PDM -
Reduction of future flood risk in the lower Kelani River basin

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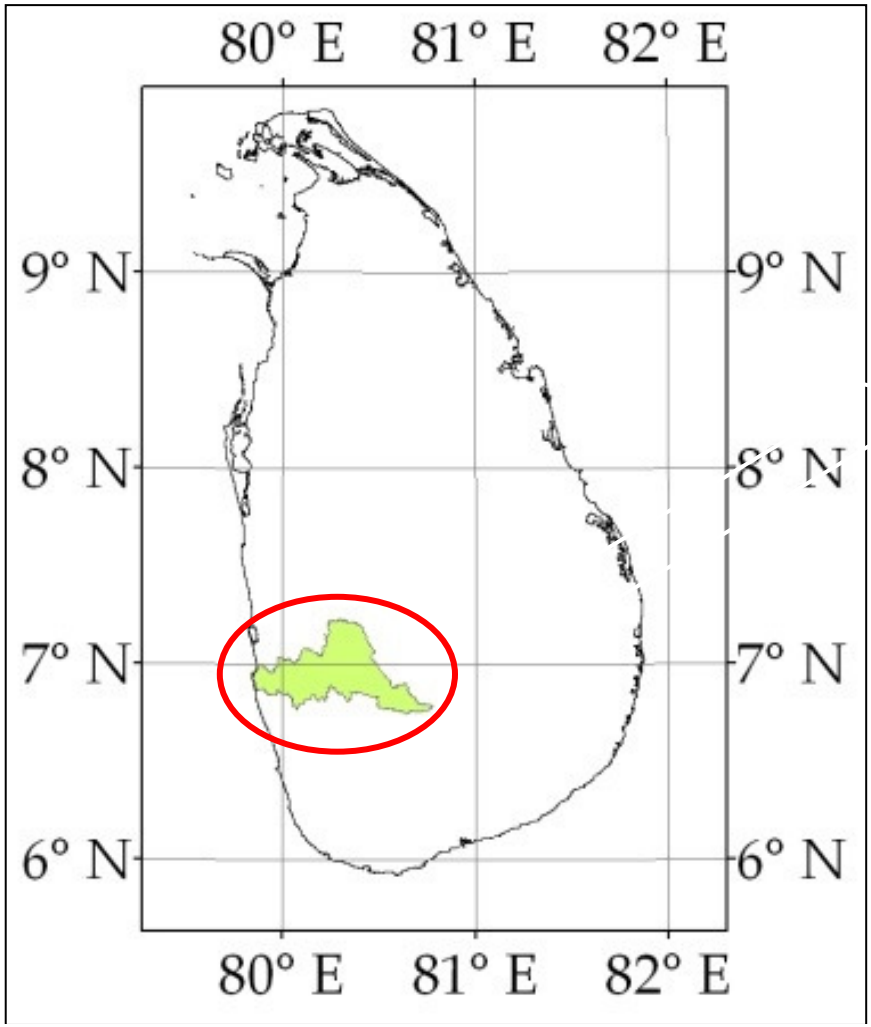
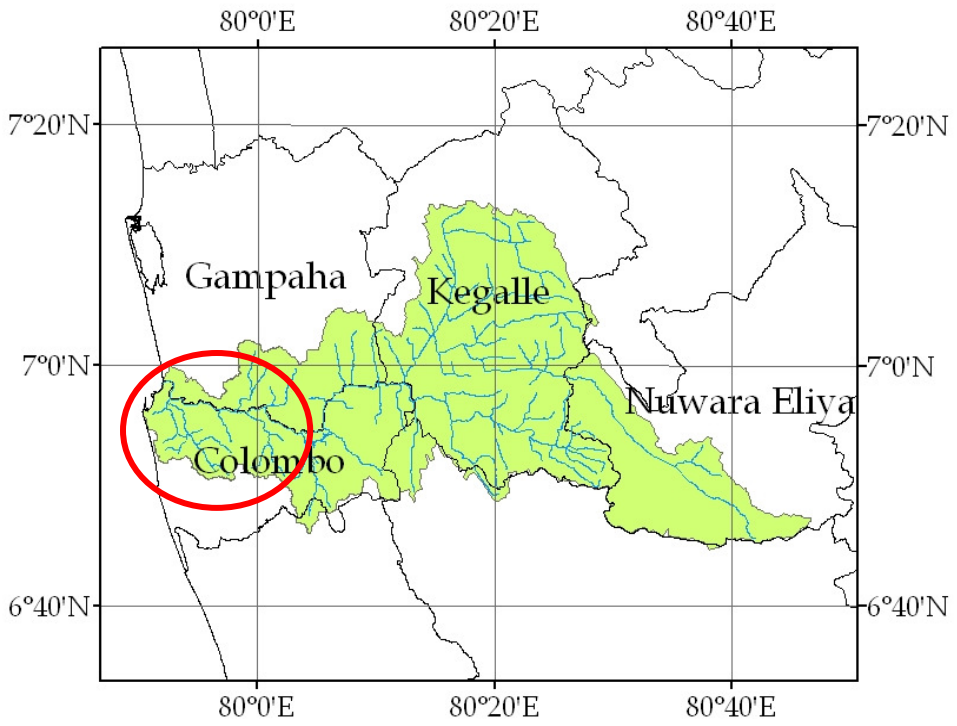
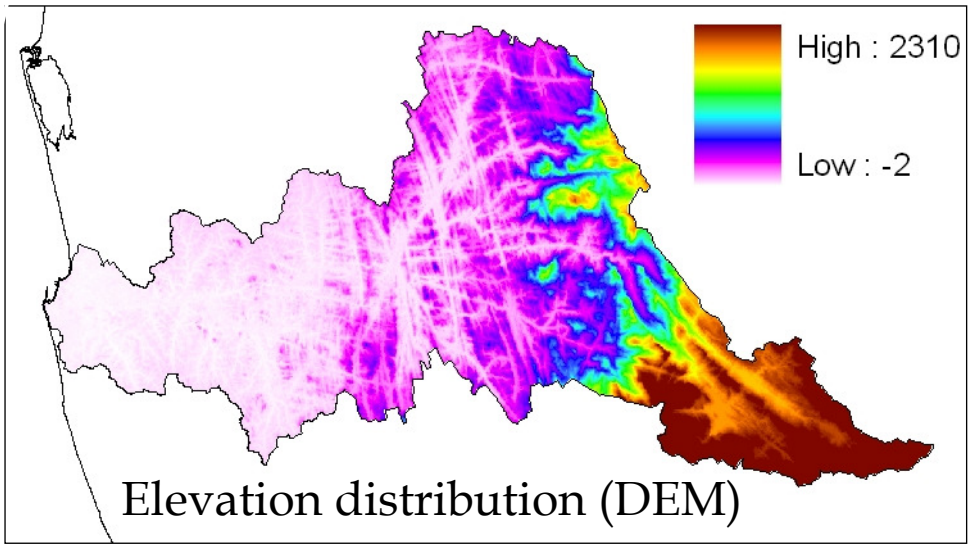
Background

Kelani basin







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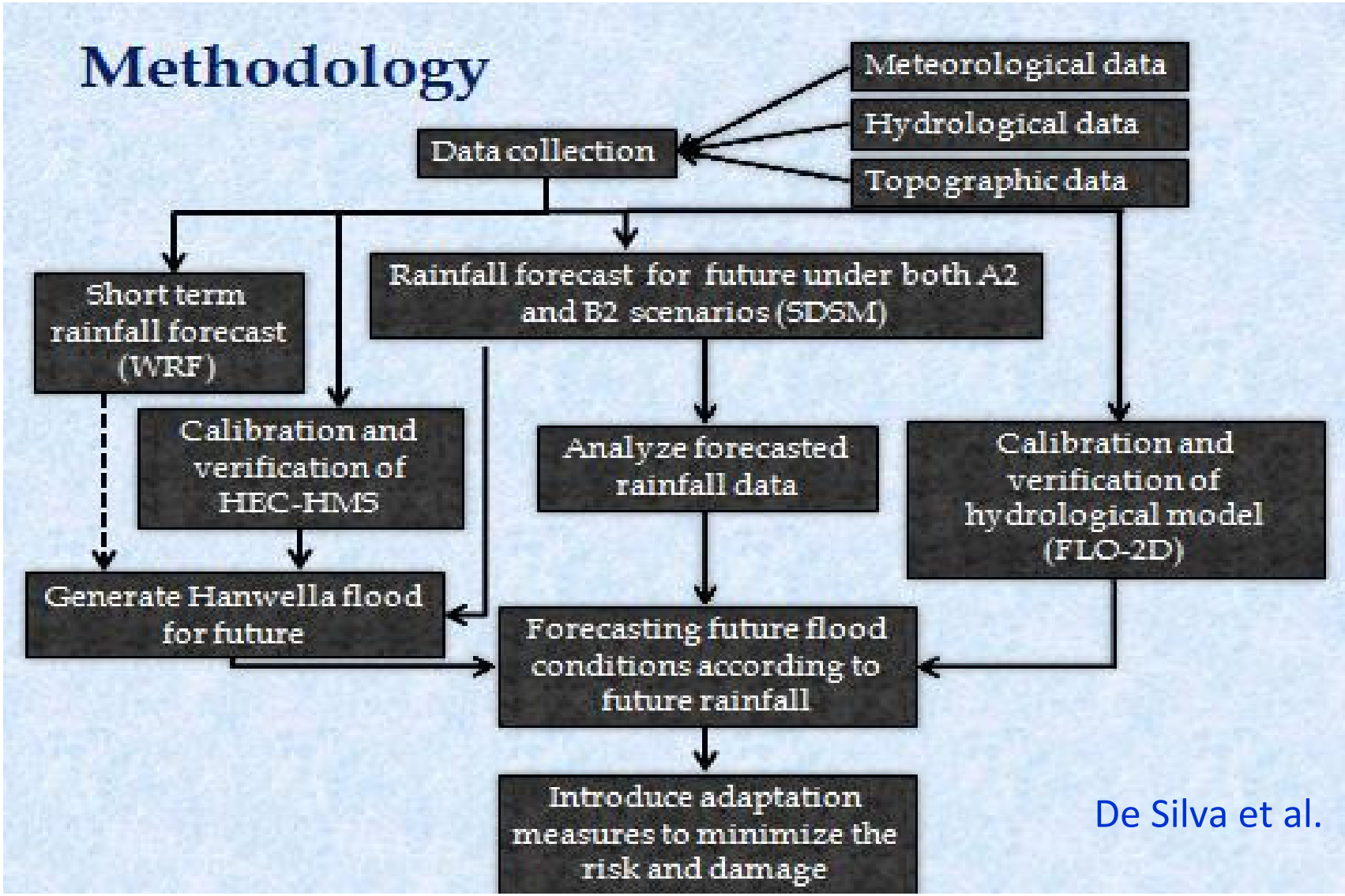
Background

The lower Kelani basin has a plain topography and high population, and it contains the Greater Colombo area of high economic input.

According to past records flood inundation damages in the lower Kelani basin is significant. Rainfalls under climate change scenarios derived by downscaling from GCMs also show an increase trend in extreme rainfall events in the Kelani River basin

Background

Estimation of inundation under climate change scenarios



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Background

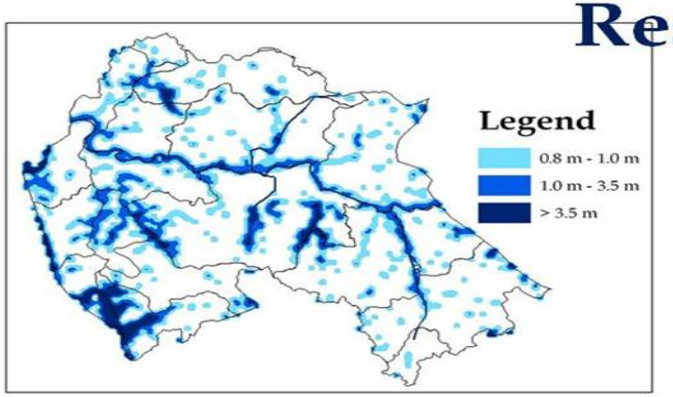
Flood analysis

FLO-2D was used to compute flood inundation at lower basin (below Hanwella). Flow from upper basin was modelled by HEC HMS and was an input at Hanwella for the lower basin.

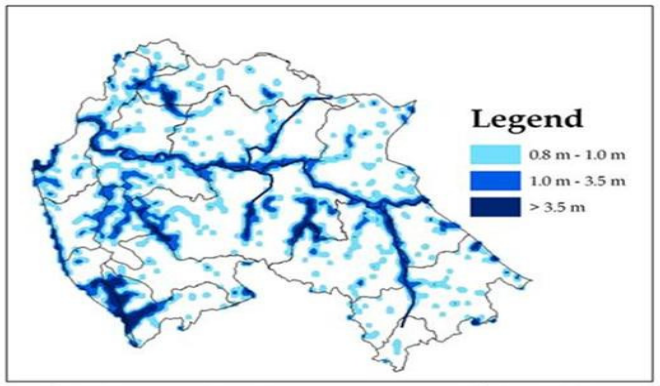
Events selected;

- 50 year return period under A2 & B2 scenarios
- 100 year return period under A2 & B2 scenarios

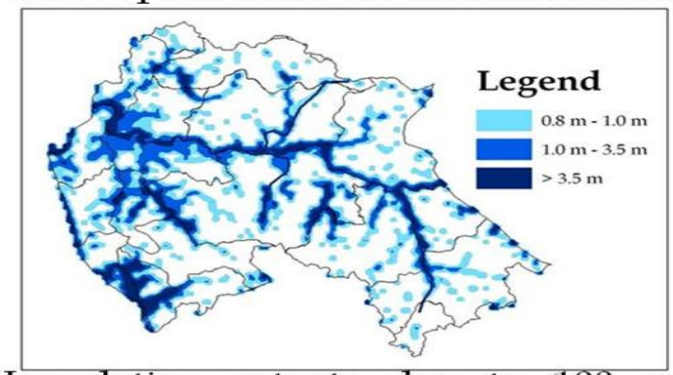
Results



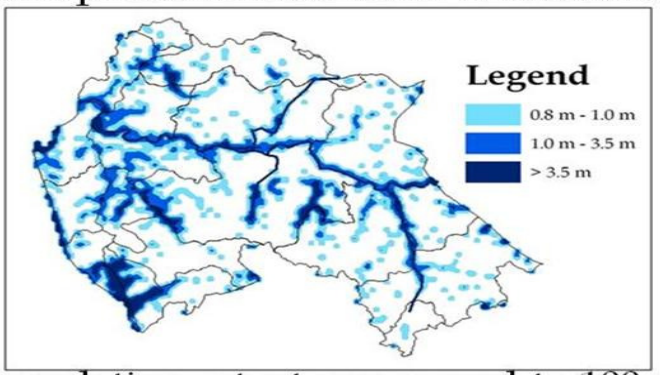
Inundation extents due to 50 year return period rainfall under A2 scenario



Inundation extent correspond to 50 year return period rainfall under B2 scenario



Inundation extents due to 100 year return period rainfall under A2 scenario



Inundation extent correspond to 100 year return period rainfall under B2 scenario

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Outputs from the Proposed Project

- Critical assessment of CC impacts on basin WR using recent advancements of GCM data and downscaling techniques
- Incorporation/mainstreaming of non-structural measures to reduce flood disasters/ damages, e.g. Early Flood Warning Systems.
- Identification and implementation of structural measures to reduce disasters/flood damage.

  e.g: levees, detention reservoirs, transbasin diversion

Activities and Key Leaders and Collaborators

GCM downscaled data by using recent advancement of model outputs and downscaling tools.

- *DIAS, JAXA, AWCI*

Development of topographic, land use, a socio-economic data base of the low lying areas of the basin

GCM downscaled data by using recent advancement of model outputs and downscaling tools.

- *JAXA, Local government and Line agencies of Sri Lanka, UN Organizations*

Refined two-dimensional flood modeling for identification of vulnerable areas and risk factors

- *AWCI, UTokyo, Line Ministry and agencies in SL*

Awareness programmes to stake holders on potential increased risk

- *ADPC, DMC of SL,*

Short term solutions for disaster reduction - Warning systems based on real-time weather predictions and flood modeling

- *JAXA, DIAS, ISPRO(India), Meteorology Dept of SL,ADB*

Long term solutions for disaster reduction-

Introduction of non-structural measures through planning agencies

Planning and implementation of structural measures- alternative proposal and evaluation

- *Line Ministry and Irrigation Dept of SL, River basin Consultant Organizations , JICA,ADB, WB*