

7.9. The ecosystem services partnership visualisation tool

EVANGELIA DRAKOU, LOUISE WILLEMEN, NEVILLE D. CROSSMAN, BENJAMIN BURKHARD, IGNACIO PALOMO, JOACHIM MAES & MICHELE CONTI

Introduction

Data sharing and open access to information are key elements for successful spatial ecosystem service (ES) assessments. The development of the Ecosystem Services Partnership Visualisation Tool (ESP-VT) emerged from the aim of the ES community (namely the ESP Thematic Working Groups on Mapping and Modelling¹ ES) to systematically organise and publish ES maps and associated data for ES map users, the scientific community and the general public. The effort started in March 2013 and the *alpha* version was released in September of the same year. The ESP-VT was then tested by ES map-makers and practitioners and, after several modifications, the *beta* version was released in September 2015.

ESP-VT comes as a complement to a range of already available tools and toolkits (see Chapter 3.4) which provide researchers with the possibility of conducting ES assessments, generating and sharing ES maps and data. Such tools can be classified into three broad categories: a) the data catalogue tools, allowing users to access catalogues of ES assessments and obtain an overview of previous research in the field (e.g. the MESP database²); b) the mapping and modelling tools, that allow users to enter their own data in an existing platform and conduct

their own ES assessments (e.g. the ARIES³ and InVEST⁴ toolkits that are widely used) and c) the combined tools, that combine functionalities of both (a) and (b), usually focusing on a specific ES (e.g. the Hugin OPENESS tool⁵ or the BioCarbon Tracker⁶; see also Chapters 3.4 and 4.4) or a specific ecosystem type (see Chapter 3.5).

Within this plurality of tools, the ESP-VT was built to serve as a catalogue for ES maps. Within it, ES map-makers, map users and practitioners can find, access, view and share ES maps. This chapter briefly presents the ESP-VT, its functions, uses and actual and potential users. It describes the contribution of the ESP-VT to the ES mapping community, highlighting the benefits of data sharing.

The Ecosystem Services Partnership Visualisation Tool (ESP-VT)

The ESP-VT is an online platform available through esp-mapping.net that systematically organises ES maps and makes them available for the ES community.

¹ <http://www.es-partnership.org/>

² <http://marineecosystems-services.org/>

³ <http://aries.integratedmodelling.org/>

⁴ <http://www.naturalcapitalproject.org/>

⁵ <http://openness.hugin.com/gui>

⁶ http://www.greenergy.com/Environment/biocarbon_tracker.html

The ESP-VT consists of: a) a database where all maps and metadata are stored and b) a map and data viewer which is the user interface.

The database is structured using an adapted version of the ES mapping blueprint, developed in 2013 as a first attempt to create a checklist for ES maps and models. The database systematically organises the ES maps metadata and the contextual background of the ES maps (e.g. purpose of the study, focal biomes, ES mapped). The ES data are currently organised following the TEEB classification system (see Chapter 2.4).

Within the map and data viewer, the users can: i) search the database for available ES maps and data; ii) view and access maps and associated metadata within the viewer and iii) download the maps or data of interest. Registered users can also upload their ES maps and associated metadata. The latter

are published online after a quality control check by the system administrator.

Within the ESP-VT platform, users also have access to a user guide that allows them to understand the basic functionalities of the platform. More detailed documentation is also provided online. An overview of the tool functionalities is given in Figure 1.

ESP-VT uses and users

The ESP-VT is currently used by ES researchers to publish and share ES maps and associated metadata.

ES maps resulting from initiatives and projects such as EU MAES⁷ or ES MERALDA⁸ will be published through the platform. ESP-VT is also planned to store and visual-

⁷ <http://biodiversity.europa.eu/maes>

⁸ <http://esmeralda-project.eu/>

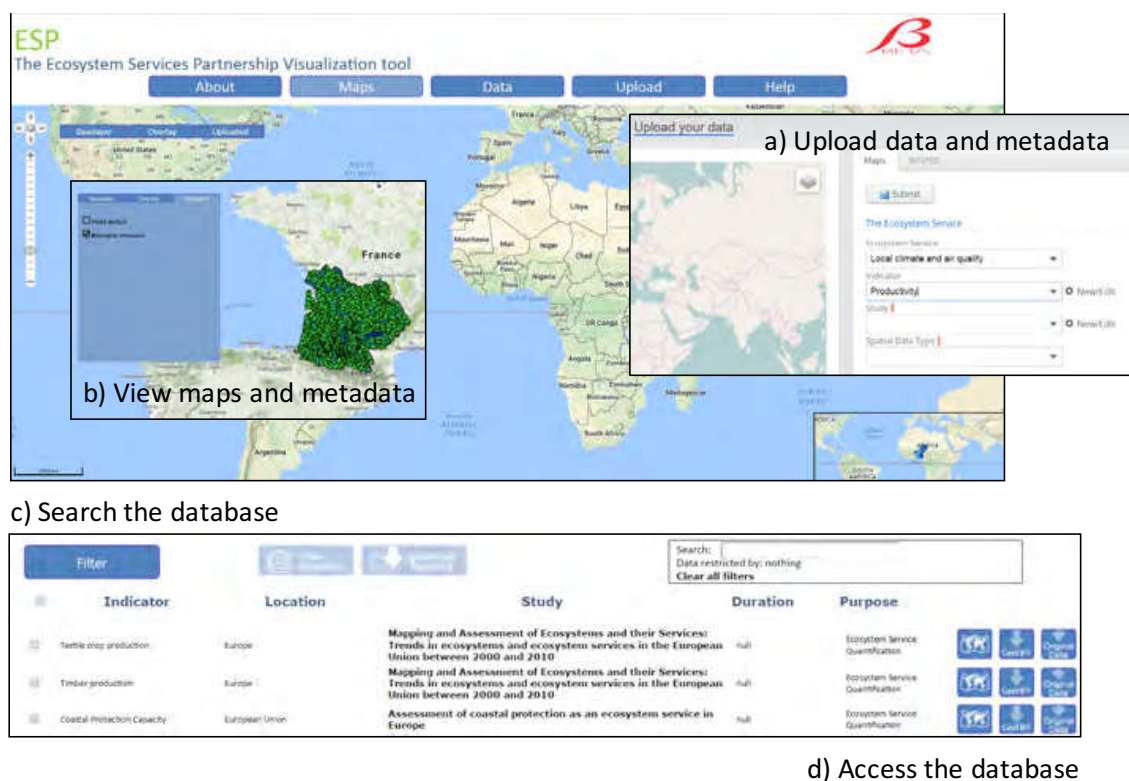


Figure 1. The basic components of the ESP-VT. The central figure is the ESP-VT starting page. On the four corners, the captions of the different interfaces show the ESP-VT web component seen by the users when they: a) upload ES maps and metadata; b) view ES maps and metadata; c) search the database and d) access the database.

ise maps and data published within the new open access data journal *One Ecosystem*⁹.

ESP-VT also serves as an ES map repository that allows researchers to search for relevant ES mapping efforts, methodologies and data used. In the future, with more functionalities added to the ESP-VT, users will be able to perform spatial queries and/or analysis within the maps stored in the database.

The ESP-VT is designed to go beyond being a tool just for the scientific community. It can be easily used by practitioners, urban planners and the general public who might require information on how ecosystem benefits are distributed in an area of interest. ESP-VT is built using the principles of open access and data sharing, thus allowing local experts (upon registration) to comment and validate the quality and accuracy of the published information.

Lessons learnt and future visions

The major challenges faced during the ESP-VT development were: a) the heterogeneity among ES mapping approaches; b) increased complexity of the ESP-VT as new functionalities were included.

- a. The heterogeneity among ES mapping approaches is an aftermath of a plurality in ES classification systems, tools and methods used to produce ES maps, units and visualisation methods. This is related to the different purposes for which ES maps were constructed: to answer different questions; for different users, like ES practitioners, policy makers or the general public (see Chapter 7).

⁹ <http://oneecosystem.pensoft.net/>

- b. Increased complexity of the ESP-VT as new functionalities were included. The database of the ESP-VT is populated with ES maps by ES map-makers. Its contribution to information-sharing is therefore based on the willingness of researchers to share their outputs with the ES community of practice.

So far, data standards on biome types and quantification units are used to organise the heterogeneous data populating the ESP-VT. To structure ES information, ESP-VT follows the TEEB classification. The community of ES researchers and practitioners agrees that there is no “one-size-fits-all” ES classification system and that local or regional specificities should be taken into account. The OpenNESS glossary¹⁰ can allow ES researchers to “translate” ES to other ES classification systems (see also Chapter 2.4).

On the other hand, establishing ES standards, populating the ESP-VT with maps and making these ES maps accessible to all under the open data sharing principles will: a) maximise research efficiency by avoiding replication of errors and duplication of efforts; b) allow for “self-correction” within the ES research community; c) open the door to innovation, synthesis work and future research and d) allow for inter-operability and hence free flow of information among other ES-related tools and toolkits.

Lastly, initiatives like *ESMERALDA* and *One Ecosystem* should boost the interest of the research community towards sharing information on ES maps through the ESP-VT platform. As more initiatives are added, the development and impact of ES maps will improve.

¹⁰ <http://openness.hugin.com/example/cices>

Further reading

- Crossman ND, Burkhard B, Nedkov S, Willemen L, Petz K, Palomo I, Drakou EG, Martín-Lopez B, McPhearson T, Boyanova K, Alkemade R, Egoh B, Dunbar MB, Maes J (2013) A blueprint for mapping and modelling ecosystem services. *Ecosystem Services* 4: 4-14.
- Drakou EG, Crossman ND, Willemen L, Burkhard B, Palomo I, Maes J, Peedell S (2015) A visualisation and data-sharing tool for ecosystem service maps: Lessons learnt, challenges and the way forward. *Ecosystem Services* 13: 134-140.
- Pagella TF, Sinclair FL (2014) Development and use of a typology of mapping tools to assess their fitness for supporting management of ecosystem service provision. *Landscape Ecology* 29: 383-399.