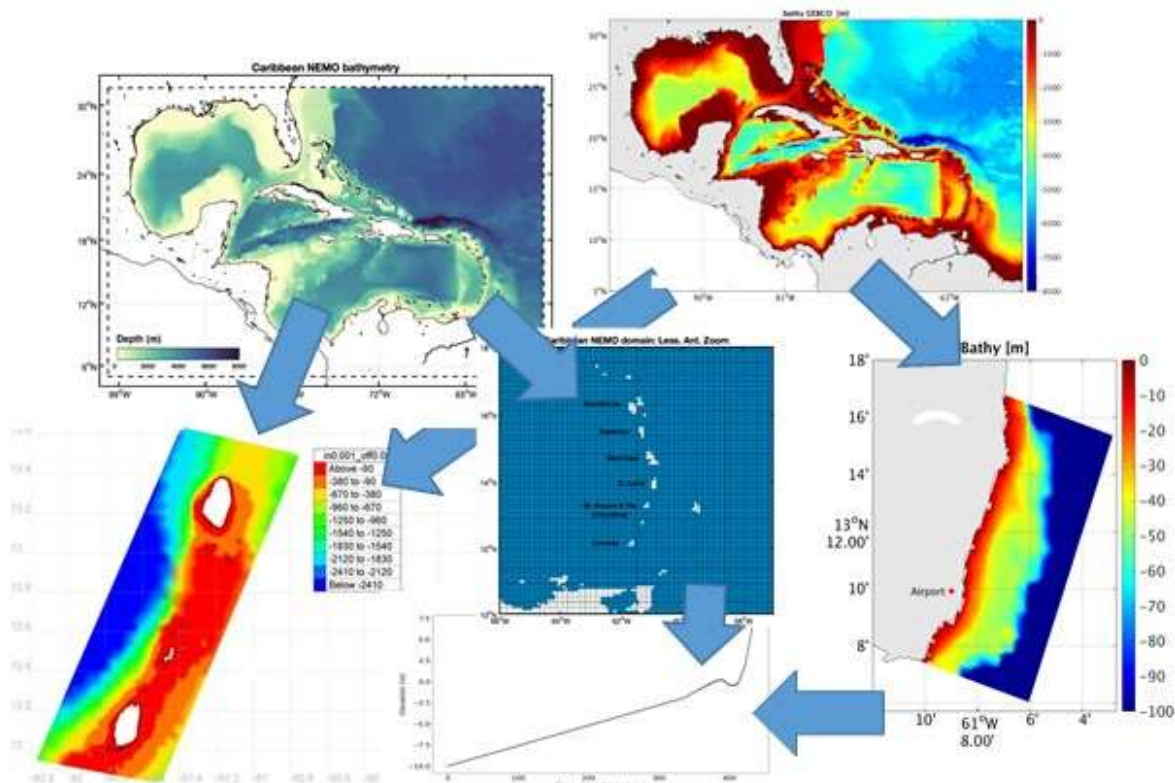


Caribbean workshop on Coastal Monitoring and Modelling for Small Island Developing States



Stakeholder Consultation
Workshop, 26 November 2020

Summary Report

National Oceanography Centre,
UK

Presenters: Prof Judith Wolf, Dr Jenny Brown, Dr Lucy Bricheno, Dr Amani Becker, Dr Valerie Le Guennec, Dr Gaby Mayorga-Adame, National Oceanography Centre (NOC), UK

SUMMARY

On 26 November 2020, we held an online workshop with invited participants from various Caribbean countries. We had 35 participants from 11 countries (including UK). This is a brief summary report of the meeting for general consumption. The talks are available to download from <https://projects.noc.ac.uk/cme-programme/>

INTRODUCTION

The motivation for this workshop is to build on work done by the UK Commonwealth Marine Economies Programme over the last 3 years – showing examples from Saint Lucia, Dominica, Belize, Grenada and Saint Vincent and the Grenadines. During this time, we have collected data, set up models and run training courses on coastal processes. We are reaching out to the wider Caribbean to offer the tools and datasets we have developed to coastal managers and academics. We have started to design a data hub for data sharing.

The aim of the workshop is twofold: to gather information about data needs across the whole Caribbean and raise awareness of what data is already available so that it can be accessed easily and freely. Following the workshop, the modelling team at NOC will tailor the work we will do during Oct 2020 – Mar 2021 to address the identified needs and encourage future collaboration. We plan to hold a longer workshop in March 2021 to provide this new information.

Workshop Programme (times in GMT/UTC):

15:00 Introduction: Prof Judith Wolf

Session 1: Coastal Hazards (Chair: Prof Judith Wolf)

15:05 talk **“Coastal Hazards”** (15 mins + 5 mins Q&A) – Dr Jenny Brown

15:25 Interactive exercise (in 3 breakout rooms): collaborate to generate a word cloud

“What are your coastal management information needs and areas of concern?”

15:55 Summary of discussion / break

Session 2: Coastal Monitoring (Chair: Dr Jenny Brown)

16:05 Talk 2 **“Coastal Monitoring”** (15 mins + 5 mins Q&A) – Dr Amani Becker

16:25 Breakout room discussion

“What data do you already access / gather, and what would you like to acquire?”

16:55 Summary of discussion / break

Session 3: Coastal Modelling (Chair: Dr Amani Becker)

17:05 Talk 3 **“Coastal Modelling and Applications”** (15 mins + 5 mins Q&A) – Dr Gaby Mayorga-Adame

17:25 Breakout room discussion

“Where should we focus our models? Can you identify coastal locations of interest in your own country?”

17:50 Summary of discussion / final wrap-up

17:55 Summary and close – Prof Judith Wolf

Exit Survey – Dr Lucy Bricheno

REPORT ON PLENARY DISCUSSIONS

Session 1: Coastal Hazards

A specific need was identified for baseline data, which then informs management practices. Often only tide gauge data is collected. There is a widespread need for underwater bathymetry.

There was a question about the coastal vulnerability index, presented in the talk. It was explained that this had been calculated from the external drivers like storm surge, tides, sea level rise (SLR) and winds, on a regional basis. Please refer to Jevrejeva et al. (2020) paper (see reference in Appendix).

Bathymetry data are needed to run models for storm surge, we need an accurate sea level baseline and the ability to accurately measure changes over time. One of the challenges is to articulate the issue of climate change. Better baseline data is required to provide evidence of local / island scale rates of sea-level rise.

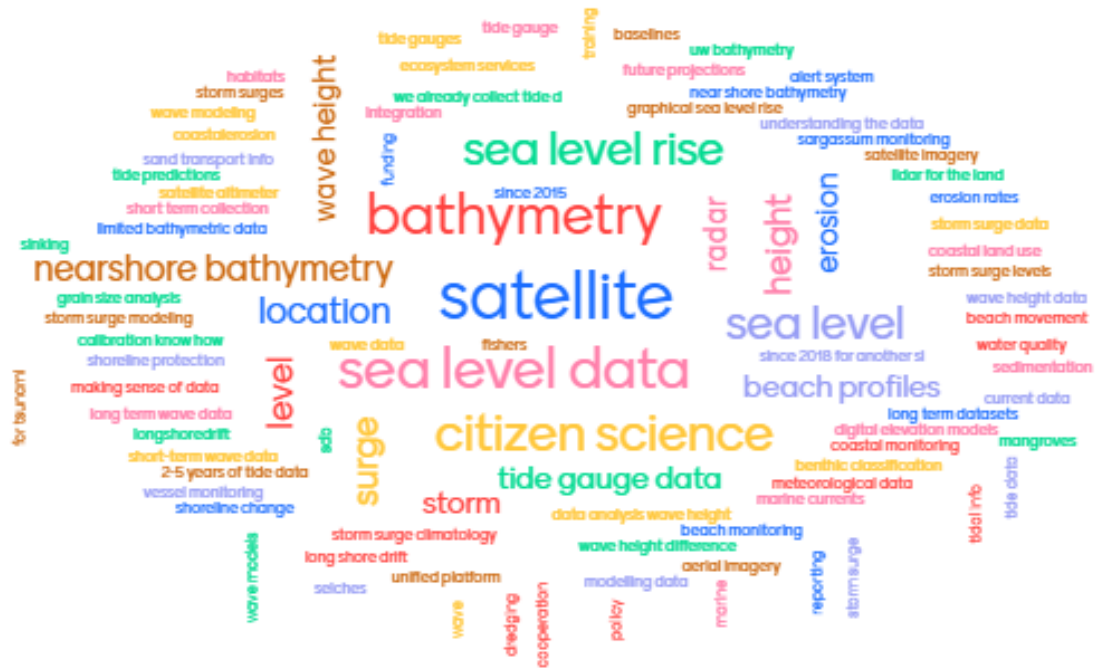
There was a question about whether effects of installing a coastal defence would be felt at a distance. It was explained that when we carry out modelling studies, we do look at the regional impact of human intervention as well as the local, you can look at how it influences the sediment transport, and how further down the coast might be impacted - breakwaters can block sediment transport. In shoreline evolution models, you can look at the largest scale impacts of human intervention, as well as the detailed local impacts and you can work out what are the positive and negative impacts.

There was also a question about availability of satellite data, which was deferred until after the next talk.

Breakout 1: What are your coastal management information needs and areas of concern?

Introductions and WordCloud exercise (www.menti.com)

The following word cloud was constructed from the responses of all participants. We had 69 submissions to our word cloud and we will keep this to inform what we do next.



The size of each word shows the number of times it was mentioned. We can see that ‘bathymetry’ is prominent and ‘nearshore bathymetry (and ‘near shore bathymetry’} is also identified. ‘Satellite’, ‘sea level data’ and ‘sea level rise’ are highlighted, with many types of data from tide gauge, wave and meteorological data also being identified. It is great to see that the value of modelling data is appreciated, especially for storm surge modelling and the prominence of ‘citizen science’ also shows that this message has been picked up, with its potential for low-cost data collection.

Session 2: Coastal Monitoring

Discussion included the use of satellite data for observing sea level, autonomous underwater vehicles (AUV) for data collection, as well as the more commonly used tide gauges, AWAC and satellite data

Breakout 2: What data do you already access or gather, and what would you like to acquire?

Summary of breakout 2

Room 1: discussion of Sargassum, validation of regional models for residuals, connectivity and transport

Room 2: need to know what is out there, baseline mapping

Room 3: hydrodynamics, AWAC, models, in situ data, satellites, barrier to data collection is cost

Session 3: Coastal Modelling

Fisheries asked about the complexity of tracking models e.g. is feeding included, food web? The response was that some larvae do feed while drifting, others do not. This can be included.

Breakout 3: Where should we focus our models? Can you identify coastal locations of interest in your own country?

Summary of breakout 3

Room 1: everyone is interested in Sargassum, how to prevent its arrival and what to do with it

Room 2:- tracking how corals seed, also plastics and pollutants (Trinidad and Tobago)

Room 3: validate models, how do we apply models and use data confidently. What is their accuracy?

Wrap Up

Summary slides (Prof Judith Wolf, NOC)

Thanks to all the participants for their attendance and engagement.

N.B. All slides, and this summary report, will be made available on our website:

<https://projects.noc.ac.uk/cme-programme/>

Further information is also provided in the Appendix.

Appendix: Reports, downloads and further reading

Commonwealth Marine Economies programme (CMEP):

<https://www.gov.uk/guidance/commonwealth-marine-economies-programme>

See NOC website (www.noc.ac.uk) and in particular our activities for CMEP (talks and brief report from this workshop will be available for download here).

<https://projects.noc.ac.uk/cme-programme/>

Here you will find News items and you can download

- Reports and Guidance notes (see below)
- Videos

For those interested in more details about modelling (Portable NEMO)

See https://github.com/NOC-MSM/Belize_workshop/wiki

For information about Earth Observation/Satellite Remote Sensing, see

- Remote sensing – EO4SD <https://noc.ac.uk/projects/eo4sd> and <http://eo4sd-marine.eu/>

NOC's MOOC (Massive Open Online Course) for the Western Indian Ocean demonstrates the potential for studies of ocean processes affecting fisheries to be used in management

- <https://www.solstice-wio.org/outputs/solstice-mooc/upgrade>
- This link will take you to a sign-up page. The course has been extended for you until the end of 2020

Reports and Guidance Notes from CME Programme work in St Vincent (these can be downloaded from NOC website or provided on request)

Becker, A., Bricheno, L., Brown, J. and Wolf, J. (2020) Guidance Note on the Application of Coastal Monitoring for Small Island Developing States. National Oceanography Centre Research and Consultancy Report, no. 74. National Oceanography Centre, UK, 40pp.

Jevrejeva, S., Matthews, A. and Williams, J. (2019) Development of a coastal data hub for stakeholder access in the Caribbean region. National Oceanography Centre Research and Consultancy Report no. 67. National Oceanography Centre, UK, 27pp.

National Oceanography Centre (2018) Monitoring and modelling the coastal zone: A 3 day interactive training course and stakeholder workshop. Technical report, 2018.

National Oceanography Centre (2019) Monitoring and modelling for coastal zone management conference and technical workshop report. Technical report.

Phillips, B., Brown, J., Becker, A. and Plater, A. (2019) Current and future vulnerability of Argyle International Airport to combined river & coastal flooding. National Oceanography Centre Research and Consultancy Report, no. 68. National Oceanography Centre, UK, 65pp.

Prime, T., Brown, J. and Wolf, J. (2019) St Vincent – Black Point Beach Modelling. National Oceanography Centre Research and Consultancy Report, no. 70. National Oceanography Centre, UK, 26pp.

Williams, J., Matthews, A. and Jevrejeva, S. (2019) Development of an automatic tide gauge processing system. National Oceanography Centre Research and Consultancy Report no. 64. National Oceanography Centre, UK, 26pp.

Wilson, C., Harle, J. and Wakelin, S. (2019) Development of a regional ocean model for the Caribbean, including 3D dynamics, thermodynamics and full surface flux forcing. National Oceanography Centre Research and Consultancy Report, no. 65. National Oceanography Centre, UK, 40pp.

Wolf, J., Williams, G., Ayliffe, J. (2019) Deployment of an AWAC off the east coast of St Vincent, 2018-2019. National Oceanography Centre Research and Consultancy Report, no. 69. National Oceanography Centre, UK, 22pp.

Wolf, J., Becker, A., Bricheno, L., Brown, J., Byrne, D., De Dominicis, M. and Phillips, B. (2020) Guidance Note on the Application of Coastal Modelling for Small Island Developing States. National Oceanography Centre Research and Consultancy Report no. 73. National Oceanography Centre, UK

Journal Publication

Jevrejeva, S., Bricheno, L., Brown, J., Byrne, D., De Dominicis, M., Matthews, A., Rynders, S., Palamisaly, H., and Wolf, J. (2020) Quantifying processes contributing to marine hazards to inform coastal climate resilience assessments, demonstrated for the Caribbean Sea. *Natural Hazards and Earth System Sciences*, 20, 2609–2626, doi: 10.5194/nhess-20-2609-2020