The Caribbean Digital Twin prototype (CDTp) & Data Hackathon

DATA WORKSHOP/HACKATHON ANNOUNCEMENT

Date: 2nd - 4th October 2023 **Venue:** Oranjestad, Aruba.

Language: English

Participants: MSP-practitioners, Planners, Data experts, Policy Makers in the CARICOM region.

Organizers: UNEP-Global Environment Monitoring Services on ocean and coasts (GEMS-Ocean), UNEP's Cartagena Convention Secretariat/Caribbean Environment Programme (CEP), UNESCO-IOC (IOCARIBE), the Breda University of Applied Sciences (BUas) with the support of the Dutch Ministry of Infrastructure and Water Management.

The Caribbean Digital Twin prototype (CDTp) is an innovative initiative that aims to improve our understanding of the Caribbean region's coastal and ocean environment and ultimately inform policy making. The CDTp will be supported by a Data Hackathon in the region, which will bring together experts and stakeholders to analyse and interpret data collected in the region and understand the constraints and opportunity for the development of the prototype. The hackathon will help identify the critical environmental factors, including the state of the ocean, the health of the marine ecosystem and the impact of human activities on these ecosystems. The results supported by capacity building activities in the region will be used to develop a digital twin prototype that can be used to monitor, model, and manage the use of the region's coastal and marine ecosystems.

A two day and half workshop/ data hackathon will be held on the margins of the Cartagena Convention (CoP) to be held in Aruba, hosted by the Dutch island, in the Caribbean Sea. Focusing on the Caribbean Community (CARICOM), the workshop will bring together MSP-practitioners, Planners, Data experts, Policy makers and other interested stakeholders to discuss the building of a Caribbean Digital Twin prototype which will try to integrate existing sources of data and information from a range of stakeholders to provide a comprehensive and almost real-time view of the state of the Caribbean's coastal and marine environment. Focusing on Marine Spatial Planning, Ocean Forecasting, Disaster Risk Reduction, Tourism and Blue Economy among others, the MSP Challenge Tool developed by the BUas[1] will be used for the prototype and the hackathon development such as simulation, 3D modelling and data visualization software. The pilot aims to support sustainable development, tackle pollution issues, enhance resilience to the impacts of climate change, and promote the conservation of the region's unique coastal and marine biodiversity, establish links with the "Kunming-Montreal Global Biodiversity Framework" (GBF) and the results will be showcased through a regional MSP Forum convened by IOCARIBE. This will provide support to ongoing efforts by the UNEP Cartagena Convention Secretariat, the UNESCO-IOC Caribe, and other regional and sub-regional intergovernmental organisations to develop periodic state of environment reports for the coastal and marine environment of the Wider Caribbean region., and contribute to global assessment and State of Ocean reporting processes.

[1] Breda University of Applied Science

Partners: Mercator Ocean International (MOi) and the OceanPrediction Decade Collaborative Centre (OP DCC), World Resources Institute (WRI), Royal Netherlands Meteorological Institute (KNMI), Netherlands Institute for Sea Research (NIOZ), ESRI, Caribbean Community Climate Change Centre (CCCCC), University of West Indies (UWI), Caribbean Institute for Meteorology and Hydrology (CIMH), Caribbean Coastal Data Centre (CCDC), Caribbean Community (CARICOM), Organization of Eastern Caribbean States (OECS) UNEP's GRID centres (Geneva and Arendal), Global Ocean Observing System (GOOS), UNEP-World Conservation Monitoring Center (WCMC), Digital Twins of the Ocean (DITTO), CoastPredict, International Union for Conservation of Nature (IUCN), The Nature Conservancy (TNC), National Oceanic and Atmospheric Administration (NOAA), International Atomic Energy Agency (IAEA) and Network of Regional Laboratories (REMARCO), Association of Caribbean States (ACS), Instituto de Investigaciones Marinas y Costeras (INVEMAR), Institute of Marine Affairs (IMA), Ocean InfoHub, HUB Ocean and FUGRO.

Objectives:

1. To encourage innovation and collaboration: it provides the opportunity for experts and stakeholders from different fields (social, economic and environmental) to come together and collaborate on finding solutions to complex environmental issues.
2. To mobilize the access to, availability and use of existing data and information: the region has a wealth of existing data and information on its coastal and ocean environments, but this information is often siloed and not easily accessible. The hackathon provides a platform for experts and stakeholders to share and analyse this information, which will inform the development of the digital twin prototype.
3. To identify critical environmental factors: the event will help identify critical environmental factors that are essential for the development of the digital twin prototype. By focusing on these indicators, the digital twin prototype can provide decision-makers with a more comprehensive understanding of the state of the region's coastal and ocean environments and support evidence-based policy and decision-making.
4. To engage and empower stakeholders: the hackathon provides an opportunity to engage and empower a broad range of stakeholders in the development of the digital twin prototype. By involving stakeholders from different sectors, such as government, academia, research, NGOs, youth and the private sector, the digital twin prototype can be tailored to meet the needs and priorities of all stakeholders.
5. To identify data gaps and constraints, opportunities for synergies and capacity building needs.

Outcomes:

To launch the development of a Digital Twin prototype that can be used to monitor, model, and manage the use of the region's coastal and marine ecosystems. Establish a network and initiate the compilation of data sources and resources as well as best practices in the process of establishing the CDTp.

The Caribbean Digital Twin prototype will try to integrate existing sources of data and information from a range of stakeholders to provide a comprehensive and almost real-time view of the state of the Caribbean's coastal and marine environment. By doing so, the pilot aims to support sustainable development, tackle pollution issues, enhance resilience to the impacts of climate change, and promote the conservation of the region's unique coastal and marine biodiversity.

Tool: The Marine Spatial Planning Challenge developed by BUas will be used during the hackathon to implement these activities. It provides a realistic and immersive simulation environment that allows stakeholders to evaluate different spatial planning scenarios and make informed decisions about the management of the use of the coastal and ocean environments and its resources. Its user-friendly interface, customizable nature, and participatory approach makes it a useful tool for engaging stakeholders and developing evidence-based policies and strategies. The platform is data driven which means that it is adaptable to different regions of the world, provided there is available and accessible data. The platform's architecture also allows to couple it with other models and simulations to tackle other issues such as climate change and water pollution.