

<http://dx.doi.org/10.1016/j.scitotenv.2022.158002>

Science of the Total Environment 851 (2022) 158002

A novel flood risk mapping approach with machine learning considering geomorphic and socio-economic vulnerability dimensions



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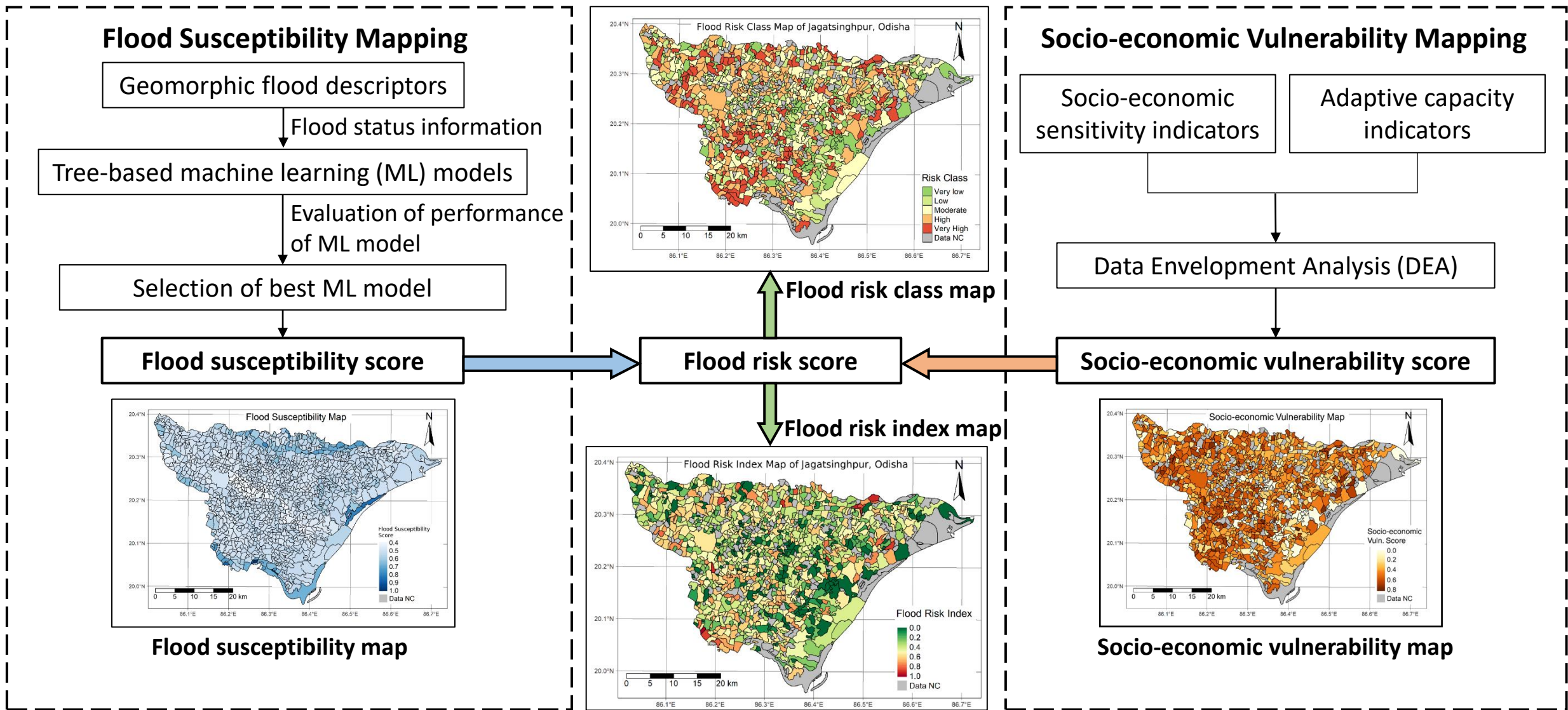
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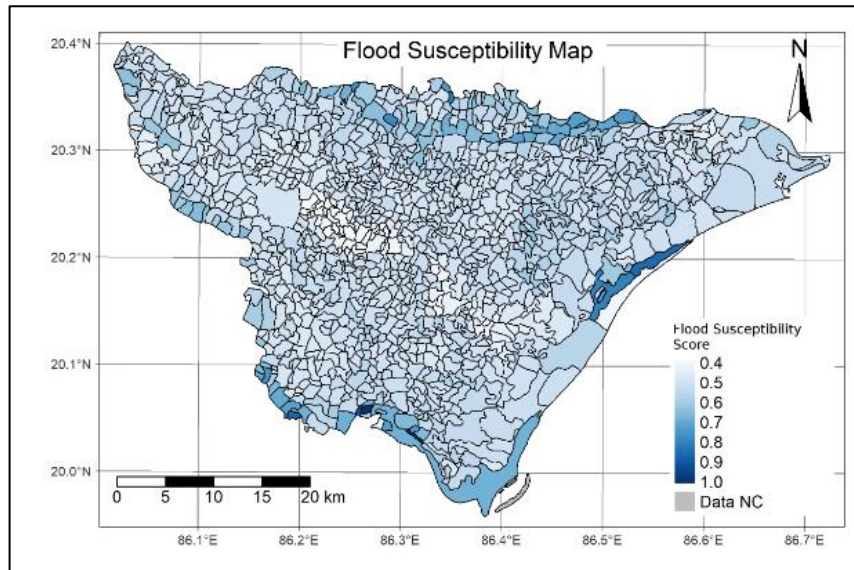
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HIGHLIGHTS

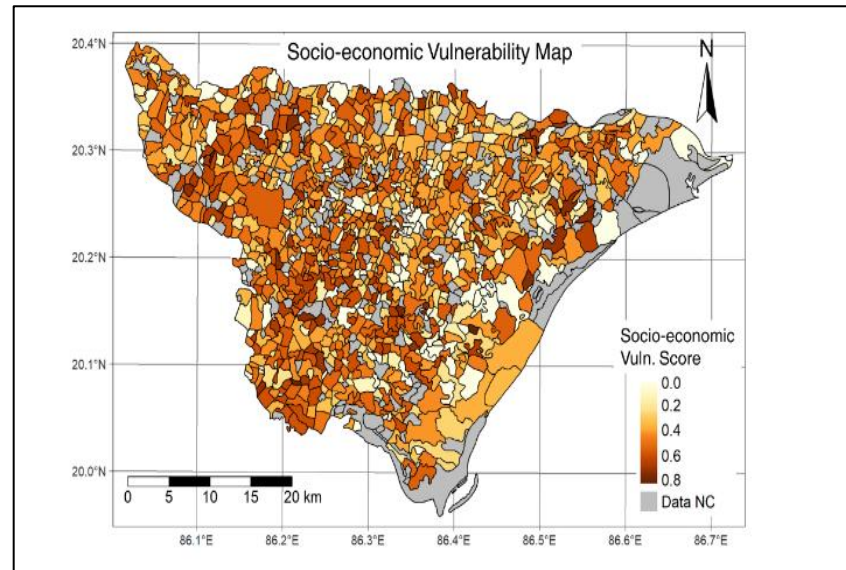
- A novel approach for *flood risk* mapping under resource-constrained scenarios is proposed.
- Tree-based ML models are evaluated to estimate *flood susceptibility* using DTM-derived GFDs.
- An efficient DEA-based approach is employed to map *socio-economic vulnerability*.
- *Flood risk* is derived by combining *flood susceptibility* and *socio-economic vulnerability*.
- A GIS-based *flood risk* map is developed at the finest administrative-level.



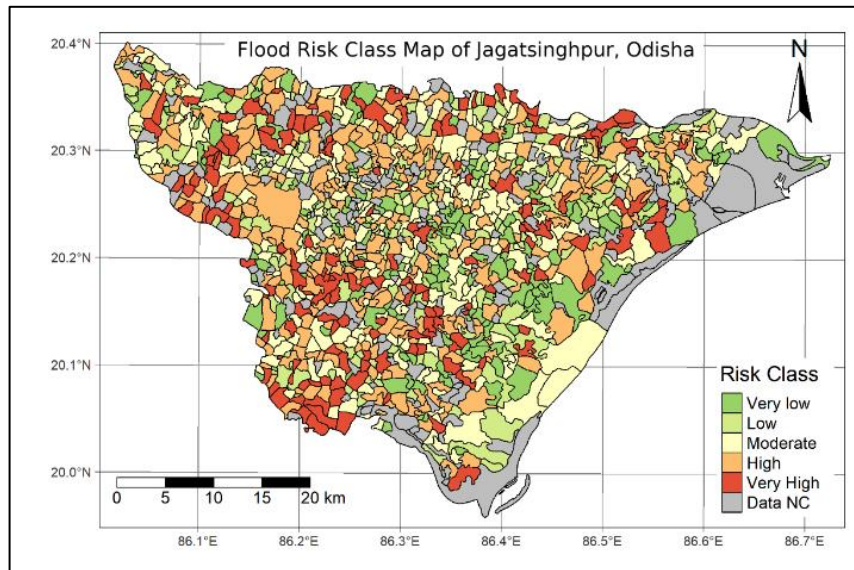
Proposed flood risk mapping framework



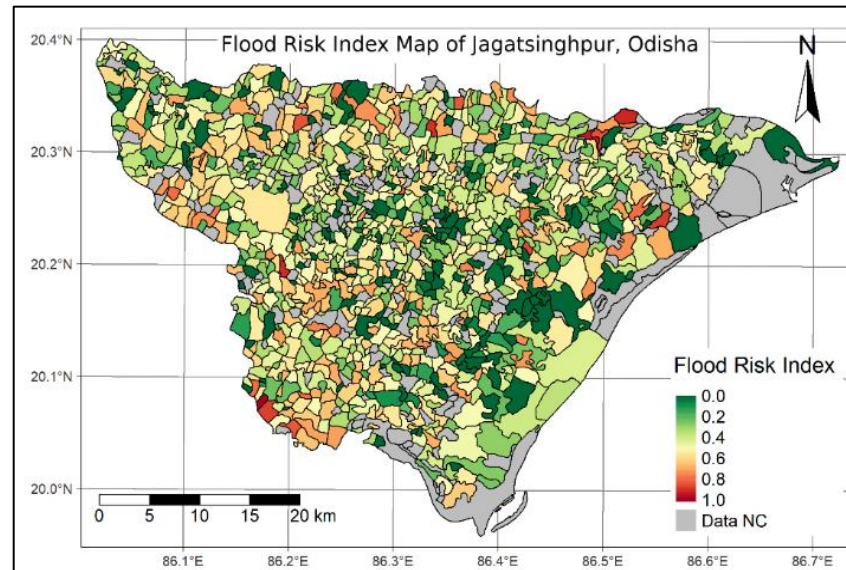
Flood susceptibility map



Socio-economic vulnerability map



Flood risk class map



Flood risk index map

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.scitotenv.2022.158002>.

Acknowledgements:

The work is supported by ISRO-IIT(B)-Space Technology Cell (STC) through sponsored project (RD/0119-ISROC00-001). The authors also thank Director, National Remote Sensing Centre (NRSC), Hyderabad; Department of Water Resources (DoWR), Govt. of Odisha; and Odisha Space Applications Centre (ORSAC), Odisha, for providing relevant data for carrying out the research. The authors are grateful to NRSC for allowing the access to CartoDEM. The support toward computational resources has been provided by IIT Bombay.