# Orientation Program on Geospatial Approach for Drought Assessment through Geospatial Drought Assessment Tool (G-DAT)
# Organized by
# Gujarat Institute of Disaster Management
**Date: 31 May, 2022 (Time: 15:00 – 17:10)**

## Concept Note:

Drought is the most complex and least-understood of all-natural hazards. It is broadly defined as a "severe water shortage". Low rainfall and fall in agricultural production have mainly triggered droughts. A droughts impact constitutes losses of life, human suffering, and damage to the economy and environment. Droughts have been a recurring feature of the Indian climate therefore study of historical droughts may help in the delineation of major areas facing drought risk and thereby management plans can be formulated by the government authorities to cope with the disastrous effects of this hazard. The impacts of drought are largely non-structural and spread over a larger geographical area than damage from other natural hazards. The non-structural characteristic of drought impacts has certainly hindered the development of accurate, reliable, and timely estimates of severity and, ultimately, the formulation of drought preparedness plans by most governments. The impacts of drought, like those of other hazards, can be reduced through mitigation and preparedness. Drought preparedness planning should be considered an essential component of integrated water resources management. Increasing society's capacity to cope more effectively with the extremes of climate and water resources variability (i.e., floods and droughts) is a critical aspect of integrated water resources

management. Drought preparedness planning will also provide substantial benefit in preparing for potential changes in climate.

Drought produces a complex web of impacts that spans many sectors of the economy and reaches well beyond the area experiencing physical drought. Impacts are commonly referred to as direct and indirect. Direct impacts include reduced crop, rangeland, and forest productivity, increased fire hazard, reduced water levels, increased livestock and wildlife mortality rates, and damage to wildlife and fish habitat.

The earlier drought declaration practices were Annewadi, Paisewadi and Rainfall deficit based assessment for drought declaration earlier methods were not comprehensive enough; many time became political and administrative clash.

Recently Ministry of Agriculture Cooperation and Farmers Welfare in association with NIDM, NRSC and MNCFC, has released Remote Sensing technology based Drought Manual 2016 for better declaration, Management, Early Warning and Mitigation of Drought. Drought Manual 2016 provided the clear cut Remote Sensing based parameters:

**Rainfall Based:** Rainfall Amount and Deviation, Rainfall Distribution (Dry Spell), Standard Precipitation Index

**Crop Based:** Sowing Progression, Crop Damage/Crop Yield, Moisture Availability (Moisture Adequacy Index, Plant Available Water Content, etc.)

**Satellite Based:** Normalised Difference Vegetation Index**,** Normalised Difference Wetness Index, Vegetation Condition Index, Soil Moisture

**Hydrological Parameters:** Stream Flow, Reservoir level, Ground water level

**Socio-economic parameters:** Availability of Food Fodder& Water, Demand of Work, Migration

Drought declaration have three tier process:

**Tier-I:** M**andatory Indicator:** Rainfall based parameter it is mandatory parameter

**Tier-II: Impact Indicators:** Remote Sensing, Crop Situation, Soil Moisture, Hydrological

**Verification:** Ground Trothing

**Step-I:** If mandatory indicators are satisfying the criterion of the drought, area will be declared in the Trigger-I area

**Step-II:** The state may consider any three of the four types of impact indicators for assessment of drought, the intensity of calamity, and make a judgment

**Step-III:** The state will conduct a sample survey for ground-truthing and finally declare drought through notification mentioned the geographic extent and administrative units.

The declaration of the Kharif drought should not be done later than 30th October and Rabi drought by 31st March.

In the drought Manual 2020 it is clearly mentioned that "the state is advised to undertake capacity building activities from time to time for all the stakeholders with support of national and State Institute." The NDMA guideline has a separate and comprehensive view on capacity building for all stakeholders.

One online platform for Drought Manual implementation has been developed to play an ancillary role for various Govt. Department for timely information and execution as per drought manual mandate. The name of this platform is proposed as Geospatial Drought Assessment Tool (G-DAT). This approach is in lined with the new Drought Manual-2020 to develop a state drought monitoring center (Pg. 21 & Annexure-II of Drought Manual-2020).

The earlier practices of drought declaration were not too technology based and comprehensive. It requires intensive capacity building efforts so that the state employees can be assimilate and orient to their duty and practices in effective Drought Mitigation and Management.

## Objectives:

1. Understanding Basic Concept of Disaster Risk Management & Drought
2. Understanding Drought Manuals
3. Understanding Issues with New Drought Manual and its Implications

## Target Participants:

District Agriculture Officer, Dy. Director Agriculture (Training), Mamlatdar, Dy. Mamlatdar (Rev.), Executive Engineers & Dy. Executive Engineers.

## Methodology:

The training has been designed to be in interactive lecture sessions followed by questionnaire sessions. It will be a fully virtual classroom-based training program.

**Resource Person:** Dr. Shashikant Sharma, Sr. Scientist, SAC, (ISRO), Ahmedabad, Dr. Manoj Lunagariya, Anand Agri. University, Anand and GIDM Experts.

## Expected Outcome:

The participant will aware of the Drought Manual Issue and Implications for their curriculum.

## Participants & Venue:

1. Officers from Agriculture, NWRWS&K, and Revenue Department.
2. GIDM Campus, Gandhinagar