

EXCESS RAINFALL COUNTRY RISK PROFILE

Turks and Caicos Islands



Overview of the Country

Population

33,740

GDP USD

706 million

GDP capita USD

21,337

**Total Built Exposure USD
(Replacement value)**

1.229 billion



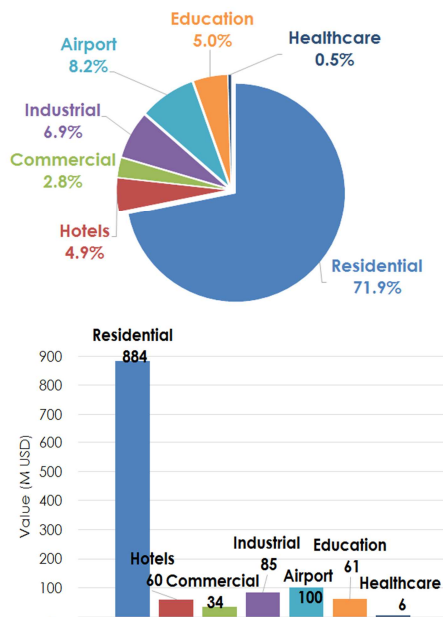
The Turks and Caicos Islands consist of the Larger Caicos and smaller Turks Islands, two groups of tropical islands in the Lucayan Archipelago, north of the larger Antilles islands.

Exposure

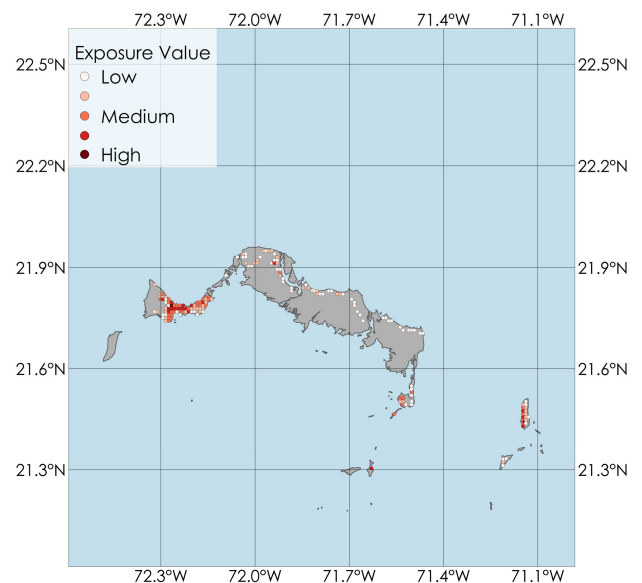
The exposure database provides count, replacement cost and vulnerability classification of different building classes and infrastructure assets at a 1km² granularity.

The map shows the distribution across the country of the assets exposed to natural hazards. The representation is in terms of Replacement Value (in M USD).

The graphs show the breakdown of the value of the assets at risk by occupancy class.

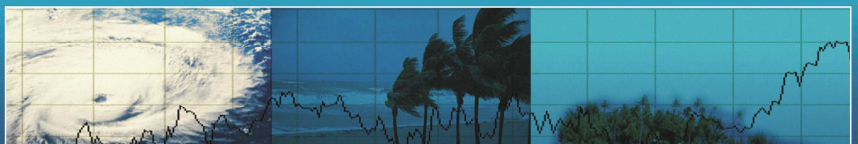


Distribution of assets at risk



CCRIF SPC

The Caribbean Catastrophe Risk Insurance Facility



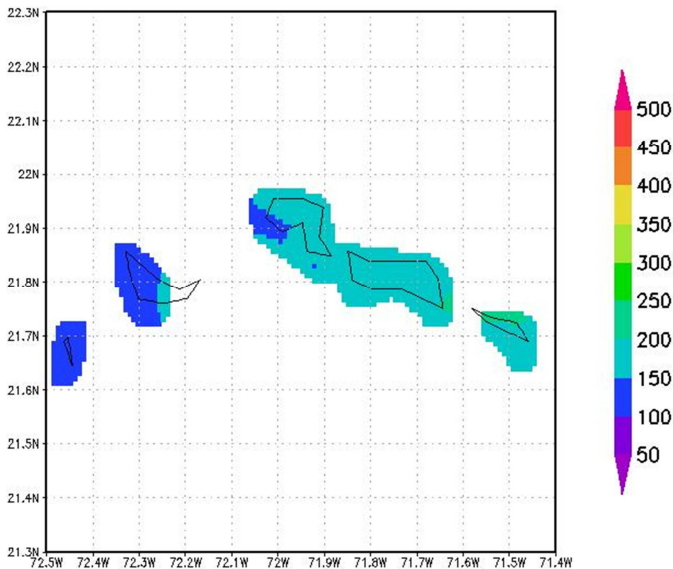


Hazard

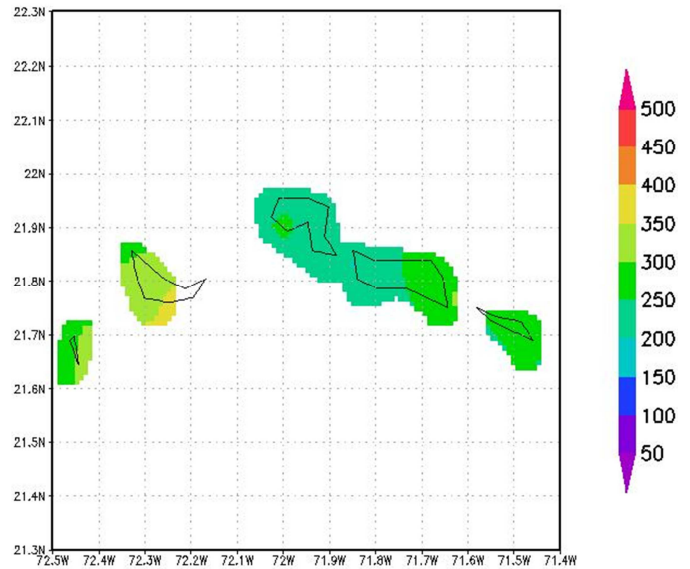
Average frequency of XSR

The hazard module of the excess rainfall model provides estimates of precipitation on a daily basis. These estimates are derived in near real time by a combination of both climatic-meteorological models and a satellite-based precipitation model.

The maps show the amount of daily rainfall that is expected to be observed in the country, on average, once every 5 and 25 years, respectively.

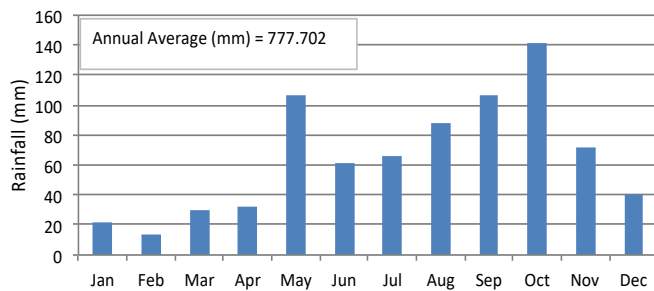


Hazard maps with return period 5 years, for the country.



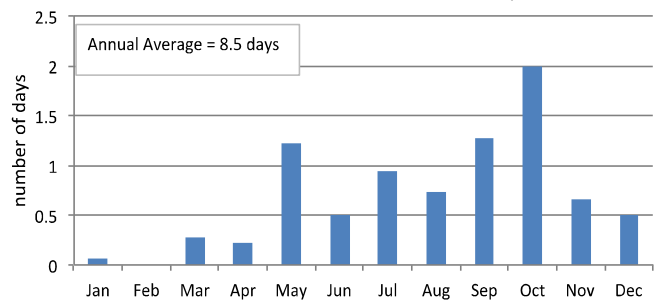
Hazard maps with return period 25 years, for the country.

Average Monthly Rainfall Jan 1998 to Dec 2015

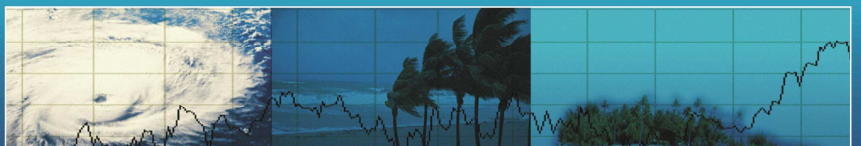


The graph shows the values of average monthly rainfall and the annual average rainfall in Turks and Caicos Islands for the period 1998-2015. Excess rainfall events are expected to occur almost exclusively during the wet season (between May and October).

Distribution of extreme events within the year



The graph shows the monthly average number of days with extreme precipitation (over 50 mm/d at least at one location) in Turks and Caicos Islands for the period 1998-2015.





Vulnerability

Vulnerability analyses are conducted to identify the consequences for the built environment when an excess rainfall event occurs. The model makes use of relationships between the amount of rainfall and the loss to the exposed assets.



Consequences of high-intensity rainfall

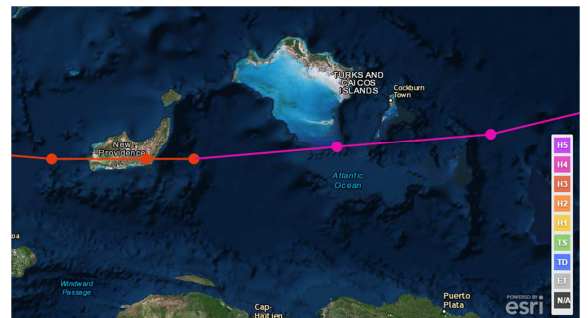
Historical Losses

Historical economic losses

During the period from 1998 to 2015 eleven significant excess rainfall events struck Turks and Caicos Islands: all the events were caused by tropical cyclones.

The most destructive event was Hurricane Ike in 2008. The overall reported losses in Turks and Caicos Islands for this event ranged between US\$250 and US\$450 million with a mean of about US\$350 million.

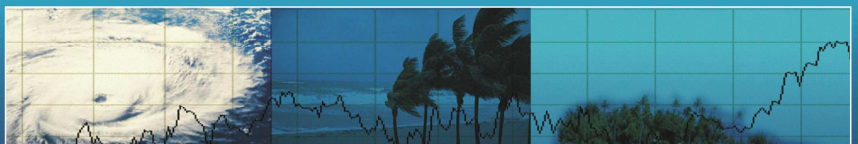
| Event | Start Date | End Date | Hurricane Category | Number of fatalities | Losses (M USD) |
|-----------------|------------|----------|--------------------|----------------------|----------------|
| Cristobal, 2014 | 23/08 | 29/08 | TD | 1 | |
| Bertha, 2014 | 29/07 | 09/08 | TS | 0 | |
| Irene, 2011 | 21/08 | 28/08 | HU1 | | |
| Tomas, 2010 | 29/10 | 10/11 | TS | 0 | |
| Ike, 2008 | 01/09 | 15/09 | HU4 | 0 | 350 |
| Hanna, 2008 | 28/08 | 08/09 | TS | 0 | |
| Gustav, 2008 | 26/08 | 26/08 | TS | 4 | |
| Chris, 2006 | 01/08 | 04/08 | TD | 0 | |
| Jeanne, 2004 | 13/09 | 29/09 | TS | | |
| Frances, 2004 | 01/09 | 01/09 | HU4 | | |
| Dennis, 1999 | 24/08 | 08/09 | TS | | |



The figure shows the track of Ike, 2008, near Turks and Caicos Islands. It passed through this country with category 4 in the Saffir Simpson scale (source: NOAA)

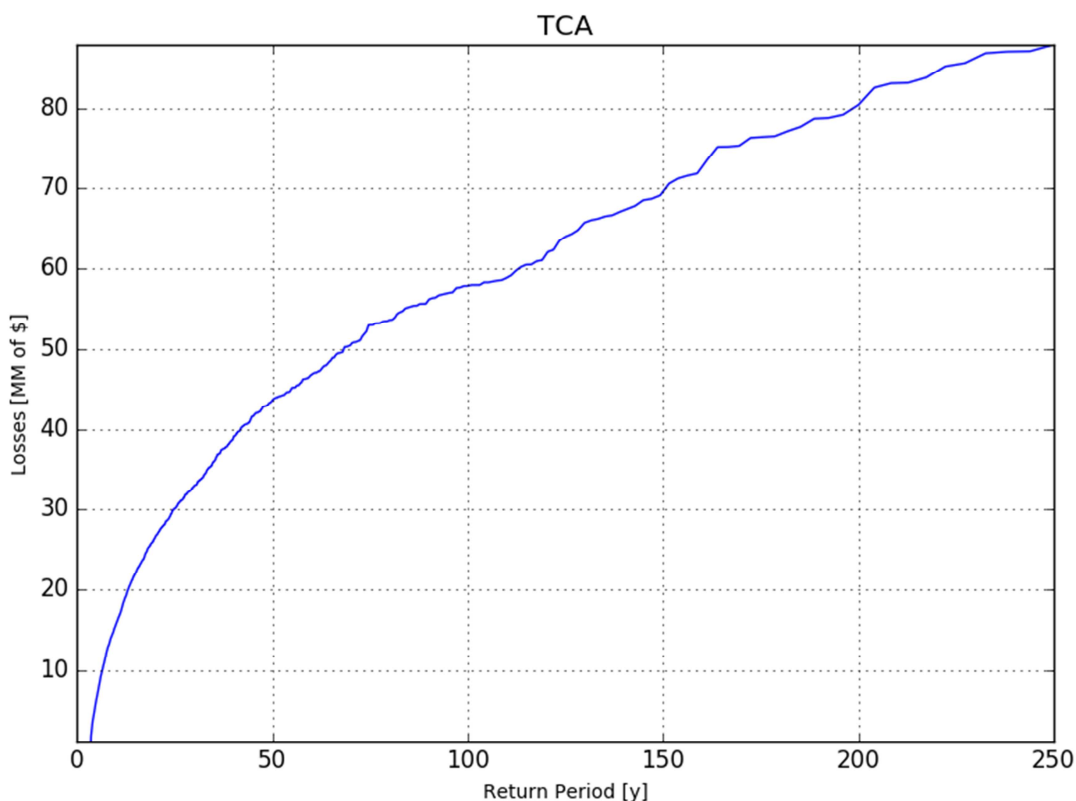
Saffir-Simpson hurricane wind scale

| Category | Tropical Depression | Tropical Storm | Hurricane 1 | Hurricane 2 | Hurricane 3 | Hurricane 4 | Hurricane 5 |
|-------------------------------|---------------------|----------------|--------------|--------------|--------------|--------------|-------------|
| Winds (1 min sustained winds) | ≤ 38 mph | 39–73 mph | 74–95 mph | 96–110 mph | 111–129 mph | 130–156 mph | ≥ 157 mph |
| Central Pressure | > 980 mbar | > 980 mbar | 980-994 mbar | 965–979 mbar | 945–964 mbar | 920–944 mbar | < 920 mbar |





Based on the statistics of the historical storms and losses generated, the future excess rainfall risk in Turks and Caicos Islands was estimated using probabilistic techniques. The graph shows the rainfall-induced losses to public buildings that are expected to occur with return periods ranging from 5 to 100 years. The table below shows also the long-term average annual loss due to excess rainfall events.



| Return Period | Loss (USD) |
|----------------------------|-------------------|
| 5 | 7,367,414 |
| 10 | 15,695,719 |
| 25 | 30,065,586 |
| 50 | 43,581,439 |
| Average Annual Loss | 4,794,930 |
| St.Dev. Annual Loss | 12,606,854 |

