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J. B. BODA *years & beyond..*

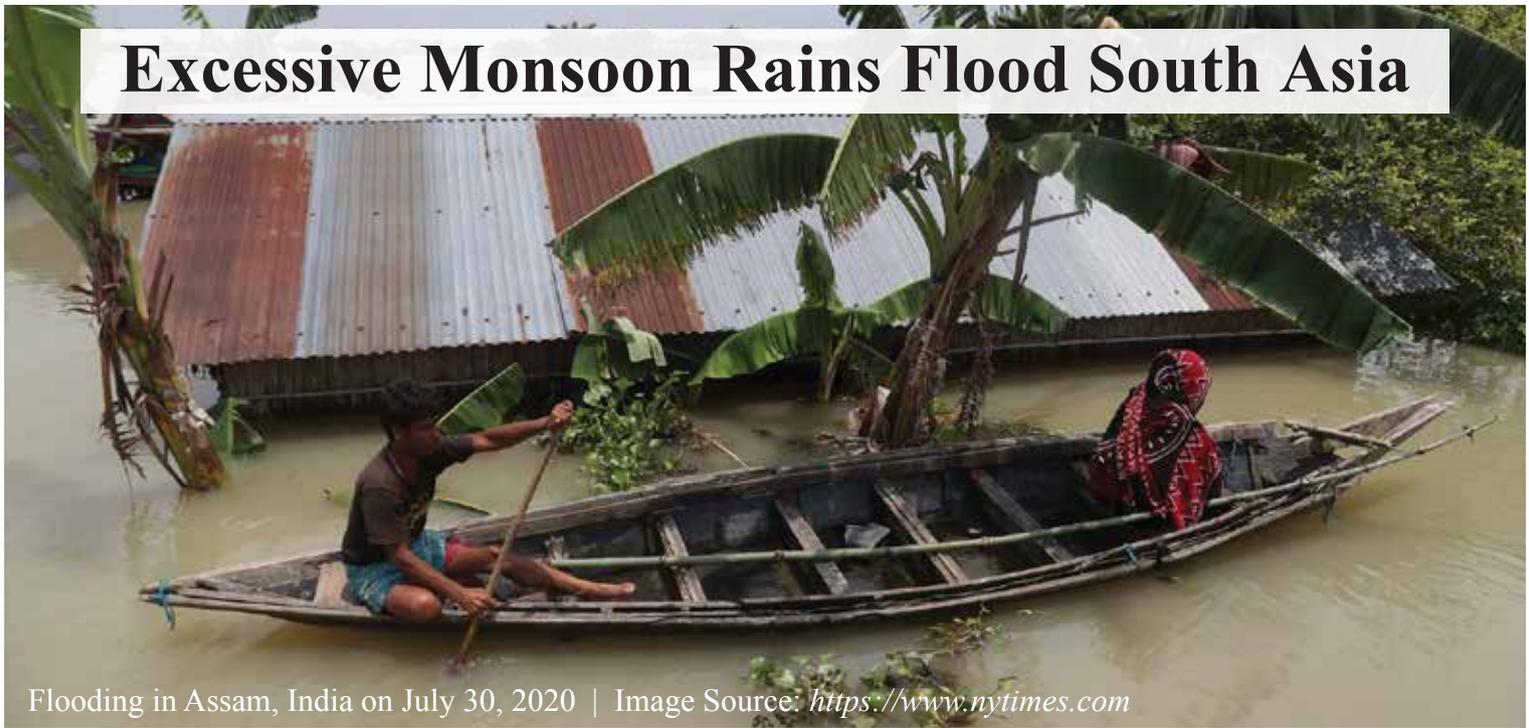
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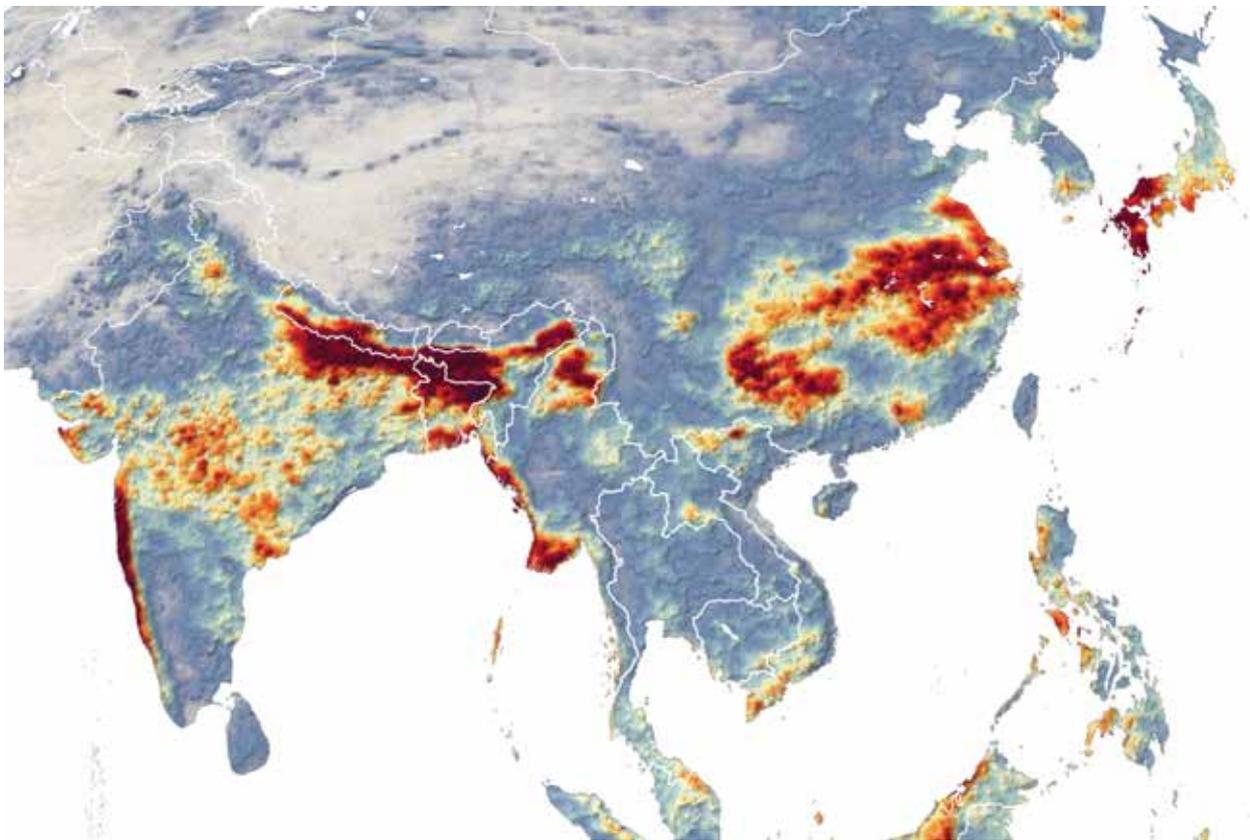
July-August, 2020

Excessive Monsoon Rains Flood South Asia



Water is life. Nothing demonstrates this better than the monsoon season in South Asia. It is the most-awaited event as it affects the livelihood of millions.

Rainfall that accompanies Asia's summer monsoon plays an important role in the region's economy by refilling aquifers, generating hydroelectric energy, and providing water for crops. In some years, however, the amount of rainfall breaks records in places. 2020 is one such year in which by mid-July, severe flooding affected millions of people across South and East Asia.



The image reflects rainfall accumulation across the region from June 1 (the start of the summer monsoon season) to July 20, 2020. | Image Source: *NASA*

The darkest reds indicate places where GPM detected rainfall totals exceeding 100 centimetres (40 inches) during this period. Due to averaging of the satellite data, local rainfall amounts may be significantly higher when measured from the ground.

Various countries in South Asia have experienced / been experiencing high to very high rainfall. For example, in India, any parts of central, north, and northeast India had received 15 centimetres (6 inches) more rainfall than usual by the middle of July. The northeast Indian state of Assam, for example, had received a total of 89 centimetres (35 inches) of rain between June 1 and July 22, about 20 % more than normal.

According to Assam State Disaster Management Authority (ASDMA), the deluge has destroyed 2,323 villages, 110,000 hectares of crop area, disrupted transport and communication networks, healthcare systems, affecting over 2.49 million people.

The state of Bihar in India, from June 1 to July 28, had received 46 % excess rains than the normal. This has been resulted in flood covering many areas.

Nepal experienced heavy rainfall and flooding. The monsoon rain started during the last week of June, 2020, triggering flooding and landslides in Parbat and Palpa districts. According to Nepal's National Disaster Risk Reduction Management Authority (NDRRMA), there were over 100 incidents of major flooding or landslides across the country between July 9 - 13, 2020. More than 100 people have lost lives during this monsoon season.

In Bangladesh, experts say this year's monsoon is going to last longer than usual because more waters are expected to rush in from upstream India. The nation is facing the most prolonged monsoon flooding in years. Over 220 people have died and over 167,000 families remain displaced after this year's monsoon flooding. In addition, over 170,000 hectares of agricultural land have been affected. While flood waters are receding in some areas, riverbanks continue to erode and pose risks to surrounding communities.



Commuters make their way through a water-logged street after a heavy downpour in Dhaka on July 21, 2020
Image Source: *AFP*

Impact of Climate Change

Experts believe that is the impact of climate change on the South-West Monsoon that is resulting in “Fewer rainy days but higher amount of Rainfall”. Instead of the regular pattern, there are now phases of not enough rainfall followed by intense rain; there is drought and flood.

A study reflects that in the 1st three weeks of 2020 monsoon, considerable variations in rainfall over what regions normally receive was observed.

Tamil Nadu, Puducherry, and Kerala received less rainfall - 46 %, 23 % and 10 % respectively. While, Madhya Pradesh, Chhatisgarh, Gujarat, Goa and Maharashtra experienced higher than normal rainfall in this period.

Researchers believe that one reason for the difference could be Cyclone Nisarga, which formed in the Arabian Sea right around the time of the monsoon onset - June 1 - 4, 2020 - and pulled the monsoon moisture further inland into central India.

Likewise, in 2019, India experienced major heatwaves and the monsoon came late and heavy. Over the course of a few days in the end of September, extreme rainfall covered some areas with knee-deep water. Even though the total average amount rainfall in India hasn't changed, the rainfall intensity has increased along with the number of extreme weather events. Compared with the past, precipitation is more intense now and more rainfall is extremely heavy.

By September 1st, temperatures usually decrease, but in 2019, temperatures remained warm in the northern hemisphere so the weather patterns lingered for longer than normal, which explains the late monsoon withdrawal.

Losses Due To Floods

A study by the Central Water Commission (CWC), Government of India estimated that between 1952-2018, Over 258 million hectares of crops were damaged and 81,187,187 houses were raged. The total economic losses due to crop, house and other property damages came to INR 4.69 Trillion. Most of this loss was un-insured; as a result, the Governments had to bear the brunt.

Climate-resilient Infrastructure

As extreme events are becoming the ‘new normal’ in an increasingly climate-constrained world, India’s critical infrastructure must be built to withstand, respond to, and recover rapidly from the disruptions they cause. They could not only significantly reduce the socio-economic vulnerabilities by anticipating, preparing for, and adapting to changing climate conditions but also will reduce the financial and insured losses.

Sources: *Down To Earth, Forbes, The Guardian, Hindustan Times, NASA*

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