



# National Database for Emergency Management

## NDEM Version 2.0

# User Manual

## NDEM Version 2.0

Prepared By  
**NDEM Team**

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# Chapter- 1

## Introduction

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### 1.1 Background

In the pursuit of institutionalizing, mitigation and preparedness to natural as well as manmade disasters more efficiently, Ministry of Home Affairs (MHA) places emphasis on development and organization of comprehensive Geospatial databases. The Steering Committee (SC) had strongly recommended that GIS/digital maps of States/districts and urban centers with spatial and non-spatial data be made available at

#### What is NDEM

NDEM stands for National Database for Emergency Management. It consists of multi-scale databases along with decision support tools which help disaster Managers in managing disasters.

appropriate scales to emergency response managers at all levels. National Database for Emergency Management (NDEM), being established at MHA, is an effort in this direction. The NDEM is essentially to serve as a national repository of databases for emergency/disaster management and to assist the stakeholders at various levels in hazard/risk zonation, damage assessment, preparedness and emergency response.

### 1.2 Purpose of the document

The main purpose of user operation manual document is to provide the crisp description about the project and stepwise operational procedure of NDEM Version-2.0 portal for disaster specific services and products. It contains the detailed information about the NDEM services; ISRO-DMS programme and brief introduction of NDEM version-2.0. It also contains the operational procedure of different modules like dashboard, map viewer, GIS tools, IDRN database integration, health database integration etc.

### 1.3 Project initiation & monitoring mechanism

National Database for Emergency Management (NDEM) is conceived as a GIS based repository of data to support disaster/ emergency management in the country, in real/ near real time. This database, which will leverage much on the aerospace

data, will have core data, hazard-specific data, and dynamic data in spatial as well as non-spatial forms. The database should enable development of decision support system in the form of customized user interfaces. Necessary security mechanisms should also be in place, so that the database is accessible by only the authorized. The Committee of Secretaries (CoS) has entrusted the responsibility of implementing NDEM to Indian Space Research Organization (ISRO), Department of Space. National Remote Sensing Centre, ISRO (NRSC) is the lead agency to implement and operationalise NDEM. The NDEM will contain datasets at different scales. As the different datasets ingested into the NDEM are generated by/ available with different organizations/ agencies, the implementation of NDEM is planned as a coordinated inter-ministerial effort. The Steering Committee (SC) Chaired by Secretary (Home) and the Technical Group (TG) Chaired by Director, NRSC shall periodically review the progress and successful implementation of the NDEM in a coordinated manner. The NDEM - Programme Management Board (PMB) shall review and provide guidance as and when required. In the recent NDEM-SC meeting held on 27th May 2013, it was suggested to prepare a user manual for State Disaster Managers highlighting about NDEM and to better utilize the NDEM services for disaster management. Hence the present manual is prepared.

#### **NDEM Implementation**

Committee of Secretaries (CoS) assigned the responsibility of NDEM to Indian Space Research Organization (ISRO) with multi-Institutional support. Technical Group (TG) Chaired by Director, NRSC and Steering Committee (SC) Chaired by Home Secretary guides and monitors the project. NDEM-SC meeting held on 27th May 2013, it was suggested to prepare a user manual for State Disaster Managers highlighting about NDEM and to better utilize the NDEM services for disaster management

#### **1.4 Scope and objectives of the project**

The scope of NDEM encompasses management of emergency situation arising out of natural as well human-induced/ technological causes.

The main objectives of NDEM consist of the following.

(i) Organization of multi-scale geo-spatial database for disaster / Emergency Management as

- National Database at 1:50,000 scale for entire country
- Multi-hazard prone districts, approximately 350 districts as recently suggested by MHA (List the districts name given in Annexure-I, table-1&2) database -at 1:10,000 scale
- 5 Mega-cities (Delhi, Mumbai, Chennai, Bangalore and Hyderabad) at 1:2,000 scale

(ii) Development of tools for Decision support (DSS) for addressing disaster / emergency management such as network tools for finding shortest path to facility, evacuation plan, query on emergency facility, tools for damage assessment etc.

(iii) Establishing computer infrastructure comprising of systems, network, security and software to facilitate network connectivity, data ingest, validation, GIS databases organization, data dissemination and services hosting, Mirroring / Replica of databases at MHA with suitable access/security mechanism.

## Chapter-2 NDEM Version 2.0

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NDEM portal Version-2.0 is hosted on **Disaster Management Support – Virtual Private Network (DMS-VPN)**, so it is accessible on DMS-VPN network. **NDEM Version-2.0 cannot be accessed on the internet system.** For enabling the availability of disaster products derived from space data sets NDEM ported spatial and non spatial database from various source. NDEM Version-1.0 was launched and made operational on ISRO-DMS VPN and provided products and services for 2013/2014 disaster events to the respective State Governments. To further enhance the capabilities of version 1.0, it is planned to develop version – 2.0 and provide a widely flexible generic design to cater to the requirements with higher level of commitment including the public domain version of NDEM and development of tools for Decision Support System (DSS) for addressing disaster / emergency management. DSS will be driven by the database to maintain flexible design. The content management system will be creating this database. This will allow to system administrator to add the contents in the NDEM portal without modification of any software code.

### **2.1 Databases ported to NDEM**

National Database for Emergency Management (NDEM) is a GIS database consisting of core, hazard specific and non-spatial data for addressing emergency management in the country. The main objectives of NDEM database organization is multi-scale geospatial database for entire India at 1:50,000 scale, multi-hazard prone districts at 1:10,000 scale, and mega cities at 1:2,000 scale. To achieve this target, the database generated from various Central/State/Other departments will be integrated and organized into a standard NDEM framework for serving to NDEM internal users / Decision Support Tools development. The Details of ported database are in table 2.1

**1:50K Database Ported from Different Source in NDEM  
35 State /UTs**

S no	Base Layers
1.	State
2.	District
3.	Taluk
4.	Village Boundaries
5.	Road
5.	Rail
7.	Drainage
8.	Canal
9.	Coastline
10.	River

S no	Thematic Layers
1.	Land use / land cover
2.	Settlement-area
3.	Mining Area
4.	Surface water
5.	Forest Boundaries
5.	Settlement-Point
7.	Slope
8.	Meteorological data (Max. Temperature Min. Temperature Mean Temperature Rainfall)

S no	Raster Layer
1.	SRTM DEM
2.	IRS LISS IV
3.	CARTO DEM
4.	ACE2 DEM

S no	Thematic Layers
1.	Railway stations
2.	Hospitals
3.	Airports
4.	Helipads
5.	Ports
5.	River Gauge Stations
7.	Ponds & Tanks
8.	Dams(Point)
9.	Dams(Area)or Reservoir
10.	Power plants
11.	Point of Interest

	CENSUS2011		IMD2005
	SOI2001		IR2013
	WRIS2011		OS2013
	NRSC2008		CWC2010
	LULC2011		OSM2014
	NRIS2001		

2.1: Available 1:50K database on NDEM Version-2.0

**1:10K Database Ported from Different Source in NDEM**

S no	Base Layers
1.	Administrative Boundary
2.	Drainage
3.	Road
4.	Rail

S no	Thematic Layers
1.	Land cover
2.	Surface water body
3.	Settlements
<b>Infrastructure</b>	
1.	Infrastructure
2.	Transport nodes

Table-2.2 1:10K database on NDEM Version-2.0

## 1:2K Database Ported from Different Source in NDEM

S no	Large scale urban data (vector)	S no	Raster
1.	Settlement	1.	KOMPSAT
2.	Contour	2.	Worldview
3.	Canal	3.	CARTOSAT
4.	Rail	4.	Aerial data
5.	Road		
6.	Spot Height		

Table-2.3 Available 1:10K database on NDEM Version-2.0

### 2.2 GIS Tools development

NDEM web application (version - 2.0) was developed for visualize, search, analysis and query processing on the geospatial database. Geo-spatial viewer with standard GIS tools such as pan, zoom, identification etc was developed. Other GIS tool like search tool, distance measurement, area measurement, proximity tool, add layer tool, multilayer analysis tool, Network analysis tool etc. were developed for decision support system which is useful to take decision at time of disaster situation.

- **Distance Measurement:** Distance measurement tool is developed for finding distance between two points on map.
- **Area Measurement:** Area measurement tool is developed for finding area of User defined polygon on map.
- **Search Tool:** Search tool is developed for searching the district/taluk/city/point of interest/lat-long on map. User has to select the category for search and provide the value to find the place on map.
- **Proximity Tool:** Proximity tool is developed to know the available facilities (Relief Shelters, Hospitals and Railway Stations etc.) around a desired location within a user defined buffer area. User has to select a location on map and provide the buffer size and facility type to know the detail information of facilities within a user defined buffer area.

- **Add Layer Tool:** Add layer tool is designed to overlay user's shape-file (From local system) on the map. User has to upload the shape-file from local system to overlay the shape-file on map for analysis.
- **Multilayer Analysis Tool:** Multi Layer Analysis tool is developed for analysis of area affected inside user defined polygon. User has to draw an AOI and then analyze the query to get Taluk/District wise vector layer statistics inside user defined polygon.
- **Network Analysis Tool:** Network Analysis tool is to get shortest distance between two user selected locations on road network. User has to select two points on the road network to find the optimized path between those points.

### 2.3 Mobile Applications

Mobile Applications for live data reception and integration for relief management were developed besides for database generation and geo-tagging of features under NDEM project. Two mobile based applications for generation of Geo-spatial database on emergency facilities and Disaster Relief Management were developed and demonstrated on pilot scale. One more application on Disaster reporting (beta version) was developed. A mobile application for geo-tagging of emergency facilities using online maps and also retrieving information by query was developed. The details of the mobile applications developed under NDEM and requirements for implementation are given in annexure-2 and also provided to State DMs for implementation. Interested States has to send a formal request with duly signed NDEM-FORM-2 given in annexure-2. The Mobile applications are being shared with the State Governments for implementation. NRSC developed a customized application for Rail Accident Management System in association with Indian Railways. Using the database received from Indian Railways (IR) SECR Zone a customized application for Railway Accident Management System (RAMS) developed in association with IR which consists of web module for database generation on Railway infrastructure and emergency facilities, mobile based application for reporting the IR accidents and data visualization portal for integrating static database & live info received from mobile devices.

#### Mobile Applications

- Relief Management Apps
- Geo Spatial Data Collection Apps
- Geo Tagging for Emergency Apps

## Chapter-3 NDEM Services

### 3.1 NDEM Portal

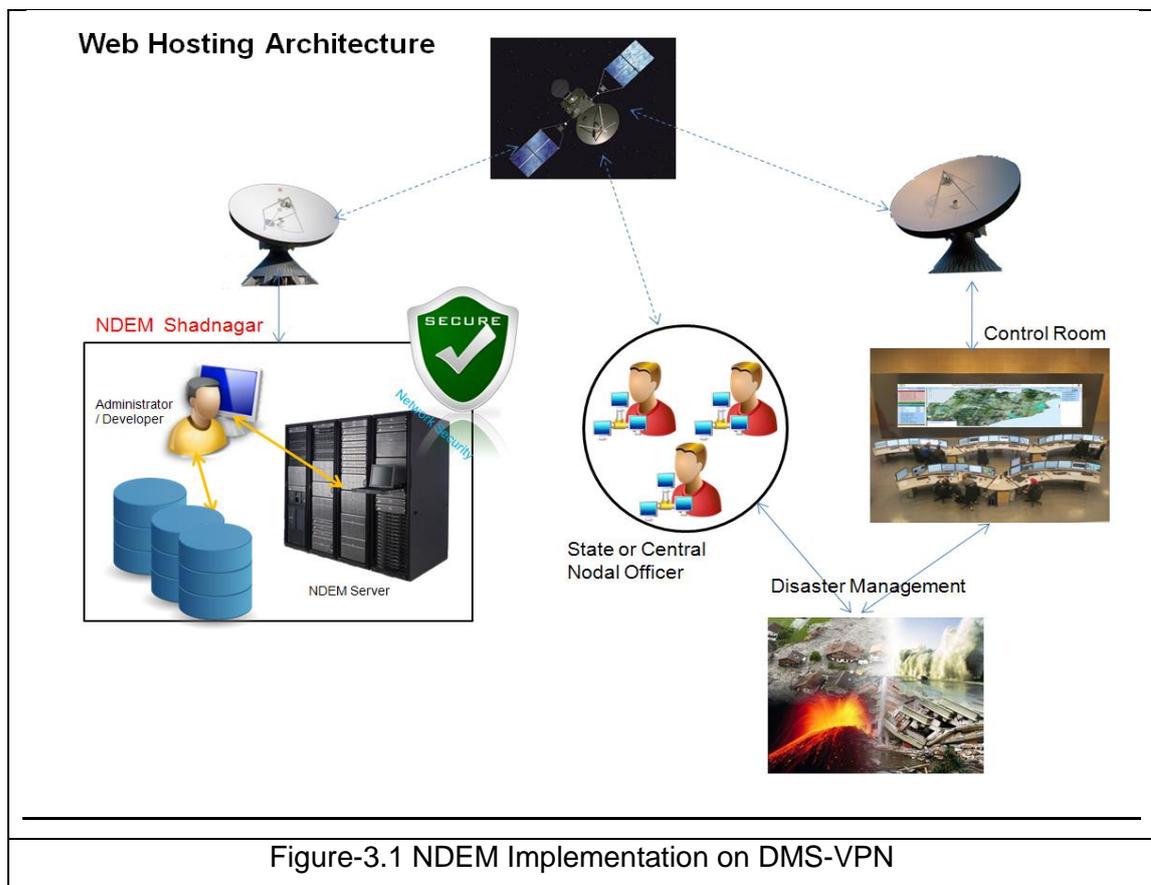
To serve the nation with satellite imagery & value added disaster products in secured environment, a web portal was designed and developed using open source tools with multi-level authentication facilities for accessing by State department and some Central departments. The data products generated under ISRO Disaster Management Support (DMS) Programme are hosted on the portal with facility for downloading the products. The NDEM portal was enabled on ISRO - Satellite based Disaster Management Support (DMS) Virtual Private Network (VPN). ISRO established this DMS-VPN at selected State Emergency Control Centers, Nodal departments like CWC, IMD, GSI etc and also at important central departments such as MHA, NDMA, Cabinet Secretariat etc. (list of the DMS-VPN Nodes are given in adjacent box. Figure-1 shows the NDEM implementation on DMS-VPN.

### 3.2 Why NDEM Portal on VPN

The main aim of NDEM is to provide value added products to the users at the time of disasters. During disasters, there is high possibility of failure of terrestrial communication besides internet communication. To ensure product delivery to users and also to make the NDEM services available at all

s no	DMS-VPN Node Location
1	DMS HUB, Delhi
2	MHA, Delhi
3	IMD, Delhi
4	GSI, Delhi
5	SEC, Gujarat
6	NRSC, Balanagar
7	INCOIS, Hyd.
8	NRSC, Shadnagar
9	ILM, Kerala
10	CWC, Delhi
11	GUPT KASHI,UK
12	MCF, Hassan
13	SEC, Kolkata
14	OSDMA, Odisha
15	SEC, Uttaranchal
16	SEC, Bihar
17	SEC, Hyd.
18	SEC, Assam
19	SEC, Portblair
20	SEC, Sikkim
21	SEC, Aizwal, Mizoram
22	NIDM, Delhi
23	Cab Sec., Delhi
24	Itanagar, AP
25	Police station, Badrinath UK
26*	Infinium BARODA
27	SEC, Meghalaya
28	SEC, Nagaland
29	SEC, Agartala, Tripura
30	SEC, Imphal, Manipur
31	Police Control ROOM Dehradun
32	PMO, Delhi
33	SEC, Chennai
34	Police Station, Pithoragarh Uttrakhand
35	NDMA, Delhi
36*	Colocated, Delhi
37	Delhi State
38	Police Station, Barkot, Uttrakhand
39	NE, SAC, Shillong
40	SEC AHMEDABAD

times irrespective of the situation, the NDEM services are launched on satellite based ISRO-DMS VPN.



### 3.3 How to Access the Portal

A user friendly Graphical User Interface was designed to access the data products hosted on the NDEM portal. To access the data products prior authorization is required. Only duly authorized persons of the State Governments can obtain the login information. For obtaining the login details the 'NDEM-Form-1' in annexure-1 has to be duly filed and sent to the address mentioned on the form. Once authentication details are available one can access the data hosted on the NDEM portal.

Step by step procedures on how to access and navigate the NDEM portal is given in Part-2 of this manual.

### 3.4 Products & Services on NDEM Portal

NDEM database organization is multi-scale geospatial database for entire India at 1:50,000 scale, multi-hazard prone districts at 1:10,000 scale, and mega cities at

1:2,000 scale. There is single geospatial web interface with a spatial data viewer with standard GIS Tools (Pan, Zoom, identification, Length measurement, Area Measurement etc.) for all State and Central department. The data are customized according to the user credentials provided by users. In NDEM Portal categorize the these service in Infrastructure Services, Thematic Services, Metrological Services, Topography Services and Raster dataset with proper styling and zoom based structured. At the time of any disaster event, Under ISRO- DMS Programme, NRSC is generating value added products from the space data sets on major five natural disasters (viz. flood, cyclones, earthquake, landslides and forest fires) in near real time. The products are hosted State-wise on the portal. In the spatial viewer user can visualize the base database layers such as roads, Railway River etc, administrative layers such as taluk, village etc along with the disaster layers such as flood inundation.

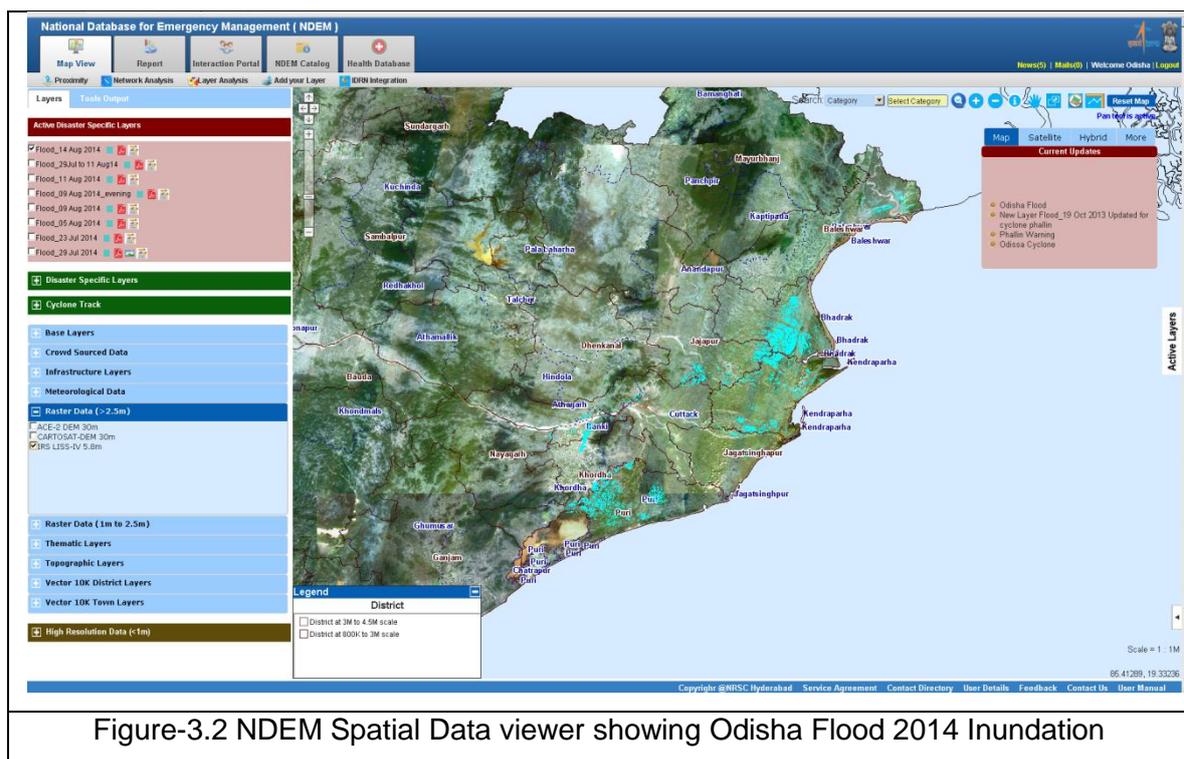


Figure-3.2 NDEM Spatial Data viewer showing Odisha Flood 2014 Inundation

For proper management of disaster event NDEM provides some advance tool for preparedness and response phase like proximity tool, add layer tool, shortest path tool using Dijkstra algorithm and Analysis tool. This helps in understanding the features that in the affected region. Further, emergency databases such as IDRN, medical facilities, relief shelters, important contact details are also provided for ready

reference. Some of the States provided State Disaster Management Plan which is also made accessible on the respective State page

Composed disaster products such as flood inundation maps which can be readily useful for relief operations are provided for download. User can download the products and save to their local computer for further value addition and dissemination. The products of disasters occurred during 2013 & 2014 mostly flood, cyclone and forest Fire events were hosted state-wise. Till date more than 500 flood /cyclone products hosted on portal for addressing major disaster like Jammu & Kashmir Flood, Odisha Flood, Bihar Flood, Uttarakhand flood, Phailin cyclone etc were hosted on the NDEM sites as on October 2014. For accessing these products and services prior authorization is required as mentioned in section 3.3.

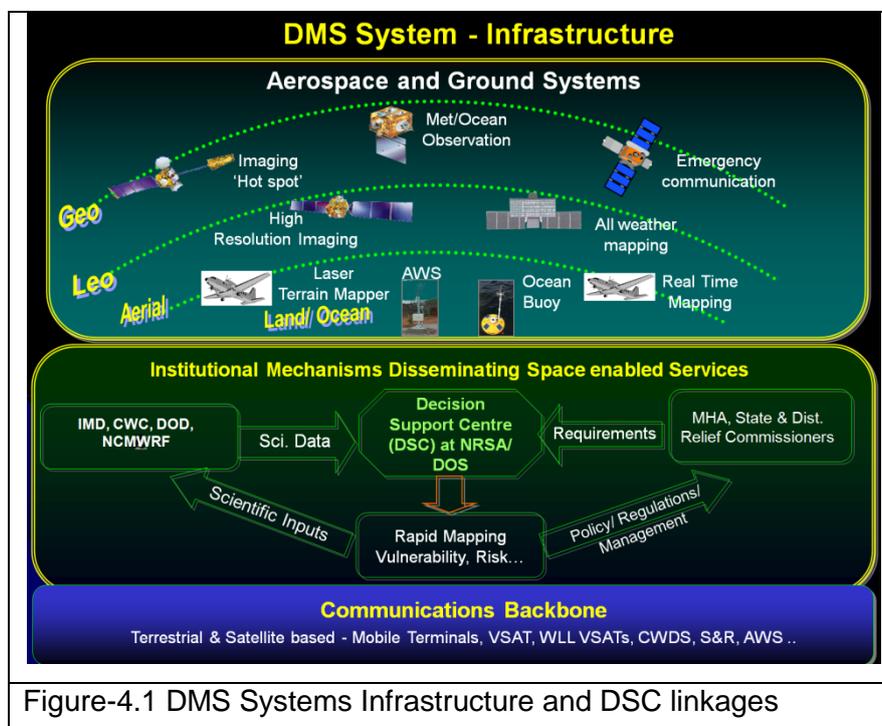
In addition to enable better access to all DMs, the un-restricted disaster products are also hosted on ISRO-BHUVAN Geo-portal which can be accessed through internet ([www.bhuvan.nrsc.gov.in/disaster](http://www.bhuvan.nrsc.gov.in/disaster)). Flood hazard zone information pertaining to Assam and Bihar are also hosted on Bhuvan which helps in flood mitigation.

To ensure security of the restrict / secret data, One Time Password (OTP) for accessing restricted data on NDEM server was enabled as additional security feature. The authorized mobile as provided by States while obtaining username and password will receive the OTP.

Step by step procedures on how to access and navigate the NDEM portal is given in Part-2 of this manual.

## Chapter-4 ISRO- DMS programme

In order to provide vital inputs and support in the event of a disaster, Department of Space (DOS) has been developing techniques and methodology by integrating space based systems and services for disaster management. DOS had executed a Disaster Management Support Programme (DMSP) for integrating operationally the space technology inputs and services on a reliable and timely basis for strengthening India's resolve towards disaster management. DMS Programme addresses five issues mainly (i) creation of digital databases at appropriate scales for facilitating hazard zonation, damage assessment, etc., in perennially disaster prone areas, (ii) development of appropriate Remote Sensing & Geographical Information System (GIS) based decision support tools and techniques and demonstrations catering to the information needs at different levels, (iii) acquisition of close contour information for priority areas, (iv) strengthening the communications backbone for addressing the real time / near real time information transfer needs and (v) networking of scientific institutions for exchange of data, information and knowledge.



Towards enabling the operational services, a Decision Support Centre (DSC) is established at National Remote Sensing Centre (NRSC) as a single window

provider, interfacing with the National / State disaster management agencies. Figure-3 shows the ISRO-DMS systems infrastructure and DSC linkages.

The important components of the DSC include satellite/ aerial data acquisition strategy, user required information and formats, output generation, dissemination of information generated to the users through networking, support functions such as digital database, hazard zonation, network modeling, query shells, etc.

Under Decision Support Centre, five natural disasters viz. flood, cyclones, earthquake, landslides and forest fires are being addressed. Flood and forest fires are being done on seasonal basis where as cyclone, landslides and earthquake are event based. As soon as information on the impending disaster is alerted by the identified nodal forecasting organizations, space and airborne data are acquired and analyzed. First level information thus derived from space data are made available to the concerned State and Central agencies for taking relief actions on the ground. Further monitoring is undertaken on a regular basis for damage assessment. At present DSC is operationally providing information at national level on flood inundation progression, recession and damages in near real-time, daily active forest fire locations besides event based assessment of impacts due to earthquake, landslides and cyclone.

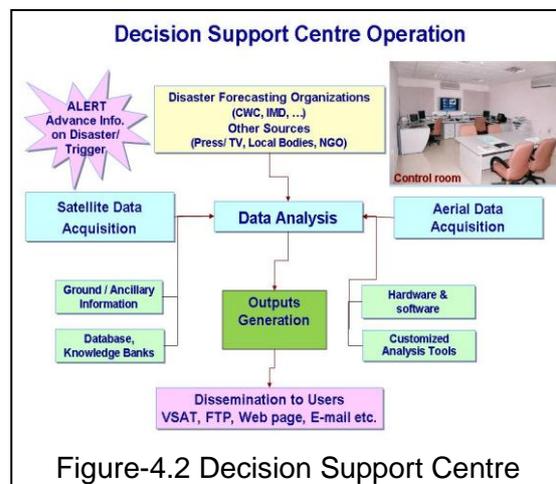


Figure-4.2 Decision Support Centre

Central agencies for taking relief actions on the ground. Further monitoring is undertaken on a regular basis for damage assessment. At present DSC is operationally providing information at national level on flood inundation progression, recession and damages in near real-time, daily active forest fire locations besides event based assessment of impacts due to earthquake, landslides and cyclone.

#### 4.1 Utilization of Space derived disaster products

Keeping in view of the user requirements and the potential of space data in disaster management, user friendly products ready to use are generated and provided to State and Central departments concerned. The near-real time products generated with rapid assessment tools are being used for disaster relief management. Hazard zonation information is being utilized for mitigation and planning for long term measures. Some of the products derived from space datasets with regard to each disaster and its utilization is given in the table-4.1

S No	Disaster	Deliverables	Utilization
1	Flood & Cyclone	<ul style="list-style-type: none"> <li>• Pre &amp; Post event satellite data</li> <li>• Flood inundation Map</li> <li>• Flood Damages</li> <li>• Flood Control Works &amp; river configuration</li> <li>• Bank erosion</li> <li>• Flood Hazard Zonation</li> </ul>	<ul style="list-style-type: none"> <li>• To map inundated areas</li> <li>• Organizing relief operations</li> <li>• Quick assessment for flood damages for providing relief &amp; rescue</li> <li>• Strengthening of existing works &amp; planning of future flood control works</li> <li>• Planning anti erosion works</li> <li>• Flood mitigation, flood plan regulation and planning flood control work</li> </ul>
2	Forest Fire	<ul style="list-style-type: none"> <li>• Forest Fire Detection</li> <li>• Estimation of extent of fire</li> </ul>	<ul style="list-style-type: none"> <li>• Fire extinguishing operations</li> <li>• Assessment of Damages</li> </ul>
3	Landslide	<ul style="list-style-type: none"> <li>• Landslide Hazard Zonation</li> </ul>	<ul style="list-style-type: none"> <li>• Mitigation measures to minimize landslide occurrence</li> </ul>
4	Earthquake	<ul style="list-style-type: none"> <li>• Affected Area Map</li> <li>• Probable earthquake Zonation</li> </ul>	<ul style="list-style-type: none"> <li>• For impact assessment and planning rescue and relief measures</li> <li>• To regulate development &amp; construction Practices</li> </ul>

Table-4.1 Utilization of Space derived disaster products

## 4.2 Success Story

A classic example of utilization Flood Hazard Atlas was prepared by NRSC by Govt. of Assam NRSC/ISRO in close association with Assam State Disaster Management Authority (ASDMA). Government of Assam prepared a Flood Hazard Atlas for Assam State using historic satellite data of past 10 years. Few copies of the atlas were provided to ASDMA besides providing complete atlas in digital form. Also the atlas was hosted on ISRO Bhuvan as well as DSC web sites for online access. ASDMA extracted relevant parts from the atlas pertaining to each district and provided the same along with guidelines for utilization to the Deputy Commissioners for implementation.

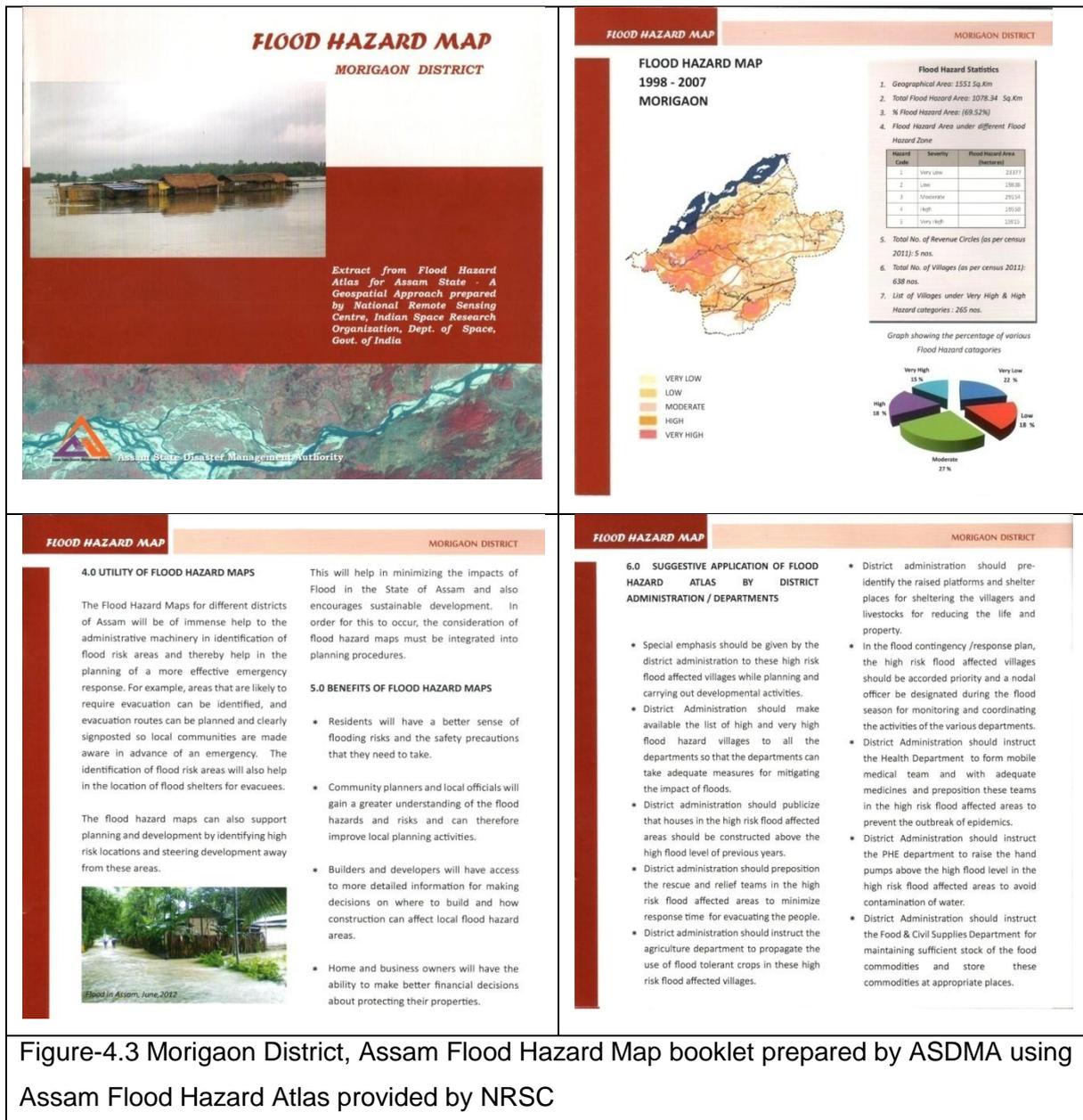


Figure-4.3 Morigaon District, Assam Flood Hazard Map booklet prepared by ASDMA using Assam Flood Hazard Atlas provided by NRSC

### 4.3 Feedback Mechanism

For constant improvement and to generate useful friendly products all possible attempts are made to obtain the feedback on the disaster products supplied by NRSC. In NDEM portal also a provision for submission of online feedback is provided. Encouraging feedback is received from Central and State Departments, Ministers regarding the utilization of the products. Online feedback received from Government of Orissa through NDEM portal regarding product supplied in connection with Phailin cyclone - 2013 and also the email feedback received regarding utilization of products for decision making.

#### 4.4 Frequently Asked Questions:

##### i. How to the access the portal?

NDEM portal is hosted on **Disaster Management Support – Virtual Private Network (DMS-VPN)**, so it is accessible on DMS-VPN network. **It cannot be accessed on the internet system.** NDEM portal is accessible through web browser on ISRO-DMS-VPN network. User has to type URL **http://10.254.7.15** to access the NDEM portal as shown in figure-4.4.

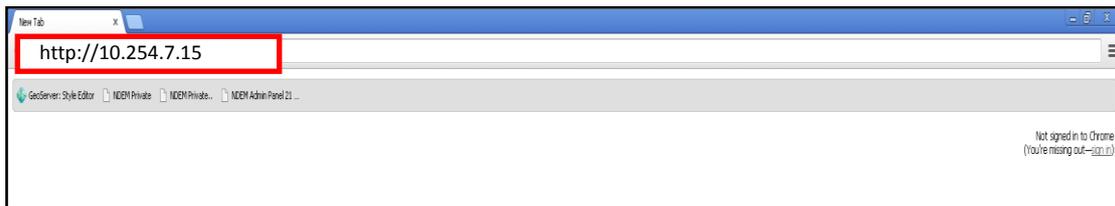


Figure-4.4. Access of NDEM Portal

After entering the URL, The NDEM-Home Page will appear. The portal can be best viewed in the browser -Google Chrome version 19.0 or Higher.

##### ii. Whether the site can be accessed through Internet?

No, the NDEM server cannot be accessed through internet. Since it is on satellite based VPN connection, using the PC connected to DMS-VPN communication network, the portal can be accessed.

##### iii. If there is no VPN connection, what is the procedure to establish?

ISRO established the DMS-VPN network for selected multi-hazard prone States. If your State is not having DMS-VPN, a formal request from Secretary Disaster Management Department, may be sent to the following address.

**Programme Director, DMS Prog. Office  
ISRO HQ, Antariksha Bhavan, New BEL Road  
Bangalore**

##### iv. What are the browser requirements for accessing the site?

The site can be best viewed in the browser -Google Chrome version 19.0, equivalent or Higher. For accessing the site, it has to be ensured that all the browser proxies are disabled. The steps to be followed are given below.

1. Open Google Chrome

2. Click settings
3. Go to show advanced settings
4. Go to network
5. Change proxy settings
6. Go to connections
7. Go to LAN setting
8. Uncheck boxes for proxy server

**v. Any specific software is required for working with the portal?**

No, Specific software is not required except for browser.

**vi. What is VPN connection? Is it secured?**

Yes. It is secured. VPN stands for Virtual Private Network connected point to point in a secured environment. In NDEM, it is Satellite based communication connectivity from point to point. The data will be uploaded at server and at user end; the data has to be accessed with user credentials.

**vii. Which communication satellite used for this ISRO-DMS-VPN network?**

GSAT-12 with extended C-band is transponder is used.

**viii. Who can access this portal and how to get authorization?**

Secretary, DM / Relief Commissioners of all States, besides MHA can access the site. As it is protected site, user name and password are required for accessing the data. The State Government has to send details of authorized official as per the NDEM-FORM-1 given in Annexure-1, duly signed by the competent authority for obtaining user name and password.

(NB: Please note that the authorized mobile number in the NDEM - Form-1 Annexure-1 is very important since the one time password (OTP) will be sent only to this mobile for accessing classified/secret data.)

**ix. What is the speed of this connection?**

For primary nodes the speed is 2 mbps and for the user nodes, the speed is 384 kbps.

**x. How this site is different from Bhuvan?**

Bhuvan portal can be accessed through internet connection where non- classified images/products are made available to the users. Apart from disaster related information, the portal is equipped with general thematic information and satellite imageries (2 years older) for download. NDEM portal is secured; only authorized users can access the site. In NDEM portal users can access both classified/restricted data products related to disaster management.

**xi. What kind of satellite images are hosted on this portal?**

Satellite imageries with varying resolutions of 100 m to 1m are hosted onto the portal, depending on availability and occurrence of disaster event.

**xii. What kinds of database layers are available?**

Currently, Road, Rail, River, Administrative boundaries, Flood layers, Land Use / Land Cover (LULC) layers, Settlements, Point Of Interest (POI) layers, IDRN (Indian Disaster Resource Network) database , Central Water Commission (CWC) Gauge Stations, Hospitals (as available from open source) and, Relief shelter information (limited)are available. Refer Table-1 & 2 of this manual for details.

**xiii. Are flood maps made available to States? Whether one State can see another State flood maps?**

Flood maps are made available to the respective State Government Departments as and when the event occurs in that particular state. The State authorized officials can access only the products pertaining to their State. For eg. Uttarakhand data can be accessed only by the authorized State officials of Uttarakhand Government only. However, MHA is authorized to access to all the data sets hosted on the portal

**xiv. Whether flood hazard map is available for all states? What is it's utility?**

Currently flood hazard atlas is available for two states i.e., Assam and Bihar. For utility, please refer to the section 7.0 'Success Story' where the State Govt of Assam utilized the flood hazard maps.

**xv. What security measures are implemented for this site?**

The data has been organized State wise under various security levels. Satellite VPN itself is secured network. Further, only authorized officials only can access the site with valid username and password. The data will be encrypted in future. Using decryption algorithm user can access the data Unclassified data can be accessed after login (with user name and password). For classified (restricted/secret) data access, separate link is available within the site. Upon clicking the link, One Time Password (OTP) will be sent to authorized/registered mobile number provided in NDEM-FORM-1 (Annexure-1). User has to submit the supplied OTP, within 15 minutes. Upon verification, the required data will be visible / accessible to the user.

**PART-2: NDEM Version-2.0 Operational Manual**  
**(VPN portal)**

# Chapter-5

## NDEM Operation Procedure

### 5.1 About the Operational Manual

This manual provides step-by-step procedure to access the NDEM portal for products and services. No specific software / resources are required except a browser to access the NDEM portal. However, it is to be noted that NDEM portal is on DMS-VPN and the computer / PC should be connected to DMS-VPN. It cannot be accessed on the system connected to Internet. Using this user friendly manual, one can access the NDEM services with ease.

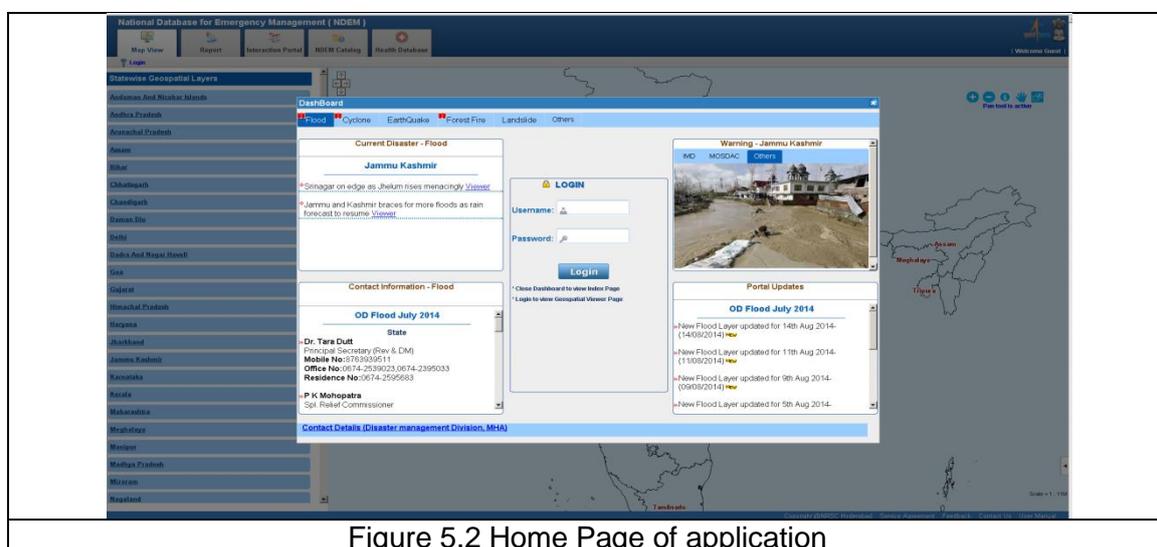
### 5.2 How to Access the NDEM Portal?

The URL for accessing the NDEM Portal is <http://10.254.7.15> or <http://10.254.7.15/index.php>

The above address has to be typed in browser (as shown in Figure-5.1) of the system connected to ISRO-DMS-VPN network. The portal can be best viewed in the browser like - Google Chrome version 19.0 or Higher.



After entering the URL, The NDEM-Home Page will appear as shown in Figure-5.2



### **5.3 Who can access NDEM Portal?**

User name and password are required for accessing the products and services hosted on NDEM portal. As per the nominations received from State Secretary, DM/Relief Commissioners, designated official is provided the username and password details for accessing. For obtaining the login information (user name & password), State Government has to send details of authorized official as per the NDEM - Form-1 (refer Annexure-1), duly signed by the competent authority. MHA is also provided with username and password for accessing the information available on all States. (NB: Please note that the authorized mobile number in the NDEM - Form-1 Annexure-1 is very important since the one time password (OTP) will be sent only to this mobile for accessing classified/secret data).

### **5.4 Access of products and services**

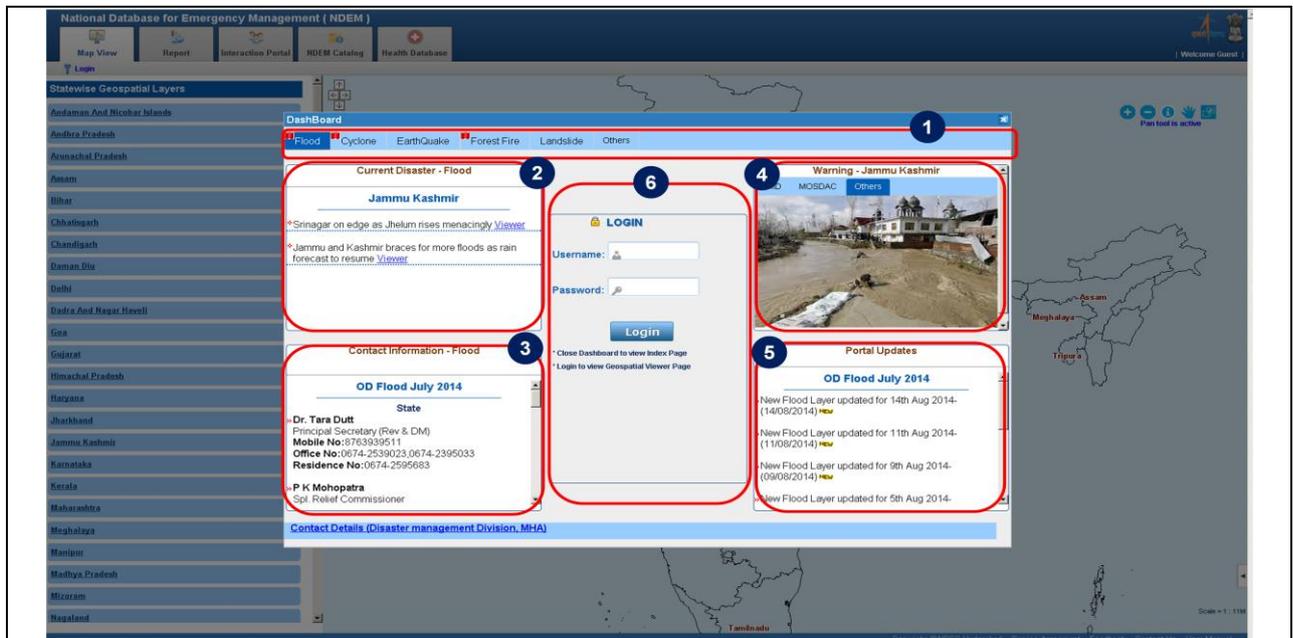
The data has been organized State wise under various security levels. The State authorized officials can access only the products pertaining to their State. e.g. Odisha data can be accessed only by the authorized State officials of Odisha Government only. Data products like base layers can be accessed without login by closing the Dashboard but the layers other than base layers can be accessed only after login. User has to enter the Username and Password for Login in the provided panel (as shown in Figure-5.3). If user credentials are valid, the user gets the customized viewer depends on the user type.

### **Home page**

Home page of NDEM Version-2.0 is a dashboard of disaster events which provides brief information of current disaster events. It contains six panels which represents different information (as shown in Figure-5.3):

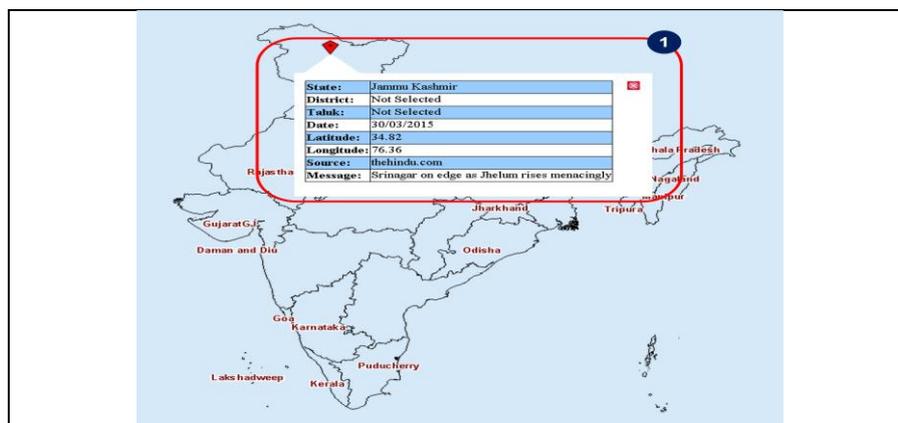
- 1 Disaster Tabs: Disaster Tabs provide the information of different types of disaster. A small red color flag shows Active Disaster Events.
- 2 Current Disaster Event News: This panel shows the disaster news of the current event for a particular state. This news can be visualized on map viewer as shown in Figure-5.3 (A) and/or can be downloaded as file in different formats.
- 3 Current Disaster Event Contact Details: This panel provides the contact information of the district Collector/Manager of the disaster affected districts.

- 4 Current Disaster Event Warning: This panel shows the disaster warning from different departments.
- 5 Portal Updates: This panel shows the recent disaster related updates on the portal.
- 6 User Login Panel: Panel to enter the user credentials for login.



1. Disaster Tabs (Active Disaster Events shows through small red color flag)
2. Current Disaster Event News
3. Current Disaster Event Contact Details
4. Current Disaster Event Warning
5. Portal Updates
6. User Login Input

Figure 5.3 Dashboard

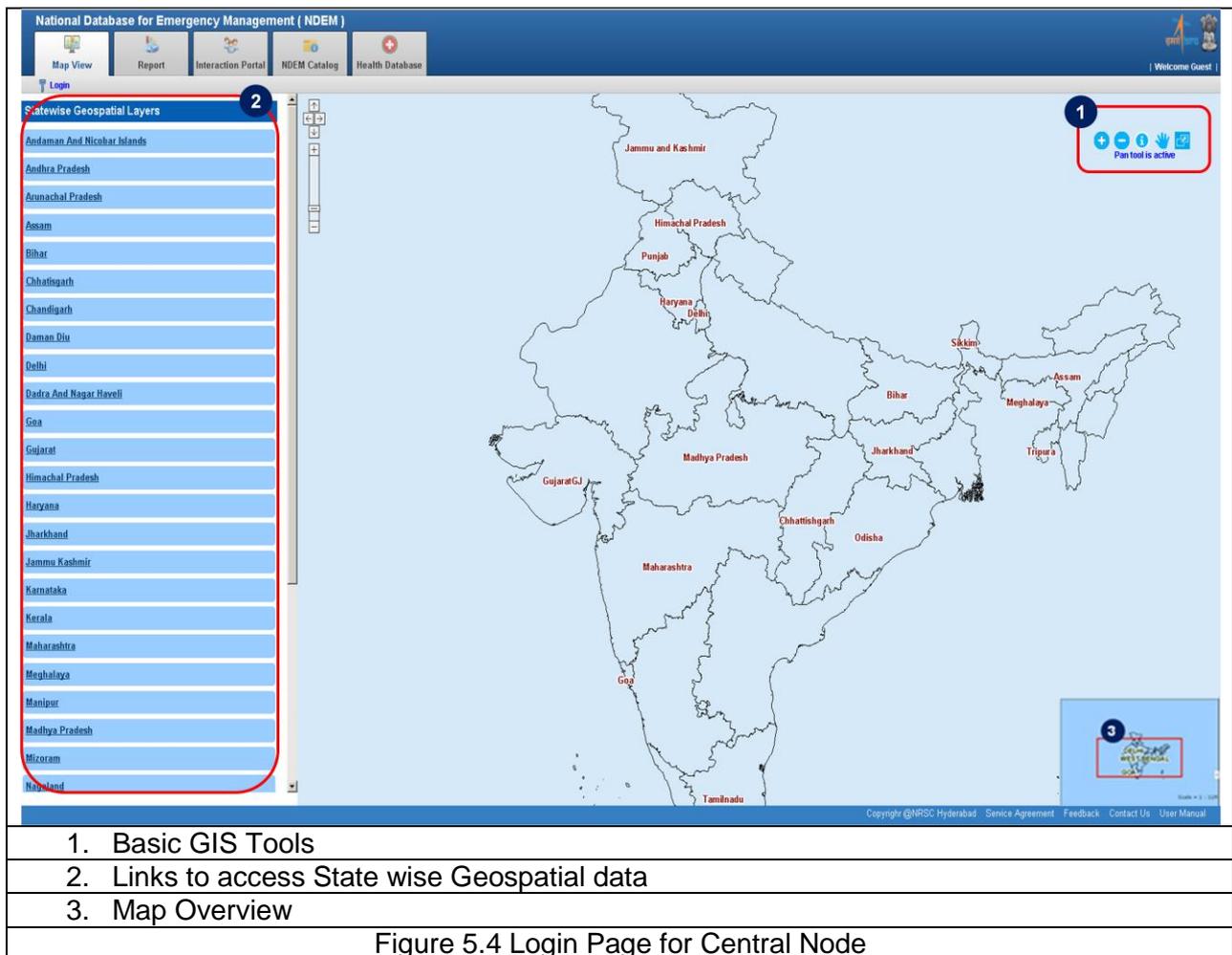


1. News detail

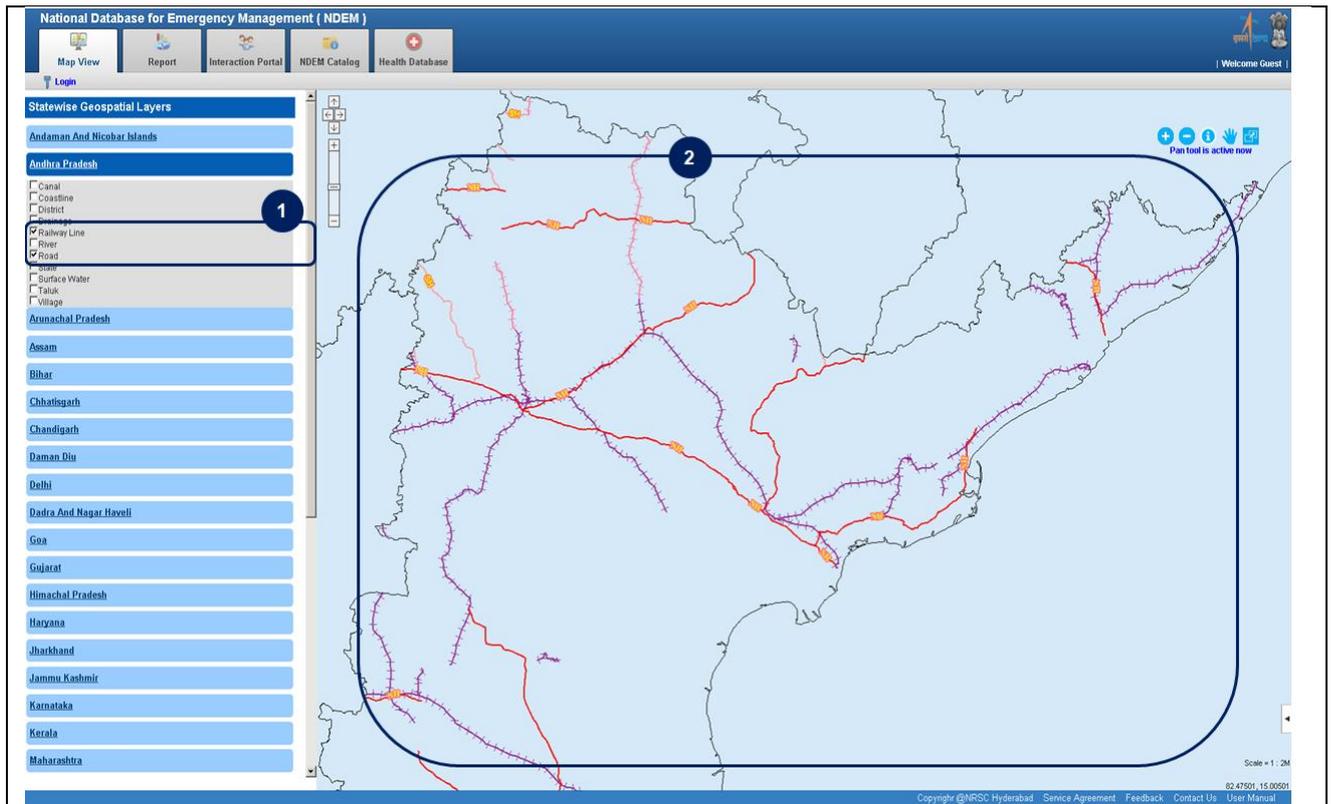
Figure 5.3(A) News detail on map viewer

## 5.5 Data products without login

The home page without login contains a map, IP based geospatial data, basic GIS tools etc. Each of these is explained in the coming sections. Figure 5.4 shows the map viewer without login. In left panel shows the base layers of particular state for state users and all state base layer for central node.



On the left side panel, state wise base layers are available which can be viewed on the map by clicking the checkbox corresponds to that layer. Figure 5.5 shows the overlaid layer on the map. Base layers like state boundary, district boundary, taluk boundary, village boundary, road, railway lines, drainages, coastlines, surface water etc can be accessible without login.



1. Railway Line & Road layer for one State (Andhra Pradesh)
2. Selected layers on Map

Figure 5.5 State wise Geospatial Layers

### 5.5.1 Basic GIS Tools description

Basic GIS tools such as zoom-in, zoom-out, Pan, measurement, identification tool, zoom to the map extent, length and area measurement tools are made available without login (Figure-5.6).

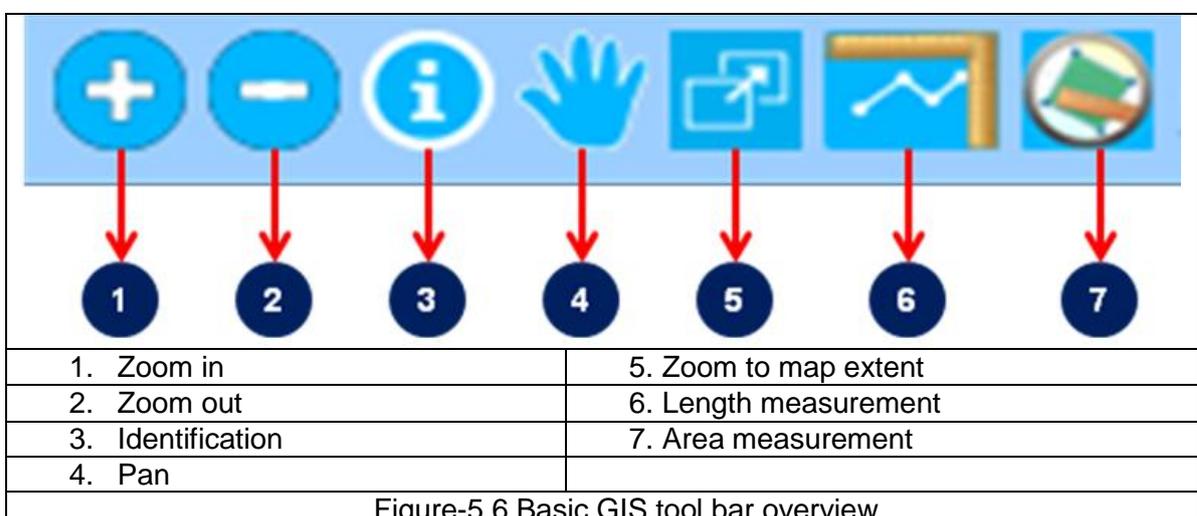
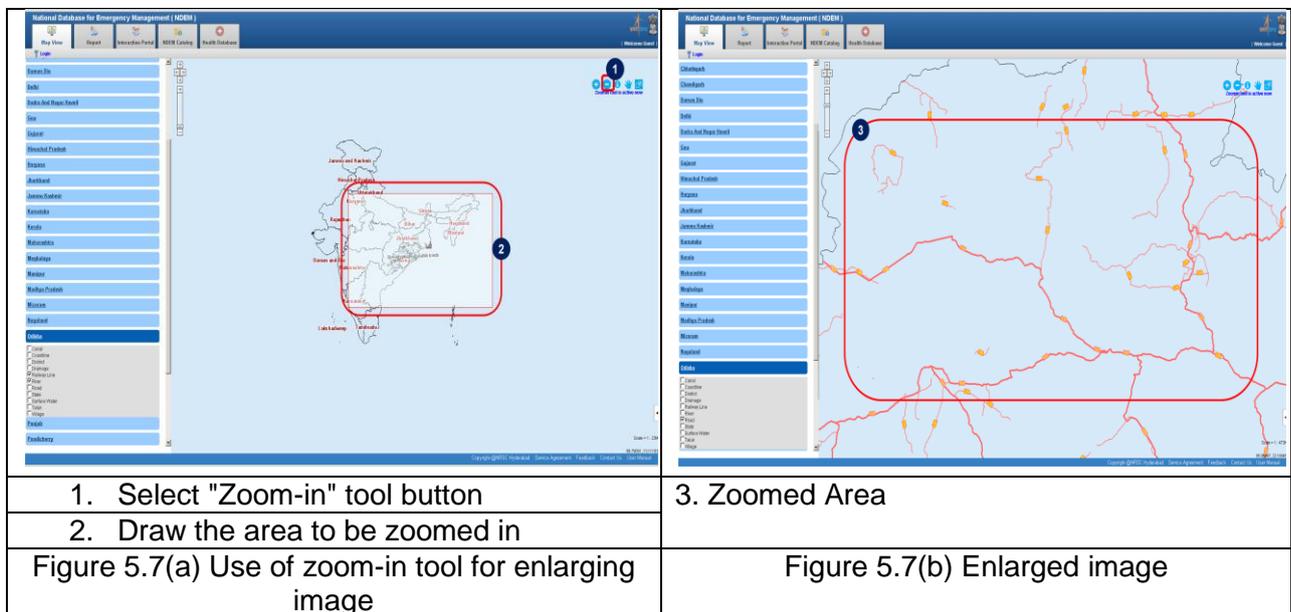


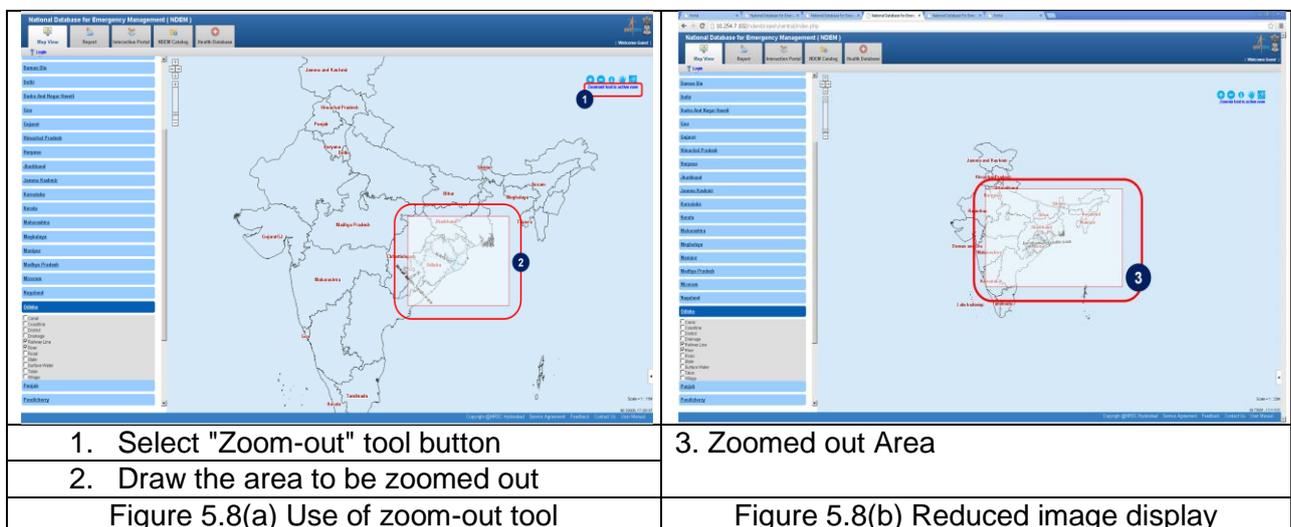
Figure-5.6 Basic GIS tool bar overview

### 5.5.2 Zoom-in and Zoom-out tool

For enlarging the image to see the details more clearly zoom-in tool is used. User has to click on Zoom-in button and then drag the mouse over the image for enlarging the contents displayed (Refer Figure-5.7 a & b).



Similarly, zoom-out tool is used for reducing the display for seeing overview (Refer Figure-5.8 a & b)



### 5.5.3 Identification tool

Identification tool is used to know the attributes (details) of the selected layer by performing the following steps (Refer Figure-5.9):

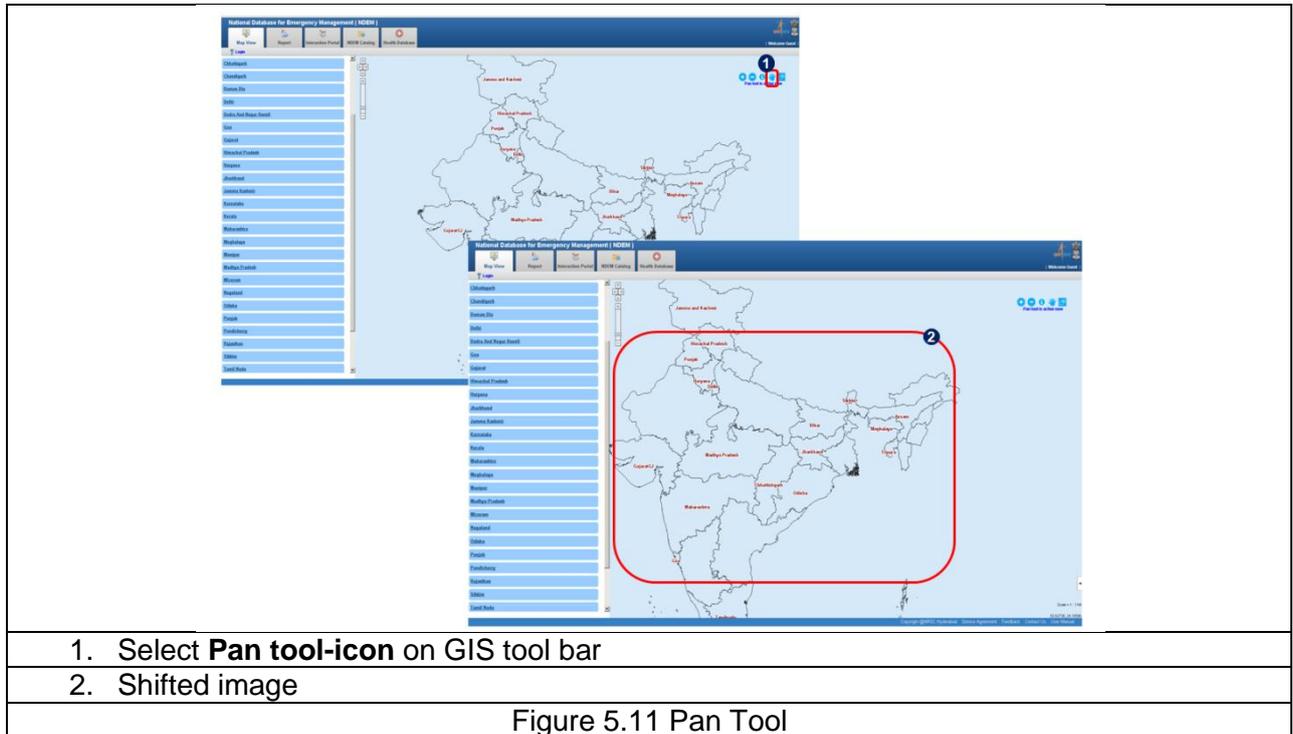
1. Click on the i-icon on GIS tool bar
2. Click on the part of the layer (State layer of Andhra Pradesh) on the map viewer.



### 5.5.5 Pan Tool

To shift the map in any direction, Pan tool is used as shown in Figure 5.11. The following steps have to be done:

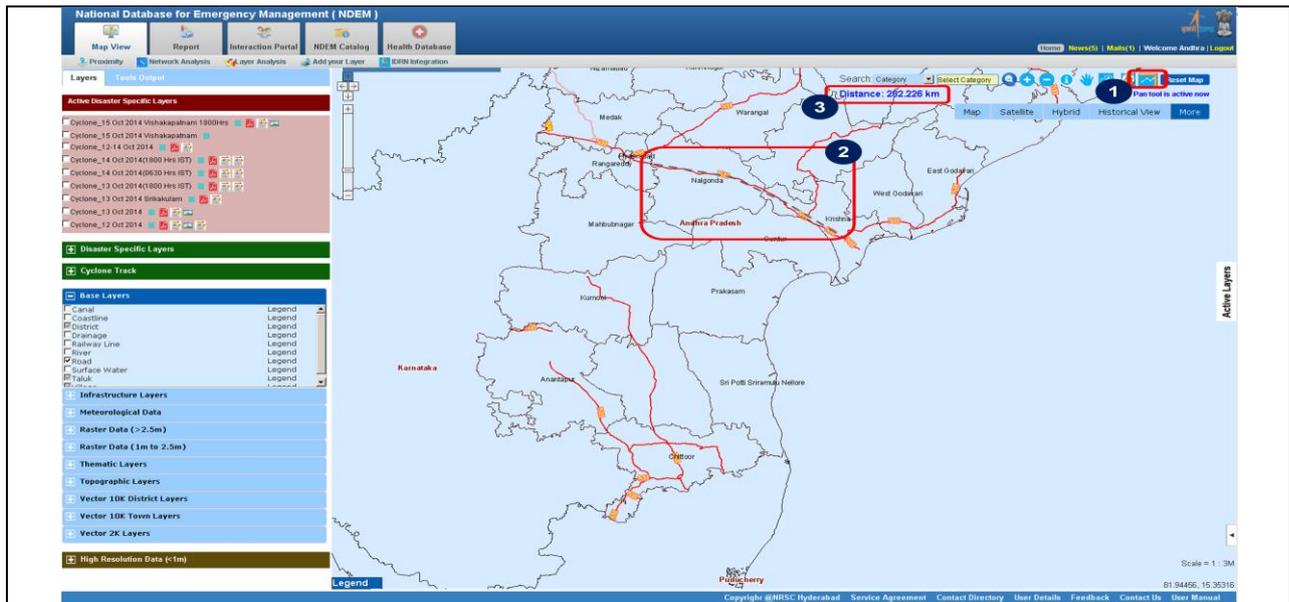
1. Click on the Pan Tool icon in GIS Tool bar
2. Shift the map in any direction



### 5.5.6 Measure Distance tool

To measure the length of a particular segment of a selected layer, the following steps to be followed

1. Select the measure-distance icon from the GIS tool bar.
2. Click on the image / layer up to required length and double click to end the segment.
3. The distance/length of the user drawn segment (line) is displayed in meters and also kilometers at the top of the map viewer. (Refer Figure-5.12)



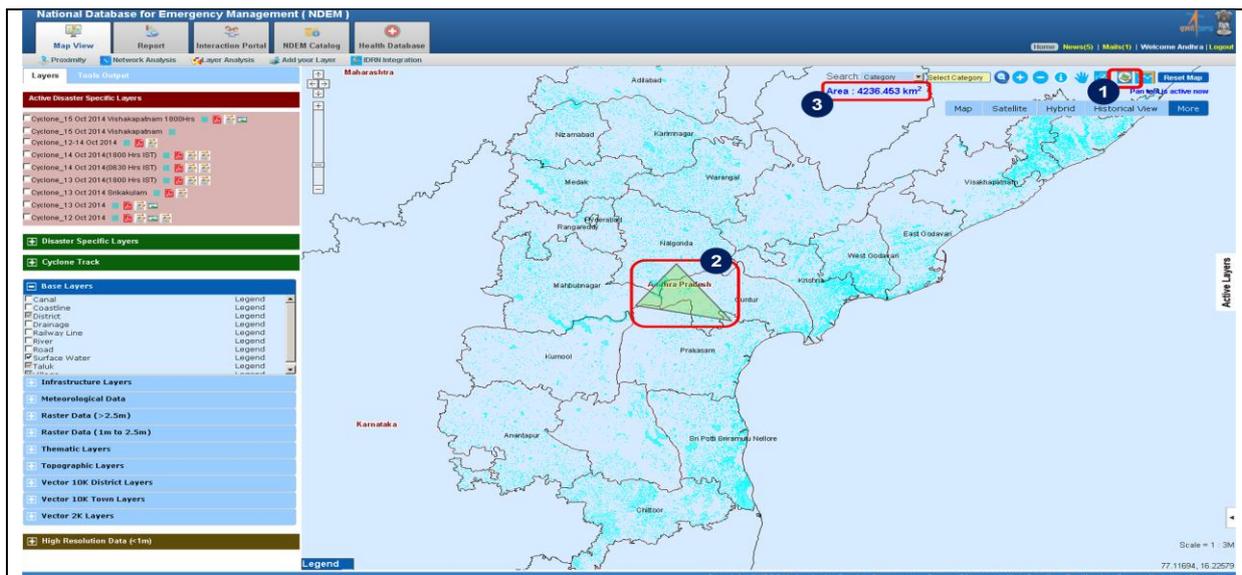
1. Select "Measure Distance" tool
2. Draw a line on the map
3. Length of the line in m/km

Figure 5.12 Measure Distance Tool

### 5.5.7 Measure Area tool

To measure the area of a user drawn polygon

1. Select the measure-area icon from the GIS tool bar.
  2. Drag the mouse onto the map and draw a polygon as shown in cyan color.
  3. The area of the polygon is displayed in sq meters at the top of the map viewer.
- (Refer Figure-13).

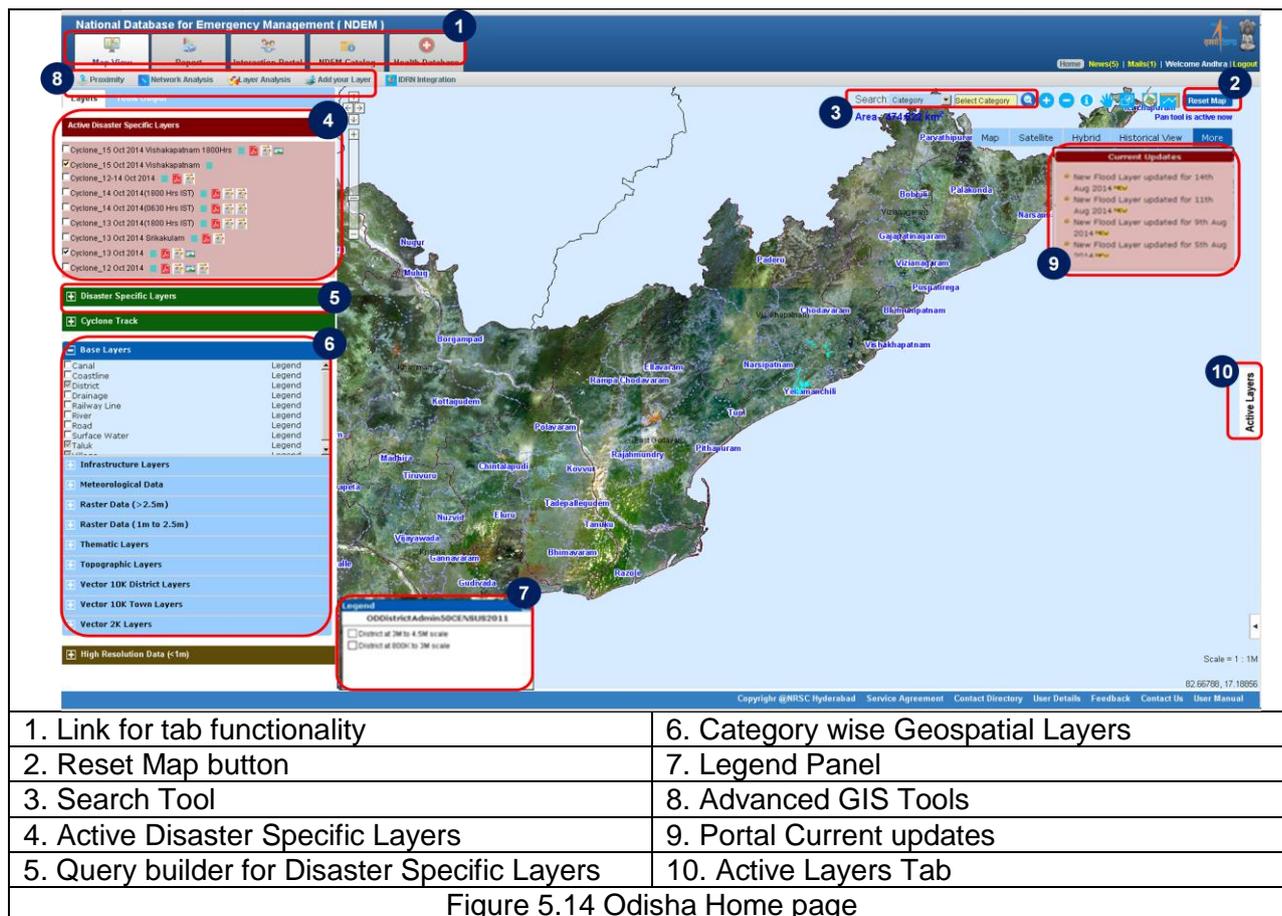


1. Select "Measure Area" tool
2. Draw a polygon on the map
3. Area of the polygon in sq.m/sq.km

Figure 5.13 Measure Area Tool

## 5.6 Data Products & Services after Login as Odisha

The state home page after login contains a map zoomed to the login state, active disaster specific layers for that state, category wise geospatial data, advanced GIS tools etc. Each of these is explained in the coming sections. Figure 5.14 shows the map viewer page for Odisha where all the data and services correspond to Odisha are made available.

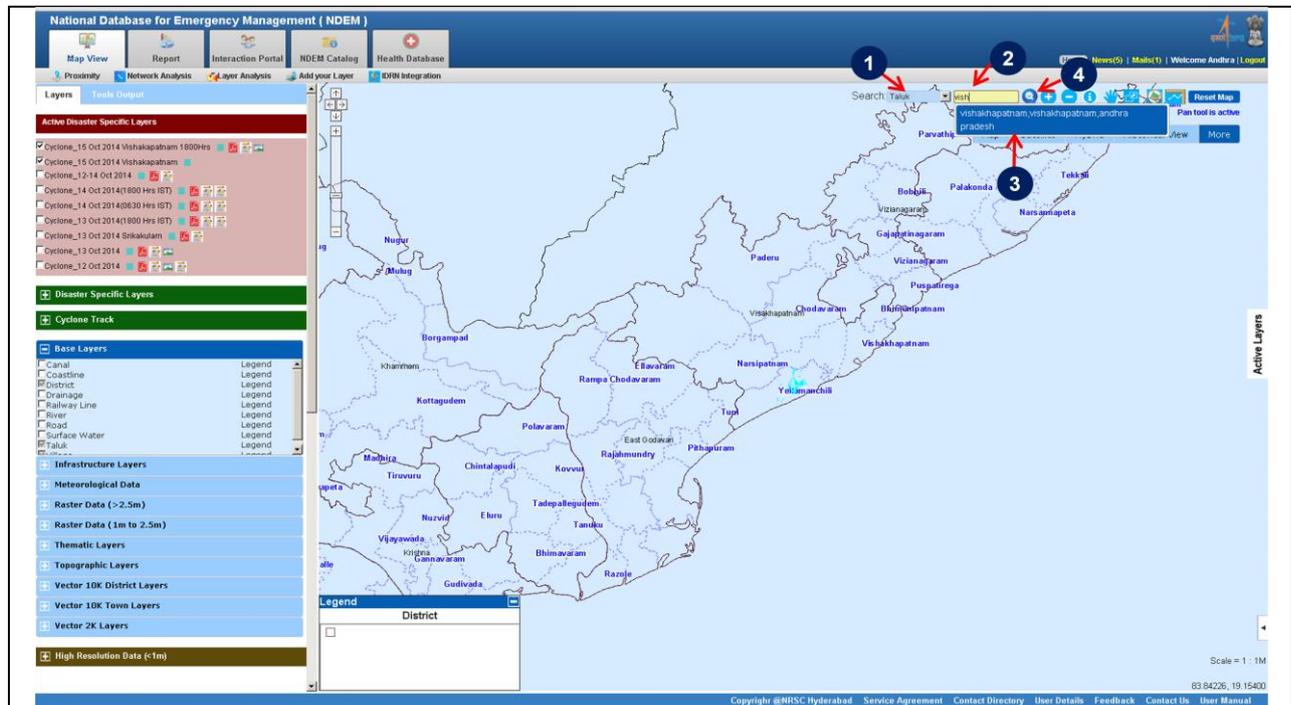


### 5.6.1 Reset Map

Reset Map provides the facility to reset the map viewer to default condition. It is useful to reset the map in default condition.

## 5.6.2 Search Tool

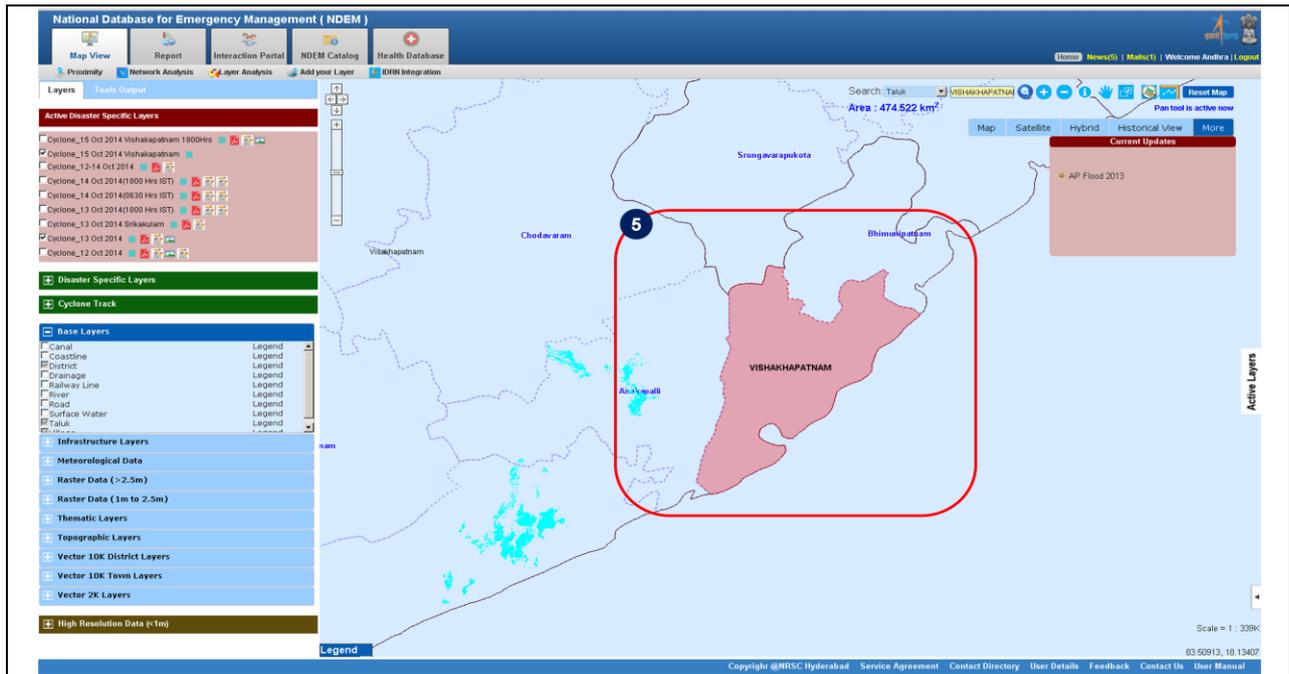
This tool is used for the searching of any location like city, taluk, district or POI (Point of Interest) on the map. This can also be used to locate a point having Latitude and Longitude on the map. The steps to perform search are shown in Figure 5.15.



1. Select Search category (District, Taluk, City/Town, Point of Interest or Lat/Long ).
2. Type place name.
3. Select name from autofill list.
4. Click on Search button.

Figure 5.15 Search Tool - Input

User can select search Category (District, Taluk, City/Town, Point of Interest or Lat/Long) and type minimum 3 letters in search box the auto-complete will be activated then the user can select the place and click on search button. The result will be viewed on the map viewer as shown in Fig. 5.16.



5. Map got zoomed-in to the searched District.

Figure 5.16 Search Tool - Output

**5.6.3 Active Disaster Specific Layers:** “Active Disaster Specific Layers” tab will appear in those state pages where any disaster has happened currently. It shows all disaster specific layers for the current event, legend of the disaster specific layer and downloadable products (Map, Report, JPEG etc). By default the latest available disaster specific layer is overlaid on map.

**5.6.3.1 Downloadable Products:** Apart from viewing geospatial data on map, information on certain products is hosted for download by the users. For downloading, click on ‘Download Map/ Download Reports’ option available on the right side of the layer name in the left panel.

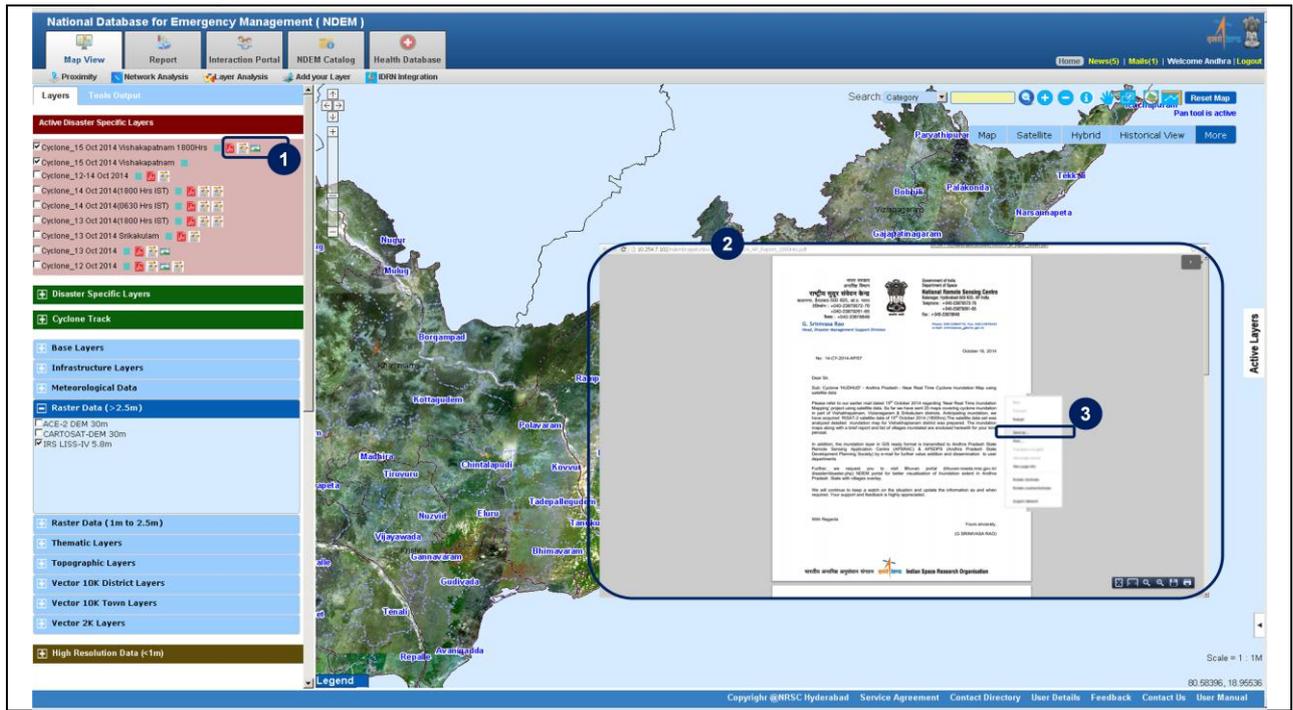
**5.6.3.1.1 Download Map:** User can download the various disaster inundation maps in PDF format with disaster specific geospatial data which are hosted on the server. User can click on the link for download Map icon. The data will be displayed in new window as shown in figure-5.17. Right click on the picture / map displayed and use ‘save as’ option to save it to the required location.

The screenshot displays the NDEM web application interface. The top navigation bar includes options like 'Map View', 'Report', 'Interaction Portal', 'NDEM Catalog', and 'Health Database'. The left sidebar lists various layer categories such as 'Active Disaster Specific Layers', 'Disaster Specific Layers', 'Cyclone Track', 'Base Layers', 'Crowd Sourced Data', 'Infrastructure Layers', 'Meteorological Data', 'Raster Data', 'Thematic Layers', 'Topographic Layers', 'Vector 10K District Layers', 'Vector 10K Town Layers', and 'High Resolution Data'. The main map area shows a map of Odisha with flood inundated areas highlighted in yellow. A pop-up window titled 'Flood Inundated areas in Part of Odisha State' is open, showing a detailed map of the flooded area and associated metadata. The pop-up window includes a 'Download Map in PDF' button, a 'Legend' section, and a 'Scale' of 1:3M. Three numbered callouts indicate the steps: 1. Click on Download Map Icon, 2. Map will be opened in New window, 3. Right Click and save the file in require location.

1. Click on Download Map Icon.
2. Map will be opened in New window
3. Right Click and save the file in require location

Figure 5.17 Download Map

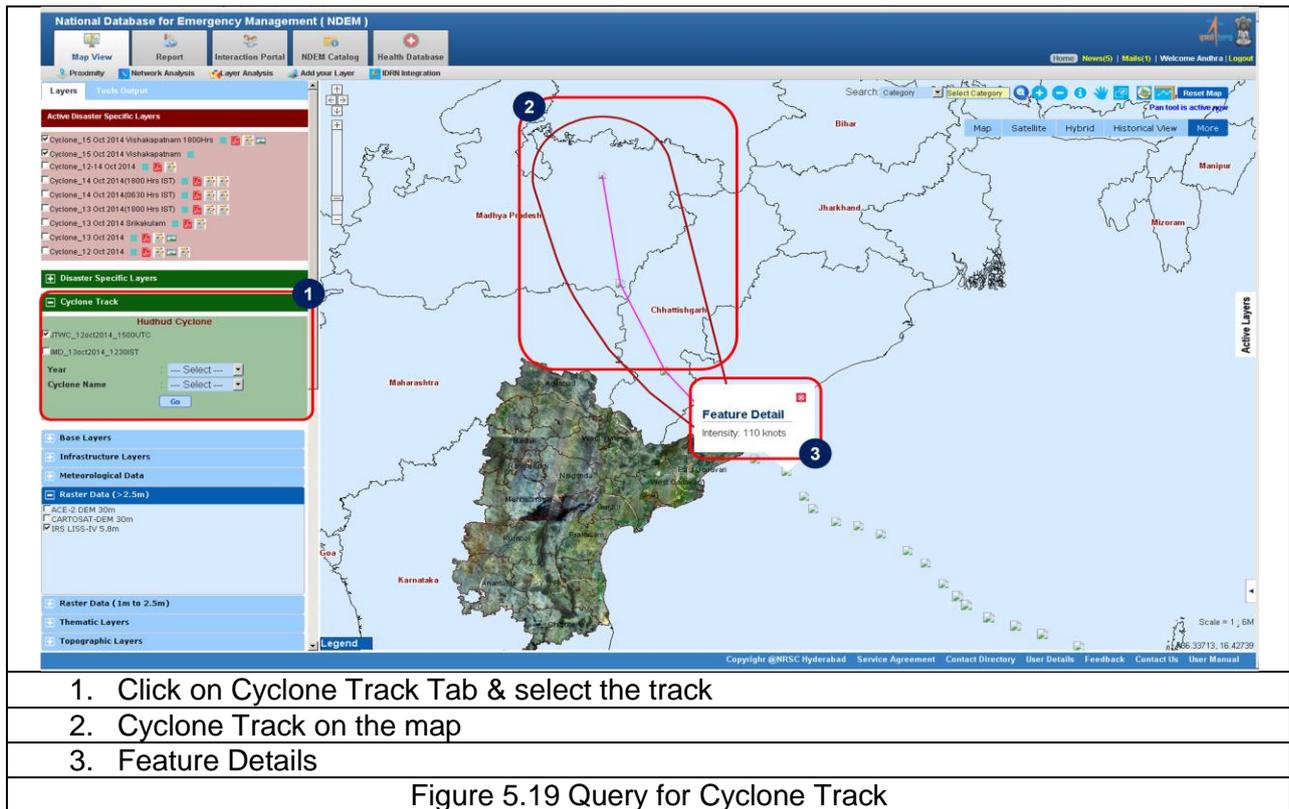
**5.6.3.1.2 Download Report:** User can download the report with disaster specific geospatial data which are hosted on the server. User can click on the link for download Report icon. The data will be displayed in new window as shown in figure-5.18. Right click on the report displayed and use 'save as' option to save it to the required location.



1. Click on Download Report Icon.
2. Report will be opened in New window
3. Right Click and save the file in require location

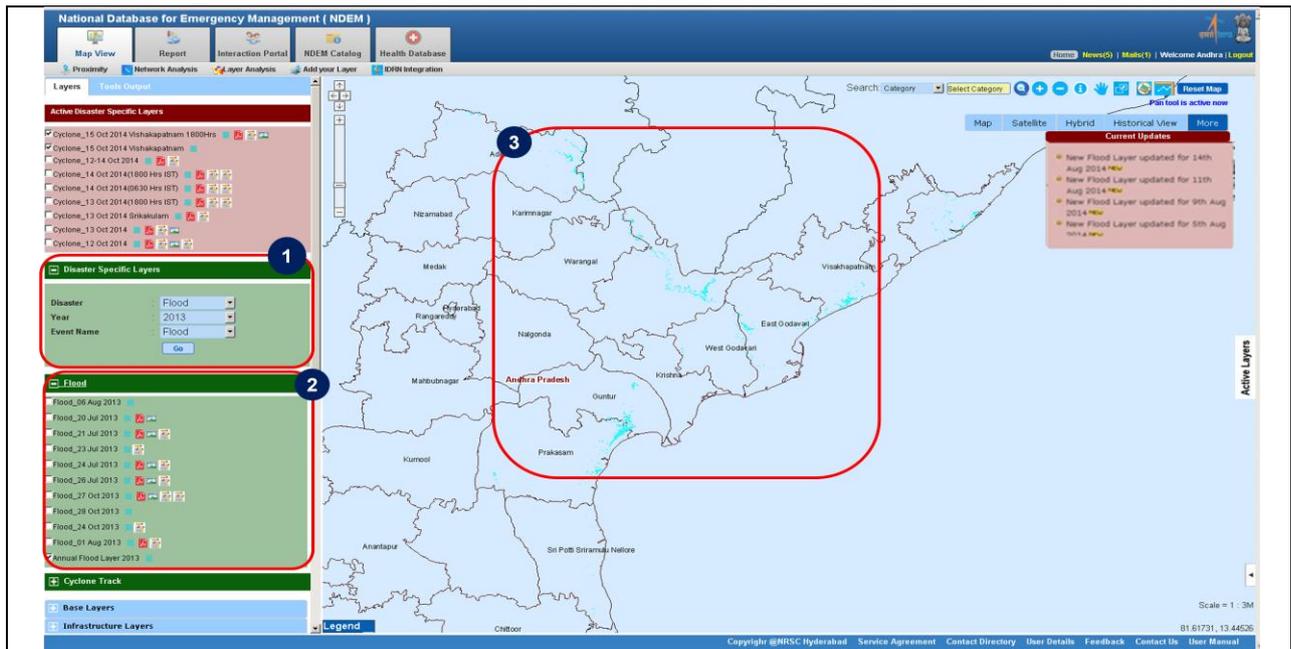
Figure 5.18 Download Report

**5.6.4 Cyclone Track:** “Cyclone Track” tab will appear in those state pages where any cyclone is about to come and the predicted track is available in warning/alert section of different departments like IMD, JTWC, and MOSDAC. This tab shows all cyclone tracks from different departments for particular event. By checking the checkbox of the output layer, the layer will be overlaid on the map as shown in Figure 5.19. By default the latest available track is overlaid on map.



### 5.6.5 Query Builder for Disaster Specific Layers

User can query for any particular disaster specific layer by using Query Builder on the left hand side panel. The query can be made after a combination of Disaster type, Year of disaster, Event name and Disaster Phase. The query result will be visible below the Query Builder panel itself. By checking the checkbox of the output layer, the layer will be overlaid on the map as shown in Figure 5.20.

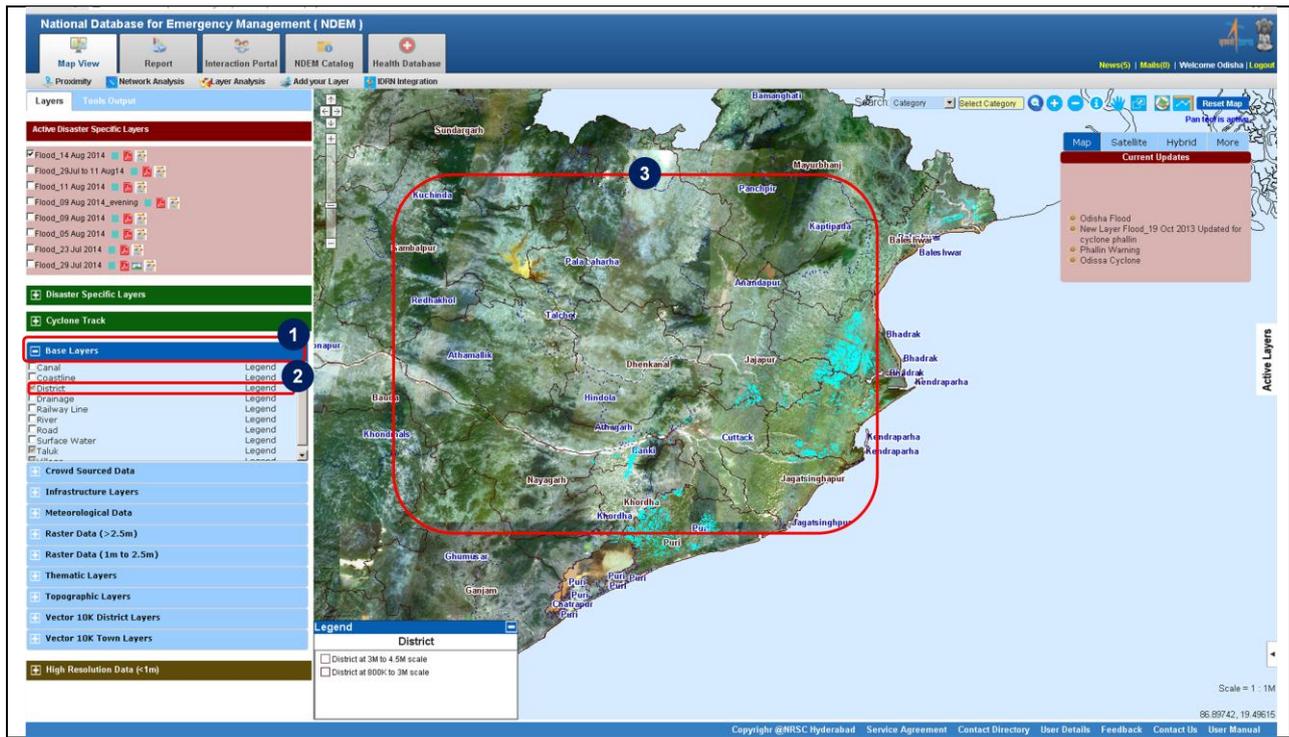


1. Select query inputs DisasterType/Year/Event
2. Select the layer
3. Disaster specific Layer on the map

Figure 5.20 Query for Disaster specific Layer

### 5.6.6 Category wise Geospatial Data

All geospatial data are categorized in different category like Base layers, Thematic layers, Infrastructure layers, Meteorological data, 10K Data, 2K data and Raster data, High Resolution Data etc. To access the data of any category user has to click on the category name and the list of data will come below this category tab. By checking the checkbox of the required layer, the layer will be overlaid on the map as shown in Figure 5.21.

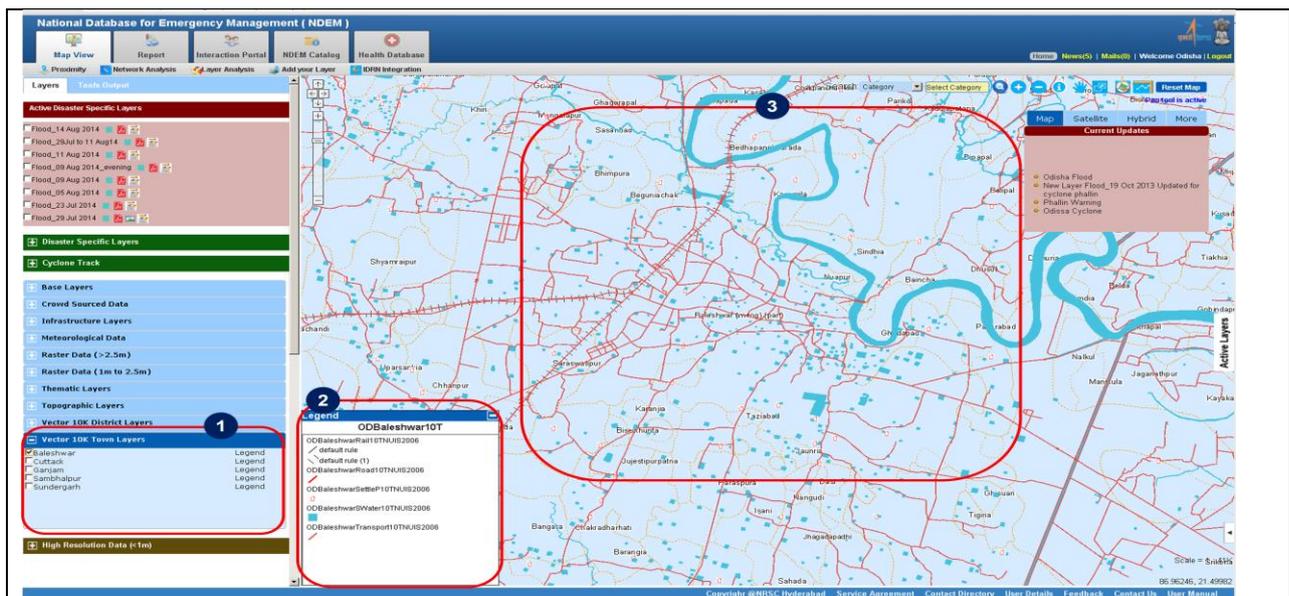


1. Select the Category
2. Checked the require Data Checkbox
3. Geospatial Layer on the map

Figure 5.21 Category wise Geospatial Data

### 5.6.7 Vector 10K Scale data

Vector data are also made available for each state at the scale of 10k. This can be accessible as District based and City based level as shown in 5.22.

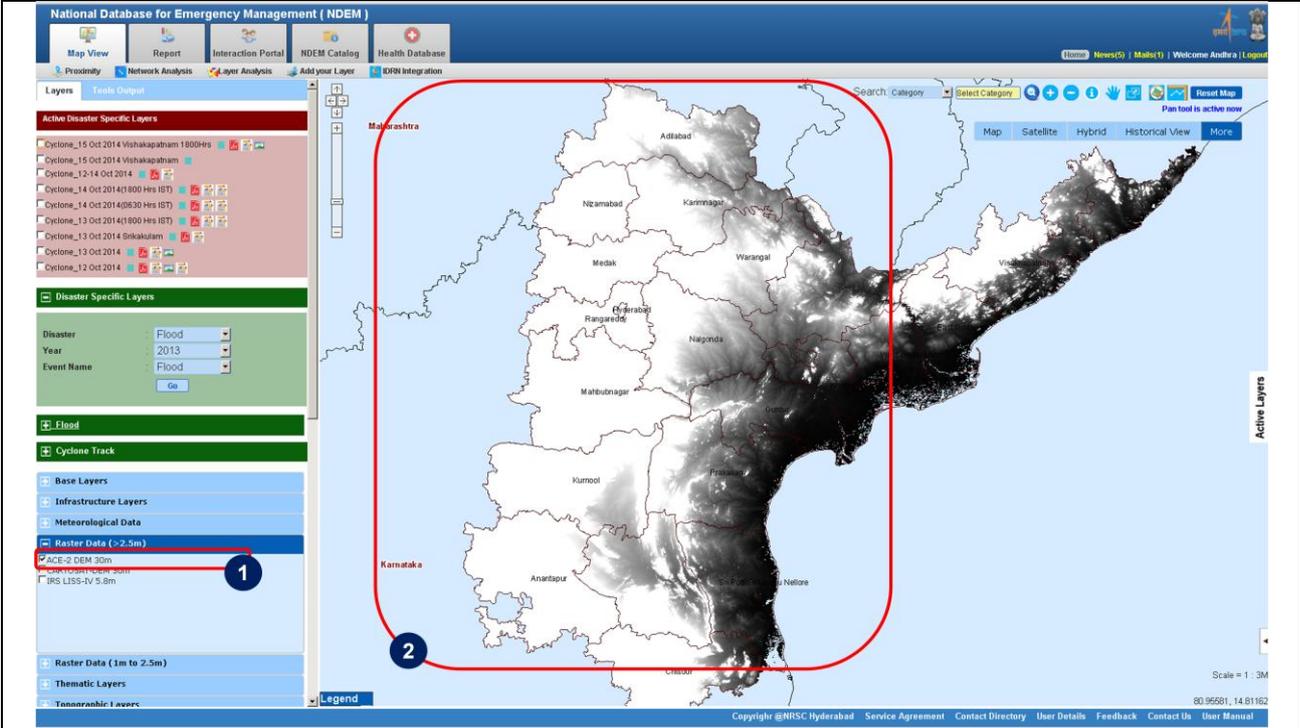


1. Select 10k vector layer
2. Legend for the layer
3. Layer on the map

Figure 5.22 Vector 10k Data

### 5.6.8 Raster DEM data

Raster Digital Elevation Model (DEM) data are also made available for the users. At present ACE-2 DEM and CARTOSAT DEM are available in this portal (Refer Figure-5.23).



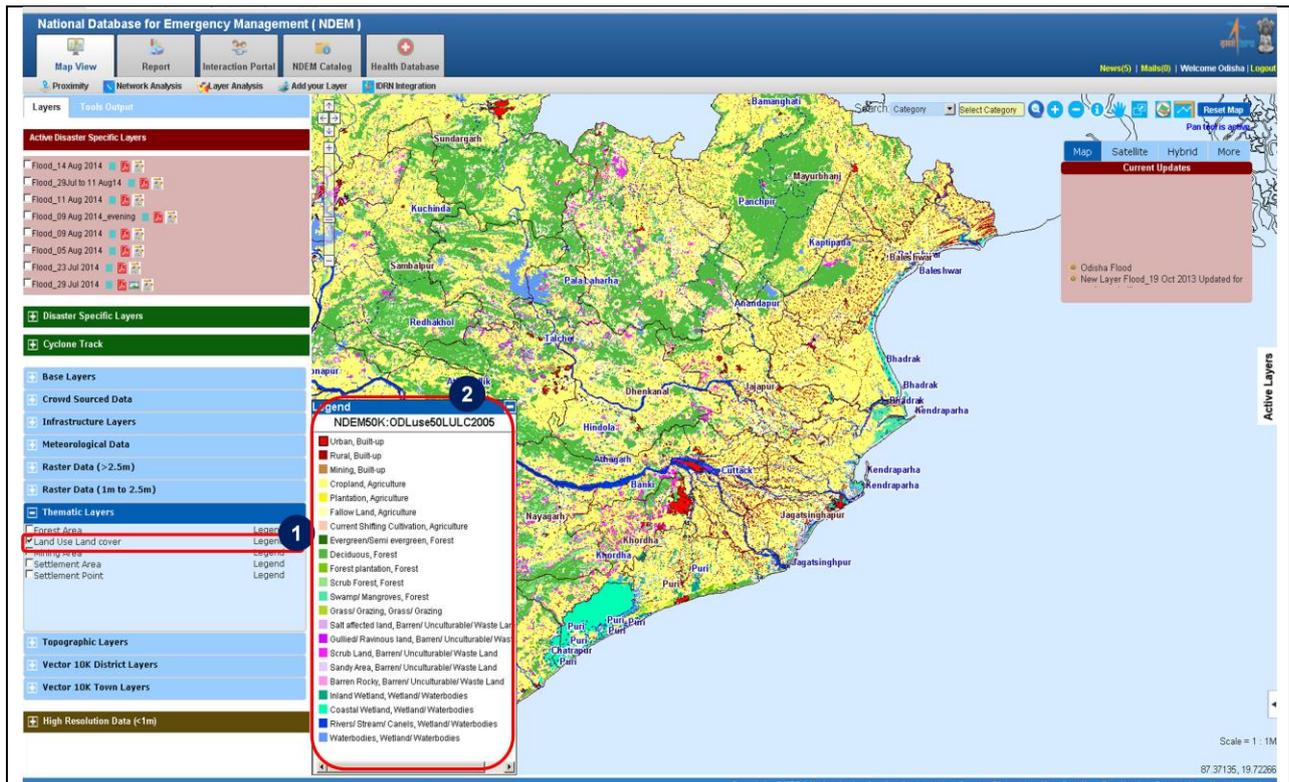
The screenshot shows the NDEM web portal interface. On the left, the 'Layers' panel is expanded to 'Raster Data (>2.5m)', where 'ACE-2 DEM 30m' is selected and highlighted with a red circle and the number '1'. On the map, a red box highlights the DEM data, with a blue circle and the number '2' indicating the map view. The map shows a grayscale elevation model of the Indian subcontinent, with state boundaries and names visible. The interface includes a top navigation bar with 'Map View', 'Report', 'Interaction Portal', 'NDEM Catalog', and 'Health Database'. A search bar and map controls are also present.

1. Select DEM from "Raster Data" tab data
2. DEM on the map

Figure 5.23 Raster DEM Data

### 5.6.9 Legend Panel

The legend of the vector layer is made available on legend panel for the information of the classified layer. Legend panel displays the legend of the current layer overlaid on the map. User can view legend of other layer also by clicking "Legend" link beside the layer name on the left panel. (Refer Figure 5.24)



1. Click on "Legend" link corresponding to desired layer
2. Legend for that layer

Figure 5.24 Legend

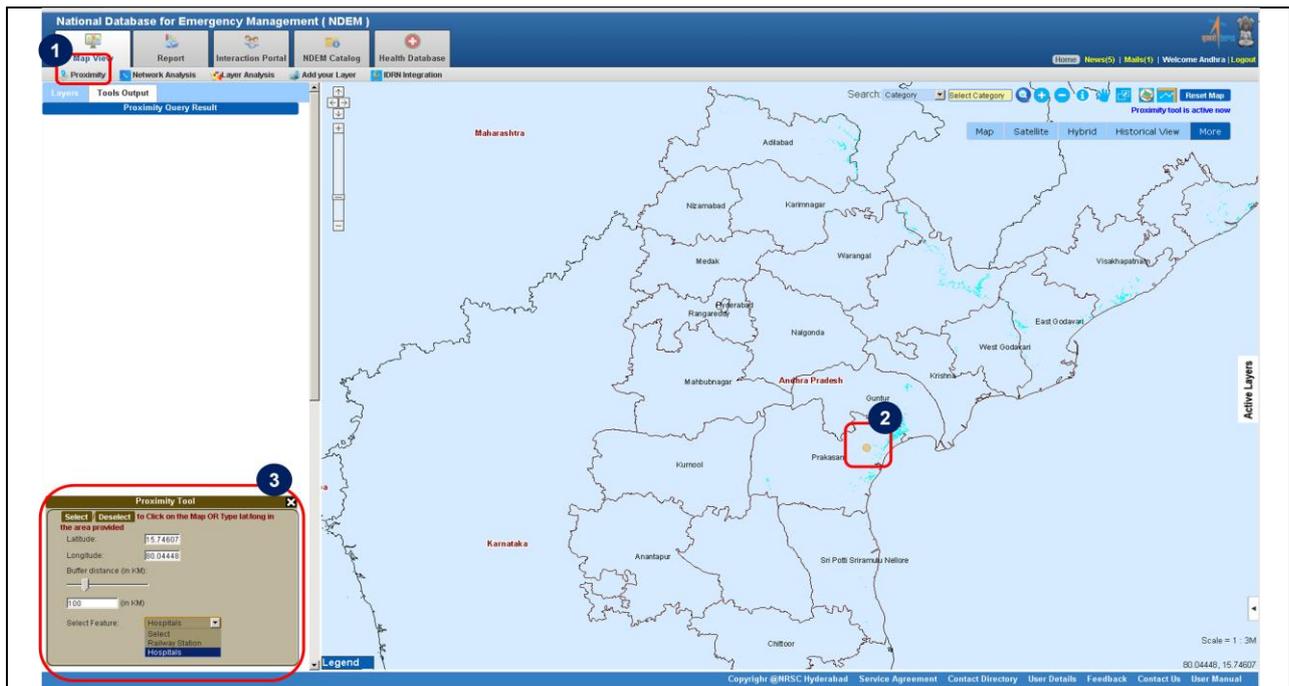
### 5.6.10 Advanced GIS Tool:

Advanced GIS tools are Decision Support System tools and Utility tools which can be used at the time of disaster situation. NDEM Version-2.0 provides four advanced tools (Proximity Tool, Add Layer Tool, Layer Analysis Tool and Network Analysis Tool).

#### 5.6.10.1 Proximity Tool

This is a DSS tool by which it is possible to know the proximity of the facilities from a given point. Query tool to find out the facilities availability (say relief shelters) within the user defined region has been developed and implemented.

To use the tool, user has to perform the following steps as shown in the Figure 5.25.



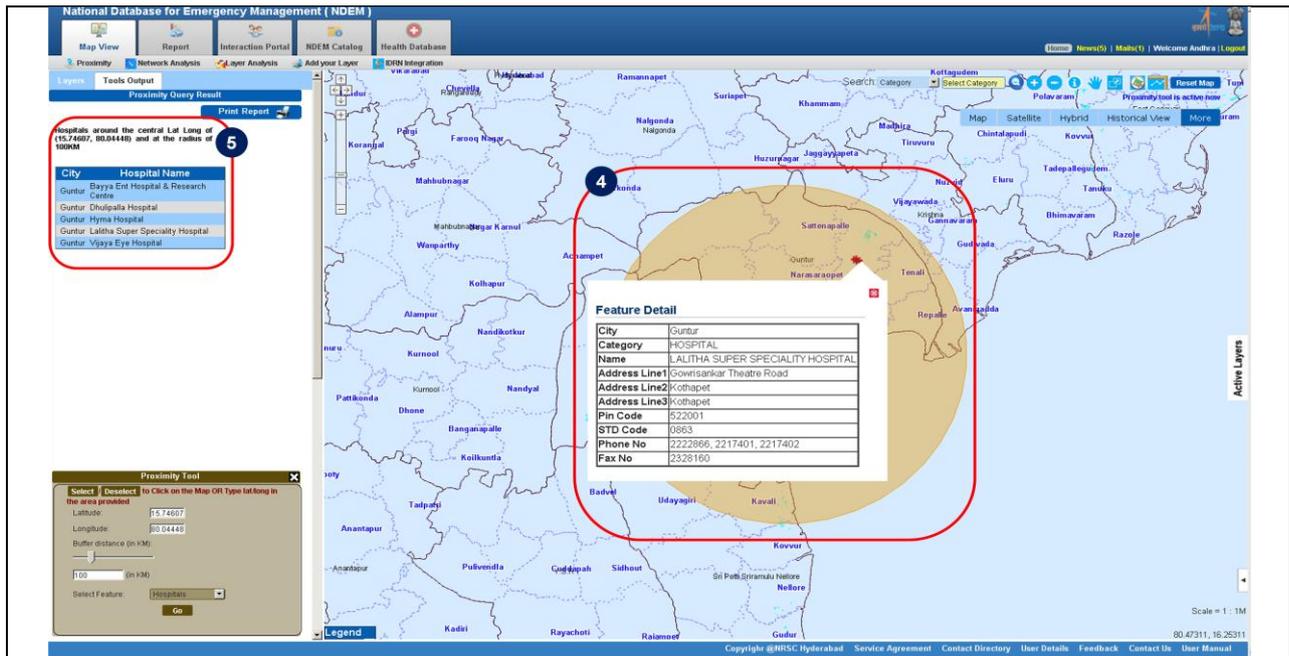
1. Select "Proximity" Tool

2. For coordinates (Incident Location), click on map or enter the values in specified textbox on left panel.

3. Insert Buffer radius by selecting the distance value through slider or enter the value in specified textbox. And select the required Facility.

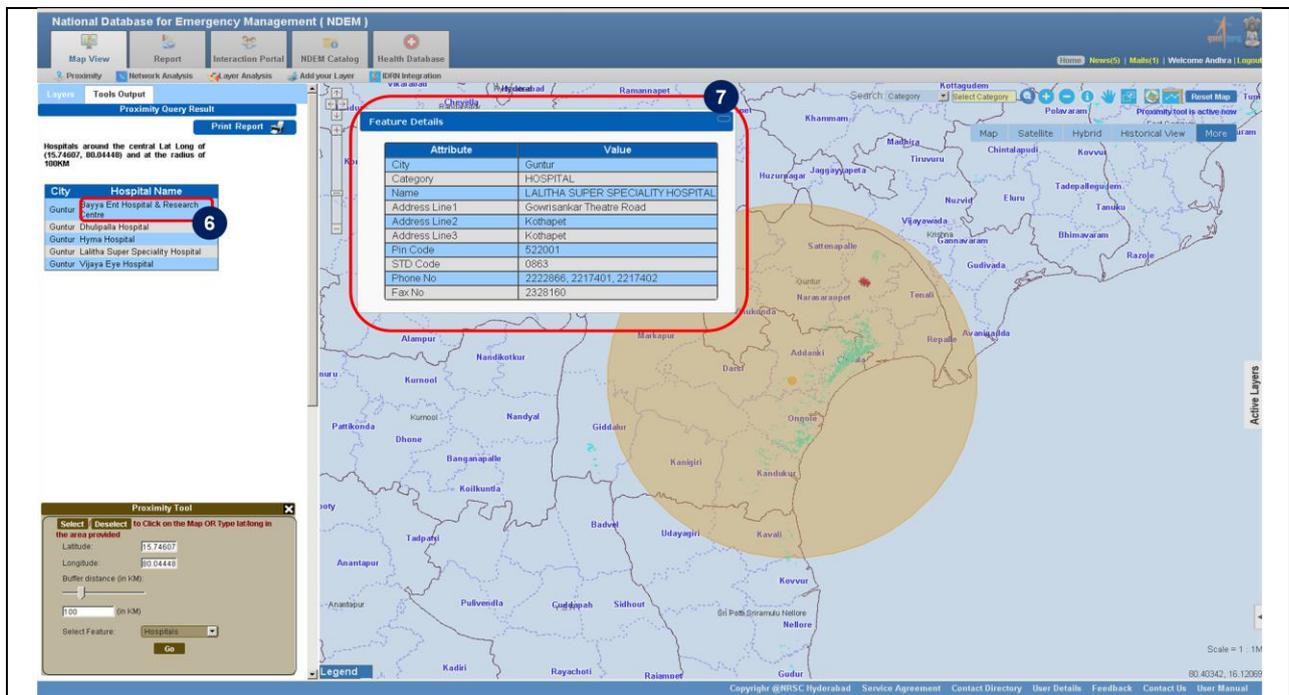
Figure 5.25 Proximity Tool - Input

The output of the proximity tool will be visible in tabular form on the left panel as well as layer inside a buffer circle form which is overlaid on map. Facilities available inside the user defined radius area will be displayed on the map where user can click on any point and get the related information. Similarly, on the left side Tool Output panel, user can click on any facility name inside the table and get the full detail of the corresponding facility as shown in Figure 5.26 and Figure 5.27.



4. Click on a feature on map, to get the details of that feature.
5. List of all available features with the cooresponding detail hyperlink.

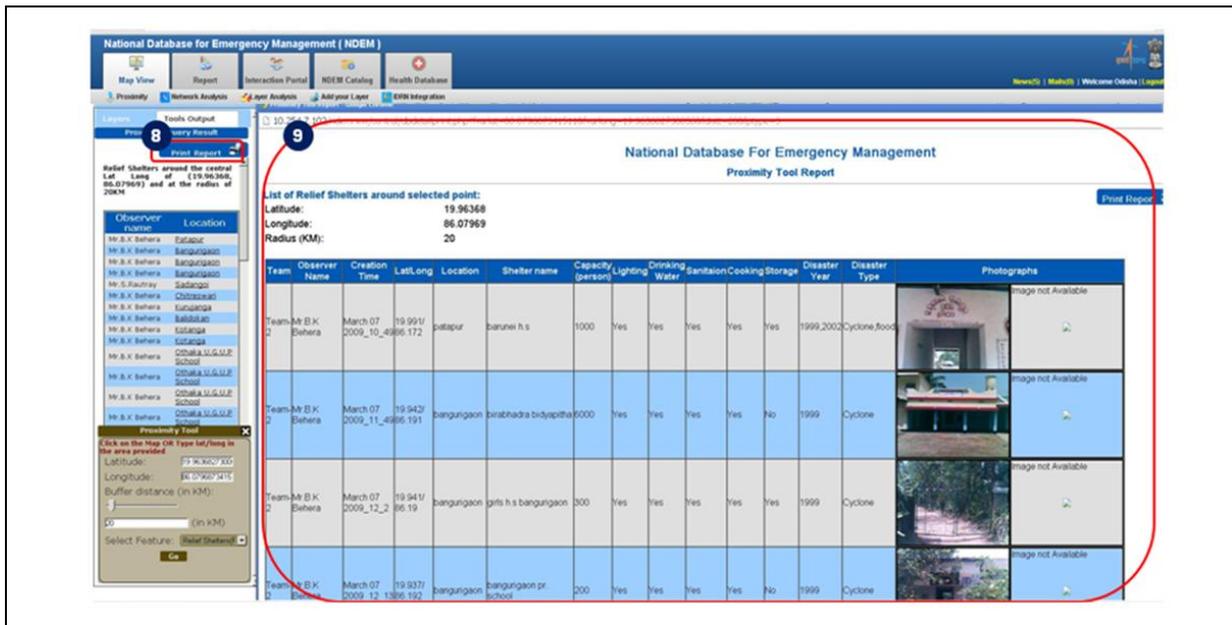
Figure 5.26 Proximity Tool – Get Detail of Features from Map



6. Click on the hyperlink to get further details.
7. Details of the selected link.

Figure 5.27 Proximity Tool – Get Detail of Features from Table

The report of the available facility can be printed by clicking “Print Report” button. The report will contain full facilities details in tabular form as shown in Figure 5.28.



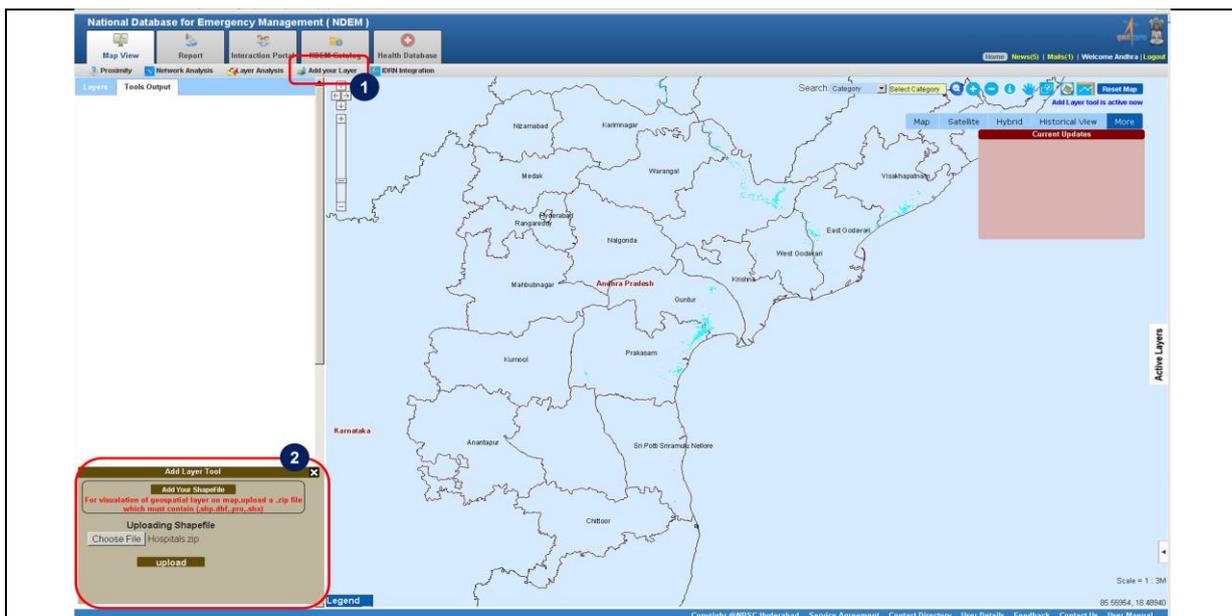
8. Click on “Print Report” button.

9. A printable Report.

Figure 5.28 Proximity Tool – Print Report

### 5.6.10.2 Add Layer Tool

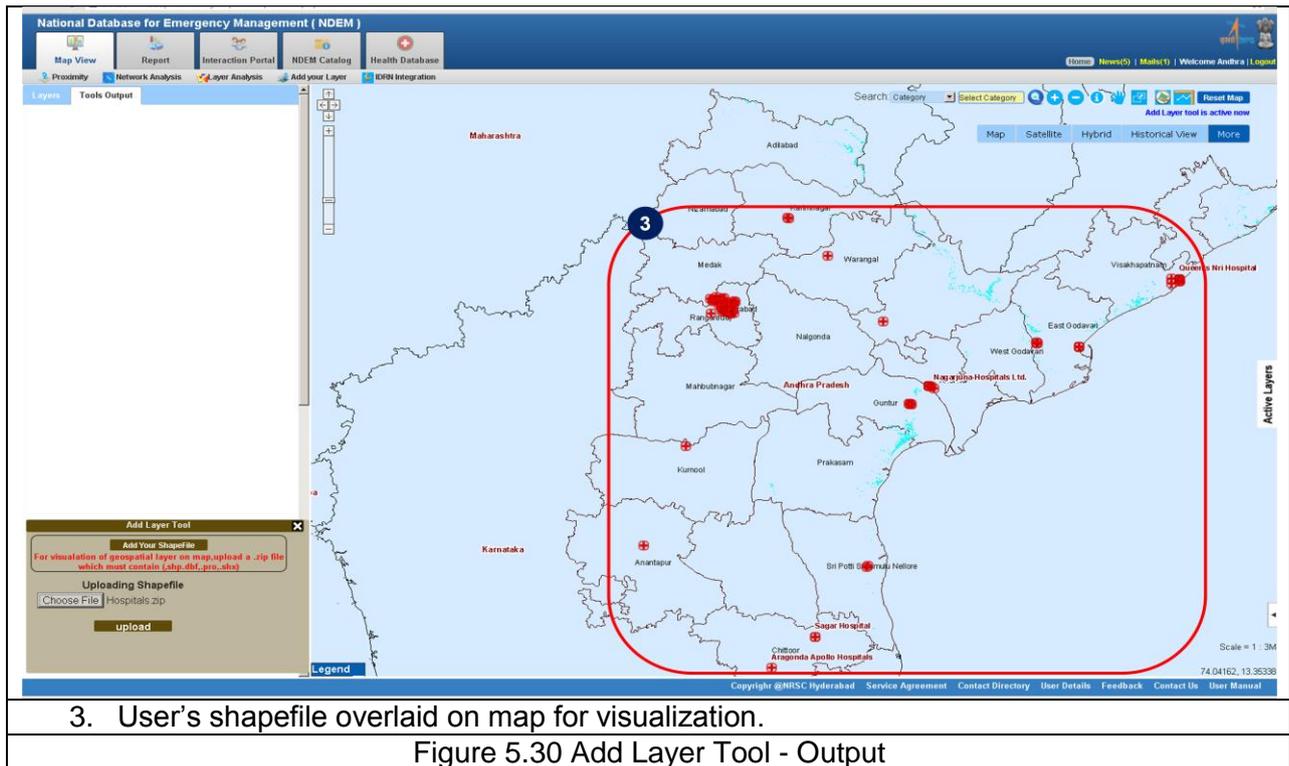
This is a Utility tool which can be use to overlay a user’s shape file on the map. Users can select their own shape-file and upload to overlay the file on the map for temporally visualization purpose. The steps to perform this operation refer Figure 5.29 and Figure 5.30.



1. Select “Add Layer” Tool.

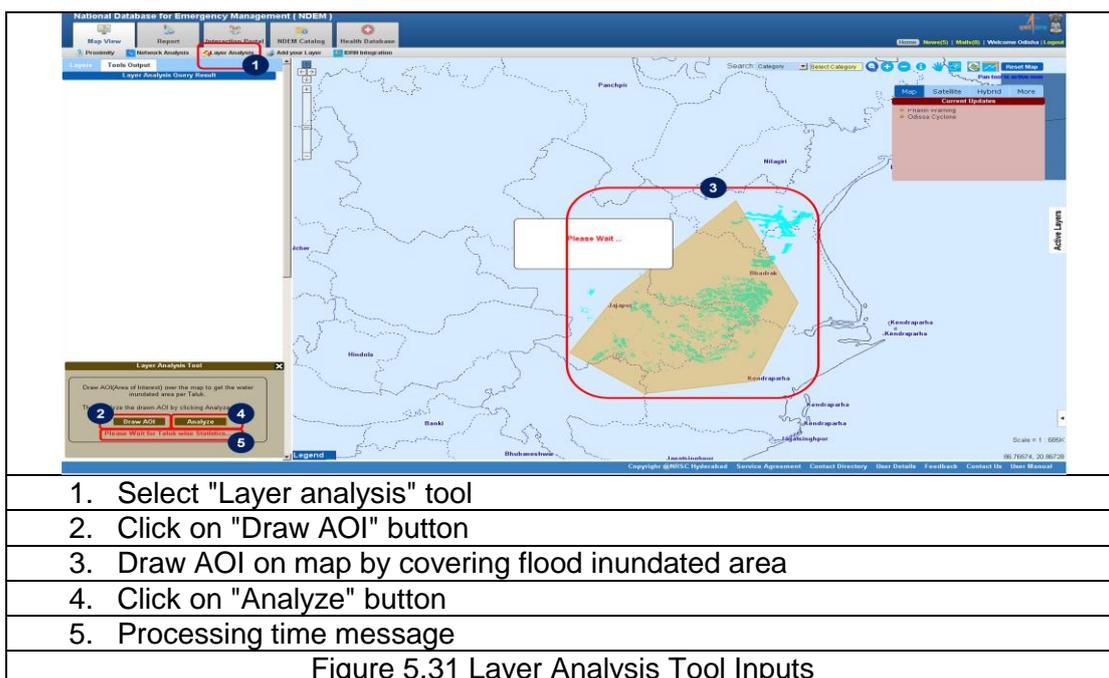
2. Select your shapefile by clicking “Choose File” button then click on “Upload” button.

Figure 5.29 Add Layer Tool - Input

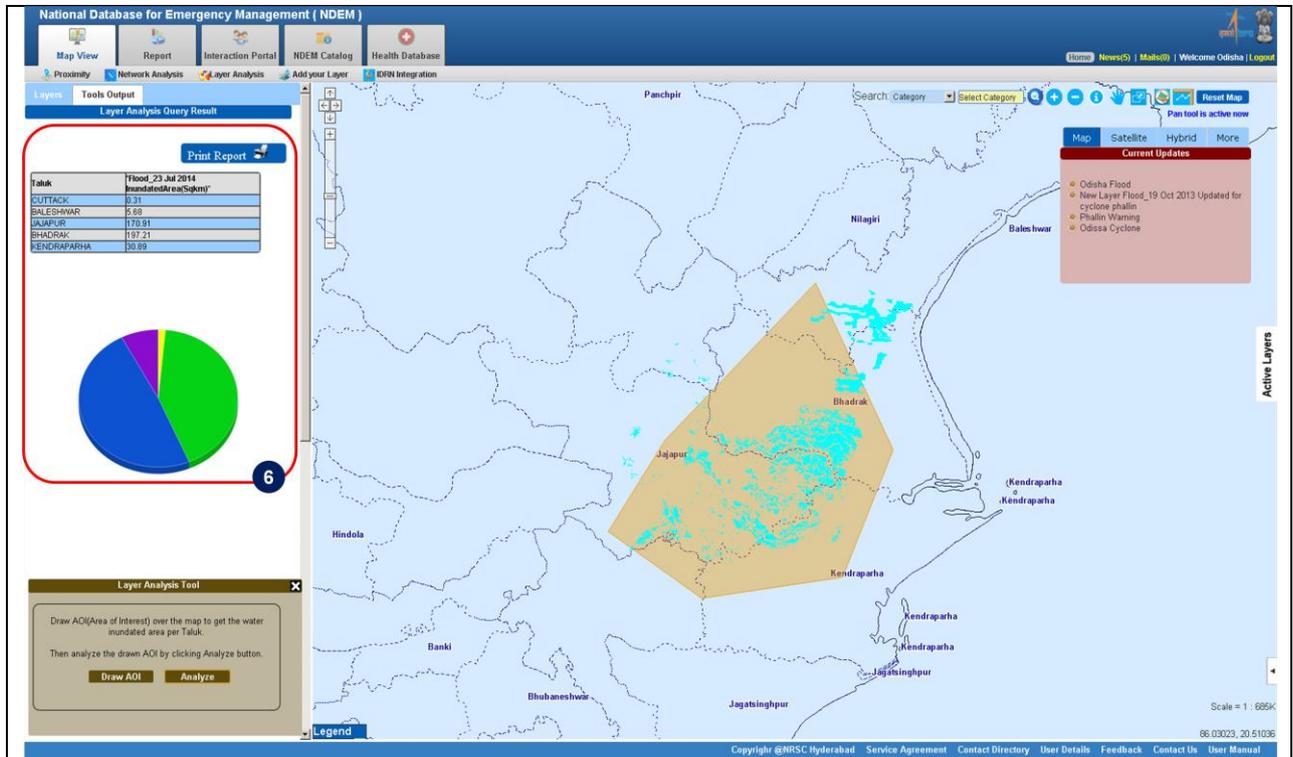


### 5.6.10.3 Layer Analysis Tool

Layer Analysis tool is another DSS tool that has been developed and implemented for multilayer analysis. User can select a vector layer for which taluk/district wise area coverage statistics needs to be generated. Statistics can be generated for full vector layer as well as for the layer area inside a user drawn polygon (AOI). The steps to perform layer analysis are shown in Figure 5.31.



The layer analysis results will be visible on the left hand side Tool Output panel which includes a printable statistics result in tabular as well as in Pie chart form as shown in Figure 5.32.

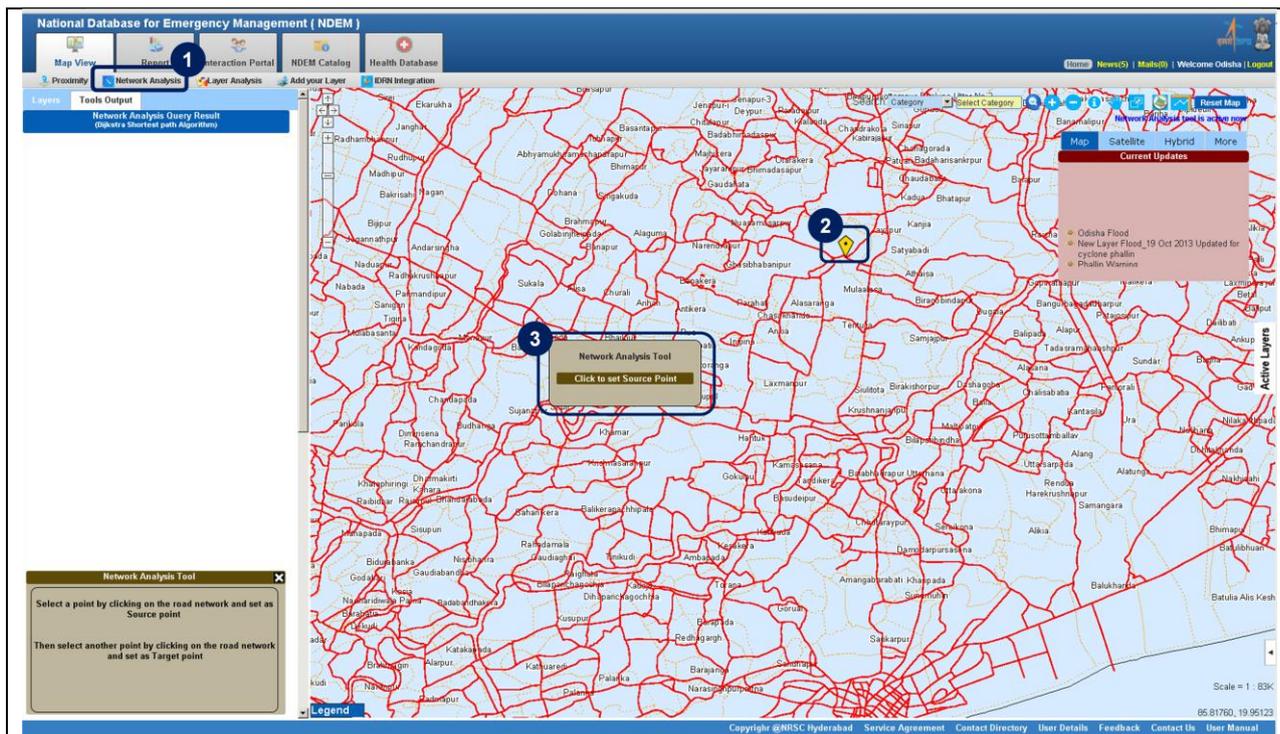


6. A printable result in Tabular & Pie Chart form

Figure 5.32 Layer Analysis Tool Outputs

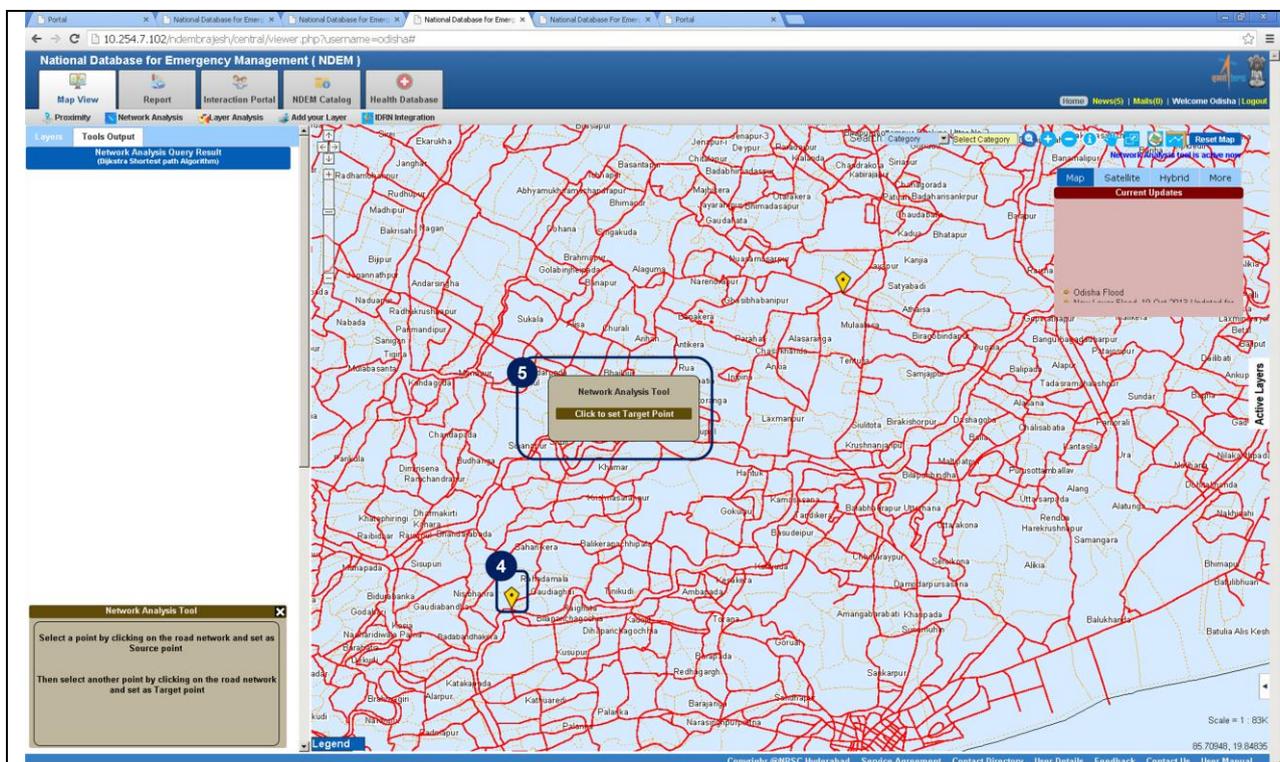
#### 5.6.10.4 Network Analysis Tool

This is another DSS tool which is used to get shortest distance between two locations on the road network. This tool has been developed and implemented by using Dijkstra algorithm for calculating the shortest path. The steps to get shortest route are shown in Figure 5.33 and Figure 5.34.



1. Select "Network Analysis" Tool
2. Select a source point by clicking on the road network
3. Set that point as "Source Point"

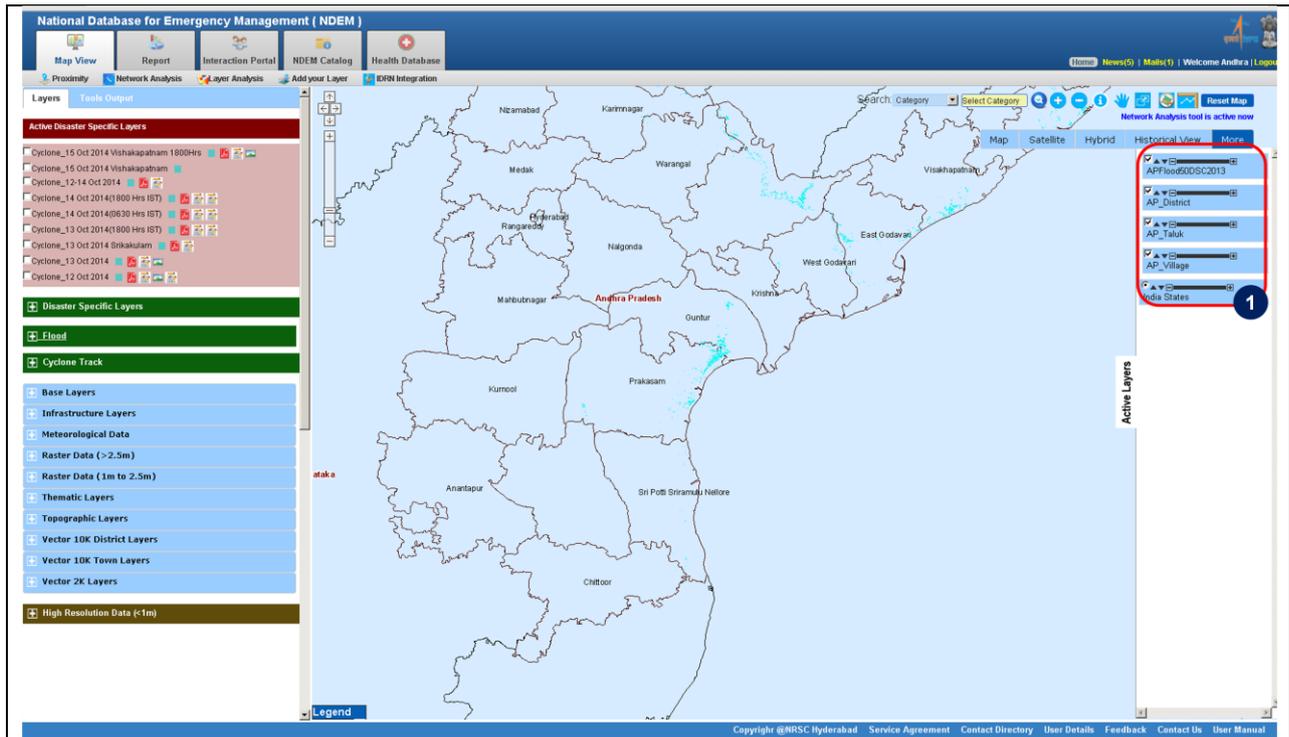
Figure 5.33 Network Analysis Tool - First Input



4. Select a target point by clicking on the road network
5. Set that point as "Target Point"

Figure 5.34 Network Analysis Tool - Second Input



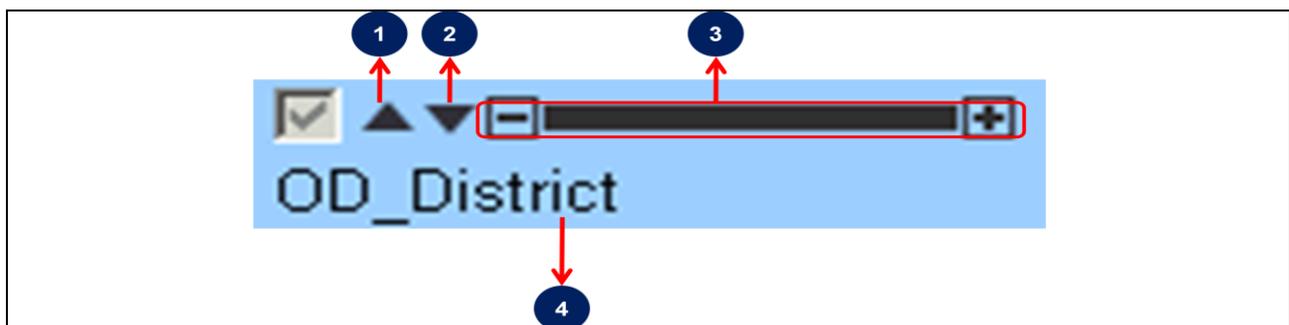


1. Active Layer Tab with layer toolbar

Figure 5.36 Active Layer Tab with layer toolbar

### 5.6.12.1 Layer Toolbar:

The layer toolbar facilitate the user to adjust layer opacity and overlapping order of the layers as shown in Figure 5.37



1. For Moving the Layer Up

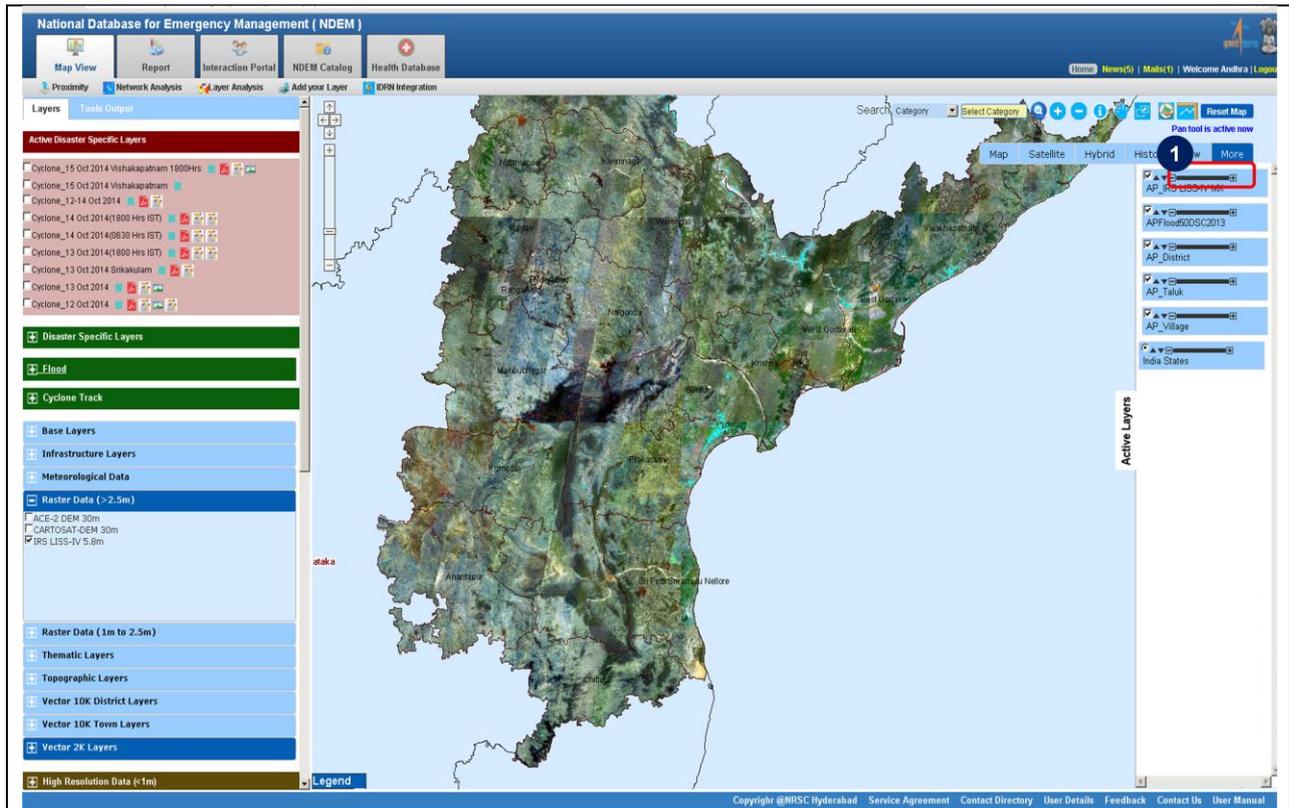
2. For Moving the Layer Down

3. Opacity Tool

4. Layer Name

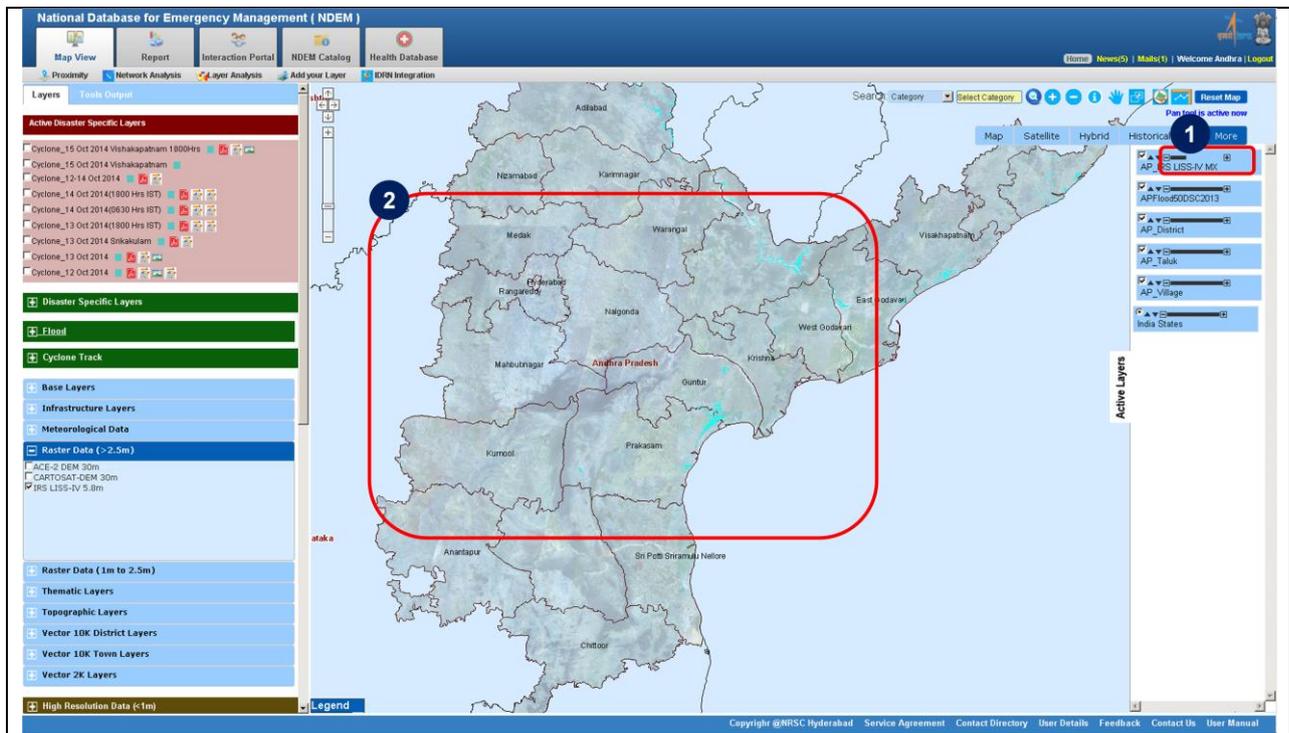
Figure 5.37 Layer Toolbar

**5.6.12.1.1 Opacity Tool:** Opacity tool is used to adjust the opacity of a layer. By dragging the cursor on the opacity icon towards right /left or by clicking plus/minus icon, user can adjust the opacity. Opacity of the layer can be increased by clicking on plus icon or decreased by clicking on minus icon as shown in figure- Figure 5.38 and Figure 5.39.



1. Default opacity of layer

Figure 5.38 Opacity Tool- Actual Image



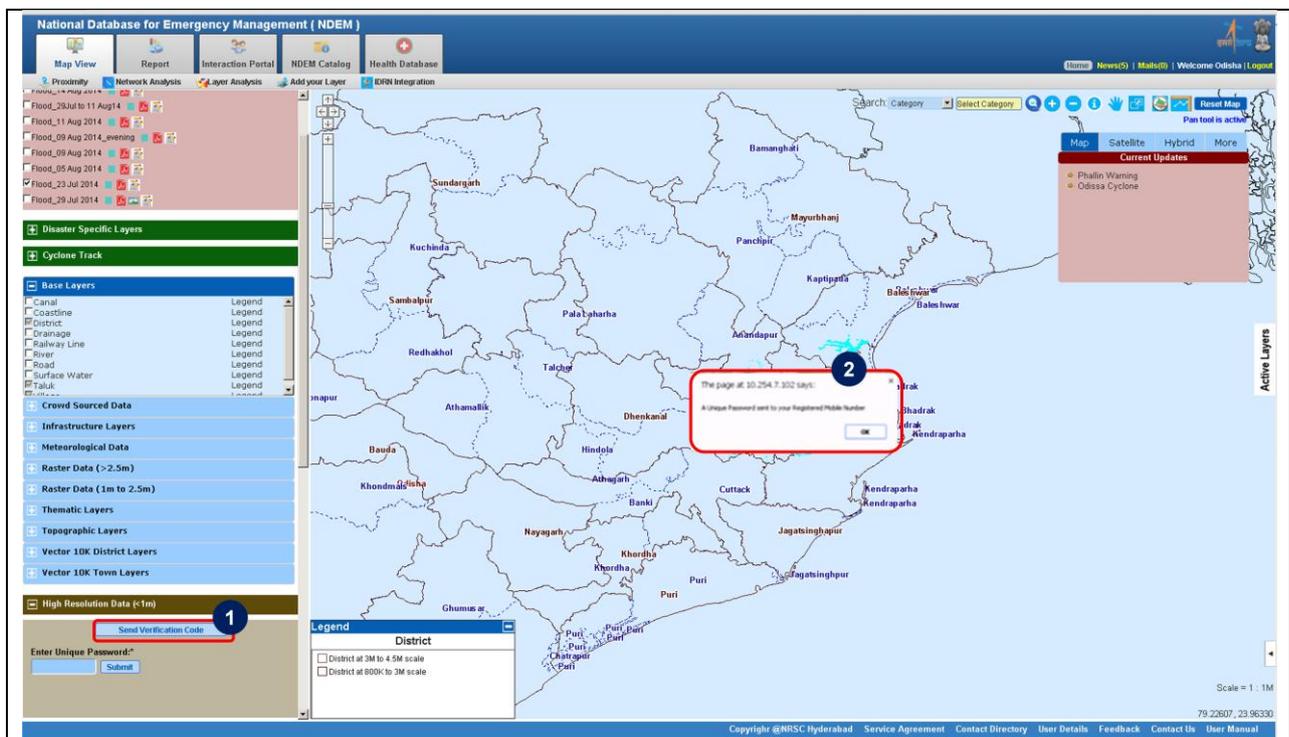
1. Decreasing the opacity of layer

2. Layer View after decreasing the opacity of layer

Figure 5.39 Opacity Tool- Image with reduced opacity

### 5.6.13 High Resolution Data (<1m resolution) data Access through OTP

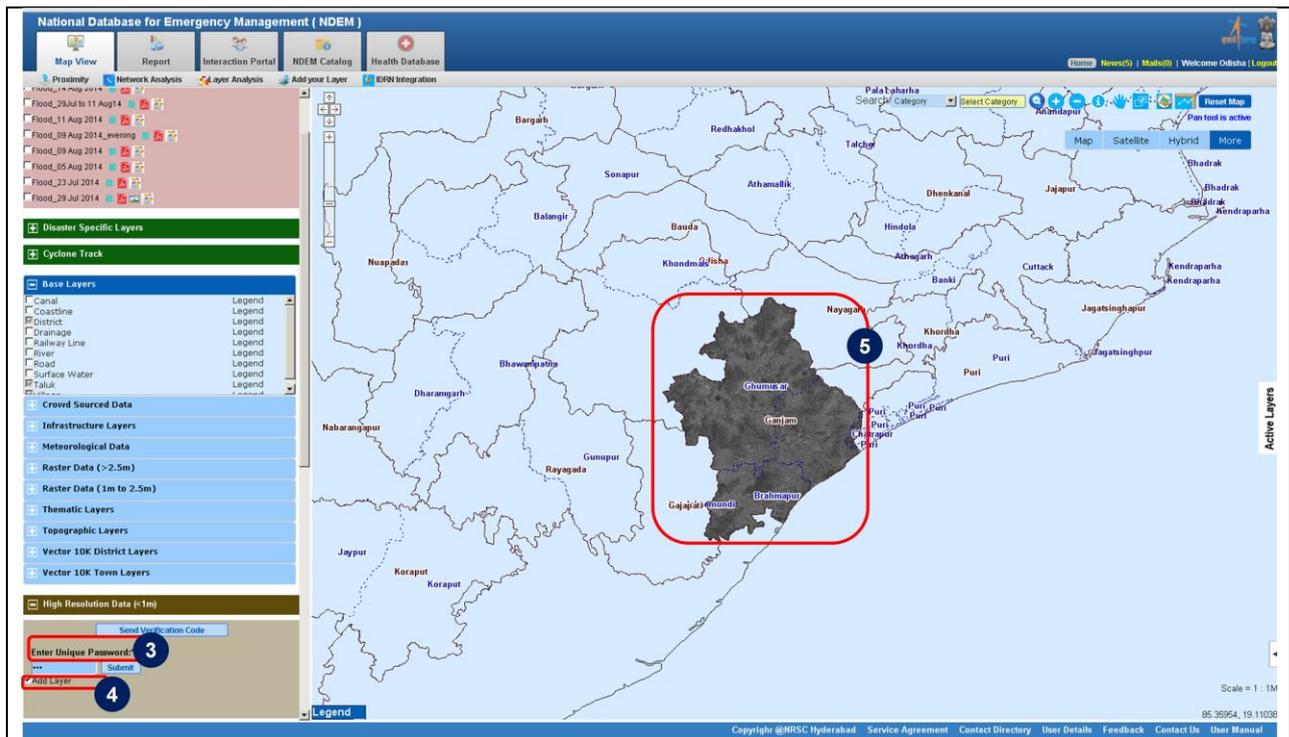
All the Vector and Raster data has been organized State wise under various security levels. For classified (restricted/secret) data access, separate tab is available in left panel of the map viewer after login. Upon clicking the link, a 'send unique password' as One Time Password(OTP) will be sent to authorized/registered mobile number provided while obtaining the authentication details for accessing NDEM services. User has to enter the 'unique password' supplied as OTP, within 15 minutes in the text box provided below the High Resolution Data (<1m). With the valid password, the required data will be visible/ accessible to the user. Functionality of “High Resolution Data (<1m)” option is explained by taking an example of Odisha page, to get the high resolution data on the map as shown in Figure 5.40



1. Click on send unique password
2. OTP message send to Registered Mobile number

Figure 5.40 High Resolution Data (<1m) data Access through OTP

After Sourced entering the OTP received on mobile the High Resolution Data (<1m) layers come below the text box. By checking the checkbox of require layer, the layer will be overlaid on the map as shown in Figure 5.41.

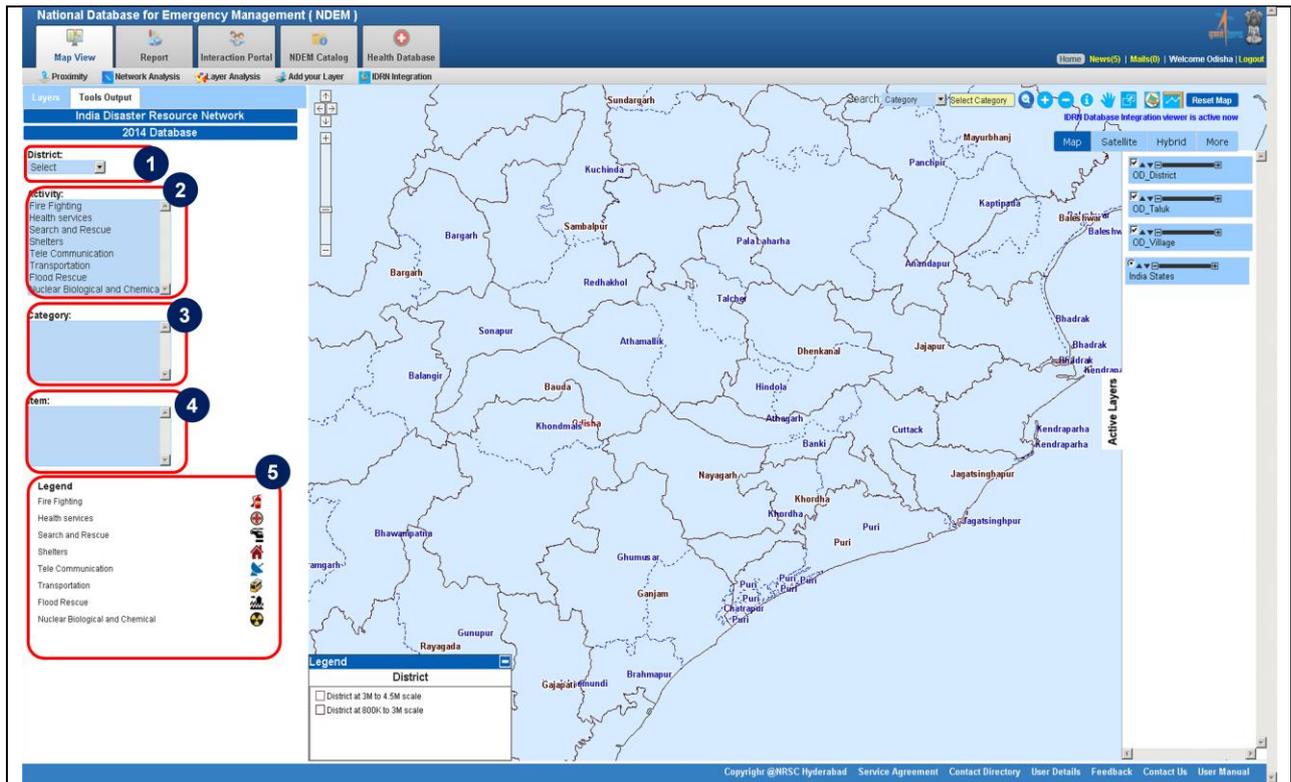


3. Enter OTP in below textbox and submit
4. High Resolution Data (<1m) layers will come below text box
5. After checking layer overlaid on Map

Figure 5.41 High Resolution Data (<1m) data Access through OTP-output

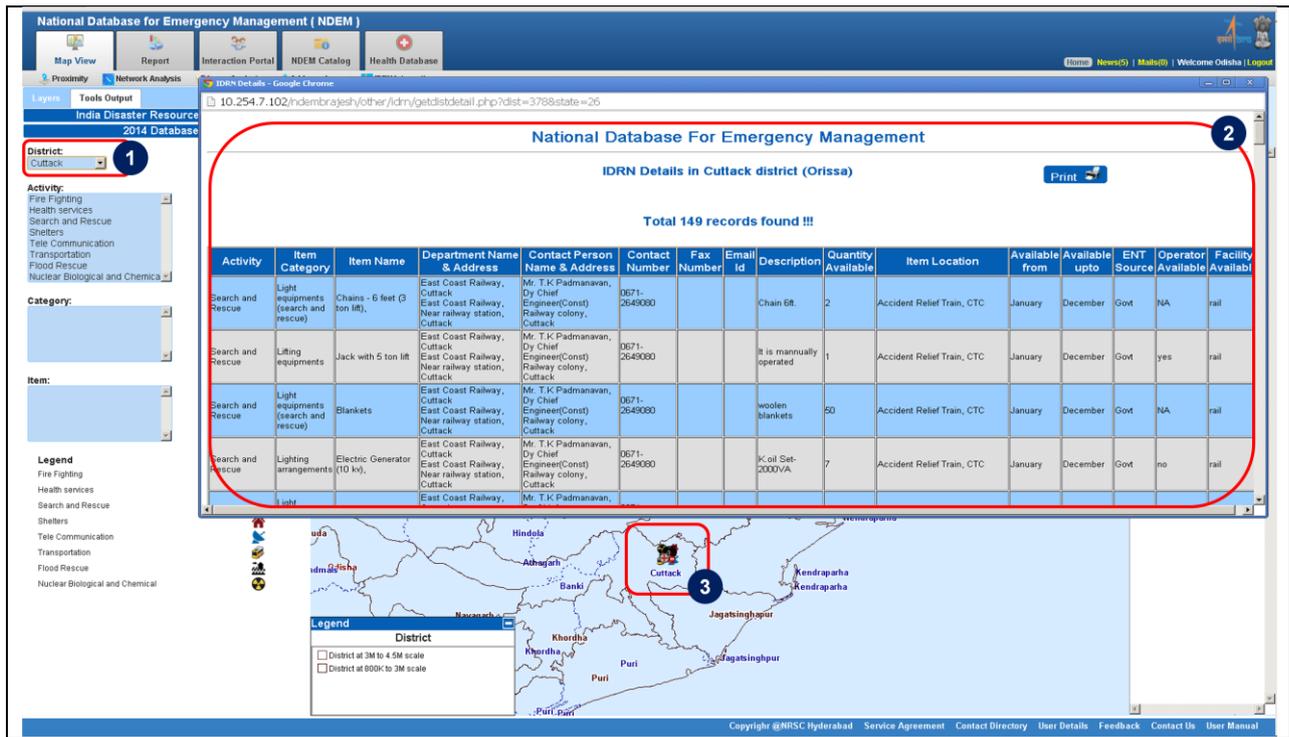
### 5.6.14 IDRN Database Integration:

IDRN (India Disaster Resource Network) database (non-spatial) as provided by MHA has been integrated into NDEM server. District-wise emergency resources availability can be found using the query builder. The non-spatial database has been converted into spatial database where locating a point on the map is made possible by using district and pin-code details from the database. The home page of IDRN database integration with NDEM is shown in Figure 5.42.



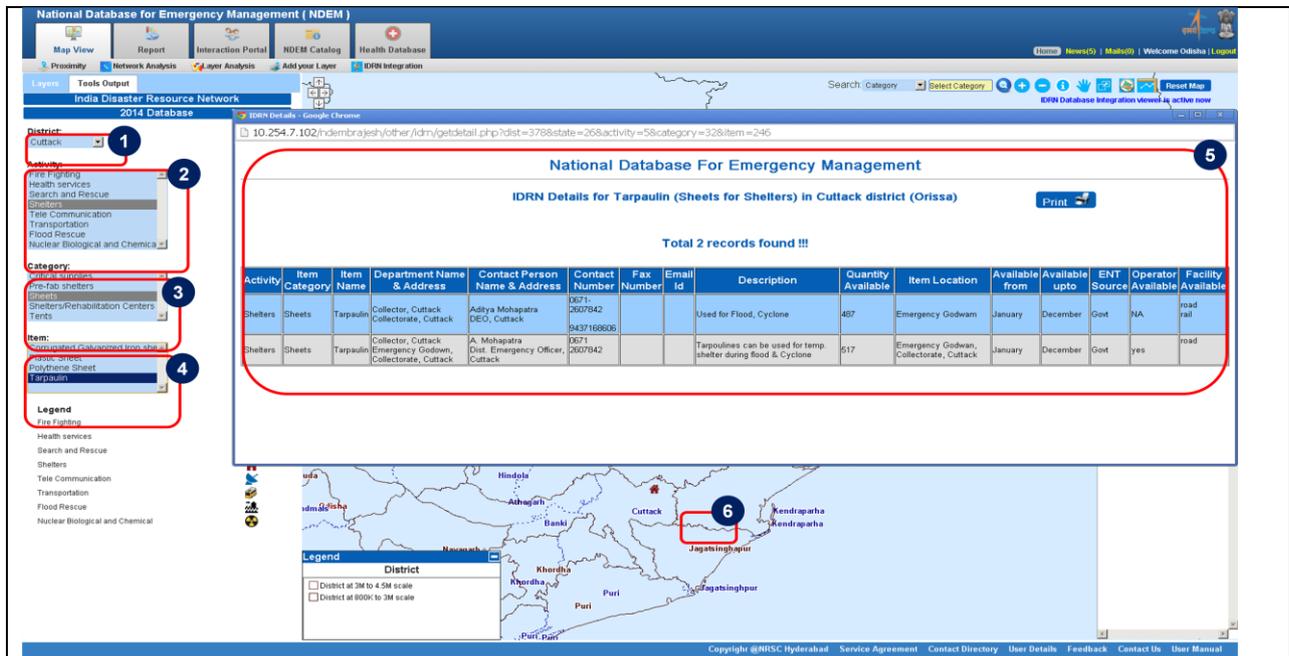
1. List of Districts	4. List of Items
2. List of Activities	5. Legend for items on the Map
3. List of Categories	
Figure 5.42 IDRN database Home page with query builder	

The query can be executed by selecting District only or by multiple selection of District, Activity, category and Items. The result of the query will be in non-spatial as well as in spatial form. Figure 5.43 shows the query result for Cuttack district, which shows the details of all the activities available for that district. Figure 5.44 shows the further refinement of the query with step by step procedure, where query execution is made up to “Item” level. The non-spatial results will come in tabular form and spatial result will come over the map where the icon can be clicked and details will be displayed inside one popup as shown in Figure 5.45.



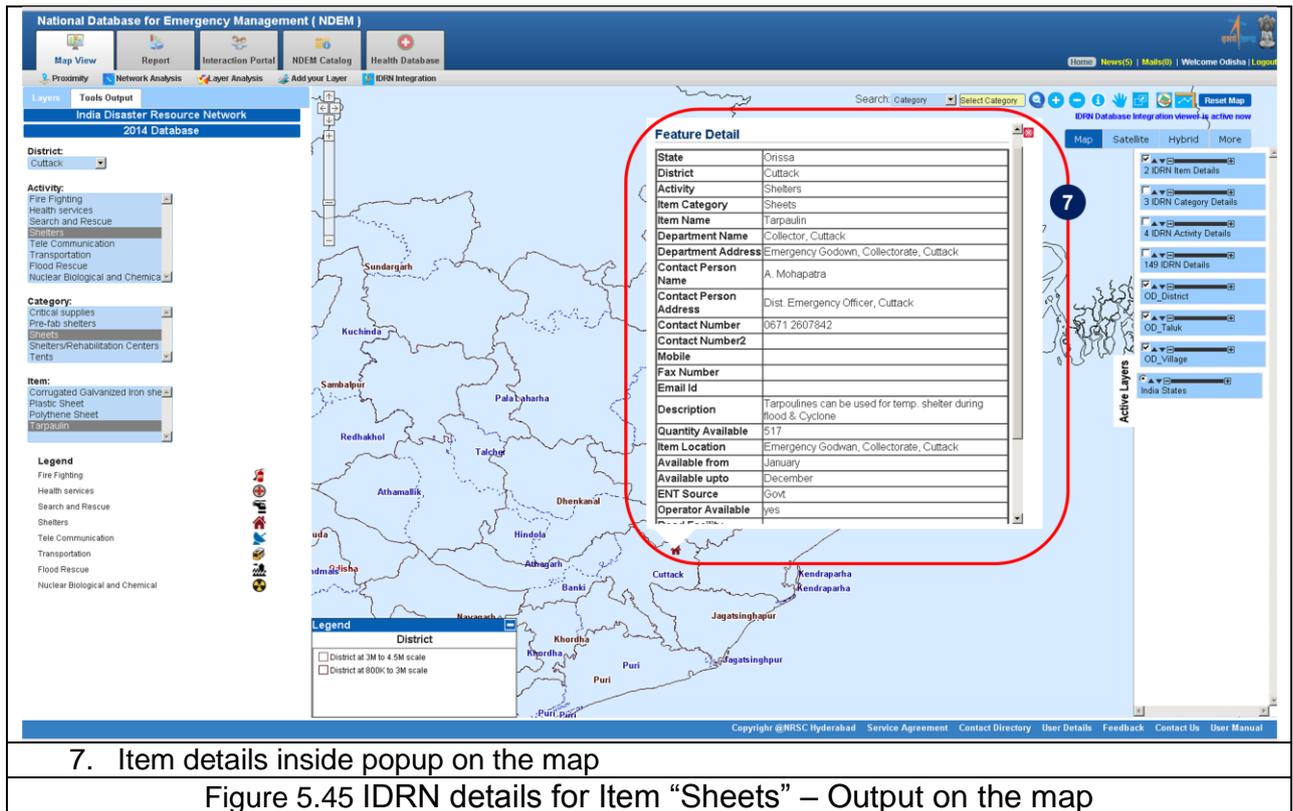
- |   |                                      |
|---|--------------------------------------|
| 1. Select District                            | 3. Query result on the map (spatial) |
| 2. Query result in tabular form (non-spatial) |                                      |

Figure 5.43 IDRN details for Cuttack district- Output



- |                    |                                 |
|--------------------|---------------------------------|
| 1. Select District | 4. Select Item                  |
| 2. Select Activity | 5. Query result in tabular form |
| 3. Select Category | 6. Query result on the map      |

Figure 5.44 IDRN details for Item "Sheets" – Tabular Output



7. Item details inside popup on the map

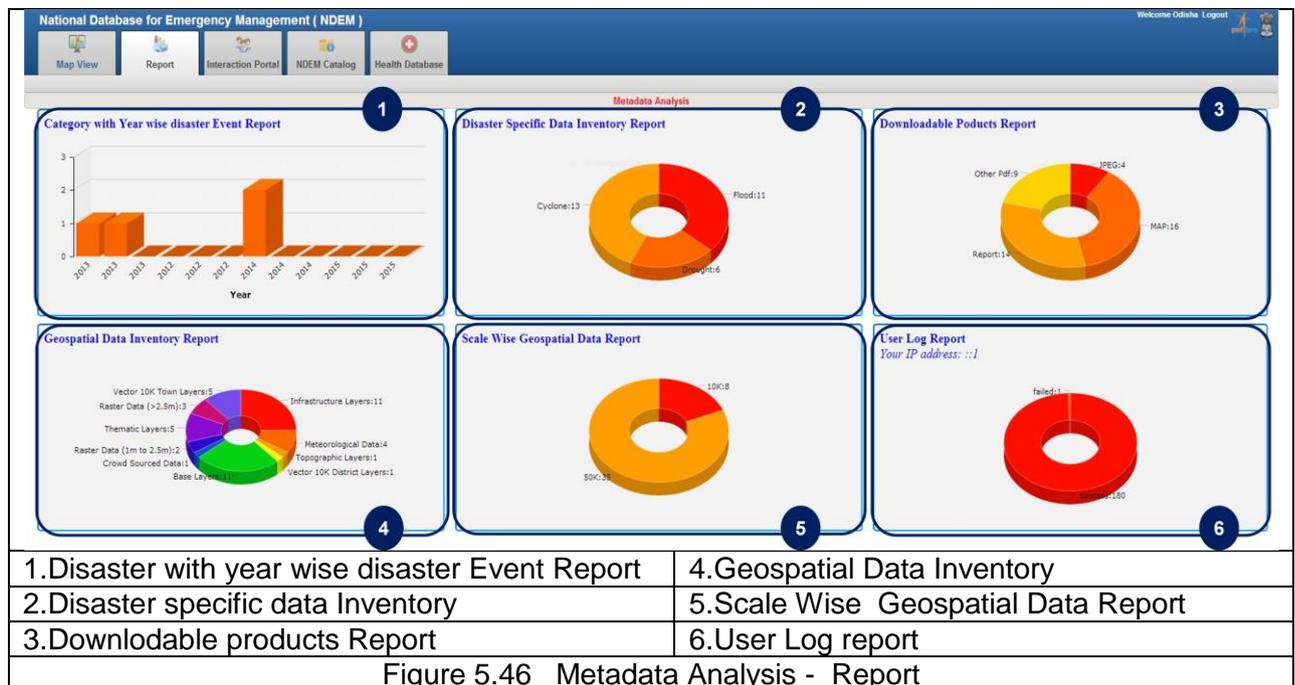
Figure 5.45 IDRN details for Item “Sheets” – Output on the map

### 5.6.15 Report:

Report sub module contains the different reports of metadata of all geospatial data like disaster event report, geospatial data report, disaster specific report scale wise report etc. The details of reports are as follow (Figure 5.46):

1. Disaster type with year wise disaster Event Report: It gives the information of year wise number of different disaster event happen in any state.
2. Disaster specific data Inventory: It gives the information of disaster wise data inventory report.
3. Downloadable Products Report: It gives the information of all available downloadable products like Map, JPEG, Report etc.
4. Geospatial Data Inventory: It gives the information of available all geospatial data like base layers, thematic layers, infrastructure layers, meteorological data, 10k data, 2k data, raster data.
5. Scale wise Geospatial Data Report: It gives the information of scale wise report available for all geospatial data on NDEM server.

6. User Log report: It gives the information of user access report in different report like IP address wise report, report between two date etc.



### 5.6.16 Interaction Portal:

Interaction portal is sub modules in which all the user of NDEM can closely interact through local e- mail system. This sub module provides facility of Notice board, Compose Mails, Inbox, Sent mails and Trash as shown in figure from 5.47 to 5.51.

#### 5.6.16.1 Public Notice:

Public Notice contains the news which is sharable by all the user of NDEM. For sending the public notice it require the approval from Administrator. When user wants to send any public notice, user has to select a approval authority for approval and send the public notice shown as figure 5.47, After the approval of administrator this public notice are visible to all the user.

**Post Public Notice**  
Select Approval Authority (1)

Public Notice

Sender: odisha Date :21/04/2015  
Message: TESTING  
Status: pending Date :20/10/2014

Sender: odisha Date :28/10/2014  
Message: hello  
Status: pending Date :28/10/2014

Sender: odisha Date :27/10/2014  
Message: test admin  
Approved By: NDEM Date :27/10/2014

Approved By: NDEM

Copyright @NRSC Hyderabad Service Agreement Contact Directory User Details Feedback Contact Us User Manual

1. Select Approval Authority
2. Enter Message and publish

Figure 5.47 Public Notice

### 5.6.16.2 Compose mail:

The Compose mail is the sub module of interaction portal on which user writes his messages to a particular user not to all. To access the Compose Mail page, click **Compose button** as figure 5.48.

**Compose Mail**

To (1) (2)

Subject (3)

Send (5)

Received Mail...

To Subject Date

Delete

1. Type recipient username(Atleast 3 letter)
2. Select username from autocomplete list
3. Write Subject
4. Type the message which user wants to send
5. Send the Mail

Figure 5.48 Compose Mail

### 5.6.16.3 Inbox Mail:

Inbox is sub module of interaction portal which contains the all received mail. User can read, forward and delete this inbox mail. (Refer Figure-5.49)



Figure 5.49 Inbox

### 5.6.16.4 Sent Mail:

Sent Mail is sub module of interaction portal which contains the all sent mail by the user. User can read, forward and delete these mails. (Refer Figure-5.50)

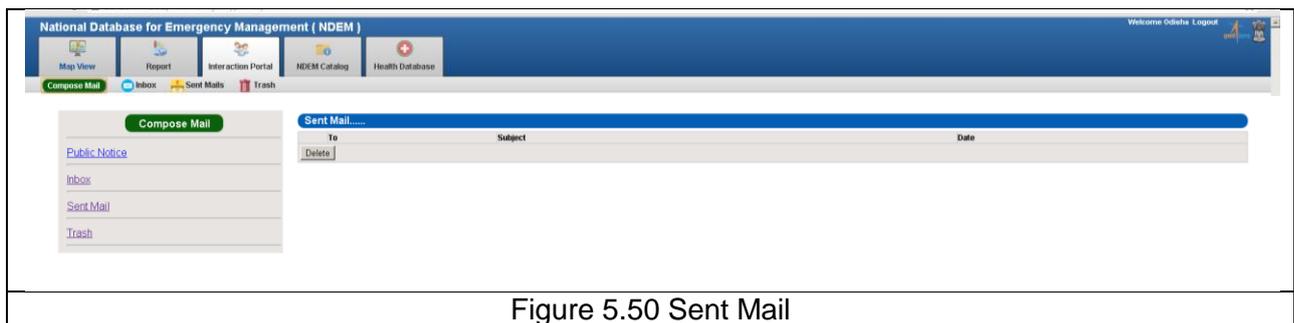


Figure 5.50 Sent Mail

### 5.6.16.5 Trash Mail:

Trash Mail is sub module of interaction portal which contains the all deleted mail by the user. Trash mail will be automatic deleted after one month User can read and permanent delete this trash mail. (Refer Figure-5.51)

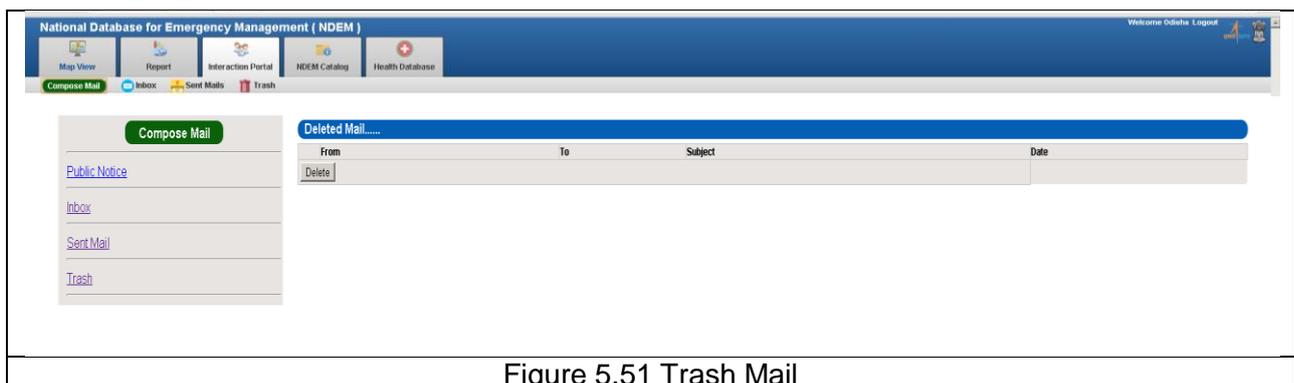
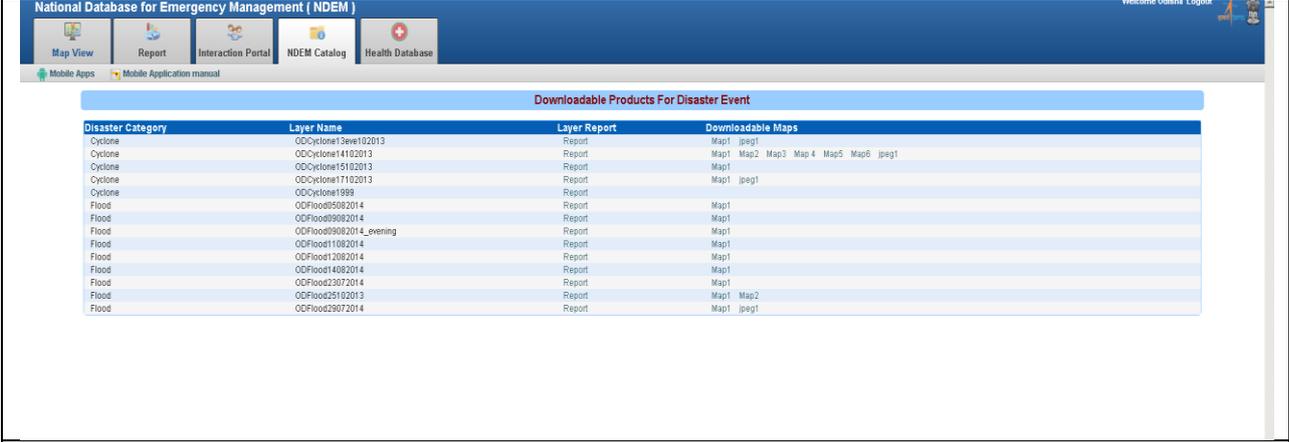


Figure 5.51 Trash Mail

### 5.6.17 NDEM Catalog:

NDEM catalog contains the complete catalog of disaster products available on NDEM server for particular state as shown in figure 5.52. It also provides the facility to download the mobile apps, Mobile apps manual and other downloadable products like Flood Map, Flood Reports etc.



The screenshot shows the NDEM web application interface. At the top, there is a navigation bar with links for 'Map View', 'Report', 'Interaction Portal', 'NDEM Catalog', and 'Health Database'. Below this, there is a section for 'Mobile Apps' with a link to 'Mobile Application manual'. The main content area displays a table titled 'Downloadable Products For Disaster Event'.

Disaster Category	Layer Name	Layer Report	Downloadable Maps
Cyclone	ODCyclone13eve102013	Report	Map1 jpeg1
Cyclone	ODCyclone14102013	Report	Map1 Map2 Map3 Map4 Map5 Map6 jpeg1
Cyclone	ODCyclone15102013	Report	Map1
Cyclone	ODCyclone17102013	Report	Map1
Cyclone	ODCyclone1999	Report	Map1 jpeg1
Flood	ODFlood05082014	Report	Map1
Flood	ODFlood09082014	Report	Map1
Flood	ODFlood09082014_eventing	Report	Map1
Flood	ODFlood11082014	Report	Map1
Flood	ODFlood12082014	Report	Map1
Flood	ODFlood14082014	Report	Map1
Flood	ODFlood23072014	Report	Map1
Flood	ODFlood25102013	Report	Map1 Map2
Flood	ODFlood28072014	Report	Map1 jpeg1

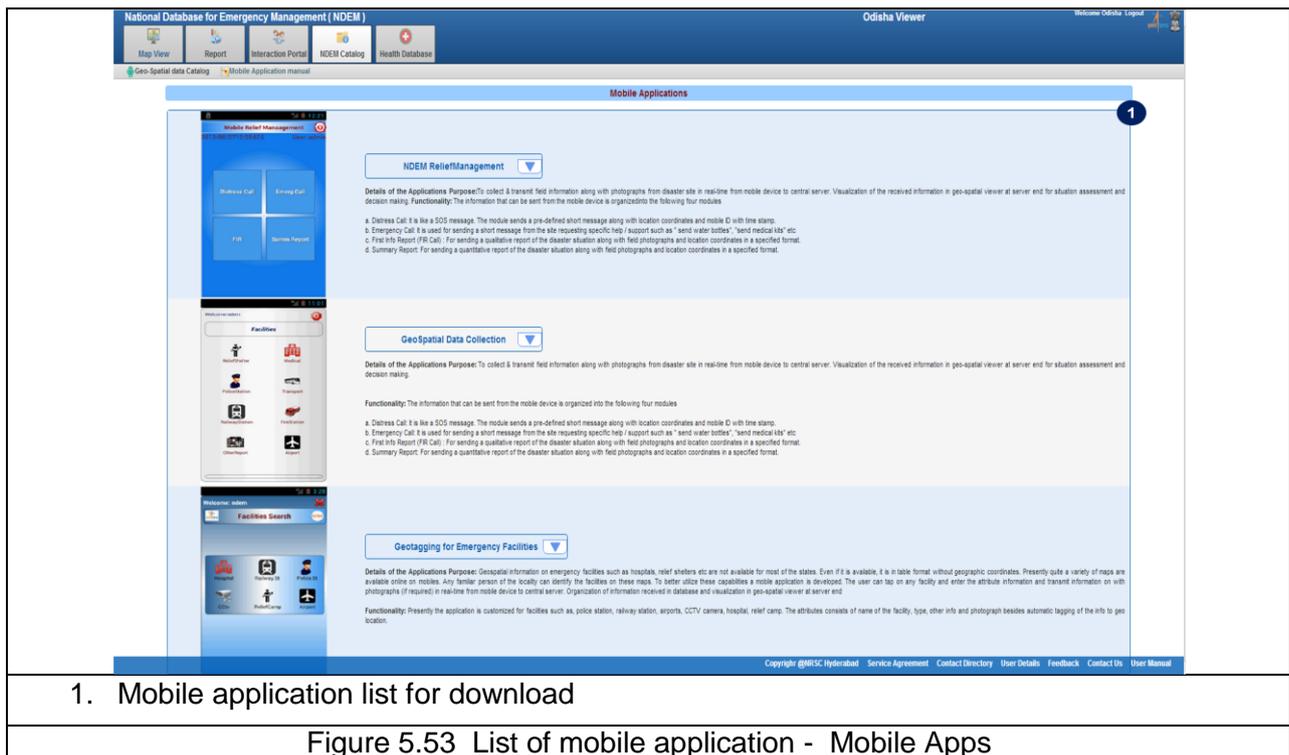
Figure 5.52 NDEM Disaster Product Catalog

#### 5.6.17.1 Mobile Apps:

For Mobile Application download, the user needs to click on 'Mobile Apps' link in NDEM catalog. There are two options, one to download the Mobile Application manual document and one to download mobile apps (Refer figure-5.53). For downloading mobile apps, user can click on different mobile application button; the app will get downloaded automatically.

#### 5.6.17.2 Mobile Apps User Manual:

The user manual of mobile apps contains the operational procedure of all mobile application. It may be downloaded in NDEM catalog section. For downloading the mobile application user manual user have to click on "**Mobile Apps User Manual**". The user manual will download in form of pdf.



1. Mobile application list for download

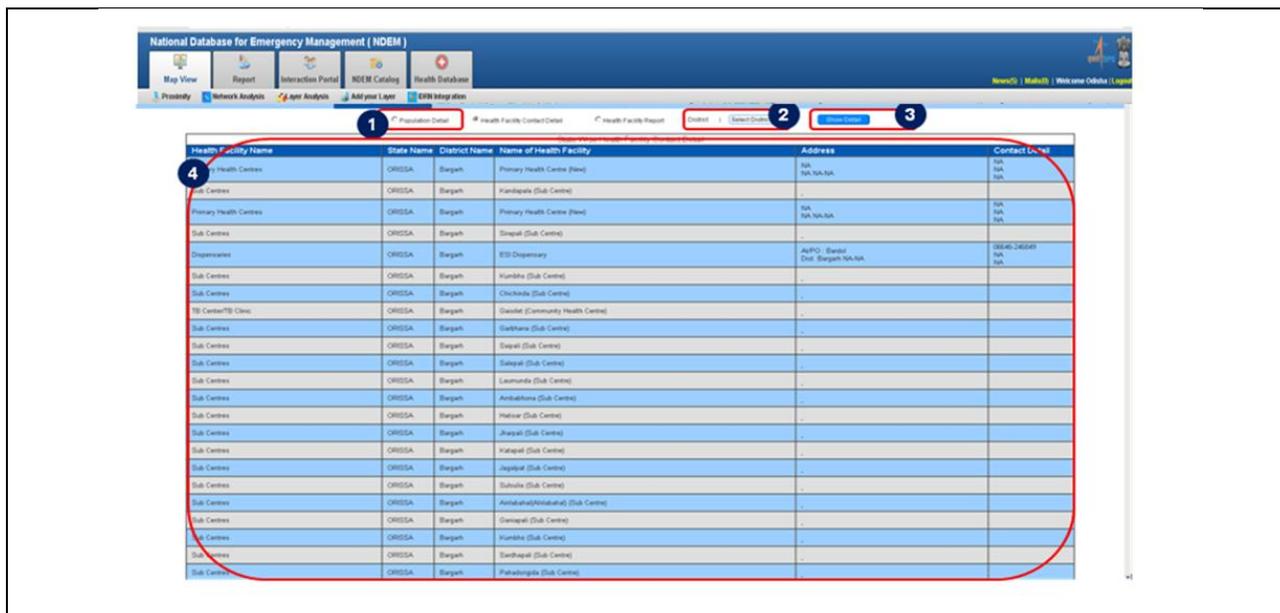
Figure 5.53 List of mobile application - Mobile Apps

### 5.6.18 Health Database Integration:

The health database (non-spatial) as provided by Ministry of Health for entire India is integrated into NDEM server. Query builder has been developed to retrieve the information district-wise / State-wise. The step by step procedure to run query builder for population detail, quantitative report of health facilities and health facility name with contact detail is as follows as shown in Figure 5.54, Figure 5.55 and Figure 5.56.

#### 5.6.18.1 Population Detail:

1. Select population detail
2. Select District
3. Get the district wise population detail

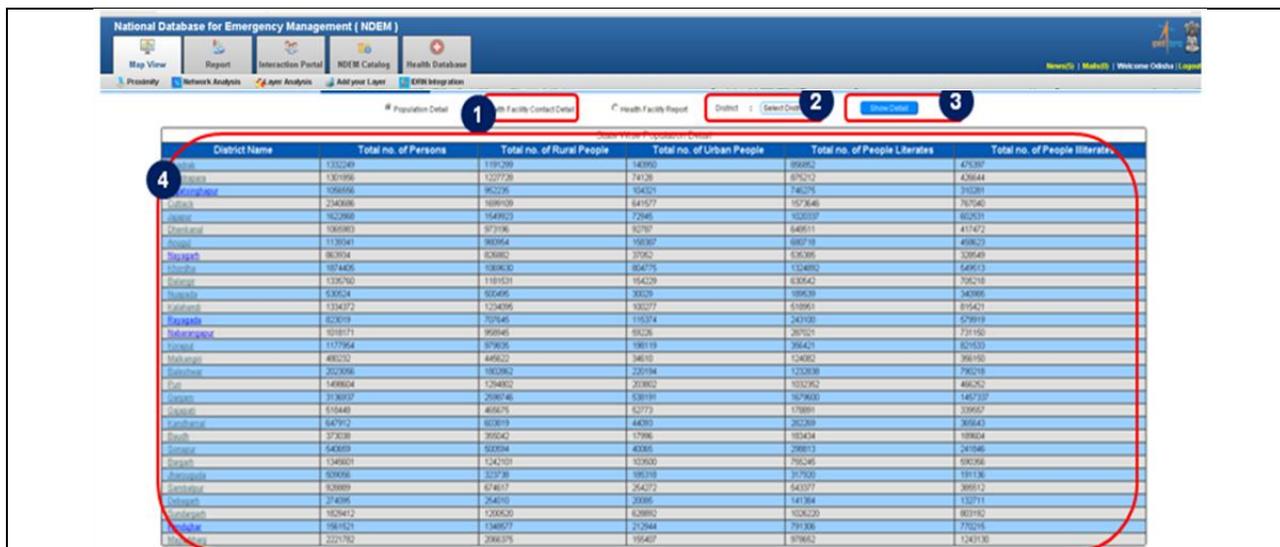


1. Select Population Detail
2. Select District
3. Submit
4. District Wise Population Detail

Figure 5.54 Population detail- Health DB Integration

### 5.6.18.2 Health Facility Contact Details:

1. Facility Contact Details
2. Select District
3. Get the district wise Facility Contact Details



1. Select Health Facility Contact Detail
2. Select District
3. Submit
4. District Wise Health Facility Contact Detail

Figure 5.55 Health Facility Contact detail- Health DB Integration

### 5.6.18.3 Health Facility Report Details:

1. Health Facility Report Details
2. Select District
3. Get the district wise Health Facility Report Details

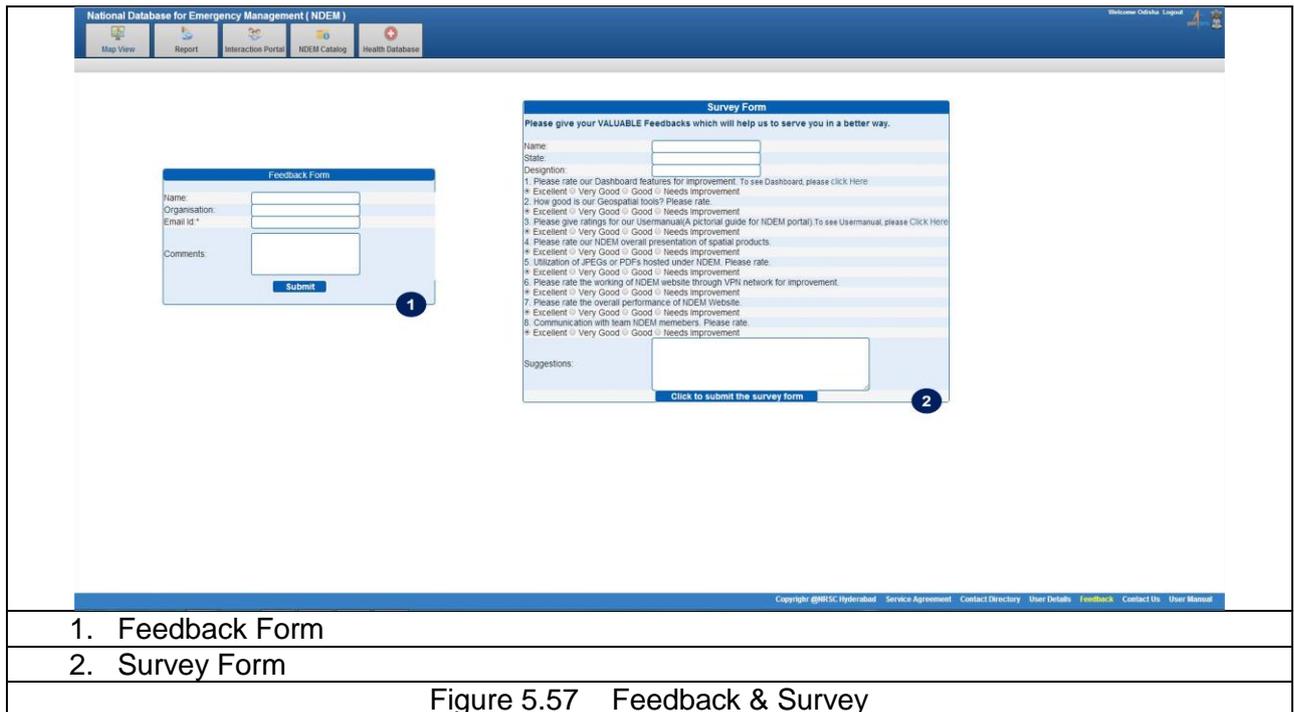
District	District Name	Total no. of Persons	Total no. of Rural People	Total no. of Urban People	Total no. of People Literates	Total no. of People Illiterates
ORISSA	Bhadrak	132249	119289	14090	99692	47537
ORISSA	Boudh	130998	122778	7419	87512	43644
ORISSA	Jajpur	159996	152236	7420	7420	31281
ORISSA	Kandhamal	234008	199709	44917	157846	75140
ORISSA	Koraput	582989	548923	72946	102037	60031
ORISSA	Keonjhar	106983	97196	9787	64811	41742
ORISSA	Koraput	113934	109954	19307	60718	49823
ORISSA	Koraput	83704	82082	2762	83188	13549
ORISSA	Koraput	107449	100630	16475	132482	54913
ORISSA	Koraput	139780	119131	16429	63042	76218
ORISSA	Koraput	53924	50495	3029	18939	34985
ORISSA	Koraput	113472	124695	10277	81893	815421
ORISSA	Koraput	82079	12946	11514	24058	87959
ORISSA	Koraput	101971	98945	9926	20721	79190
ORISSA	Koraput	117964	97895	19819	36641	50153
ORISSA	Koraput	48232	44622	3480	12482	38190
ORISSA	Koraput	202996	182262	22994	122038	76218
ORISSA	Koraput	149884	124812	20762	102292	48210
ORISSA	Koraput	393897	209746	53919	587600	149719
ORISSA	Koraput	51848	48676	5273	17891	33967
ORISSA	Koraput	84792	80919	4480	30289	36643
ORISSA	Koraput	37308	35942	1796	10348	10924
ORISSA	Koraput	54889	50984	4905	27853	27046
ORISSA	Koraput	134801	124201	10600	79246	55556
ORISSA	Koraput	80896	82736	18819	37920	18118
ORISSA	Koraput	82889	87467	26427	64377	38912
ORISSA	Koraput	29498	25419	2688	14784	13271
ORISSA	Koraput	102412	100000	42882	102130	82110
ORISSA	Koraput	184521	148877	27944	79138	77216
ORISSA	Koraput	222782	206375	19647	97862	134330

1. Select Health Facility Report Detail
2. Select District
3. Submit
4. District Wise Health Facility Report Detail

Figure 5.56 Health Facility Report detail- Health DB Integration

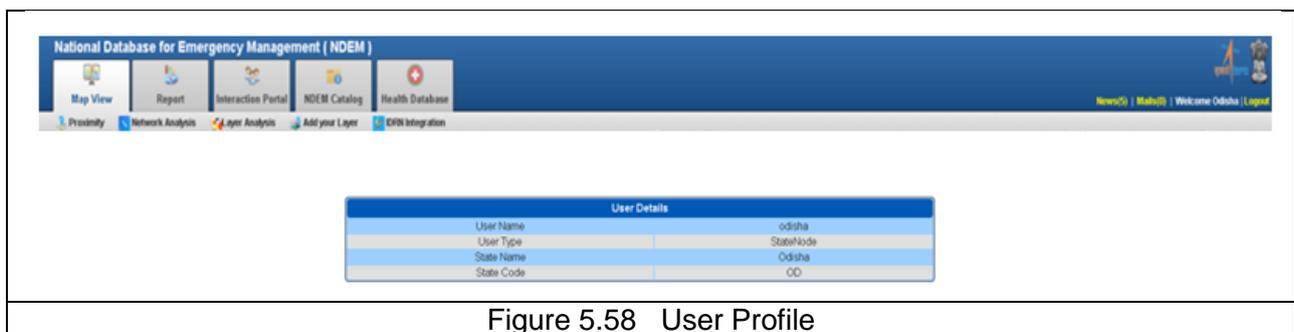
### 5.6.19 Feedback & Survey:

If a user wants to give feedback to NDEM portal, one has to click 'Feedback' tab. By giving name, organization, email-id and comment, the user can submit the form. For detailed feedback survey form, user needs to submit the survey form is shown in figure-5.57.



### 5.6.20 User Details

User Details tab shows as the user details like user name, user type and state name and date wise user log etc (Figure 5.58).



### 5.6.21 Contact Us

Contact us tab shows as the contact detail of Project Director NDEM and NDEM VPN Support team (Figure 5.59).



Figure 5.59 Contact us

## Annexure-1

### Request for User name and Password for accessing the products hosted on the NDEM server

State Name:

Details of the official to be authorized for accessing

1.	Name	
2.	Designation	
3.	Organisation	
4.	Address	
5.	Email-id	
6.	Phone no	
7.	Mobile no*	
8.	Fax no.	

\* Mobile number for receiving the OTP(One Time Password)

( Signature of the official with seal)

Details of the officer authorizing the official

1.	Name	
2.	Designation	
3.	Organisation	
4.	Address	
5.	Email-id	
6.	Phone no	
7.	Mobile no	
8.	Fax no.	

I hereby certify that the above mentioned official is a permanent Government employee and he is authorized for obtaining the User name ,Password and OTP for accessing the products hosted on the NDEM server.

The data/products accessed/downloaded will be used for official usage only. Necessary precautions will be taken for safety and security of the data as per the Government Of India guidelines. It is also certified that the User name and Password will be kept confidential.

( Signature of the competent authority)  
(not below the rank of the Secretary, DM/Commissioner)

## User Authentication Procedure of NDEM-VPN server Access

The following procedure is followed for authorizing the user to access NDEM-VPN server after receiving the duly filled and authorized request form from the user.

1. Mobile Authentication: By calling on the mobile number given in the request form to check and ensure the VPN connection availability.
2. Email Authentication: A test email is sent to the email -id mentioned in the request form for ensuring the information is sent to the authorized person and requesting them to acknowledge mail.
3. Ensuring that User node is having VPN Data-PC with VPN network connection and it is in working condition.
4. If VPN connectivity is available, NDEM server URL, test id and password will be provided to the users through email for accessing the site and acknowledgement is sought after accessing the site successfully.
5. After receiving the acknowledgement, User\_id is provided through email and password through mobile and request to acknowledge the same.

**Note:** The nominated official for authorization to get username and password has to respond to the emails as well as call / SMS made to the mobile number provided for completion of the authorization process.

**National Database for Emergency Management**  
**National Remote Sensing Centre**  
**ISRO, Department of Space, Govt. of India**  
**Hyderabad - 500037**