



# MONSOON MONITORING & EARLY WARNING

Issue 6/ 2008

5 August 2008

## HIGHLIGHTS

- The risk of a large scale flood for the coming week is low to moderate. The prevailing flood situation in some low-lying areas of Zone 4 (see map next page) is improving.
- As of the morning of the 5<sup>th</sup> August 2008, six FFWC (Flood Forecasting and Warning Center) river level monitoring stations were at or above danger level. Fifteen other stations were at warning level or higher. All other 52 stations reported normal status.
- Heavy to very heavy rains was recorded in Sylhet district in the extreme Northeast during the last two days. Heavy rains also fell upstream within the bordering Indian states of Assam, Meghalaya, West Bengal, Sikkim, Bihar and Tripura.
- As of the morning of 5<sup>th</sup> August, India's Central Water Commission was reporting eleven river stations upstream and not far from Bangladesh above danger level; four in Assam, six in Bihar and one in West Bengal. Fifteen other stations were at or above warning level; six in Assam and nine in Bihar.
- In comparison to last year (2007), river levels this year in Bangladesh have less frequently reached danger level during the period 1<sup>st</sup> June thru 4<sup>th</sup> August.

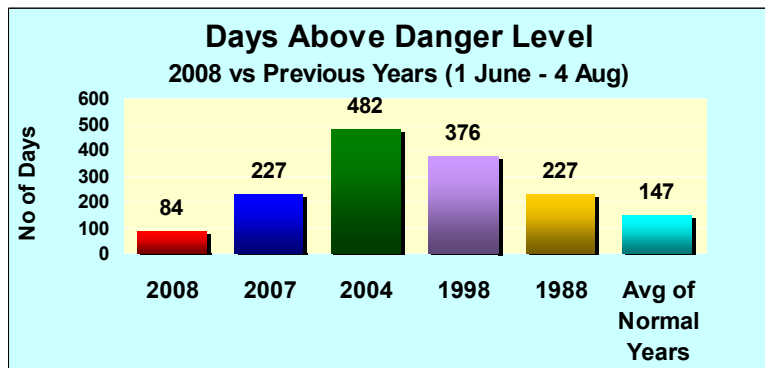
## Historical Perspective Analysis: 2008 River Levels vs Previous Years

Each of the river level monitoring stations of Bangladesh's Flood Forecasting and Warning Center/ FFWC has its own designated "danger level". The number of days rivers flow at or above danger level at these stations can serve as a useful indicator for flood monitoring. The following analyses, conducted for the period 1<sup>st</sup> June thru 4 August for 26 key monitoring stations North of Dhaka, focuses on the following questions:

How many days have water levels been at or *above* danger level for 2008?

How does 2008 compare with the previous "mega flood years" of 2007, 2004, 1998, & 1988?

How does 2008 compare with the "normal years"?



The graph above shows relatively few days (84 during 2008) when rivers reached danger level for the stations considered. In comparison, during last year (2007), there were many more days (227) when these same rivers touched danger level or higher. Readers should be aware that results presented above, represent only a snap-shot in time (i.e., for the period 1 June thru 4 August). Using the FFWC data, WFP will update this analysis weekly through the 2008 Monsoon season. Results will change significantly (i.e., the inter year comparisons) as the season progresses.

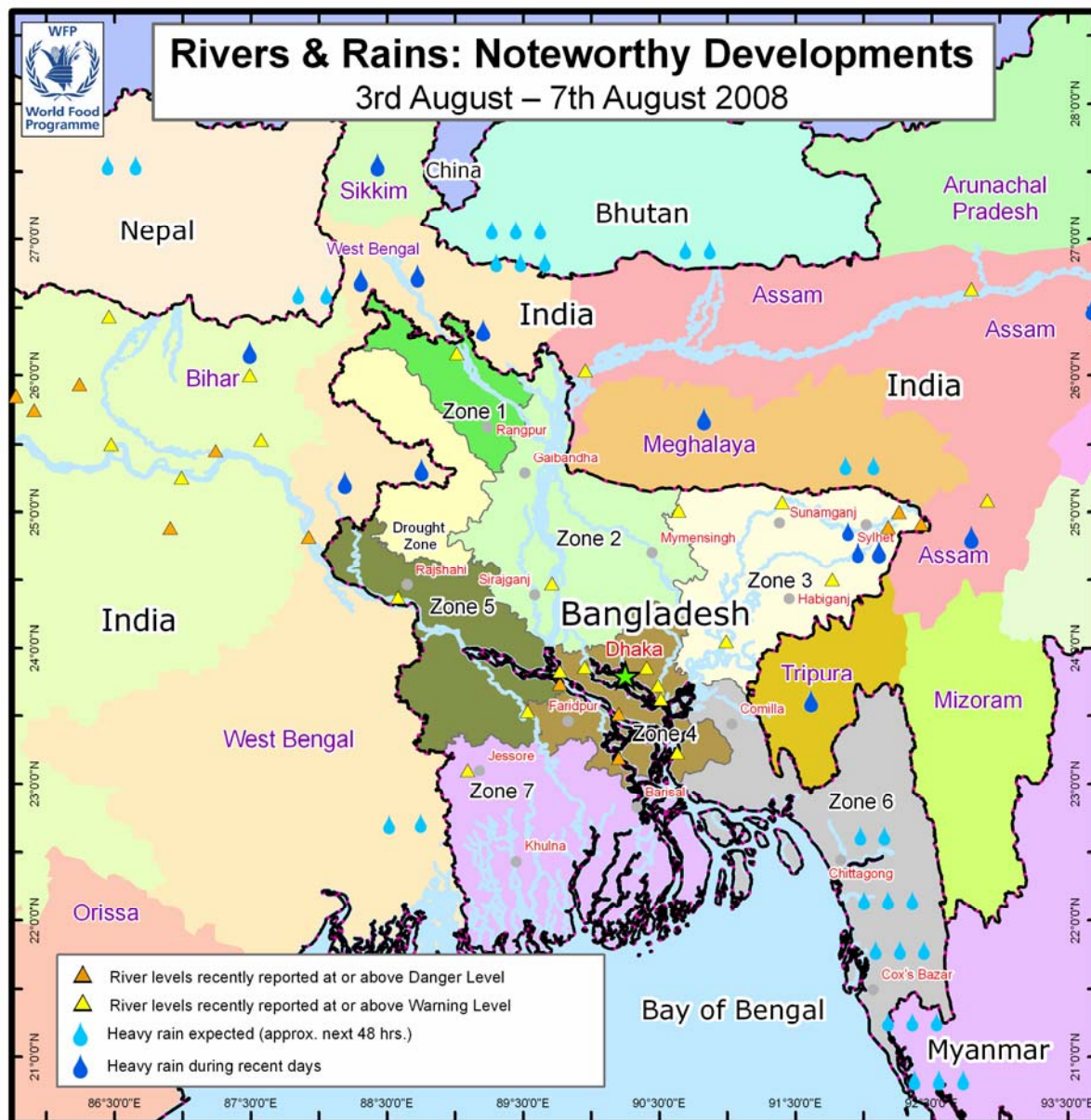
**Note:** 1) Period considered: 1<sup>st</sup> June thru 4 August,

(2) Normal Years: 1986, 1987, 1989-1997, 1999-2003, 2005, 2006

3) Mega Flood Years: 2007, 2004, 1998, 1988,

(4) Analysis based on 37,180 (26 x 65 x 22) river level observations during previous years.

## Monsoon 2008: Situation Map




- Within Bangladesh, six FFWC river monitoring stations, within the districts of Sylhet, Rajbari, Munshiganj and Madaripur, are presently at or above danger level as of the morning of 5<sup>th</sup> August. Fifteen other stations are at or above warning level, while the remaining 52 stations reported normal status.
- Upstream, in the neighboring Indian states of Assam, West Bengal and Bihar, eleven stations were above danger level, as of the morning of 5<sup>th</sup> August 2008. Fifteen additional stations were at or above warning level; Six in Assam and nine in Bihar (Note: not all stations are shown in the map above because of the map frame used).
- Heavy rain (70 mms or more in a day) recently fell within the district of Sylhet in the Northeast. The same is true within the upstream neighboring Indian states of Assam, Meghalaya, West Bengal, Sikkim, Bihar and Tripura during the last two days.
- Moderate rains are expected during the next 48 hours in most places within Bangladesh except Chittagong, Cox's Bazar and Bandarban districts where heavy to very heavy rains are expected. Moderate rain is also expected in West Bengal, Sikkim, Assam, Meghalaya, Bihar, Tripura, and in parts of Nepal. South and Southwest Bhutan is expected to experience moderate to heavy rain.

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## Flood Risk Analysis

	Districts	River Basin	Heavy Rainfall events last 2 days (within zone)	Heavy Rainfall events last 2 days (upstream Basin)	River Levels (within zone)	River Levels (upstream basin)	Rainfall Forecast (next 48 hours)	Overall Flood Risk
<b>Zone 1 North West</b>	Panchagarh Nilphamari Lalmonirhat Rangpur	Tista	L	H	L	L	M	Medium
<b>Zone 2 North Central</b>	Kurigram Gaibandha Jamalpur Sherpur Bogra Sirajganj Mymensingh Tangail	Brahmaputra/ Jamuna	L	M	L	H	M	High
<b>Zone 3 North East</b>	Sylhet Sunamganj Netrokona Kishoreganj Habiganj Moulavibazar Narsingdi Brahmanbaria	Meghna	M	L	H	L	M	High
<b>Zone 4 Central</b>	Dhaka Gazipur Manikganj Munshiganj Narayanganj Faridpur Madaripur Shariatpur Chandpur	Convergence of Brahmaputra, Padma and Meghna	L	M	M	L	M	Medium
<b>Zone 5 West Central</b>	Rajshahi Nawabganj Natore Pabna Kushtia Meherpur Chuadanga Jhenaidah Magura Rajbari	Padma/ Ganges	L	L	L	H	M	Medium
<b>Zone 6 South East</b>	Comilla Lakshmipur Noakhali Feni Chittagong Khagrachari Rangamati Bandarban Cox's bazar	Lower Meghna	L	M	L	M	H	Medium
<b>Zone 7 South West</b>	Jessore Narail Gopalganj Satkhira Khulna Bagerhat Pirojpur Barisal Jhalokati Patuakhali Barguna Bhola	Coastal	L	L	L	L	M	Low

**Methodology Used for Flood Risk Analysis** (see matrix previous page)

Five simple indicators were used to estimate flood risk for seven zones within Bangladesh (see small inset map p-3). The indicators used are :

- (a) Heavy rainfall events during the last 2 days within the zone.
- (b) Heavy rainfall events during the last 2 days upstream from the zone
- (c) River levels within the zone
- (d) River levels upstream from the zone (either outside Bangladesh or inside)
- (e) Rainfall forecast/expected within approximately the next 48 hours.

The threshold used for defining “heavy” rainfall was 70 mms or more within a 24 hour period. Regarding river levels, only those cases where rivers were “at warning level or above”, were considered. The amount of rainfall expected/ forecast varied both across and within zones. Some areas are expected to receive as little as 20-30 mms total in the next 2-3 days, while others are forecast to receive 150 mms or more. A value of “low” in the table on page 3 will be closer to the low end of this range, a value of “high” will be closer to the high end.

All 5 indicators were used as inputs to determine “overall flood risk”. In order of importance, more consideration was given to “river levels within the zone”, moderate importance was given to river levels upstream and to recent rainfall upstream. Relatively lower consideration was given to rainfall in the zone and to the rainfall forecast.

**Data and Information Sources****Rainfall Recent Past:**

BMD/ Bangladesh Meteorological Department  
 FFWC/ Flood Forecasting and Warning Center: <http://www.ffwc.gov.bd/>  
 IMD/ Indian Meteorological Department: <http://www.imd.gov.in>  
 NASA TRMM/ Tropical Rainfall Measuring Mission: [http://trmm.gsfc.nasa.gov/publications\\_dir/potential\\_flood.html](http://trmm.gsfc.nasa.gov/publications_dir/potential_flood.html)

**Rainfall Forecast:**

CPC/ Climate Prediction Center: <http://www.cpc.ncep.noaa.gov>  
 IMD/ Indian Meteorological Department: <http://www.imd.gov.in>

**River Levels:**

FFWC/ Flood Forecasting and Warning Center: <http://www.ffwc.gov.bd/>  
 CWC/ Central Water Commission, India: <http://www.india-water.com/ffs/index.htm>

**Note:** 1. This Bulletin is available at WFP Bangladesh website at [www.wfp.org/bangladesh](http://www.wfp.org/bangladesh) and LCG DER Website at <http://www.lcgbangladesh.org/derweb/index.php>  
 2. Comments on this bulletin should be sent to [mmew.bangladesh@wfp.org](mailto:mmew.bangladesh@wfp.org)