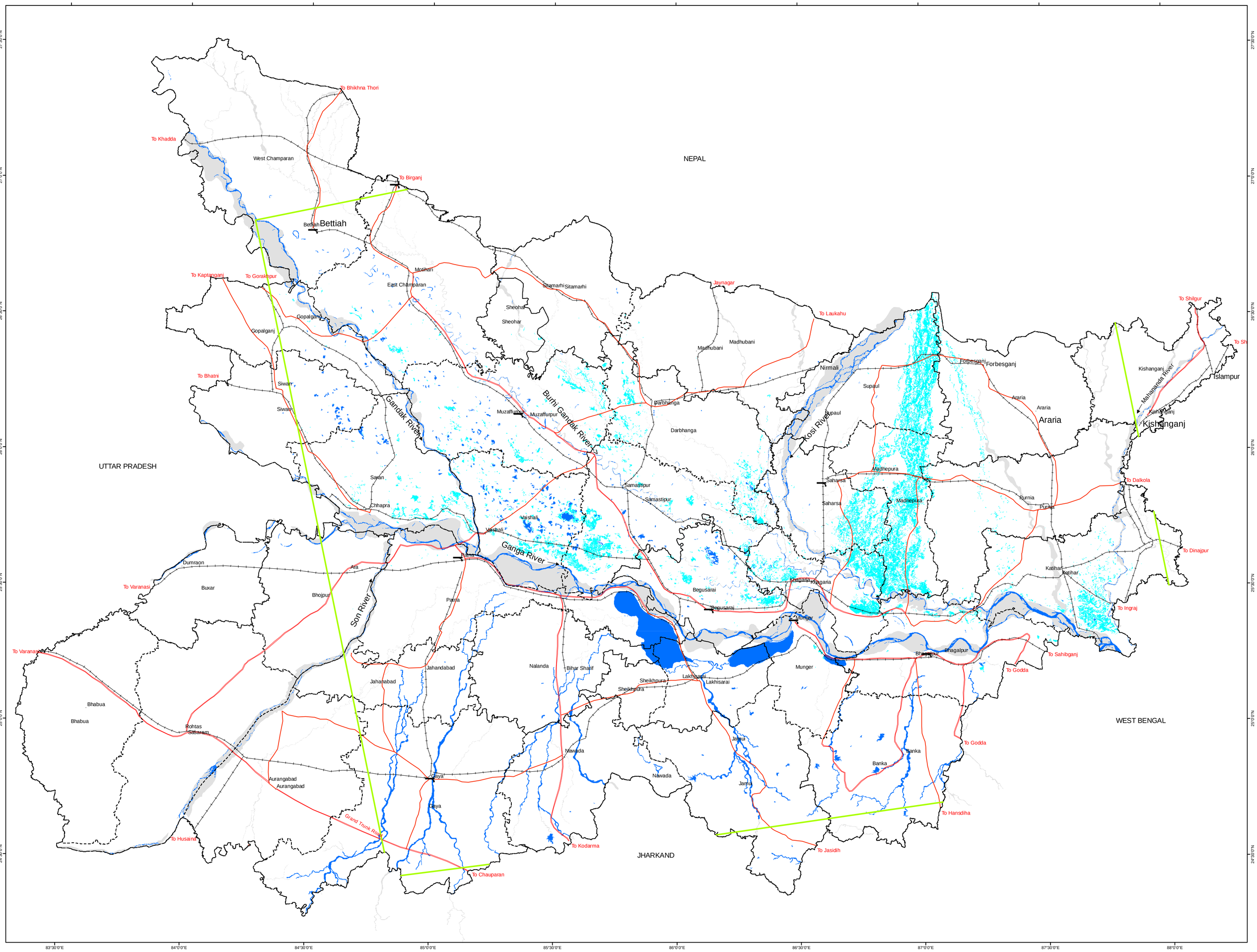
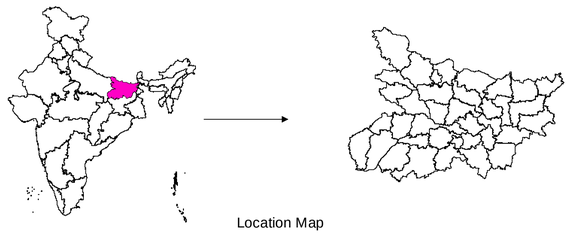
Flood Inundated areas in Bihar state

Based on the analysis of Radarsat-1 data of 15-September-2008



Legend

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



Location Map

Scale: 1:600,000

0 9 18 27 36 45

Kilometers

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Date: September 16, 2008

Dear Sir,

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

Please refer to our earlier letter dated 15-Sep-2008 regarding 'Near Real Time Flood Mapping' project using satellite data. So far, we have sent 167 flood maps covering floods in Bihar. In continuation, we have programmed Radarsat-1 data of 15-Sep-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 being prepared for Supaul, Madhepura,Saharsa and Araria 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)	| for kind information please
DIRECTOR, NRSC	|

Bihar Floods – 2008

1.0 Background

The overall flood situation in Bihar is reported to be improving with major rivers receding. The water level in the flood-hit areas of Supaul, Madhepura, Saharsa, Araria and Purnia districts is slowly receding. (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-1 data of 15-Sep-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 were sent.

19	03-09-08	Radarsat-2	Procured, analysed and 12 flood maps were sent.
20	05-09-08	Radarsat-2	Procured, analysed and 11 flood maps were sent.
21	07&08-09-08	IRS-P6AWIFS & RADARSAT-2	Procured, analysed and a 12 flood maps were sent.
22	10-09-08	Radarsat-2	Procured, analysed and 11 flood maps were sent.
23	13-09-08	Radarsat-2	Procured, analysed and 12 flood maps were sent.
24	15-09-08	Radarsat-1	Procured, analysed and a flood map is being sent.

3.0 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, district and detailed flood maps are being prepared for Supaul, Madhepura Saharsa and Araria districts overlaid with village boundaries. 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 most part of Bihar state.
- Major flood inundation was observed in Madhepura, Supaul, Saharsa, Khagaria, Katihar and Samastipur districts.
- The inundation due to breach in Kosi is clearly seen in satellite data.

Table-2

DISTRICT	INUNDATED AREA(Ha)
Madhepura	45006
Supaul	30474
Khagaria	19549
Samastipur	14973
Saharsa	14347
Katihar	13223
Vaishali	10020
Darbhanga	8043
Muzaffurpur	7104
Begusarai	6298
Saran	6216
Araria	4406
Bhagalpur	2989
Purnia	1997
East Champaran	1593
TOTAL	**186239**

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