

European Research Area for Climate Services ERA4CS European Research Area for Climate Services Transnational Collaborative Research Services ERA4CS Topic A – Researching and Advancing Climate Services Development by Advanced co-development with users

INtegrating Sea-level Projections in climate services

for coastal adaptaTION



INSeaPTION Global User Workshop

Global Coastal Climate Services: Experiences and Outlook

Final Report

June 11, 2020

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Global Climate Forum









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Front matter

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Executive summary

This report documents the outcomes of the final workshop on global coastal climate services of the INSeaPTION project held virtually on June 9th, 2020. The first section of the report introduces the workshop concept note. The workshop focused on further developing and refining a typology of global decisions requiring sea-level rise information developed in the INSeaPTION project. This typology is thus presented in the second section of the Report. Structured around this typology of global decisions, the workshop brought together 25 coastal and sea-level rise experts and stakeholders from both the public and private sectors in a range of different country contexts with the aim of sharing experiences and insights on Global Coastal Climate Services. Section 3 thus reports on roundtable discussions in the workshop focused on the typology and future global coastal climate service development. Key new additions to the typology where suggestions to include a developing country national planning perspective, a focus on system relevant actors for global trade and food security, and a focus on financial regulations in the context of increased attention to corporate disclosures of physical risks.



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1. Introduction: Workshop concept note

The aim of this INSeaPTION Global User Workshop was to assess Global Coastal Climate Services: Experiences and Outlook. Due to the Covid19 outbreak, the workshop could not be organized in Berlin as initially planned, so that it has been held virtually on 9th June 2020.

INSeaPTION is an international transdisciplinary research project that, over the course of the last three years, co-designed coastal climate services together with a range of users. Under climate service, we understand any effort to deliver information and tools that support addressing the specific decision-problems users face. One focus lay on coastal climate services for global users. By global users, we mean users that make decisions that rely on information on SLR and its impacts at global scales (e.g., coherent information for many locations, regions or countries around the globe). Such global users and global decision-problems include:

- Global climate policy makers, such as, national governments or development banks:
 - making *mitigation* policy decisions, e.g. setting global temperature and SLR targets.
 - making *adaptation* policy decisions, e.g. deciding on the volume of funding needed for adaptation or Loss and Damage.
 - making climate research programming decisions, e.g., which aspect of sea-level rise research should be targeted in order to make better coastal decisions.
- Multi-national corporations, holding physical assets in the coastal zone in many countries, concerned with risks to their physical assets, as well as, supply chain risks.
- Financial institutions including:
 - Investors concerned with risks of SLR to their portfolio of physical assets.
 - Insurers issuing insurance policies for assets exposed to coastal risks.
 - Banks issuing mortgages for assets exposed to coastal risks.
 - Rating agencies assessing risks for individual projects, companies, or countries in order to rate financial instruments issued by these entities. For example, a ratings agency may assess coastal risk exposure of an individual coastal development project in order to rate the project bonds associated to that project. It may also assess coastal risk exposure for a country in order to rate the sovereign risk of that country.
 - Development banks concerned with climate-proofing infrastructure projects they finance.

A final project workshop will bring together scientists and users to share and reflect upon the experiences gained in INSeaPTION. This workshop serves two purposes. First, the workshop presents global climate services developed in INSeaPTION, in order to distill lessons from developing these services and explore their wider applicability.





Second, the workshop aims to stimulate discussion on the future development of global coastal climate services more broadly, and specifically within the new European Research project PROTECT, which aims to close important knowledge gaps on the contribution of the melting of the ice-sheets of Greenland and Antarctica to global mean sea-level rise.

To address the second aim, we invite several presentations both from global users on the current decision contexts they are facing and further approaches directly relevant to global users of interest identified in INSeaPTION, but not yet addressed in the timeframe of the project. Specifically, we thereby focus on climate services that take into account that sea-level rise impacts propagate through global economic networks (e.g., supply chains) and financial networks. These climate services are of specific relevance to global users, but have hardly been explored so far.

Finally, based on these inputs, the workshop will distill views on promising avenues for futures development of global coastal climate services. A key workshop outcome will be a position paper on precisely this future development of regional and global coastal climate services.

2. A typology of global decisions requiring sea-level rise (SLR) information

This section presents the Typology of global decisions requiring sea-level rise information, for which an abstract has been submitted to a Special Issue of the Journal Frontiers in Marine Sciences.

Abstract

Climate services bring together scientists with stakeholders in a range of sectors to develop methods and tools for informing climate-related decisions. To date, these activities focus largely on local or sub-national levels, with little attention to the global level. Yet many potential global climate services exist, as a number of decisions require information on climate impacts at global scales (e.g., coherent information for many locations, regions or countries around the globe). For instance, development finance institutions make decisions on climate finance allocation between countries. Further, both the global financial system and global supply chains are becoming increasingly interconnected, exposing operational decisions of companies, financial institutions, and governments to climate risk in multiple locations in different world regions as well as to indirect climate impacts. To further the development of such global climate services, we present here a typology of decisions that rely on global climate information and its impacts. The aim of the typology is to characterise different decisions, and identify the global climate information needs for addressing them. Our analysis is based on a co-development process in the INSeaPTION project with potential global users of coastal climate services (i.e. governments, insurers, investors, ratings agencies, etc.) conducted through a series of workshops. We thus illustrate the typology through examples taken from the domain of coastal risk, however, our results are applicable for climate risks more broadly. We distinguish 7 types of decisions making use of global climate information. At a top-level, we distinguish between 'multilateral climate



policy decisions', and 'portfolio decisions in multiple different countries'. Multilateral climate policy decisions are taken with regard to either 'mitigation targets' or 'multilateral adaptation' decisions. Portfolio decisions regard either 'choice of location decisions' of a physical asset or 'choice of financial asset decisions'. Choice of location decisions can be further distinguished, as to whether they involve 'direct climate risks', 'supply chain risks' or 'financial network risks'. For each decision type, suitable decision frameworks, climate and impact information needs, e.g. probabilistic scenarios, high-end scenarios, etc., are then indicated based on the characteristics of decision type. Below in, Table 1, we illustrate each of the types identified with current realworld practice from the coastal domain. Our typology thus provides an entry-point for global climate service development by pointing to promising directions of research for supporting global decision-making.







Table 1. A typology of global decisions requiring sea-level rise information

Type Sub-type	Multilateral climate policy decisions Portfolio decisions involvin countries • total exposure of people, assets, etc. in many countries is relevant • Selected physical fi assets across countries • Mostly public decisions • Mostly private decisions Choice of mitigation target Choice of multilateral adaptation measures across or design such that			lateral climate policy decisions total exposure of people, assets, etc. in many countries is relevant Mostly public decisions e of Choice of multilateral adaptation measures			ng multiple financial tries are disions ce of ncial assets that	
		Scoping: Assessment of multilateral climate impacts	Choice of multilateral flood risk pools	Choice of multilateral coastal protection measures	supply- chain risks are reduced	direc SLR ris reduced	ct sk is 1	SLR- induced financial network risk is reduced
Examples (time horizon)	UNFCCC negotiations on global mitigation targets (100+ years)	* WB assessing global cost of infrastructure upgrade (80 years) * Assessing large-scale migration risks *Reinsurance strategic assessment	* Caribbean Cat. Risk Pool * European Solidarity Fund	* Countries choosing a North European Enclosure Dam (100+ years); Baltic Sea only; * Countries choosing a Mediterranean enclosure dam *Geoengineering Antarctica	 * Automakers choosing assembly plant and part suppliers (10 years) * Investor choosing the second financial assets physical assets years) * Green bond assessing benefind multiple adapt projects (10-5) * Ratings agen (up to 50 year) * Multilateral choosing infra 	* Real estate compar choosir rental propert (10-15 years) oosing a backed s (up to certifier efits of tation 0 years*	hy ng ies by 30 () () () () () () () () () () () () ()	* Investor choosing a financial asset (e.g. stock, bond, etc) whereby the counterparty is exposed to SLR (up to 50 years*) g credit risk

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3. Roundtable discussion on global coastal climate services

Questions at the end of the "next steps" session

- What are we missing in this typology table?
- What global coastal climate service would you like us to develop in PROTECT? Priorities?
- Opportunities for future collaboration amongst us?

Other decisions not considered in the table

- Developing country that have no resources to do a detailed local analysis and thus uses global data
 - o National adaptation planning that have a global scope
 - This should include e.g. food security perspective
- Global decisions:
 - Private sector global associations
 - o System-level actors: which actors have the mandate for 'public good'
 - Trade-organizations
 - Food security, within the UN system
 - Electricity production and distribution involving economic activities in multiple countries
 - o Reduce systemic risk
 - PIANC (www.pianc.org): global organization of traffic, ports, etc,
 - o C40
- Which decisions are most important?
 - There are many steps before one gets down to the decisions (awareness raising)
 - Physical risk and financial disclosure \rightarrow financial regulators may be a user
- Management of networks of critical infrastruture

Future collaboration

• Adaptation w/o borders initiative

Round table discussions

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- Joanna
 - Solution-space: Paradigm shift in global climate policy
 - Has science reacted to this?
 - Multi-levels: Global and national levels:
 - Global: IPCC process
 - Local
 - Ocean-Climate Change nexus:
 - key risk for countries is loss of land borders
 - one proposal is that countries retain their land borders from 1990
 - What are the actual decisions countries are currently facing?
- Paul-Antoine
 - Companies are affected by multiple risks: physical risk, supply-chain, financial
 Policy risk, transition risk
 - But there are also potential opportunities for companies that engage early in adaptation
 - and mitigation, therefore proposing services for which the demand is expected to grow
- We either speak about
 - \circ ~ the very big picture: Global policy processes: IPCC
 - Or the very detailed picture: we can take ours to discuss a single model parameter, but is this relevant
- I think to improve our science-policy interaction we should try to meet an an intermediate level
 - Decisions individuals are facing
 - Problems? What is missing?



Which piece of information is really missing?

- Deep uncertainties in the long term sea-level rise? Different from temperature
 - We need clear indication on when we will approach the tipping point (Gael)
 - Uncertainty will remain in the future; but we are getting better in characterizing it, with potential reduction of deep uncertainties within 5 to 10 years (no consensus on this point)
 - \circ $\;$ We will make progress on early warning signals through a better understanding

Joanna:

- Policy landscape SLR
 - Implication on national borders
 - Loss & damage, particular from the islands

The topic of climate services for global coastal adaptation will require more interactions between stakeholders and scientists over the coming years. Among others, the H2020 Protect project offers an opportunity to pursue the exchanges initiated in INSeaPTION and other projects.

Acknowledgements

The INSeaPTION project wishes to thank all participants for their active and constructive contributions. We extend a particular thanks to Robert Nicholls for advising the project, as well as, to Daria Korsun for crucial support in organizing the event.



Annex I: Workshop Agenda

Tuesday 9 June				
I. What we	have			
10:30 -	Welcome and introduction to the web conference	Jochen Hinkel, GCF		
10:40	system (10min)			
10:40 -	INSeaPTION Project	Gonéri Le		
10:45		Cozannet, BRGM		
10:45 -	Types of global SLR decision problems (10min +	Sandy Bisaro, GCF		
11:05	10min discussion)			
11:05 -	Transboundary impacts of coastal risk and SLR on	Magnus Benzie,		
11:25	trade (15min + 5min discussion)	SEI		
11:25 -	Global analysis of uncertainty§ in SLR and coastal	Jeremy Rohmer,		
11:45	impacts (15min + 5min discussion)	BRGM		
11:45 –	The propagation of coastal flood damages through	Jochen Hinkel		
12:05	global financial networks under climate change (15min + 5min discussion)			
12:05 -	Lunch Break			
13:00				
13:00 -	What we will know about ice-sheets at the end of	Gael Durand,		
13:20	the PROTECT project	CNRS		
II. What do	global users need?			
13:20 -	WMO Climate Services (15min + 5min	Erica Allis, WMO		
13:40	discussion)			
13:40 -	User Context: UNFCCC (15min + 5min	Joanna Post,		
14:00	discussion)	UNFCCC		
14:00 -	Break			
14:10				

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Paul-Antoine	
Michelangeli, EDF	
	Real-Antoine Michelangeli, EDF

Annex II: Workshop participant list

Erwin Lambert	IMAU
Gonéri Le Cozannet	BRGM
Sandy Bisaro	GCF
Thomas van der Pol	GCF
Jeremy Rohmer	BRGM
Angel Amores	IMEDEA
Jochen Hinkel	GCF
Marta Marcos	IMEDEA
Daniel Lincke	GCF
Robert Nicholls	Tyndall Center, University of East Anglia
Lisa Danielson	OECD, Climate Adaptation Team
Miroslav Petkov	Parker Fitzgerald
Paul-Antoine Michelangeli	EDF UK R&D centre
Rosh Ranasinghe	IHE-Delft
Jason Lowe	Met Office Hadley Centre
Bart van den Hurk	Deltares











Michael Mullen	GCA
Dewi Le Bars	KNMI
Gael Durand	Uni Grenoble
Marta Arbinolo	OECD
Ruth Mottram	Danish Meteorological Institute
Jesse Louisor	BRGM
Joanna Post	UNFCCC
Magnus Benzie	SEI
Tamsin Edwards	King's College London



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