

MINUTES OF THE MEETING TO REVIEW 2ND, 3RD, & 4TH DELIVERABLES OF STUDY "DEVELOPMENT OF WEB-DCRA & DSS TOOL FOR CYCLONE & ASSOCIATED IMPACTS" UNDER NCRMP (PH. II) HELD ON 17.05.2019 AT 10:00 AM IN CONFERENCE HALL, INCOIS, HYDERABAD.

The meeting to review Second, Third, and Fourth Deliverables of the study "*Development of Web based Dynamic Composite Risk Atlas (Web-DCRA) and Decision Support System (DSS) Tool*" for Cyclone & associated impacts including storm surge & inland flooding" under NCRMP (Ph. II) was held on 17th May, 2019 at 10 AM in INCOIS, Hyderabad under the Chairmanship of Dr. M. Mohapatra, Scientist 'G' & Head (Services), IMD, New Delhi. The meeting was attended by Review Committee Members and Officials from NDMA, Coastal States/UTs, and M/s RMSI. List of participants is attached at Annexure-I.

2. The meeting started with a welcome note from Dy. Project Director, NCRMP, NDMA. The Dy. PD. referred NDMA request to INCOIS for High Performance Computing (HPC) facility and output of coupled model (ADCIRC + Wave) of INCOIS to be used in the study. Dr. T M Balakrishnan, Scientist 'G' & Head (ISG), INCOIS agreed for HPC facility for 15 days and output of the coupled model facilitating the study. Sh. Anup Karanth, Task Team Leader, the World Bank briefed on the recent Cyclonic Storm 'FANI' in Odisha coast, its damaging impacts on vulnerable infrastructures, utilities of cyclone mitigation infrastructures built under NCRMP, and collective efforts of the Central and State government administrations in coordination with IMD and INCOIS during the cyclonic event to minimise its impacts. He also stressed on necessity of Coastal States' support in terms of providing requisite data/information for development of the Web-DCRA & DSS tool. Dr. PVN Rao, Scientist 'H' & Dy. Director, NRSC, Hyderabad agreed to share relevant exposure data used in NDEM, a geo-portal for DSS Tool under NRSC.

3. RMSI explained that it is not possible to include release of Water from Dam in the present study. There are a number of dams outside the study area and a separate study has to be carried out considering numbers of dams, quantity of water released during a cyclone events, hydraulic modeling of released water, impact of released water on inundated area, etc. Dr. M. Mohapatra suggested to attempt integration of Dam/Reservoir generated flood for real-time flood forecasting taking into consideration Phase I States, being more vulnerable to Cyclone, on priority, preferably Odisha State as a model to start with. Dr. Mohapatra also suggested that such information will be useful to decide whether water should be released or not during a Cyclone event.

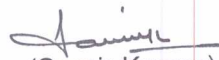
4. A presentation was made by RMSI Team on overall progress achieved so far in development of Web-DCRA & DSS Tool, with reference to the Second, Third, and Fourth Deliverables of the project. Highlighting current status of development of Web-DCRA & DSS Tool, a Demo was given by the Consultant on Web-DCRA (Beta version) and DCRA Mobile App navigating across their different feature layers. As per the status presented in the meeting, modelling works are complete only w.r.t. Odisha State and remaining works w.r.t. other Coastal States for the fully operational Web-DCRA will be completed by 31st May, 2019. It was observed that the Web-DCRA (Beta version) and DCRA Mobile App need further improvement in terms of its content and visualization. As suggested by Dr.

Mohapatra, RMSI team visited Tsunami Early Warning system of INCOIS for taking a view of the DSS Tool as reference.

5. After deliberation involving views/suggestions of participants, following decisions were taken:

- i. Web-DCRA and DSS Tool to be customised by high-resolution DEM from Survey of India (Sol)/MoEF. Sol shall be pursued for High-resolution DEM/DTM.
- ii. INCOIS will share outputs of coupled model (ADCIRC + SWAN) in the format required for Web-DCRA & DSS Tool through FTP with RMSI so that these could be tested for integration in Web-DCRA. The same information will be required from INCOIS for every advisory of live cyclone event. The outputs from INCOIS will include:
 - (a) Surge flood-depth grids (latitude, longitude, flood depth, & velocity), and
 - (b) Wind hazard grids (latitude, longitude, & wind speed), of historical cyclones such as recent Cyclone Fani, Phailin, Hudhud, Odisha Super Cyclone and Andhra Super Cyclone).
- iii. INCOIS will provide access of High Performance Computing (HPC) facility for 15 days
 - (a) to process the stochastic event analysis output data for porting in Web-DCRA, and
 - (b) to test the functioning of Web-DCRA.
- iv. Participating Coastal States/UTs shall provide updated exposure database, including relevant information on FLCs (Fish Landing Centres) and Dam/Reservoir rule curve required for the study.
- v. Coastal States/UTs will nominate a Nodal Officer, who will be responsible for updating the exposure data.
- vi. A separate meeting with the participating Coastal States/UTs to be held on updation of exposure data/information required for the study.
- vii. Exposure elements used in Web-DCRA should be shared with NRSC. NRSC will check NDEM exposure database and will share the related GIS layers with NDMA.
- viii. State level data from AMRUT project may also be referred for the requisite exposure data.
- ix. Reservoir/ Dam generated flood to be integrated for real-time flood forecasting. RMSI to start with Odisha as pilot state for integration of Reservoir/ Dam rule curve information for flood forecasting.
- x. NDMA to interact with Dam Authorities in the Odisha State to examine location of dams and details of release of water from these dams, provision of providing release data on real-time basis.
- xi. Cyclone warning to be integrated in DCRA Mobile App.
- xii. RMSI to review existing Mobile Apps such as NavIC and GAGAN. INCOIS to provide login authentication along with their User Guide to access these Apps.
- xiii. Since Google API cannot be used in Web-DCRA due to problem with International Boarder, NRSC will explore possibility of sharing Bhuvan API. Once Bhuvan API is available, RMSI will explore feasibility to include in Web-DCRA.
- xiv. The Beta version of Web-DCRA to be shared with Coastal States/UTs for feedback. Link of the Application also to be shared with 1-2 District Collectors in each coastal states for feedback.

- xv. RMSI to circulate PPT file including a complete report on the Cyclone 'FANI' to all Members of the Review Committee.
 - xvi. Fully Operational Web-DCRA & DSS Tool to be completed by 31st May, 2019. RMSI to provide report to NDMA on daily basis on development of the Web-DCRA & DSS Tool.
6. The meeting ended with thanks to the Chair and all the participants.


(Samir Kumar)
Dy. Project Director
NCRMP, NDMA

Annexure-I

MINUTES OF THE MEETING TO REVIEW 2ND, 3RD, & 4TH DELIVERABLES OF PROJECT "DEVELOPMENT OF WEB-DCRA & DSS TOOL FOR CYCLONE & ASSOCIATED IMPACTS" UNDER NCRMP (PH. II) HELD ON 17.05.2019 AT 10:00 AM IN CONFERENCE HALL, INCOIS, HYDERABAD.

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