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**Dr. K.H.V.DURGA RAO**, Scientist/Engineer 'SG'  
Head, Disaster Management Support Division

Date: May 05, 2019

No: 01-FL-2019-OD/01

Dear Sir,

Sub: Cyclone 'Fani'- Near Real Time Cyclone Inundation Mapping using satellite data

As you are aware that National Remote Sensing Centre is carrying out 'Near Real Time Cyclone inundation Mapping' project using satellite data. Heavy rains were reported in Odisha state under the influence of Cyclone "Fani" during the first week of May, 2019. We have analyzed Sentinel 1A SAR and ALOS-PALSAR data of 04-May-2019 and prepared a cyclone inundation map for part of Odisha State. However, rain induced inundation is observed hence, the reported inundation may include wet areas/ rain water accumulation / water in low lying areas. The inundation map along with a brief report is enclosed herewith for your kind information. Since the image was acquired during/immediate to the rainfall event, large extents of wet areas were also observed.

Further, we request you to visit flood page in Bhuvan portal ([bhuvan-app1.nrsc.gov.in/disaster/disaster/disaster.php](http://bhuvan-app1.nrsc.gov.in/disaster/disaster/disaster.php)) NDEM portal for better visualization of inundation extent in Odisha State.

In addition, the inundation layer in GIS ready format and inundation statistics are transmitted to Odisha State Disaster Management Authority (OSDMA) and Flood Management Information System Cell (FMISC), Bhubaneswar, through e-mail for further value addition and dissemination to user departments.

We will continue to keep a watch on the flood situation and update the information as and when required. Your support and active interaction is highly appreciated. Please provide us a feedback on the information being provided.

With kind regards

Yours sincerely,

(K H V Durga Rao)

As per the distribution list enclosed in the report.

# Odisha- Cyclone 'Fani'– 2019

## 1.0 Background

Cyclone storm Fani hit Odisha coast near Puri on the morning of 03 May 2019 which triggered heavy rains, leading to flood like situation in low lying areas of Ganjam, Puri, Jagatsinghpur, Khordha, Kendrapara and Jajapur districts.

(Source: News Media)

## 2.0 Satellite Data

Flood Disaster Team is keeping a constant watch on the flood situation and checked the satellite data coverage over the flood affected areas. Sentinel 1A SAR and ALOS-PALSAR satellite data of 4<sup>th</sup> May 2019 was analyzed. (Refer Table-1).

**Table-1 Satellite Data acquired over Flood Affected Area**

S No	Date	Satellite / Sensor	Status
1	03-May-2019 (0600 hours IST)	Sentinel 1A SAR	Analyzed and 1 flood map was sent
2	04-May-2019	Sentinel 1A SAR ALOS PALSAR -2	Analyzed and 1 flood map is being sent

## 3.0 Data Analysis

Satellite data is rectified and inundation layer is extracted. The inundation layer is integrated with district boundary layer, for extracting district-wise inundation statistics which are shown in the Table-2.

## 4.0 Observations

Based on the analysis of satellite data, the following points were observed.

- Satellite data covers part of Odisha state.
- Major inundation was observed in the districts of Puri, Cuttack, Khurdha and Jagatsinghpur districts
- Observed inundation may include wet areas/ rain water accumulation / water in low lying areas

**Table-2: District-wise inundated area statistics**

Sl.NO	District	Flood Inundated Area (ha)
1	PURI*	8127
2	CUTTACK*	1490
3	KHURDHA*	1305
4	JAGATSINGHPUR*	1221
	<b>Total</b>	<b>12142</b>

Note:

-Flood inundation may include rain water accumulation / flood water in low lying areas.

-Districts with inundation less than 1000 ha are not included in the statistics.

\* Partially covered in satellite data

#### Distribution List:

1	MHA	1. Joint Secretary, NDM, Ministry of Home Affairs, North Block, New Delhi - 110 001. (Through e-mail). 2. NDM control Room, Ministry of Home Affairs, North Block, New Delhi - 110 001 (Through e-mail).
2	NODAL MINISTRIES	1. Chairman, Central Water Commission, Sewa Bhavan, R K PURAM, New Delhi-110066 2. ADGM (H & A), India Meteorological Department, Mausam Bhavan, New Delhi -110003
3	STATE	1. Additional Chief Secretary and Managing Director, Odisha State Disaster Management Authority (OSDMA), Bhubaneswar 2. Relief Commissioner, Govt. of Odisha, Bhubaneswar. (Through email and hard copy of the map through ORSAC also) 3. Chief Executive, Odisha Remote Sensing Application Centre (ORSAC), Dept Of S&T, Govt. of Odisha, 2nd Floor, Surya kiran building complex, Saheed Nagar, Bhubaneswar – 751 007. (with a request to disseminate the information to the concerned user depts.)
4	ISRO/DOS	1. Director, EDPO, ISRO Head Quarters, Antariksha Bhavan, New BEL Road, Bangalore-560094. (e-mail) 2. Programme Director, EDPO, ISRO Head Quarters, Antariksha Bhavan, New BEL Road, Bangalore-560094. (e-mail) 3. Associate Director, EDPO, ISRO Head Quarters, Antariksha Bhavan, New BEL Road, Bangalore-560094. (e-mail)
5	NRSC	1. Director, NRSC 2. Associate Director, NRSC 3. Deputy Director (RSA) & PD, DSC

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