

**MINUTES OF MEETING ON ‘DEMONSTRATION OF FULLY OPERATIONAL WEB-DCRA & DSS TOOL & DCRA APP., OFFLINE DESKTOP VERSION OF WEB-CRA AND OFFLINE EXPOSURE MANAGEMENT’ HELD ON 13.01.2021 AT 12 PM AT IMD, NEW DELHI.**

A meeting on Web based Dynamic Composite Risk Atlas (Web-DCRA) and Decision Support System (DSS) Tool for cyclone and associated impacts was held on 13<sup>th</sup> January, 2021 at 12 PM under the Chairmanship of Dr. M. Mohapatra, DGM, IMD, New Delhi. The meeting was attended by Officials from NDMA, IMD, INCOIS, NRSC, the World Bank, coastal States/UTs, and Consultant (M/s RMSI). List of participants is attached at **Annexure-I.**

2. The Consultant (RMSI) team made demonstration of fully operational Web-DCRA & DSS Tool directly from the IMD’s server at IMD HQ, New Delhi. Discussion was focussed on 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 and district level estimated Average Annual Loss (AAL) due to wind, surge & flood. Different Exposure layers of Web-DCRA, and Technical User Guide for the Web-DCRA & DSS Tool available on the dashboard were demonstrated and discussed.

While running across the back-end operational features of the Web-DCRA Application, RMSI team confirmed that the Application on real-time run will pick-up the latest requisite data-sets from IMD [*Cyclone track, Observed & Forecasted rainfall data, wind hazard data*], and INCOIS [*ADCIRC model outputs (maxele & maxvel files), and flood heights at river mouth locations*] from their depositories through FTP. Final flood hazard is generated by the model alongwith surge hazard. Master log keeps all the information of the processed tasks. Error occurred, if any, in the model run, can be understood through Logs for various outputs generated by the system. The Dashboard updates information every 3 hours and this can also be suitably modified manually. The system only takes into account the maximum sustained winds and not gust speed and the outputs of damage is reflected accordingly. Scenario development inbuilt into the model output will be useful for emergency management and undertaking mock exercises as well.

3. Sh. Ramesh Kumar Ganta, JS (Admn. & CBT) and Project Director (In-Charge), NCRMP, NDMA suggested to include a section on “How to read document” as part of the Technical User Guide to make the document practically useful by the Users. Mr. Anup

Karanth, Sr. DRM Specialist & TTL (NCRMP), The World Bank further suggested that User groups need to be categorized and during the training programmes, a particular user should be made aware about the key functions, process to update exposure database, and critical overlapping roles along with system stability/utilization aspects. He also stressed about the roles and responsibilities of respective State Space Application Centers (SACs) and NIOT, Chennai in exposure database updation. Dr. Mohapatra, DGM, IMD emphasised that the DSS tool should be capable of automatically generating the necessary return period 'hazard scenario' for a given wind speed and indicate the coastal areas vulnerability. The DGM, IMD also insisted that the System run should start from Depression stage, i.e., once the track & wind forecast files are fed (6 hourly impact forecasting at depression stage and 3 hourly impact forecasting at Cyclonic storm stage onwards). He further agreed to provide support of IMD's regional centres offices towards having discussions with relevant state level institutions and the national level institutions (NCSCM, Chennai) for updating data or harmonizing relevant information in the web DCRA outputs.

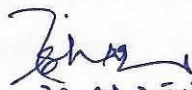
4. Based on the discussions/demonstration, the action plan/way forward is summarised below:

- i. A section on 'How to read document' to be formulated as part of the Technical User Guide to make the document practically useful by the Users.
- ii. If any Error is encountered in the model run, the feature of sending error message automatically by the System to the Administrator at IMD through Whatsapp and E-mail be enabled.
- iii. The outputs generation should bring the metadata information upfront giving clarity of last update of the exposure information. An annexure of the output report to be generated capturing this information.
- iv. The SOP/Protocol need to be put around the Application Dashboard to make it clear that updation of exposure dataset and metadata information rests with the States. Hence, the roles and responsibilities of respective State Space Application Centres (SACs) and NIOT, Chennai will be crucial and, therefore, coastal States to co-ordinate with respective SAC and NIOT, Chennai for updation of exposure data.
- v. The consultant to provide hand-on training on exposure updation as well as the vulnerability grading and the potential damage curves. In particular, the new assets will have to absorb the information of infrastructure cost, vulnerability and associated damageability.



- vi. Population exposure available in table format should also be made available on Map. This is a critical part of decision making for the District Collectors/DDMA and State level Administrators/SDMA for Cyclone risk management. In addition to the extrapolated census data for the coastal districts, the following data set if found appropriate by user groups can be made available as option: <https://sedac.ciesin.columbia.edu/data/collection/gpw-v4>; <https://sedac.ciesin.columbia.edu/data/collection/gpw-v4/sets/browse>. Population density at risk also to be depicted as output map.
- vii. Parametric model output may have to be tweaked (say update from current hazard level to high or vice versa) by either changing input or output file. The trigger for manual intervention should be reflected in the SOP and key personnel handling this update should be pre-identified.
- viii. Wind speed output for the case of TN as depicted for Cyclone Bueri during the live demo, to be rechecked.(Since it was explained to be the resultant of utilising Parametric model for generating the probabilistic wind speed, a viable solution should be sought for replacing the Parametric model).
- ix. Final forecast for wind speed issued by IMD to be depicted graphically as output maps.
- x. Picking up two states for viewing is available for the user; however the reports are generated state wise. Consultants to add report generation mechanism for dual/multiple states.
- xi. Return period analysis from climatology point of view should be made available on the system for each identified cyclone. State wise Return periods of wind speed, rainfall & Storm Surge in tabular form should be generated by the system and made available to IMD.
- xii. The Web-DCRA & DSS Tool and the DCRA App. should be launched at the earliest. This will require to agree on the policy of critical data in discussion with IMD and key stakeholders.
- xiii. Demonstration of DCRA App., Offline Desktop Version of Web-CRA and Offline Exposure Management will be done in another meeting to be scheduled next week. Participation of SDMA and State SAC to be ensured in the meeting.

5. The meeting ended with thanks to the Chair and all the participants.

  
20.07.2021  
(Sanjay K Sharma)  
Project Manager  
NCRMP, NDMA

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<b>Sl. No.</b>	<b>Name of Officials with Designation</b>	<b>Organisation</b>
1	Sh. Ramesh Kumar Ganta JS (Admn. & CBT) and PD (NCRMP)	NDMA
2	Sh. Samir Kumar Dy. Project Director, PMU	NDMA
3	Dr. Sanjay K Sharma Env. Specialist, PMU	NDMA
4	Dr. P Prasad Project Coordinator, PMU	NDMA
5	Mr. Vijay Kumar Sharma Manager (IT), PMU	NDMA
6	Mr. Anup Karanth, TTL & Sr. DRM Specialist	The World Bank
5	Dr. Sunitha Devi S. Scientist 'E', Cyclone Warning Division	IMD
6	Dr. D R Pattanaik Scientist 'F'	IMD
7	Dr. R K Jenamani Scientist 'F'	IMD
8	Dr. Kuldeep Srivastava Scientist 'E'	IMD
9	Dr. Shankar Nath Scientist 'E'	IMD
10	Dr. T M Balakrishnan Nair Scientist 'G' & Head (ISG)	INCOIS
11	Dr. E. Pattabhi Rama Rao Scientist 'F', ODG	INCOIS
12	Sh Srikant D. Patil Chief Engineer (WRD) & PD, NCRMP-SPIU	Goa
13	Sh R K Abhinand Procurement Specialist, NCRMP-SPIU	Karnataka
14	Sh Dushyant Nariala Prl. Secretary (DM & Civil Defence Deptt.) & PD, NCRMP- SPIU	West Bengal
16	Dr. Sushil Gupta, Dy. Team Leader	M/s RMSI
17	Dr. Indu Jain Asst. General Manager	M/s RMSI
18	Mr. Rajneesh Kumar Sr. Software Engineer	M/s RMSI
19	Mr. Sachin Jalota Sr. Software Developer	M/s RMSI
20	Ms Vijay Lakshmi Sr. Engineer	M/s RMSI
21	Mr. Lokendra Dixit	M/s RMSI

	Project Manager	
22	Mr. Rajesh Mahana Sr. Technical Specialist	M/s RMSI
23	Mr. Rakesh Chaudhary Sr. Engineer	M/s RMSI
22	Ms Puja Kumari Sr. Engineer	M/s RMSI