

An integrated geospatial and geophysical approach for groundwater management and artificial recharge

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Introduction

Uniqueness of the area

1. Basalt- alluvium couple aquifer
2. Tapi river flowing middle of the study area

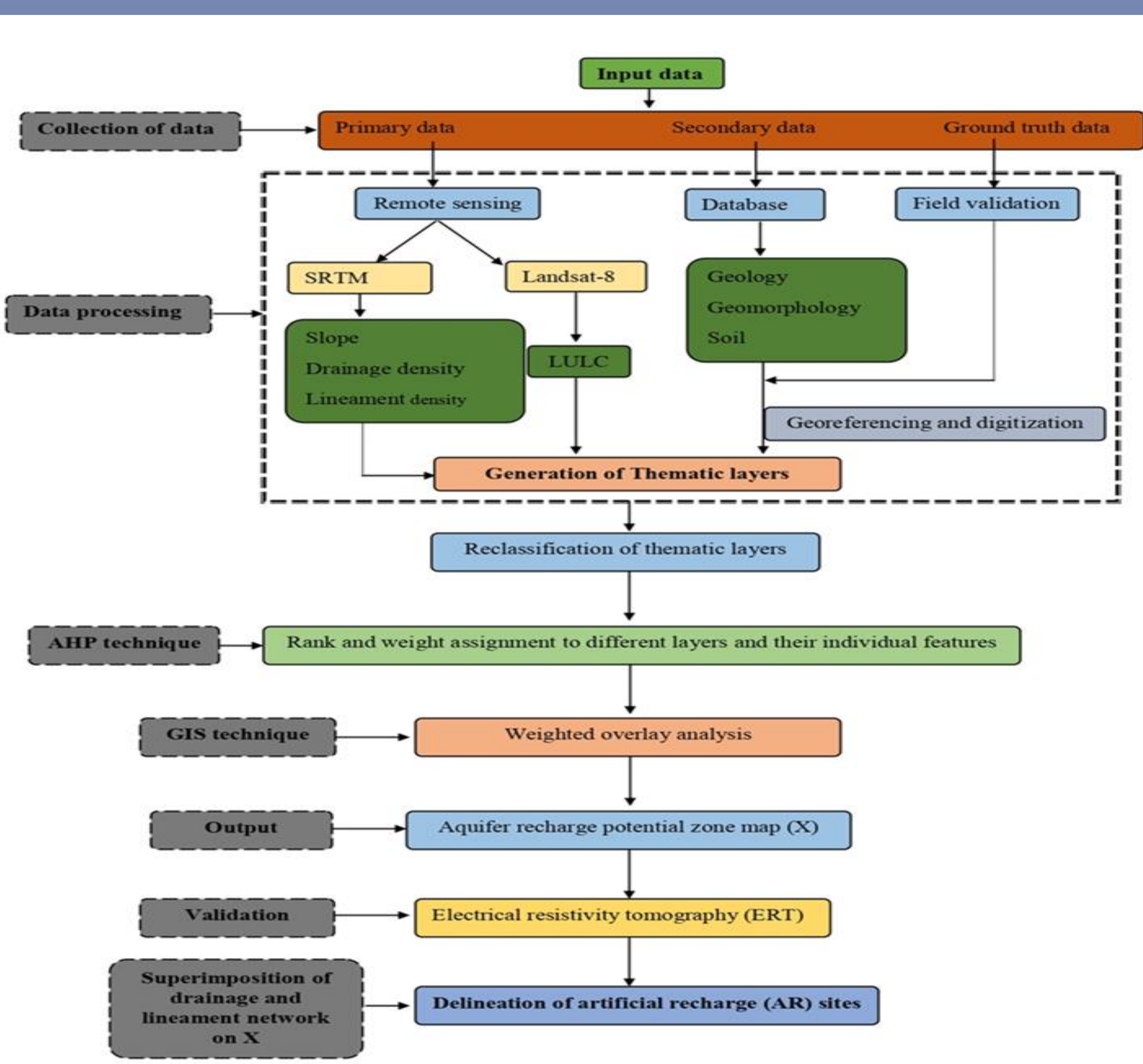
Objectives

- Assessment and conceptualization of the groundwater system in various basaltic formations
- Analyzing various methods of groundwater enhancement under changing climatic conditions with their merits and demerits
- Evolving the most adequate method of MAR in basaltic environment and development of methodologies for effective and optimal recharge sites

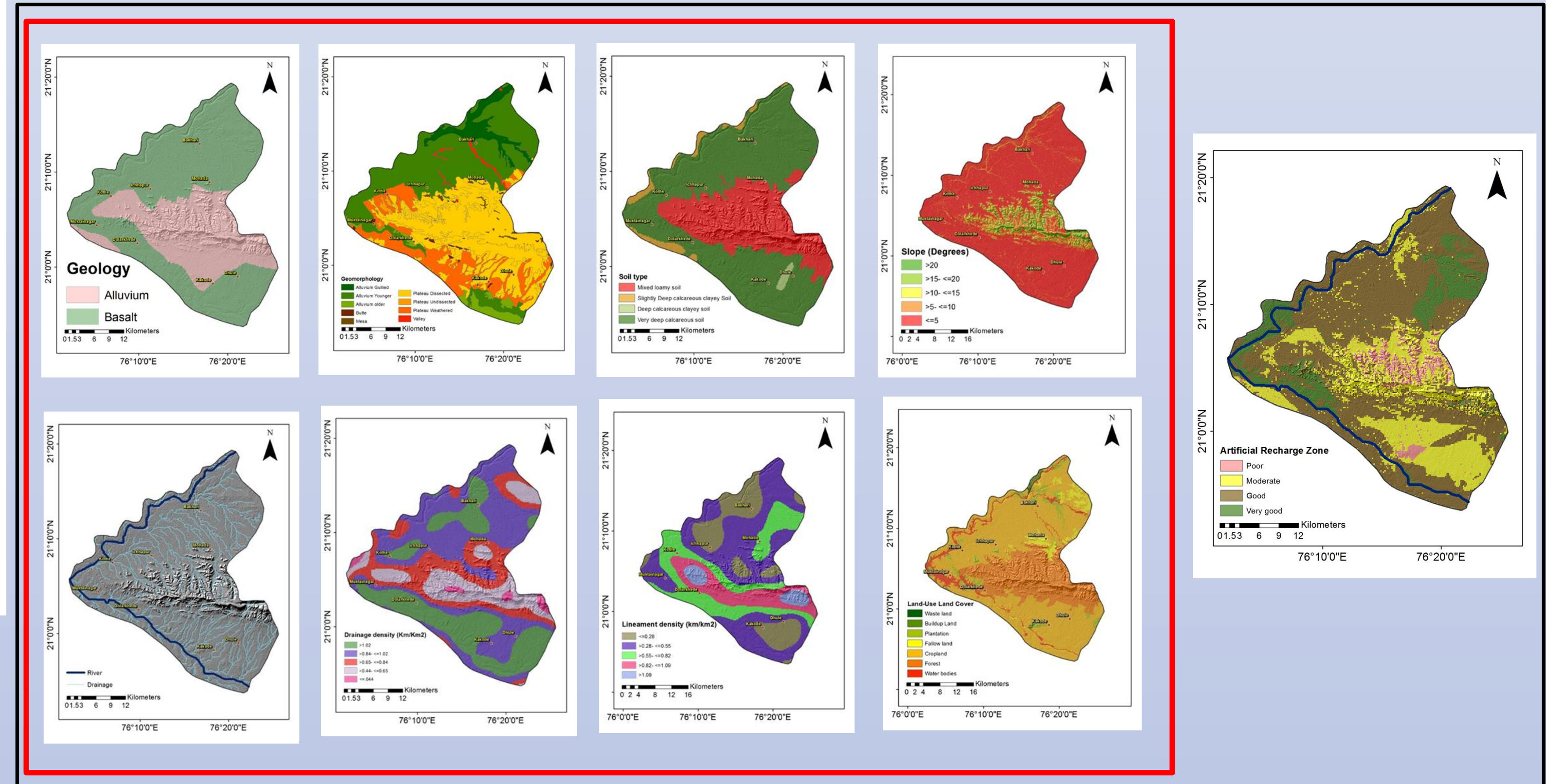
Back ground & Motivation

1. The Orange orchards and Sugarcane Cropping are the main reason for groundwater overexploitation of the Deccan trap region.
2. If a methodology is developed for delineation of basaltic flow aquifers, it will be beneficial for entire region and other LIPs of World.
3. The rainfall in the peninsular region varies from 500 mm to about 4000 mm annually. In spite of that, the groundwater availability in the region in dry season is very low.
4. This entire deccan trap is facing acute shortage of groundwater supply for domestic and agricultural uses.

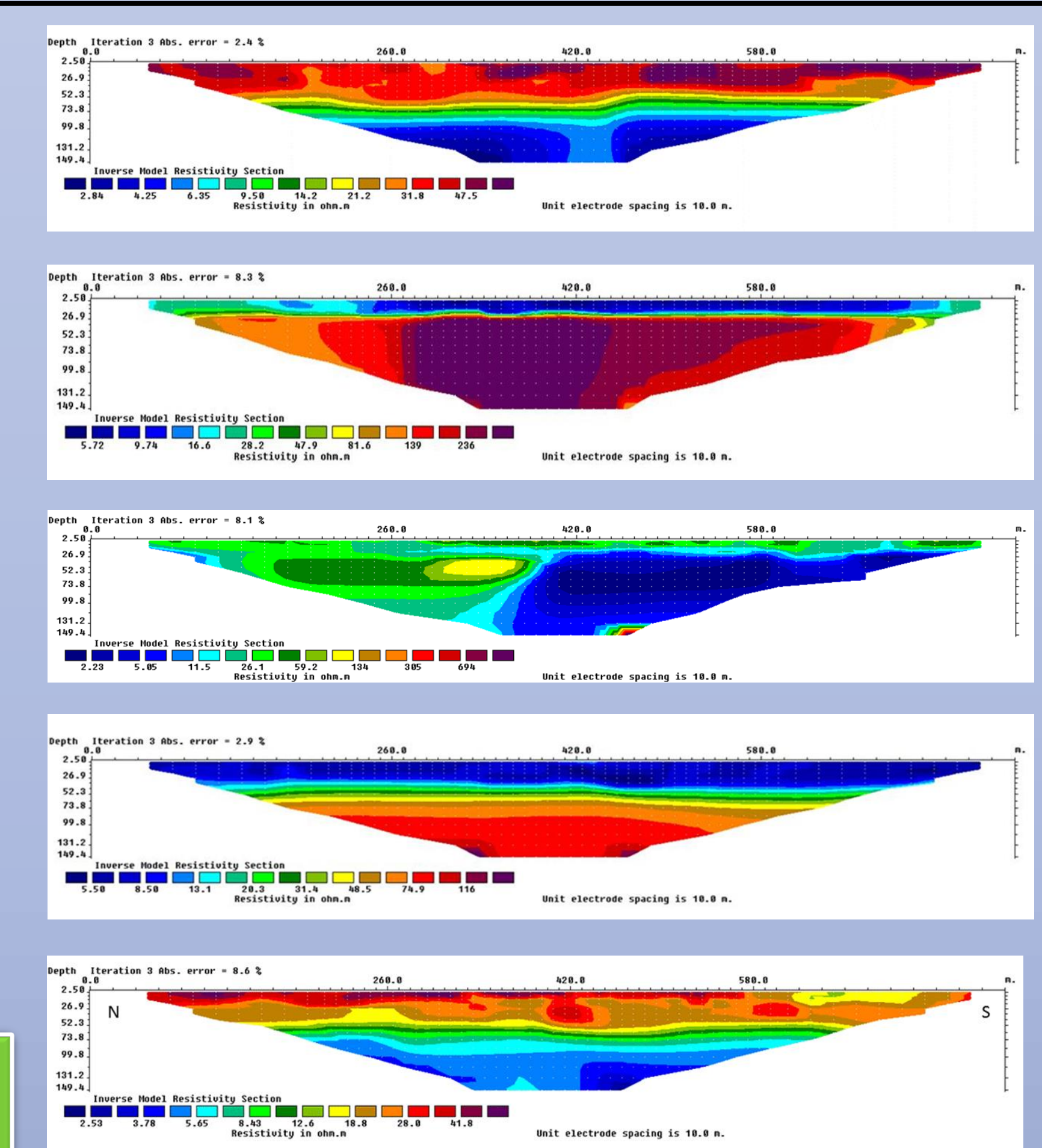
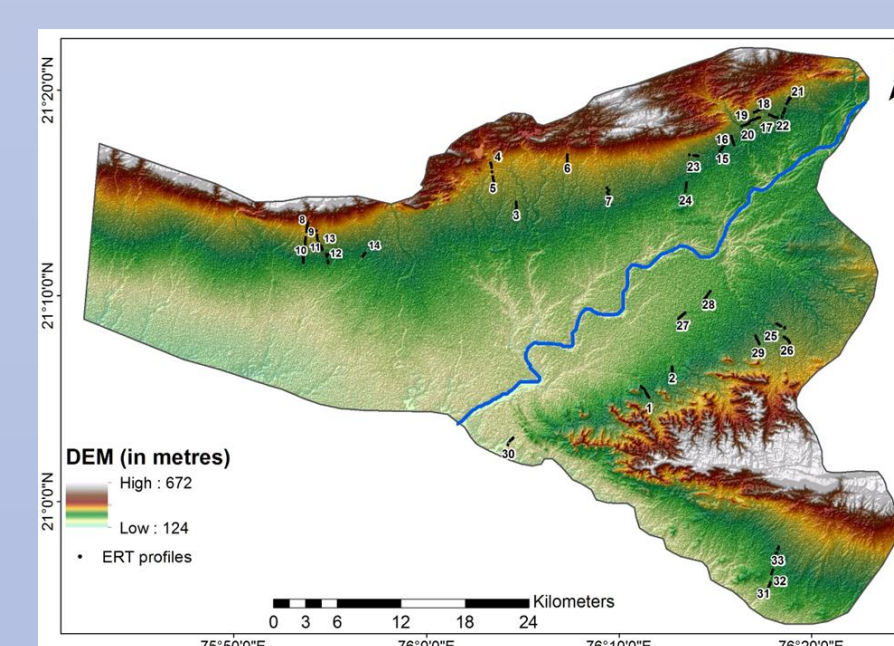
METHODOLOGY AND WORK FLOW



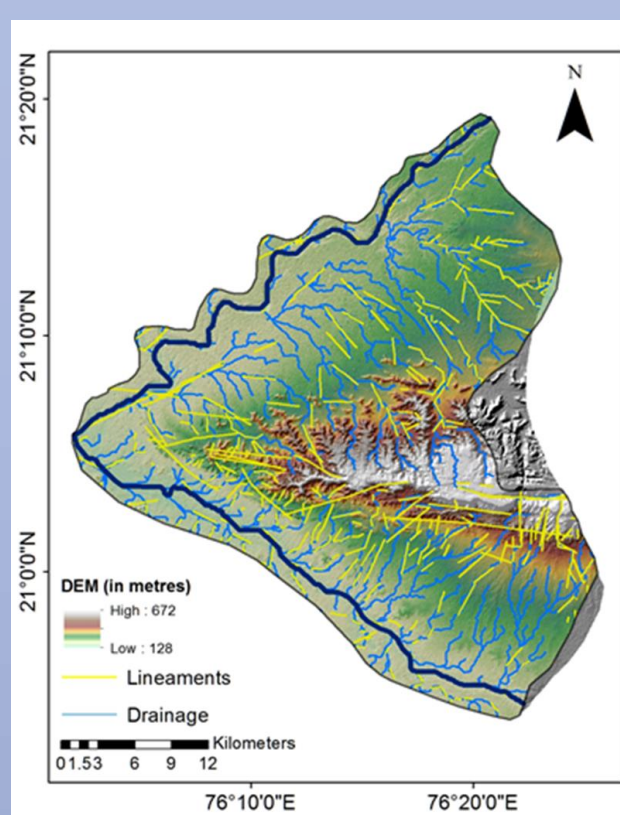
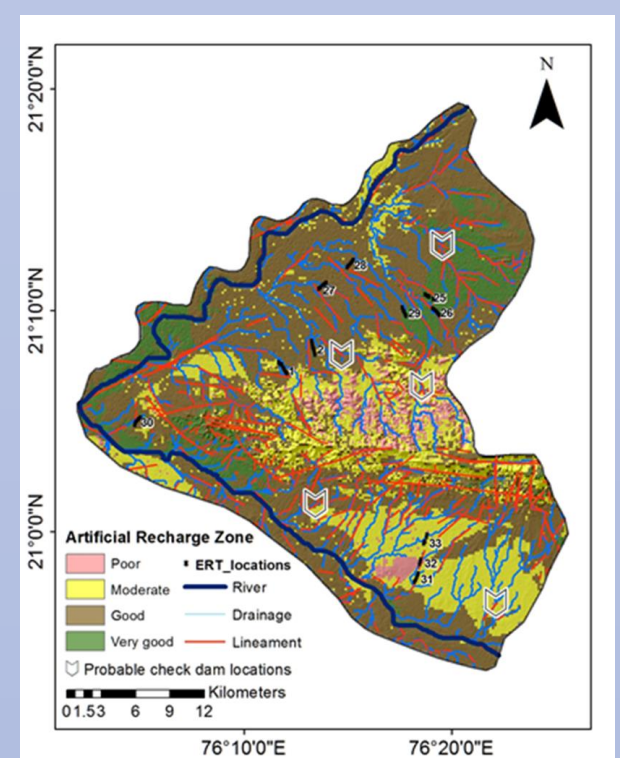
Result and Discussion



Validation



Suggestion



Out comes

- Locations of recharge sites to enhance the aquifer recharge.
- Suggesting most effective MAR structures for use during scarcity period.
- Groundwater protection plans for sustainable uses and prevention of groundwater from over exploration.

Conclusions

Suitable sites for implementation of artificial recharge structures were delineated by superimposing the drainage over the lineament, the locations where lineament lines and drainage lines intersect each other within the favorable recharge zone.

Future work

Establishment methodology for groundwater exploration and management in the basaltic terrain.

References

Somvanshi VK, Arora T, Mondal NC, Nagaiah E, Kumar L, Jalander D, Ahmed S (2017) Geophysical 519 investigation for planning mega recharge scheme of groundwater in Tapi River Basin, Maharashtra, 520 Unpublished Technical Report number NGRI-2017-GW-937

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