Summary of user requirements

Descriptive Title	Priority
Evaluate the storm-induced and the wave energy indexes by qualitative comparison/benchmarking to similar solutions currently being used as input in HR models, obtained from large-scale physics-based models	1
Evaluate the use of altimetry and wave data (unfocused & FF-SAR) retrieved from satellite for calibration and/or validation of HR numerical wave and hydrodynamical models	1
Evaluate the use of altimetry and wave data retrieved from satellite as initial condition and for assimilation in HR numerical wave and hydrodynamical models	1
Benchmark the historical trend results and analysis from EOatSEE, by comparing them with previous work that was included in IPCC reports based on 50 years of ERA5 reanalysis (including GTSMv3.0, Mog2D-G, and CCI+)	1
Benchmark the future projections results and analysis from EOatSEE, by comparing them with previous predictions made for the coming 100 years by Deltares considering IPPC climate scenarios	1
Investigate how EO-derived solutions (namely topography data) can influence risk and vulnerability analysis	1
Provide EO solutions as publicly accessible products	1
Discern the contributions between fluvial and marine-driven flooding in a compound case using EO	1
Address the timing between drivers (i.e. surge and river flow/rainfall) in compound flooding studies	1
Statistically characterise the individual contributions and the combined effect of each component of extreme coastal water levels (ECWL) from the point of view of the risk (for instance with joint-distributions)	1
Provide EO-derived updated initial conditions for flood/erosion operational numerical model, potentially improving the forecast of the coastal impacts of a subsequent storm	1

Provide coastline change data with 10 to 30m spatial resolution	1
Provide wave power index combining Hs and Tp	1
Provide Potential Hazards index combining erosion and flood indicators	1
Estimate ground motion from long time series	1
Provide digital terrain models that are capable of accurately characterizing the topography and bathymetry of small low-lying coastal environments such as islands and atolls to improve their vulnerability assessment. Employ HR satellite altimeter (ex. Sentinel-6), HR optical images, or alternatively VHR	1
Interact with the PASS-SWIO project which aims to add instrumentation and generate altimetry information around Madagascar: https://eo4society.esa.int/projects/pass-swio/.	1
Consider LNEC publications by André Fortunato et al on several scenarios of sea level rise, combined with storm surge and river discharge, for the Tagus river mouth	1
Consider longshore transport and its effects within the EOatSEE approach for long-term	1
Address cascading effects (the sequence of subsequent storms, which maximizes its effects in the long-term evolution of the coastal morphology) when studying the long-term coastal evolution	1
Consider different IPCC SLR scenarios in the future projections	1
Include the use of the coastal vulnerability indexes approach in EOatSEE	1
Study the cascade effect of extreme sea level events in the long-term coastal morphology and flooding hazards to investigate relationships between storminess (storm-induced and wave power indexes), morphology changes, and flooding risk	1
Understand how EO-derived products used in conjunction with numerical models can improve the scientific understanding of coastal processes related to extreme sea level events	1
Make a direct comparison between EO-derived and reference data which are used as input or validation for numerical models	1
Employ bathymetry from waves produced in the S2SHORES project, developed by LEGOS/CNES	1

Compare results from ENDURE approach to those provided by EOatSEE	2
Consider the impact of river flows, which are liable to be large in storms and may raise coastal sea levels, especially in estuaries	2
Provide direct measurement of wave setup with EO	2
Validate the flood extent to indirectly validate the forcing (ESLs) using EO, as well as any flood modeling components	2
Data closer to the coast during "medicans"	2
Evaluate the use of wave information acquired much closer to the coast than usual for a long-term approach	2
Derive Land Cover information from VHR images	2
Promote collaboration with ECFAS - a proof of concept for an EU-wide coastal flood awareness system. A roadmap is being written in this last stage of the project and could be a valuable source of information for EOatSEE	2
Contribute to the WRCP Grand Challenge on “Regional Sea Level and Coastal Impacts”	2
Contribute to the All Atlantic Ocean Research Alliance promoted by the EU	2
Contribute to the United Nations Decade of Ocean Science for Sustainable Development (2021-2030)	2
Contribute to CoastPredict: Observing and Predicting the Global Coastal Ocean	2
Contribute to CEOS COAST: Coastal Observations Applications Services and Tools (COAST) Ad Hoc Team	2
Contribute to Digital Twin of the Earth	2
Include a two-way interaction in the MOHID + SWAN numerical modeling approach	2

Consider that Carcavelos is usually subject to several minor management interventions, in terms of beach scraping	2
Consider Carcavelos has a partially submerged rocky platform, which may be needed to be taken into account, in a model for purely sandy beaches	2
Consider the effect of coral reefs in reducing erosion (within the short-term approach in Majuro use case through satellite-derived bathymetry)	2
Address human intervention in the short-term approach	2
Consider the strong surface currents (>2m/s) that can occur in Madagascar when modeling waves in that region	2
Explore use cases including sandy beaches with coastal works, to analyse the possible contribution to reducing the impacts of extreme events	2
Take advantage of EarthConsole: ESA Altimetry Virtual Lab (https://earthconsole.eu/) for reprocessing data on demand using advanced retracking algorithms (e.g. SAMOSA+, SAMOSA++, ALES+ SAR) and improved Unfocused & FF-SAR altimetry services	2
Consider the use of data from the CFOSAT satellite, which provides co-located wind vector fields and directional spectra of ocean waves for wavelengths larger than about 70 m, with a revisit time of 13 days	2
Provide winds and waves from C-band SAR - Sentinel 1	2
Provide the ForCE model as a practical solution to be used in consultancy work	3
Transform the EOatSEE products into solutions for practical/consultancy work	3
Provide a scientific response to the European Union Green Deal (complying with the SDGs)	3
Assess the usefulness and relevance of the solutions developed and delivered in EOatSEE for risk and vulnerability assessments with a number of engaged users, scientists, and stakeholders, directly supporting their decision making	3
Include effects from storm recurrence into the HR operational numerical models for precise forecast	3
Deliver knowledge transfer/capacity building documentation to facilitate the appropriation of the EOatSEE solutions at the local level	3

Ensure outreach submitting abstracts for conferences such as Coastal altimetry workshop (Cadiz, 6-10 February 2023), EGU, AGU, etc.	3
Assess the roughness/permeability of the soil in coastal plains, which is affected by water content, as a preconditioner for compound effects during a coastal storm (surge/waves) event	4
Foster collaboration with future projects/institutions that can provide in situ data	4
Promote cooperation with Singapore NTU focused on coastal vulnerability and ocean modeling toward tidal energy estimation	4
Interact with Group on Earth Observations (GEO) community of practice on citizen science to check if they are addressing the EOatSEE topics: https://earthobservations.org/documents/gwp20_22/GEO-CITSCI.pdf	4
Promote collaboration with Bahia Digital - almost a DT from Guanabara - historical data, in situ, remote sensing, and numerical models, and associated academic work, all available on a public website	4
Simulate underground waters as a preconditioning factor for compound extreme events	4
Explore 'cascading effects' from the operational forecasting perspective: assimilate information from reduced complexity models in HR numerical models forecast setups already in place within the project use cases	4
Gather citizen science data regarding sea state, the position of the shoreline, etc.	4
Explore how EO can support the prediction of wave runup at local scales (e.g. through the provision of HR beach geometry)	4
Include features to allow modeling nature-based solutions in reduced complexity models	4
Include the use of citizen science in EOatSEE	4
Perform studies using wave spectra, which can provide much more information than just the wave parameters	4
Perform validation of flooding extent predictions with a literature review on geological records of coastal flooding for each use case	5
Perform detection of seagrass from satellite	5

Employ coastal video imagery in conjunction with tide gauge data to identify contributions for wave setup (shoreline positions + DEM are also needed)	5
Consider complementing the EO "observations" of the wave field in the open ocean with in situ observations by surface drifters that could provide better time resolution and, occasionally, also better space resolution	5
Consider the deployment of surface drifters in river and estuary systems during the setup of an extreme event as this could improve the estimates of river discharge	5
Consider near-shore components such as kelp beds. It probably doesn't have a big impact on large-scale storm events but they do absorb a notable amount of wave energy	5
Consider the effects of erosion countermeasure aids in growing natural and living structures (marine and coastal plants, algae, etc) that can reduce the washing of beaches and erosion	5
Include effects from vegetation (kelp, seagrass, mangrove) into the modeling of long-term impacts on coastal morphology	5
Include geological records information on extreme events from the last few thousand years - important to understand the rare extreme events	5
Perform socio-economic analysis for exposure risk assessment - at least include economic information from previous work whenever it is available	5
Understand local tipping points and identify impacts from extreme events using resources from social media	5