

Invitation to Indian Startups for providing support in the development of various Meteorological Applications and Services

India Meteorological Department (IMD) invites proposals from Indian Startup groups with proven experience, resources, and professional expertise to provide support in the development of various Meteorological Instruments/ Sensors/ Software/ Services. Once the proposals are received, a meeting will be arranged with the short-listed Start-up groups to fine tune the proposal, followed by the signing of MoU.

Background

IMD is the nodal agency of the Government of India, with its Headquarter at New Delhi, under the Union Ministry of Earth Sciences for all aspects related to operational weather and climate services in the country. This includes collection and archival of meteorological data, its utilization in operational weather & climate monitoring and forecasting and generation of various weather and climate services products. IMD has a network of observatories covering the entire landmass of the country and surrounding sea areas from where ground-based, airborne and satellite observations are routinely taken.

IMD has six Regional Meteorological Centres located at Mumbai, Chennai, New Delhi, Kolkata, Nagpur & Guwahati and 25 Meteorological Centres, mostly in the state capitals. Another important office of IMD is the office of Climate Research & Services (CRS), Pune for carrying out many India specific climate related activities like Climate Monitoring & Analysis, Climate Data Management, Climate Research, Seasonal Forecasts etc. It also has different types of operational units such as Forecasting Offices, Agro-meteorological Advisory Service Centres, Flood Meteorological Offices, Meteorological Watch Offices, Aerodrome Meteorological Offices, Aeronautical Meteorological Stations, Area Cyclone Warning Centres and Cyclone Warning Centres. In addition, IMD has specialized Divisions/sub-offices for Upper Air Instruments, Surface Instruments, Aviation, Agro-meteorological, Hydro-meteorological, Cyclone Warning, Climate, Environment Monitoring & Air Quality forecasting, Training, Marine, Positional Astronomy and several other services.

Scope of Work

Targeted research is required to deliver efficient meteorological services to various sectors of socio-economic activities. Start-ups can support in development of met instruments / sensors and software and provide useful outputs for enhancing precipitation forecasting, validation of weather forecasting models, and dissemination of information and products. The support could revolve around following sectors:

- a. Autonomous development of low-cost sensors for Surface/ Upper

- air Meteorological Observation System, Air quality monitoring sensors and Aviation Meteorological Instruments
- b. Development of robust digital technologies for exchange of meteorological data from public and stakeholders to IMD
 - c. Development of ICT for dissemination of weather information to end users
 - d. Precision farming by combining meteorology and data science to develop customized weather services for farmers and agronomists.
 - e. Development of ICT for pulling of information by farmers
 - f. Development of Artificial intelligence and Machine learning - based high resolution Agromet Advisory Services and crop/ livestock specific advisory generation
 - g. Use of Artificial intelligence and Machine learning for Automation and Dissemination of Nowcast (forecast up to 3-6 hours)
 - h. Development of Decision Support System in weather forecasting
 - i. Sectoral Applications: Development of user friendly data and production of application software for weather and climate application in different sectors viz., Urban, Power & energy, Hydrology, Health, Agriculture and Transport (Aviation, Marine, Surface transport (Road, Rail)), Tourism and hospitality sector, Retail sector and Industrial workplace.
 - j. Development of tools for low cost user friendly weather forecast & warning dissemination.
 - k. The Internet of Things (IoT) application in weather and climate services.
 - l. Extension of Extreme Weather monitoring and forecast services of IMD to different users including general public, stakeholders and disaster managers for DRR and Natural resource management.
 - m. Application of air quality observations and forecast for different sectors, especially for health sector
 - n. Big data analysis & Info graphics: Development of new observed & forecast products using large data available in IMD and with data analytics & info graphics.

Responsibilities

Responsibilities would be shared broadly as per the following:

IMD's responsibilities:

1. To provide data (free of cost)
2. To provide working space as per requirement
3. To provide scientific knowledge and capacity development support
4. Minimum financial support at initial stage

Start-ups responsibilities:

1. Development of sensors / instruments
2. Development of Models/software/application tools for various meteorological applications as mentioned above.

3. Development of AI/ML applications
4. Development of warning dissemination tools

Submission Guidelines

Please submit the proposal, as per the enclosed Annexure.
 Email for submission of the Proposals: **plandgm@gmail.com**
 Last date of submission: 31 May, 2023

In case of any queries, please contact:

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Note: IMD reserves the right to cancel this invitation and/or invite afresh with or without amendments, without liability or any obligation for such request for proposals and without assigning any reason. Information provided at this stage is indicative and IMD reserves the right to amend/add further details in this document.

Annexure

FORMAT FOR THE PROPOSAL

(Please attach separate sheets wherever necessary)

S.No.	Description	Response
1.	Name, full postal address, Email ID and website of the Startup (if available)	
2.	Contact Person Details: a. Name: b. Mobile No.: c. Email ID:	
3.	Details of Professionals to be engaged in the assignment	
4.	Infrastructure & Equipment available	

5.	Technical competence and research background	
6.	Name of activities proposed to be executed (Please select from Scope of Work)	
7.	Methodology to be adopted for execution of the activity	
8.	Timeline proposed	
9.	Type of support expected from IMD	
10.	Any other information/suggestions	