# Mapping the Impacts of Typhoon Goni in Catanduanes

Geomatics for Environment and Development MANILA OBSERVATORY November 9, 2020

- onslaught of Typhoon Goni in Catanduanes.
- were flooded.
- More than **10,000 houses** were damaged.

# Summary

 Low-lying municipalities (with elevation less than 10 meters) above sea level) were flooded (flooded extent was estimated to be **4.3 km<sup>2</sup>**) due to rainfall exceeding 150 mm during the

1,577 people or less than 1% of Catanduanes' population

Buildings in different parts of the province were damaged.

### **Low-lying Areas in Catanduanes**



### Typhoon Goni (Nov. 1, 2020)



# Low Elevation Coastal Zones

### (meters above sea level)

- 0 2 2 - 4 4 - 6 6 - 8
- 8 10

- Bagamanoc
- San Miguel

### **Flooded Areas in Catanduanes**



CATANDUANES

AGAMANOC

NDRES (CALOLBON)



**CAMARINES SUF** 

Source:

13°40'0"N |

Detected Flood (Sentinel 1, Copernicus Sentinel data 2020, processed by ESA Oct. 2, 2020 - Nov. 1, 2020) Provincial and Municipal Boundary (NAMRIA, 2018) Roads and waterways (OSM, 2020) Elevation (SRTM, 2000)

10

RAC (Capita



124°0'0"E

### Typhoon Goni (Nov. 1, 2020)



124°20'0"E



Legend  Legend  Typhoon Goni Track  Waterways  Roads  Provincial Boundary  Municipal Boundary  Detected Flooding		
<ul> <li>Typhoon Goni Track</li> <li>Waterways</li> <li>Roads</li> <li>Provincial Boundary</li> <li>Municipal Boundary</li> <li>Detected Flooding</li> </ul>	1	Legend
Waterways Waterways Waterways Waterways Waterways Waterways Note: Comparison of the second se	, P	——— Typhoon Goni Track
Roads          Provincial Boundary         Municipal Boundary         Detected Flooding		—— Waterways
Provincial Boundary Municipal Boundary Detected Flooding		—— Roads
Municipal Boundary	4	Provincial Boundary
Detected Flooding		Municipal Boundary
		Detected Flooding

)	Gigmoto
bon)	Pandan
	Baras





### **Flooded Population in Catanduanes**



### Typhoon Goni (Nov. 1, 2020)

![](_page_5_Picture_6.jpeg)

![](_page_5_Picture_7.jpeg)

![](_page_5_Picture_13.jpeg)

### Affected Population in Catanduanes as of Nov. 8, 2020

![](_page_6_Figure_1.jpeg)

### Typhoon Goni (Nov. 1, 2020)

124°20'0"E

![](_page_6_Picture_8.jpeg)

![](_page_6_Picture_9.jpeg)

## Nov. 8, 2020

- 470 800
- 801 1,500
- 1,501 5,000
- 5,001 8,000
- 8,001 22,163

### **Damaged Buildings in Catanduanes**

![](_page_7_Picture_1.jpeg)

### Typhoon Goni (Nov.

- Highlighted in yellow are the location of buildings and in red the possible location of building damage due to inundation and strong

1,	2020)	
-		

![](_page_7_Picture_16.jpeg)

Legend
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Typhoon Goni Track Roads Waterways Provincial Boundary **Municipal Boundary** Buildings **Detected Flooding** Possible Building Damage

### **Damaged Buildings in Catanduanes**

![](_page_8_Picture_3.jpeg)

### Typhoon Goni (Nov. 1, 2020)

Kilometers

![](_page_8_Picture_10.jpeg)

### **Damaged Houses in Catanduanes**

![](_page_9_Figure_1.jpeg)

### Typhoon Goni (Nov. 1, 2020)

![](_page_9_Picture_8.jpeg)

### Nov. 8, 2020 0

- 1 1,500
- 1,501 2,000
- 2,001 2,500
- 2,501 4,480

### **Affected land cover in Catanduanes**

![](_page_10_Picture_3.jpeg)

### Typhoon Goni (Nov. 1, 2020)

![](_page_10_Picture_10.jpeg)

Annual Crop Brush/Shrubs Built-up **Closed Forest** Fishpond Grassland Inland Water Mangrove Forest Marshland/Swamp Open Forest Open/Barren Perennial Crop

### CATANDUANES Typhoon Goni Hospitals

![](_page_11_Figure_1.jpeg)

124°0'0"E

124°10'0"E

### Tunhaan Gani (Nav 1 2020)

![](_page_11_Picture_6.jpeg)

![](_page_11_Picture_7.jpeg)

### CATANDUANES Typhoon Goni Schools

![](_page_12_Figure_1.jpeg)

124°20'0"E

![](_page_12_Picture_8.jpeg)

### CATANDUANES Typhoon Goni Flooded Roads

![](_page_13_Figure_1.jpeg)

![](_page_13_Picture_7.jpeg)

![](_page_13_Picture_8.jpeg)

# For queries, requests, comments, suggestions, please email manila@observatory.ph