

Massive Damage to Coastal Region of Bangladesh by the Cyclone Storm YASS

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ARTICLE INFO

ORIGINAL ARTICLE

Article history:

Received: 8 Jan 2021

Revised: 5 Jul 2021

Accepted: 15 Sep 2021

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ABSTRACT

Background: Tropical cyclones have significant destructive features like strong winds, heavy rainfall, and storms. It happens frequently in Bangladesh because of its geographical position. The southern parts of Bangladesh suffer most, especially the south-western region. Cyclone YASS hit the same parts of the country as cyclone Amphan did in 2020. These areas are still reeling from the effects of the prior tragedies.

Methods: Secondary data has used to full fill the objective of the study investigating the damages of cyclone YASS in Bangladesh.

Results: Wind and storm surge of the cyclone affected the south-western of Bangladesh. In Patuakhali and Jhalokathi districts, people were mostly affected and houses were mostly damaged in Patuakhali district. Paddy fields were mostly damaged and fish farms in Satkhira district were mostly damaged due their proximity to the cyclone track. Some places have been affected due to the storm surge.

Conclusion: Due to the lack of suitable embankments in the coastal region, these areas are flooded by the storm surge. Authorities and government has to take necessary steps to overcome the losses.

Keyword: Cyclone; Yaas; Damage; South-western region.

Introduction

Globally, tropical cyclones (TCs) are considered the deadliest weather risk (1,2). Strong winds, heavy rainfall, and storms are significant destructive features of TCs(3,4). The effects of TCs are observed spontaneously in many coastal regions of the world. The cyclone caused worldwide damage of about 1965 billion US dollars during 1970-2019 (5).

Major cyclones have increased dramatically over the years. During 1978-2016, 131 TCs originated in the Bay of Bengal, with an annual average incidence of 3.6 TCs (6).

Bangladesh is one of the most vulnerable countries in the world to climate change, with a high

risk of natural disasters. Monsoon floods, cyclones, and storm surges are particularly dangerous in low-lying coastal districts around the Bay of Bengal (7). During the monsoon season, the Bay of Bengal sees an average of five cyclones every year (8). Cyclones are the most severe natural phenomenon in Bangladesh, accounting for over half of all cyclone-related deaths worldwide (9).

Cyclone YASS formed in the Bay of Bengal at low pressure on 23 May 2021 (10). According to the IMD, the storm attained its peak intensity of 140 km/h (85 mph) in three-minute sustained wind speeds; the JTWC reported somewhat lower estimations of 120 km/h (75 mph) (11). YASS

made landfall on the Odisha coast at Balasore on May 26 (11,12). During the landfall, the wind speed was 155-165 Km/h (12).

Although cyclone YASS did not hit directly the coastal region of Bangladesh, people in this part of Bangladesh faced strong gusts of wind, storm surge, and rain. The wind speed in the coastal areas of Bangladesh was between 80-100 Km/h (12).

Cyclone YASS hit the same parts of the country as cyclone Amphan did in 2020. These areas are

still reeling from the effects of the prior tragedies. The primary goal of this research was to determine the influence of cyclone YASS on Bangladesh coastal areas.

Materials and Methods

This study was completely based on secondary data. All of this collected from different authentic reports, newspaper, etc.

Results and discussion

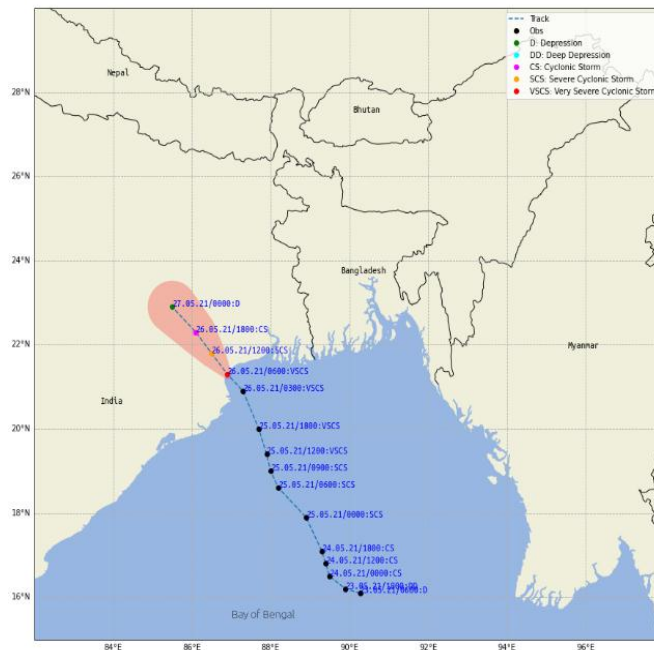


Figure 1. Cyclone YASS track with wind speed (13)

As the cyclone YASS made landfall, 80-100 km/h wind speed was seen on the south-west of Bangladesh (Figure1), this area was mostly affected by the force of the storm wind. Sixteen districts of Bangladesh have been affected by cyclone YASS. Some districts were severely affected and cyclone YASS left its demolishing trace on these districts (NAWG). Figure 2 shows the affected area of cyclone YASS.

Due to cyclone YASS and full moon in the spring tide, coastal areas and southern part of Bangladesh faced strong storm surge up to 1.5 to 2.5 meters, which was higher than typical. Figure 3 illustrates the height of storm surge. The cyclone washed away households and agricultural lands. Many people trapped into water and also lost their livestock and livelihood (NAWG) (15).

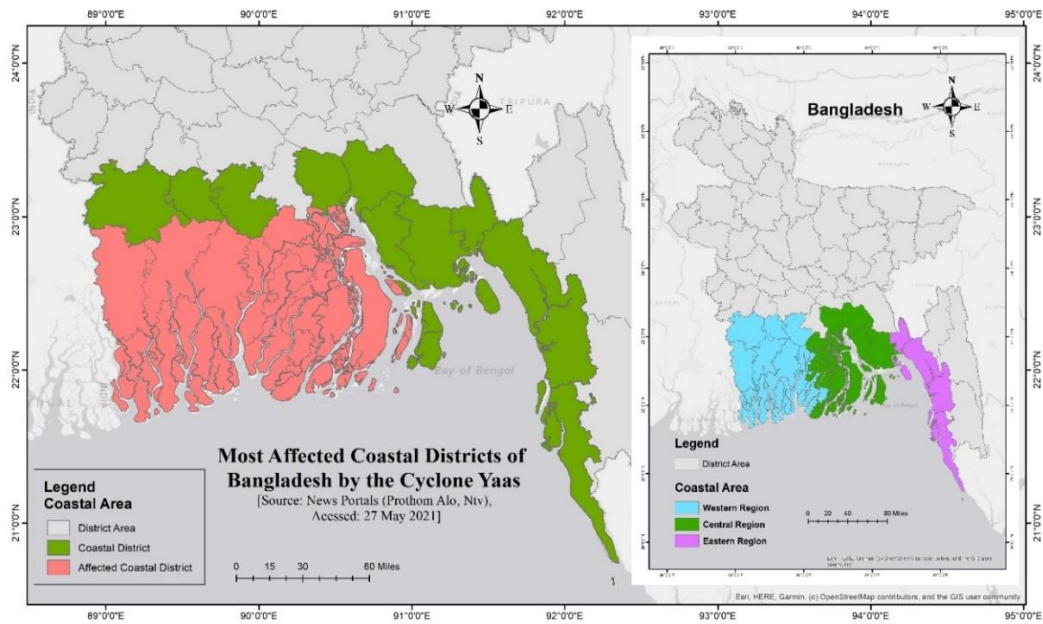


Figure 2. Affected coastal districts of Bangladesh by cyclone YASS (14)

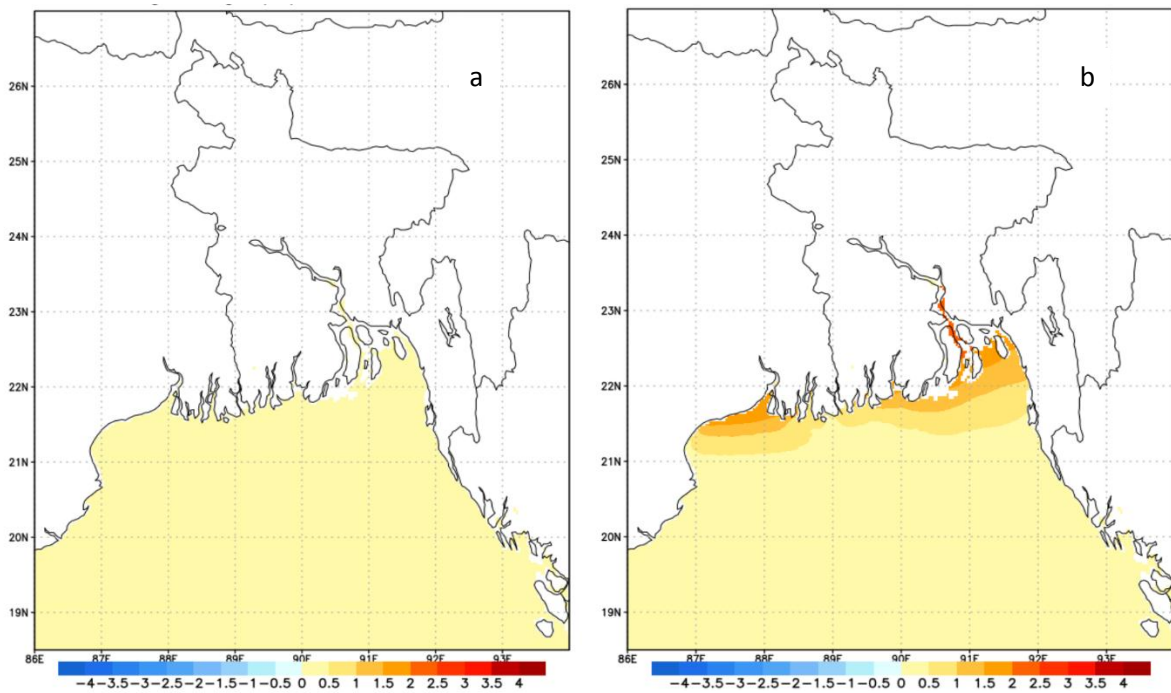


Figure 3. Height of storm surge a) 24 may 2021 before the cyclone. b) 26 may 2021 during the cyclone (16)

Number of affected Population

A total of 1,300,271 people were affected by cyclone YASS in 9 districts, 31% of whom were affected in Patuakhali, which is the most affected

area. Jhalokathi is the second most affected area with 22% of the affected population. Barguna, Bagerhat, and Khulna districts have less affected populations, with 2%, respectively.

Table 1. Number of affected population

District	Total population	Affected population	Percentage
Bagerhat	14,06,578	24,916	2%
Barguna	9,39,310	17,320	2%
Barisal	22,93,071	1,27,162	6%
Bhola	18,53,656	1,69,160	9%
Jhalokathi	6,71,297	1,49,000	22%
Khulna	22,59,613	50,400	2%
Patuakhali	18,07,356	5,59,363	31%
Pirojpur	11,15,447	1,08,000	10%
Satkhira	21,15,096	94,850	4%
Total	1,44,61,426	13,00,271	9%

Source: NAWG

Damage to infrastructure

Due to cyclone YASS, the low-lying coastal district of Bangladesh was significantly affected. Table 3 reveals that around 26,000 residences were entirely or partially damaged. The high tide mostly affected the coastal districts, where the plinths of most residences were seriously damaged and are now under risk of prolonged waterlogging (IFRC) (17).

Table 2. Number of damaged residences

District	Total damaged houses	Fully damaged	Partially damaged
Bagerhat	690	0	690
Barguna	1800	0	1800
Barisal	1140	57	1083
Bhola	11309	3579	7730
Jhalokathi	50	0	50
Khulna	1250	1200	50
Patuakhali	4693	484	4209
Pirojpur	550	0	550
Satkhira	5073	4695	378
Total	26,555	10,015	16,540

Source: IFRC (17)

Agricultural Damage (Fruits, crops and vegetables)

Around 12,150 hectares of land were affected by cyclone YASS. Because of the breach in the embankment, saline water also entered the land affecting agricultural production (NAWG) (15). Figure 4 shows the percentage of damaged crop land.

Table 3. List of Damaged crops and area

Crop	Land area(hectares)
Aush seedbed	823
Aush paddy	5,345
Bona Aman	1,200
Summer Vegetable	3,345
Summer chili	135
Summer Sesame	41
Jute	166
Betel leaf	217
Banana Garden	351
Mango Garden	400
Papaya	116
Sugarcane	12
Total	12,151

Source: NAWG

Fisheries and livestock damages

Livestock from 6 districts of the Barisal division were seriously affected. Due to cyclone YASS, 74,733 ducks, 2,097 sheep, 20,646 goats, 26,361 cows, and 4,898 buffaloes were affected. The estimated damage to livestock was around 35,338,610 BDT, which is approximately 417,629 USD (15). Around 9592 hectares of fishing enclosure were damaged, with an estimated value of 83 cores in BDT. Land was most affected in Satkhira district, but Patuakhali district suffered more in terms of money.

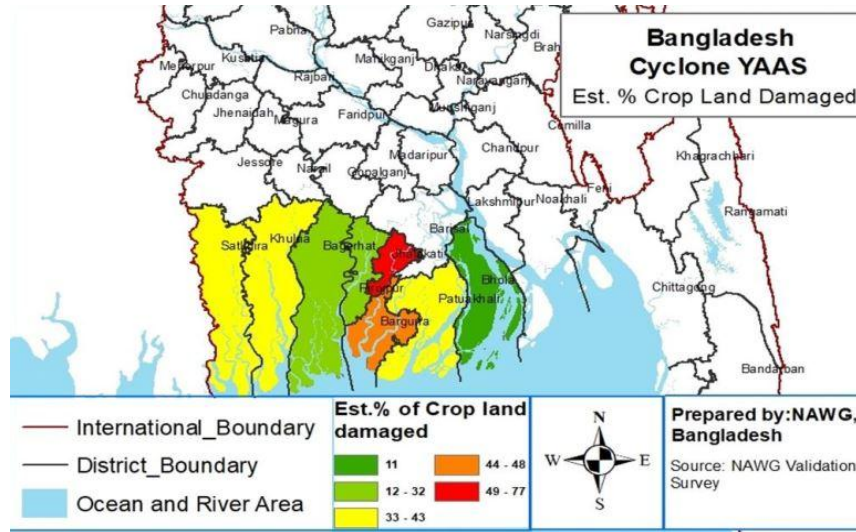


Figure 4. Crop land damage (Source: NAWG)(15)

Table 4. Damage in fishing sector

Affected area	Land area (hector)	Number of shrimp farm/ Pond	In Taka
Patuakhali	1217	7585	55 core 23 lakhs
Bola	373	2351	13 core 5 lakhs
Pirojpur	596	2152	5 core 60 lakhs
Barisal	400	1728	4 core 35 lakhs
Jhalokati	201.49	2139	2 core 80 lakhs
Borguna	73.96	1249	1 core 2 lakhs
Satkhira	6732	7468	16 core
Total	9592	24,672	82.68 core

Source: Prothom Alo, News Portal. (18)

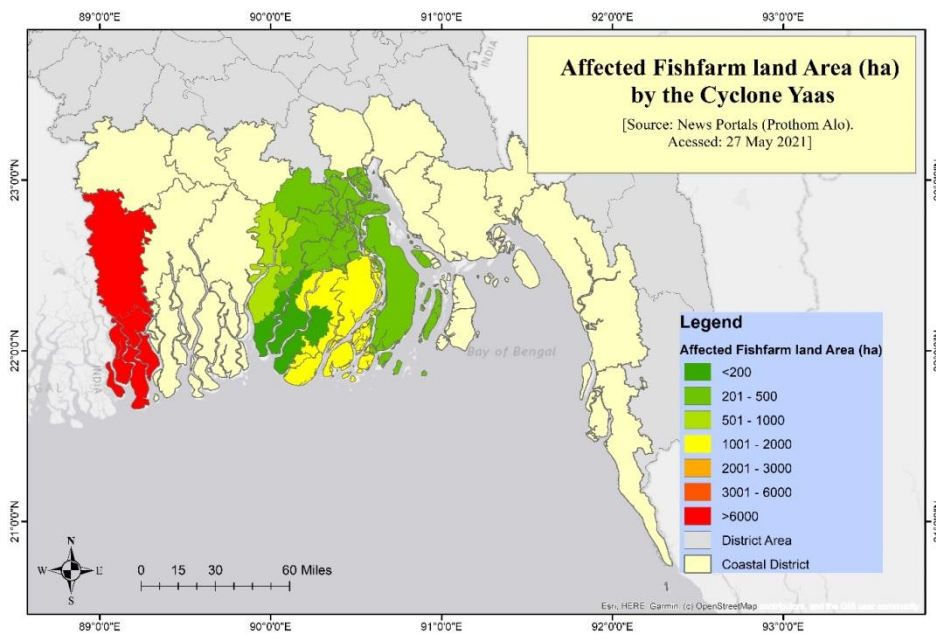


Figure 5. Affected fish farm land area by cyclone YAAS

The cyclone mostly affected the south-western of Bangladesh by its wind and storm surge. People in Patuakhali and Jhalokathi districts were mostly affected and houses were mostly damaged in Patuakhali district. Paddy fields were mostly damaged and fish farms in Satkhira district were damaged due to their proximity to the cyclone track. Some places were mostly affected due to the storm surge.

Conclusion

Cyclone YASS left a devastating trail in the coastal areas of Bangladesh, making their condition critical. Already, due to the corona virus, the normal life of people in these areas has been disrupted. Meanwhile, the cyclone has made their lives worse than the corona virus. The cyclone has made people pauper, which is far worse than the coronavirus pandemic. The real problem is that there are no suitable embankments in the region to protect the coastal region. Because of this, when a cyclone occurs, these areas are flooded due to storm surge. Authorities need to build suitable embankments in these areas very quickly to prevent such a problem in future. With the construction of sustainable embankments, the government has to take the necessary steps to overcome the losses. At the same time, NGOs have to come forward to help the affected people. Only then will it be possible to quickly repair the damage caused by cyclone YASS.

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