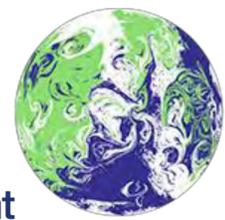


# Natural Capital in the Caribbean UK Overseas Territories: Valuation, Vulnerability and Monitoring Change

Joint Nature Conservation Committee, UK



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IN PARTNERSHIP WITH ITALY

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## Introduction



Hurricanes and tropical storms pose a major threat to Small Island Developing States (SIDS) and are likely to increase in frequency and severity in the coming years due to climate change (Lim *et al.* 2018).

In 2016, JNCC began a new programme of work with the UK Overseas Territories to build on-island stakeholder capacity to mitigate disaster risk. The programme helps communities in the Overseas Territories build resilience against a range of disasters using natural capital management and habitat conservation approaches. Habitats like mangroves and coral reefs provide nature-based solutions for adaptation, climate change and disaster resilience.

[Earth Observation](#) (EO) plays a key role in mapping priority natural capital assets and monitoring changes over time. The products from satellite data can be used to model disaster risks and identify the most impactful locations for nature-based solutions, which can be integrated into planning and policy making.

## Impact

Earth Observation techniques have been instrumental in the development of valuable tools to support development and land-use change decision making in the UK Overseas Territories.



Figure 1. Satellite imagery of the Paraquita bay before (left) and after (right) Hurricanes Irma and Maria. The white objects seen are vessels in the harbour.

### Damage Assessment and Monitoring

EO satellite imagery was used to assess the impact of Hurricane Irma and Maria along the coast of the British Virgin Islands (BVI). Figure 1 shows the damage to Paraquita Bay, one of the largest natural harbours in the BVI with a natural sea barrier of coral rock flanked by mangroves. The before and after imagery shows the displacement of boats in the harbour and the damage to the surrounding natural environment (going from green to brown). Further information on the use of satellite imagery to investigate damage to natural capital can be found [here](#).

### Risk Modelling

Using EO satellite data, we modelled the risk from storm surges in Anguilla ([report link](#)). The risk zones identified in Figure 2 can be used to plan evacuation strategies and target key areas for effective disaster response. These data can also be used to advise on development, making investors aware of the risks and enabling them to plan suitable mitigation strategies. Likewise, they can feed into decision-making about natural capital and can help identify optimal areas to invest in nature-based solutions, such as [mangrove restoration](#).

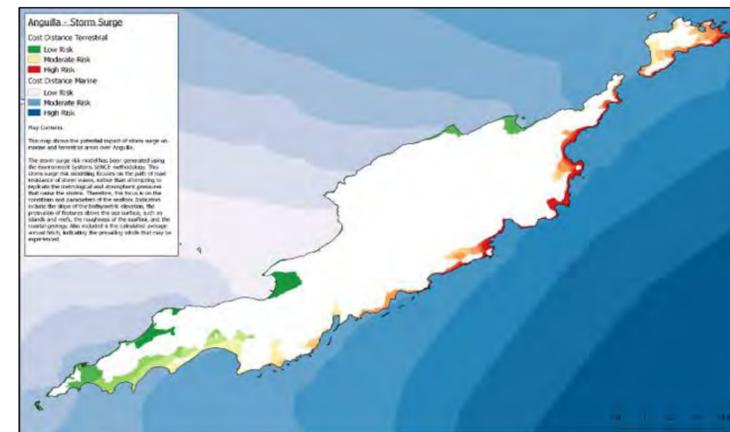


Figure 2. Map of Anguilla showing the modelled risk to coastal areas from storm surge.

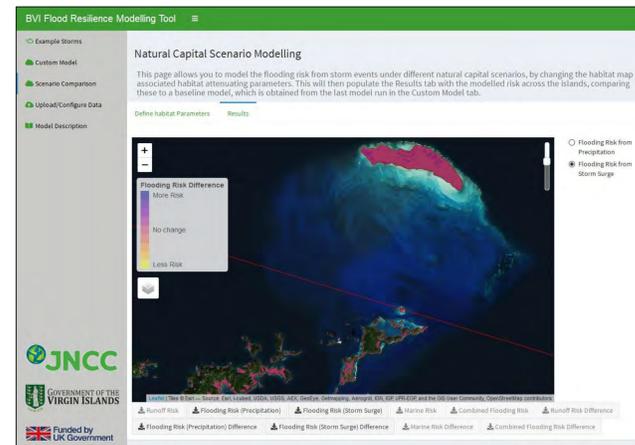


Figure 3. BVI Flood Resilience Modelling Tool showing the difference in flood risk for varying Natural Capital scenarios

### Natural Capital and Opportunity Mapping

Our EO analysis shows that the natural coral reef barrier in BVI provides US\$74.3 million worth of protection against hurricanes and other disasters annually. We used EO data to map and value natural capital in the BVI ([report link](#)) and fed them into the [BVI Flood Resilience Modelling tool](#) to model flood risk from storm events under a range of natural capital scenarios. This tool allows decision-makers to compare a variety of scenarios to the baseline risk model and identify opportunities to enhance natural capital and disaster resilience. Thanks to its user-friendly interface, the tool is useful for engaging stakeholder and communicating the value of nature-based solutions.

## Future Work



JNCC is continuing to work with the UK Overseas Territories to identify where nature-based solutions can help protect communities and economies in the face of climate change through:

- Improving products, like risk models, with new EO datasets that deliver higher resolution data.
- Honing in on evidence gaps and increasing targeted areas for nature-based solutions.
- Upscaling the programme outlook to incorporate a more regional approach.
- Shifting the focus from mapping habitats to monitoring habitats.

## References

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