



“Towards a Disaster Resilient Assam”

FLOOD IN ASSAM, 2012



**ASSAM STATE DISASTER MANAGEMENT AUTHORITY
GOVERNMENT OF ASSAM
DISPUR**

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FLOOD 2012 : A GLANCE

Sl No	Items	UNITS	
		June 2012	September 2012
1.	Total Number of Districts Affected	27	20
2.	Number of Revenue Circles affected	128	94
3.	Villages Affected	4540	2594
4.	Total Number of Population Affected:	23.91 lakhs	29.14 lakhs
5.	Crop area Affected	2.55 lakh hector	3.28 lakh hector
6.	Human lives lost	112	37
7.	Relief Camps Opened	768	1069

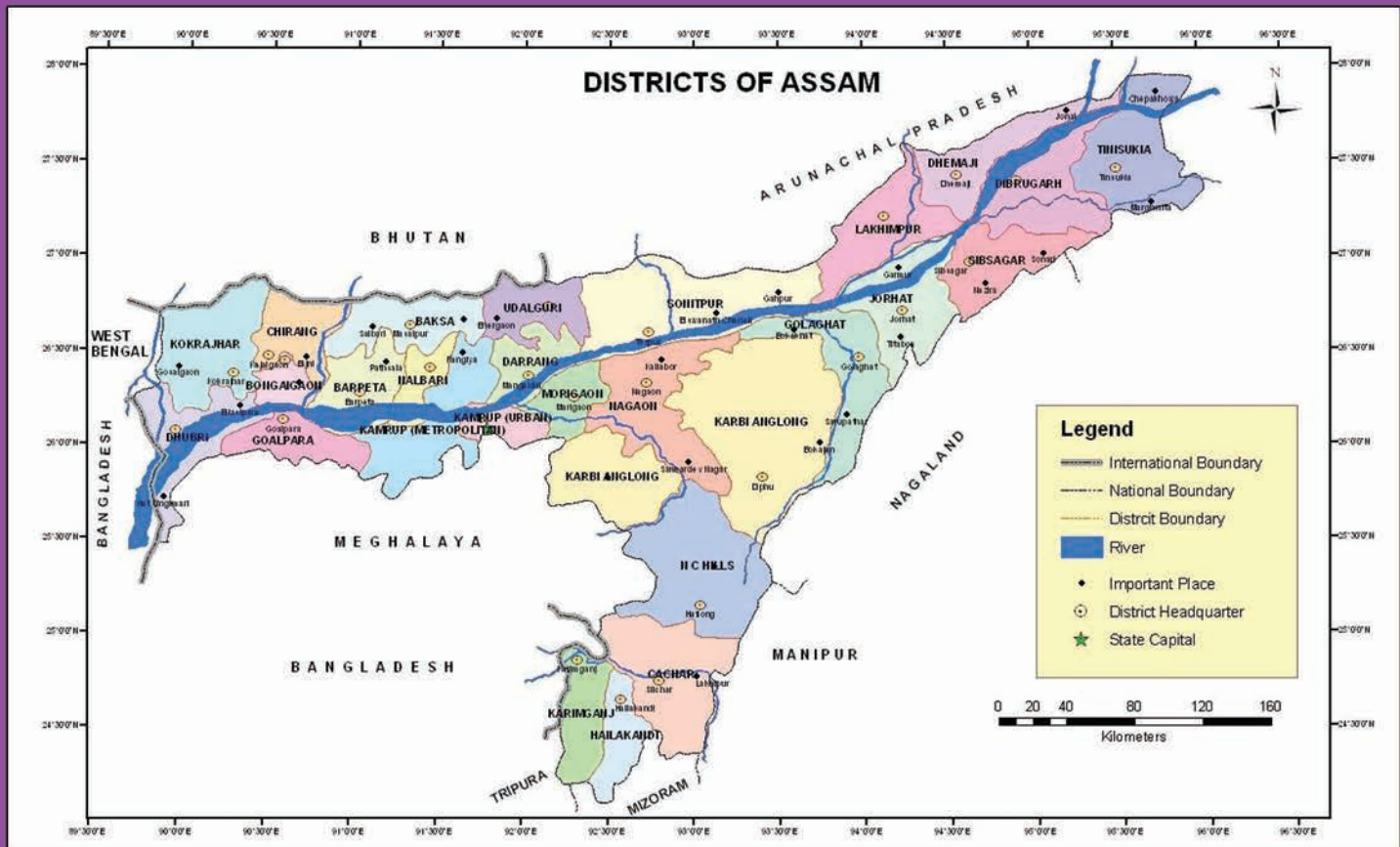


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Introduction

Assam is situated in the North East region of India with a geographical area of 78,438 sq km which constitutes about 2.4% of the country's geographical area. Most of 3,11,69,272 population (2011 census) live in the valleys of its two major river systems in the twenty four districts of the Brahmaputra valley and the three districts of the Barak valley.

Assam possesses a unique geomorphic environment, with plains, dissected hills of the South Indian Plateau system and with the Himalayas all around its north, north-east and east. Geomorphic studies conclude that the Brahmaputra, the life-line of Assam is an antecedent river, older than the Himalayas. The river with steep gorges and rapids in Arunachal Pradesh entering Assam, becomes a braided river (at times 16 km wide) and with tributaries, creates a flood plain (Brahmaputra Valley: 80–100 km wide, 1000 km long). In the south, the Barak originating in the Barail Range (Assam-Nagaland border) flows through the Cachar district with a 40–50 km wide valley and enters Bangladesh with the name Surma



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Major River Systems

All the rivers in Assam are liable to floods, mainly because they receive heavy rainfall within a short time. These rivers are in their early stage of maturity and are very active agents of erosion. The river waters collect a tremendous amount of silt and other debris and raise the level of the river beds. Therefore, it becomes impossible for the main channel to cope with the vast volume of water received during the rains. The extremely dynamic monsoon regime vis-à-vis the unique physiographic setting of the basin has been considered as the single most important cause for frequent occurrence of flood in this region.

The Brahmaputra and the Barak are the two major river systems of the State. The Brahmaputra River originates at an elevation of about 5,000 m above (m.s.l.) in Tibet. The Brahmaputra River, known as Tsang Po in Tibet, after a long eastward course of 1,600 km abruptly veers towards south around Namcha Barwa peak (7,710 m) in Eastern Himalaya. This southward course of the river flowing through Arunachal Pradesh is known as Siang River. It passes through tortuous course across the mountains of Arunachal Pradesh and then emerges on to the plains of Assam, where downstream it is met by the Dihang, which is known as the largest tributary of the Brahmaputra, further fed by tributaries like Dibong, Sessiri, Lohit and Noa-Dihing around Saikhowaghat.

The river known as Brahmaputra in Assam initially flows south-westward and thereafter towards west in the Brahmaputra Valley. Further down streams, the river swings towards south and passes on to the plains of Bangladesh. The Brahmaputra River between Namcha Barwa and the confluence with Dihang descend by about 2,200m and its water power resources have been estimated to be the third biggest in the world coming after Congo and Amazon basins. Along the northern bank the Brahmaputra River is joined by about 20 major tributaries like Subansiri, Ranga Nadi, Dikrong, Gabharu, North Dhansiri, Pagladiya, Manas, Aie, Beki, Champamati, Gangadhar, and Raidak. On the south bank about 13 tributaries like Burhi-Dihing, Disang, Dikhau etc join the river Brahmaputra.



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District-wise Flood Hazard Index

Flood Hazard Index (FHI) gives an idea on the severity of flood hazard. To find the severity of flood hazard for different districts of Assam, the flood hazard was classified into 5 categories based on the frequency of inundation and weightages were given to each category of the flood hazard zones. Weightages were also given as per the percentage of Flood Hazard Area for each district. Finally the Flood Hazard Index was calculated by multiplying the weightage given for different hazard category with weightages given for the Flood Hazard Area.

Table below shows the Flood Hazard Index for different districts of Assam. Based on the Flood Hazard Index derived for different districts, it is seen that Nalbari, Morigaon, Darrang, Lakhimpur and Dhemaji districts are the five most flood prone districts of Assam.



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District-wise Flood Hazard Index



Sl.No	District	District Area (Hectares)	Total Hazard Area (Hectares)	Flood Area	% Flood Hazard Area	Hazard Index
1	NALBARI	110586	51737		46.78	27
2	MARIGAON	149300	107834		72.23	25
3	DARRANG	155598	116294		74.74	21
4	LAKHIMPUR	289686	153527		53.00	19
5	DHEMAJI	252527	117417		46.50	19
6	BARPETA	213851	147591		69.02	18
7	SIBSAGAR	262656	122519		46.65	18
8	JORHAT	283134	121074		42.76	18
9	UDALGURI	197518	48867		24.74	17
10	NOWGONG	400002	191193		47.80	16
11	GOLPARA	200731	76987		38.35	16
12	KAMRUP®	306706	116849		38.10	16
13	BONGAIGAON	110160	41605		37.77	16
14	DHUBRI	271003	98753		36.44	16
15	DIBRUGARH	337731	117234		34.71	16
16	SONITPUR	527723	160450		30.40	16
17	GOLAGHAT	353499	104814		29.65	16
18	TINSUKIA	383365	74345		19.39	16
19	KARIMGANJ	185840	51968		27.96	15
20	HAILAKANDI	132892	32661		24.58	15
21	CACHAR	378136	92772		24.53	15
22	KAMRUP (M)	102705	21987		21.41	15
23	KOKRAJHAR	258923	33665		13.00	15
24	BASKA	262748	26191		9.97	
25	CHIRANG	188189	13167		7.00	
26	KARBI ANGLONG	1042757	46337		4.44	
27	NORTH CACHAR	486293	462		0.10	

Source: Flood Hazard Atlas for Assam State :
NRSC, Government of India

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Floods in Assam 2012

Floods are a recurring phenomenon in Assam as 45% of its area is prone to floods. Apart from the heavy rainfall that occurs in the State, the Brahmaputra and its tributaries and the Barak river and their tributaries swell up during the monsoon on account of rains in the upper reaches of the catchment areas of various rivers which include China, Myanmar and Bhutan besides the neighbouring states of Arunachal Pradesh, Meghalaya, Nagaland etc.

April-May 2012: First Wave of Floods

A flood occurred in the district of Karimganj in April 2012. Later in May a flood occurred in Lakhimpur district. However, the duration and magnitude of the first wave of floods was very small affecting a population of 4068 only and no relief camps were opened during this phase.

June- August 2012: Second Wave of Floods

In the second wave of Floods, all the 27 Districts of Assam were affected. The most devastating phase came on 24th June 2012 when due to incessant rainfall in the catchment areas of Brahmaputra (particularly in China and Arunachal Pradesh) and its tributaries originating from Arunachal Pradesh and Bhutan, water levels of all rivers started rising and crossed the danger level mark.

September 2012: Third Wave of Floods

Barely had the State recovered from the devastating floods of June 2012, the State was again struck by another enormous flood in the third week of September 2012. Twenty districts of Assam has been flooded due to incessant rainfall in the catchment areas affecting a population of nearly 29.14 lakh population in 2594 villages of 94 Revenue Circles.



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Floods June & September 2012: Why it happened?

Incessant rainfall during the month of June 2012 and the period from 15th September to 27th September 2012 which was 24 % and 47 % above normal was one of the reasons for the enormous floods in Assam.

Year & Month	States	Normal (mm)	Actual (mm)	% above normal
June 2012	Assam	427.3	528.8	+24%
June 2012	Arunachal Pradesh	458.8	495.6	+8%
September 15 th -27 th 2012	Assam	123.3	181	+47%
September 15 th -27 th 2012	Arunachal Pradesh	154.7	263	+70%

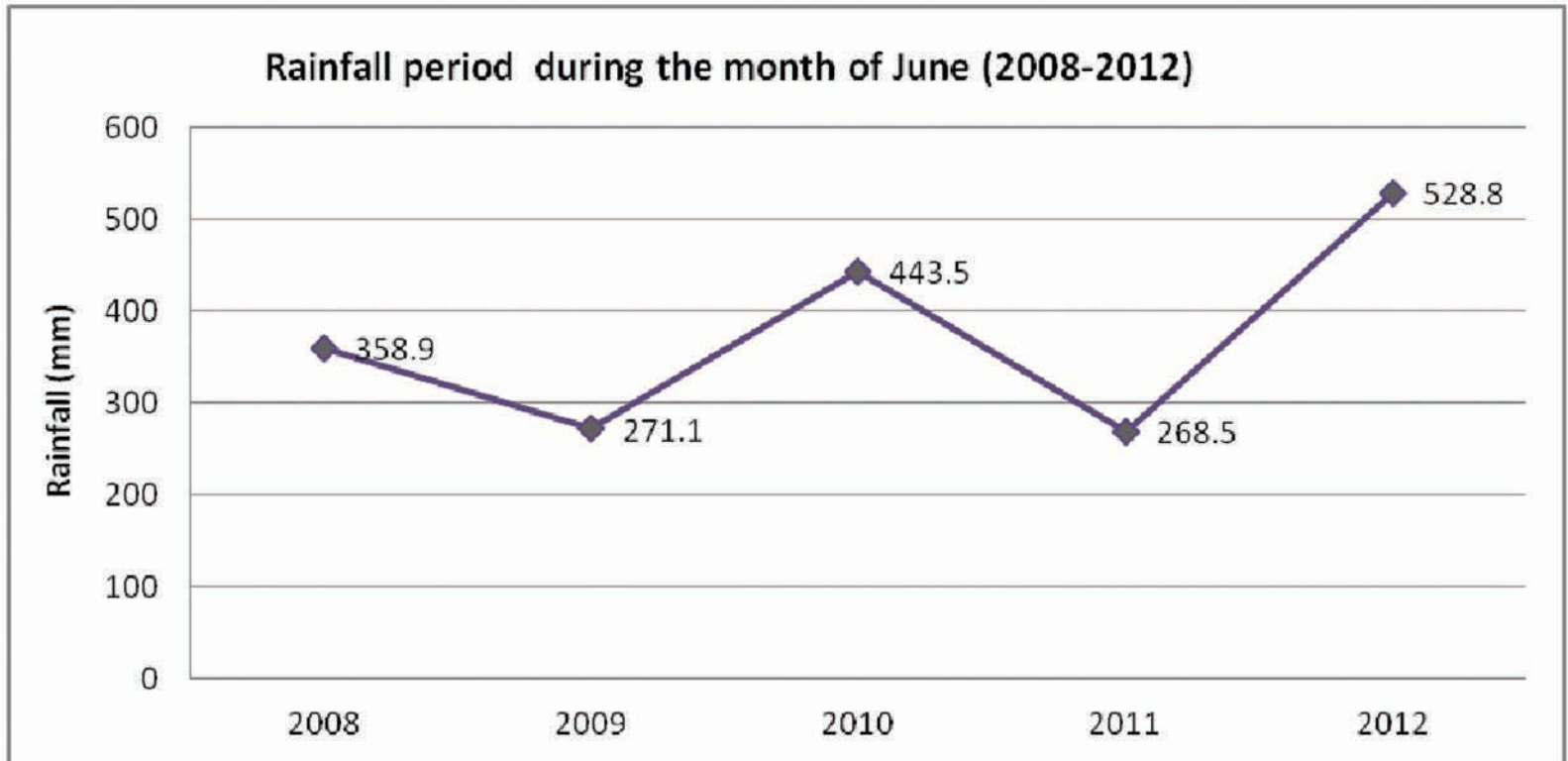


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An overview of the rainfall scenario during the month of June of the past four years is given below (Fig-1):-



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Moreover, what was striking was that the rainfall activity was unusually extreme, on four days of June viz. 25th, 26th, 27th and 28th and four days of September 2012 viz. 20th, 21st, 22nd and 23rd. The table on rainfall activities is given below:

Rainfall in June 2012: Assam

Date	Actual (mm)	Normal (mm)	Departure (%)
24.06.2012	15.3	15	2
25.06.2012	35	14.2	+145
26.06.2012	70	13.8	+406
27.06.2012	210.9	104.1	+103
28.06.2012	21	13.1	+60
29.06.2012	0.7	12.2	(-) 94
30.06.2012	0.2	13.8	(-) 99

Rainfall in September 2012: Assam

Dates	Actual	Normal	Departure (%)
20.09.2012	34.3	7.3	+370
21.09.2012	28.3	7.6	+272
22.09.2012	19.2	7.7	+149
23.09.2012	14.7	10.2	+44

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Simultaneously, on those days there was very heavy rainfall in Arunachal Pradesh. The table below shows rainfall received in Arunachal Pradesh for the period from 24.6.12 to 30.07.2012 and 20.09.12 to 25.09.12.

Rainfall in June: Arunachal Pradesh\

Date	Actual (mm)	Normal (mm)	Departure (%)
24.06.12	45.9	16	+187
25.06.12	39.5	15.9	+148
26.06.12	31.1	20.8	+50
27.06.12	14	18.1	-22
28.06.12	1.9	18.1	-89
29.06.12	2	11.4	-82
30.06.12	1.3	14.6	-91



Image Courtesy: Reuters and Assam Tribune

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Rainfall in September 2012: Arunachal Pradesh

Dates	Normal	Actual	Departure (%)
20.09.2012	11.8	36.1	+205
21.09.2012	11.8	36	+205
22.09.2012	9.1	24.4	+169
23.09.2012	8.9	35.4	+296
24.09.2012	12.3	31.7	+159
25.09.2012	9.9	14.1	+42

Thus, the level of the river Brahmaputra rose alarmingly and crossed the danger mark at Dibrugarh, Jorhat, Tezpur, Guwahati, Goalpara & Dhubri. The high water level of the Brahmaputra during the June flood was the highest since the levels in 1988, 1998 and 2004 in different locations. Besides the river Brahmaputra, the level of the tributaries that rose above the danger level were Dikhow, Jiabharali, Kopili, Bharalu, Puthimari, Champamati, Aai, Gaurang, Beki, Manas, Pagladia, Saktola, Nonoi, Subhansiri, Singra, Charikhuria, Dikrong, Durpang and Jiadhah.

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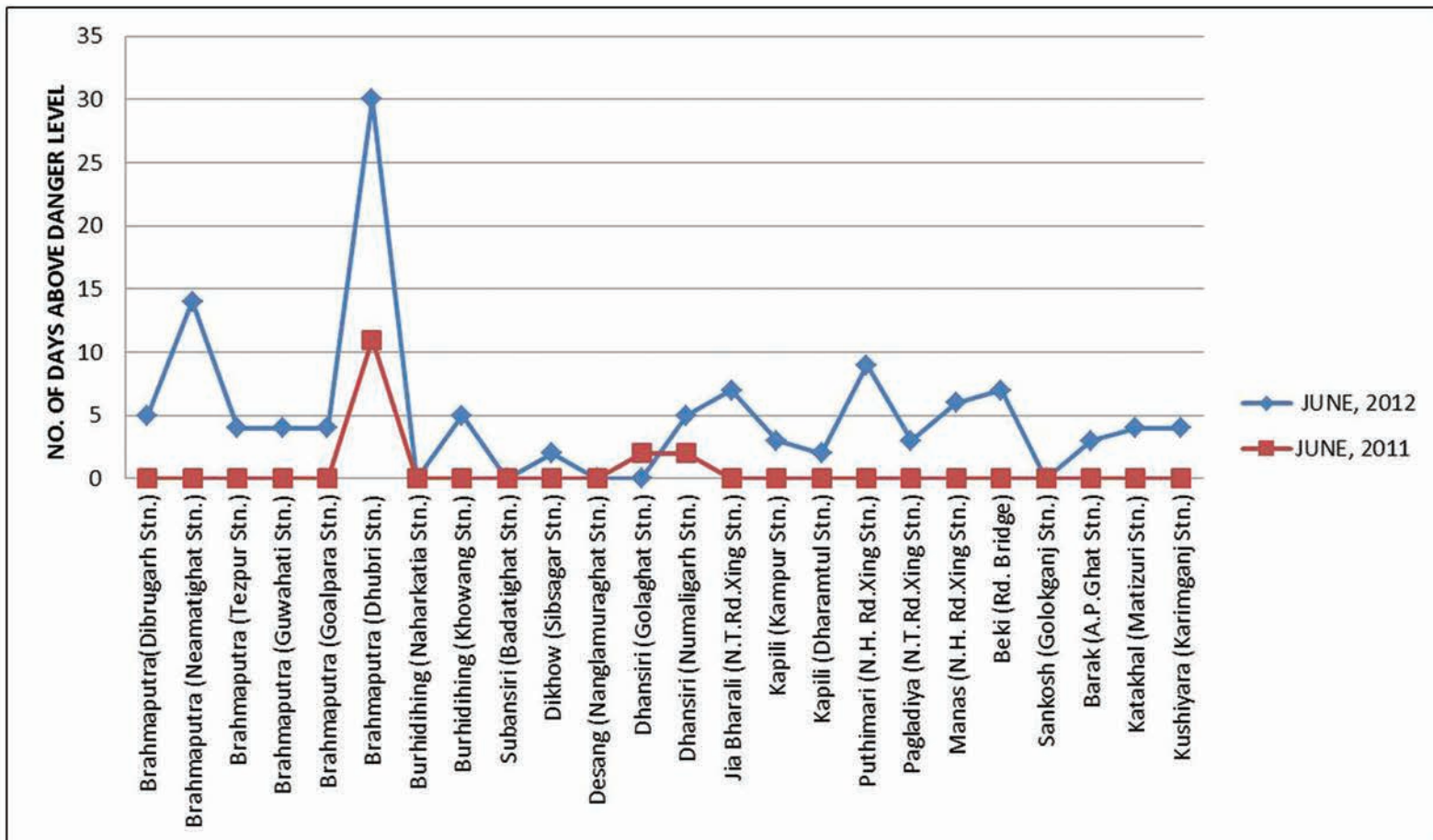
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During the period of June, 2012 and September 2012, the rivers flowing above danger level has been analyzed and compared with the same period for the year 2011.

Sl. No.	River	Station	District	No. of Days above Danger level	
				JUNE 2012	JUNE, 2011
1	Brahmaputra(Dibrugarh Stn.)	Dibrugarh	Dibrugarh	5	0
2	Brahmaputra (Neamatighat Stn.)	Neamatighat	Jorhat	14	0
3	Brahmaputra (Tezpur Stn.)	Tezpur	Sonitpur	4	0
4	Brahmaputra (Guwahati Stn.)	Guwahati	Kamrup	4	0
5	Brahmaputra (Goalpara Stn.)	Goalpara	Goalpara	4	0
6	Brahmaputra (Dhubri Stn.)	Dhubri	Dhubri	30	11
7	Burhidihing (Naharkatia Stn.)	Naharkatia	Dibrugarh	0	0
8	Burhidihing (Khowang Stn.)	Khowang	Dibrugarh	5	0
9	Subansiri (Badatighat Stn.)	Badatighat	N.Lakhimpur	0	0
10	Dikhow (Sibsagar Stn.)	Sibsagar	Sibsagar	2	0
11	Desang (Nanglamuraghat Stn.)	Nanglamuragat	Sibsagar	0	0
12	Dhansiri (Golaghat Stn.)	Golaghat	Golaghat	0	2
13	Dhansiri (Numaligarh Stn.)	Numaligarh	Golaghat	5	2
14	Jia Bharali (N.T.Rd.Xing Stn.)	N.T.Rd. Xing	Sonitpur	7	0
15	Kapili (Kampur Stn.)	Kampur	Nagaon	3	0
16	Kapili (Dharamtul Stn.)	Dharamtul	Nagaon	2	0
17	Puthimari (N.H. Rd.Xing Stn.)	N.H.Rd.Xing	Kamrup	9	0
18	Pagladiya (N.T.Rd.Xing Stn.)	N.T.Rd. Xing	Nalbari	3	0
19	Manas (N.H. Rd.Xing Stn.)	N.H.Rd. Xing	Barpeta	6	0
20	Beki (Rd. Bridge)	Rd. Bridge	Barpeta	7	0
21	Sankosh (Golokganj Stn.)	Golokganj	Dhubri	0	0
22	Barak (A.P.Ghat Stn.)	A.P. Ghat	Cachar	3	0
23	Katakhal (Matizuri Stn.)	Matizuri	Hailakandi	4	0
24	Kushiyara (Karimganj Stn.)	Karimganj	Karimganj	4	0

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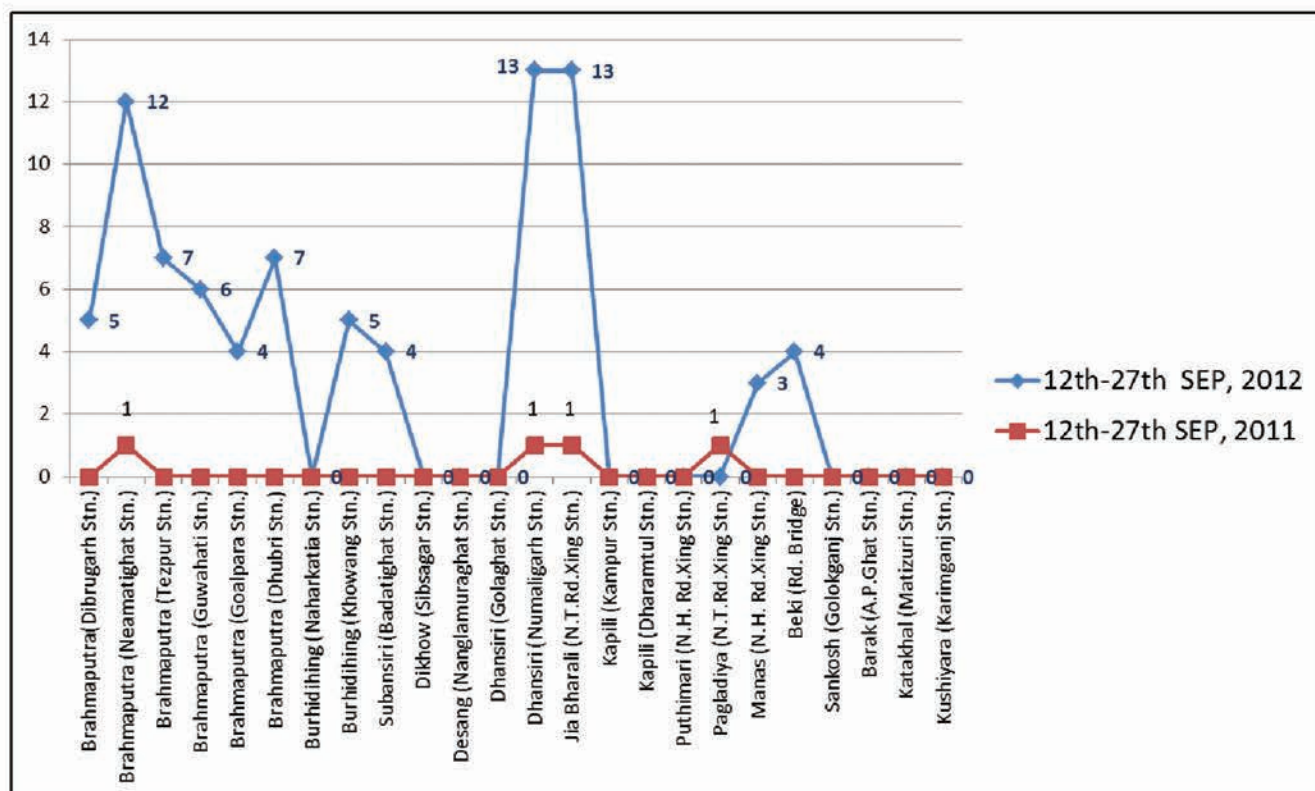


12th September – 27th September 2012

Sl. No.	River	Station	District	No. of Days above Danger level	
				12 th -27 th Sept 2012	12 th -27 th Sept 2012
1	Brahmaputra(Dibrugarh Stn.)	Dibrugarh	Dibrugarh	5	0
2	Brahmaputra (Neamatighat Stn.)	Neamatighat	Jorhat	12	1
3	Brahmaputra (Tezpur Stn.)	Tezpur	Sonitpur	7	0
4	Brahmaputra (Guwahati Stn.)	Guwahati	Kamrup	6	0
5	Brahmaputra (Goalpara Stn.)	Goalpara	Goalpara	4	0
6	Brahmaputra (Dhubri Stn.)	Dhubri	Dhubri	7	0
7	Burhidihing (Naharkatia Stn.)	Naharkatia	Dibrugarh	0	0
8	Burhidihing (Khowang Stn.)	Khowang	Dibrugarh	5	0
9	Subansiri (Badatighat Stn.)	Badatighat	N.Lakhimpur	4	0
10	Dikhow (Sibsagar Stn.)	Sibsagar	Sibsagar	0	0
11	Desang (Nanglamuraghat Stn.)	Nanglamuragat	Sibsagar	0	0
12	Dhansiri (Golaghat Stn.)	Golaghat	Golaghat	0	0
13	Dhansiri (Numaligarh Stn.)	Numaligarh	Golaghat	13	1
14	Jia Bharali (N.T.Rd.Xing Stn.)	N.T.Rd. Xing	Sonitpur	13	1
15	Kapili (Kampur Stn.)	Kampur	Nagaon	0	0
16	Kapili (Dharamtul Stn.)	Dharamtul	Nagaon	0	0
17	Puthimari (N.H. Rd.Xing Stn.)	N.H.Rd.Xing	Kamrup	0	0
18	Pagladiya (N.T.Rd.Xing Stn.)	N.T.Rd. Xing	Nalbari	0	1
19	Manas (N.H. Rd.Xing Stn.)	N.H.Rd. Xing	Barpeta	3	0
20	Beki (Rd. Bridge)	Rd. Bridge	Barpeta	4	0
21	Sankosh (Golokganj Stn.)	Golokganj	Dhubri	0	0
22	Barak (A.P.Ghat Stn.)	A.P. Ghat	Cachar	0	0
23	Katakhal (Matizuri Stn.)	Matizuri	Hailakandi	0	0
24	Kushiyara (Karimganj Stn.)	Karimganj	Karimganj	0	0

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In that situation, in June 2012, water either overtopped the embankments or breached the same causing large scale inundation within a very short time. The embankments of various rivers were breached in 65 places and as the breaches widened with time, more areas were affected over the next few days. Heavy flood occurred in the districts of Dibrugarh, Jorhat, Sonitpur, Nagaon, Golaghat, Morigaon, Kamrup (M), Kamrup, Goalpara, Dhubri, Bongaigaon, Barpeta, Darrang, Lakhimpur, Dhemaji, Tinsukia, Sibsagar, Karbi Anglong, Kokrajhar, Chirang Baksa, Nalbari and Udalguri.

The Barak river and its tributaries Kushiyara, Katakhal & Matijuri caused floods in the three districts of Cachar, Hailakandi & Karimganj.

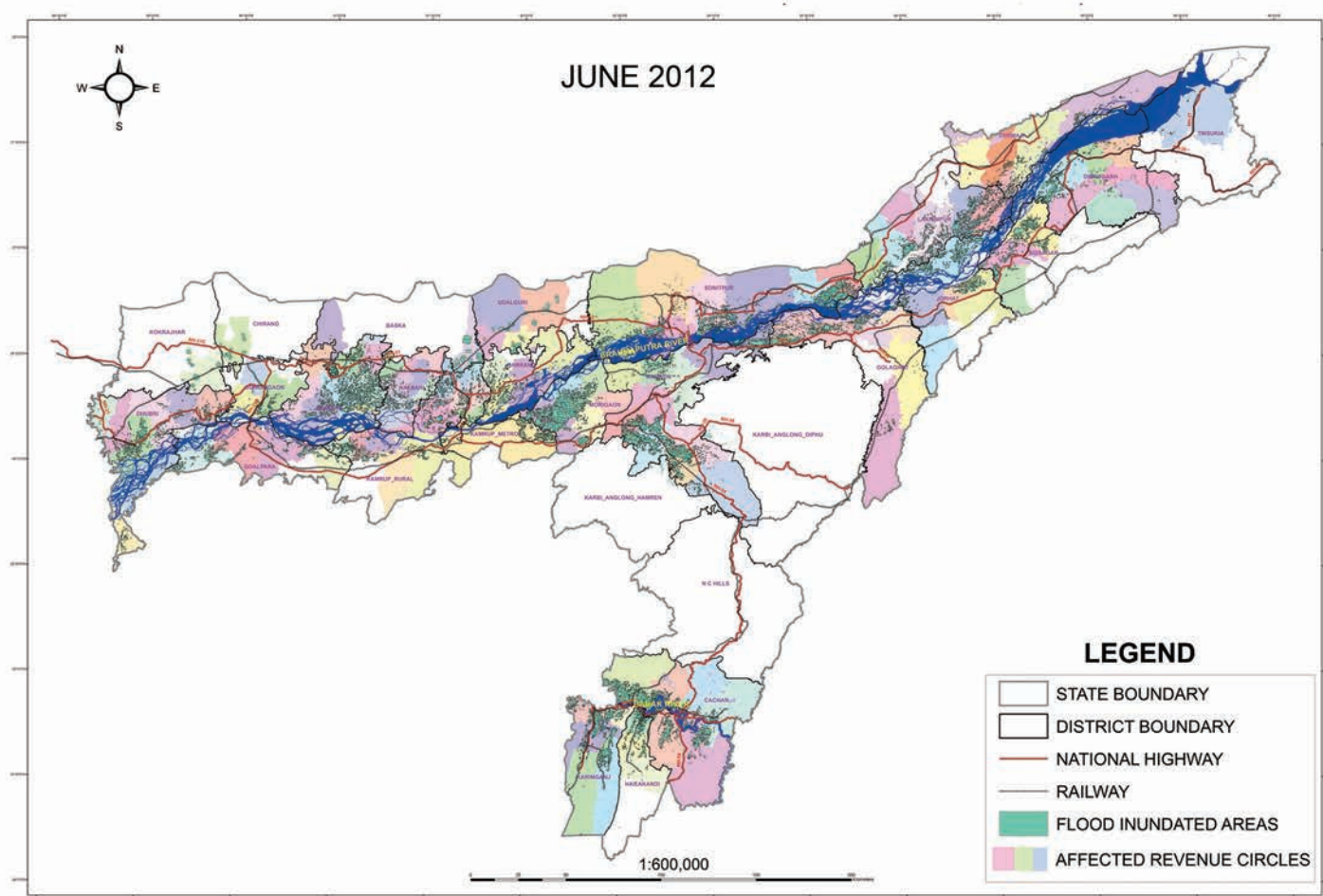
Heavy rainfall also triggered 27 landslides in three districts of Assam, worst affected were Dima Hasao and Kamrup (Metro). 16 people lost their lives in these landslides.

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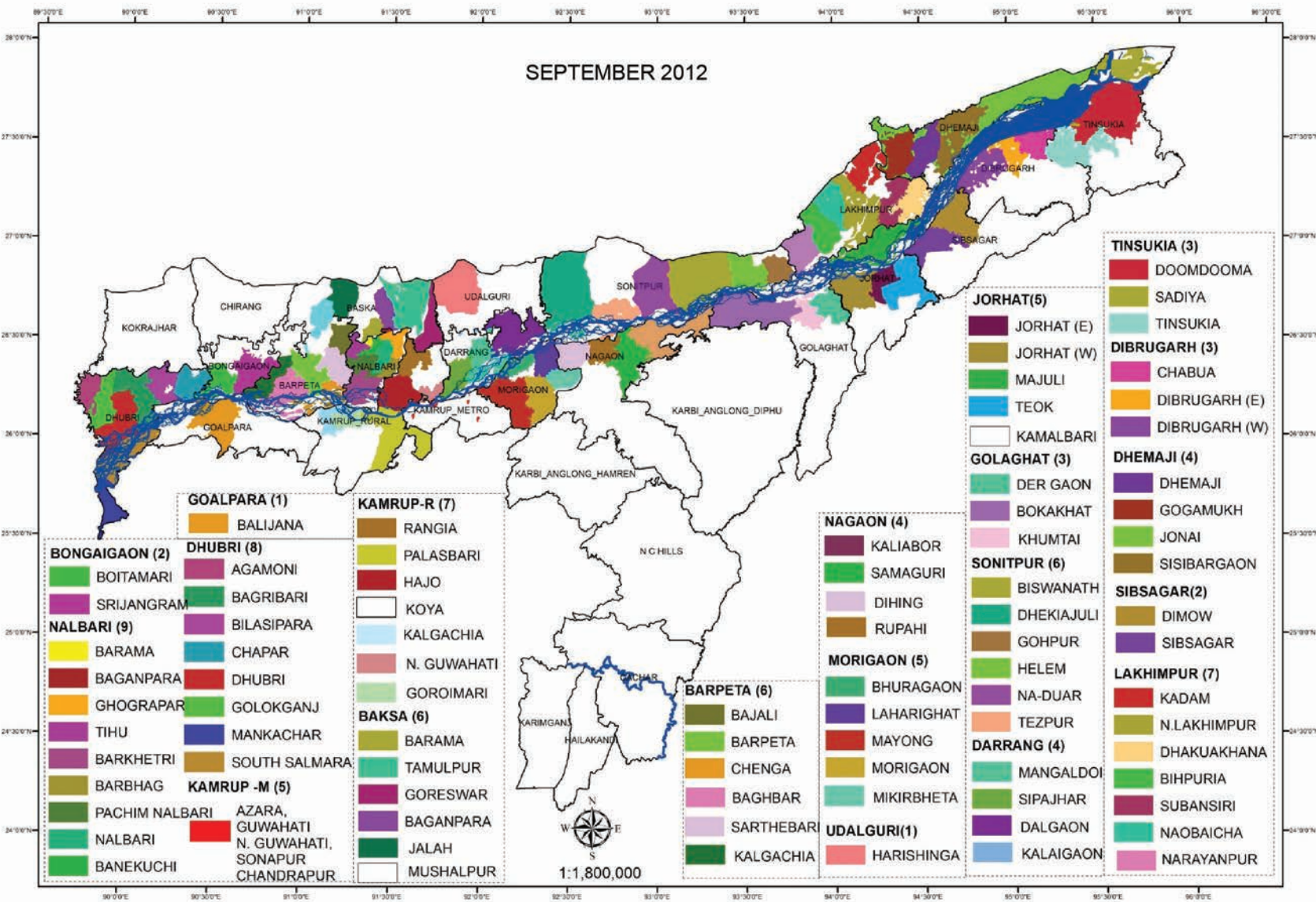


In the third week of September 2012, the heavy rainfall caused havoc as the water entered from the already open breaches in the embankments and also caused 9 fresh breaches. Floods occurred in the twenty districts of Dhemaji, Lakhimpur, Tinsukia, Dibrugarh, Sivasagar, Jorhat, Golaghat, Nagaon, Morigaon, Kamrup (M), Kamrup, Nalbari, Barpeta, Sonitpur, Darrang, Udalguri, Baksa, Goalpara, Dhubri & Bongaigaon.

Below is a map showing flood affected areas of the June & September 2012 floods.



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A. Progression of Floods during the Second & Third Wave of Flood

Date	Affected district	Affected population
24 th June 2012	7	69026
25 th June 2012	10	119599
26 th June 2012	17	370828
27 th June 2012	21	767241
28 th June 2012	27	1509166
29 th June 2012	27	2106280
30 th June 2012	27	1937655
1 st July 2012	27	1992727
2 nd July 2012	16	1233970
3 rd July 2012	16	916801
4 th July 2012	17	850145
5 th July 2012	15	566221
6 th July 2012	14	334007
7 th July 2012	13	195683

This wave of flood affected the State till 15th August 2012, when number of affected districts came down to 2 & all relief camps were closed.

Date	Affected district	Affected population
19 th September 2012	4	1,17,209
20 th September 2012	7	1,95,942
21 st September 2012	13	4, 15,051
22 nd September 2012	14	7,97,502
23 rd September 2012	16	9,96,718
24 th September 2012	16	13,81,025
25 th September 2012	17	17, 60,050
26 th September 2012	17	16, 42,793
27 th September 2012	18	20,06,168
28 th September 2012	18	15,11,429

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B. Impact of floods

A brief overview of the impact of the second & third wave of Floods in June & September 2012 is given below.

	June 2012	September 2012
Number of Districts affected	27	20
Number of Revenue Circles affected	128	94
Villages affected	4540	2594
Population affected	23.91 lakh	29.14 lakh
Human lives lost	112	32
Crop area affected	2.55 lakh hectares	3.28 lakh hectares

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D. Damage to Infrastructure

An overview of the damage of June 2012 floods is presented below. The impact of the September 2012 floods is under compilation:

- * 3033 roads damaged, 43.35 KM roads breached , 331 RCC bridge approach damaged
- * Several National Highways submerged and potholes (635608 sq km) developed, 31 km damaged due to Landslide etc
- * Embankments breached at 43 places covering a total Length of 4.784 Km
- * Crucial rail line between Lumding and Badarpur damaged
- * 33.34 KM of 33 KV line, 37.23 KM of 11 KV line, 40.76 KM of LT line damaged. Further, 128 PSC Poles, 43 Distribution Transformers also damaged due to Floods this year.
- * Several water supply schemes affected throughout the State. Spot source affected = 32341 , PWSS damaged = 739
- * 5958 schools , 112 BPHC/CHC & other Health institutions, 9980 Anganwadi centres, 2849 work-sheds of weavers, 3.00 lakh cattle sheds, 11 fish seed farms, etc damaged



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The overview continued:

- * Infrastructure damaged of 3 National Parks viz. Dibru-Saikhowa, Kaziranga & Manas National Parks and 3 Wildlife Sanctuaries viz. Pobitora, Laokhowa & Bura Wildlife Sanctuaries
- * 13670 ha of Fish Farm Area damaged & 11 Nos of Fish & Fish seed farm affected
- * 92.8 km Canal damaged (Earthen & Lined) & 101 Hydraulic structures damaged
- * 2531.25 m Aflux bund/ guide bund damaged
- * 812 Hectare Sericulture Plantation affected, 10,00,000 Nursery damaged and 1580 Rearing House damaged
- * 5000 Km of Village internal roads damaged, 500 Km of Irrigation Channel/Marginal Bund affected, 425 Drinking Water units damaged, 50 Panchayat Ghars damaged.



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A brief summary of the damages (in monetary terms) caused by floods is given below:-

Sl No	Items	Rs in Crore
1.	Roads & Bridges damaged	Rs. 1544.80
2.	Breaches in embankment etc	Rs 834.00
3.	Damage to Power sector	Rs 2.60
4.	School Buildings damaged	Rs 118.14
5.	Crop damage	Rs 109.05
6.	Houses damaged	Rs 270.37
7.	Livestock dead	Rs 5.97
8.	BPHC, CHC, MPHC, SDCH etc damaged	Rs 1.05
9.	Spot Source affected & PWSS Damage of Pump and Panel Board, Washed away portion of LDS & Hydrant etc	Rs 43.87
10.	Damage to infrastructure of 3 National Parks & 3 Wildlife Sanctuaries	Rs. 26.03
11.	Erosion in Bridge & Culvert Approaches, submergence, landslide affected etc of PWD National Highway (excluding N.H. maintained by BRO & NHAI)	Rs 96.89
12.	Damage to Fish farms	Rs 137.71
13.	Damaged Anganwadi Centres	Rs 49.90
14.	Damaged canals, hydraulic structures, Aflux bund/guide bund	Rs 65.01
15.	Plantation, Nursery, Rearing House etc damaged of Sericulture	Rs 6.19
16.	Damages of Work-sheds of weavers	Rs 1.72
17.	Damages to Panchayat Ghar, Village internal roads, Drinking Water unit, Irrigation Channel/Marginal Bund	Rs 159.63
18.	Damage to Land Development Project, Gully Control Project etc of Soil Conservation	Rs 1.41
19.	Damage to Cattle sheds etc	Rs 60.25
20.	Damaged threshing floors & godowns of seed farms & storage facilities	Rs 57.30
	Total	Rs. 3591.89 Cr



The details are given in Annexures I to VII

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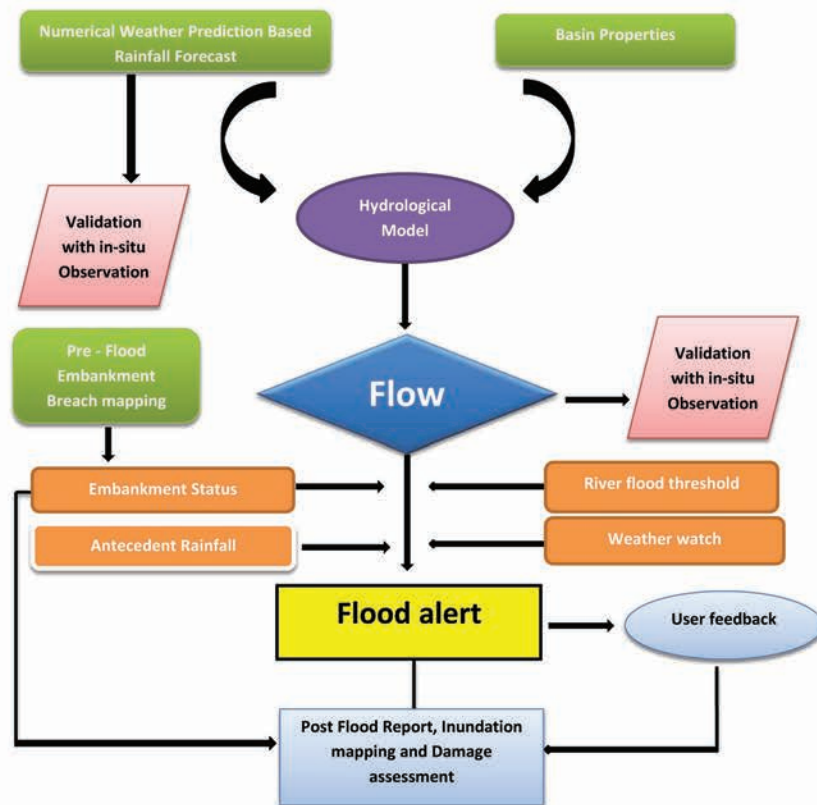
MEASURES TAKEN BY THE STATE GOVERNMENT

1) Flood Early Warning

Flood forecasting and early warning is used for alerting the likely damage center well in advance of the actual arrival of flood, to enable the people to move and also to remove the movable properties to safer places or to raised platforms specially constructed for this purpose.

The Government of Assam felt the inadequacy of not having an effective early warning system to alert the administration and the population from the probable occurrence of a flood event for taking necessary measures to minimize the loss of human lives and mitigating the damage to properties. Therefore different stakeholders were consulted to find a solution to the problem. After a series of meeting with different stakeholders, the North Eastern Space Application System (NESAC) took the responsibility for developing a model of flood forecasting and issue early warnings in 2009.

Initially, the Flood Early Warning System was exercised for two districts of Assam. But due to its uniqueness, the project now covers 14 districts of Assam. These districts are Lakhimpur, Dhemaji, Barpeta, Baksa, Nalbari, Cachar, Hailakandi, Karimganj, Dhubri, Goalpara, Morigaon, Darrang, Sonitpur and Sibsagar.



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During the period from 15th May- 24th September, 2012 NESAC has issued 63 warnings for different districts of Assam, out of which flood has been reported for 42 warnings. These warnings were disseminated to the District Administration and Revenue Circle Officers via email and bulk SMS services by Assam State Disaster Management Authority.

Date & Time	Duration	Flood Severity	District and Rivers	Revenue Circles	Feedback
24-06-12	Within 72 hrs	Low	Sibsagar (Dikhow-Darika, Dehing, Demow)	Sibsagar, Sonari, Nazira, Demow	Flood Reported on 26 th & 27 th for Sibsagar & Demow RC
		Low	Sonitpur (Jiabharali, Gabharu)	Tezpur, Naduar, Dhekiajuli	Flood Reported for Naduar & Tezpur RC
24-06-12	Within 24-48 hrs	Moderate	Barpeta (Beki, Pahumara, Kaldia, Nakhanda)	Barpeta, Baghbar, Barnagar, Kalgachia, Sathebari, Chenga)	Flood Reported for the forecasted Revenue Circles
		Low	Baksa (Mora Pagladia, Kaldia, Baralia, Mutanga-Nona)	Barama, Baganpara, Jalah, Tihu, Rangia, Tamulpur	Flood Reported for Tamulpur RC
24-06-12	Within 24-48 hrs	Moderate	Dhemaji (Jiadhal-Kumatia, Gainadi)	Gogamukh, Dhemaji, Sissiborgaon	Flood reported for Dhemaji & Sissiborgaon RC
		Low	Lakhimpur (Dickrong-Durpang, Singra, Pava, Kakoi & Boginadi)	Narayanpur, Bihpuria, Naoboicha, Kadam	Flood reported for Naoboicha & Narayanpur,
27-06-12	Within 24-48 hrs	Low	Hailakandi (Katakhal, Dhaleswari)	Lala, Algapur, Hailakandi	Flood reported for Algapur RC
		Low-Moderate	Karimganj (Singla, Longai, Kushiya)	Ramkrishna Nagar, Neelam Bazar, Patharkandi	Flood reported for Karimganj & Badarpur RC
27-06-12	Within 24-48 hrs	Low	Dhubri (Sankosh, Brahmaputra)	Golokganj, Agamoni, Dhubri, S. Salmara, Mancachar)	Flood reported for Bilasipara, Dhubri, Chapar, Agomoni, mankachar, S. Salmara
		Low-Moderate	Goalpara (Krisnai, Brahmaputra, Dudhnoi)	Matia, Rongjuli, Lakhimpur, Gerua, Dudhnoi	Flood Reported for Balijana RC

The flood alerts for June, 2012 has been analysed and it has been observed that during the peak flood period of 24th-30th June, 2012 for Dhemaji, Barpeta, Baksa, Lakhimpur, Sibsagar, Sonitpur, Hailakandi, Karimganj, Dhubri and Goalpara were forecasted accurately. The table is given:



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Date& Time	Duration	Flood Severity	District and Rivers	Revenue Circles	Feedback
12.09.12	Within 24-48 hrs	Low-Moderate	Dhemaji (Jiadhal-kumatia, Gainadi-Sisi)	Gogamukh , Dhemaji Sisiborgaon	Flood reported in Gogamukh , Dhemaji Sisiborgaon
		Low	Lakhimpur (Ranganadi – Dickrong, Singra, Pava-Kakoi)	Narayanpur, Bihpuria, Lakhimpur & Naobaicha	Flood reported in Kadam
19.09.12	Within 24-48 hrs	Moderate	Dhemaji (Jiadhal-kumatia, Gainadi- Sisi & Simen)	Gogamukh , Dhemaji Sisiborgaon , Jonai	Flood reported in Gogamukh , Dhemaji Sisiborgaon, Jonai
		Low	Lakhimpur(Dickrong-Durpang,Pava Kakoi)	Narayanpur, Bihpuria, Naiboicha	Flood reported in Lakhimpur RC
20.09.12	Within 24-48 hrs	Low	Barpeta (Beki Pohumara, Kaldia, Nakhanda, Brahma Putra)	Baghbar, Barpeta, Barnagar, Kalgachia, Sarupeta, Sarthebari, Chenga	Flood reported in Bajali , Barpeta, Chenga RC
		Moderate	Baksa (Mora Pagladia, Nona – Baralia)	Barama, Baganpara, Rangiya	Flood reported in Barama, Baganpara, Goreswar, Tamulpur
		Moderate	Nalbari (Pagladiya & Buradiya)	Nalbari, Barkhetri, Paschim Nalbari, Banekuchi	Flood reported in Ghograpar, Tihu, Paschim Nalbari , Barkhetri, Barbhog
		Low	Sivasagar (Dikhow – Darika, Brahmaputra, Dihing, Demow)	Sibsagar, Sonari, Nazira, Demow	Flood reported in Sivasagar, Demou
		Low	Sonitpur (Jiabharali , Gabharu, Brahmaputra)	Tezpur, Naduar, Dhe kjauli, B.Chariali, Gohpur	Flood reported in Naduar, Biswanath, Gohpur
23.09.12		Low	While Nalbari, Barpeta and Baksa warnings were extended, Goapara & Dhubri have been added.	Balijan, Lakhipur, Matia, Rongjuli (under Goalpara dist) S.Salmara, Mancachar, Chapar, Bilasipara (under Dhubri dist)	Flood reported in Balijan RC Flood reported in S Salmara, Chapar, Bilasipara, Mancachar etc



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2) Weekly Review meetings:

During the flood season, the Sub-Committee of SEC chaired by the Chief Secretary meets regularly every Monday morning to review the flood situation in the State and issue necessary directions to the departments as and when necessary. The Sub Committee met 15 times this flood season.

In the time of high flood in the month of June & September 2012, the Committee met frequently to monitor the situation and rush in either emergency supplies or rescue forces and give instructions to districts for taking necessary measures to deal with the unprecedented floods.

3) Rescue operations

The floods of 2012 inundated many areas suddenly on account of breaches in embankments. This resulted in many areas remaining cut off from rest of the landmass for 1-3 days. In the initial phase, Amarpur and Laika areas of Sadiya subdivision in Tinsukia district and later certain parts of Sonitpur district could not be approached for 1 or 2 days.

When the state was reeling under devastating flood, the district administrations supported strongly by SDRF, NDRF, Army and Air Force did a commendable job in rescuing and evacuating people to safer areas.

It is estimated that over 3,70,265 people were evacuated all over the State using boats from the Army, NDRF, ASDMA and private boats. In some areas of Tinsukia and Sonitpur districts food had to be airdropped initially till boats could reach the marooned people as the river currents were too strong for boats to negotiate in the initial 24 hours.



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16 teams (678 person) of NDRF were deployed in 9 districts of Tinsukia, Dhemaji, Lakhimpur, Sonitpur, Sibsagar, Kamrup, Nagaon, Jorhat & Kamrup (M) in the month of June and 9 Teams of NDRF were deployed in Tinsukia, Dhemaji, Sonitpur & Kamrup & Kamrup Metro in September 2012.

7 army columns and 18 SDRF teams rendered assistance in rescue and relief work in the districts of Kamrup (M), Jorhat, Dhemaji, Nagaon & Barpeta. The Air Force flew a number of sorties transporting men and materials and also rescue operations in the district of Tinsukia (Sadiya subdivision), Sonitpur & Jorhat(Majuli).



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What people have to say...

“Our family was brought to safe location by SDRF personnel just before our village was heavily submerged by flood.....” a villager from Borbil village under Lakhimpur Revenue Circle quoted.

Hundreds of marooned people in Lakhimpur, Narayanpur and Dhakuakhana Revenue Circles were shifted to highlands and other safe locations by SDRF with the help of machine and country boats provided by Assam State Disaster Management Authority and managed by District Disaster Management Authority, Lakhimpur. “The local people responded positively and felt secure at our presence”, quoted Naren Boro, team leader, SDRF in Lakhimpur.

The two companies of SDRF Battalion raised under the direct control of the Director, State Fire Service Organisation, Assam, and having a manpower strength of 227 Nos. of Emergency Rescuer, 18 Nos. of Squad Commander and 18 Nos. of Havilder rendered an yeomen service to the flood affected people in the districts.

“The SDRF team members were highly co-operative and actively extended their helping hands in the crisis hour” mentioned Prasanta Konwar, DM volunteer who assisted in the rescue operations in the Lakhimpur district along with the SDRF team. Moved by the efforts of the SDRF in the rescue operation, Gopal Bora, a teacher by profession was also motivated to undertake the rescue operation as in his words, “SDRF personnel were in all vigour to rescue the marooned people.”



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What people have to say...

“We were on the rooftop of our house.....it was night..... and at any time flood water that was about to touch the roof level would have swept us away.....then we saw one boat of NDRF personnel coming towards us...they threw one rope and shouted at us to tie the end of the rope to any part of the roof....we struggled and somehow came to the boat by holding the rope.....”, recalled one villager who was rescued on 28th June, 2012 along with five others by a team of NDRF led by SH R.M. Passah, deployed at Sootea of Sonitpur district.

Added Arjun Sahani, “I was swept away along with my grandfather by the flood water when the plank where the rope was tied suddenly broke.....I screamed with all my might...I saw NDRF personnel throwing light towards us.....two of them jumped into the water and swam through the darkness to get hold of us.....they got hold of us and we were pulled to the boat.....we were saved”, in praising the efforts of SH R.M Passah and C.T. Brajesh who swam all the way through the high currents and CT Ananta Raut who was handling the boat and managed to make way through bushes and reached near to them in the midst of darkness. “My whole world ran into darkness and I was trembling helplessly amidst water all around.....I saw my son swept away by flood...NDRF personnel swam across the flood waters, managed to get hold of him and was saved.....” Sanjeeta Devi of Karoni village of Sootea of Sonitpur district was grateful to SH Hanumana Ram, CT Deepak Singh and CT Prakash Bisht and said she will never forget that they have saved her son.

NDRF personnel with their operational base in Giladhari, a worst flood affected village in Sonitpur district said, “The villagers were frightened as the flood water was rising and they had to save their own lives, and when we reached them they gathered some courage”

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3) Relief operation

A massive relief operation was undertaken in all the districts immediately. Relief Camps were opened and GR distributed for immediate relief. At one point, in June 2012 total no of relief camps that were operational in the State was nearly 768 with over 4.85 lakh people. Apart from the people in relief camps, a large number of people also shifted to roads and embankments. Drinking water, sanitation, health and veterinary services were provided in the relief camps and affected villages. In September 2012, 1069 Relief Camps and 176 Shelters were set up with over 5.43 lakh people

A total amount of Rs 165.90 crore was given to the districts and subdivisions for providing GR to the flood victims. Total materials distributed during the flood season are as follows:

- * Rice: 230667.3 quintals
- * Dal: 36920.69 quintals
- * Salt: 14259.93 quintal
- * Chira: 2354.1 quintal
- * Gur: 551.06 quintal
- * Mustard Oil: 22086.16 litres
- * Fodder: 10495 bags
- * Whaet Bran: 43085.32 quintals
- * Tarpauline: 107468 sheets



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Other Assistance Provided:

- | | |
|-------------------------------|-------------------------------|
| 1. Baby Food : 6524 Pkts | 2. Biscuits: 6652 Pkts |
| 3. Mineral Water: 200 bottles | 4. Petrol & mobile: 76 Litres |
| 5. Bread: 4825 Pkts | 6. Candles: 400 Pkts |
| 7. S.K.Oil: 40 Ltrs | 8. Phenyle: 635Ltrs |
| 9. Mosquito nets: 675 nos | 10 Bleaching Powder: 1635 kg |



5) Health and Medical care:

The Government mobilised teams comprising of health workers from its departments who visited camps and provided first aid and medicines. Due to the effective measures taken by the Health department, there was no outbreak of any diseases in the relief camps.

A brief summary of the assistance provided by the Health Department to the inmates of the Relief Camps in June 2012 floods is given below. Assistance is still underway for the September Floods as Relief Camps are still operational

- * 764 Medical teams deployed
- * 11,165 patients treated in camps
- * 9917 patients treated in the villages
- * Special care & treatment given to pregnant mothers
- * One doctor visited every relief camp at least once every day
- * One Paramedic in Uniform present 24x7 at Relief Camps
- * 469 Mobile Medical Unit camps organized where more than 35000 patients treated
- * 709 Medical Camps opened
- * 33,605 ORS distributed
- * 2,68,804 Halozen tablets distributed
- * DDT sprayed in 218 camps
- * 12,39 blood samples collected in affected areas
- * Sufficient stock of Drugs and essential medicines made available



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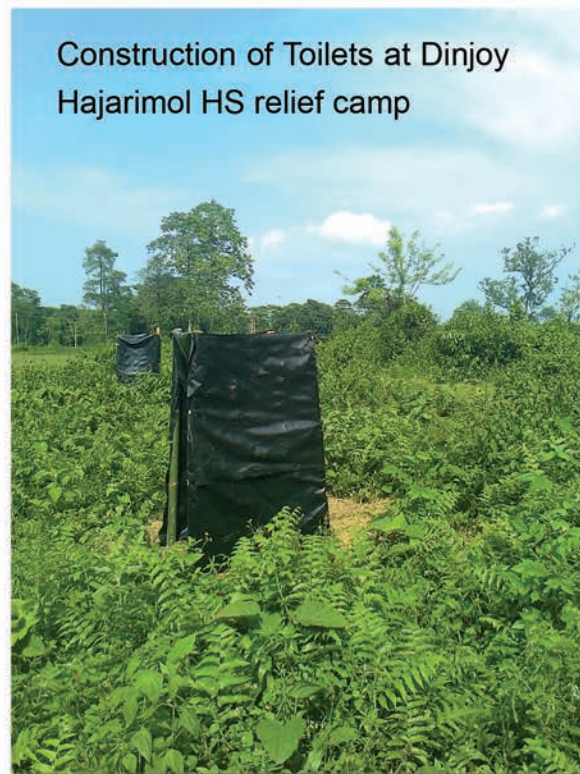


6) Water & Sanitation:

For ensuring safe drinking water the Public Health Engineering Department distributed Water Purifying packets, disinfected submerged spot sources, open wells as well as restored defunct sources. The Department also undertook sensitization programmes on various types of hygiene practices during and after flood and educative leaflets were also distributed among the people. Further, for ensuring proper sanitation facilities low cost sanitation facilities were also installed.

A summary of the activities carried out by the department is as follows:

- * 6,44,173 water purifying packets consisting of lime, Alum & Bleaching powder distributed
- * 3,15,000 bleaching powder packets distributed
- * 10,28,001 Halogen tablets distributed
- * 1594 Spot source installed
- * 4526 Spot source repaired
- * 43,691 Spot source disinfected
- * 862 Toilet constructed at Relief camps
- * 1,26,869 leaflets distributed
- * 682 ponds disinfected



Construction of Toilets at Dinjoy Hajarimol HS relief camp



IEC Materials being distributed at a relief camp

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7) Visit of Inter- Ministerial Central Team:

After the devastating floods of June 2012, a six member inter- ministerial central team led by Shri G.V.V. Sarma, Joint Secretary (F), Ministry of Home Affairs was deputed by Government of India for an on the spot assessment of the damage and the admissibility of supplemental central assistance to the State. The members of the team were Shri A Murulidharan, Sr Advisor, Planning Commission, Shri B. L. Meena, Department of Expenditure, MoF, Shri S.R. Mehar, Ministry of Rural Development, GoI, Shri S.K. Biswas, Director Jute Development, Ministry of Agriculture & Shri Praveen Kumar, SE- Central Water Commission.

The team divided themselves into three groups and visited different districts of the State from 10th July to 12th July 2012. The districts covered by the inter- ministerial central team were Nalbari, Cachar, Karimganj, Sonitpur, Nagaon, Lakhimpur, Dhemaji, Kamrup, Barpeta, Dhubri & Goalpara.

The Government of Assam presented a Flood Memorandum to the team seeking Rs 3986.26 crores as special assistance under NDRF and Rs 11092.12 crores as additional special package for the State.

8) Visit of Prime Minister to the Flood affected area

The Prime Minister of India, Shri Manmohan Singh visited the Flood affected areas of Assam on 1st July 2012 and announced a special package of Rs. 500 crores for the Flood hit victims of Assam



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CONCLUSION

Some of the lessons learnt from this year's flood are:

1. Need for SOP regarding actions to be taken at different levels on receipt of flood warning:

ASDMA in collaboration with NESAC has set up the Flood Early Warning System (FLEWS) in 14 districts of Assam. On the basis of the hydro-met analysis NESAC issues an advisory along with the names of the flooding rivers as well as the likely areas to be affected by floods. This warning is conveyed to the Deputy Commissioner of the concerned districts well as the Circle Officer of the concerned Revenue Circle.

But, in spite of these warnings, it has been seen that the community suffered severely due to floods this year. This perhaps, was due to the absence of the Standard Operating Procedure's clearly outlining the actions that needs to be taken by the Deputy Commissioner and the Circle Officer on receipt of the warning from NESAC and the State Control Room.

2. Last Mile Connectivity:

The early warnings issued to the districts and revenue circles could not be conveyed to the concerned community due to lack of established procedure. Therefore, the need for a mechanism for last mile connectivity is required.



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3. More sustained campaigns on the do's and don'ts during flood:

Among the death that occurred in the floods, 68.75 per cent were children and women. This calls for a more sustained awareness campaigns targeted for the children and womenfolk on the dos and don'ts during floods. Awareness generation on do's and don'ts during flood has to be taken up for the better safety of this group. ■

বানপানীৰ সজাগতা

বানপানীৰ সজাগতা

আপুনি বানপানীৰ বাবে প্রস্তুত নে?

বানপানীৰ বাবে

আপুনি বানপানীৰ বাবে প্রস্তুত নে?

আপুনি বানপানীৰ বাবে প্রস্তুত নে?

- পানীৰ উচ্চতা বৃদ্ধি কৰক
- স্বাস্থ্যকৰণ কৰক
- পানীৰ উচ্চতা বৃদ্ধি কৰক
- পানীৰ উচ্চতা বৃদ্ধি কৰক

বানপানীৰ সজাগতা

বানপানীৰ সজাগতা

Are you prepared for the Floods this season?

For ensuring Food Security during Flood

- Store and stockpile food at individual and community level
- Store dried food and vegetables
- Establish a community Grain/Seed bank
- Build 'Machar' and 'chang ghars' to store the food items

আপুনি বানপানীৰ বাবে প্রস্তুত নে?

আপুনি বানপানীৰ বাবে প্রস্তুত নে?

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GLIMPSES OF ASSAM FLOOD



Dhemaji- Brahmaputra River's embankment breached



Dibrugarh- Koilaghat area affected by the rise Brahmaputra River



Kaziranga- Under water



Narayanpur- Old age Bridge broken due to heavy rain

আপুনি বানপানীৰ পৰৱৰ্তীকালীন অৱস্থাৰ কাৰণে সাজু নে?

বানপানী পিচত জল বাহিত বীজানু উৎপত্তি
হব পাৰে।
তাৰ পৰা নিৰাপদে থাকিবলৈ নিম্ন লিখিত
উপদেশ সমূহ পালন কৰক।

কি কৰিব:-

- ১) খোৱা পানী,গাখীৰ আদি ভালদৰে উতলাই লওক।
- ২) খোৱা বস্তু মাখি নপৰাকৈ ঢাকি থওক।
- ৩) শাক পাচলি ভালদৰে পৰিষ্কাৰ কৰি লওক।
- ৪) খোৱা বাচ-বৰ্তন ভালদৰে পৰিষ্কাৰ কৰি লওক।
- ৫) কুৱাৰ পানী ব্লিচিং পাউদাৰ, পঁটাচ আদি দি বীজানুমুক্ত কৰি লওক।
(১ লিটাৰ পানীত ৪ চামুচ ব্লিচিং পাউদাৰ মিহলাওক)।



ADDRESS: Office of Assam State Disaster Management Authority
2nd Floor, Block-C, Assam Secretariat, Dispur
Guwahati-6, Assam

Phone: 9207043787

Fax: 0361-2237010

Email: asdmaghy@gmail.com

Website: www. sdmassam.nic.in

SDRIC/Control Room:

Phone No. 9207043756,9207045023,1070 (Toll Free)

Fax: 0361-2237011