

EXCESS RAINFALL COUNTRY RISK PROFILE

Dominica



Overview of the Country

Population

72,341

GDP USD

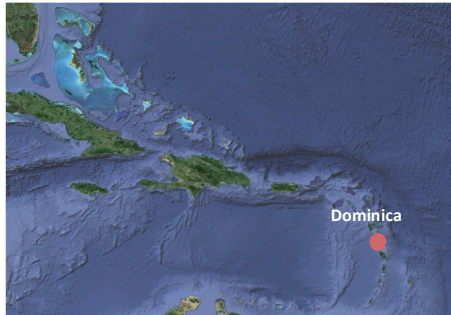
524 million

GDP capita USD

7,244

Total Built Exposure USD (Replacement value)

2.668 billion

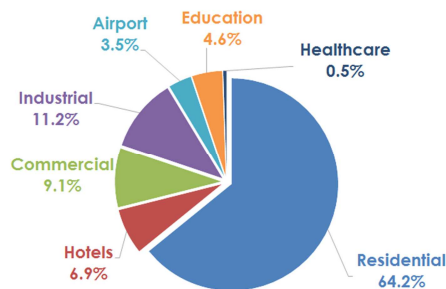


Dominica is an island country located in the Lesser Antilles region of the Caribbean Sea, south-southeast of Guadeloupe and northwest of Martinique.

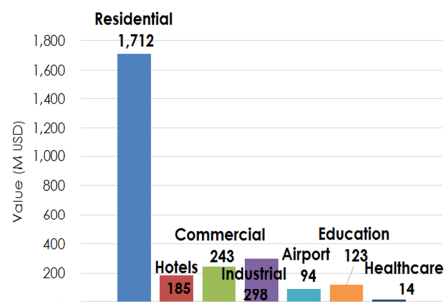


Exposure

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

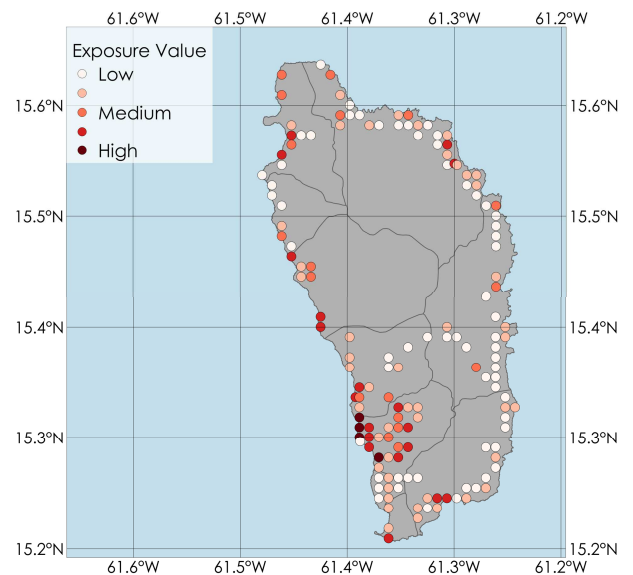


The map shows the spatial distribution of the assets exposed to natural hazards. The representation is in terms of Replacement Value (in M USD).



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

Distribution of assets at risk



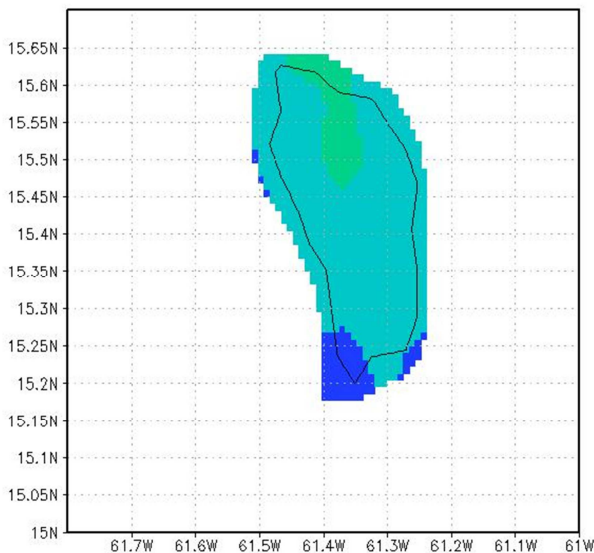


Hazard

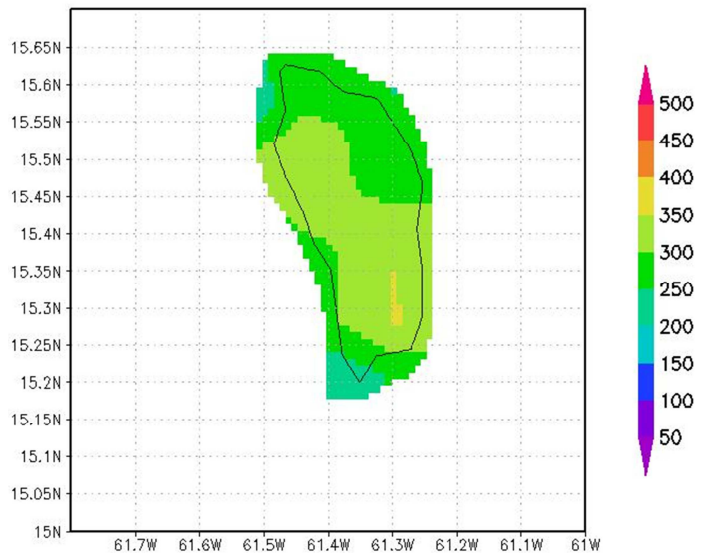
Average frequency of XSR events

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.

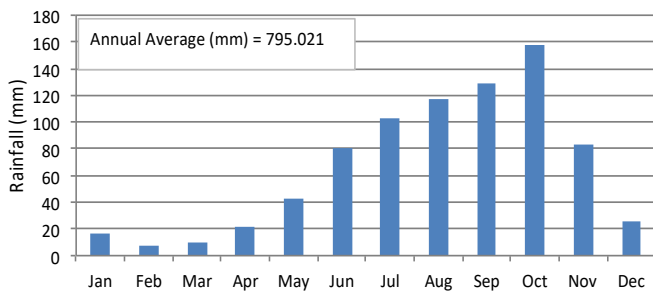


Hazard maps with return period 5 years, for the country.



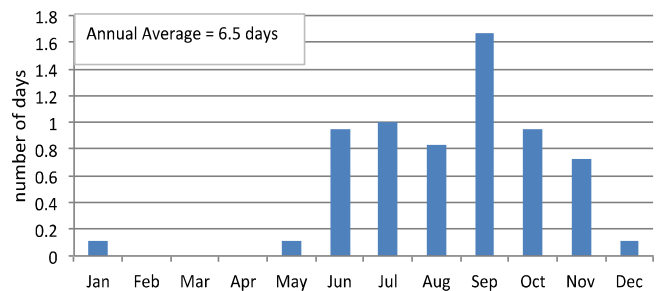
Hazard maps with return period 25 years, for the country.

Average Monthly Rainfall Jan 1998 to Dec 2015

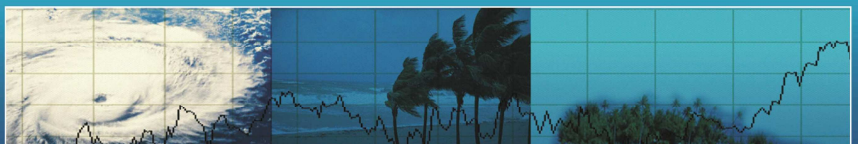


The graph shows the values of average monthly rainfall and the annual average rainfall in Dominica for the period 1998-2015. Excess rainfall events are expected to occur almost exclusively during the wet season (between June and November).

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 Dominica for the period 1998-2015.





Vulnerability

Consequences of high-intensity rainfall

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.



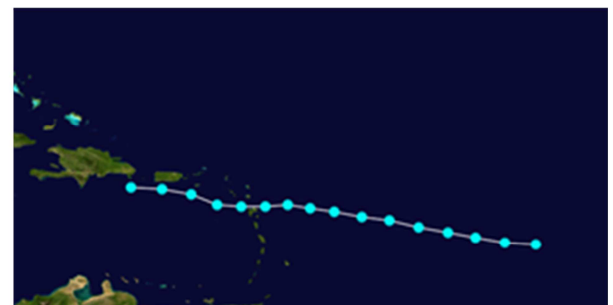
Historical Losses

Historical economic losses

During the period from 1998 to 2015 ten significant excess rainfall events struck Dominica: all the events were caused by tropical cyclones.

The most destructive event was Tropical Cyclone Erika in 2015 which caused 34 fatalities. The overall reported losses in Dominica for this event ranged between US\$450 and US\$550 million with a mean of about US\$500 million.

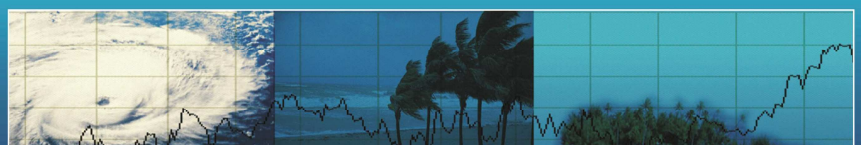
Event	Start Date	End Date	Hurricane Category	Number of Fatalities	Losses (M USD)
Erika, 2015	25/08	29/08	TS	34	500
Chantal, 2013	07/07	10/07	TS	0	
Isaac, 2012	20/08	01/09	TS		
TCS, 2011	25/09	29/09	NA		
Emily, 2011	02/08	07/08	TS		
Dean, 2007	13/08	24/08	HU1	2	90
Iris, 2001	06/10	06/10	TD	3	
Lenny, 1999	13/11	23/11	TS	0	0
Jose, 1999	17/10	25/10	HU1	0	0
Georges, 1998	15/09	01/10	HU3		



The figure shows the track of the Tropical Storm Erika, 2015

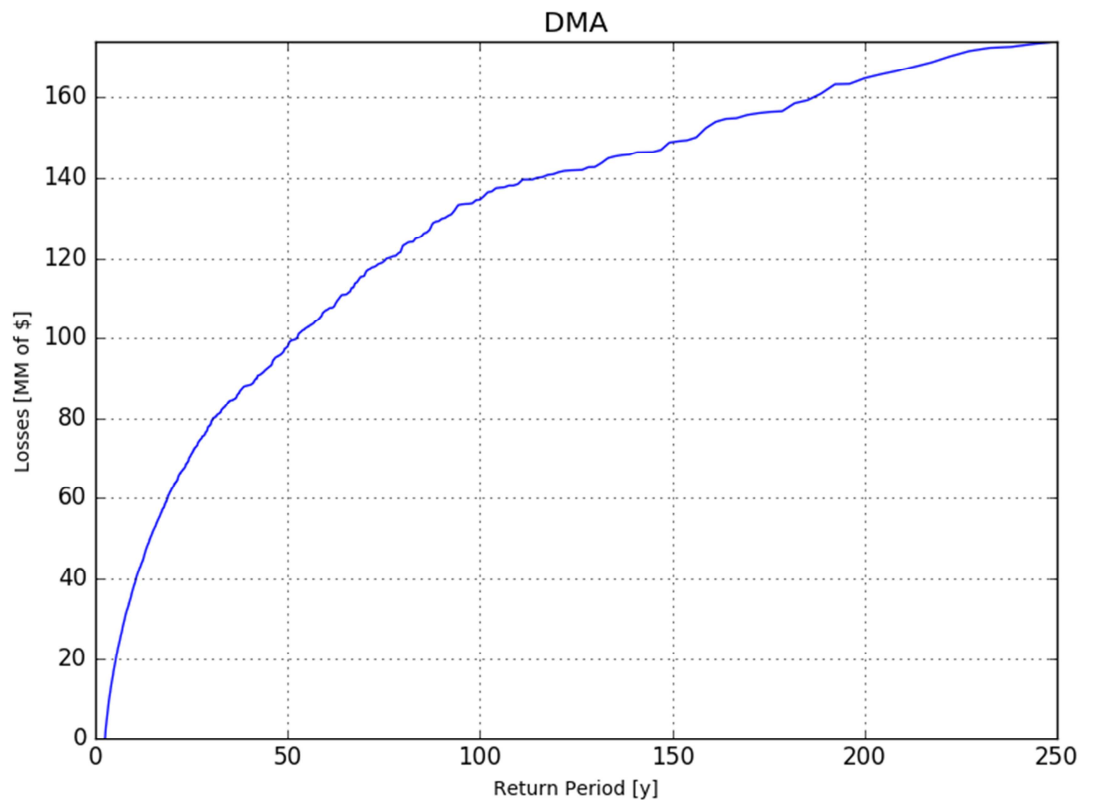
Saffir-Simpson hurricane wind scale

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 Dominica 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	18,547,705
10	37,949,205
25	71,067,497
50	97,869,002
Average Annual Loss	12,059,493
St.Dev. Annual Loss	28,516,385

