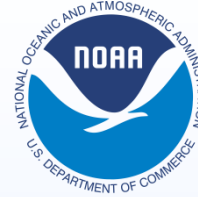




WORLD
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Case Study of Flash Flood in Bangladesh in 2017

South Asia Flash Flood Guidance System (SAsiaFFGS) Follow-up Operational Workshop (Step 4 training),
New Delhi, India, 5-7 June 2018

Presented by,

Tahiya Tarannum

Assistant Engineer

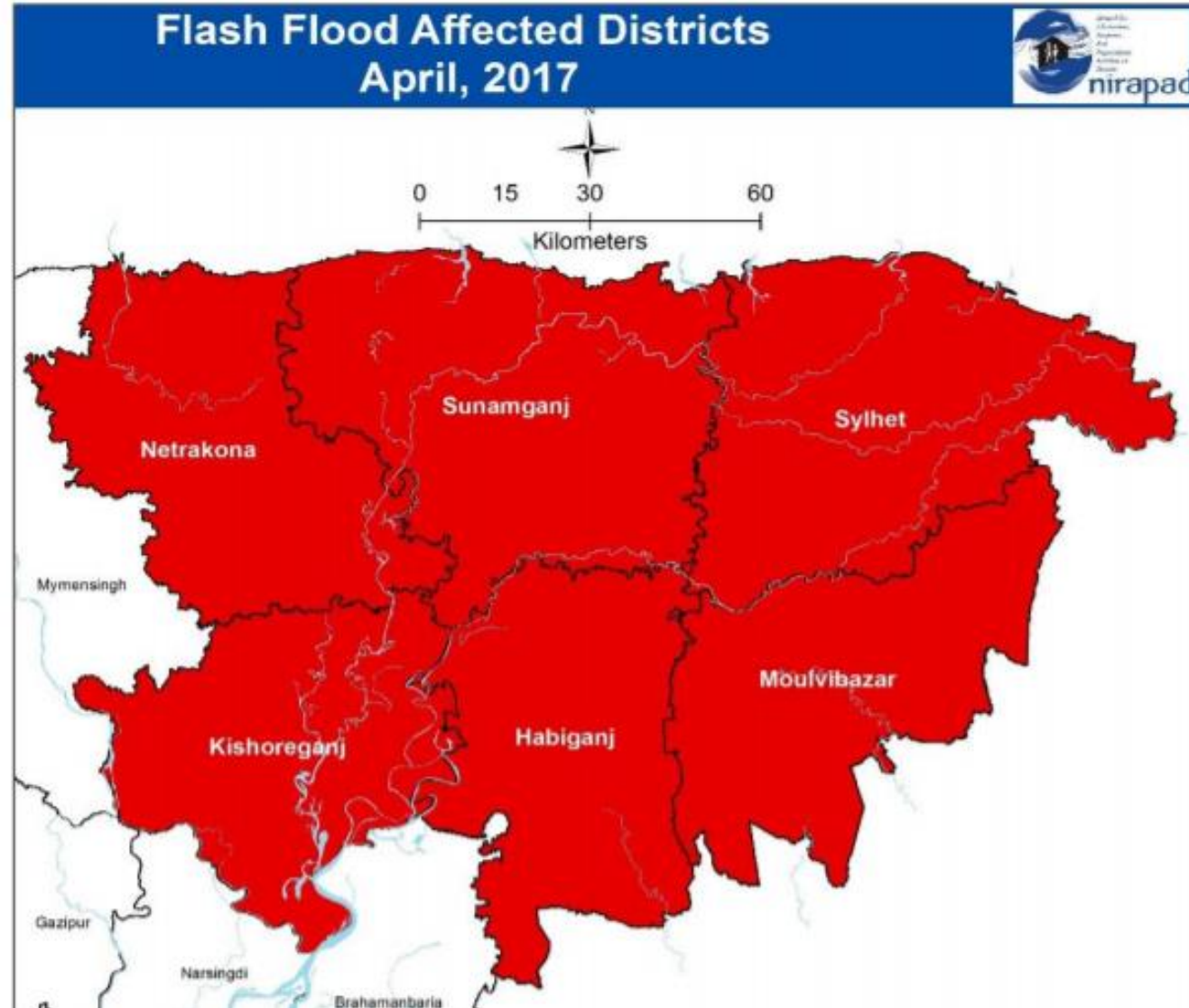
Processing and Flood Forecasting Circle

Bangladesh Water Development Board

eMail: tahiya.ae.bwdb@gmail.com

taihyatarannum.79@gmail.com

Flash Flood Vulnerability



- ▶ Flash flood mainly occurred in the **North eastern (NE) Haor area** in Bangladesh (mainly in Sunamganj, Sylhet, Netrokona, Habiganj, Sherpur and Molvi Bazar districts).
- ▶ Rainfall hit the Northeastern zone at the end of March, 2017.
- ▶ The flash flood was triggered by **high intensity rainfall** in Bangladesh and the neighboring Indian catchments located in **Meghalaya**.
- ▶ Flash floods in the months **April and May** damage Boro rice paddy just before the harvesting.
- ▶ Rising water overflow and breached embankment in many places and inundated vast areas of croplands.



Date and Time: 2 April, 2017 at 00:00 UTC

- ▶ Has there been any rainfall?
- ▶ Is additional rainfall expected?
- ▶ Is the soil moisture above 50%?
- ▶ Are the FFG values fairly low?
- ▶ Are there areas where you would be concerned for flash flooding?

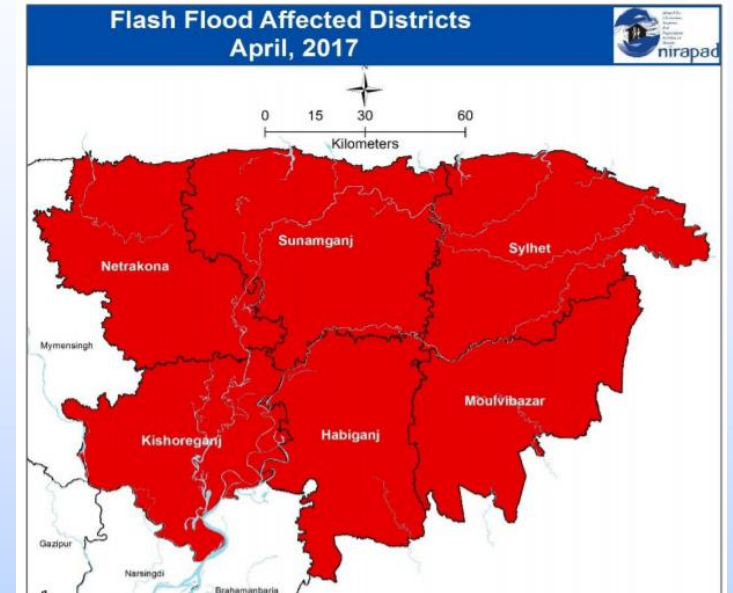
- ▶ Specify location of concern

Date and Time: 2 April, 2017 at 00:00 UTC

Consider the following questions:

- ▶ Has there been any rainfall? YES
- ▶ Is addition rainfall expected? YES
- ▶ Is the soil moisture above 50%? YES
- ▶ Are the FFG values fairly low? YES.
- ▶ Are there areas where you would be concerned for flash flooding? YES

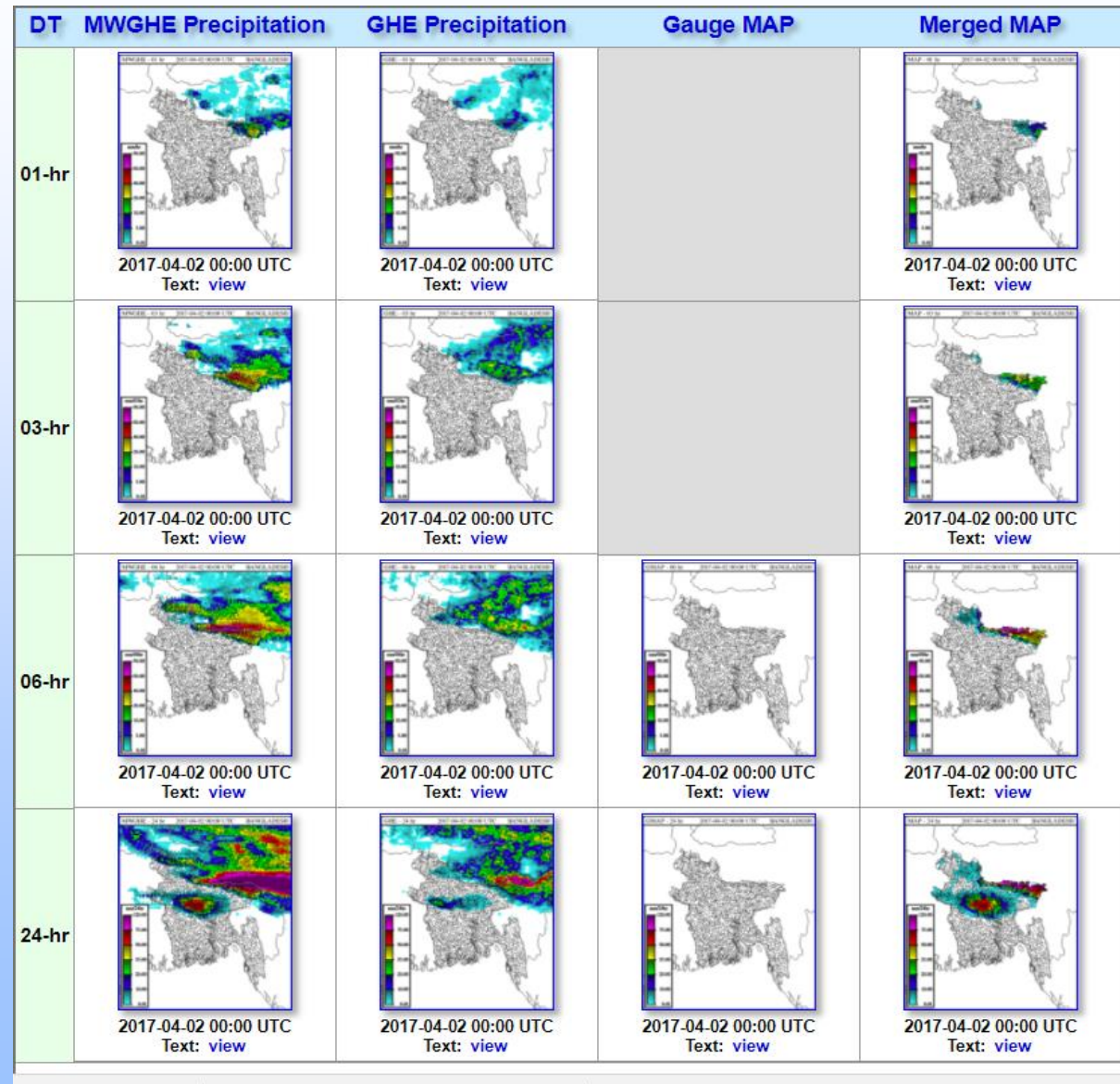
- ▶ Specify location of concern: North eastern basins in Sunamganj and Sylhet



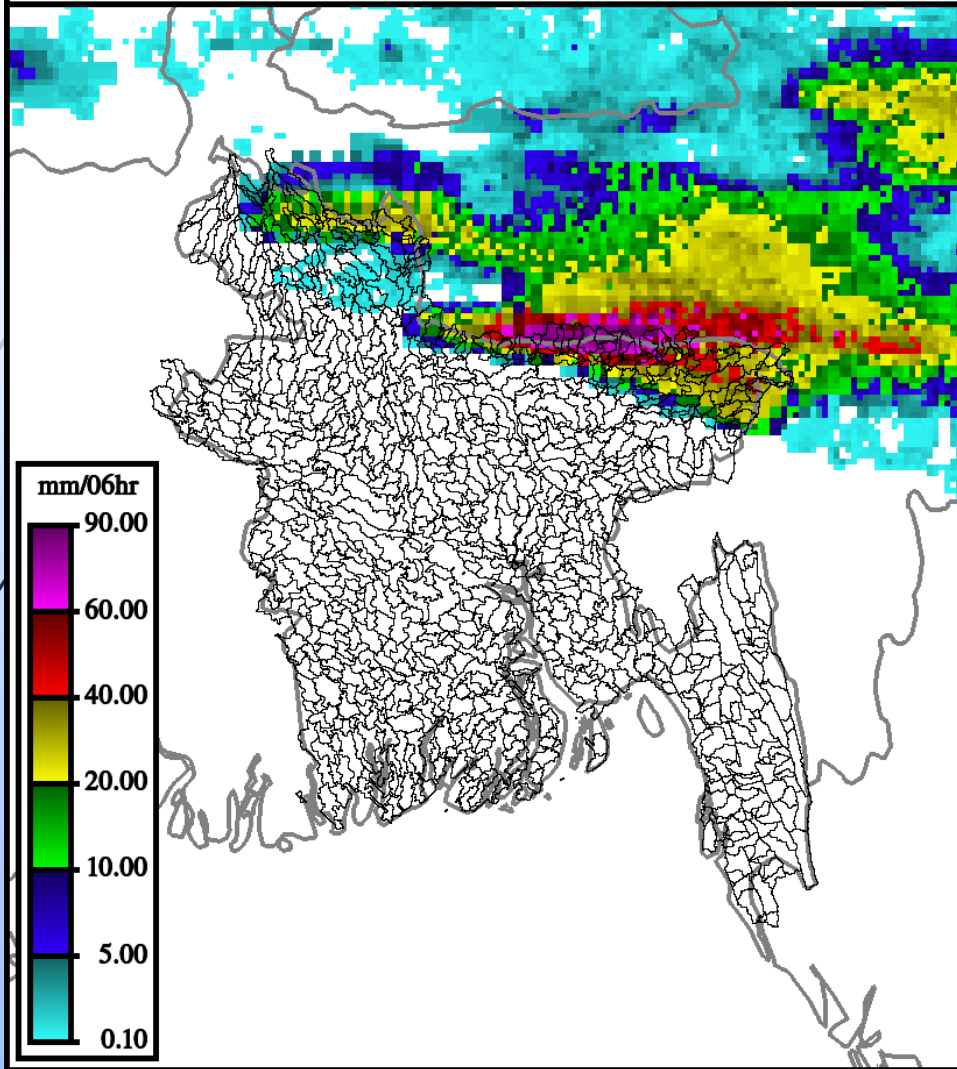
Meteorological Conditions...



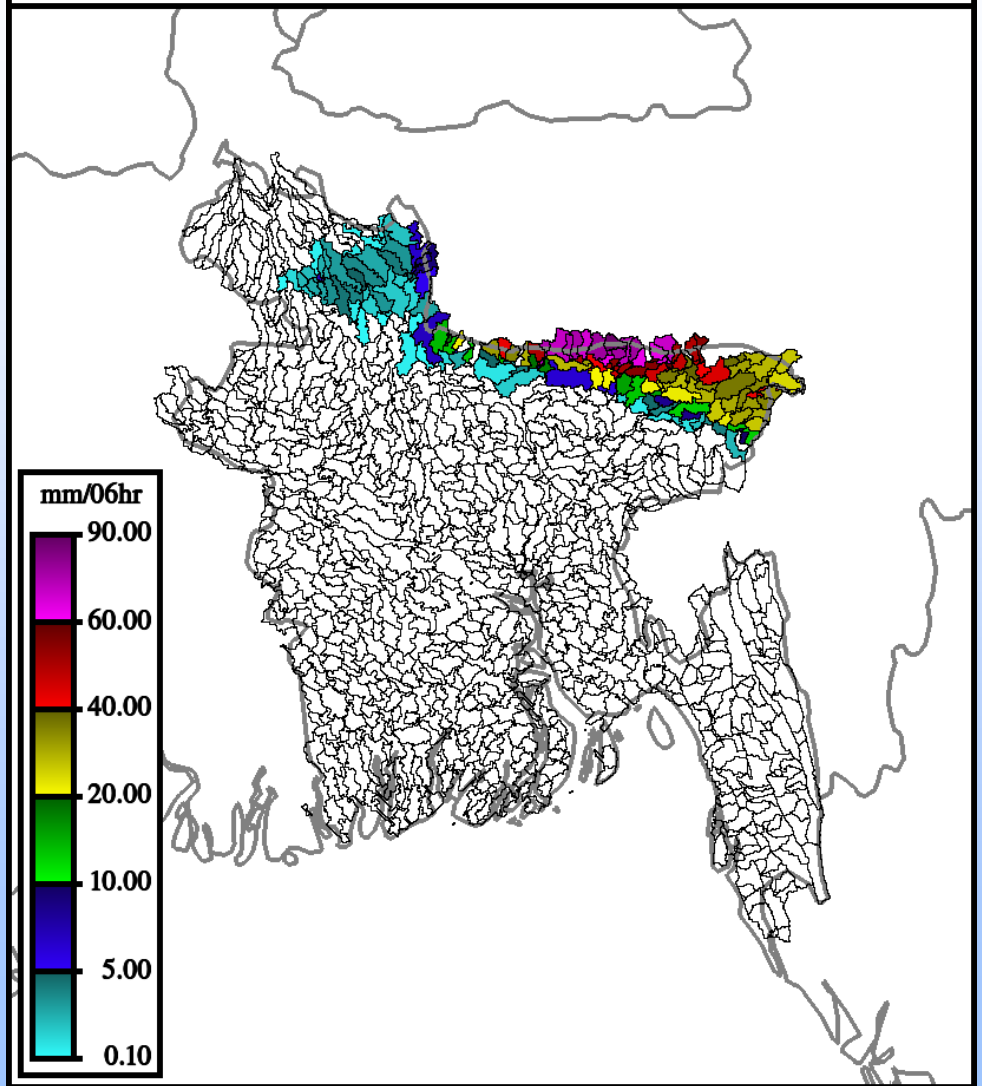
Has there been any rainfall?



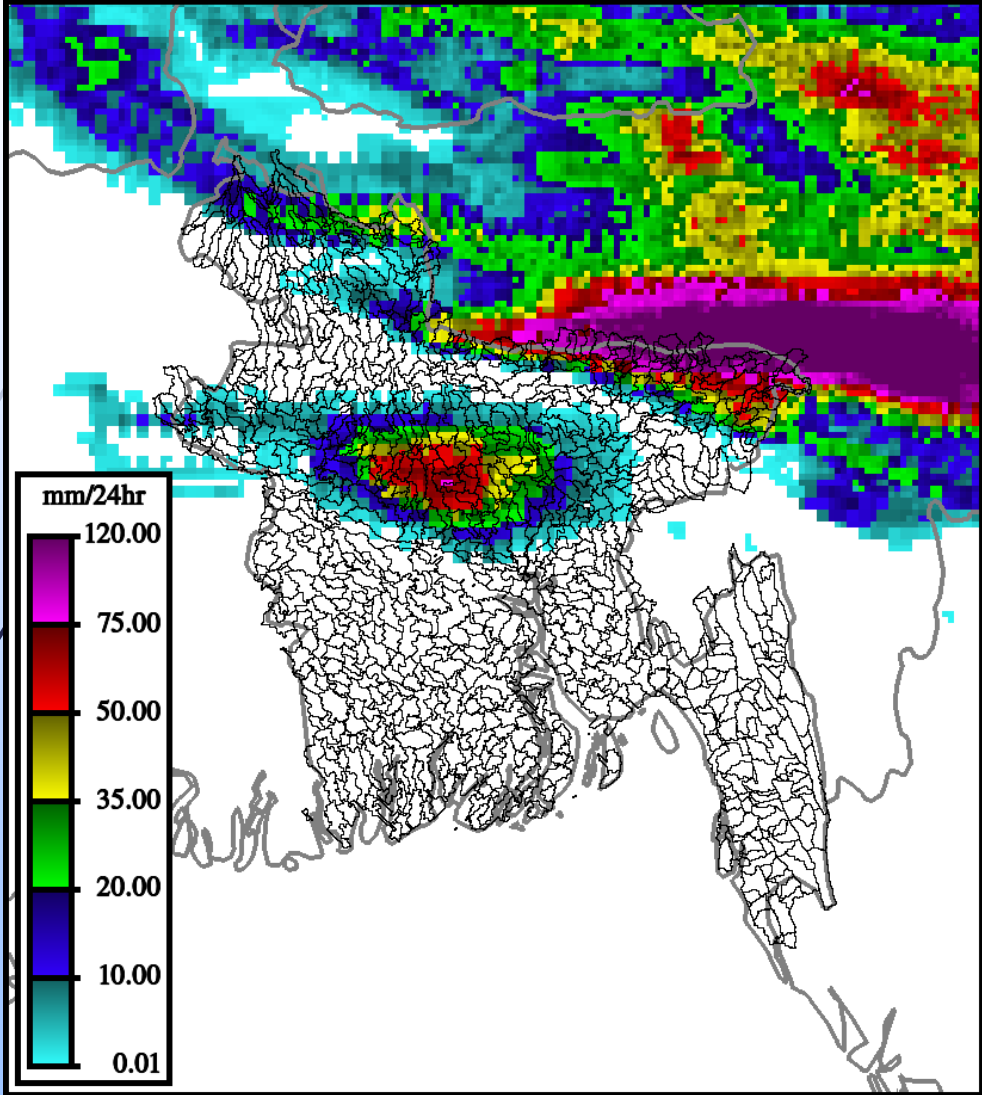
MWGHE - 06 hr 2017-04-02 00:00 UTC BANGLADESH



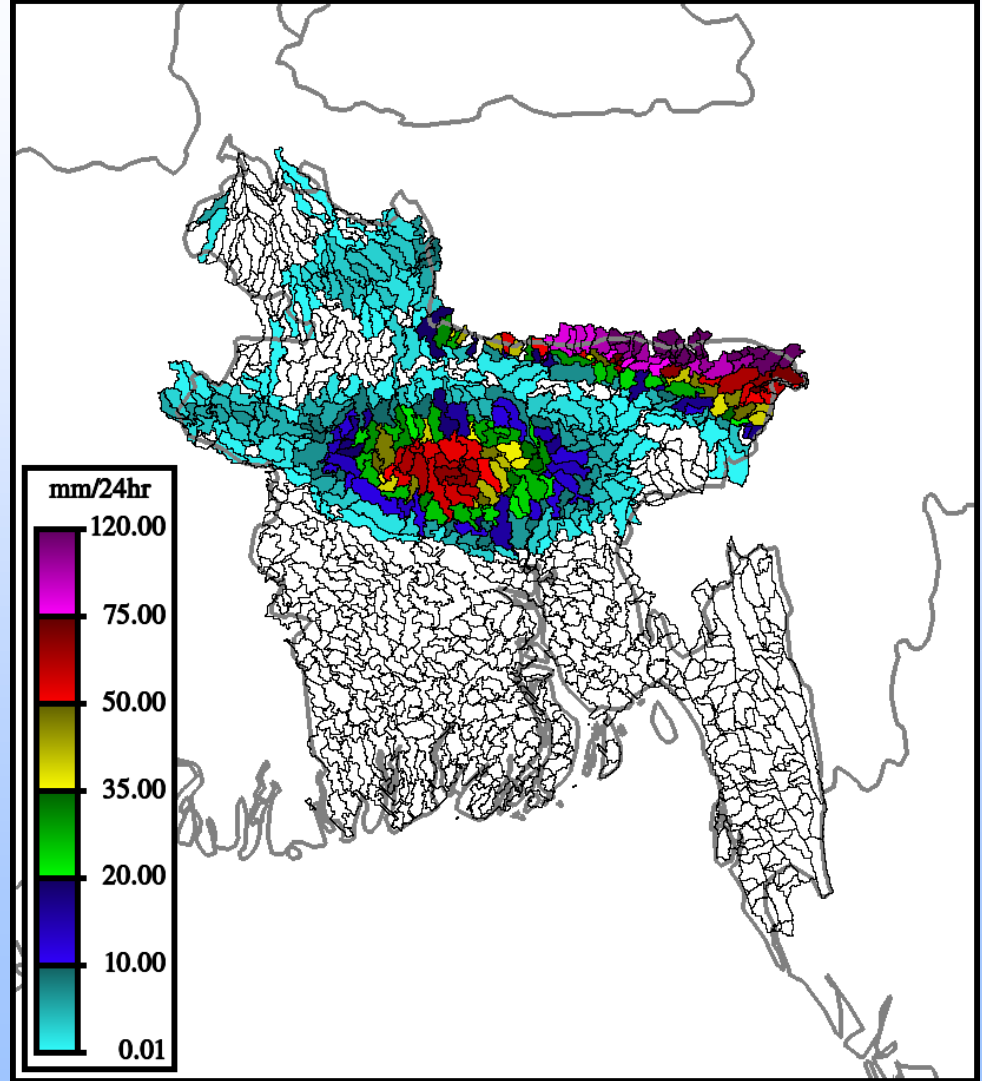
MAP - 06 hr 2017-04-02 00:00 UTC BANGLADESH



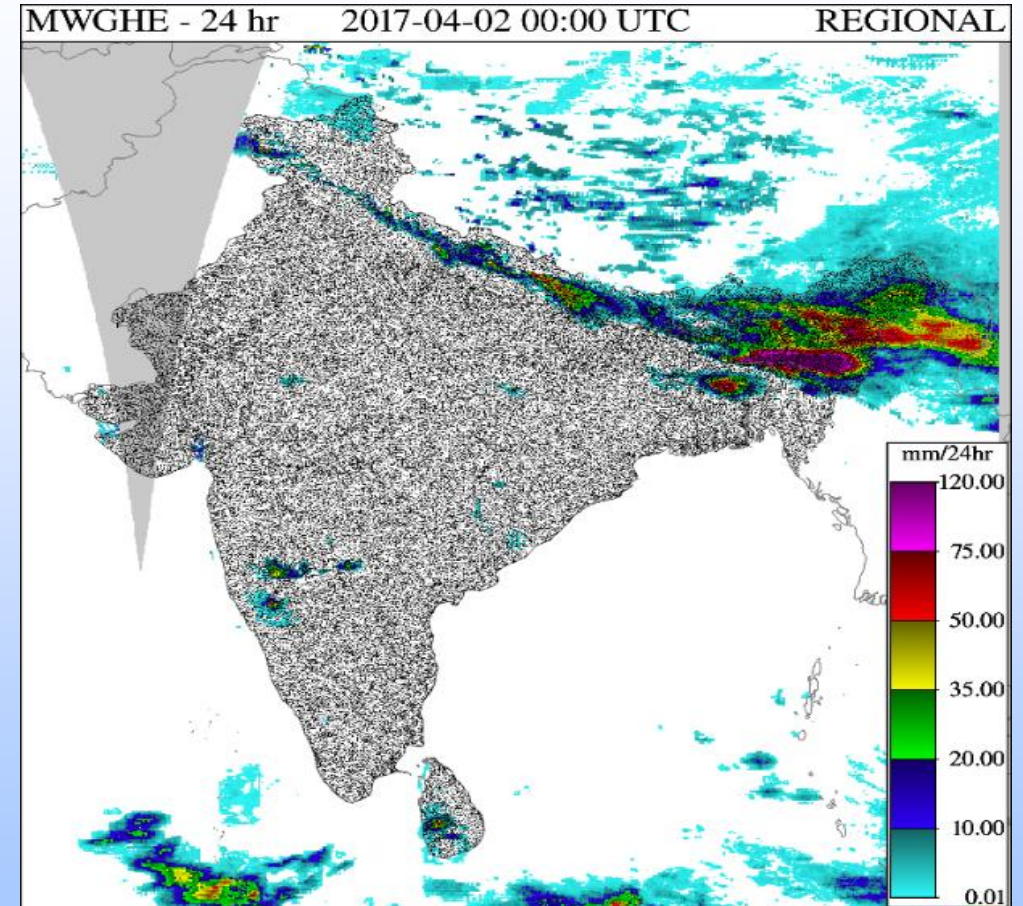
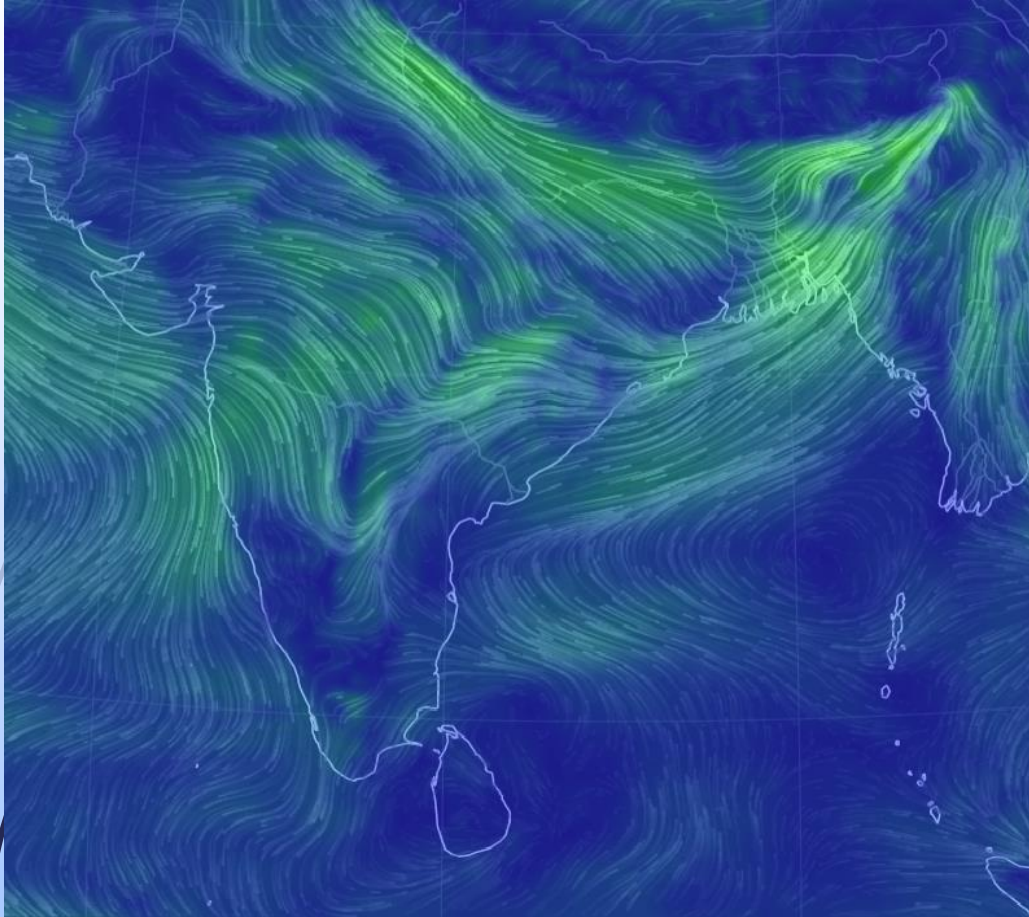
MWGHE - 24 hr 2017-04-02 00:00 UTC BANGLADESH



MAP - 24 hr 2017-04-02 00:00 UTC BANGLADESH



What type of system is prevailing?



Is there indication that the system is strengthening or weakening?

SAsia-FFG - Southern Asia Regional Flash Flood Guidance System

Current Date: 2018-06-05 21:49 UTC

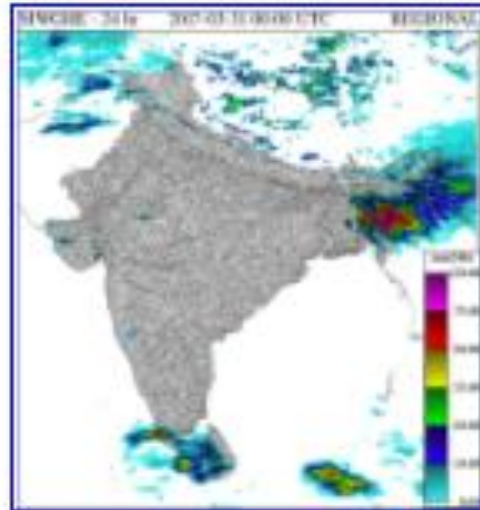
Product Date: 2017-04-02 00:00 UTC

Year: 2017 Month: 04 Day: 02 Hour: 00 REGION: BANGLADESH OPTION: MEDIAN Submit

-1 Month -1 Day -6 Hours -1 Hour +1 Hour +6 Hours +1 Day +1 Month

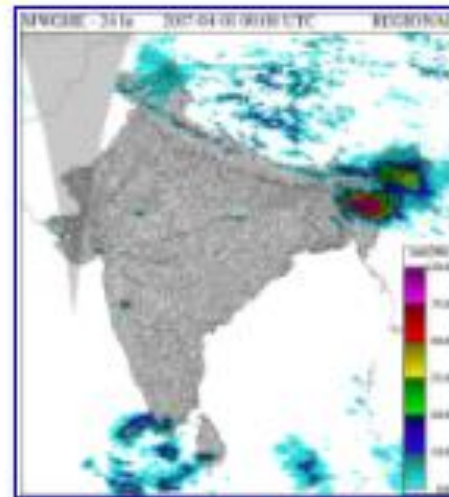
Prev 6-hr Interval (18 UTC) Reset to Current Next 6-hr Interval (06 UTC)

24-hr



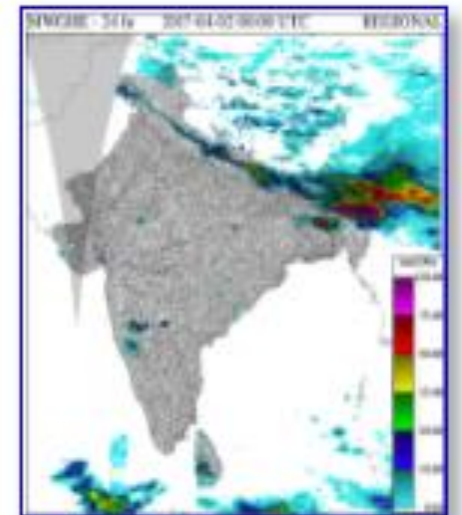
2017-03-31 00:00 UTC
Text: [view](#)

24-hr



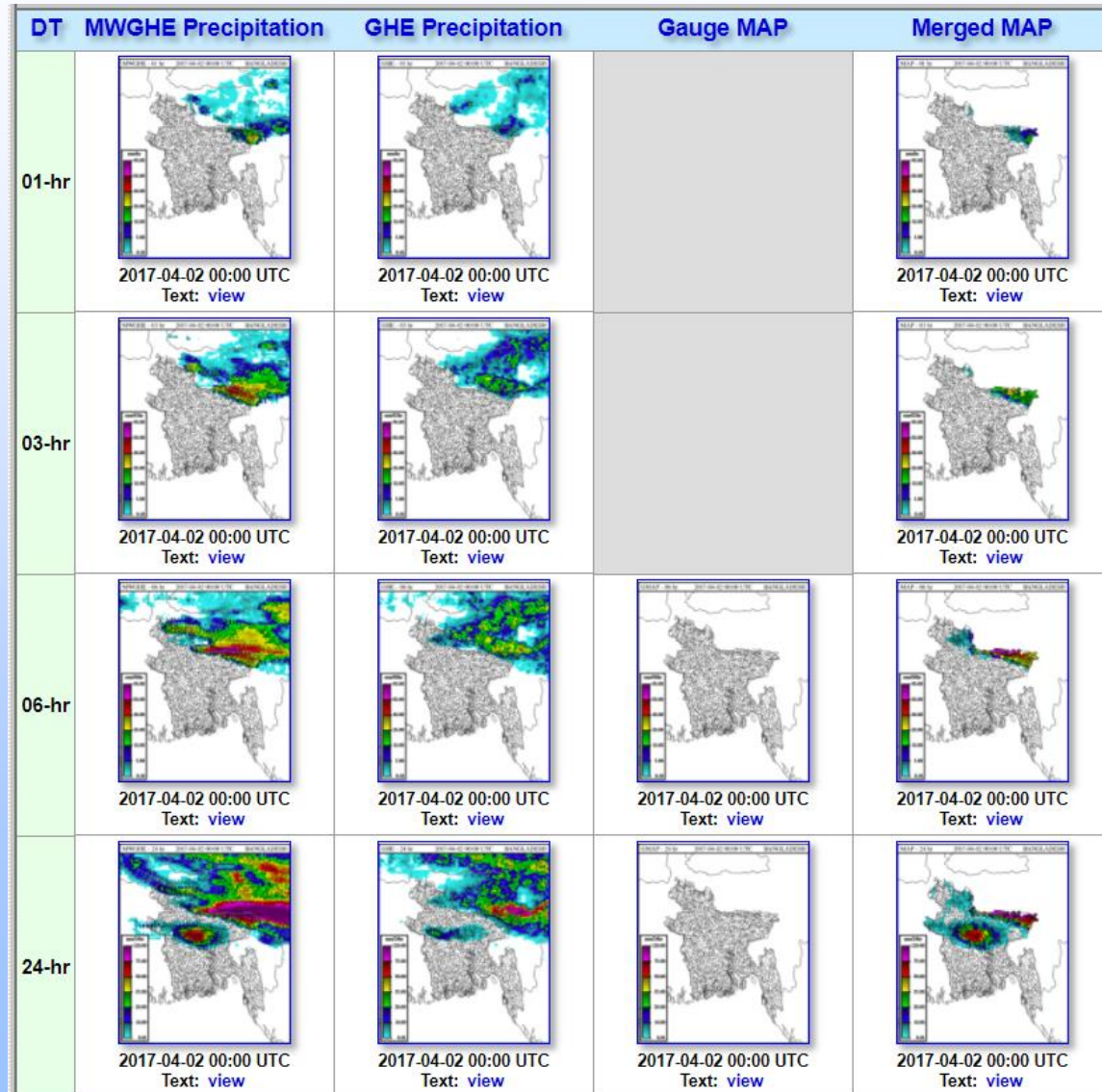
2017-04-01 00:00 UTC
Text: [view](#)

24-hr



2017-04-02 00:00 UTC
Text: [view](#)

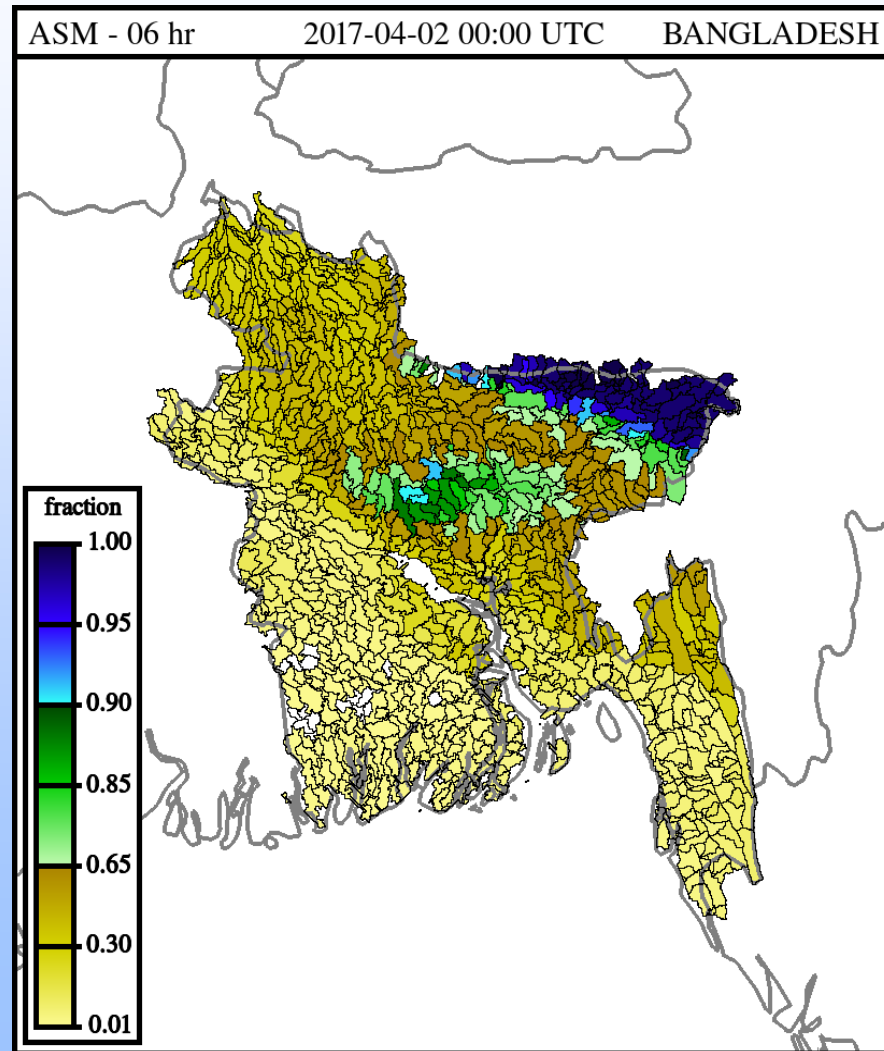
Include forecaster remarks about confidence in precipitation estimates.



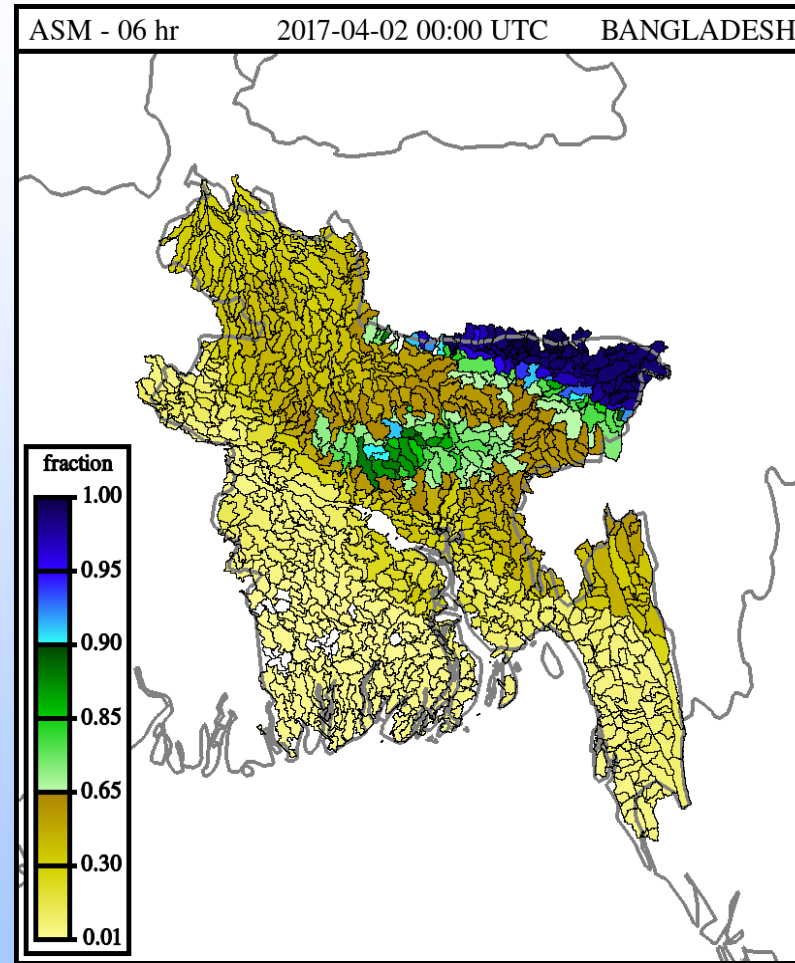
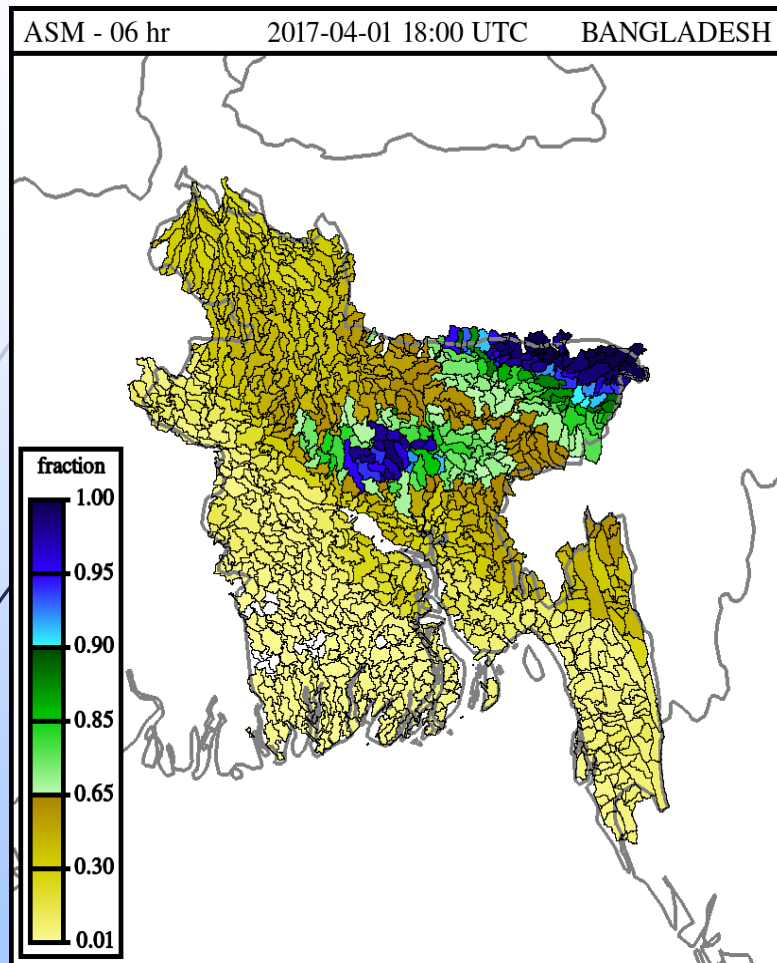
Hydrologic Conditions...



What are the soil moisture saturation levels?

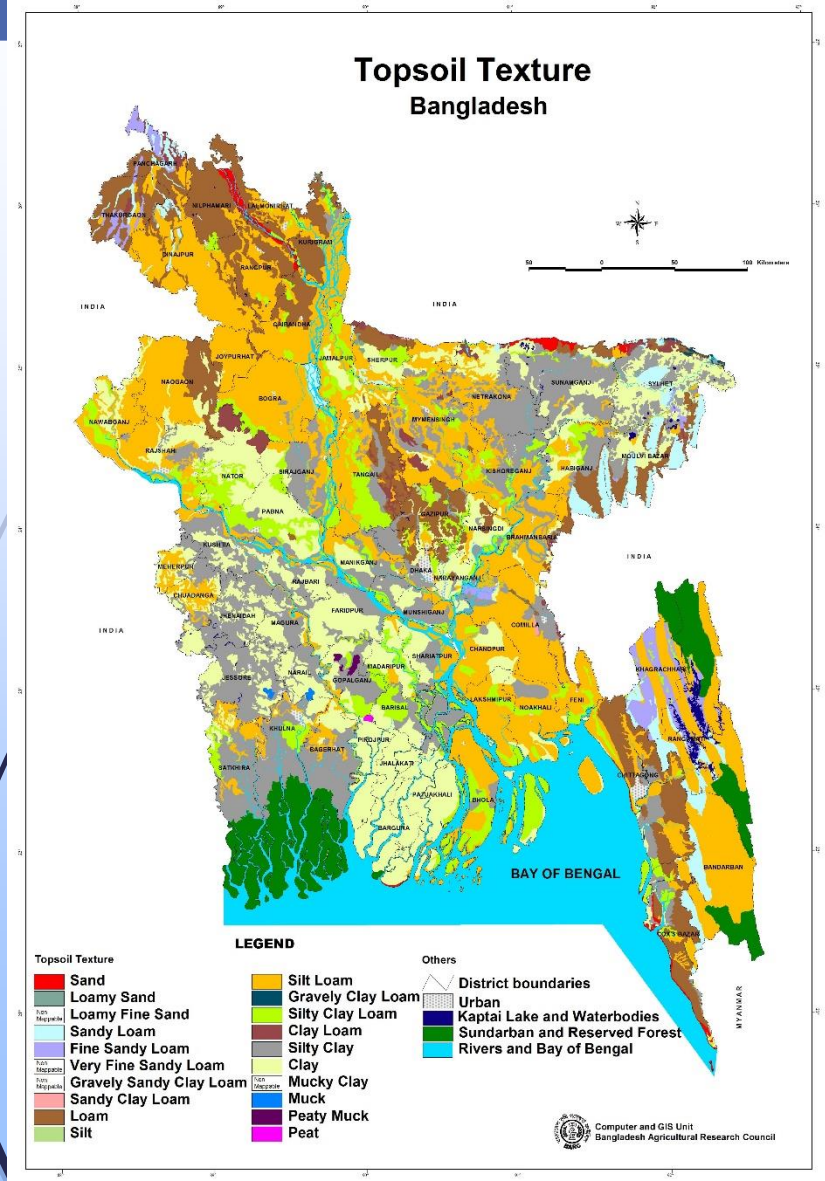


What is the trend in soil moisture? (Drying/wetting)



Is the area(s) flash flood prone?

Remarks on steep slopes, soil type, shallow soils



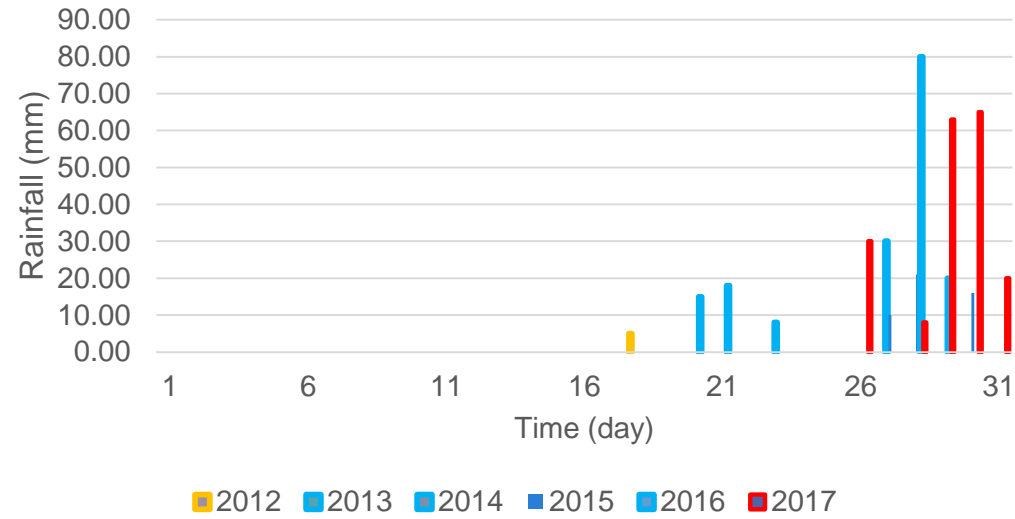
The north-eastern zone of the country mainly has silty clay, clayey soil. Some basins with sandy, sandy clayey loam, loam are also present.



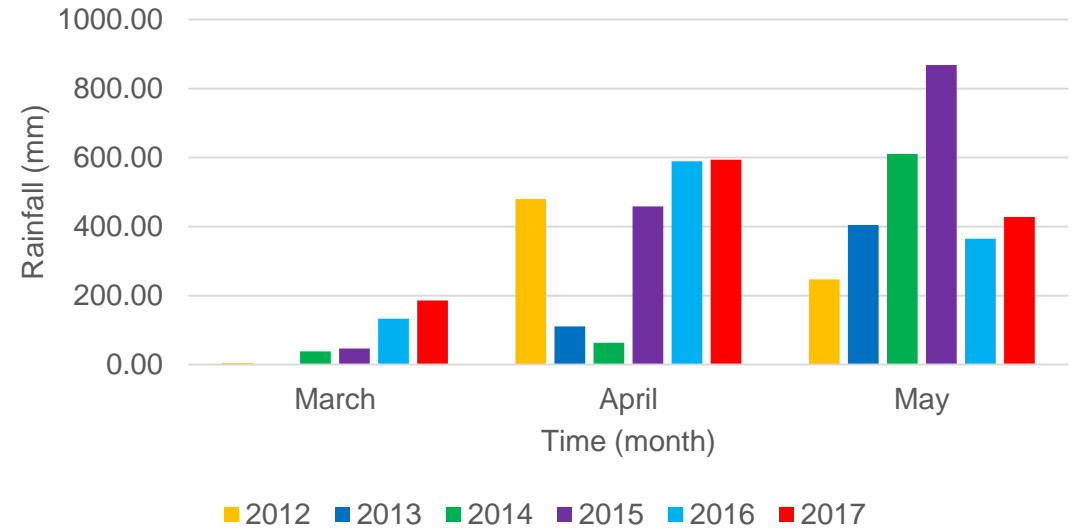


Are there streamflow records in this area?
What is the trend in streamflow?

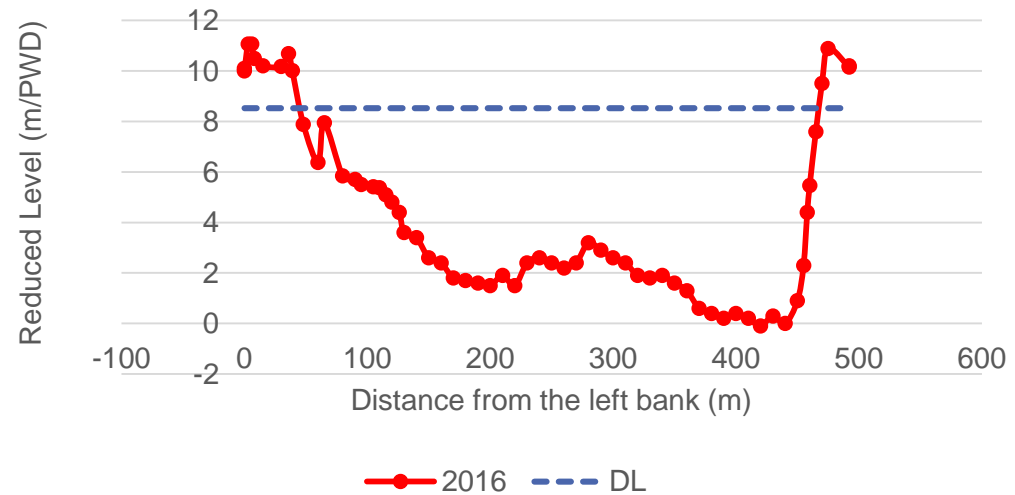
Daily Rainfall in Laurergarh



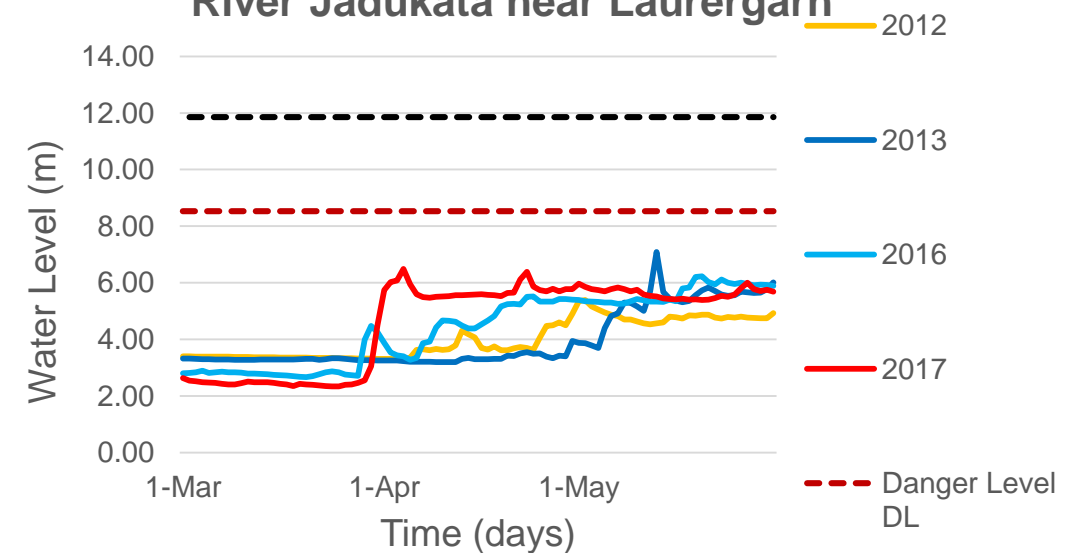
Monthly total rainfall near Laurergarh



River Jadukata near Laurergarh, Tahirpur in 2016



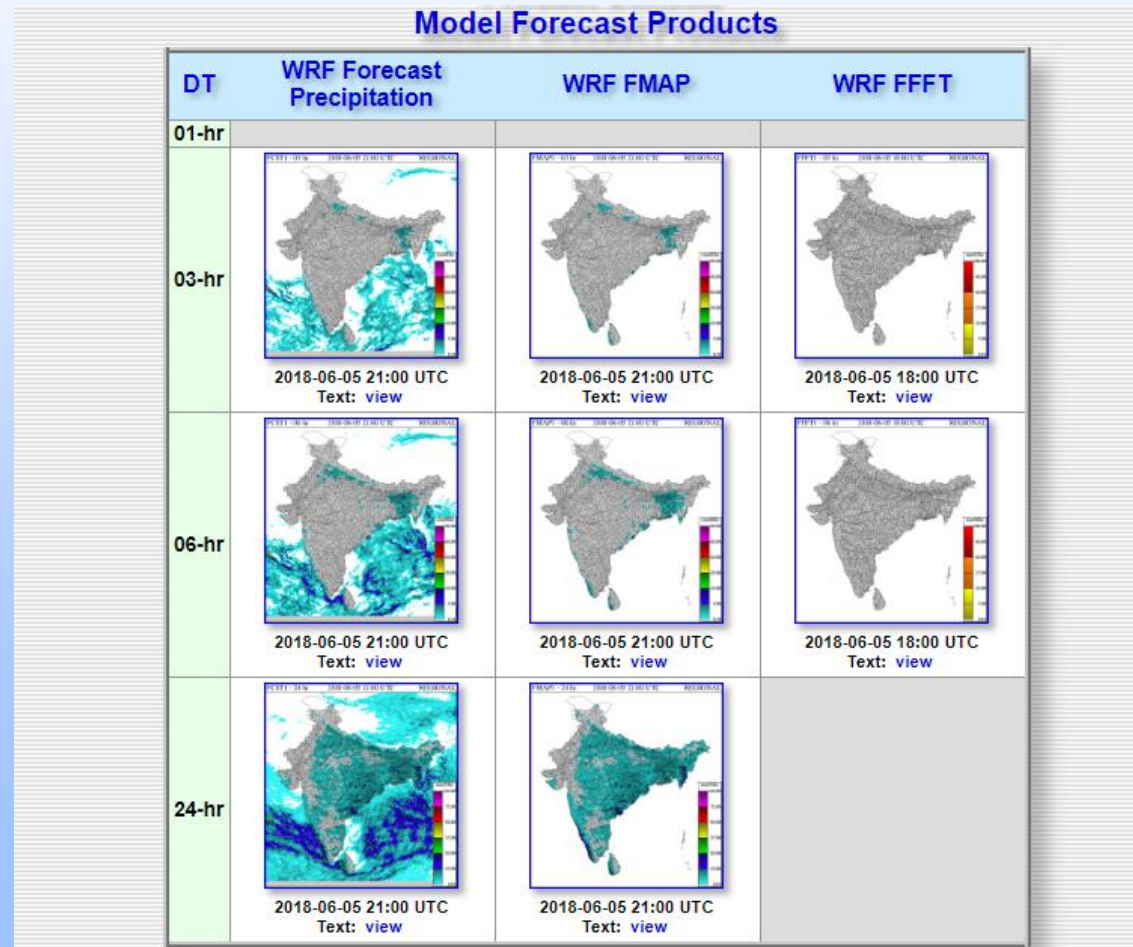
River Jadukata near Laurergarh



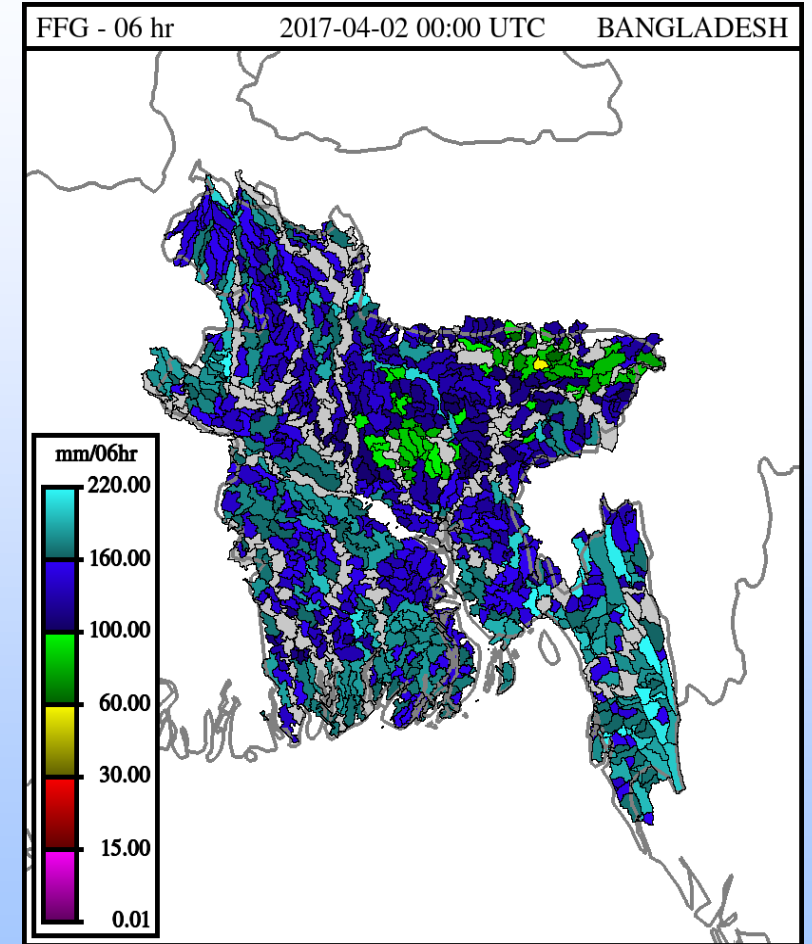
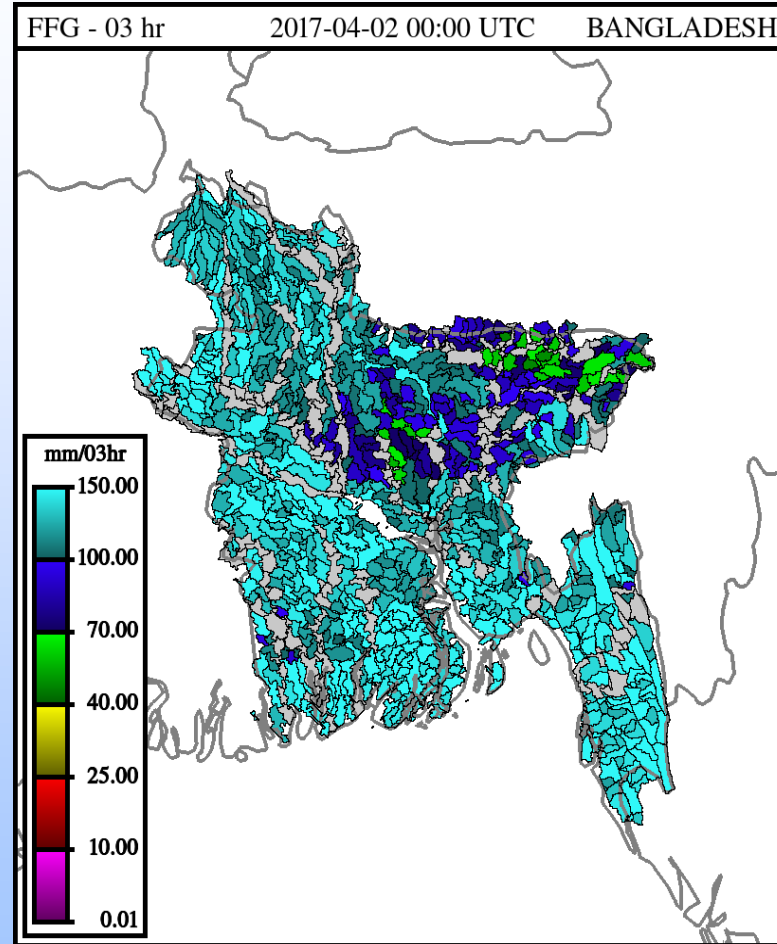
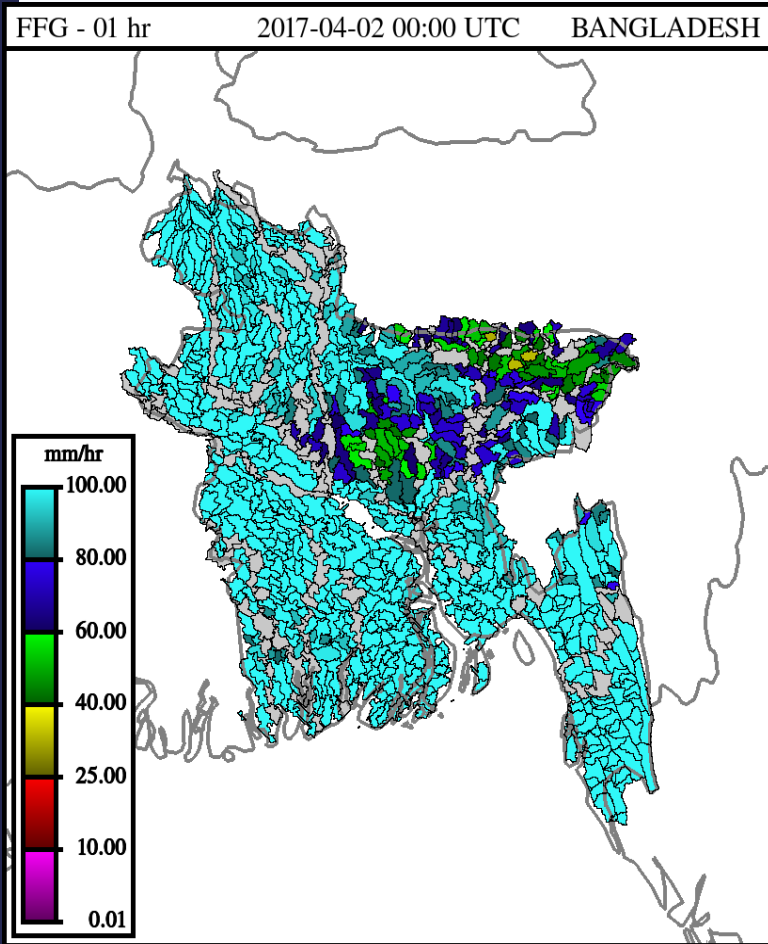
Is rainfall expected to continue?

Is the system strengthening or weakening?

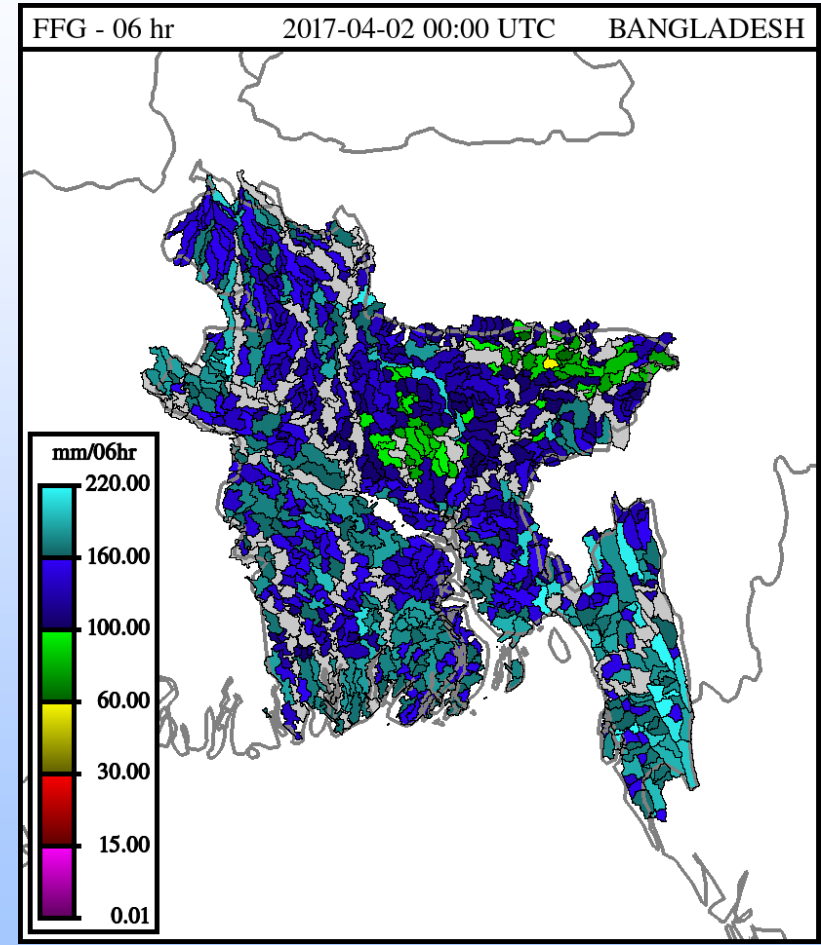
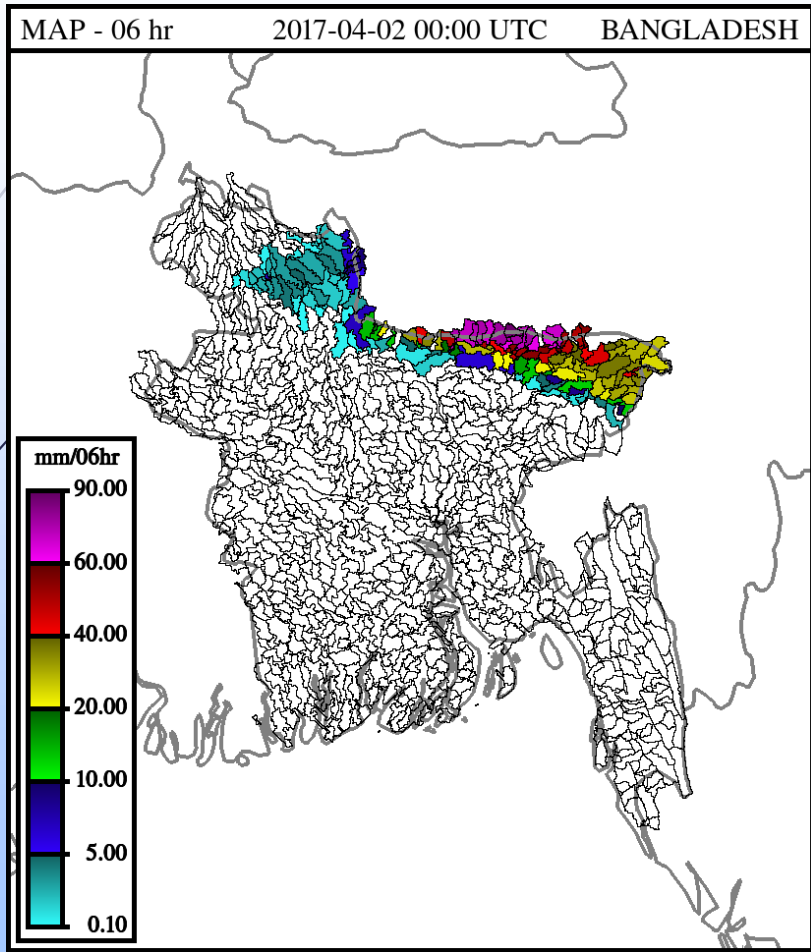
What is the outlook beyond 6 hours?



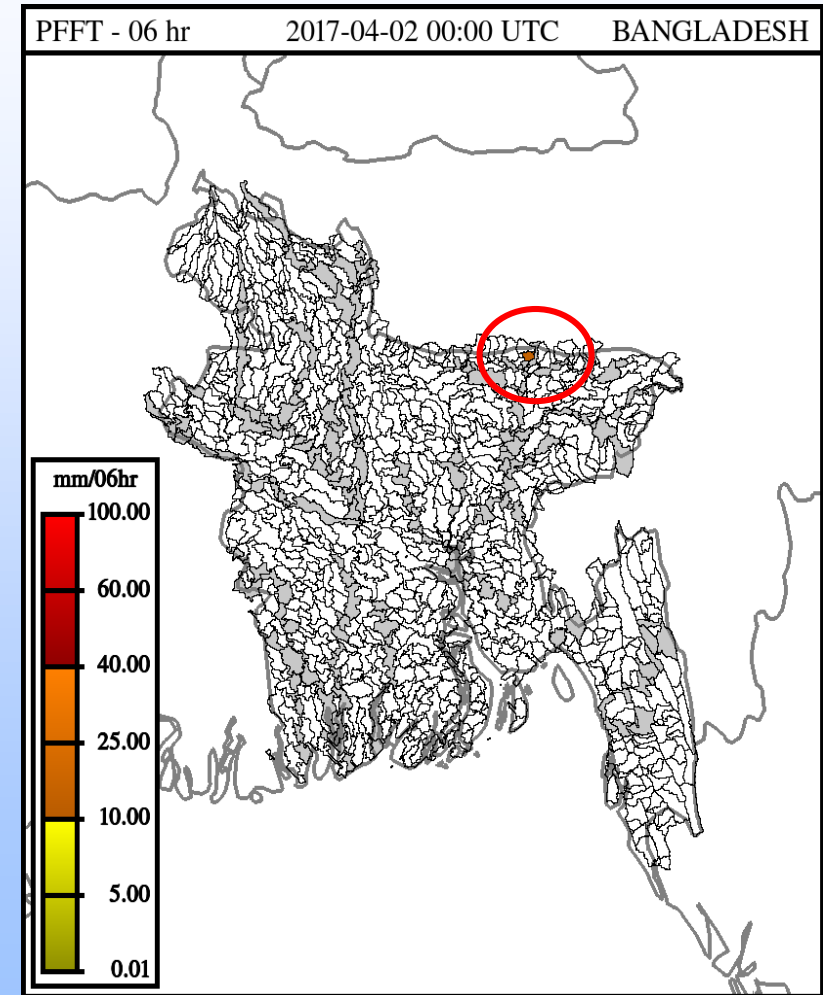
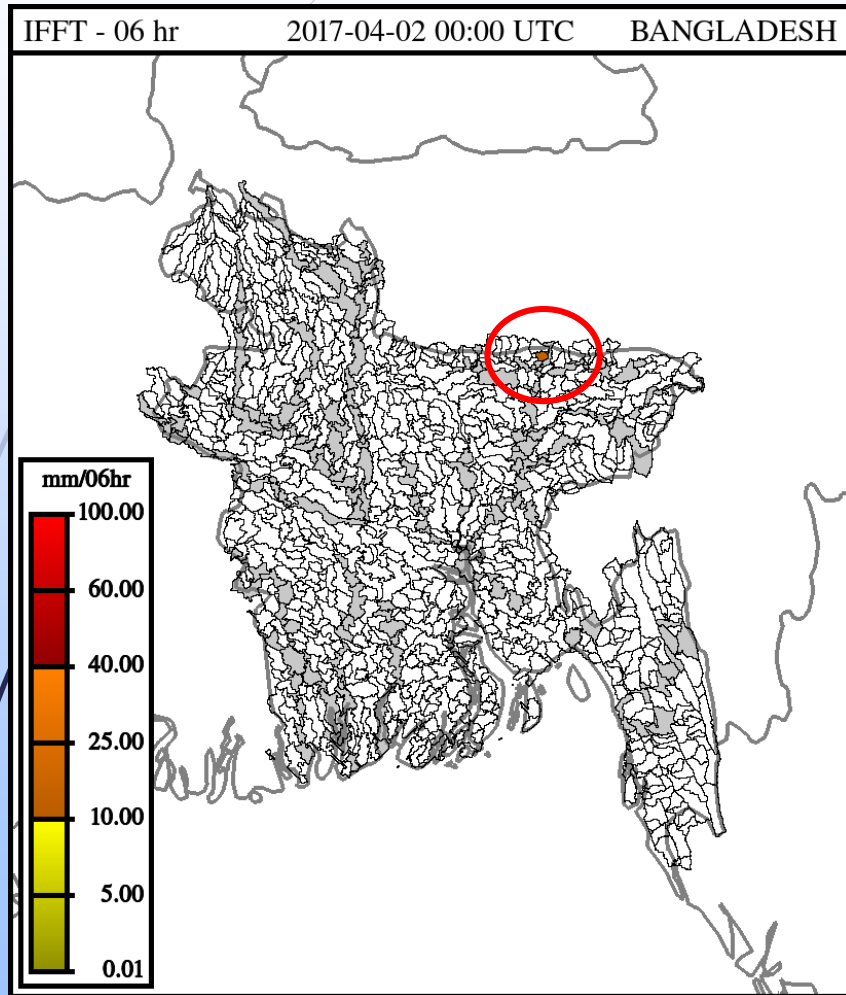
What are the values of FFG?



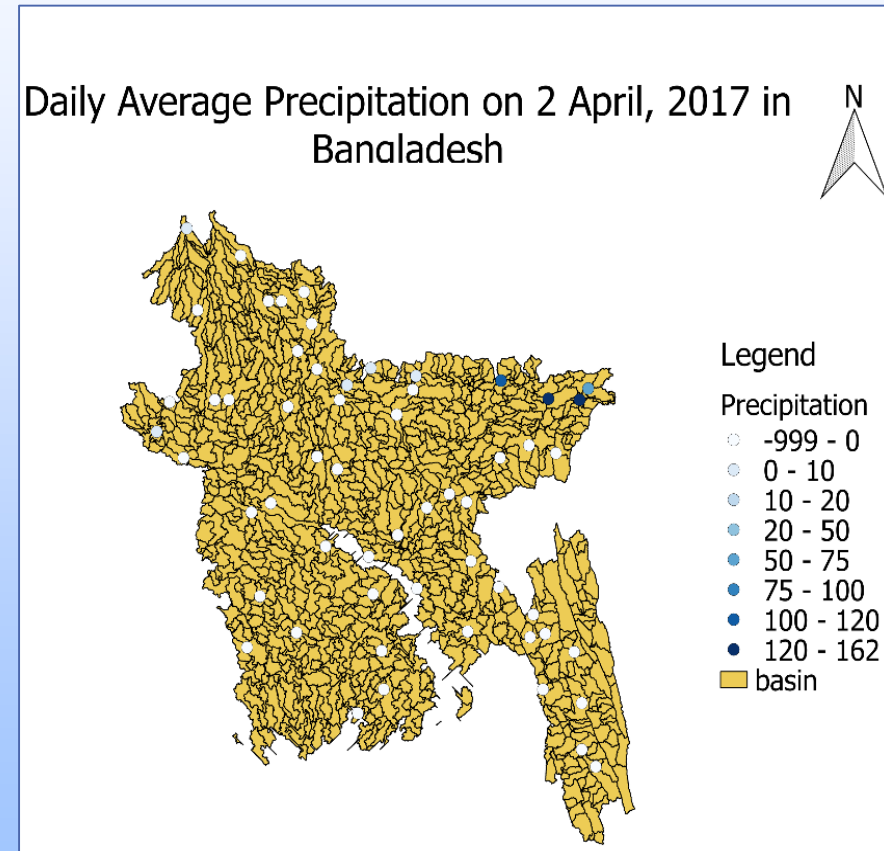
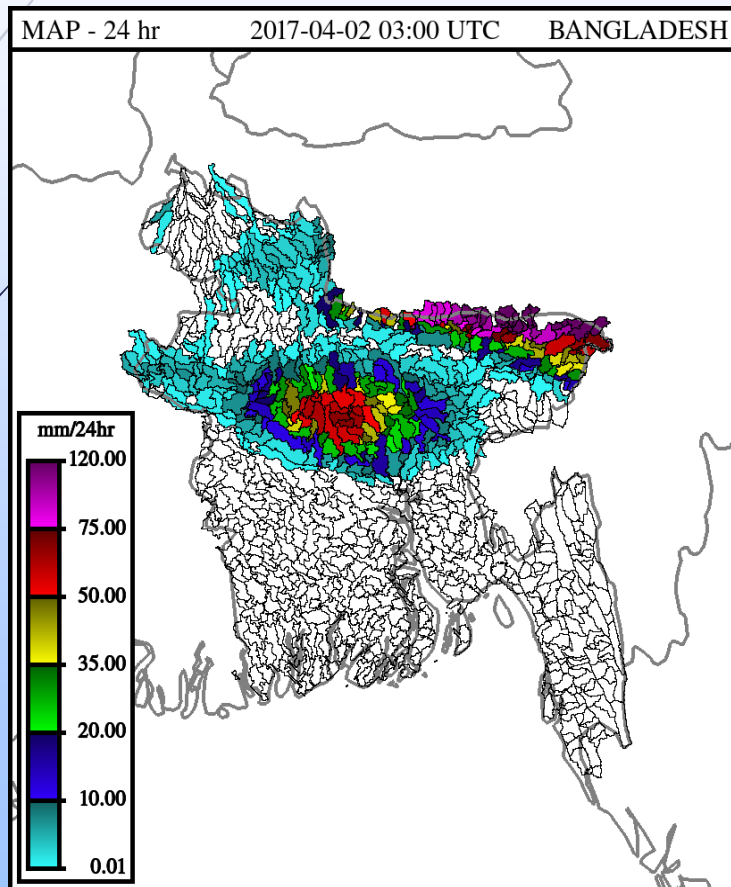
Are there areas with relatively low FFG?



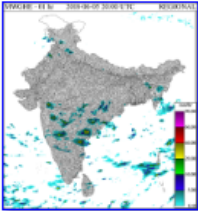
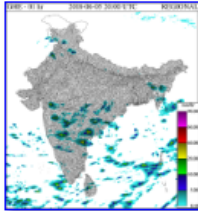
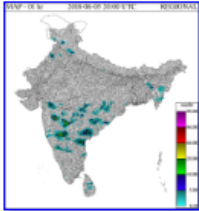
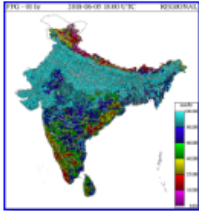
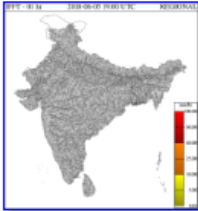
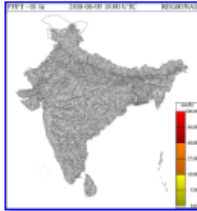
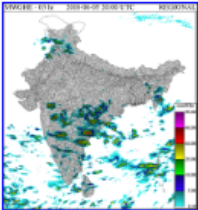
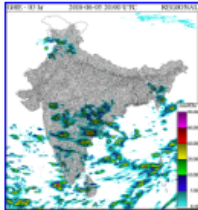
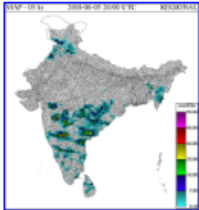
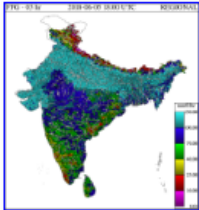
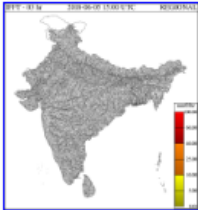
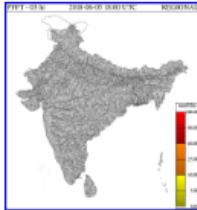
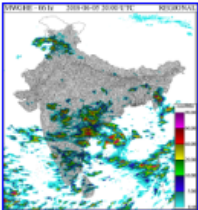
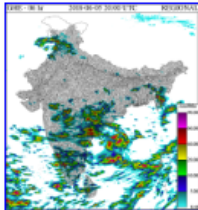
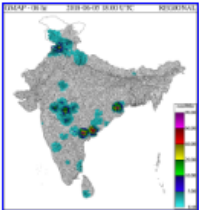
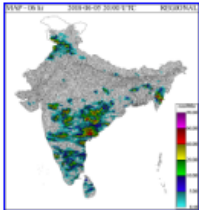
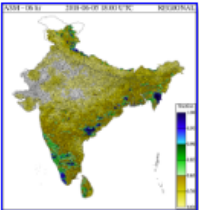
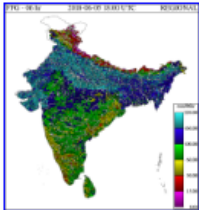
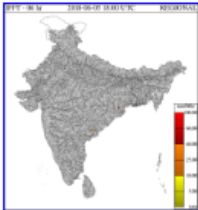
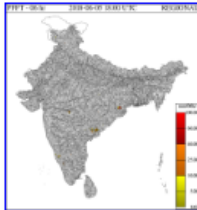
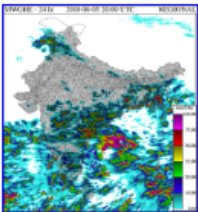
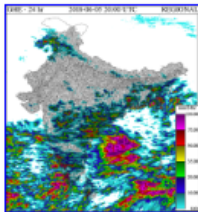
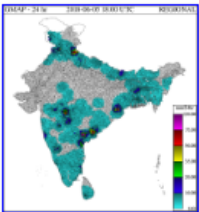
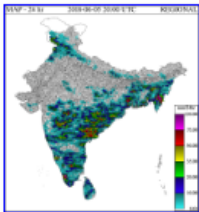
Does the expected rainfall exceed the FFG?



Comparison between MAP and Gauge Precipitation accumulation



Product Console - Main Table

DT	MWGHE Precipitation	GHE Precipitation	Gauge MAP	Merged MAP	ASM	FFG	IFFT	PFFT
01-hr	 2018-06-05 20:00 UTC Text: view	 2018-06-05 20:00 UTC Text: view		 2018-06-05 20:00 UTC Text: view		 2018-06-05 18:00 UTC Text: view	 2018-06-05 19:00 UTC Text: view	 2018-06-05 18:00 UTC Text: view
03-hr	 2018-06-05 20:00 UTC Text: view	 2018-06-05 20:00 UTC Text: view		 2018-06-05 20:00 UTC Text: view		 2018-06-05 18:00 UTC Text: view	 2018-06-05 15:00 UTC Text: view	 2018-06-05 18:00 UTC Text: view
06-hr	 2018-06-05 20:00 UTC Text: view	 2018-06-05 20:00 UTC Text: view	 2018-06-05 18:00 UTC Text: view	 2018-06-05 20:00 UTC Text: view	 2018-06-05 18:00 UTC Text: view	 2018-06-05 18:00 UTC Text: view	 2018-06-05 18:00 UTC Text: view	 2018-06-05 18:00 UTC Text: view
24-hr	 2018-06-05 20:00 UTC Text: view	 2018-06-05 20:00 UTC Text: view	 2018-06-05 18:00 UTC Text: view	 2018-06-05 20:00 UTC Text: view				

Composite Product: [text](#) , [CSV](#) , [CSVT](#)

SFTP data transfer (requires SFTP Client): [EXPORTS/REGIONAL/2018/06/05](#)

The 03-hr PFFT at 00:00 UTC = 03hr Merged MAP at 00:00 UTC - 03hr FFG at 00:00 UTC,
(considered valid at 03:00 UTC)

The 06-hr PFFT at 00:00 UTC = 06hr Merged MAP at 00:00 UTC - 06hr FFG at 00:00 UTC,
(considered valid at 06:00 UTC)

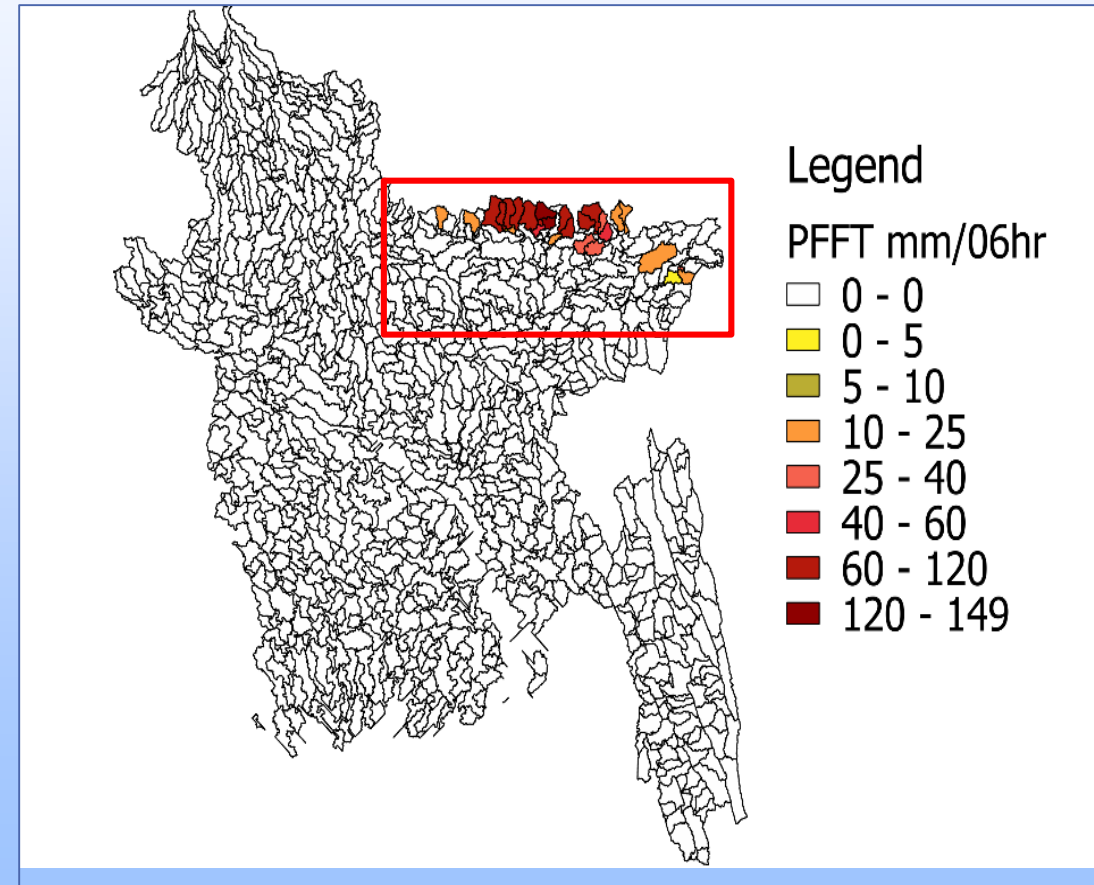
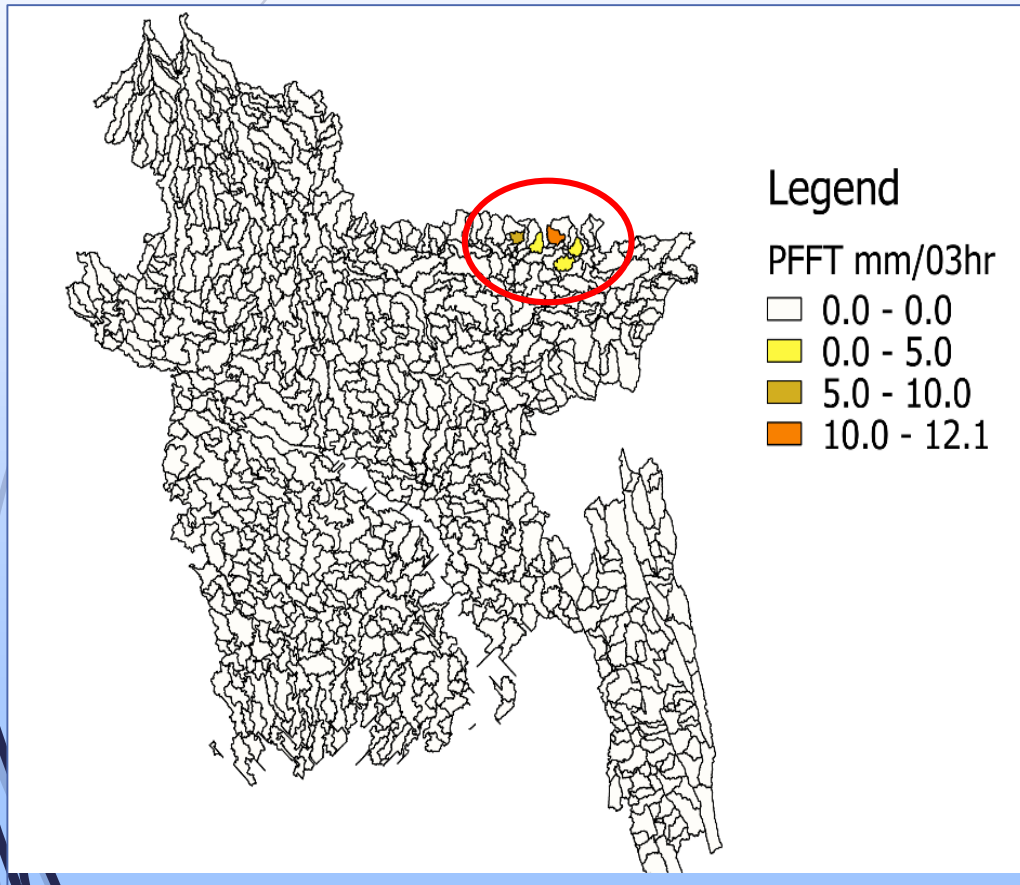
The screenshot shows the ArcGIS Field Calculator dialog box. The 'Create a new field' option is selected. The output field name is 'PFFT06', the type is 'Decimal number (real)', and the length is 10 with a precision of 3. The expression is a case statement:

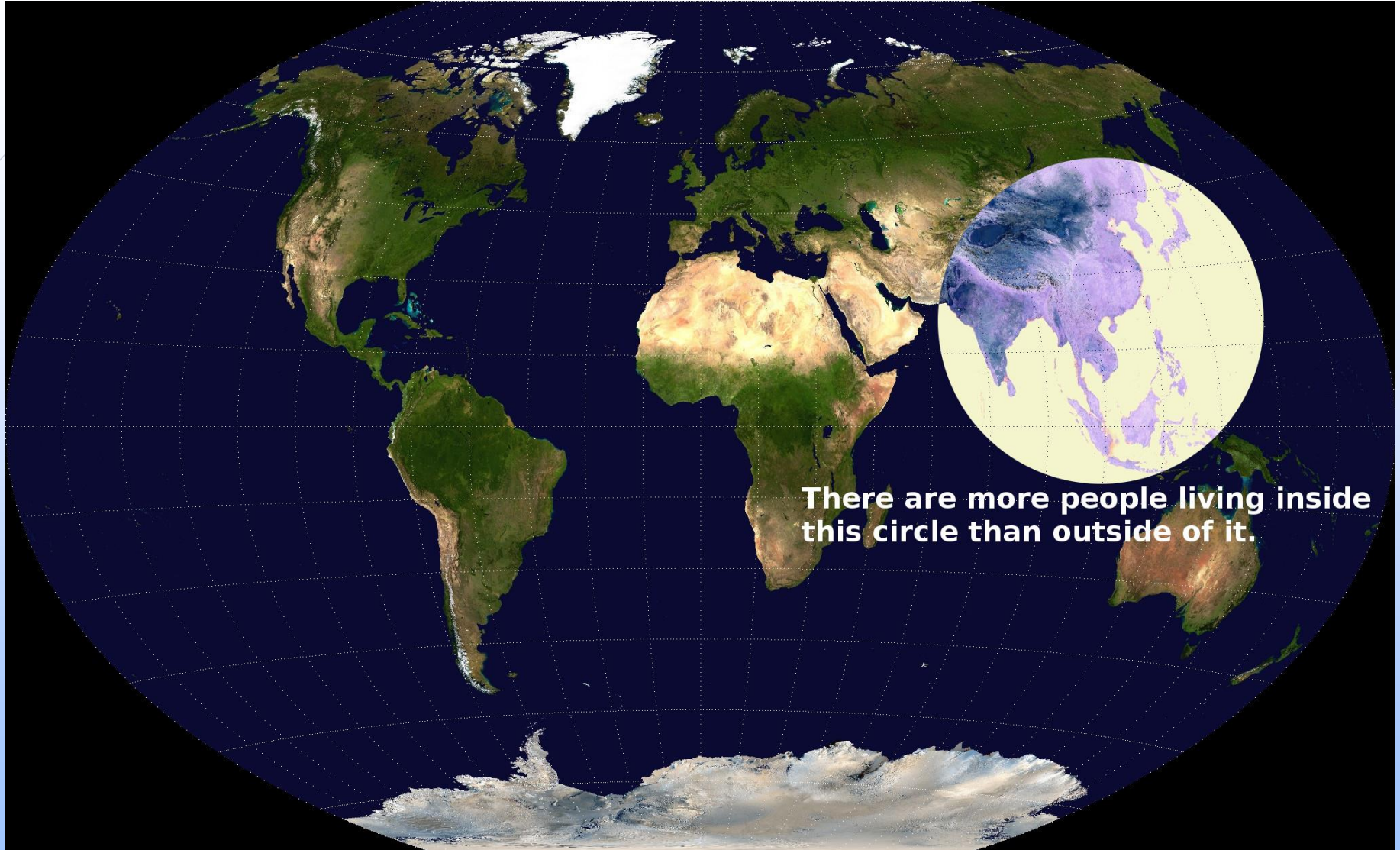
```
case
when "MAP_6X2.75" <> -999
and "20170402-0000_FFG06" <> -999
and ("MAP_6X2.75" - "20170402-0000_FFG06") > 0
then "MAP_6X2.75" - "20170402-0000_FFG06"
else 0
end
```

The right pane shows a list of fields including PFFT6*2.75, PFFT01, PFFT03, and various MAP and FFG fields. A warning message at the bottom states: 'You are editing information on this layer but the layer is currently not in edit mode. If you click Ok, edit mode will automatically be turned on.'

*The 03-hr PFFT at 00:00 UTC = 03hr Merged MAP at 00:00 UTC - 03hr FFG at 00:00 UTC,
(considered valid at 03:00 UTC)*

*The 06-hr PFFT at 00:00 UTC = 06hr Merged MAP at 00:00 UTC - 06hr FFG at 00:00 UTC,
(considered valid at 06:00 UTC)*





**There are more people living inside
this circle than outside of it.**

Thank you

