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Name of ISRO Centre/Unit

National Remote Sensing Centre, Hyderabad

Title of the research proposal

Big Geospatial data analysis for Climate Change with special emphasis on land use / land cover dynamics in Western Rajasthan.

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Area of Research

Bigdata based assessment of historic environmental parameters / variables and anthropogenic activities which drives the land use / land cover dynamics which in turn affect the climate. Similarly impact assessment of climatic conditions on the land use / land cover dynamics.

Summary of the proposed research and expected deliverables

Geographically, the maximum part of the Western Rajasthan is situated / covered under Thar Desert Area which is also known as semiarid area in climatic terms.It has been observed that due to various anthropogenic activities(mining, agriculture activities, urbanization etc.) for economic development in the region,impacting the land use / land cover over a period of time.Hence, there is as temporal change in the land use / land cover and it has been captured by remote sensing data and other source of data. At the same time natural phenomenon viz.; dust storms, drought, flood, desertification etc. also plays the key role for changes in the land use / land cover of the region over a period of time. Hence, it is very much essential to capture these temporal changes and its impact assessment over climate and reversibly assessment of impact of climate on land use / land cover over a period of time. Which is a very challenging and complex task in nature.

The Bigdata / Big Geospatial data analysis approach would allow to attempt / deal with above mentioned complexity or capture the such temporal behaviour of the regional ecosystem and allow us to visualize the semiarid / desert ecosystem in depth to further formulate the policies addressing the Sustainable Development Goal (SDG) 13 & 15.

Scope of the Work:

- Investigation of the impact of land use / land cover dynamics on climate change and vice versa, over a period of time is highly complex in nature and Bigdata / Big

geospatial data approach would support and can bring out the insights for climate change. Further, it would be helpful for defining the sustainable measures for prevention / exploitation of natural resources in the regions addressing the Sustainable Development Goal (SDG) 13 & 15.

Deliverables:

- Anthropogenic factors driving the temporal land use / land cover changes in the region (Western Rajasthan) viz.; mining & agriculture activities, urbanization, harnessing of renewable energy etc.
- Environmental factors driving the land use / land cover changes in the region (Western Rajasthan) viz.; dust storm, drought, flood, desertification, extreme weather conditions etc.
- Role of preventive measure viz.; afforestation, sand dune stabilization, green area development etc.
- In totality factors affecting the climate and visa-a-vis climate affecting the land use / land cover in the region.
- Policy formulation for sustainable resource management based on Bigdata analysisto support Sustainable Development Goal (SDG) 13 &15in the region(Western Rajasthan).