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Milestone TITLE:
JERICO-S3 MS31 Inventory of coastal citizen science initiatives

Milestone: **MS31**

WORK PACKAGE N° and NAME: WP6 - Data management for multidisciplinary coastal data

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DOCUMENT TECHNICAL DESCRIPTION

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JERICO-S3 MILESTONE

Joint European Research Infrastructure network for Coastal Observatory
Science, Services, Sustainability

Milestone n° WP and full title	JERICO-S3 MS31 – WP6 – Inventory of coastal citizen science initiatives
Description	This document documents a first inventory of citizen science initiatives for coastal observation. We list the ones with potential for cooperation and linkage to JERICO-S3 activities, and a realistic approach for a more complete overview and interaction during the project.
Lead beneficiary	MARIS
Lead Authors	Peter Thijsse (MARIS), Patrick Gorringe (SMHI)
Contributors	Patrick Gorringe (SMHI)
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REVISION HISTORY

Revision	Date	Modification	Author
V0.1	9.12.2020	Framework with first content	Peter Thijsse
V0.2	13.01.2021	Addition of inventory and content	Patrick Gorringe, Peter Thijsse
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APPROVALS

	Name	Organisation	Date	Visa
Coordinator	Laurent Delauney	Ifremer	03/03/2021	LD
WP Leaders	Peter Thijsse	MARIS		PT
	Veronique Creach	CEFAS	01/02/2021	VC

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Diffusion list			
Consortium beneficiaries	Third parties	Associated Partners	other
X			

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1. Introduction

The JERICO-S3 project aims at strengthening the European network of coastal observatories providing a powerful and structured European Research Infrastructure dedicated to observe and monitor the complex marine coastal seas and to:
(i) provide services for the delivery of high quality environmental data,
(ii) access to solutions and facilities as services for researchers and users,
(iii) create product prototypes for EU marine core services and users,
(iv) support excellence in marine coastal research to better answer societal and policy needs.

Citizen science initiatives are more and more common, and also in the coastal marine area there are at national/regional levels some interesting concepts. Integrating Citizen science data, and connecting to the initiatives, fits in the main objectives of JERICO-S3 when it comes to innovative monitoring strategies and involvement of the citizen (communities) as stakeholder to the JERICO-RI.

Citizen science activities in the coastal area allow citizens to participate in monitoring their environment, leading to education, "empowerment" and a raise of awareness. The value of awareness raising, education and communication is rather well acknowledged, however, when it comes to the use of the data there is a skepticism among policy makers and scientists and steps will be needed to change the behaviour and attitude towards citizen science data. Within the JERICO-S3 project we can take some small steps with limited budget, which can later be expanded within the RI.

Under task 6.1 an inventory will be made of existing initiatives that collect coastal data in close cooperation with WP3/4 and WP10. WP6 will first provide an initial overview in this MS31 of available initiatives and resources relevant to coastal observation. Where possible reference to a website with data archives is provided. The document will conclude with the approach how the list will be further expanded and analysed, how citizen science will be promoted within the project, and how D6.11 will be constructed in M48.

2. Creating a win-win situation

As already mentioned in the introduction citizen science activities with a coastal observation component and active at national and/or regional level are already quite abundant. They allow citizens to participate in monitoring their environment, and when well executed they will be leading to education, citizen "empowerment" and a raise of awareness of environmental and climate changes. However, many initiatives fail to achieve their full potential, and therefore studies have been made how that could be achieved. An interesting list of ten principles for successful citizen science is forthcoming from a well-known study: https://osf.io/xpr2n/

Ten principles for successful citizen science:

1. *Citizen science projects actively involve citizens in scientific endeavour that generates new knowledge or understanding. Citizens may act as contributors, collaborators or as project leaders and have a meaningful role in the project.*
2. *Citizen science projects have a genuine science outcome. For example, answering a research question or informing conservation action, management decisions or environmental policy.*
3. *Both the professional scientists and the citizen scientists benefit from taking part. Benefits may include the publication of research outputs, learning opportunities, personal enjoyment, social benefits, satisfaction through contributing to scientific evidence, for example, to address local, national and international issues, and through that, the potential to influence policy.*
4. *Citizen scientists may, if they wish, participate in multiple stages of the scientific process. This may include developing the research question, designing the method, gathering and analysing data, and communicating the results.*
5. ***Citizen scientists receive feedback from the project. For example, how their data are being used and what the research, policy or societal outcomes are.***
6. ***Citizen science is considered a research approach like any other, with limitations and biases that should be considered and controlled for. However unlike traditional research approaches, citizen science provides opportunity for greater public engagement and democratisation of science.***
7. *Citizen science project data and metadata are made publicly available and where possible, results are published in an open-access format. Data sharing may occur during or after the project, unless there are security or privacy concerns that prevent this.*
8. ***Citizen scientists are acknowledged in project results and publications.***

9. *Citizen science programmes are evaluated for their scientific output, data quality, participant experience and wider societal or policy impact.*
10. *The leaders of citizen science projects take into consideration legal and ethical issues surrounding copyright, intellectual property, data-sharing agreements, confidentiality, attribution and the environmental impact of any activities.*

The value of awareness raising, education and communication is rather well acknowledged, but when it comes to the use of the data (point 6), there is often skepticism among policy makers and scientists. Therefore there are also problems in feedback from the project to the citizen of how the data is being used (point 5), and there is no acknowledgement (point 8) if the data is being used. These are points where the JERICO-S3 project can take some small steps to support the change of behaviour and attitude towards citizen science with limited budget, which can later be expanded within the RI. How, will be documented more in chapter 4.

3. Inventory of relevant citizen science initiatives

Collecting relevant initiatives is not an easy task as they are many, and in particular many local ones, around. The following document has been the starting point, apart from browsing web resources:
https://www.marineboard.eu/sites/marineboard.eu/files/public/publication/EMB_PP23__Citizen_Science_web.pdf

The following criteria have been applied when checking the European Marine Board (EMB) directory and other sources:

- Parameters should be
  - physical parameters
  - chemical parameters
  - biological, only micro so plankton species, not the macro biodiversities like fish/jellyfish
  - plastics/litter
- Still operational, with an active URL
- coastal related concepts

title	url	summary	theme
T-MEDNet	https://t-mednet.org/	**T-MEDNet** initiative is devoted to develop an observation network on climate change effects in marine coastal ecosystems by spreading the acquisition of standard monitoring protocols on seawater temperature and biological indicators over large-scale and long-term.	Climate change effects
Bering Data Collective	https://berringdatacollective.com/	Ocean data from fishing gear: Connecting and benefiting fishermen, science and maritime industries.	Temperature, salinity profiles and possible other parameters
Eyeonwater	www.eyeonwater.org	Water quality related concept (originated from FP7 Citclops.eu), measuring water colour as basis, plus	Water colour, transparency

		transparency with secchi disk and potentially more parameters with a measurement kit. Global coverage.	
Beachwatch	https://www.mcsuk.org/beachwatch/	Beachwatch is a UK national beach cleaning and litter survey programme	Litter surveying programme
Big Sea Survey	http://www.sapphirecoastdiscovery.com.au/research/oceans-connected/the-big-sea-survey/	Gathering ecological data on the range and distribution of coastal marine species	Marine species
Citclops	http://www.citclops.eu/home	Assessing water environmental properties, using an app to photograph and classify the colour	Coast and Ocean Optical Monitoring
Coastwatch Europe	http://coastwatch.org/europe/	Coastal area surveys addressing wide variety of topics	Various
My Ocean Sampling Day	https://www.microb3.eu/myosd/	Global campaign to take coastal water samples for various environmental parameters	Various
PlanktonID	https://planktonid.geomar.de	Volunteers help to identify plankton organisms in photographs via an online game	Plankton images
Plankton Planet	https://planktonplanet.org/	Sailors sample seawater and identify plankton species	Plankton
Plankton Portal	https://www.zooniverse.org/projects/kelseyswieca/plankton-portal/	Online-based programme where users identify plankton species in photographs	Plankton
Diveboard	https://www.diveboard.com/	Online platform for scuba divers to share their dives and data collected from dive computers	Various
Secchi Disk Study	www.secchidisc.org	A Secchi Disk is used to measure water clarity as an indicator	Phytoplankton

		of phytoplankton abundance	
Outdoor Portofino	https://www.outdoorportofino.com/en/		
Smartfin	https://smartfin.org/	Smartfin is developing surfboard fins with sensors that will measure multiple ocean parameters.	Coastal water quality data
Plastic origins	https://www.plasticorigins.eu/	mapping plastic pollution in european rivers	Plastics

This list will be updated and expanded during the project as new initiatives may popup, or be brought forward by project partners.

4. Approach for achieving integration of citizen data (D6.11)

This document MS31 introduces the context of the action, and a first list of relevant initiatives. The following steps are foreseen to reach D6.11 "Achieving integration of citizen science data" in Month 48:

- This document will be shared with PSS and IRS partners, and discussion in the JERICO All region workshop.
- This discussion will lead to updates, identification of new initiatives and selection of priority initiatives to contact.
- Communication will be opened with the selected initiatives.
- WP6 partners will analyse the data of priority initiatives, their data management practices, and suggest solutions to enable the datastreams to be made accessible and useful for JERICO-S3 data products.
- Where possible, cooperation will be started with selected initiatives to feed their data as input to JERICO-S3. For the other initiatives the action will be to make a link, and promote them in the JERICO community. Due to a limited budget that is the maximum to be done.
- Product developers involved in WP3 IRS and WP4 PSS will check possible integration of the data in the foreseen products, and when done the results will be published, or at least connected to, from the website or app of the citizen science initiative (D6.11).

In this way JERICO-S3 will make the first steps in demonstrating acceptance of citizen science data, creating a feedback loop, and thereby being an example for the wider community.