge and AWSs rain gauges are tipping bucket type. We have no proper methodology to calibrate them. Actually, there are no instruments as well as knowledge.

There is a big gap of quality controlling process. Really, we did not follow a proper quality controlling methodology for rainfall.
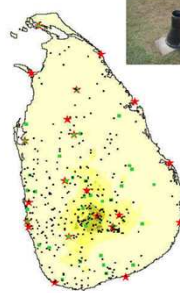
4 ## Challenges in rainfall observation

40 Agro- Meteorological Stations
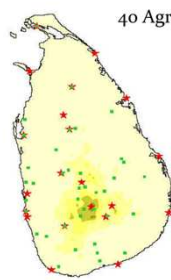
We have 31 collaborative agro-meteorological stations and receive 24 hour rainfall from those stations. There are qualified observers at those stations and we regularly give trainings to them.
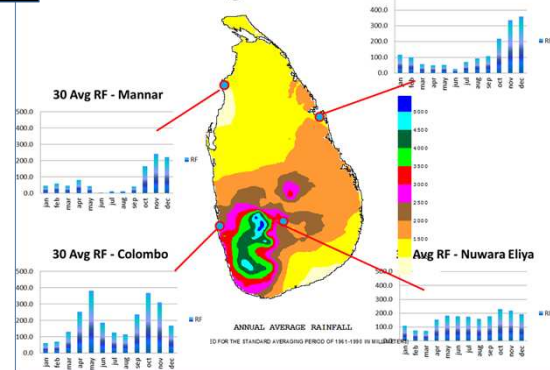
5 ## Challenges in rainfall observation

Other 520 rain gauges are installed all over the country collaborating with different type of agencies.

Department of Meteorology provides rain gauges and sufficient knowledge to maintain a small enclosure for the rain gauge and to get readings.

But most of the readers are not fully qualified or have not sufficient education background.

Then the quality of the measurement cannot be guaranteed.

7 ## Annual Average Rainfall

30 Avg RF - Trincomalee
30 Avg RF - Mannar
30 Avg RF - Colombo
Avg RF - Nuwara Eliya

ANNUAL AVERAGE RAINFALL
3D FOR THE STANDARD AVERAGING PERIOD OF 1961-1990 IN MILLIMETRES

8 ## Major recent rainfall-related disaster

- 15/05/2016
- Landslide
- Kegalle (Central hill area)
- Over 235 mm rainfall in 24 hour on 15th
- 4 people are killed, one is misplaced and no of affected families are 509

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- 17/05/2016
- Landslide
- Kegalle (Central hill area)
- Over 250 mm rainfall in 24hour on 17th
- 14 people are killed, 2 are misplaced and 15 houses are fully damaged
- No of total affected people is 908

10 Aranayake (Kegalle)
24-hrs Rainfall [mm]
May 2016

11 ## Major recent rainfall-related disaster

- Landslide
- 16/05/2016
- Kandy (Central hill area)
- Over 131mm rainfall in 24hour on 15th & over 95 mm on 16th
- 6 people are killed and houses are fully or partially damaged

12 Kandy
24-hrs Rainfall [mm]
May 2016

13 ## Major recent rainfall-related disaster

- 18/05/2016
- Floods
- Near Colombo (Western lowland)
- Over 190 mm rainfall in 24hour on 15th
- 5 people are killed, 21 houses are fully damaged and 74 partially damaged.
- No of Total affected people is 123727

14 Rathmalana
24-hrs Rainfall [mm]
May 2016
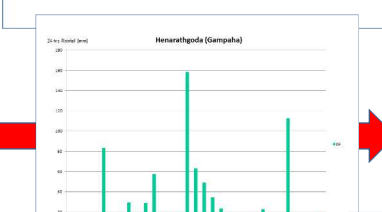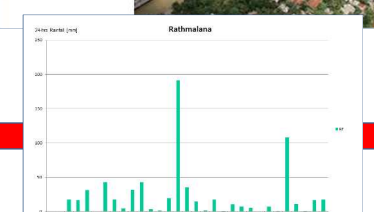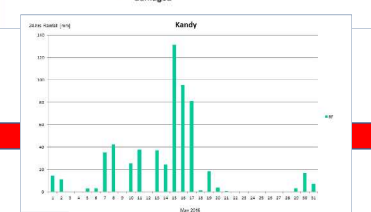
15 ## Major recent rainfall-related disaster

- 18/05/2016
- Floods
- Gampaha (Western lowland)
- Over 158 mm rainfall in 24hour on 15th
- 8 people are killed, 11 houses are fully damaged and 43 partially damaged.
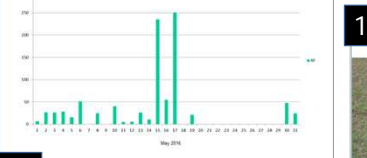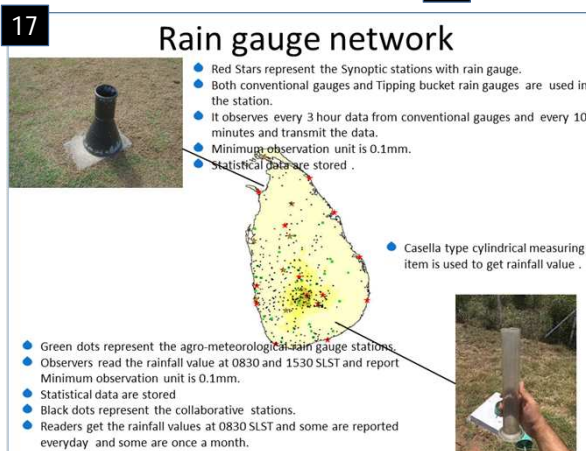- No of Total affected people is 45935

16 Henarathgoda (Gampaha)
24-hrs Rainfall [mm]
May 2016

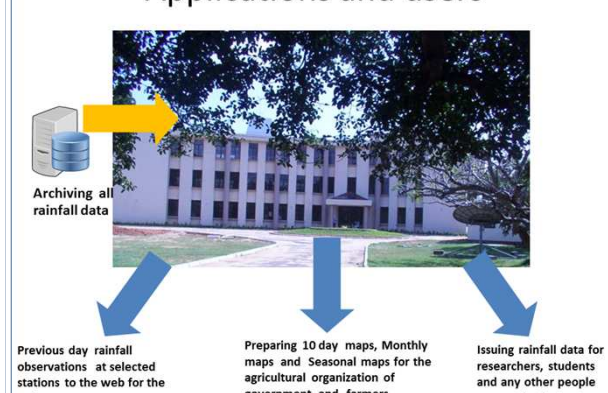**17** ## Rain gauge network

- Red Stars represent the Synoptic stations with rain gauge.
- Both conventional gauges and Tipping bucket rain gauges are used in the station.
- It observes every 3 hour data from conventional gauges and every 10 minutes and transmit the data.
- Minimum observation unit is 0.1mm.
- Statistical data are stored.

- Casella type cylindrical measuring item is used to get rainfall value.

- Green dots represent the agro-meteorological rain gauge stations.
- Observers read the rainfall value at 0830 and 1530 SLST and report Minimum observation unit is 0.1mm.
- Statistical data are stored
- Black dots represent the collaborative stations.
- Readers get the rainfall values at 0830 SLST and some are reported everyday and some are once a month.

18 ## Applications and users

Archiving all rainfall data

Previous day rainfall observations at selected stations to the web for the nation

Preparing 10 day maps, Monthly maps and Seasonal maps for the agricultural organization of government and farmers

Issuing rainfall data for researchers, students and any other people or organizations

19 ## Quality management

- conduct following quality management operations.

  - Rain gauge inspection once a year or anytime if necessary
  - Site environmental check once a year or anytime if necessary
  - Daily appearance check at synoptic stations
  - Training for the observer

20 ## Expectation of this workshop

- Knowing how to adopt quality management
- Knowing how to calibrate tipping bucket rain gauges and conventional rain gauges
- Getting some skills of quality control for observation data
- Getting some tools of AQC and HQC
- Getting some materials for lecturing about quality management in my office
- Making firm relationships between participants to exchange useful information after the workshop

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Thank you for the Attention