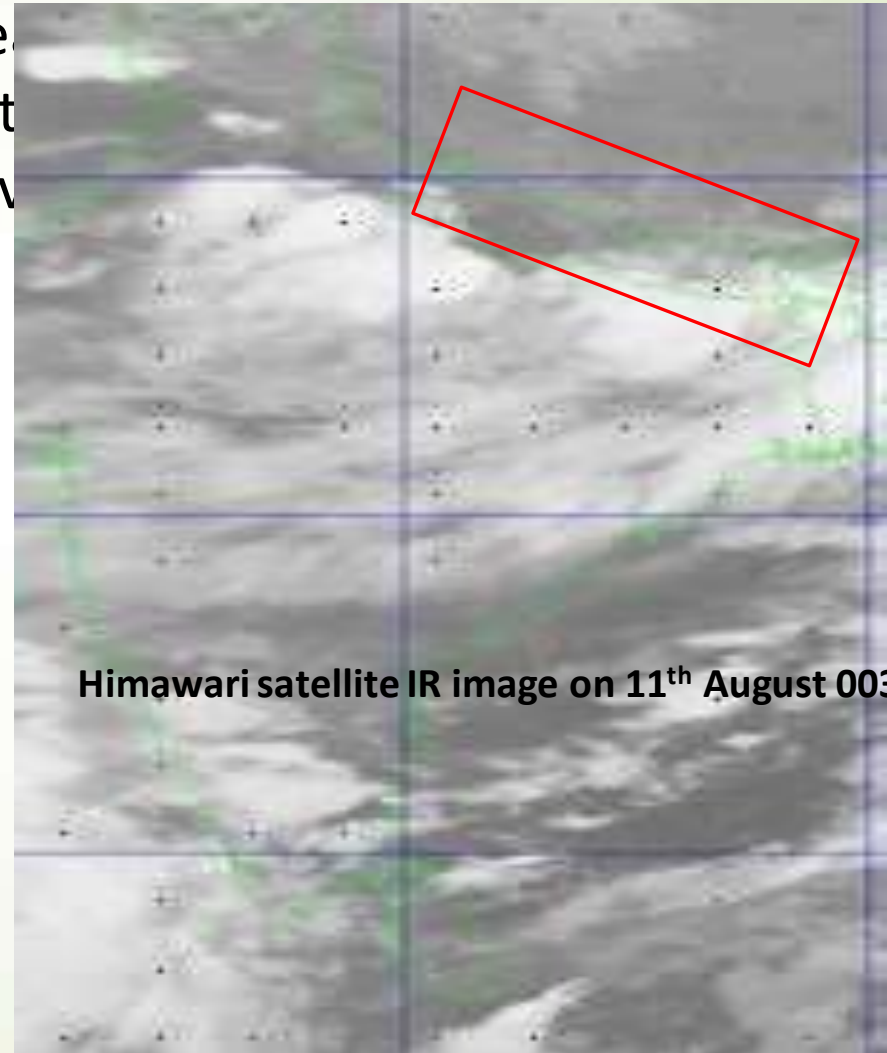
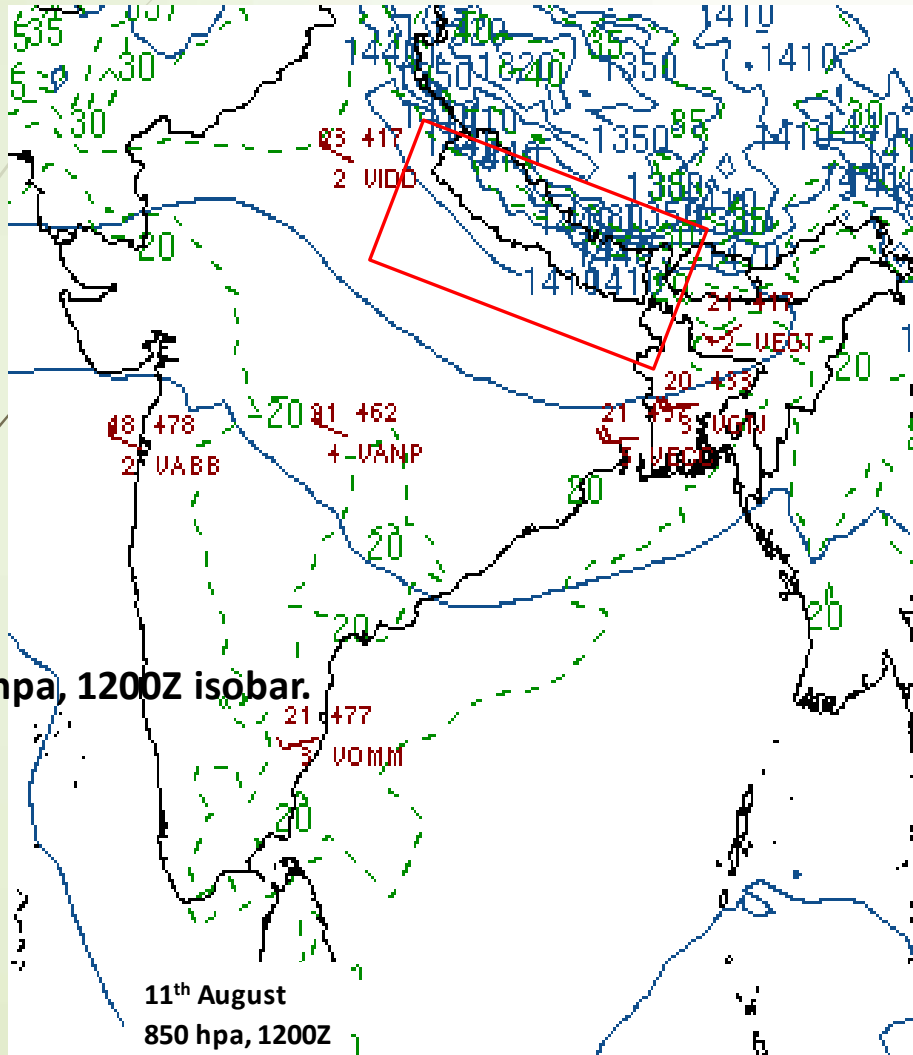


A Flash Flood Case Study of 2017-08-11 Flash Flood in Madi (Riu Khola) Basin, Nepal

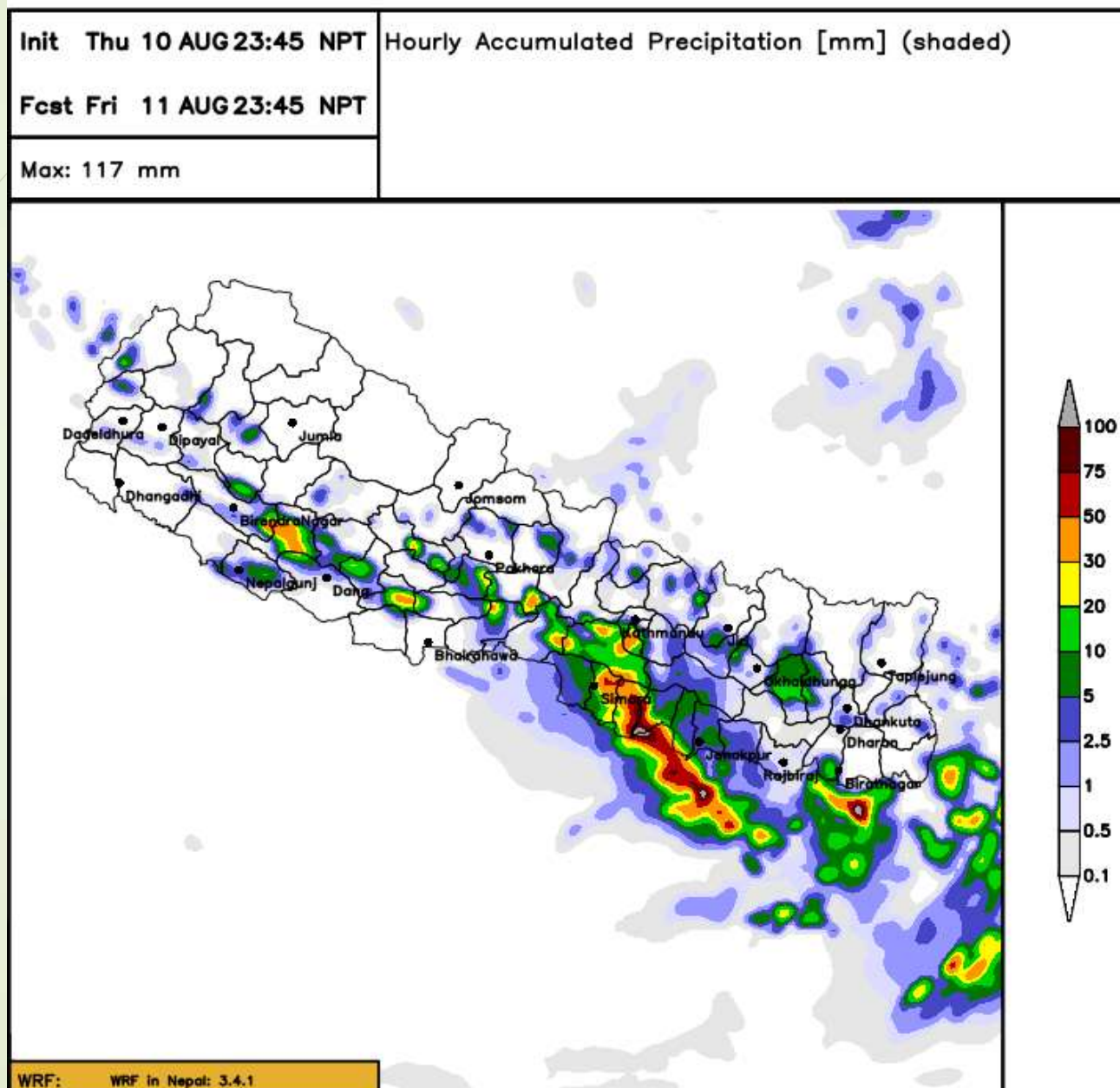
Bikash Nepal – Meteorologist

Department of Hydrology and Meteorology

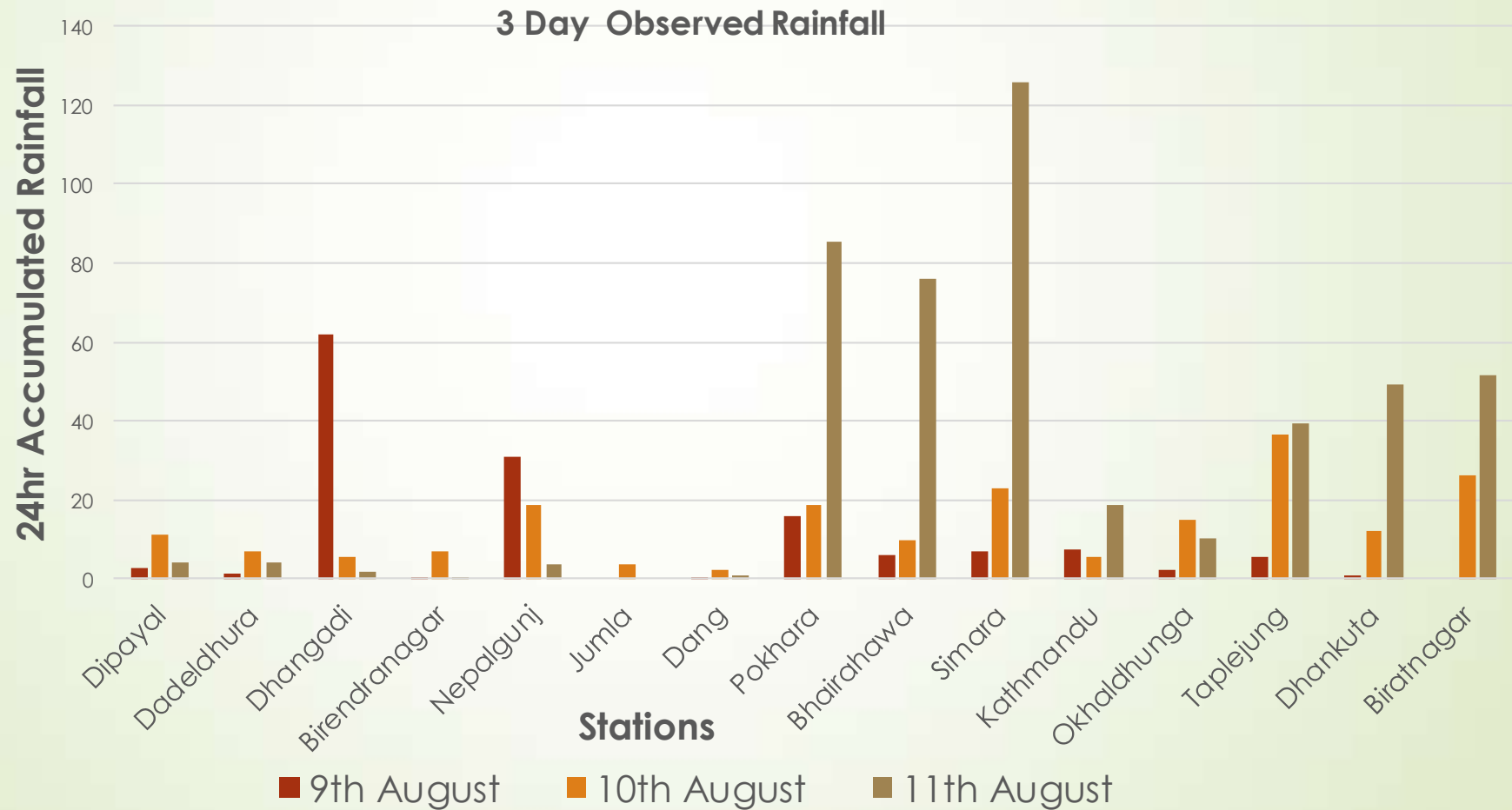
Synoptic Condition



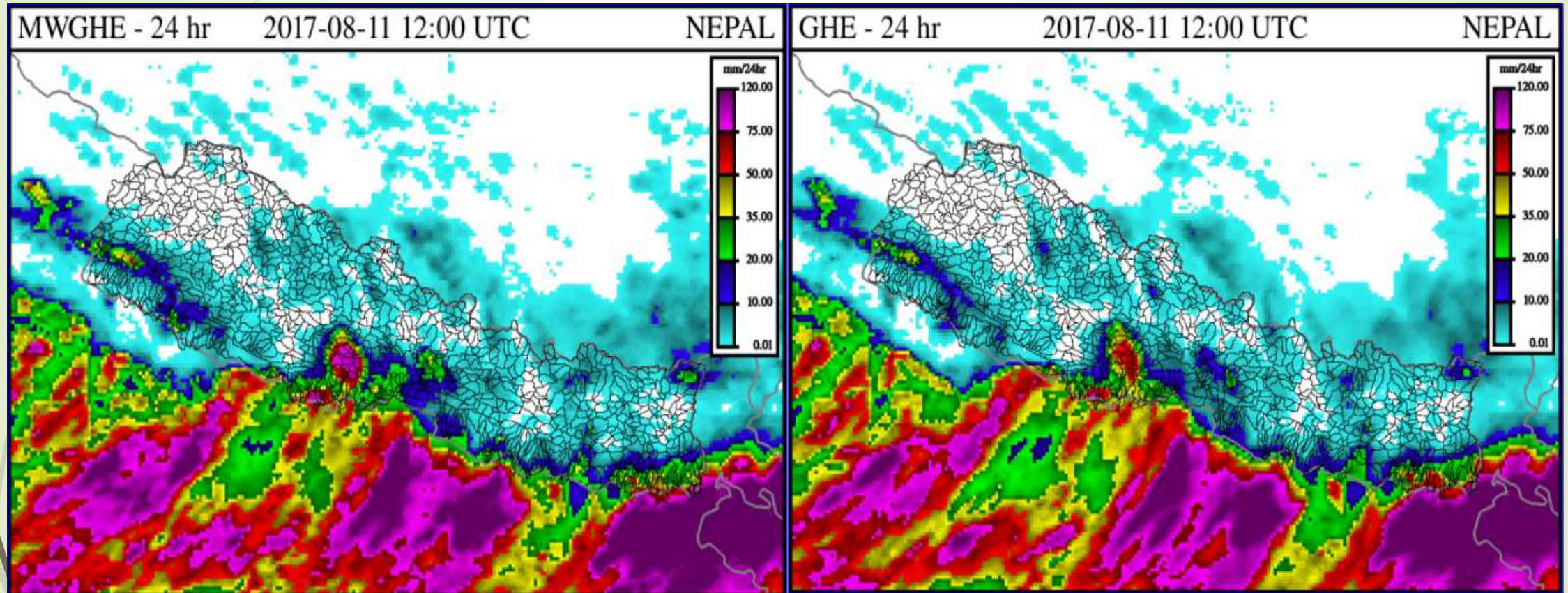
WRF Model Prediction



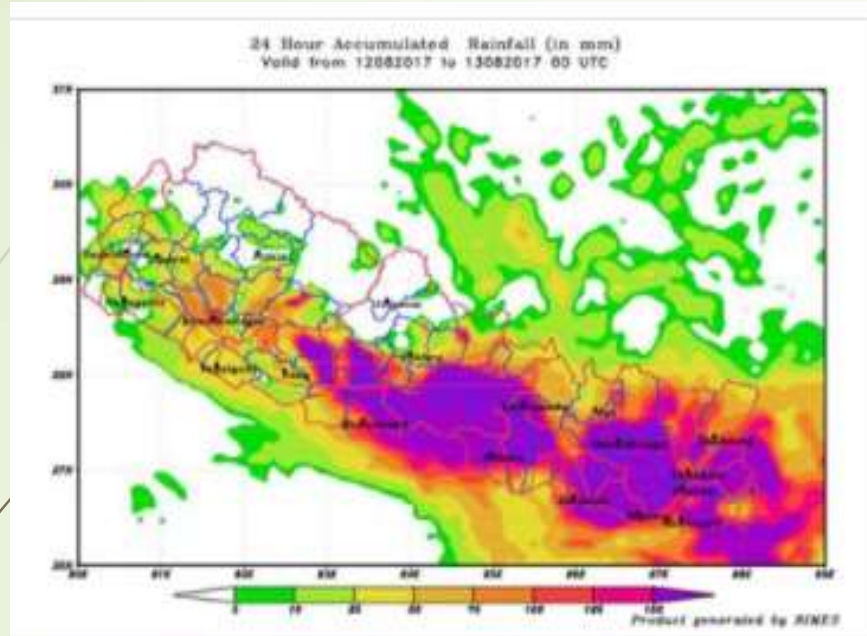
Past 3 days Gauge based Rainfall Observation



MWGHE and GHE rainfall Estimates of Last 24 hour Accumulated Rainfall



General Warning Dissiminated



Rajendra Sharma is with Binod Parajuli and नेपाल बाढी सूचना
August 11, 2017 · ३३

Probability of High Rainfall in eastern and central Nepal!!!!

मिति: २०७४/०४/२८ विहान ०६:४५ बजे

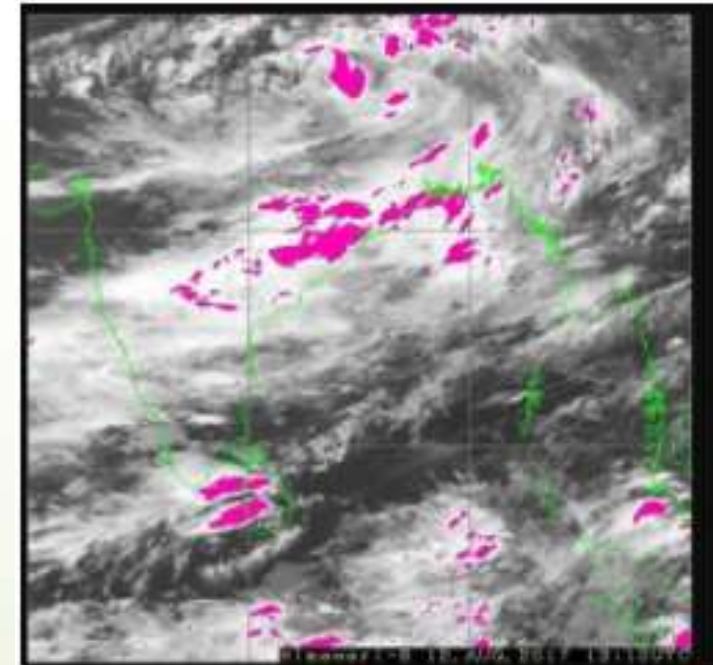
मनसुनी न्यून चापीय रेखा अहिले नेपालको पहाडी क्षेत्र नजिकै रहेको र न्यून चापीय प्रणाली मध्य तथा आसपासको भागहरूमा विद्यमान रहेको देखिन्छ । यसले गर्दा नेपालमा मनसुनी गतिविधि अहिले सक्रिय अवस्थामा रहेको छ । यसको प्रभावले गर्दा देशका अधिकांश स्थानहरूमा हिजो वर्षा भएको र केहि स्थानहरूमा भने भारी वर्षा पनि भएको छ । आज तथा भोली पनि मनसुनी वर्षाको गतिविधि देश भरिने सक्रिय रहने र देशका केहि स्थानहरूमा भारी वर्षा पनि हुने सम्भावना देखिन्छ ।

<http://www.mfd.gov.np/content/?id=308>

Potential Heavy Precipitation Area: Image source Himawari(Japan) .
Rain activity seems to continue upto tomorrow #FloodAlertNepal#MFD
forecast by MFD.

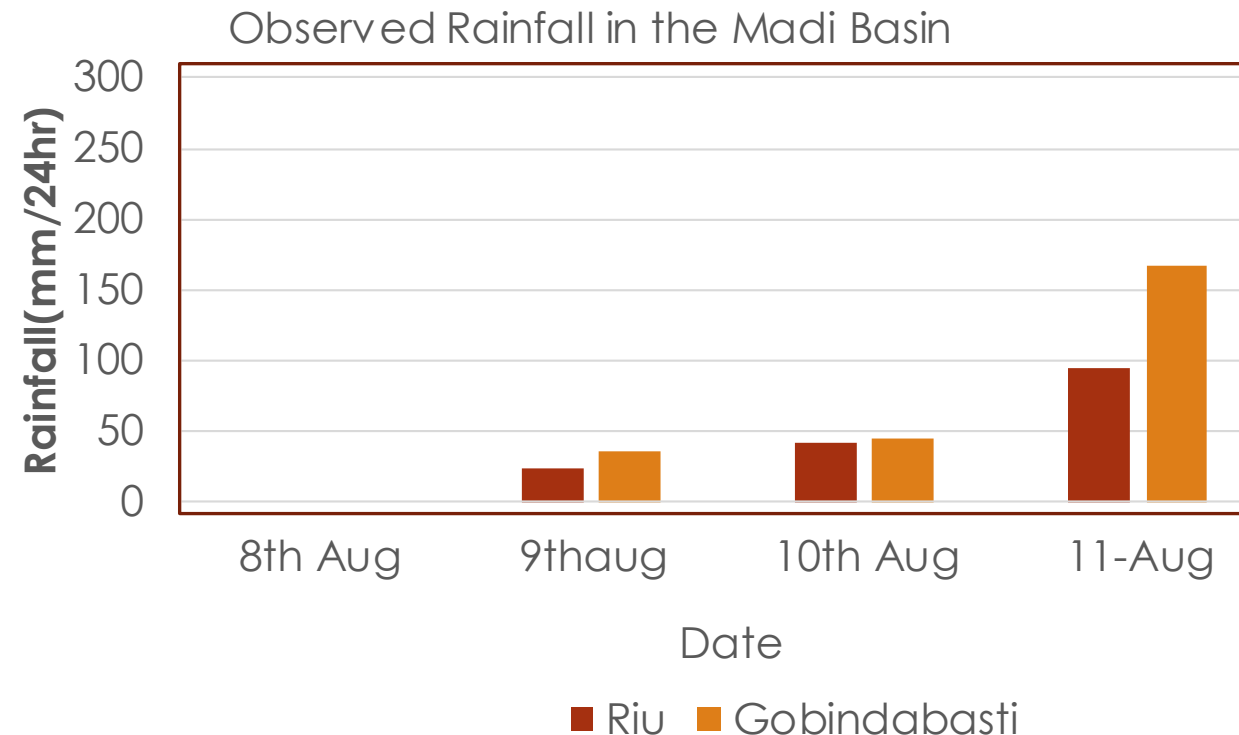
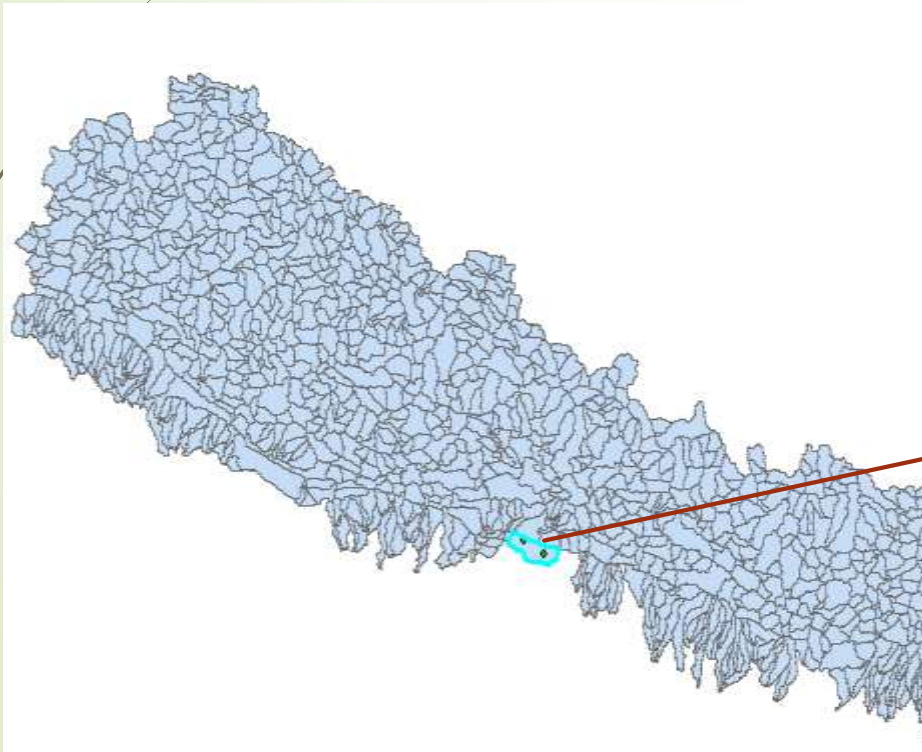
विषेश बाढी पूर्वानुमान बुलेटिन

<http://www.hydrology.gov.np/.../e91a4d96d4d7fd8a948cc59296257...>



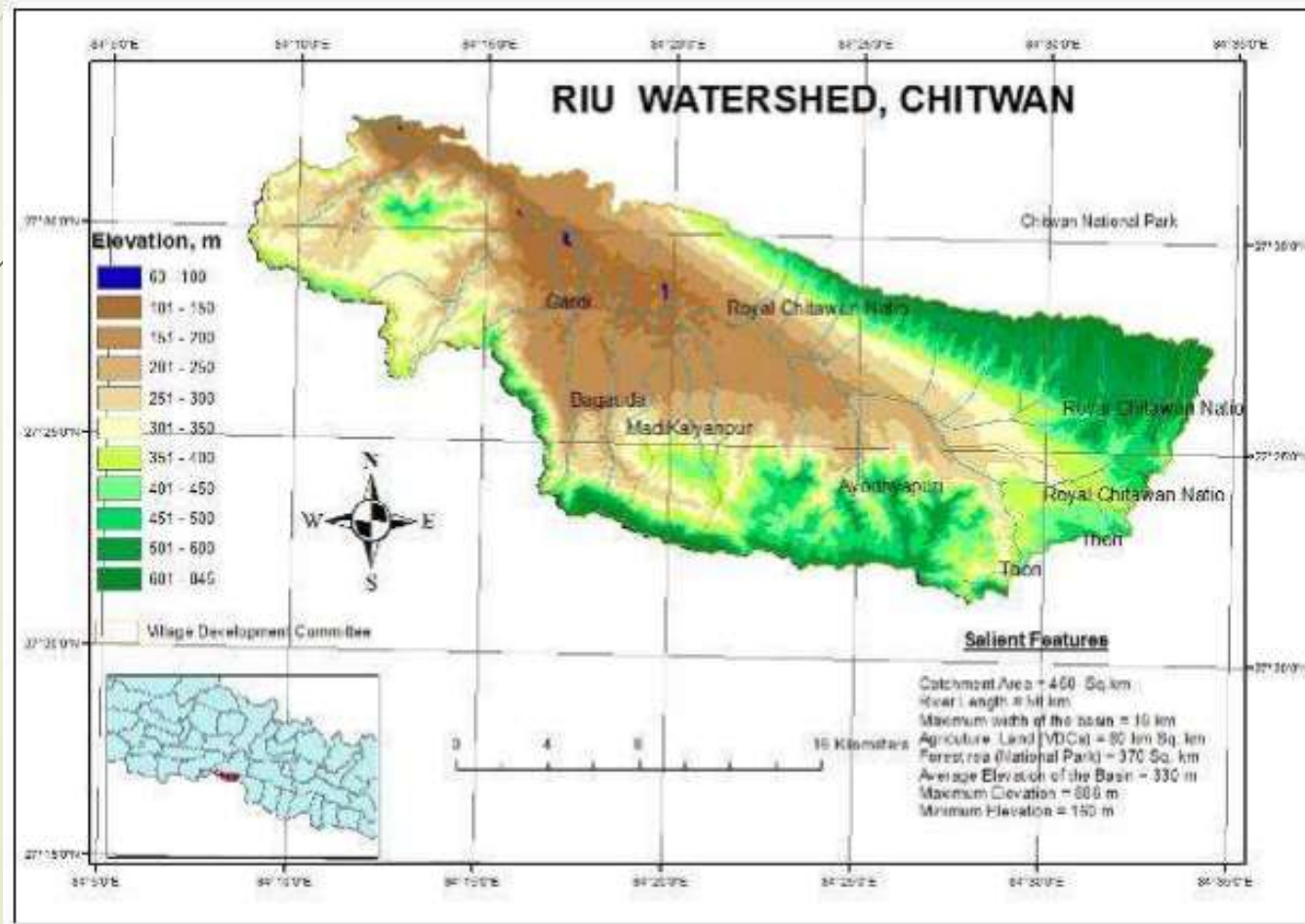
Region of Focus

- ▶ Madi (Riu Khola) Basin of Southern lower flat land in Central Nepal
- ▶ Chtiwan district is vulnerable to three major types of floods: floods on large river with snow components (Narayani River), flood on medium sized rain-fed river (Rapti, Lothar and Manahari) originating from the Mahabharat range and **flash floods on rivers originating from the Chure hills, such as the Riu and its tributaries.**

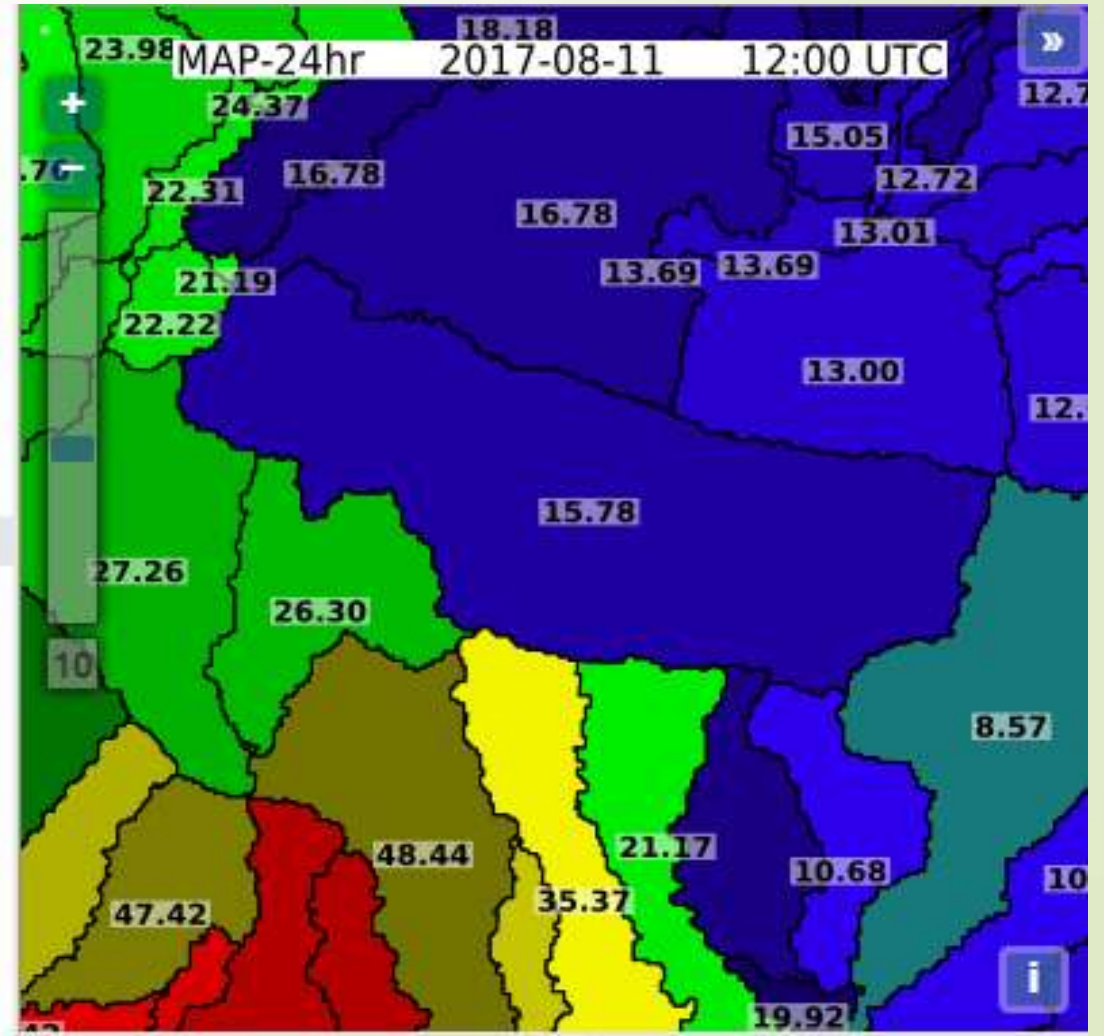
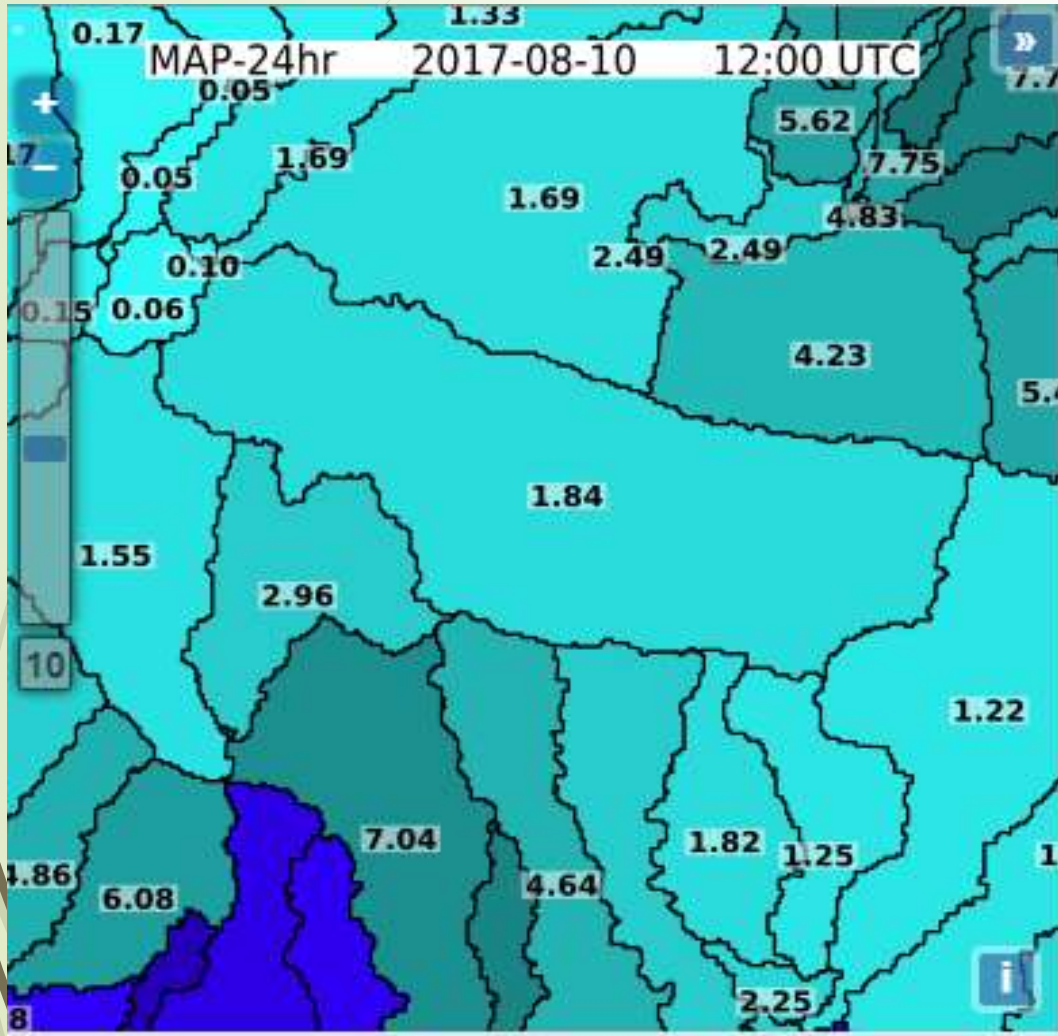


Madi(Riu Watershed)

- In this area of concerned, there is east west extending steep slopes along the Nepal India boundary and mild slopes along the chure range having silty soil in the upstream but mostly clayey in the downstream areas.

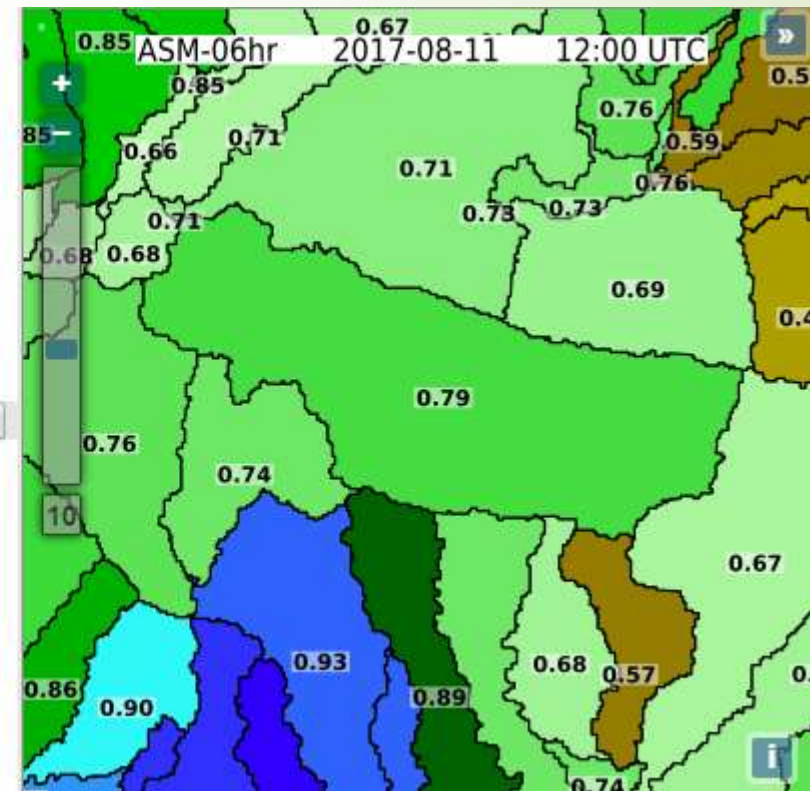
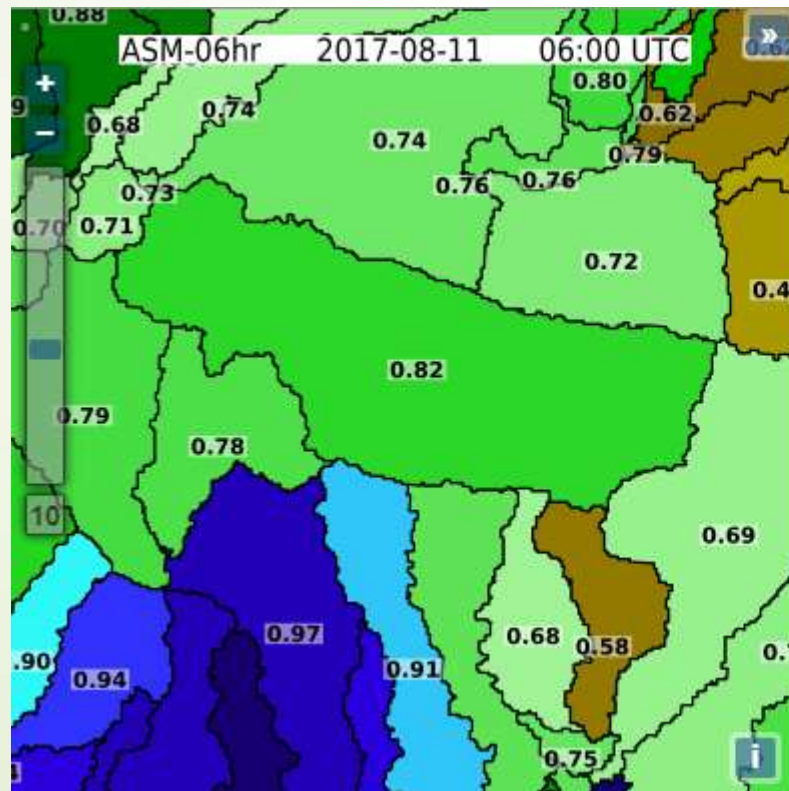


Rainfall Activity in the region

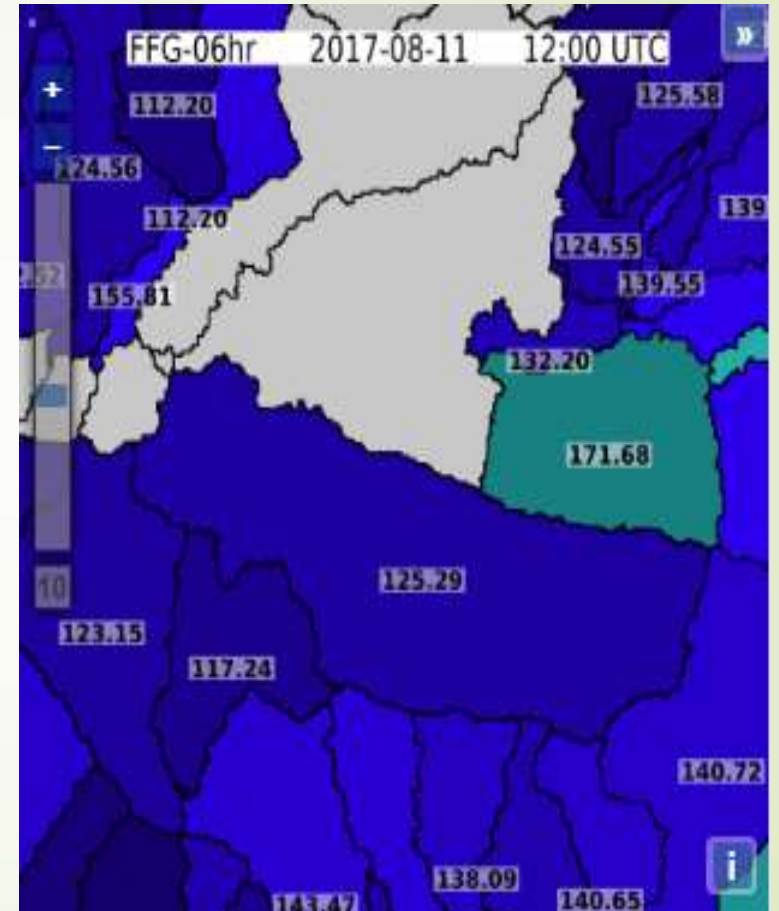
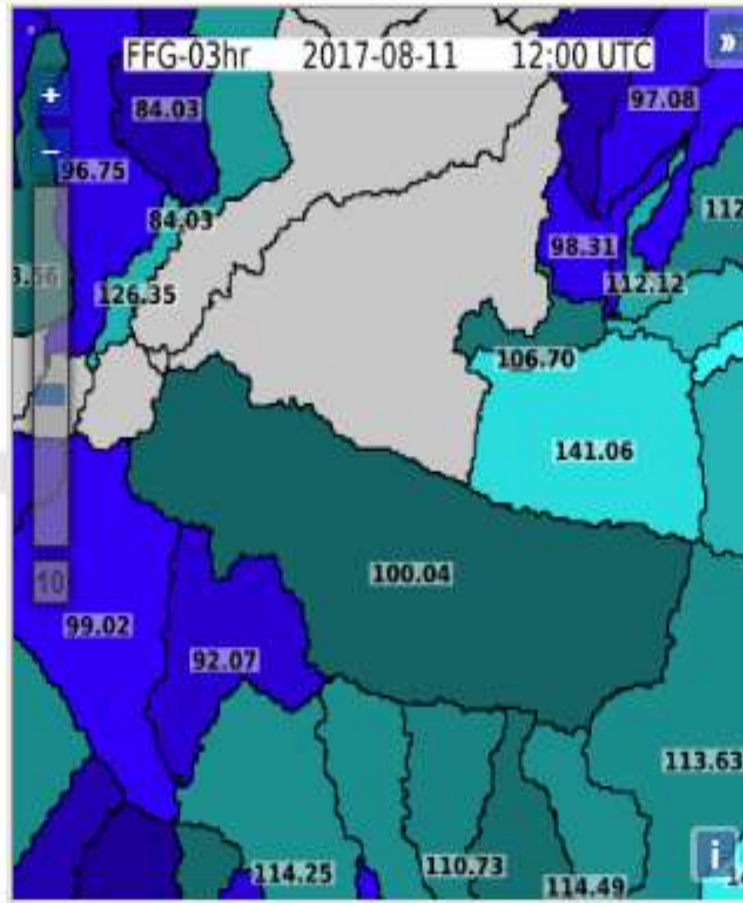
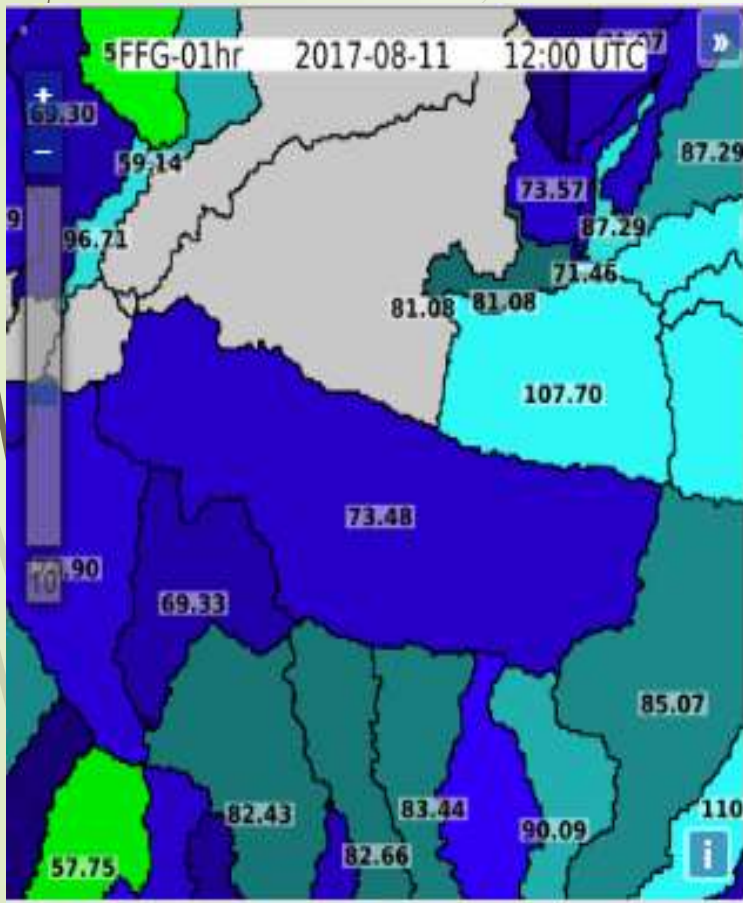


Soil Moisture Condition

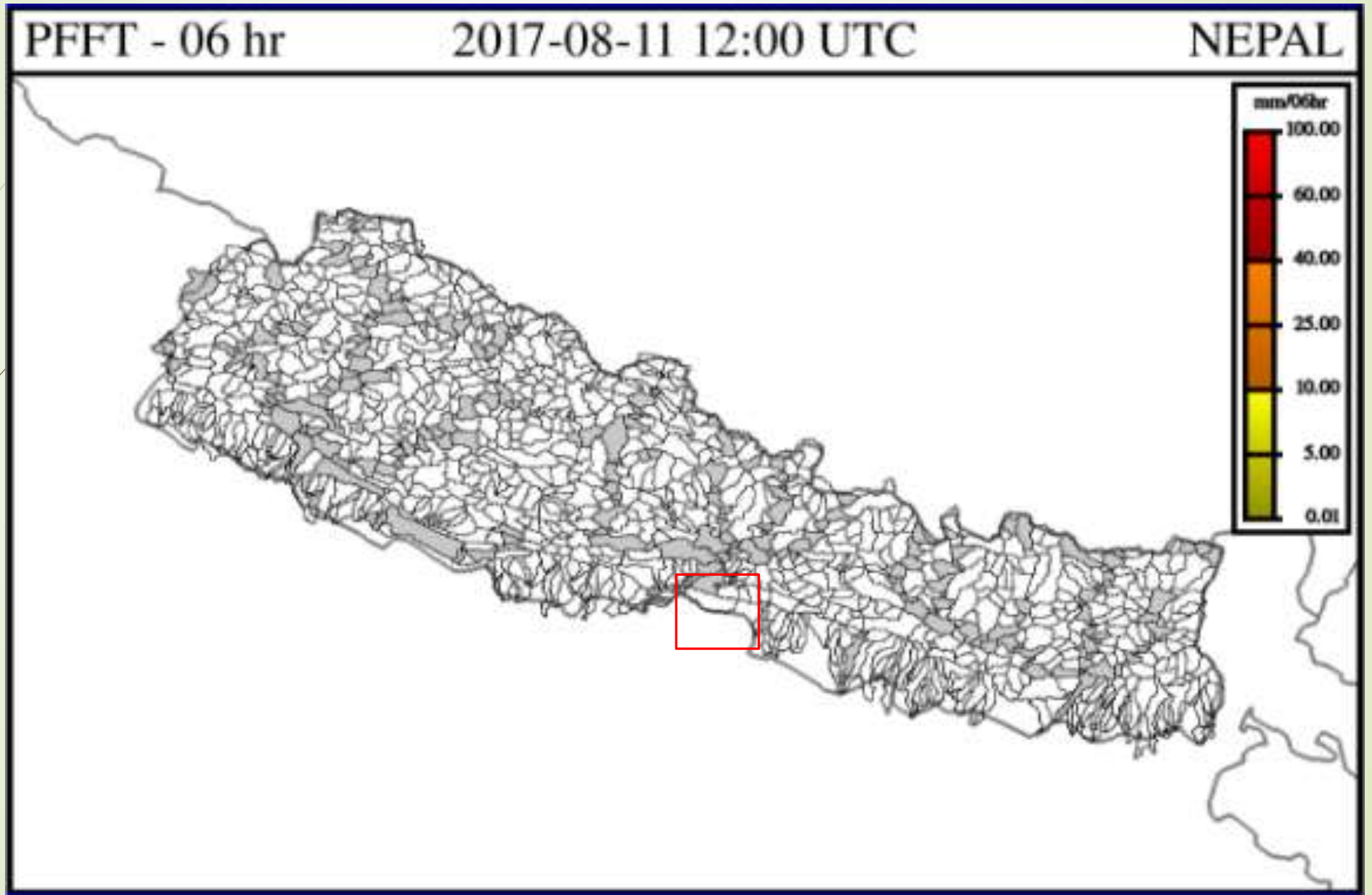
Its about 80 % in the the basin considered and over 50% in the other surrounding basins over that area.



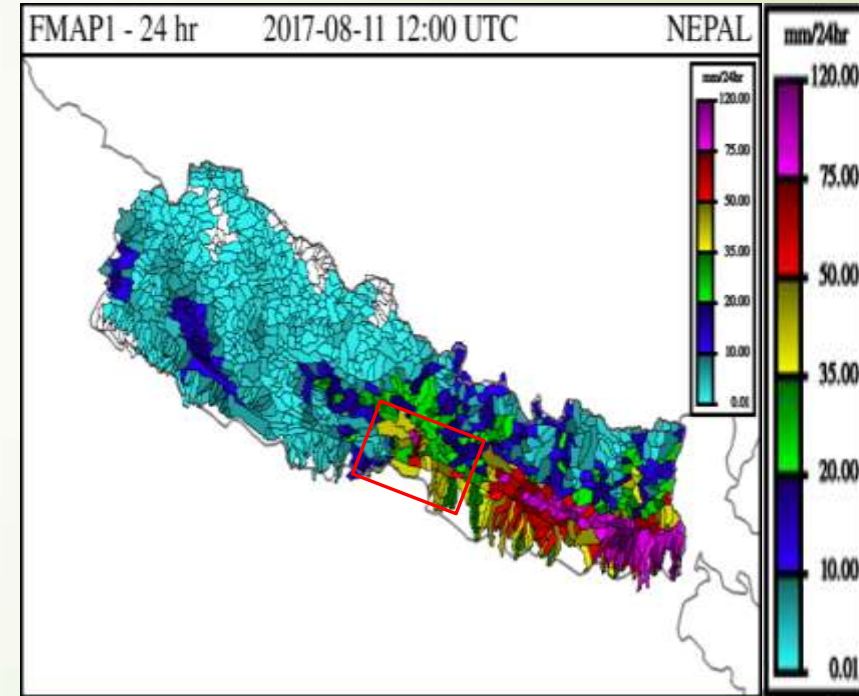
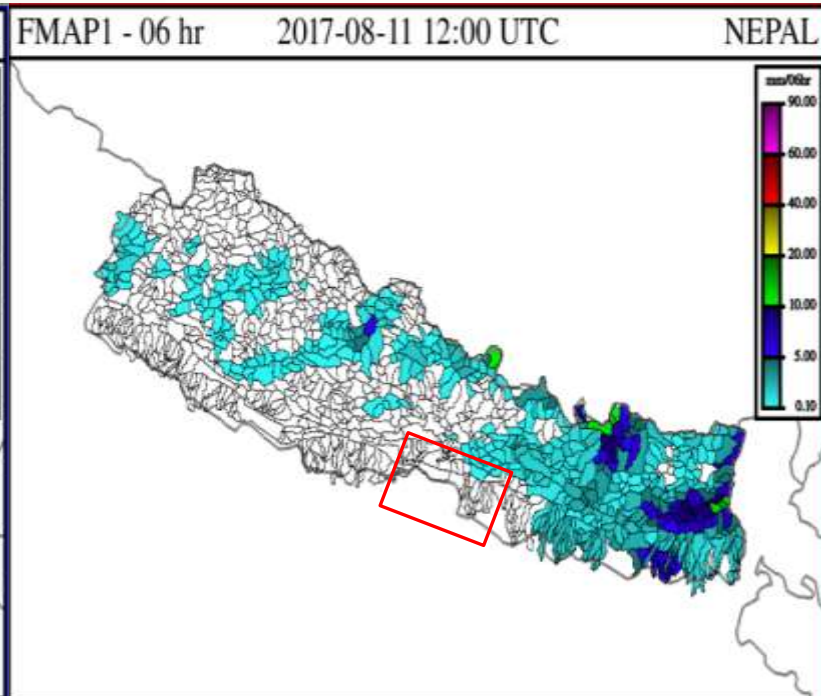
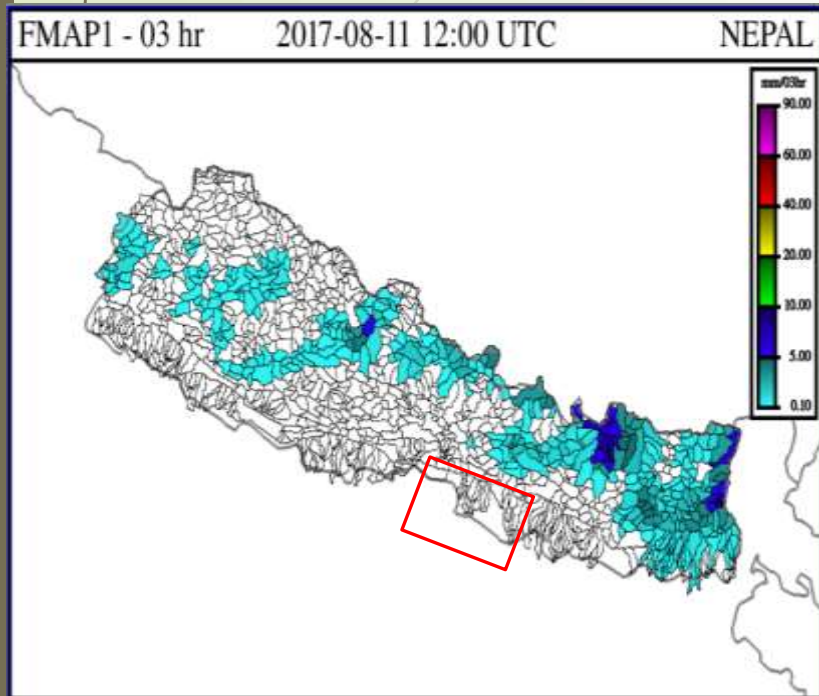
FFG Value



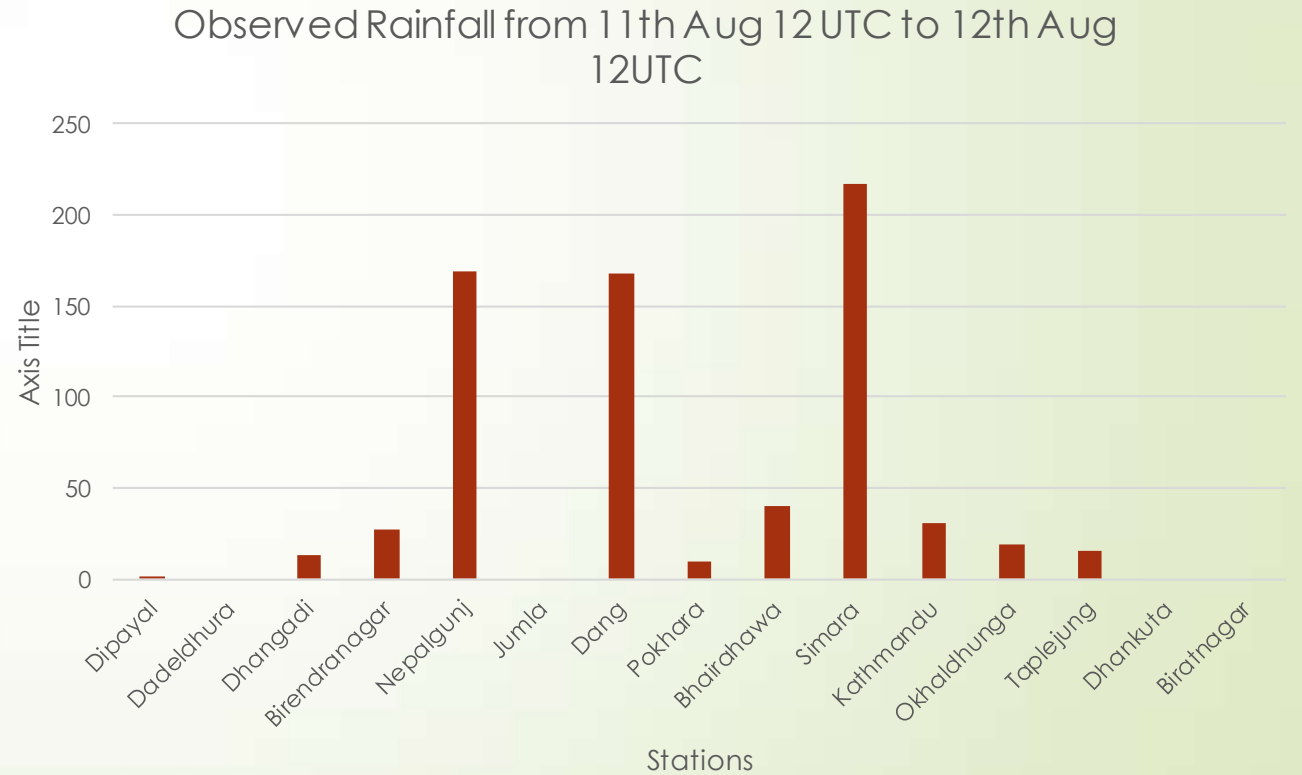
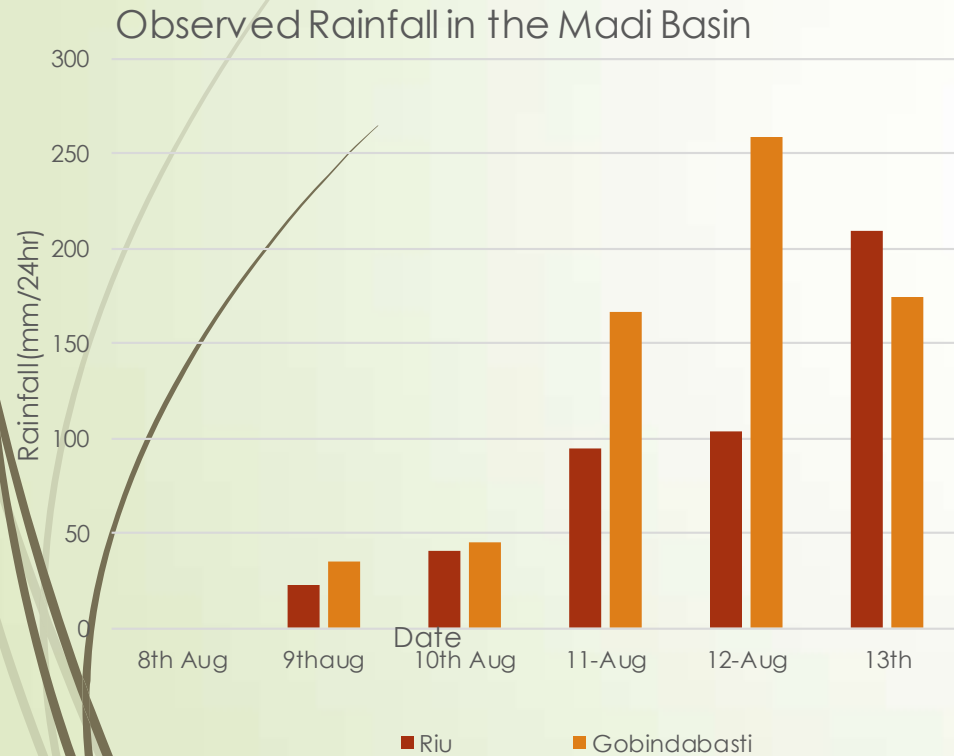
PFFT



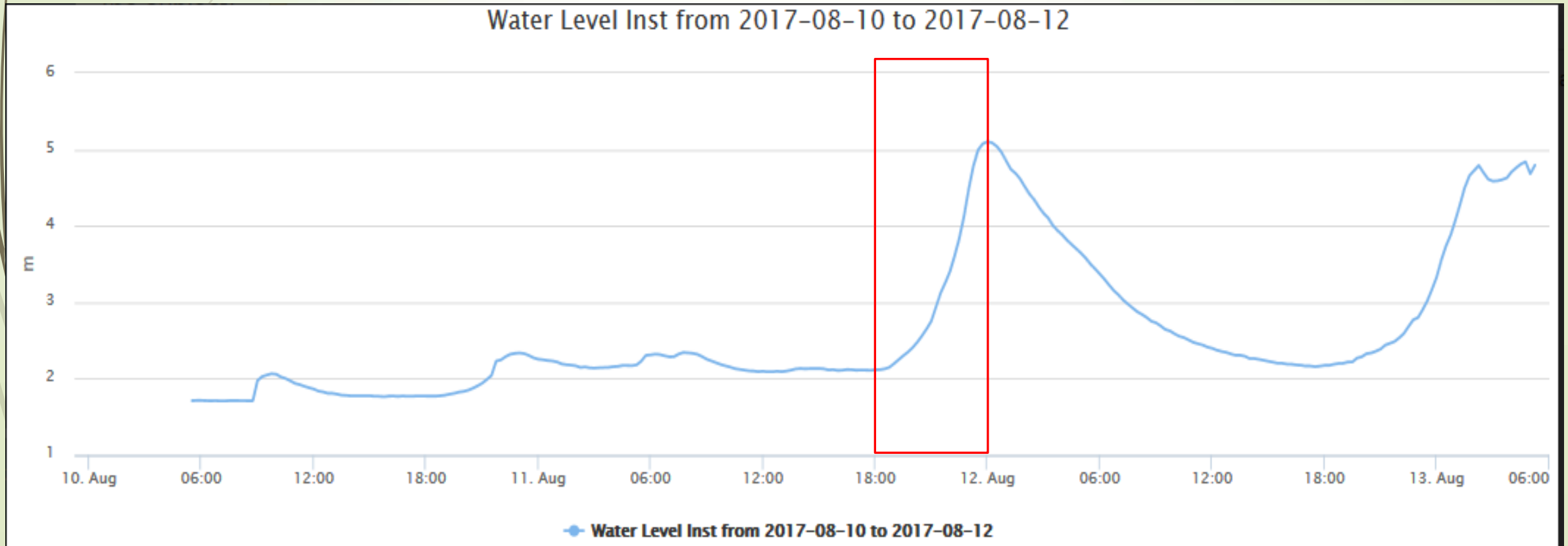
Forecasted Rainfall



Observed Rainfall




Observed Water Level Rise at Riu Khola Gauging Site





Conclusion

- MWGHE and GHE well captured the rainfall event
 - Considering the FFT and for this date the system missed this particular event
 - We will do more Verification in this coming monsoon season
- 



Thank You