

**MINUTES OF REVIEW MEETING ON DEVELOPMENT OF “WEB-DCRA & DSS TOOL FOR CYCLONE & ASSOCIATED IMPACTS” UNDER NCRMP (PH. II) AND STANDARD OPERATING PROCEDURE (SOP) HELD ON 15.09.2020 AT 11AM THROUGH VIDEO CONFERENCE AT NDMA, NEW DELHI.**

A Review meeting on development of “*Web based Dynamic Composite Risk Atlas (Web-DCRA) and Decision Support System (DSS) Tool for cyclone and associated impacts*” under NCRMP (Ph. II) was held on 15<sup>th</sup> September, 2020 at 11 AM under the Chairmanship of Sh. GVV Sarma, Member Secretary, NDMA, New Delhi. The meeting was attended by Officials from NDMA, IMD, INCOIS, NRSC, the World Bank, and Consultant (M/s RMSI). List of participants is attached as **Annexure-I**.

2. The meeting started with a presentation on Deliverable 2<sup>nd</sup> [*Development of Probabilistic Risk Assessment Maps/Products*] & Deliverable 4<sup>th</sup> [*Beta version of Web-DCRA & DCRA App. for User Acceptance Test*] by RMSI team. Initial discussion was focussed on calibration/validation of models (wind, storm surge and flood); cyclonic wind, storm surge & cyclone induced flood hazard maps, as well as risk modelling outputs viz.; cyclonic wind and cyclonic flood for different return period (2, 5, 10, 25, 50, 100, 250 & 500 year) and district level estimated Average Annual Loss (AAL) due to wind, surge & flood. Further, SOP for Web-DCRA & DSS Tool, and the status with timeline for completion of balance Deliverable 5<sup>th</sup> [*Closure Report and Fully operational Web-DCRA & Offline Desktop version of Web-CRA*], Deliverable 6<sup>th</sup> [*Experimental phase*], & Deliverable 7<sup>th</sup> [*Training Workshops and Capacity Building activities*] were also deliberated. After presentation, different Exposure layers of Web-DCRA & DSS Tool were demonstrated and discussed.

3. Dr. M. Mohapatra, DGM, IMD highlighted the requirement of automatic and manual generation of Hazard maps of required return periods of all-weather elements including wind, rainfall & storm surge associated with the forecast wind speed at the time of landfall of a particular Cyclone. He further elaborated, considering the example of Super cyclone ‘Amphan’, that when the System is forecasted to cross with a specific wind speed, say 150-160 kmph, the DSS tool should be capable of automatically generating the necessary return period ‘hazard scenario’ for such a wind speed and indicate the coastal areas vulnerability thereby. This will serve as a Climatological reference scenario for the forecaster as well as the Disaster Managers.

Procurement/installation of hardware (Servers) and further installation of the Web-DCRA & DSS Tool at IMD HQ was also discussed. As informed by IMD and RMSI as well,



the supplier is likely to deliver the requisite hardware (Servers) and set up the same at IMD by 21<sup>st</sup> September 2020, and further, Web-DCRA & DSS Tool with its complete GIS database will be installed at the IMD's Servers by RMSI.

4. Dr. T M Balakrishnan Nair, Scientist 'G' & Head (ISG), INCOIS informed that INCOIS is generating High Wave and Swell Surge information during cyclone period and normal period as well, and these informations have been included in Common Alerting Protocol (CAP) for Early Warning purpose. He further suggested for integration of these informations with the Web-DCRA & DSS Tool, and proposed to discuss in a separate meeting, the format of INCOIS's data/information related to High Wave and Swell Surge for their integration with the Web-DCRA Tool. Dr. E. Pattabhi rama Rao, Scientist, E, INCOIS also confirmed that High Wave and Swell Surge information being generated by INCOIS have already been included in the CAP. Further, Dr. Nair confirmed for a virtual meeting with RMSI team to be held on 25<sup>th</sup> September 2020 to discuss format/mechanism for integration of INCOIS generated High Wave and Swell Surge information with the Web-DCRA Tool.

5. RMSI also presented the findings of risk analysis of SuCS "Amphan" based on IMD's observed cyclone track, cyclonic wind speed estimates, INCOIS estimated surge height, model estimated flood height and the observations given in the IMD filed-survey report. It was highlighted, inter-alia, that:

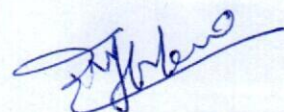
(a) The observed maximum sustained wind speed was 241 kmph (throughout the observed track) and 157 kmph at the cyclone landfall location. The model simulated wind speeds were 248 kmph and 155 kmph, respectively, which exhibit a quite good match between observed and simulated wind speeds.

(b) Storm Surge height reported by IMD's field survey team based on locals' observations was about 15 feet (4.5 m) at Gobordhanpur of the G-Plot delta in South 24 Parganas. While, the INCOIS simulated surge height through ADCIRC was 3.3 meter. The difference in surge height may be attributed to the locals' observation error as it was not recorded from an instrument.

6. Sh Anup Karanth, World Bank, suggested that there should be SOP for updation of Exposure data.



7. Based on the discussions/demonstration, the action plan/way forward is summarised below:
- i. RMSI to schedule a meeting with IMD in this week to discuss and implement IMD's suggestions to improve capability of the Web-DCRA Tool for automatic as well as manual generation of Hazard maps of required return periods of all-weather elements including wind, rainfall & storm surge associated with the forecast wind speed at the time of landfall of a particular Cyclone.
  - ii. RMSI to schedule a meeting with INCOIS on 25<sup>th</sup> September 2020 at 11 AM to discuss data format/mechanism for integration of High Wave and Swell Surge information with Web-DCRA & DSS Tool.
  - iii. RMSI to coordinate with all 13 Coastal States/UTs, as well as the Space Application Centres (SAC) in coastal States/UTs for updating Exposure information in Web-DCRA Application.
  - iv. The Exposure data to be updated by Coastal States/UTs and SAC before the Training Workshops in the States/UTs.
  - v. RMSI to submit a detailed report on the findings, based on the IMD's observed track of SuCS "Amphan" (16-21 May 2020).
  - vi. SOP for Exposure data updation in Web-DCRA & DSS Tool by Coastal States/UTs and SAC would be prepared in consultation with RMSI and circulated to the States/UTs.
  - vii. RMSI to install the Web-DCRA & DSS Application and GIS database at IMD's Server by 30<sup>th</sup> September 2020, and testing of the Application will be completed by 08<sup>th</sup> October 2020. Deliverable 5<sup>th</sup> report to be submitted by 09<sup>th</sup> October 2020.
6. The meeting ended with thanks to the Chair and all the participants.



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Project Manager  
NCRMP, NDMA



**Annexure-I**

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<b>Sl. No.</b>	<b>Name of Officials with Designation</b>	<b>Organisation</b>
1	Dr. Pradeep Kumar Spl. Secretary & Project Director	NDMA
2	Sh. Samir Kumar Dy. Project Director, PMU	NDMA
3	Dr. Sanjay K Sharma Env. Specialist, PMU	NDMA
4	Mr. Vijay Kumar Sharma, IT Manager, PMU	NDMA
5	Mr. Anup Karanth, TTL & Sr. DRM Specialist	The World Bank
6	Dr. M. Mohapatra DGM	IMD
5	Dr. Sunitha Devi S. Scientist ‘E’, Cyclone Warning Division	IMD
6	Dr. T M Balakrishnan Nair Scientist ‘G’ & Head (ISG)	INCOIS
7	Dr. E. Pattabhi Rama Rao Scientist ‘F’, ODG	INCOIS
8	Dr. PVN Rao Scientist ‘H’ & Dy. Director	NRSC
9	Mr. Pushpendra Johari Team Leader	M/s RMSI
10	Dr. Sushil Gupta, Dy. Team Leader	M/s RMSI
11	Dr. Indu Jain Asst. General Manager	M/s RMSI
12	Mr. Rajesh Mahana Sr. Technical Specialist	M/s RMSI
13	Mr. Rajneesh Kumar Software Engineer	M/s RMSI