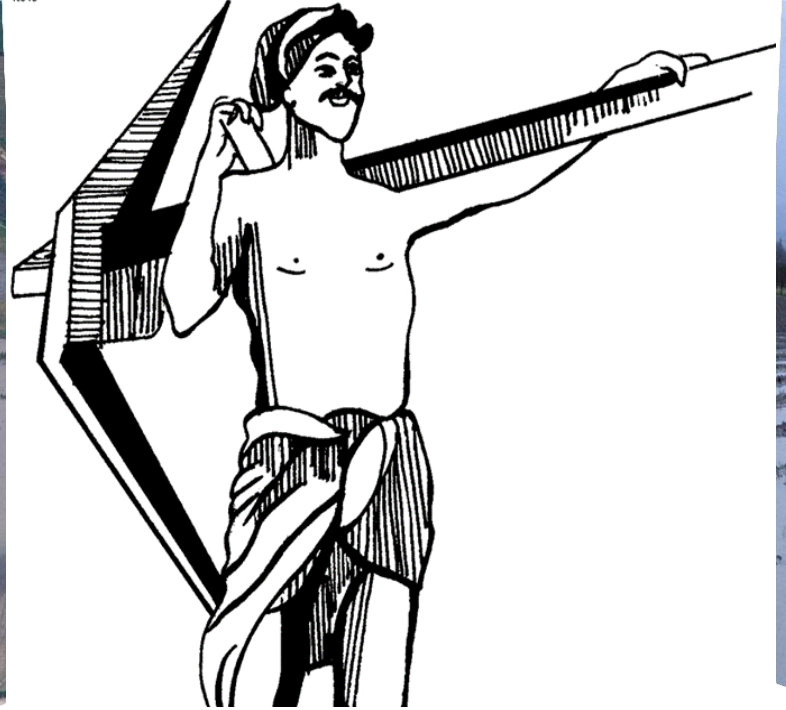
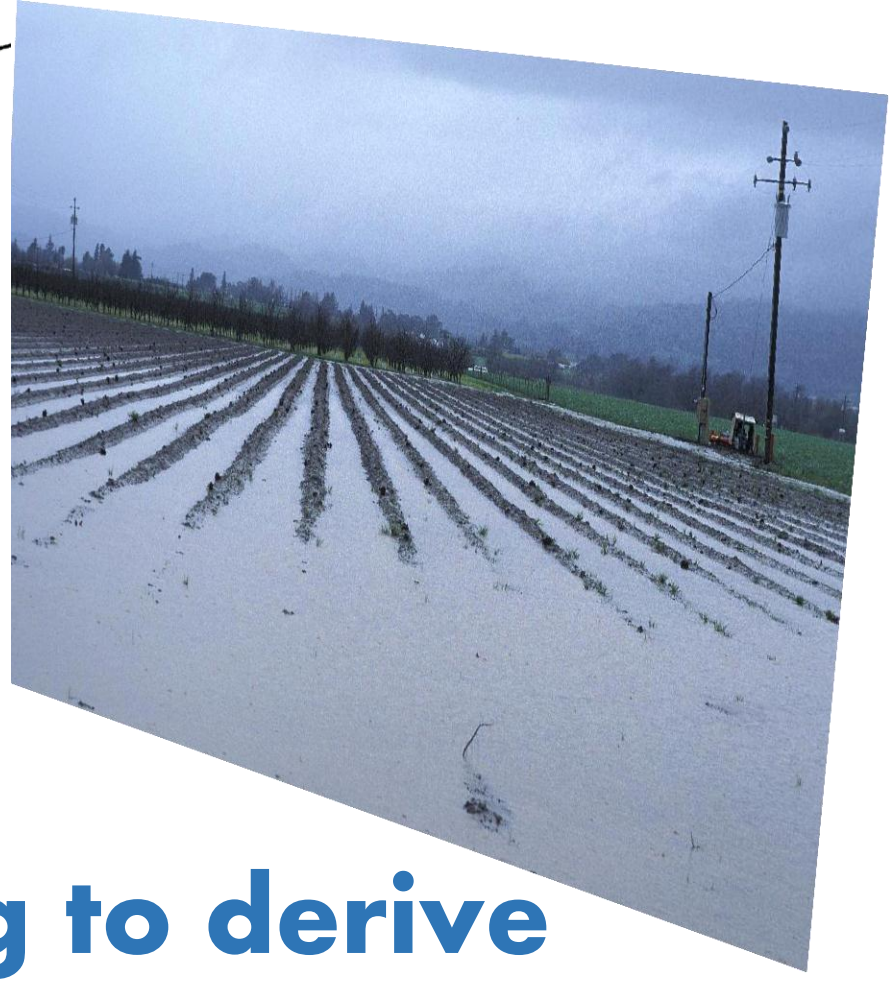


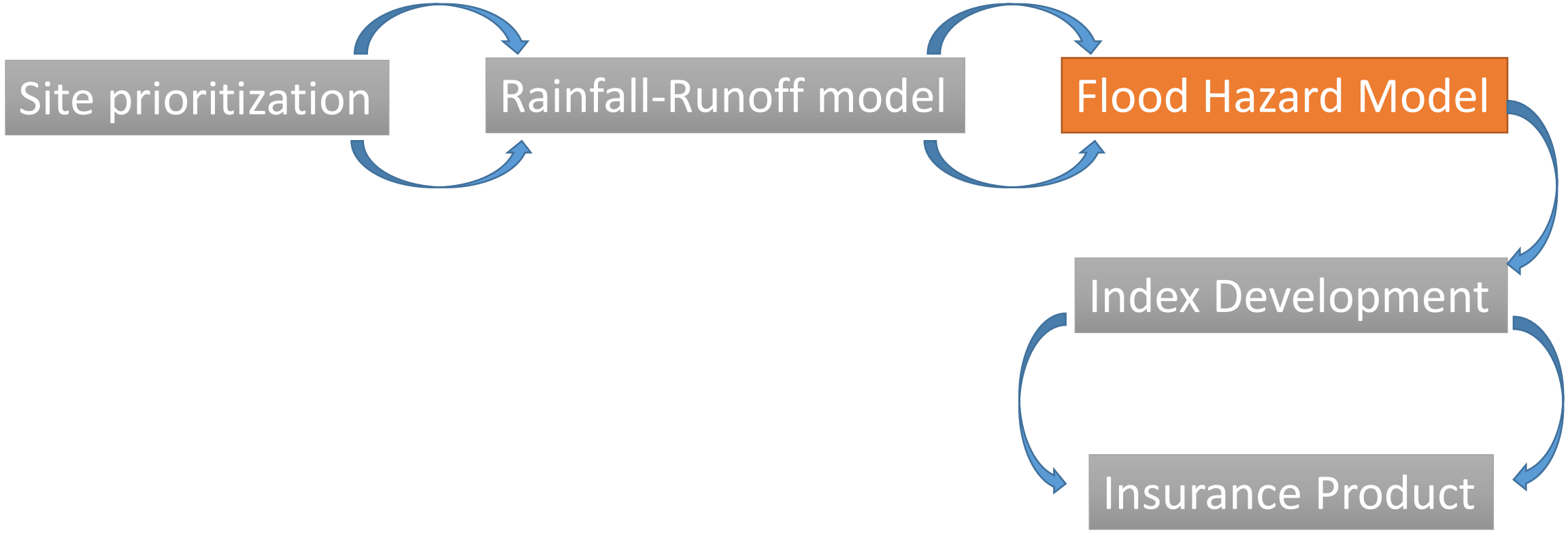


Flood hazard modeling to derive parameters for Insurance index

Karthikeyan Matheswaran

Postdoctoral Researcher, IWMI Central Asia

Index development cycle



Insurance index

Economic loss

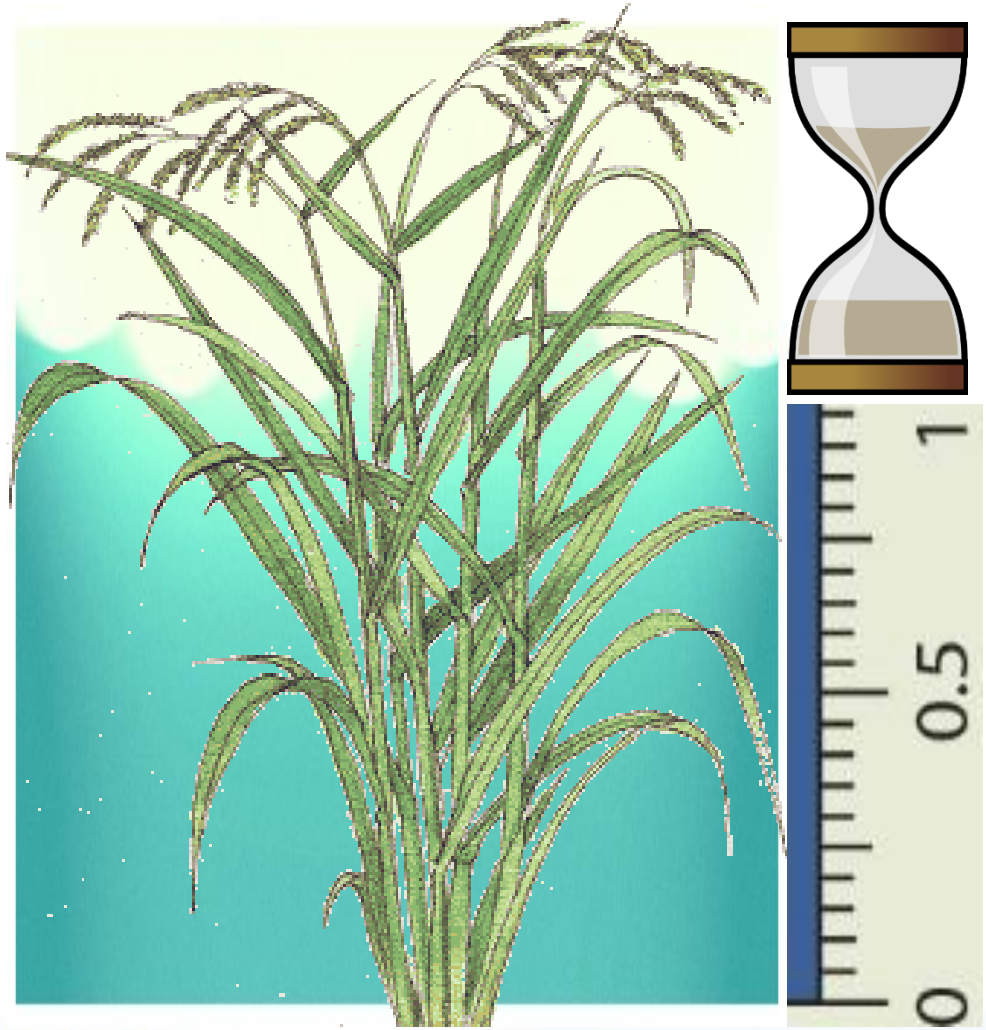
Flood Parameters

Correlate

=

index

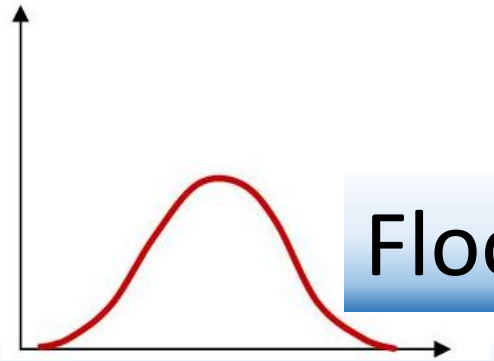
To create index



How

Much? Long?

Parameters:



Depth
Duration

Flood Characteristics

Deriving flooding Characteristics / Parameters

- Depth & Duration (DD) – Measured in specific river sections
- In floodplain & land surface: DD – Function of topography
- Measurements – Lumped
- Flood characteristics – Distributed
- Need a system / method to predict DD

Hydrodynamic Model – mathematical representation of flow mechanism in rivers and flood plain

Mike Flood

Flood Hazard Model

Input

- River networks
- Cross sections
- Longitudinal profile
- Discharge / Water level Upstream
- Digital Elevation Model (DEM)
- Discharge / Water level Calibration/Validation

1D Hydraulic m model

Water level @ different river sections

2D Overland flow model

Depth & Duration over floodplain/land surface

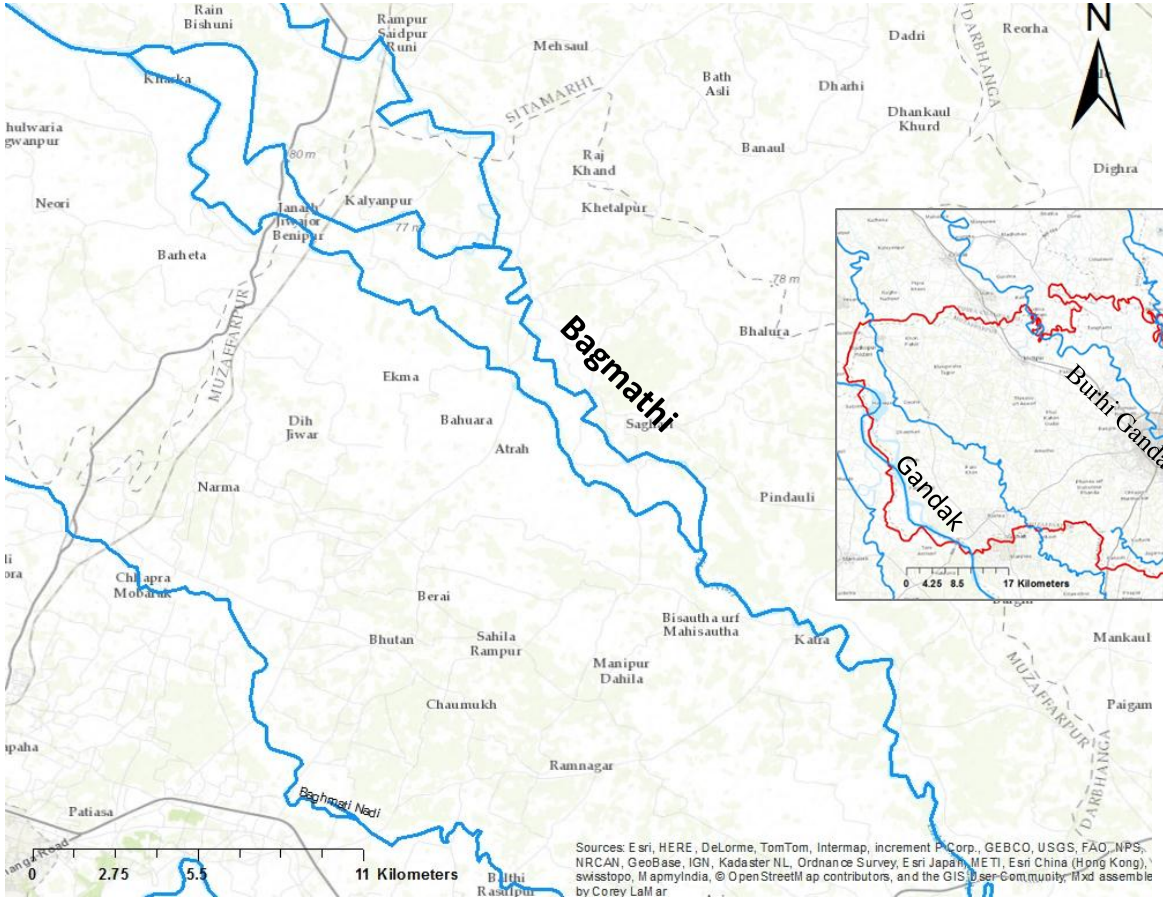
Output

Depth / Duration land surface

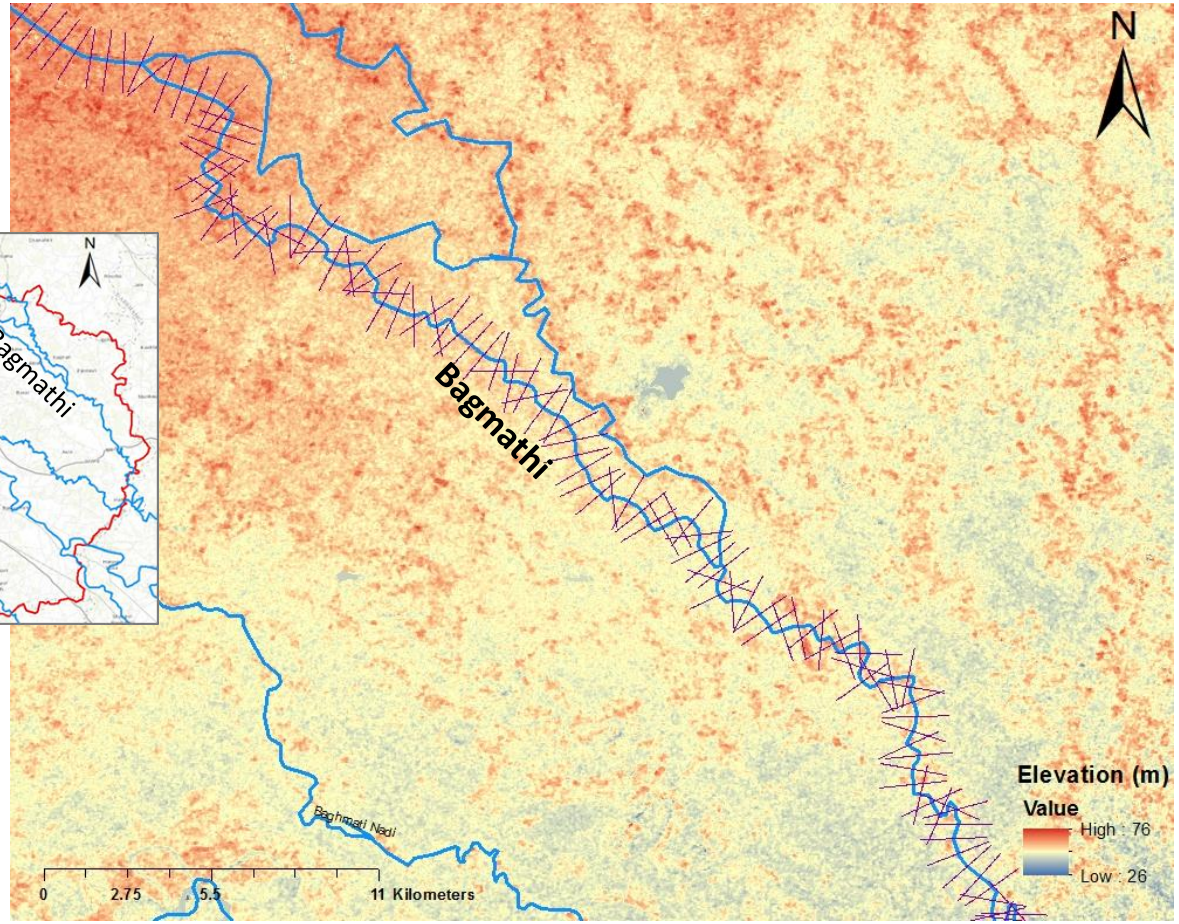
Parameters Zonation

River Bagmathi

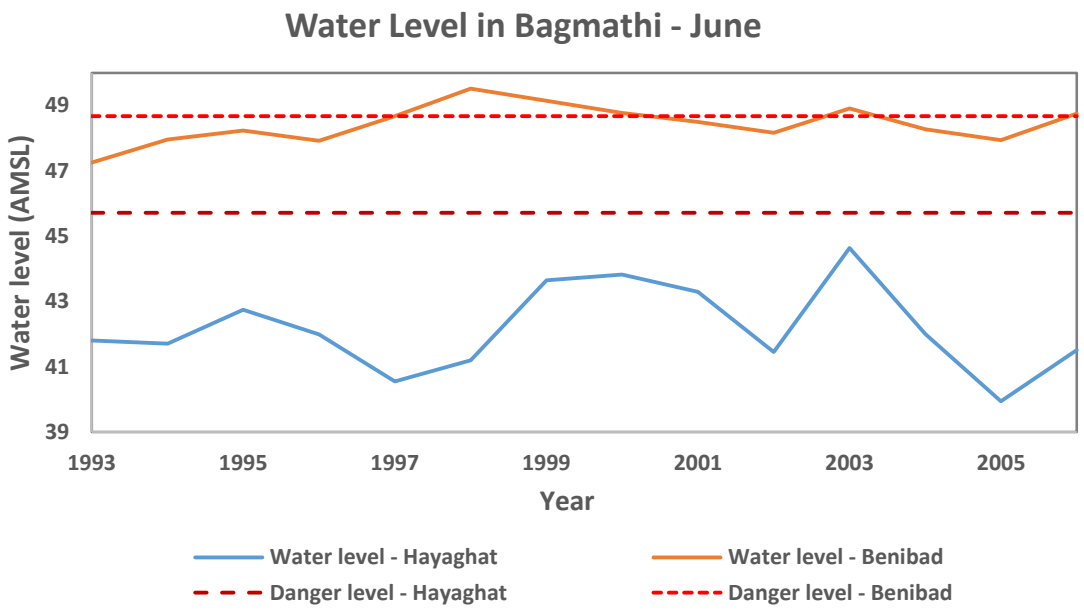
River network

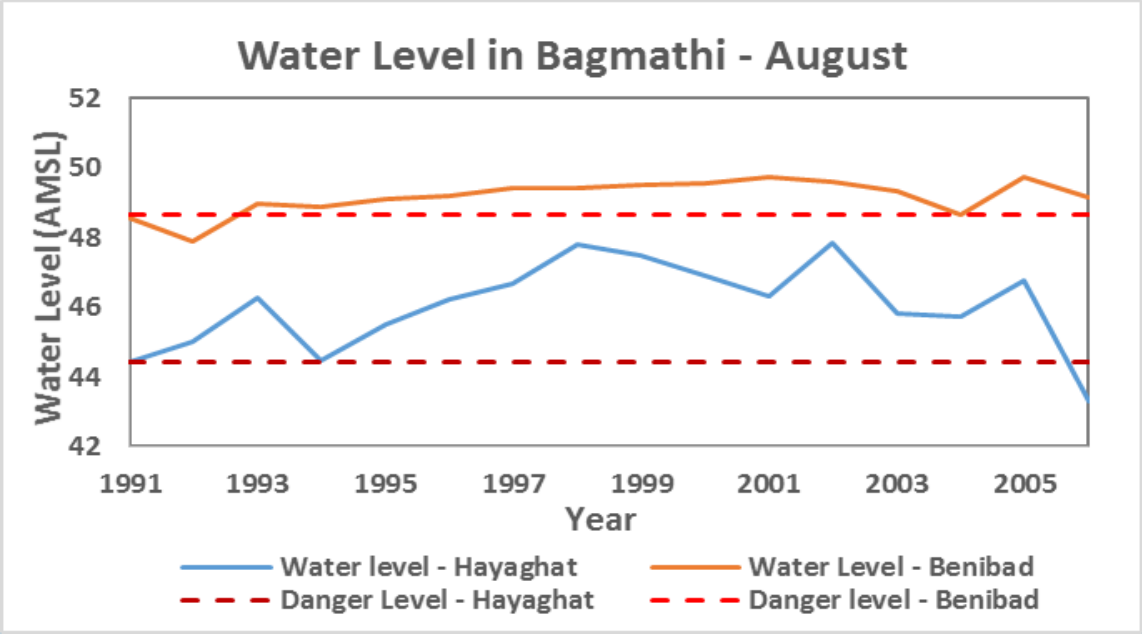


DEM & Cross section locations

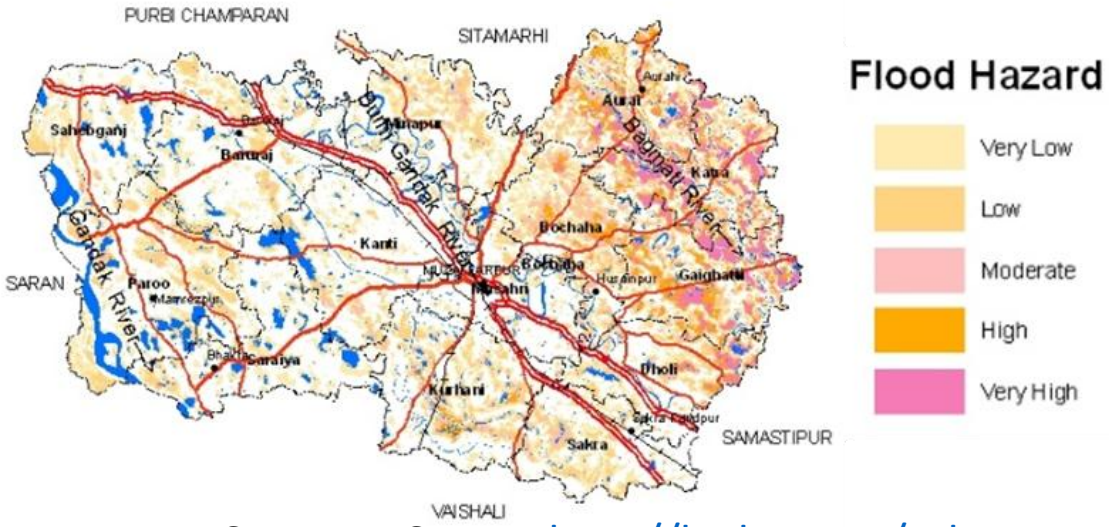


Water Level in Bagmathi for June and August





Flood Hazard map of Muzzafarpur District



Source: BSDMA, http://bsdma.org/Atlas.aspx

Average crop coverage area (Ha) in proposed blocks (Kharif)

Crop	Aurai	Katra	Gaighat
Paddy	11000	11000	11000
Maize	1400	1400	1400
Pulses	630	630	630

Thank you