

District-level Early Warning Systems for Floods and Cyclones Operational Across Vulnerable Districts: Dr. Jitendra Singh in Lok Sabha

Technology-Driven Early Warning Systems Strengthening Disaster Preparedness, says Dr Jitendra Singh in Lok Sabha

Flood Watch India App Provides Real-Time Alerts from 200 Forecasting Stations: Dr Jitendra Singh

Government Enhancing Public Awareness and Local Response to Early Weather Warnings, says Dr Jitendra Singh

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Union Minister of State (Independent Charge) for Science & Technology and Earth Sciences, MoS PMO, Personnel, Public Grievances, Pensions, Atomic Energy and Space, Dr. Jitendra Singh today updated Lok Sabha about district-level early warning systems for floods and cyclones are operational across vulnerable districts of the country, enabling timely alerts and improved disaster preparedness.

The Minister was replying to a question raised by Rajiv Pratap Rudy, who sought to know whether district-level early warning systems for floods and cyclones have been established in vulnerable districts of the country and the steps taken by the Government to strengthen local-level dissemination of such warnings.

Dr. Jitendra Singh said that the India Meteorological Department (IMD) prepares and updates district-wise early warnings four times a day, with forecasts valid for up to seven days, particularly for heavy rainfall and cyclone-related events. These warnings are disseminated through multiple communication channels including Common Alerting Protocol (CAP), mobile applications, official websites, social media platforms and messaging services to ensure timely access for authorities and the public.

The Minister said that real-time weather warnings and graphical products generated by IMD support continuous monitoring of weather systems, helping disaster management authorities take necessary preparedness and mitigation measures in vulnerable districts.

He further informed that the Central Water Commission (CWC) is the nodal organisation for flood forecasting and early flood warnings in the country. At present, flood forecasts are issued at 350 forecasting stations, including 150 inflow forecast stations on major dams and barrages and 200 level forecast stations on major rivers, established in consultation with States and Union Territories.

To enhance preparedness, the CWC has developed basin-wise flood forecasting models based on rainfall-runoff mathematical modelling, enabling seven-day advance advisory forecasts, in addition to short-range flood forecasts with response times of up to 24 hours. These forecasts provide additional lead time to local authorities for planning evacuation and other preventive measures.

Dr. Jitendra Singh also highlighted the web-based “C-Flood” platform, which provides two-day advance inundation forecasts up to the village level through detailed inundation maps and water-level predictions. The platform integrates advanced two-dimensional hydrodynamic modelling with satellite-based datasets and ground-based hydrological observations to improve forecasting accuracy.

The C-Flood platform currently covers the Godavari, Tapi and Mahanadi River basins in its initial phase and provides colour-coded flood alerts based on inundation depth, including yellow, orange and red alerts to indicate increasing severity of flooding.

The Minister also referred to the “Flood Watch India” mobile application, launched by the CWC in August 2023, which provides flood forecasting information at 200 stations, flood monitoring data at over 500 stations and reservoir storage status of 150 major reservoirs across the country. The application provides timely information to both disaster management authorities and the general public for preventive action.

Regarding certain flood-prone regions, Dr. Jitendra Singh said that no major deficiencies have been observed in generating district-wise heavy rainfall warnings for States such as Punjab, West Bengal, and Bihar. IMD continues to provide timely rainfall observations and Quantitative Precipitation Forecasts (QPF) to the Central Water Commission to support flood forecasting in relevant catchment areas.

In his reply, the Minister stated that India does not lack end-to-end connectivity for the dissemination of cyclone warnings. IMD utilises a wide range of communication channels including official websites, mobile applications, SMS alerts, social media platforms, press releases, and media briefings to reach disaster managers, media organisations and the general public.

Special communication arrangements are also in place for fishermen. Weather warnings are broadcast through All India Radio, while alerts are sent to fishermen through SMS and through the NAVIC satellite navigation system via the Indian National Centre for Ocean Information Services (INCOIS) for those operating in deep sea areas.

Dr. Jitendra Singh added that State Disaster Management Authorities (SDMAs) and State Emergency Operation Centres (SEOCs) further disseminate warnings to vulnerable communities through their state-level disaster warning communication networks, including local alert systems.

The Minister highlighted that efforts are also being made to strengthen last-mile warning dissemination, including improving mobile and digital connectivity in vulnerable areas, installing local siren systems, enhancing satellite communication support for fishermen, and promoting public awareness on disaster preparedness and response.

He further informed that financial resources for strengthening early warning dissemination and response capacity at the state level are available through the State Disaster Response Fund (SDRF) and the State Disaster Mitigation Fund (SDMF). Additional financial assistance can also be considered under the National Disaster Response Fund (NDRF) and National Disaster Mitigation Fund (NDMF) as per the prescribed guidelines.





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