Environmental Flow in Water Bodies

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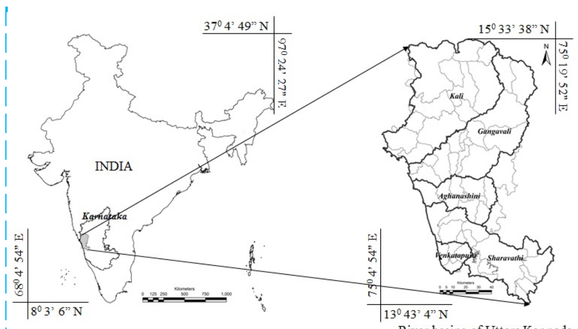
- Environmental flow refers to the quantity, quality, duration and timing of water in the wetlands, lakes, estuaries, streams, rivers.
- Environmental Flow/ Ecological Flow needs to be maintained to sustain biodiversity and livelihood of the people.
- Need to manage watershed to ensure sustained water in streams, lakes and rivers.
- Resource needs to be protected to sustain water for our next generation.

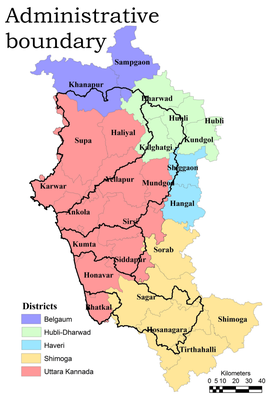
- River catchments in the Central Western Ghats of Karnataka flowing in Uttara kannada district namely Kali, Bedti, Agnashini, Sharavati, Venkarapura.
- The total catchment are is about 13972.84 sq.km, extending from $13^0 43'4"$N to N $15^0 33'38"$ N latitude and from $75^0 4'54"$ E to$75^0 19'52"$ E longitude spread across districts of Shimoga, Uttara Kannada, Haliyal, Dharwad and Belgaum. These sections of the Western Ghats poses rich biodiversity.
- The rainfall varies from as low 750 at the plains where as it reaches over 5000 mm at the Ghats with about 50 to 120 rainy days and 6 to 8 rainy months.
- Forest cover in Uttara Kannada has reduced from 67.73% in 1973 to 32.08% in 2013.
- Streams are perennial in the ghats such as Chandi hole (Yaana), Vibuthi falls, Kattalekan, Torme and many more; where as the streams are intermittent towards upstream of the Linnganamakki reservoir namely Yennehole, Haridravati, Nandi hole etc and upstream of Bedti towards the plain lands.

STUDY AREA

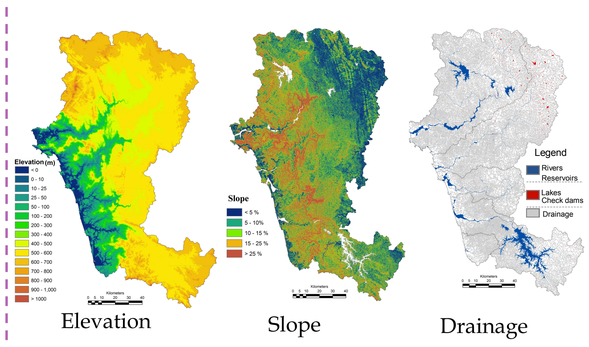


River basins of Uttara Kannada

Administrative boundary

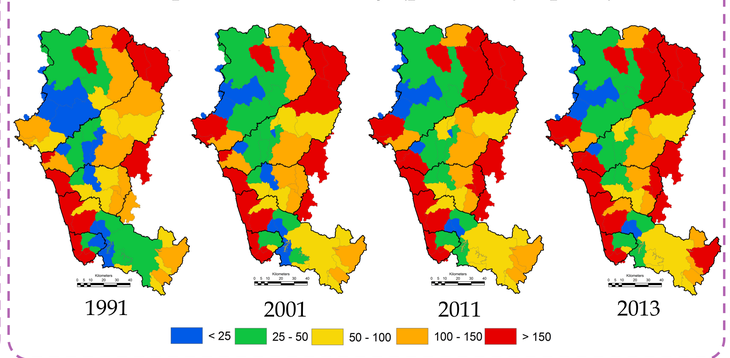


Topography

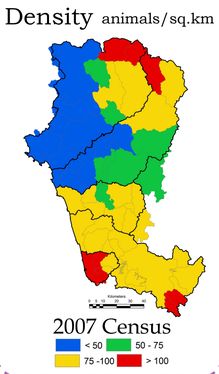


Elevation Slope Drainage

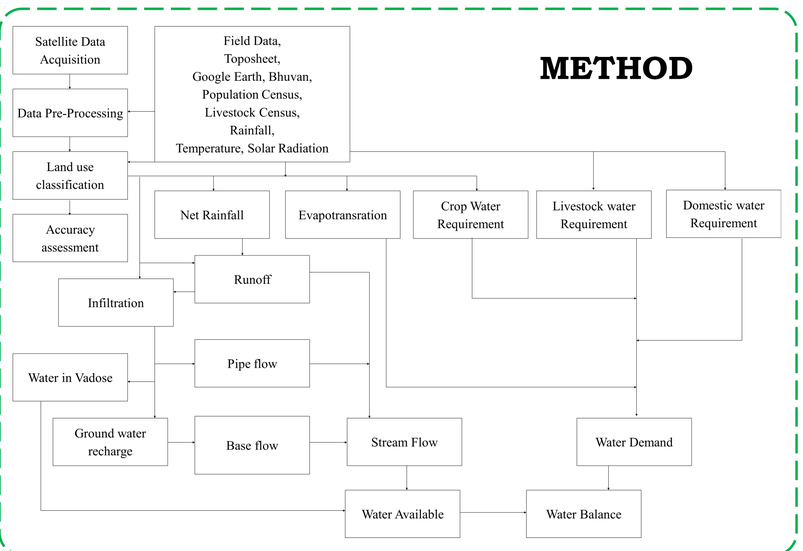
Population Density (persons/sq.km)

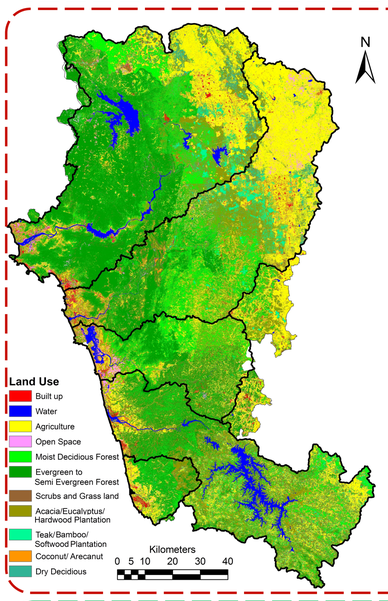


Livestock Density animals/sq.km



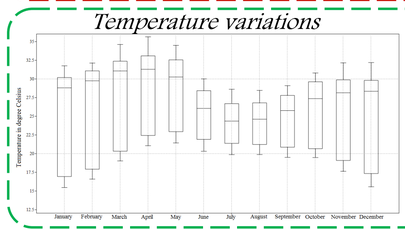
METHOD



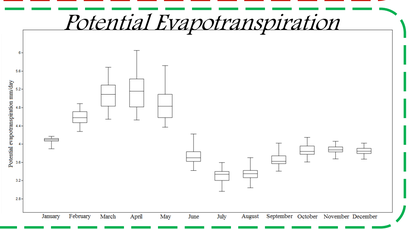


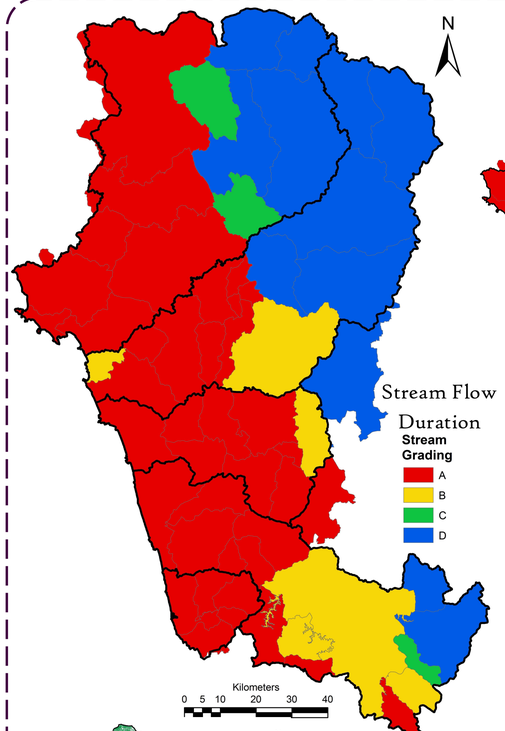
Land Use	Area (Ha)	
Urban	28053	1.90%
Water	45768	3.10%
Agriculture	320100	21.70%
Open lands	30705	2.10%
Moist Deciduous Forest	213254	14.40%
Evergreen to Semi Ever-green forest	422986	28.60%
Scrub/Grassland	64160	4.30%
Acacia/Eucalyptus	191511	13.00%
Teak/Bamboo	68593	4.60%
Coconut/Arecanut	75226	5.10%
Dry Deciduous	16338	1.10%

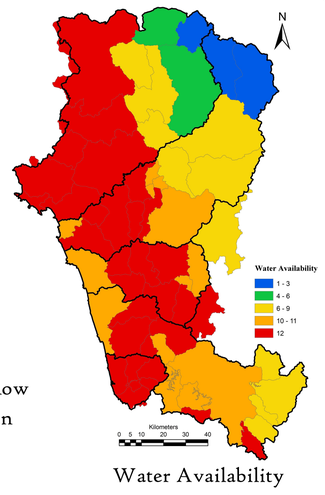
Temperature variations



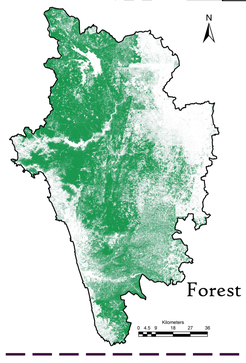
Potential Evapotranspiration



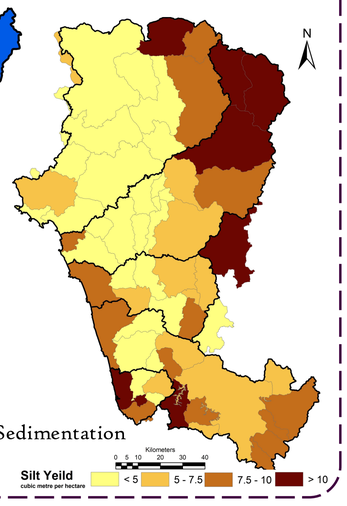




Water Availability in Months



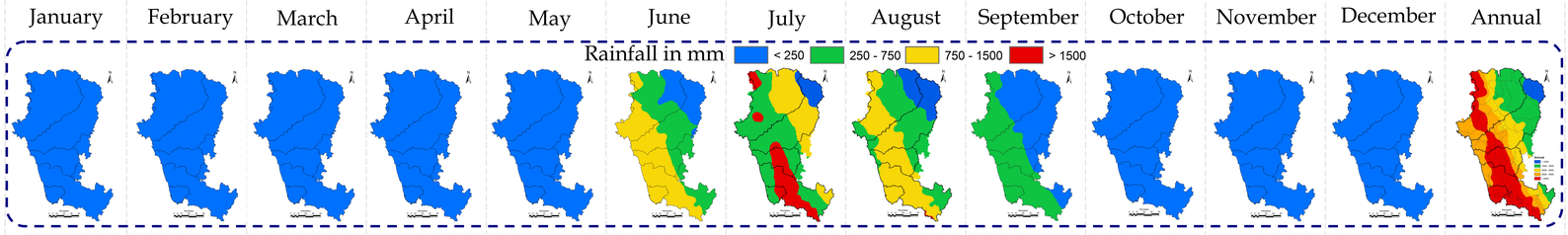
Forest Cover



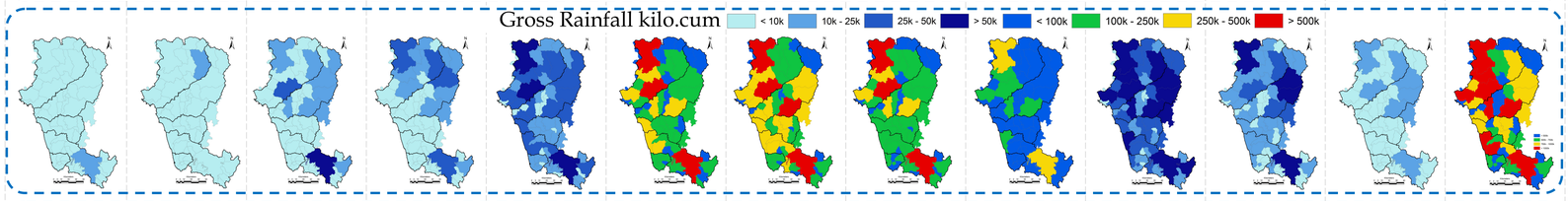
Sedimentation

January	February	March	April	May	June	July	August	September	October	November	December	Annual

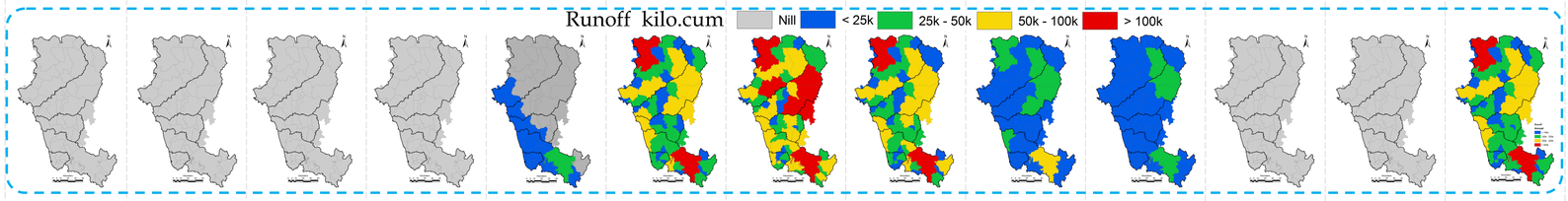
Rainfall in mm — < 250 | 250 - 750 | 750 - 1500 | > 1500



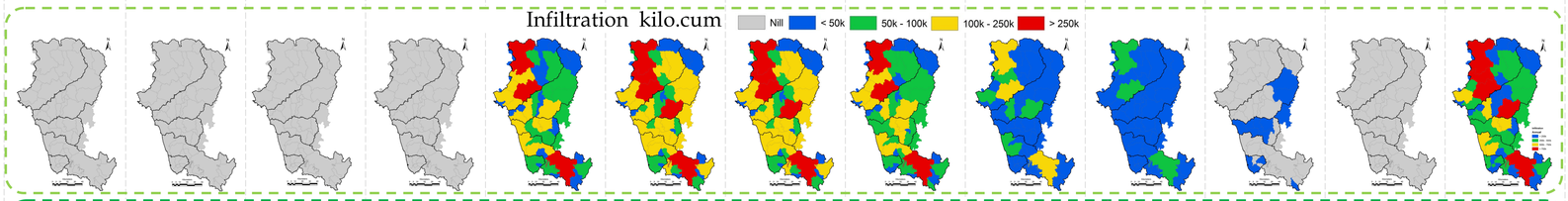
Gross Rainfall kilo.cum — < 10k | 10k - 25k | 25k - 50k | > 50k | < 100k | 100k - 250k | 250k - 500k | > 500k



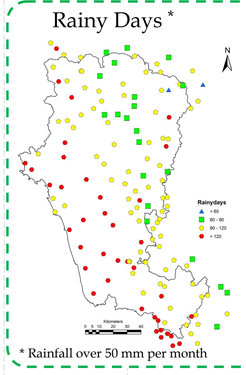
Runoff kilo.cum — Nill | < 25k | 25k - 50k | 50k - 100k | > 100k



Infiltration kilo.cum — Nill | < 50k | 50k - 100k | 100k - 250k | > 250k

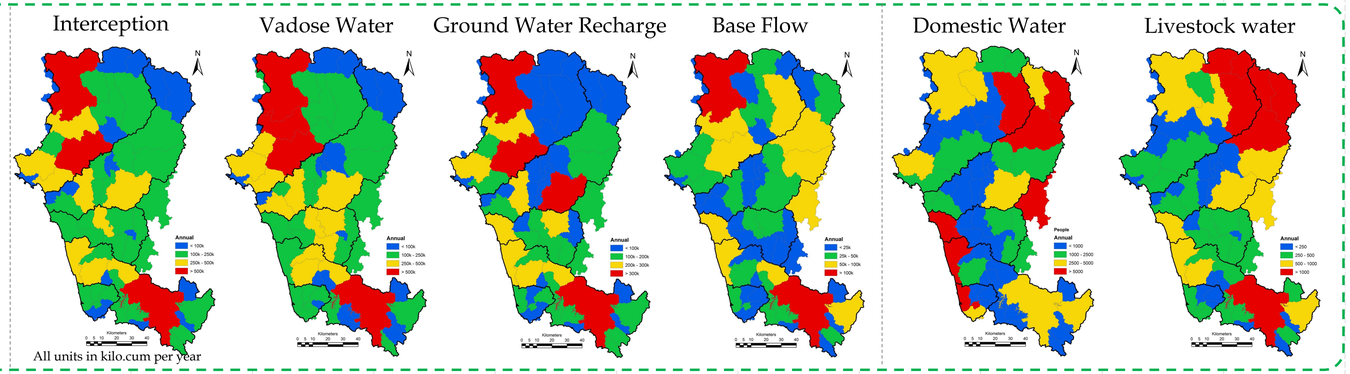


Rainy Days *



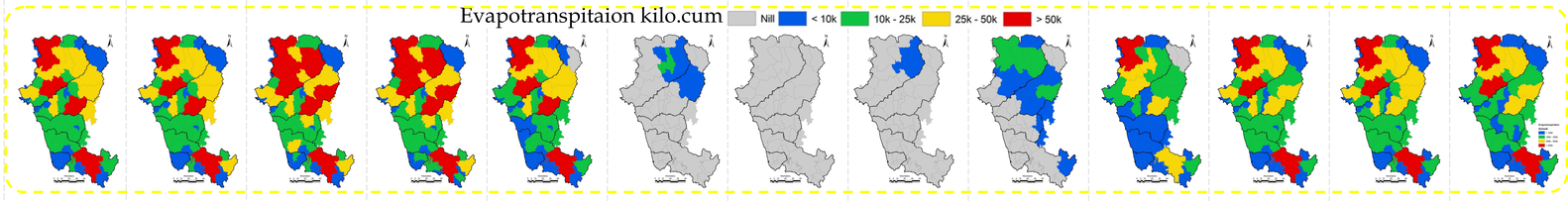
* Rainfall over 50 mm per month

Interception Vadose Water Ground Water Recharge Base Flow Domestic Water Livestock water

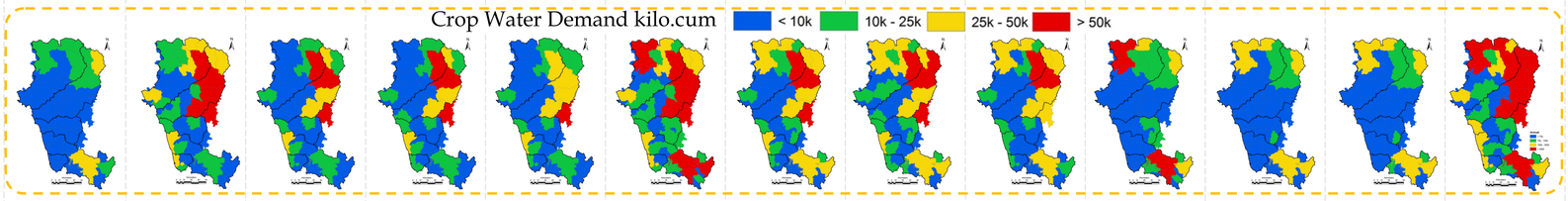


All units in kilo.cum per year

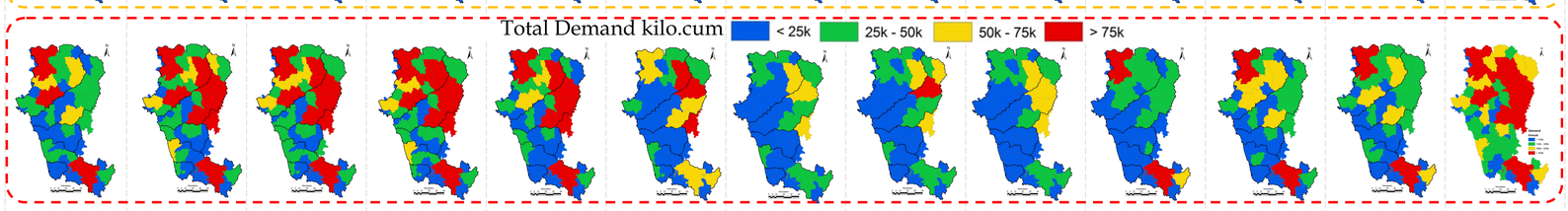
Evapotranspitaion kilo.cum — Nill | < 10k | 10k - 25k | 25k - 50k | > 50k



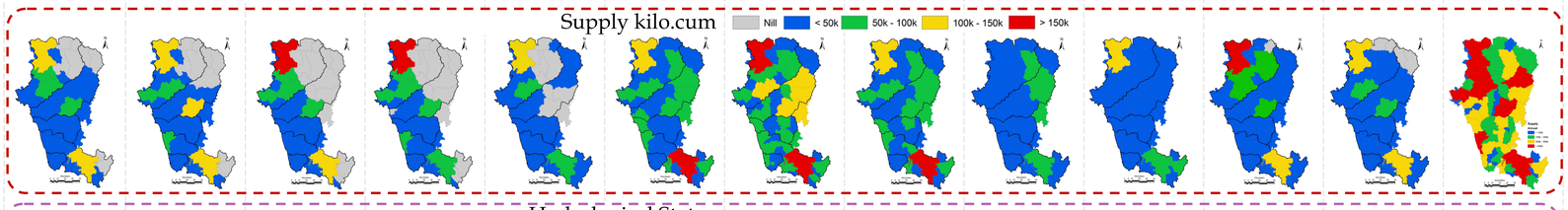
Crop Water Demand kilo.cum — < 10k | 10k - 25k | 25k - 50k | > 50k



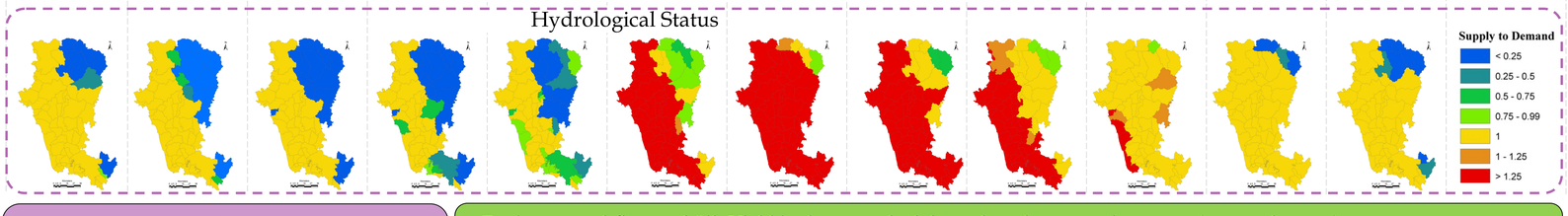
Total Demand kilo.cum — < 25k | 25k - 50k | 50k - 75k | > 75k



Supply kilo.cum — Nill | < 50k | 50k - 100k | 100k - 150k | > 150k



Hydrological Status



Acknowledgement

- Karnataka Bio-Diversity Board.
- Ministry of Environment and Forests
- Department of Science and Technology
- Western Ghats Task Force
- Dedicated to the people of Uttara Kannada and Shimoga

- Environmental flow and Silt Yield in the watershed depend on the vegetation cover (type and extent)
- Streams are perennial (streams carry water for 12 months) if the watershed has predominant land covered by native vegetation.
- Deforestation in some catchments has led to seasonal streams and flooding.

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