Early flash floods in the haor region: A new normal?

MD KHALEQUZZAMAN

A flash flood in early April of 2017 devastated the *boro* crops in six haor districts that were worth Tk 13,000 crore (*Kaler Kantha*, July 8, 2017). Since then, a shadow of anguish engulfs millions of farmers every time there is a grey cloud in the northern sky in early April. This year too, according to news reports, rain accompanied by hailstorm damaged crops on vast tracts of paddy fields in Kishoreganj and Moulvibazar districts during the first week of April.

In general, yearly floods in the haor region occur during late April and last for several months. *Boro* crop is harvested after Bangla New Year around April 15 or so. Any early hailstorm and flash flood during late March or early April cause havoc for farmers. In addition to damaging the *boro* crop, the flood in 2017 also devastated poultry, fisheries, and livestock in Netrokona, Sunamganj, Sylhet, Moulvibazar, Habiganj, and Kishoreganj districts (*The Daily Star*, April 17, 2017). Flash floods in the latter part of March or early April are not a regular occurrence in the haor region as it happened in 2017 and 2019.

Against this backdrop, it is imperative to investigate the underlying causes of early flash floods in the haor region and to look for possible solutions to such devastations. Are the early floods becoming a new trend in our weather?

First, let us investigate underlying causes of any flood in a region and the reasons why the frequency, magnitude, and duration of floods increase over time. The causes of floods can be broadly divided into several categories: (1) the amount, timing, and duration of rainfall over a catchment or watershed area, (2) an increase in surface run-off following a rain event and a decrease in water-carrying

PHOTO: COLLECTED

capacity of natural drainage network within the watershed to accommodate the surface run-off, and (3) a reduction in land elevations in floodplain in comparison to riverbed and sea level.

Most rivers in the haor region originate in Meghalaya and Assam states in India. About 60 percent of the total catchment area of the rivers draining the haor region are located outside the territory in Bangladesh. Part of the rainfall in upper reaches of the watersheds ends up in rivers, creeks, and *beels* in haors as surface run-off. It should be mentioned that Cherrapunji in Meghalaya receives the highest amount of rainfall in the world, which eventually drains through the haor region. A total of 1,262mm of rain fell at Cherrapunji during the period between March 28 and April 4 in 2017, which was 5.5 times greater than the amount of rainfall during the same period in 2016.

Besides, the rainfall occurred in a consecutive manner, which did not allow enough time for the downstream rivers in the haor region to effectively discharge the surface flow to the ultimate destination—the Bay of Bengal—through the Meghna River at Bhairab Bazar. To calculate the total amount of surface flow in rivers that results from rainfall in various parts of the watershed, it is important to have hourly and daily rainfall data for various locations within a watershed.

Although continuous rainfall data at a rain gauge station at Cherrapunji is available on the Internet, such data is not publicly available for other locations in the haor region. However, monthly average rainfall data starting from 1901 for Garo, Khasia, Jaintia Hills, and Sunamganj is available, except for Sunamganj, for which data since 1956 is available. A statistical analysis of the monthly rainfall data reveals correlations between the rainfall in Cherrapunji and all the other locations. Based on such correlations, the amount of daily rainfall was calculated for Garo, Khasia, Jaintia Hills and Sunamganj for the period of March 28-April 4 in 2017. For example, although the amount

of rainfall at Cherrapunji was 1,262mm during the duration of the flood in 2017, Sunamganj received only 350 mm during the same period.

An analysis of average monthly rainfall data also revealed that during 1901-1957, the total amount of rainfall in May was much higher than in April and that there was a 3-5-year periodicity in the amount of high rainfall in May. However, the data indicated that since 1958-2017, the gap between the monthly rainfall in May and April has declined and that the amount of rainfall in April has increased. This is worrisome, because more rainfall in early April will mean increased incidents of flash floods in the haor region, which will cause havoc on *boro* crop in the future. Hopefully, this year's early rainfall accompanied by hailstorm is not a sign of validation of the changing patterns in rainfall in the haor region. If the occurrences of early flash flood become a new normal, then a lot more research will have to be done

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Now, let us investigate the water-carrying capacity of the rivers in the haor region. An analysis of satellite images of the region

indicates that most of the rivers have lost depth and width over the last few decades, resulting in a net loss of water-carrying capacity during floods. The reduction in water-carrying capacity has resulted due to siltation in riverbeds, land-use changes, unplanned development, deforestation within the watershed, and unplanned mining of sand from riverbeds. In addition, building of roads and embankments also interferes with the natural flow of surface water in the haor region.

For instance, the width of the Jadukata River near the India-Bangladesh border was 168m in 2004; it stood at 68m in 2017. The total cross-sectional area of any river increases as it flows downstream to accommodate more flow from groundwater and tributaries. The analysis of the changes of Ghorautra-Meghna River indicates that its cross-sectional area, which is indicative of its water-carrying capacity, has drastically declined at Bhairab Bazar bridge. It should be noted that all surface water flow in the haor region discharges through the Meghna River at Bhairab Bazar. This reduction in water-carrying capacity at Bhairab Bazar can be attributed to slow discharge of upstream flow which, in turn, is responsible for prolonging the haor floods.

The increase in sea level due to climate change is compounding the flood problem further by making all inland river sluggish due to backwater effect, and by reducing surface elevations of floodplain with respect to sea level and riverbeds.

What are some possible solutions? I think we should increase the water-carrying capacity of the drainage network in the entire watershed; supplement the water-carrying capacity of the Meghna River at Bhairab Bazar though capital dredging and establishing a bypass spillway above the railway bridge; reach a treaty with the upper riparian country on integrated water-sediment-landuse management; and carry out research to invent crops that can be harvested prior to early flood season.

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PROJECT ■ SYNDICATE

The Transatlantic Continental Drift

CHRISTOPHER R HILL

THE Earth's continental plates broke apart and first began to shift hundreds of millions of years ago. But anyone visiting European capitals or following events in President Donald Trump's Washington can be forgiven for thinking that another tectonic divergence is underway.

Of course, transatlantic mistrust is not new. In the run-up to the 2003 Iraq War, then-US Secretary of Defense Donald Rumsfeld sparked controversy by drawing a line between "old Europe" and "new Europe," the latter comprising the ex-communist states that were more enthusiastic about following the US into war. In the eyes of many Europeans, Rumsfeld's goal was to sow division within Europe.

Now Europe must deal with another difficult American named Donald. The Trump administration has pursued an even more aggressive approach to Europe, deeming the European Union a strategic competitor and raising doubts about America's long-term commitment to European security. In keeping with the Trumpian worldview, the US now views Europe as a freeloader that has taken advantage of American largesse.

Demonstrating his tenuous grasp of US interests, Trump seems intent on weakening the forces of European integration. He has also tried to drive wedges between Europeans, and not just between "old" and "new" (among whom he has a number of cheerleaders). For example, Trump makes no

secret of his sympathy for the Brexiteers, even as they continue to discredit themselves in the eyes of most Europeans, and perhaps even among a majority in the United Kingdom, too.

Trump's "America First" worldview makes no room for a partnership between the US and Europe, or for any allies who do not automatically throw their support behind US policies. US Vice President Mike Pence made this all too clear at the Munich Security Conference in February, where he scolded Europeans for undermining US sanctions against Iran, and rather resembled a teacher reciting a list of overdue assignments.

American paternalism toward Europe will not necessarily end with Trump. As we have seen, it reflects a longstanding attitude within the US national-security establishment, including among neo-conservatives, many of whom have openly refused ever to work for Trump. On issues ranging from the Balkans to the Russian threat against Ukraine, the prevailing American view is that Europeans are weak. Or, as a popular 2003 foreign-policy book put it, "Americans are from Mars, Europeans are from Venus."

To be sure, Europe also bears some of the blame for transatlantic tensions. When the EU began its expansion process some 20 years ago, Poland and other EU applicants complained to US diplomats about being told by European envoys to choose between America and the EU, as if there were two different sets of values and interests. Europeans' supposedly more evolved views on climate change, the death penalty, the uses of soft power, and many other issues were marshalled in support of a single European identity, with interests distinct from those of the US.

Of course, much has changed since then, and

Jens Stoltenberg, Secretary General of NATO, flanked by German Chancellor Angela Merkel and US President Donald Trump at a NATO heads of government and state meeting in 2017.

PHOTO: NATO/FLICKR

some Europeans have come to realise that they must do more to strengthen transatlanticism, not least by increasing their defence spending, streamlining EU decision-making processes, and settling economic disputes. (One major holdout is Germany, whose defence spending as a share of GDP remains well below the two percent target set by NATO.)

But an even more fundamental challenge for Europe is internal. Across a wide array of issues, Europe's leaders need to do a better job of explaining to their constituents what the European project is really about. To earlier generations, the answer was obvious:

European integration is necessary to prevent another world war. But while that was true 70 years ago, it is clear that the project's *raison d'être* needs to be updated to address European voters' current concerns.

Europeans originally thought they were joining together in a civilisational undertaking. But with the deepening of the bloc's structural integration and the inclusion of a unified Germany, many Europeans started to feel like they had been forced into the world's most onerous bureaucracy. And as social and economic pressures from immigration have increased, more Europeans

have begun to feel as though they have lost their national identities. Their minds are not likely to be changed by lectures about moral responsibility and the needs of the less fortunate.

Hence, for some member states—including some that have benefited tremendously from EU membership—the instinct now is to shut the door and roll out the barbed wire. But as any serious European leader knows, migrant and refugee crises—and immigration policy more generally—must be addressed comprehensively at the EU level, including with a robust foreign policy focused on addressing the root causes of the problem.

As Europeans grapple with fundamental issues of identity, bureaucracy, and sovereignty, US policymakers, whatever their political pedigree, need to take a deep breath and reflect on the causes of the current transatlantic rift. Specifically, they should consider whether high-handed paternalism is really the best approach to a continent whose values and interests so overwhelmingly overlap with their own.

At the risk of stating the obvious, the rising threat to democracy—and even to civilisation itself—demands that the US and Europe demonstrate more mutual respect and cooperation. There is no reason to expect anything to change under the current US administration, but we still need all hands on deck to prepare for a better future for transatlantic relations. It's time to push the continental plates back together.

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CROSSWORD BY THOMAS JOSEPH

ACROSS
1 Thread holders
7 Eye line
11 Roma's nation
12 Opera set in Egypt
13 Look
15 Fiery crime
16 Earth neighbour
18 Tenant's fee
21 Mayor's domain
22 Brook
24 In the style of
25 Yacht spot
26 Verb for you
27 Luxurious fabric
29 Put away
30 Marina spot
31 Glasgow native
32 Dance music
34 Leave in a hurry
40 River from Pittsburgh
41 Smitten
42 Skillets
43 Checked out

DOWN
1 Canine command
2 School org.
3 Sturdy tree
4 Noted cow owner
5 Deceitful people
6 Hangs low
7 Flag
8 Free (of)
9 Shelley work
10 Simple card game
14 Blood line
16 Odometer units
17 Even a little
19 "Keen!"
20 Deck of fortunes
21 Cleveland player, for short
22 Filming site
23 Kitten cry
25 Brown shade
28 Band creations
29 Dark looks
31 Crumpet's cousin
33 Rotisserie
34 Spinning toy
35 "That's it!"
36 Reunion group
37 URL part
38 Cain's mother
39 Cardinal

YESTERDAY'S ANSWER

H	E	L	P	S			J	A	I	L	S
A	V	E	R	T		I	X	N	A	Y
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S	M	A	C	K	D	A	B			
H	A	S	H		O	W	L	E	T	S
A	R	I	E	S		S	E	T	U	P
D	E	F	R	A	Y		A	C	N	E
			S	L	O	U	C	H	E	D
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U	P	T	O	N		G	R	A	N	T
A	S	H	E	S		E	S	T	E	S

BEETLE BAILEY by Mort Walker

SO THAT'S WHY THEY'VE BEEN SO SLOW LATELY

I WONDERED WHAT WAS INFLUENCING THEM

BABY BLUES by Kirkman & Scott

HEY! HOW WAS SELF-DEFENSE CLASS?

I'M A LITTLE SORE.

SNIFF! AND MORE THAN A LITTLE RIPE.

BUT, YOU KNOW, IN A SEXY WAY.

THANKS FOR NOTICING.