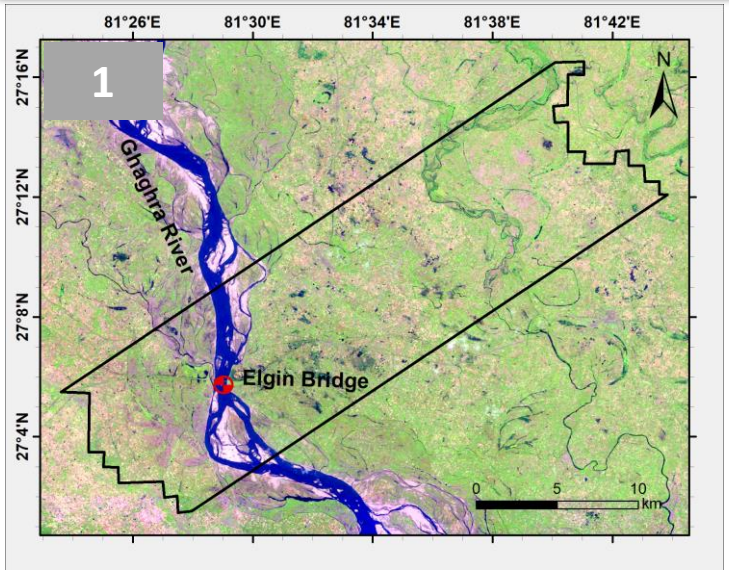
EGU General Assembly 2021

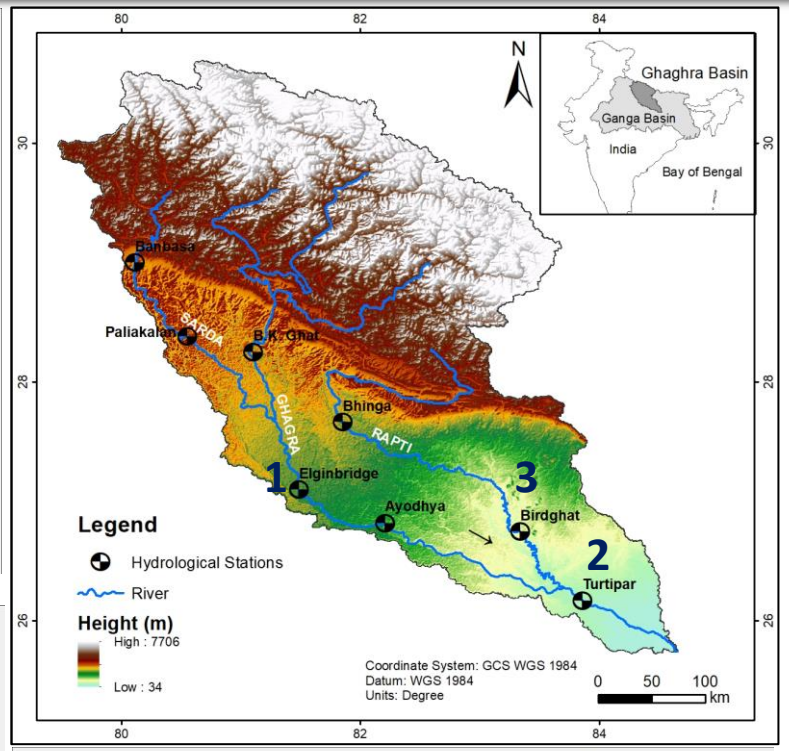
Exploring stage-based flood frequency analysis for flood inundation mapping

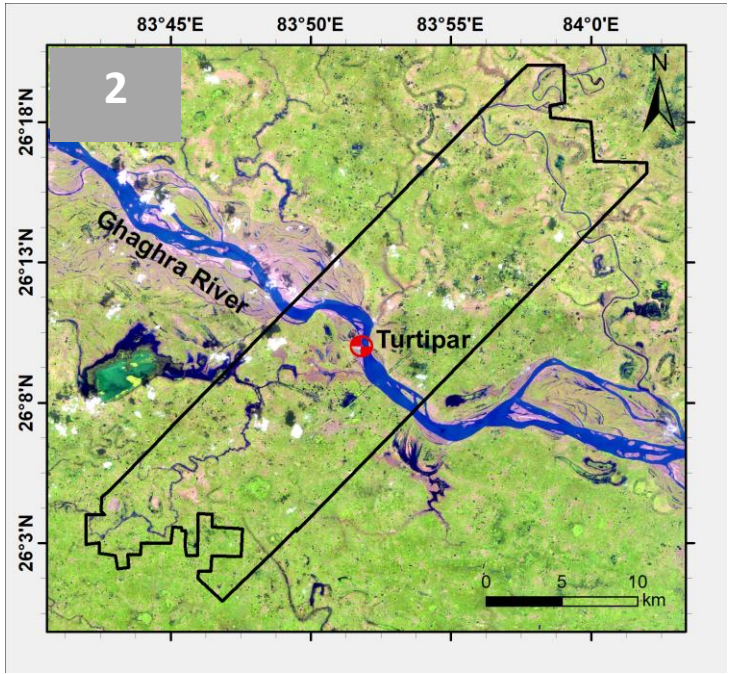
Shobhit Singh*[1] Somil Swarnkar [2] and Rajiv Sinha [1]

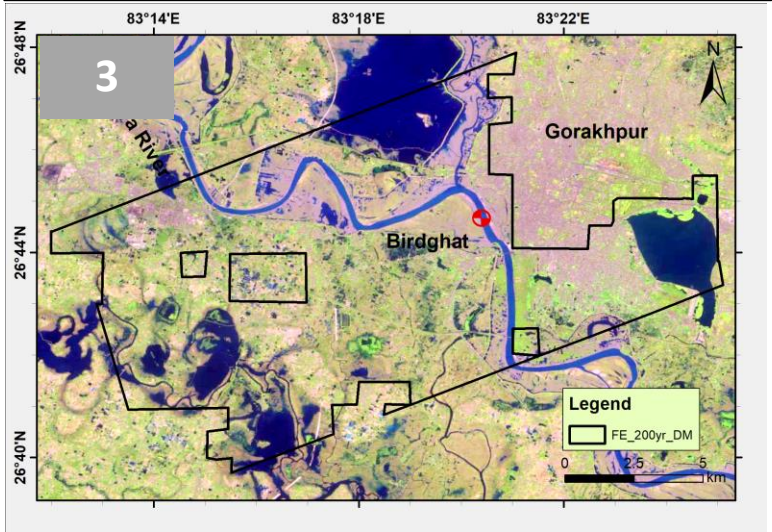
[1] Department of Earth Sciences, Indian Institute of Technology Kanpur, Kanpur, India
[2] Interdisciplinary Center for Water Research, Indian Institute of Science Bangalore, Bangalore, India

Study area and Input data set





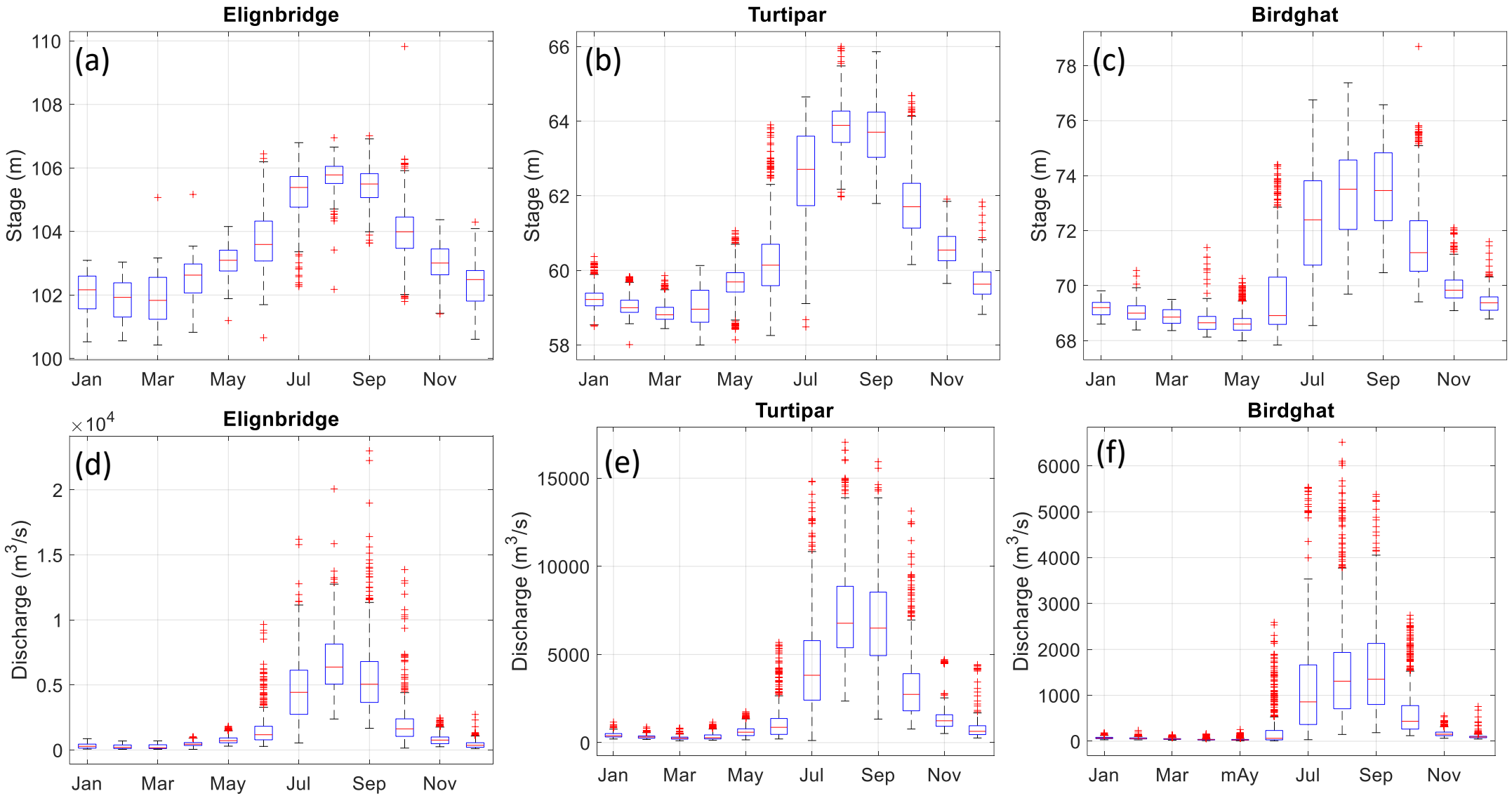




- Ghaghra basin and major hydrological stations
- 1-Elignbridge, 2- Turtipar and 3-Birdghat were considered for flood frequency analysis and inundation mapping.
- Historical discharge and stage data were used
- TanDEM-X Digital Elevation Model used for inundation mapping.
- Dartmouth flood extent data

  http://floodobservatory.colorado.edu/Flood Observatory

Stage and Discharge Variability

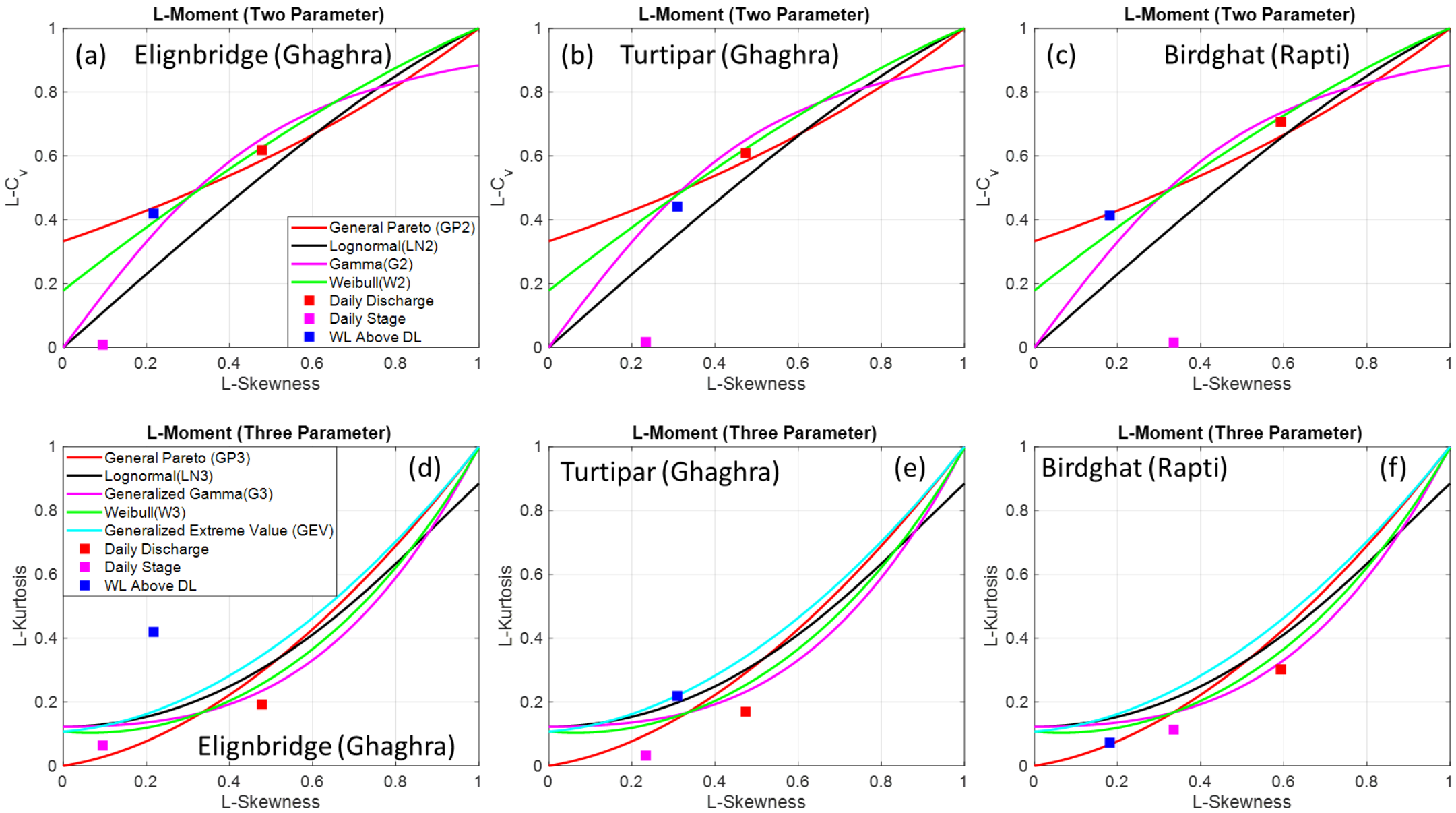


Danger level=106.07 m

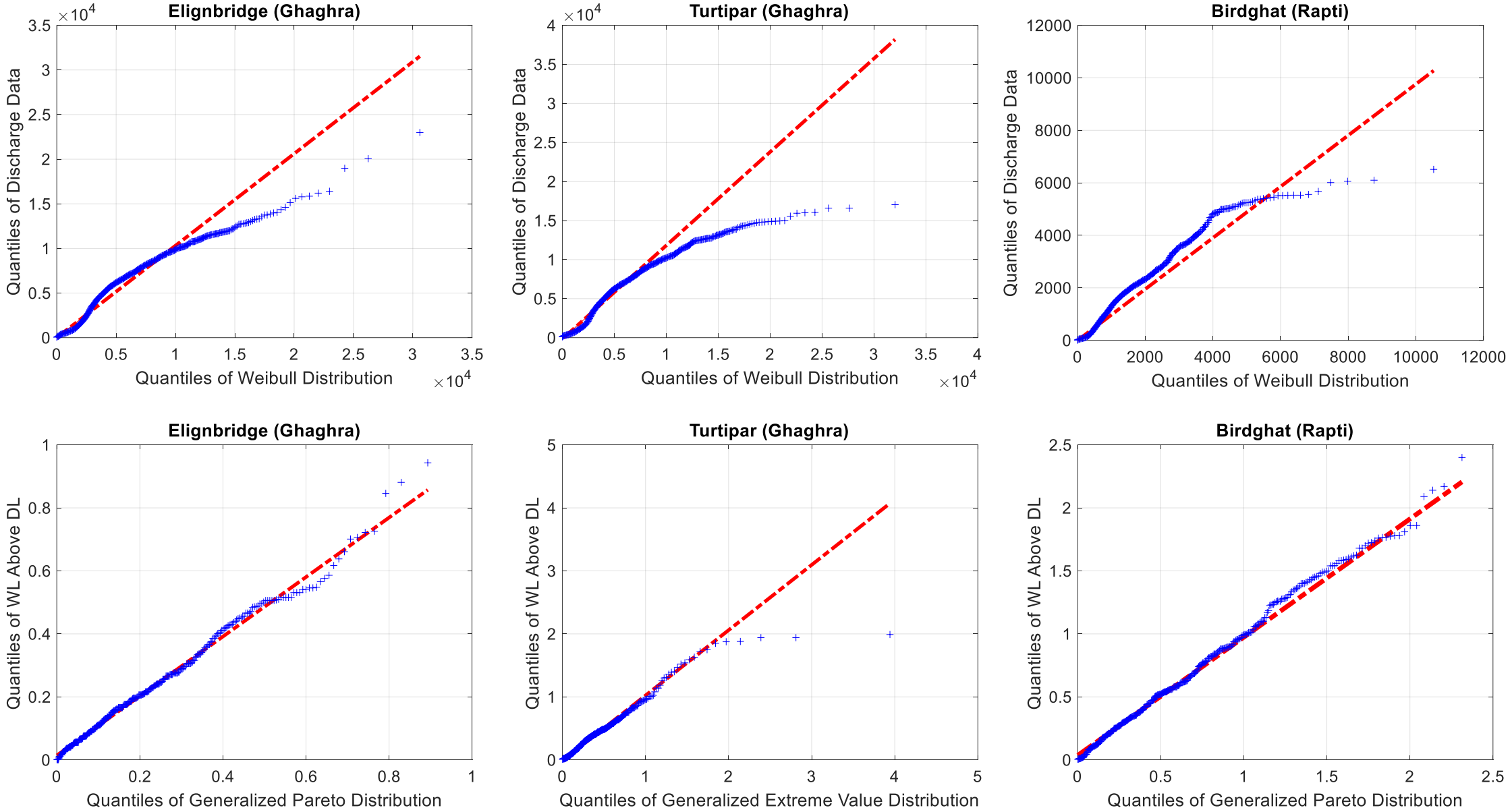
Danger level=64.01 m

Danger level=74.98 m

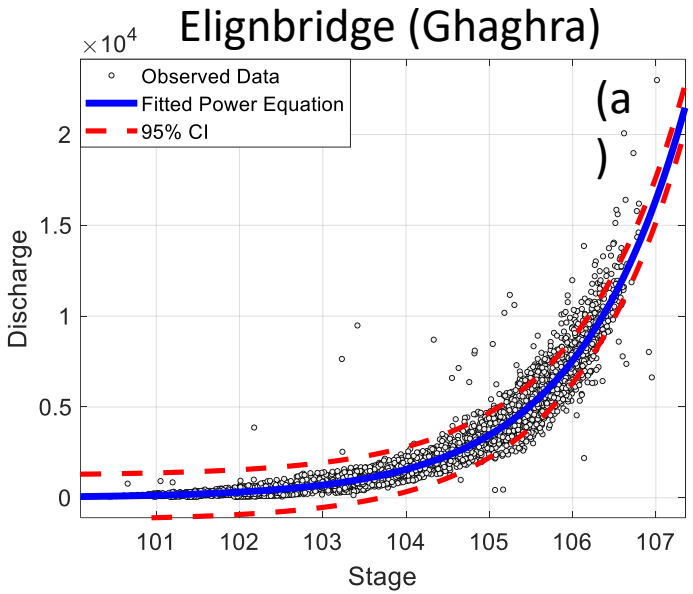
L Moment analysis

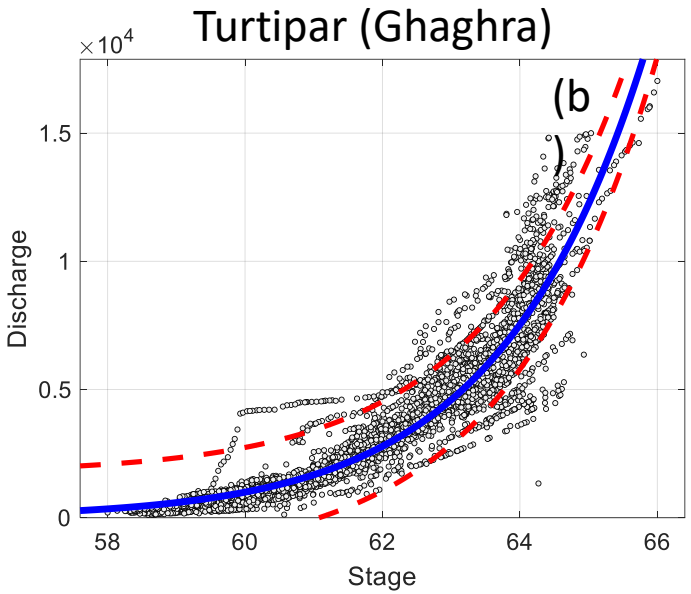


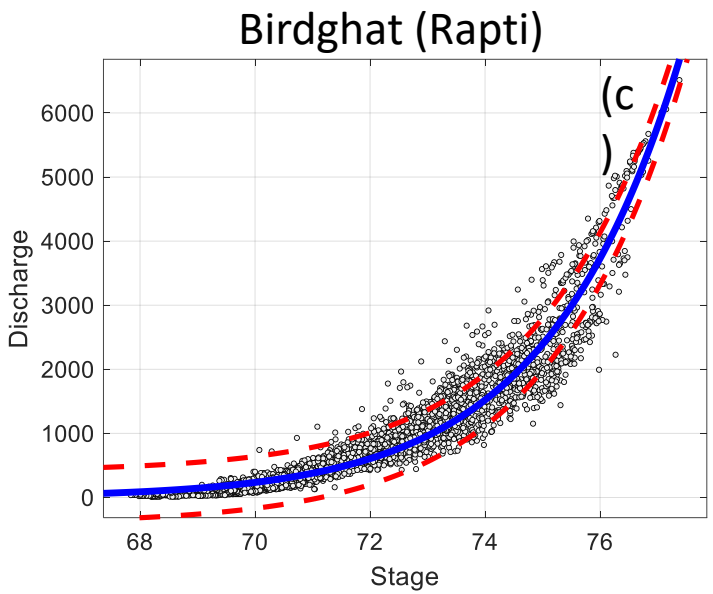
Accuracy Assessment

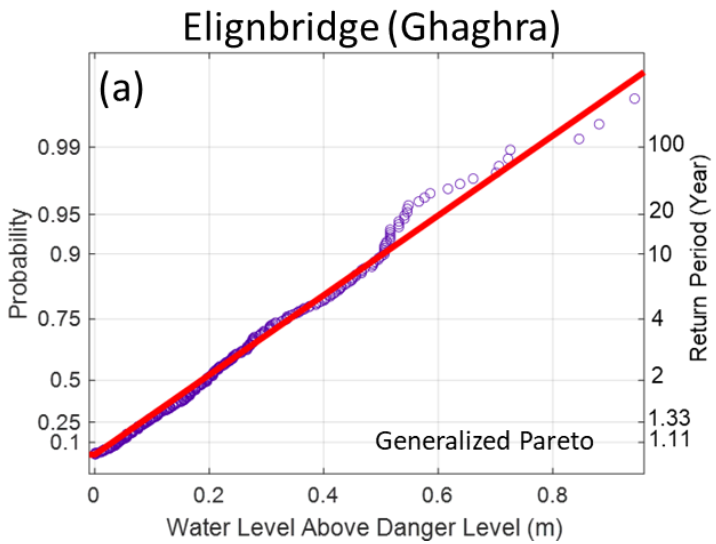


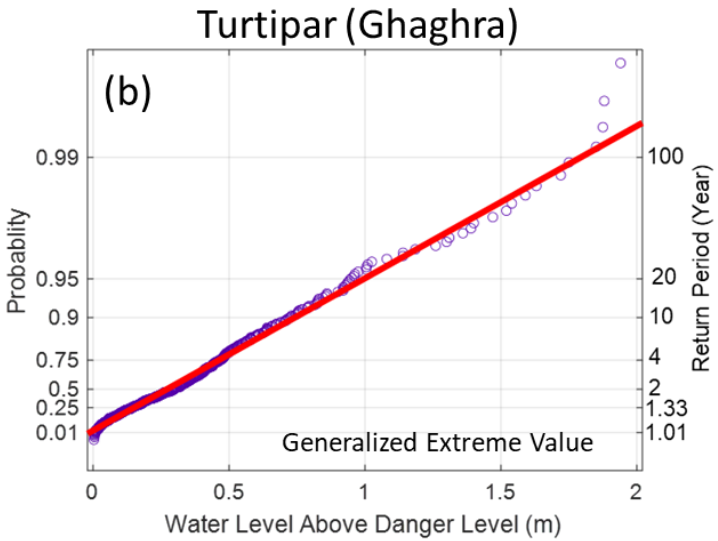
Stage and Discharge Relationships And Frequency analysis

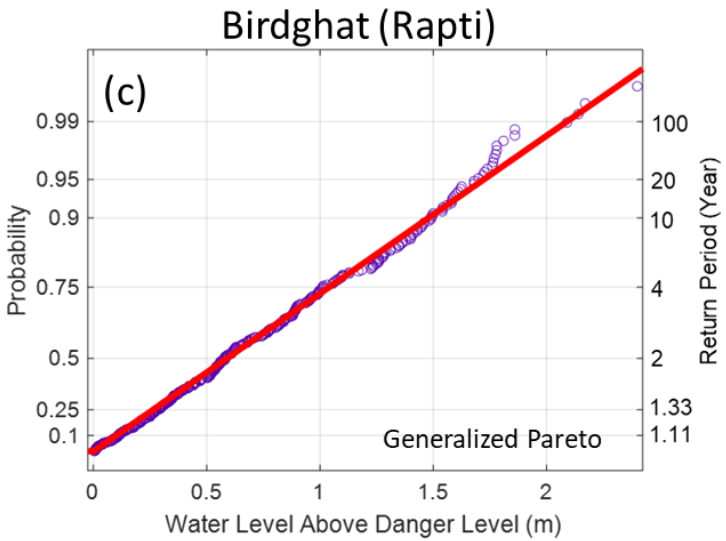




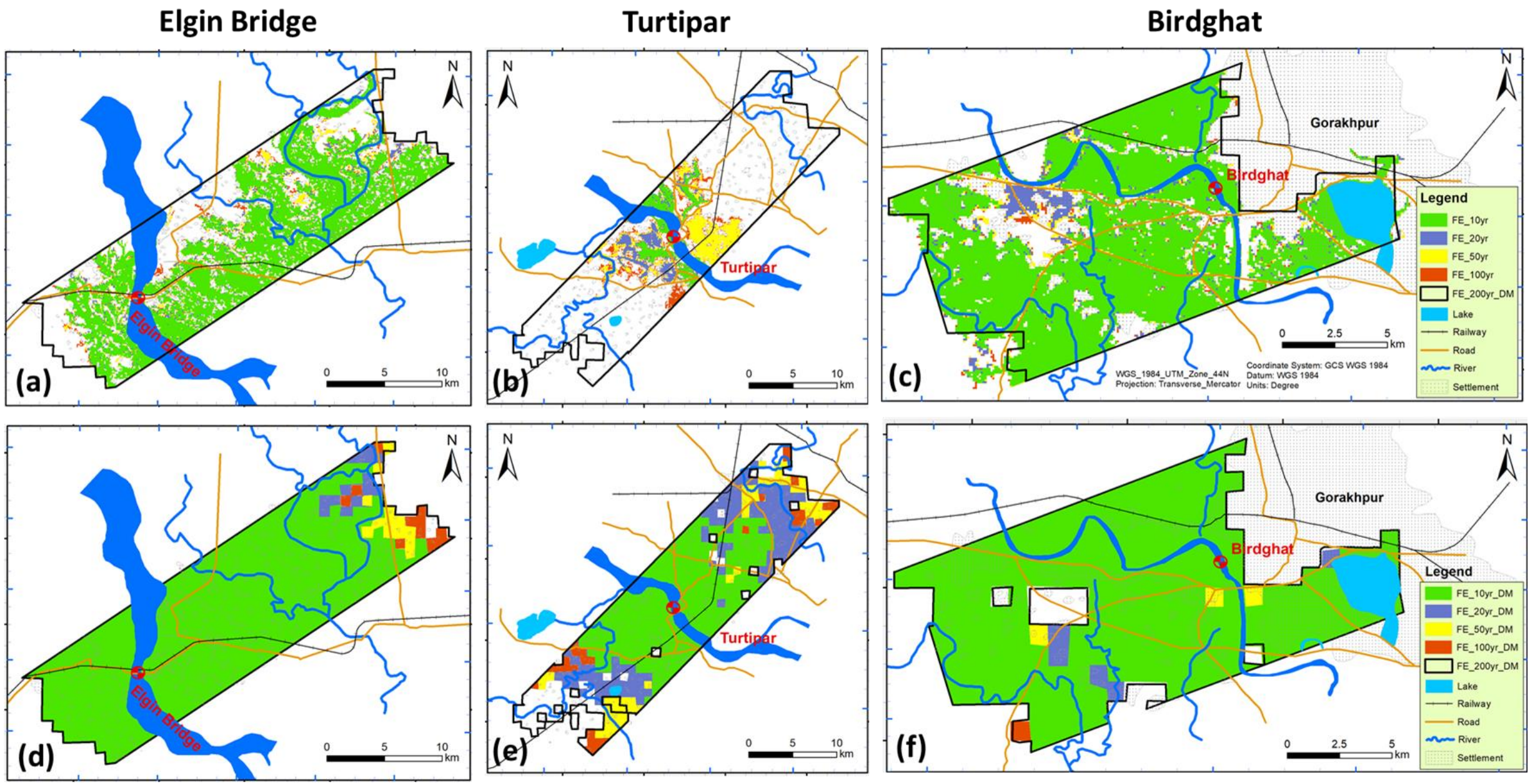




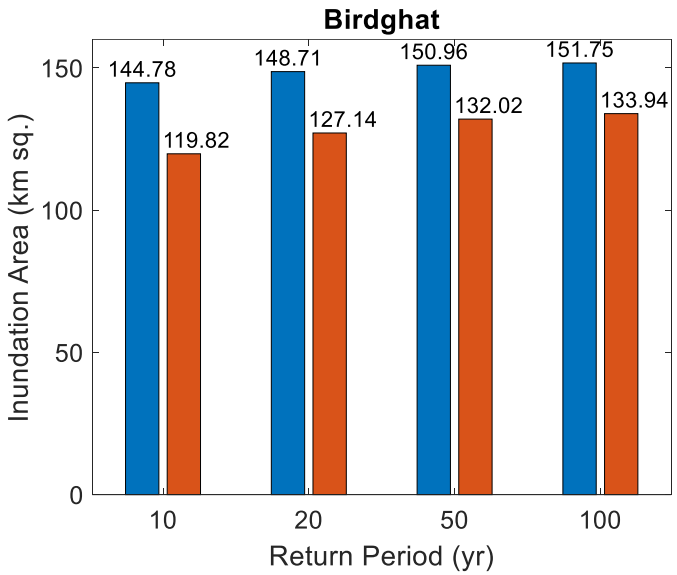


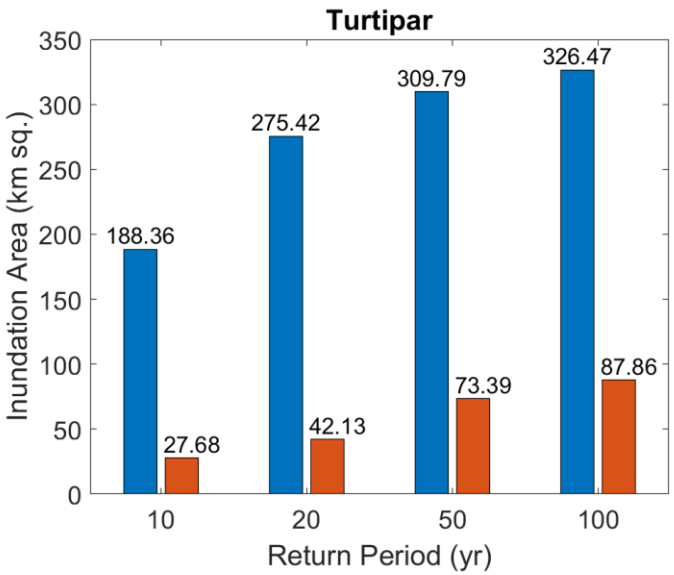


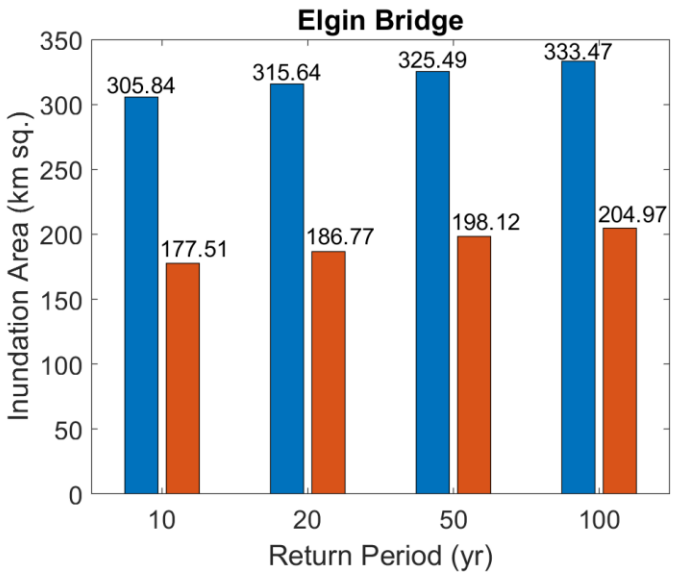
Flood Inundation Maps for Different Return Periods



Comparison of Inundation Maps (this study) with Dartmouth Dataset







Thank you !

Contact Details

Shobhit Singh, PhD student, IIT Kanpur

Email id: Shobhits@iitk.ac.in

Website: www.shobhits.info

Google scholar: https://scholar.google.com/citations?user=7xxf36oAAAAJ&hl=en