



First Soil Moisture Forecast in India

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For the first time, IIT Gandhinagar and the India Meteorological Department (IMD), have come out with a country-wide soil moisture forecast at seven and thirty day lead times. The joint collaboration uses a land surface model to forecast soil moisture content.

- The product, termed 'Experimental Forecasts Land Surface Products', is available on the IMD website and has been developed using the hydrological model that takes into consideration soil, vegetation, land use and land cover among other parameters.
- India has been working on its own high-resolution soil database that is essential for soil parameters used in the modelling. However, the database is not available for the entire country currently.

Land Surface Model

- It includes the complex interactions (biophysical, hydrological, and biogeochemical) between the land-surface and the atmosphere.
- The ultimate goal is to integrate such knowledge to improve prediction of the impacts of land-surface processes on regional weather, climate, and hydrology.

Significance of the Exercise

- Soil moisture is crucial for agriculture since **it directly affects crop growth and amount of irrigation** required for the area.
- Timely soil moisture forecasts **will help target interventions**, in terms of seed varieties for **better planning in agriculture**.
- For eg. based on observed conditions at present, Gujarat, parts of Maharashtra, Chhattisgarh, Jharkhand, Tamil Nadu and parts of Andhra Pradesh are deficient in terms of soil moisture which means that if there is not enough rainfall in one or two months, these are regions which will demand heavy irrigation from sources like groundwater or surface water storage (reservoirs).

- Forecasting of soil moisture becomes significant for the rabi season. As per official data, the total area sown under rabi crops is around 625 lakh hectares of which wheat takes up 300 lakh hectares.
- Crucial information needed for agriculture is not revealed only through rainfall data. Even in a normal rainfall, if the temperature is abnormally high, it can rapidly deplete the soil moisture. So essentially soil moisture gives us more information on what is needed for crop growth in different parts of the country.