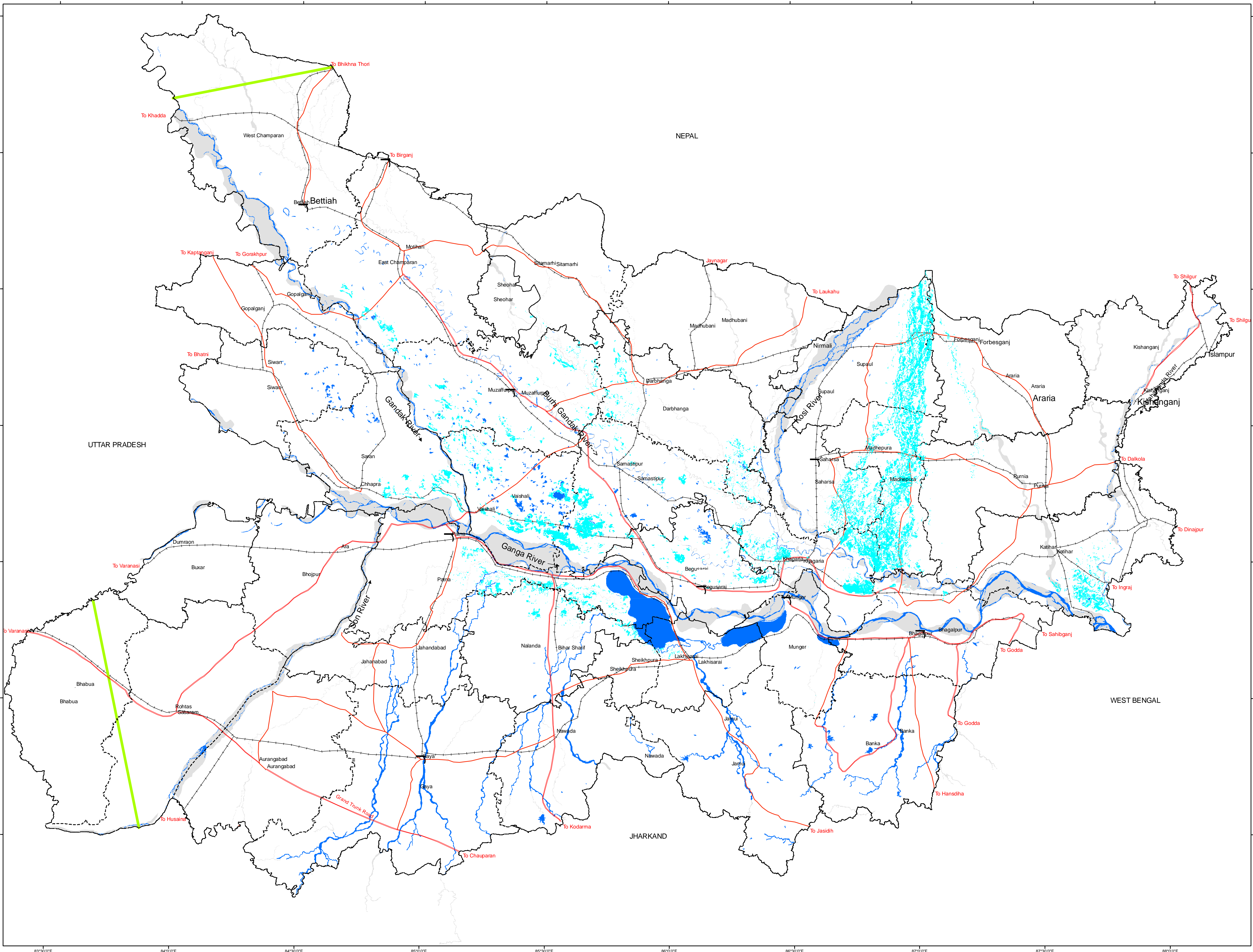


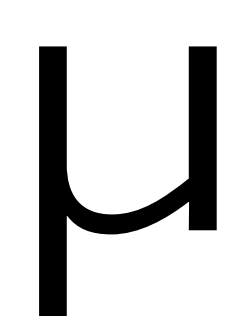
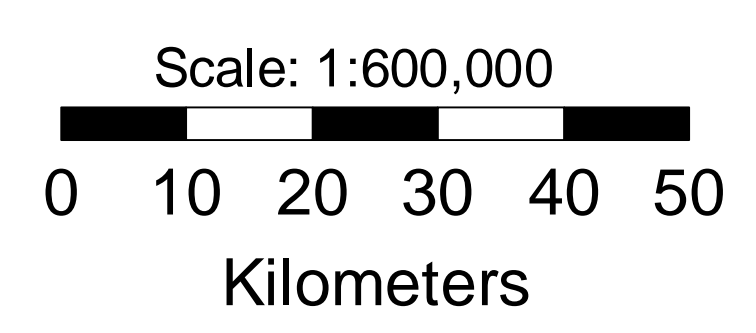
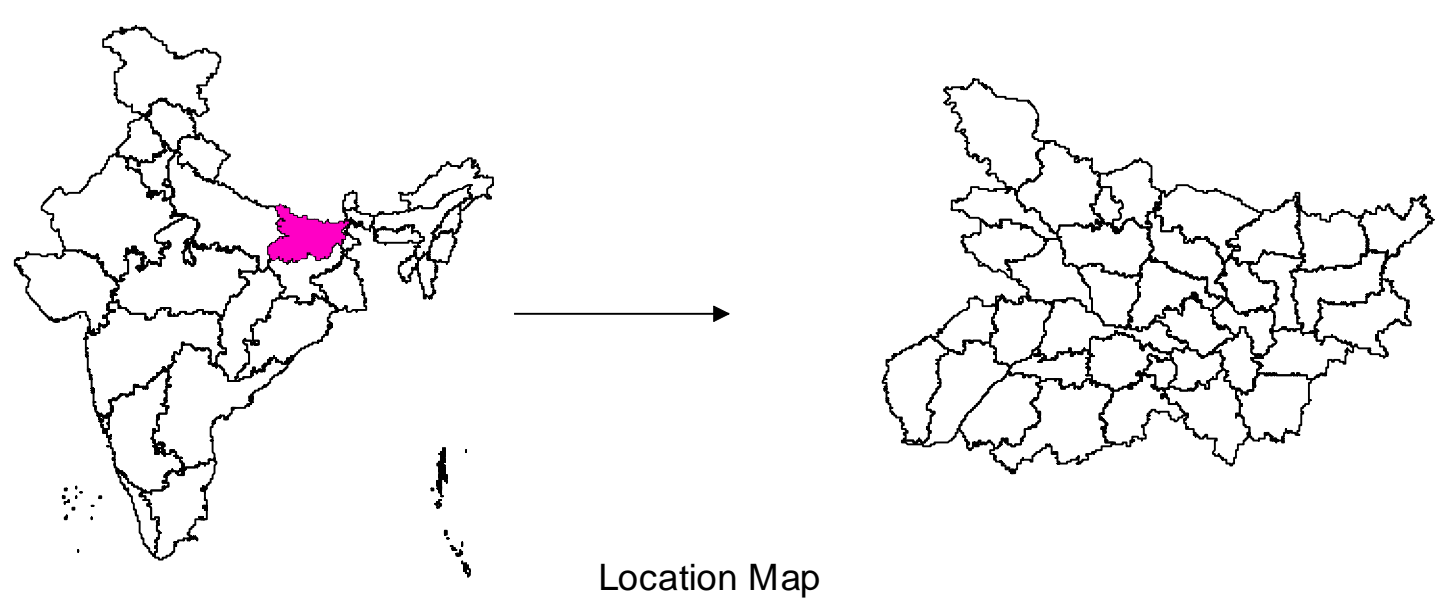
Flood Inundated areas in Bihar state

Based on the analysis of Radarsat-2 data of 20-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



Decision Support Centre (DSC)
 RS & GIS Applications Area
 National Remote Sensing Centre
 Dept. of Space, Govt. of India
 HYDERABAD-500 625
 E-Mail: flood@nrsa.gov.in



भारत सरकार
अन्तरिक्ष विभाग
राष्ट्रीय सुदूर संवेदन केन्द्र
बालानगर, हैदराबाद-500 625, आं.प्र. भारत
टेलिफोन : +040-23879572-76
+040-23879261-65
फैक्स : +040-23878648



Government of India
Department of Space
National Remote Sensing Centre
Balanagar, Hyderabad-500 625, AP, India
Telephone : +040-23879572-76
+040-23879261-65
Fax : +040-23878648

Phone: 040-23884252, Fax: 040-23870445
e-mail: bhanumurthy_v@nrsc.gov.in

V. Bhanumurthy

Head, Disaster Management Support Division &
Dy. Project Director (DSC-Applns)

Date: September 22, 2008

Dear Sir,

Sub: Bihar Floods - Near Real Time Flood Mapping using Satellite Data

Please refer to our earlier letter dated 19-Sept-2008 regarding 'Near Real Time Flood Mapping' project using satellite data. So far, we have sent 187 flood maps covering floods in Bihar. In continuation, we have programmed Radarsat-2 data of 20-Sep-2008. The satellite data was analysed and two flood maps were composed on 1: 200,000 scale, 1:600,000 for Bihar state. Further, district and detailed flood maps are being prepared for Supaul, Madhepura, Araria 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, NRSC

| for kind information please

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-2 data of 20-Sept-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 12 flood maps were sent.
25	18-09-08	Radarsat-2	Procured, analysed and 8 flood maps were sent.
26	20-09-08	Radarsat-2	Procured, analysed and 2 flood maps are being sent.

3.0 Data Analysis

Satellite data is rectified and flood inundation layer is extracted. Two flood inundation maps are composed on 1: 200,000 scale and 1:600,000 for Bihar state. Further, the district and detailed maps are being prepared. 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 part of Bihar state.
- Major flood inundation was observed in Madhepura, Supaul and Saharsa districts.
- The inundation appears to be increased in Madhepura, Supaul, Saharsa, Khagaria, and Araria districts when compared to September 15, 2008.
- The inundation appears to be receded in Katihar and Begusarai districts when compared to September 15, 2008.

Table-2

DISTRICT	INUNDATED AREA(Ha)
Madhepura	61738
Supaul	31852
Saharsa	28166
Khagaria	27553
Araria	21261
Samastipur	18827
Vaishali	15861
Katihar	8328
Patna	8238
Muzaffarpur	7605
Nalanda	5823
Begusarai	5562
Darbhanga	5490
Bhagalpur	5437
Saran	4816
Purnia	4603
East Champaran	2756
TOTAL	263916

* Partially Covered Districts

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