FLOOD WARNING SYSTEM FOR MUMBAI "IFLOWS-MUMBAI" TO BE LAUNCHED ON JUNE 12, 2020

Relevant for: Environment | Topic: Disaster and disaster management

Extreme precipitation events are on the rise in India driven by warming temperatures and changes in the monsoon due to climate change. **The capital of the state of Maharashtra, Mumbai,** a megapolis and the financial capital of India has been experiencing floods with increased periodicity and recent flood in 29 August 2017, brought the city to a standstill. The flood during 26th July 2005, is probably etched in the memory of every Mumbai citizen, when the city received a rainfall of 94cm, a 100 year high in a span of 24 hours paralyzing the city completely. As a preparedness for floods before they occur, people to be warned so that they can be prepared in advance for flooding conditions.

In a bid to aid in the mitigation activities of the flood prone city, Municipal Corporation of Greater Mumbai, Govt of Maharashtra approached the Ministry of Earth Sciences (MoES) to develop an **Integrated Flood Warning System for Mumbai** referred to as, **IFLOWS-Mumbai.** MoES initiated the development of **IFLOWS-Mumbai** in July 2019 using the in-house expertise available within the Ministry of Earth Sciences in close coordination with Municipal Corporation of Greater Mumbai. IFLOWS-Mumbai is developed as a state of art Integrated Flood Warning system for Mumbai to enhance the resilience of the city of Mumbai by providing early warning for flooding specially during high rainfall events and cyclones.

I-FLOWS is built on a modular structure and comprises of seven modules, namely Data Assimilation, Flood, Inundation, Vulnerability, Risk, Dissemination Module and Decision Support System. The system incorporates weather models from National Centre for medium Range Weather Forecasting (NCMRWF), India Meteorological Department (IMD), field data from the rain gauge network stations setup by Indian Institute of Tropical Meteorology (IITM),Municipal Corporation of Greater Mumbai (MCGM) and IMD, thematic layers on land use, infrastructure etc provided by MCGM. Based on inputs from weather models, Hydrologic models are used to transform rainfall into runoff and provides inflow inputs into the riversystems. Hydraulic models are used to solve equations of fluid motion to replicate the movement of water to assess flooding in the study area.   Since, Mumbai is an island city with its connectivity to sea, hydrodynamic models and storm surge model are used to calculate the tide and storm surge impacts on the city. The system has provisions to capture the urban drainage within the city and predict the areas of flooding, which will be incorporated in the final system. The data on river bathymetry was collected in all rivers namely Mithi, Dahisar, Oshiwara, Poisar, Ulhas, lakes and creeks by NCCR in association with MCGM and IMD, Mumbai. The land topography, land use, infrastructure, population etc., was provided by MCGM and it was integrated into a Decision Support System to accurately estimate flood levels at ward level using thematic layers in GIS. A web GIS based decision supports system is build to calculate the vulnerability and risk of elements exposed to flood.

The Flood Warning System will be formally launched jointly by Honorable Shri Uddhavji Balasaheb Thackeray Hon Chief Minister, Government of Maharashtra and Dr Harsh Vardhan,

Hon Union Minister for Health & Family Welfare, Science & Technology, Earth Sciences, Govt of India on 12th June 2020 at Mumbai at 1230 hours.

NB/KGS/(MoES-IMD release)

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