



User interfaces available

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1. Introduction

In the last deliverable from WP4 (“Innovative modelling tools”), our overall aim was two-fold: (i) to provide engaging means to communicate our results in an innovative way; and (ii) increase the public awareness of the Marine Strategy Framework Directive (MSFD) in general. Applications (‘apps’) for smart-phones and tablets are considered useful communication tools, which are able to reach out further than our scientific reports and publications do, including the society at large, especially people interested in scientific and marine topics.

We describe here the two user interfaces developed in order to:

1. disseminate to a wide audience complex products generated in the DEVOTES project (DEvelopment Of innovative Tools for understanding marine biodiversity and assessing good Environmental Status) (Section 2.1). Results from WP4 were considered for inclusion in the Apps along with related information from across the project.
2. attract the attention of the public (including those scientists not involved in marine environmental assessments) in assessments of Good Environmental Status (GES) in European regional seas (Section 2.2)

This deliverable is linked to Task 4.4.1 “Provide user interfaces”, within WP4 and the milestone report MS19 “User interfaces available”.

2. Applications developed

First of all, the partners involved in the development of the apps have identified the interested users, from people directly involved in research to the general public, trying to identify different target groups. Second, the partners participating in the development of the apps have created storyboards to explore, plan and design the apps. Ecoeach led the technical development of the apps.

Two different applications were developed, each of them dedicated to specific target groups, both of them using the scientific results of the project but they are inherently linked. The app DevoMAP focuses on people directly involved in research and policy, to support the implementation of the MSFD. The app MY-GES targets people interested in our achievements among the general public. By targeting the general public, we aim to make society aware about the MSFD, its implementation and assessments of environmental status.

2.1. Application “DevoMAP”

This app is dedicated to researchers, technicians, stakeholders and policy makers directly involved in marine ecological monitoring programs, the MSFD and its implementation. We chose to make available spatial outputs from complex studies since mapped products are particularly engaging.

With this app, the user can select a specific site and get information about it using the maps: such as what available data (from physical properties of ecosystems to communities) there are, how many and which type of habitats, lists of indicators and links to relevant publications and reports. The app also allows the user to overlay different maps to gain data and information. For each of the areas covered by the maps, the app can link to related web pages of the Regional Sea Conventions and the European Union (EU). As researchers are one of the main target groups, the app will report contact information for the relevant data managers (owners or those responsible for the data), to encourage further and future scientific collaboration. This app will point to the Nested Environmental status Assessment Tool (NEAT) for integrative assessment, and developed by the project.

2.2. Application “Make Your Assessment of Good Environmental Status (MY-GES)”

This app is dedicated to the general public, with the aim of increasing awareness about GES, environmental EU policies, environmental assessment and related scientific knowledge. The general logic structure of the app will be structured in 3 levels:

- i) what the science knows about the environment I am observing?

- ii) what I see today in this environment? and
- iii) how could I assess the environmental status today?

First of all, the user can select a specific site and then he/she can follow a structured path to make a simple assessment of the environmental status of the site. The assessment will be conducted through a series of questions (elaborated according to the data/maps available for each site). The answer will correspond to “what science knows about each site”, i.e., with the maps elaborated in DEVOTES. In addition, the user can overlay the maps obtaining simultaneous results of different variables, get additional general information on each site and on which research institute has produced the maps. This app will also point to the NEAT tool developed by the project and provide a simple description of the approach.

3. Maps used

For the purpose of the planned applications, maps have been selected *a-priori* among those available, either in our web page (<http://www.devotes-project.eu/software-and-tools/>) or in the different publications made by DEVOTES, and accessible in Zenodo (<https://zenodo.org/collection/user-devotes-project>). The selection has been necessary, since smartphones have a limited capability in dataset management and storage. On the basis of the size of the datasets and technical characteristics of the most popular devices, 35 maps have been selected to be used (Annex 1). Among available maps, 10 resulted not useful to be converted and visualized on smartphones display (Annex 2). These maps will be further re-elaborated in order to make them suitable and available for the next versions of the applications (see Section 4).

4. Applications availability and upgrading

The apps are available from the DEVOTES website at the link <http://www.devotes-project.eu/app/>. At this stage, the apps are in beta version, which is an early version containing most of the major features, but not yet complete. These versions have been preliminary released in order to test them and collect feedbacks from the involved partners. After this stage of development, the apps will be continuously upgraded during the life of the project and open to the society at large.

5. List of annexes

Annex 1 - List of maps used for the Apps

N. map	Referent	Institution	File name	Area	Description (in the Apps tapping "Details")
1	C. Lynam	CEFAS	lfi00to02.geojson	North Sea	Spatial distribution of the large fish indicator (LFI) for the North Sea fish fauna, from 2000 to 2002
2	C. Lynam	CEFAS	lfi10to12.geojson	North Sea	Spatial distribution of the large fish indicator (LFI) for the North Sea fish fauna, from 2010 to 2012
3	C. Lynam	CEFAS	lfi83to85.geojson	North Sea	Spatial distribution of the large fish indicator (LFI) for the North Sea fish fauna, from 1983 to 1985
4	C. Lynam	CEFAS	otter1990sGrouped.geojson	North Sea	Spatial distribution of international fishing effort, in hours fishing, in the North Sea by demersal otter trawlers, averaged by year over the periods 1990–1995
5	C. Lynam	CEFAS	otter2000sGrouped.geojson	North Sea	Spatial distribution of international fishing effort, in hours fishing, in the North Sea by demersal otter trawlers, averaged by year over the periods 2003–2012
6	C. Lynam	CEFAS	beam1990sGrouped.geojson	North Sea	Spatial distribution of international fishing effort, in hours fishing, in the North Sea by beam trawlers, averaged by year over the periods 1990–1995
7	C. Lynam	CEFAS	beam2000sGrouped.geojson	North Sea	Spatial distribution of international fishing effort, in hours fishing, in the North Sea by beam trawlers, averaged by year over the periods 2003–2012
8	C. Lynam	CEFAS	common-skate_1900s.geojson	North Sea	Spatial distribution of skate common species, in % of incidence, over the period 1902-1909, in the North Sea
9	C. Lynam	CEFAS	common-skate_2000s.geojson	North Sea	Spatial distribution of skate common species, in % of incidence, over the period 2000-2013, in the North Sea
10	C. Lynam	CEFAS	lesser-spotted-dogfish_1900s.geojson	North Sea	Spatial distribution of lesser-spotted dogfish, in % of incidence, over the period 1902-1909, in the North Sea
11	C. Lynam	CEFAS	lesser-spotted-dogfish_2000s.geojson	North Sea	Spatial distribution of lesser-spotted dogfish, in % of incidence, over the period 2000-2013, in the North Sea

12	C. Lynam	CEFAS	smooth-hounds_1900s.geojson	North Sea	Spatial distribution of smooth-hound, in % of incidence, over the period 1902-1909, in the North Sea
13	C. Lynam	CEFAS	smooth-hounds_2000s.geojson	North Sea	Spatial distribution of smooth-hound, in % of incidence, over the period 2000-2013, in the North Sea
14	C. Lynam	CEFAS	spotted-ray_1900s.geojson	North Sea	Spatial distribution of spotted ray, in % of incidence, over the period 1902-1909, in the North Sea
15	C. Lynam	CEFAS	spotted-ray_2000s.geojson	North Sea	Spatial distribution of spotted ray, in % of incidence, over the period 2000-2013, in the North Sea
16	C. Lynam	CEFAS	spurdog_1900s.geojson	North Sea	Spatial distribution of spurdog, in % of incidence, over the period 1902-1909, in the North Sea
17	C. Lynam	CEFAS	spurdog_2000s.geojson	North Sea	Spatial distribution of spurdog, in % of incidence, over the period 2000-2013, in the North Sea
18	C. Lynam	CEFAS	starry-ray_1900s.geojson	North Sea	Spatial distribution of starry ray, in % of incidence, over the period 1902-1909, in the North Sea
19	C. Lynam	CEFAS	starry-ray_2000s.geojson	North Sea	Spatial distribution of starry ray, in % of incidence, over the period 2000-2013, in the North Sea
20	C. Lynam	CEFAS	thornback-ray_1900s.geojson	North Sea	Spatial distribution of thornback ray, in % of incidence, over the period 1902-1909, in the North Sea
21	C. Lynam	CEFAS	thornback-ray_2000s.geojson	North Sea	Spatial distribution of thornback ray, in % of incidence, over the period 2000-2013, in the North Sea
22	C. Lynam	CEFAS	tope_1900s.geojson	North Sea	Spatial distribution of tope, in % of incidence, over the period 1902-1909, in the North Sea
23	C. Lynam	CEFAS	tope_2000s.geojson	North Sea	Spatial distribution of tope, in % of incidence, over the period 2000-2013, in the North Sea
24	C. Lynam	CEFAS	Benthivore.geojson	North Sea	Spatial distribution of mean catch-rate (kg per km ²) of benthivore species
25	C. Lynam	CEFAS	Benthopiscivore.geojson	North Sea	Spatial distribution of mean catch-rate (kg per km ²) of benthopiscivore species
26	C. Lynam	CEFAS	LFI.geojson	North Sea	Spatial distribution of Large Fish Indicator (LFI): dimensionless ratio of the biomass of large (>40cm) fish to total fish catch in the survey, in the North Sea
27	C. Lynam	CEFAS	mean.TL.geojson	North Sea	Spatial distribution of Mean Trophic Level (MeanTL) dimensionless, in the North Sea
28	C. Lynam	CEFAS	MML.geojson	North Sea	Spatial distribution of Mean Maximum Length (MML) in cm, for demersal fish and elasmobranchs, in the North Sea
29	C. Lynam	CEFAS	Piscivore.geojson	North Sea	Spatial distribution of mean catch-rate (kg per km ²) of piscivore species
30	C. Lynam	CEFAS	Planktivore.geojson	North Sea	Spatial distribution of mean catch-rate (kg per km ²) of planktivore species

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31	C. Lynam	CEFAS	TyL.geojson	North Sea	Spatial distribution of Typical Length (TyL) in cm, for demersal fish and elasmobranchs, in the North Sea
32	C. Lynam	CEFAS	TyLpel.geojson	North Sea	Spatial distribution of Typical Length (TyLpel) in cm, for pelagic fish and elasmobranchs, in the North Sea
33	C. Wilson	oceanDTM	ecohydrodynamic_cefas.shp		
34	C. Wilson	oceanDTM	sub_regions_iecs_14_02_14.shp	All Regional Seas	
35	C. Wilson	oceanDTM	EUbiodiversity_subregion.geojson	All Regional Seas	Overall Biodiversity in EU regional seas

Annex 2 - List of maps not suitable for smartphones display and under re-elaboration for next upgraded versions of the apps

N. map	Referent	Istitution	File name	Area	Text in the Apps (tapping "Details")
1	C. Lynam	CEFAS	percentGravel.geojson	North Sea	Gravel % content in the sediment
2	C. Lynam	CEFAS	percentMud.geojson	North Sea	Mud % content in the sediment
3	C. Lynam	CEFAS	percentSand.geojson	North Sea	Sand % content in the sediment
4	F. Tempera	JRC, Institute for the Environment and Sustainability (IES)	Clias4DEV_mrgd1.shp	Mediterranean Sea	Cumulative Impact Score (Clias) of alien species in the Mediterranean Sea
5	M. Galanidi	Institute of Marine Science and Technology, Dokuz Eylul University	SA1.geojson	Eastern Mediterranean Sea	Probability of occurrence of common transitional polychaete species (archetype 1)
6	M. Galanidi	Institute of Marine Science and Technology, Dokuz Eylul University	SA2.geojson	Eastern Mediterranean Sea	Probability of occurrence of sensitive polychaete species (archetype 2)
7	M. Galanidi	Institute of Marine Science and Technology, Dokuz Eylul University	SA3.geojson	Eastern Mediterranean Sea	Probability of occurrence of indicative of disturbance polychaete species (archetype 3)
8	C. Wilson	oceanDTM	es_total.shp		
9	C. Wilson	oceanDTM	regions_iecs_14_02_14.shp		
10	C. Wilson	oceanDTM	uk_shelf_eunis.shp		