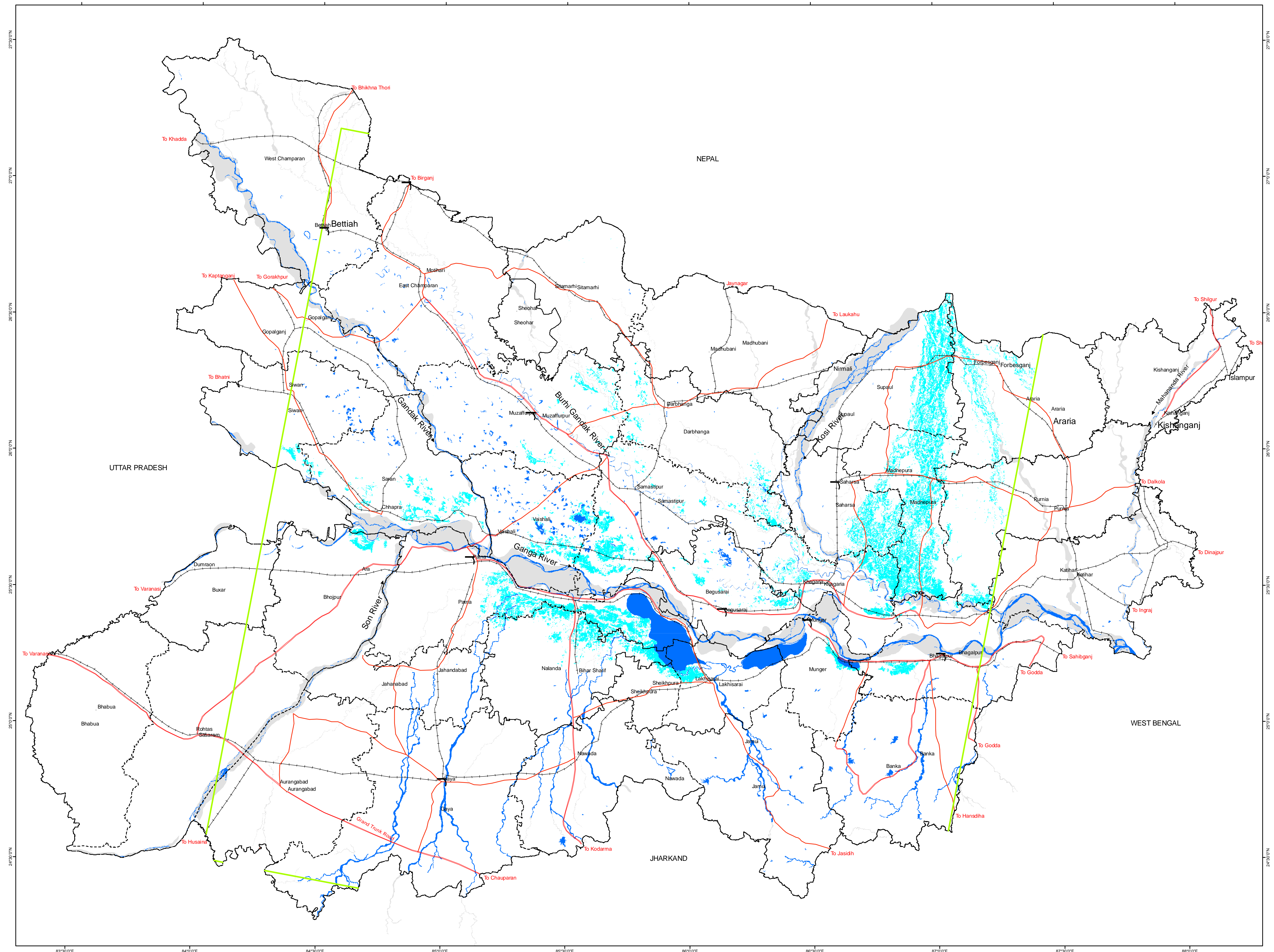


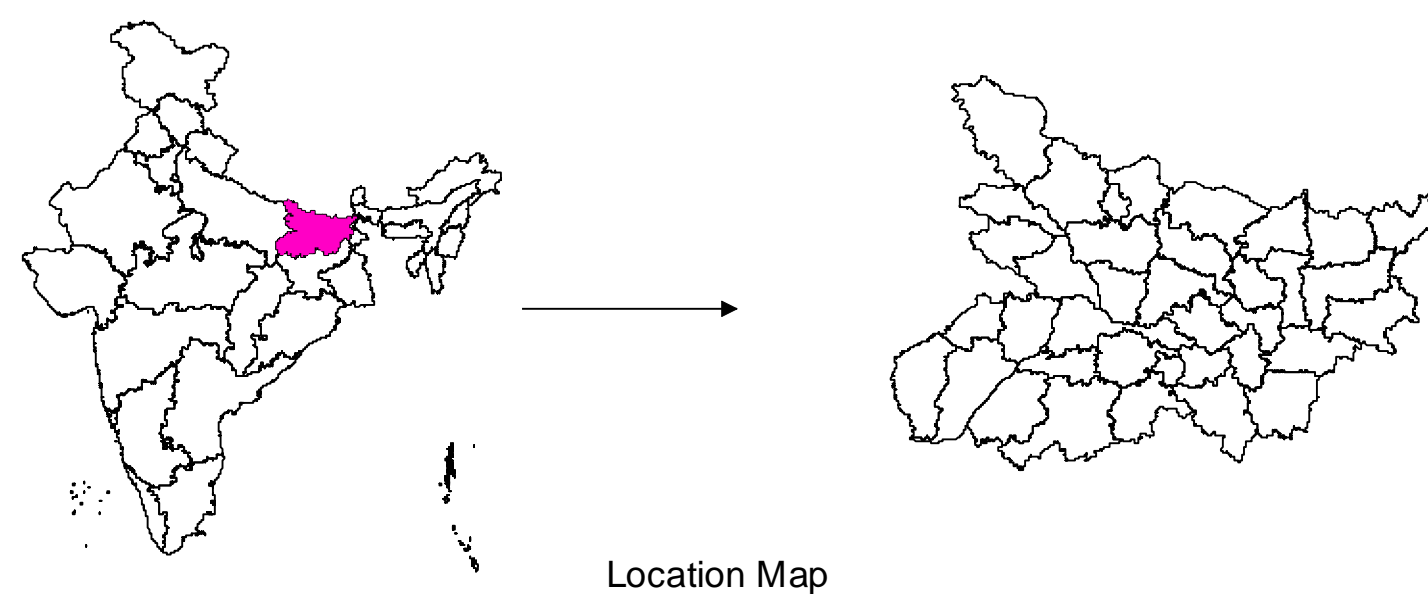
Flood Inundated areas in Bihar state

Based on the analysis of Radarsat-2 data of 29-August-2008

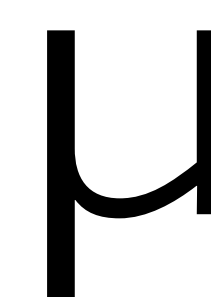


Legend

- End of satellite coverage
- River Bank
- Normal river/water bodies
- Flood Inundation
- Airport
- District HQ
- Major Roads
- Other Roads
- Railway
- International Boundary
- State Boundary
- District Boundary



Scale: 1:600,000
0 10 20 30 40 50
Kilometers



Decision Support Centre (DSC)
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V. Bhanumurthy

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Date: Aug 29, 2008

Dear Sir,

Sub: Bihar Floods - Near Real Time Flood Mapping using satellite data

Please refer to our earlier letter dated 28-Aug-2008 regarding 'Near Real Time Flood Mapping' project using satellite data. So far, we have sent 98 flood maps covering floods in Bihar. In continuation, we have programmed Radarsat data of 29-Aug-2008. The satellite data was analysed and a flood map was composed on 1: 600,000 and 1: 200,000 scale for parts of Bihar state. Further, district and detailed flood maps are prepared for Supaul, Madhepura and Saharsa districts. A brief report along with the flood maps are attached herewith containing the statistics.

In addition, the flood layer in GIS ready format and inundation statistics are transmitted to Bihar Remote Sensing Application Centre (BIRSAC) and Flood Management Information System Cell (FMISC), Patna by e-mail for further 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 the feedback on the flood maps.

Regards

Yours sincerely,
(V BHANU MURTHY)

1. Joint Secretary, NDM, Ministry of Home Affairs, New Delhi - 110 001. (Through e-mail and Hard copy by post)
2. NDM control Room, Ministry of Home Affairs, New Delhi - 110 001(e-mail)
3. Chairman, Central Water Commission, Sewa Bhavan, R K PURAM, New Delhi-110066. (Through e-mail and Hard copy by post)
4. Commissioner & Secretary, Disaster Management Department, Govt of Bihar, Old Secretariat, PATNA-800015 (E-mail and hard copy of the map through BIRSAC also)
5. In-charge, Flood Management Information System Cell (FMISC), Patna (e-mail)
6. Project Director, Bihar Remote Sensing Centre (BIRSAC), Planetarium Complex, Bailey Road, Patna 800001. (With a request to disseminate the information to Shri C.K.Anil, Additional Secretary to Government, Department of Agriculture, Patna and other concerned user depts.)
7. Dr V S Hegde, Programme Director, DMSP, ISRO Head Quarters, Antariksha Bhavan, New BEL Road, Bangalore-560094. (e-mail)
8. ADGM (H & A), India Meteorological Department, Mausam Bhavan New Delhi - 110003

CC

PD (DSC)

DD (RS & GIS-AA)

DIRECTOR, NRSA

| for kind information please

Bihar Floods – 2008

1.0 Background

The overall flood situation in Bihar is reported to be grim with major rivers in spate following heavy rains in their catchments and breach in the River Kosi embankment areas. Muzaffarpur, Supaul, Saharsa, Madhepura, Katihar, Araria, West Champaran, Khagaria, Sitamarhi, Patna and Nalanda were reported to be affected. (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. Anticipating cloud cover, Radarsat data of 29-Aug-2008 was programmed, procured and analysed. (Refer Table-1).

Table-1 Satellite Data acquired over Flood Affected Areas of Bihar

S No	Date	Satellite/ Sensor	Status
1	21-06-08	Radarsat-1	Procured, analysed and a flood map was sent
2	28-06-08	Radarsat-1	Procured, analysed and a flood map was sent
3	30-06-08	Radarsat-1	Procured, analysed and a flood map was sent
4	07-07-08	Radarsat-1	Procured, analysed and 3 flood maps were sent
5	17-07-08	Radarsat-1	Procured, analysed and 7 flood maps were sent
6	22-07-08	Radarsat-1	Procured, analysed and 9 flood maps were sent
7	24-07-08	Radarsat-1	Procured, analysed and 5 flood maps were sent
8	03-08-08	Radarsat-2	Procured, analysed and 9 flood maps were sent
9	05-08-08	Radarsat-2	Procured, analysed and 11 flood maps were sent
10	08-08-08	Radarsat-1	Procured, analysed and 3 flood maps were sent
11	12-08-08	Radarsat-2	Procured, analysed and a flood map was sent
12	13-08-08	Radarsat-2	Procured, analysed and a flood map was sent
13	17-08-08	Radarsat-1	Procured, analysed and 11 flood maps were sent
14	20-08-08	Radarsat-2	Procured, analysed and 4 flood maps were sent
15	22-08-08	Radarsat-1	Procured, analysed and 10 flood maps were sent
16	24-08-08	Radarsat-1	Procured, analysed and 10 flood maps were sent
17	27-08-08	Radarsat-1	Procured, analysed and 11 flood maps were sent.
18	29-08-08	Radarsat-2	Procured, analysed and 11 flood maps are being sent.

2.0 Data Analysis

Satellite data is rectified and flood inundation layer is extracted. A flood inundation map is composed on 1: 600,000 and 1: 200,000 scale for parts of Bihar state. Further, for Supaul, Madhepura and Saharsa districts, which were affected by floods due to breach in Kosi river, district and detailed flood maps were prepared with village boundaries overlaid. The flood inundation layer is integrated with district boundaries layer, for extracting district-wise flood 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 major part of Bihar state.
- Major flood inundation was observed in Supaul and Madhepura districts.
- The inundation due to breach in Kosi is clearly seen in satellite data.
- **Table-2**

S.No	DISTRICT	INUNDATION AREA(HA)
1	Madhepura	51251
2	Supaul	33720
3	Patna	29115
4	Khagaria	19085
5	Nalanda	18787
6	Saharsa	18367
7	Samastipur	17949
8	Araria*	12414
9	Saran	11021
10	Vaishali	9084
11	Purnia*	6940
12	Darbhanga	6625
13	Bhagalpur*	5825
14	Muzaffarpur	5436
15	Begusarai	4872
16	Lakhisarai	4003
17	Bhojpur	3289
18	Munger	2478
19	Sheikhpura	2040
20	Siwan*	1552
	Total	263853

Note:

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