

Final General Assembly

24-26 Apr. 2023

Nice | France

Blazing new trails
for EO markets



e-shape

EuroGEO Showcases:
Applications Powered
by Europe

www.e-shape.eu

Apollo statue
Place Masséna,
Fontaine du Soleil
Nice | France

Session: e-shape objective O5: "Increase uptake by raising awareness on the solutions developed through tailored and well-targeted communication, dissemination and outreach activities"

Title: Harnessing the power of communication: Testimonial from mySpace pilot

Presenter: Ioannis Manakos | CERTH

myEcosystem showcase – mySpace pilot – EO products for wetlands monitoring

Inundation mapping in service of
habitat change monitoring



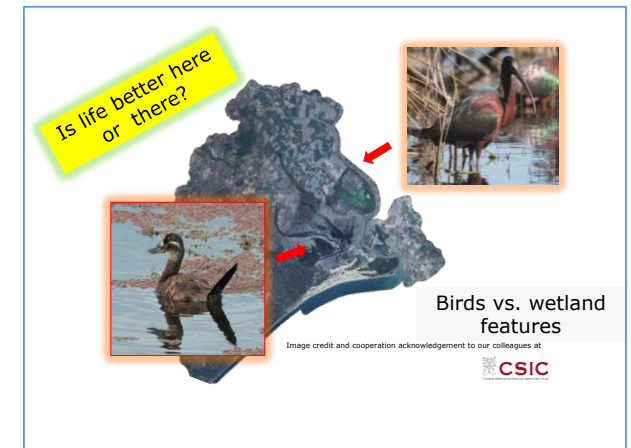
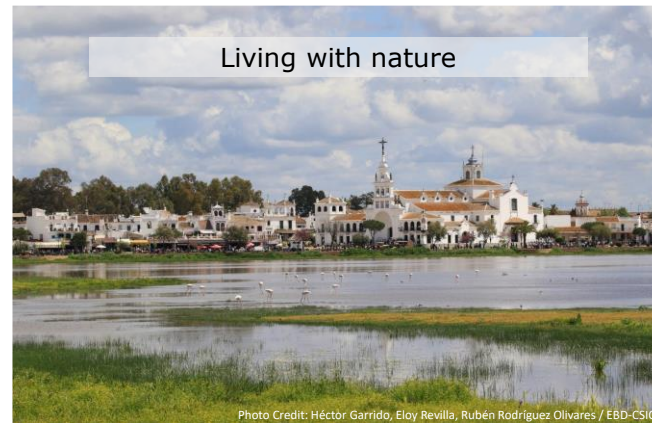
Change? : Reaching to the real needs: how to make best use of the land?
From the society to managers to science to managers to the society

Doñana National Park Cattle Feeding vs. Bird Nesting

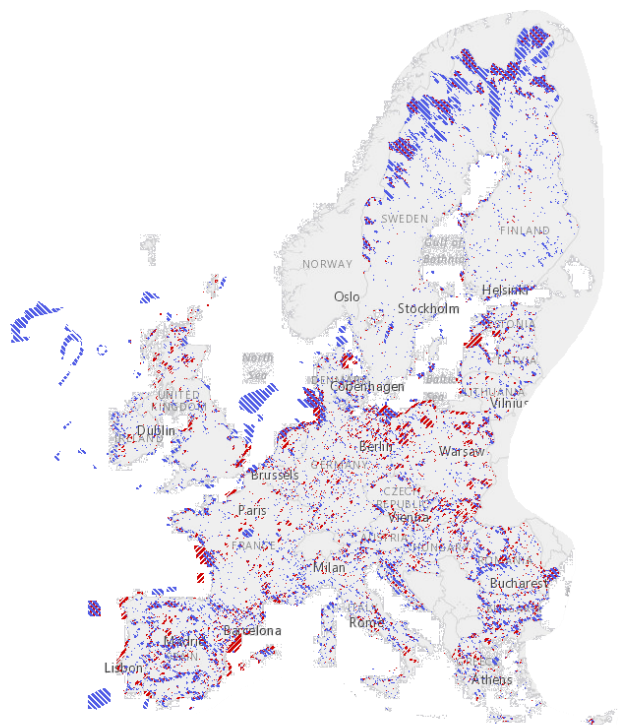
Harnessing the legacy
of ECO-POTENTIAL !!



How much
biomass?

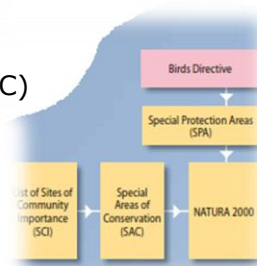


Communication Challenges : Top Down vs. Bottom Up



Blue lines: Habitats Directive Sites (pSCI, SCI or SAC)
 Red lines: Birds Directive Sites (SPA)
 Scale under 1:10.000.000

Credit: European Environmental Agency (EEA)



- **Member States identify** sites that are important for the conservation of species and habitats listed in the Habitats Directive occurring naturally in their territory based on purely ecological grounds.

- **European Commission examines** the information provided across the whole biogeographical region and, in cooperation with all relevant actors, selects sites of Community importance.

- **Member States formally protect** these areas and introduce measures to maintain or restore them to a good conservation state.

Joint Strategy:

- Resources Availability
- Top down approach
- EU policy compliant



Issues with local actors:

- Non systematic
- Sparse resources
- EU policy in opposition

The human factor ←

Communication Challenges

→ The services/ products factor

Ecology

Computer Science

Remote Sensing

Finances

Geography

Legislation

Communication amongst scientific communities, governmental actors, economic agents and the society is sought to support policy making and implementation

Cross-scale

Standardization

Uncertainty

Interface

Copyrights

Processes

RS product reliability and adoptability enhancement for the non-RS society users (experts and simple users)

There is a need for:

- Description of land cover and habitat/ ecosystem classes
- Ensure correspondences between descriptions & land use
- Integration in an operating system
- Field data and local expertise acquisition and incorporation

- Validation
- Framework conditions analysis and reporting
- Metadata quality
- Easy to access products
- Product delivery maintenance

Communication examples and take over in e-shape

Harnessing the legacy of ECOPOTENTIAL !!



Within the ECOPOTENTIAL project, researchers of Estación Biológica de Doñana (EBD-CSIC, Spain) and the Centre for Research and Technology Hellas (CERTH) worked in close collaboration, using satellite data, to study wetland seasonal dynamics and hydroperiods duration and trends in the Doñana National Park (Southern Spain)..

e-shape field visits to understand the processes in the area



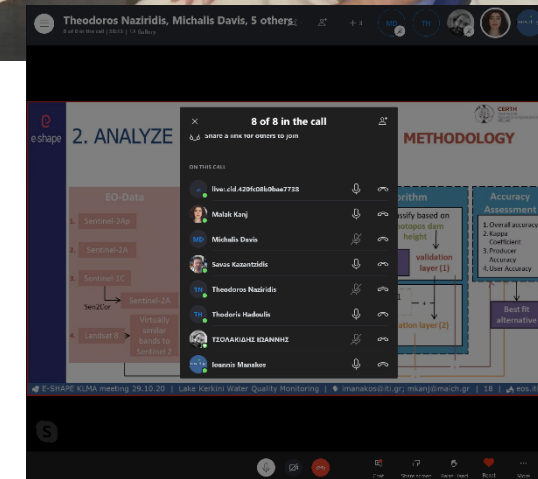
e-shape in situ visits and discussions to understand the management challenges and needs, and suggest e-shape expected support



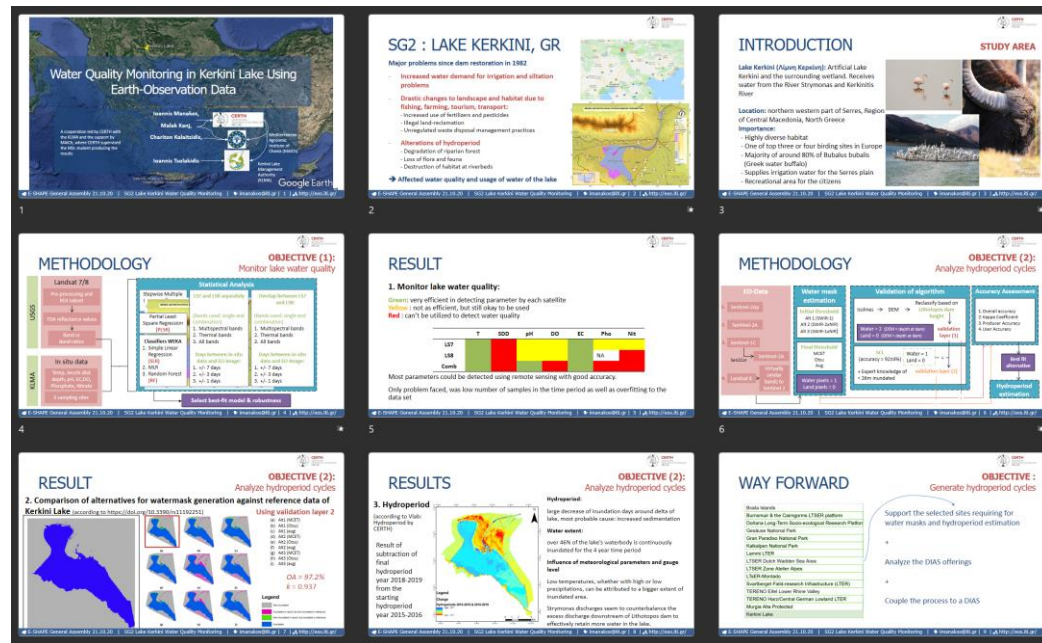
ECOPOTENTIAL tools hands-on workshop



e-shape follow up telecons during COVID-19 travel restrictions regime to maintain momentum



Communication of the results & discussion with local actors



Interactions led to data, information and knowledge exchange in a bilateral manner !!!

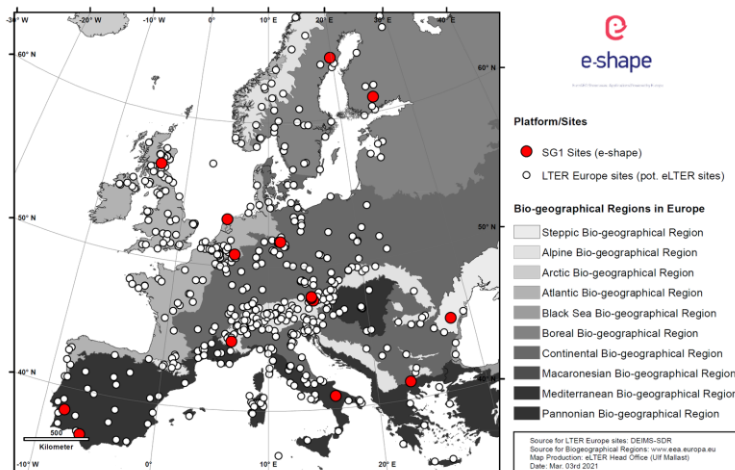
M. Kanj, I. Manakos, I. Tsolakidis, N. Katselas, C. Kalaitzidis, Empirical estimation of surface water quality parameters in Lake Kerkinis using Landsat ETM+/OLI, *Eighth International Conference on Environmental Management, Engineering, Planning and Economics (CEMEPE) and SECOTOX Conference*, July 20-24 2021, Thessaloniki, Greece pp. 110-121.

I. Manakos, M. Kanj, M. Sismanis, I. Tsolakidis, C. Kalaitzidis, *Multi-Temporal Inundated Areas Monitoring Made Easy: The Case of Kerkinis Lake in Greece*, 7th International Conference on Geographical Information Systems Theory, Applications and Management, April 23-25 2021, Prague, Czech Republic, doi:10.5220/0010555700480055

Interest rose more as results were shared and as joint publications became reality !!!

Dissemination of the results to a wider audience

Services and products are initially developed for selected sites (in red):



Murgia Alta, Annual Hydroperiod, 2017-2021

23 Nov 2022 by Ioannis Manakos;

Annual Hydroperiod maps utilizing inundation maps generated from Sentinel-2 data.

Braila, Annual Hydroperiod, 2015-2021

23 Nov 2022 by Ioannis Manakos;

Annual Hydroperiod maps utilizing inundation maps generated from Sentinel-2 data.

Montado, Annual Hydroperiod, 2016-2021

23 Nov 2022 by Ioannis Manakos;

Annual Hydroperiod maps utilizing inundation maps generated from Sentinel-2 data.

Kerkini, Annual Hydroperiod, 2015-2021

23 Nov 2022 by Ioannis Manakos;

Annual Hydroperiod maps utilizing inundation maps generated from Sentinel-2 data.

Wadden Sea, Annual Hydroperiod, 2016-2021

23 Nov 2022 by Ioannis Manakos;

Annual Hydroperiod maps utilizing inundation maps generated from Sentinel-2 data.

Donana, Annual Hydroperiod, 2015-2021

23 Nov 2022 by Ioannis Manakos;

Annual Hydroperiod maps utilizing inundation maps generated from Sentinel-2 data.

Tereno Harz, Annual Hydroperiod, 2017-2021

23 Nov 2022 by Ioannis Manakos;

Annual Hydroperiod maps utilizing inundation maps generated from Sentinel-2 data.

A server is purchased within e-shape to facilitate results production towards the wider stakeholder community

Openly accessibly @ <https://b2share.eudat.eu/records/?q=hydroperiod&ort=-&page=1&size=10>

Approaching the user



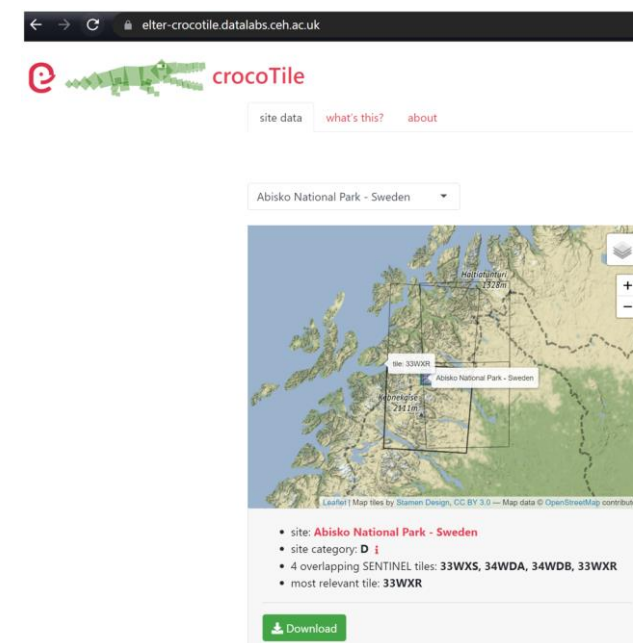
Inundation maps and hydroperiods are produced

→ WITHOUT user input

→ with spaceborne data use ONLY

→ Interoperable with existing applied international workflows and norms

Land Cover area selection tools are developed that enable spaceborne sensor tile selection according to the ecologist site selection, enabling local stakeholder and e-shape actors bidirectional communication:



<https://elter-crocodile.datalabs.ceh.ac.uk/>

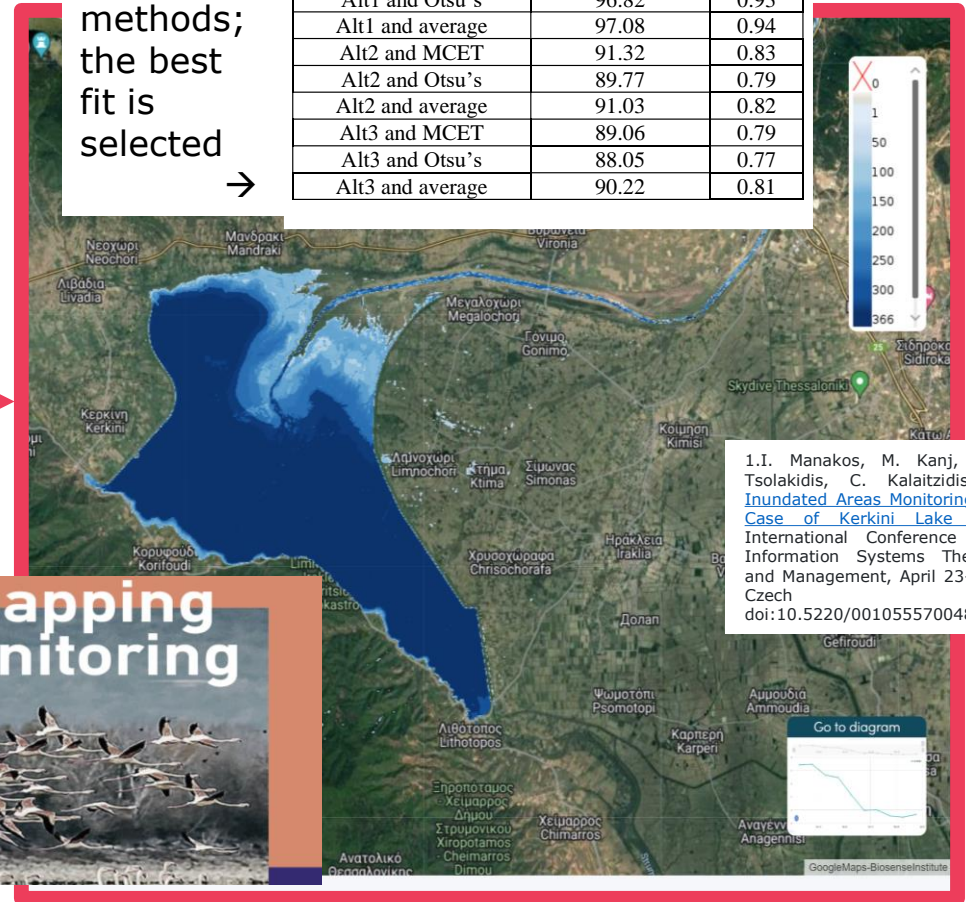
Interfacing through e-shape means and platform

Map products have been integrated in EcoSense platform in support of biodiversity and habitat monitoring across regions (https://ecosense.biosense.rs/#/home):



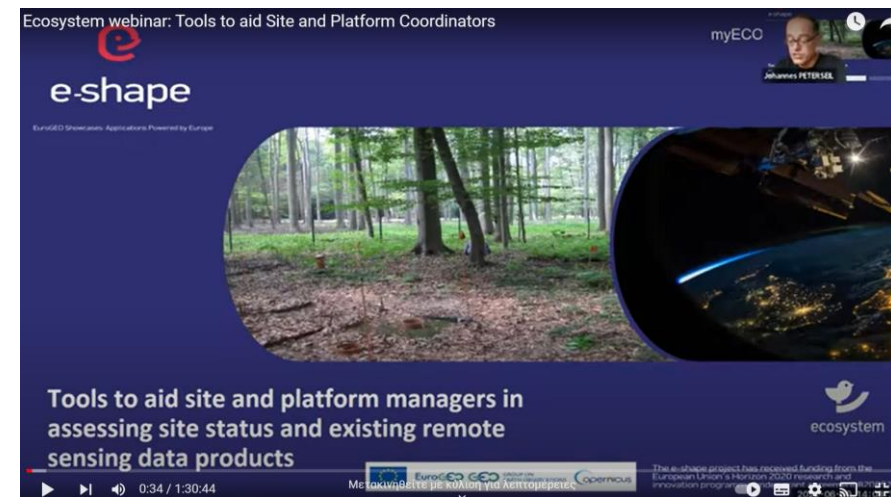
9 different alternative methods; the best fit is selected →

Alternatives	Overall Accuracy (%)	Overall kappa
Alt1 and MCET	97.16	0.94
Alt1 and Otsu's	96.82	0.93
Alt1 and average	97.08	0.94
Alt2 and MCET	91.32	0.83
Alt2 and Otsu's	89.77	0.79
Alt2 and average	91.03	0.82
Alt3 and MCET	89.06	0.79
Alt3 and Otsu's	88.05	0.77
Alt3 and average	90.22	0.81



I.I. Manakos, M. Kanj, M. Sismanis, I. Tsolakidis, C. Kalaitzidis, [Multi-Temporal Inundated Areas Monitoring Made Easy: The Case of Kerkini Lake in Greece](#), 7th International Conference on Geographical Information Systems Theory, Applications and Management, April 23-25 2021, Prague, Czech Republic, doi:10.5220/001055700480055

myEcosystem Webinar



Webinar:
Tools to aid site and platform managers in assessing site status and existing remote sensing data products

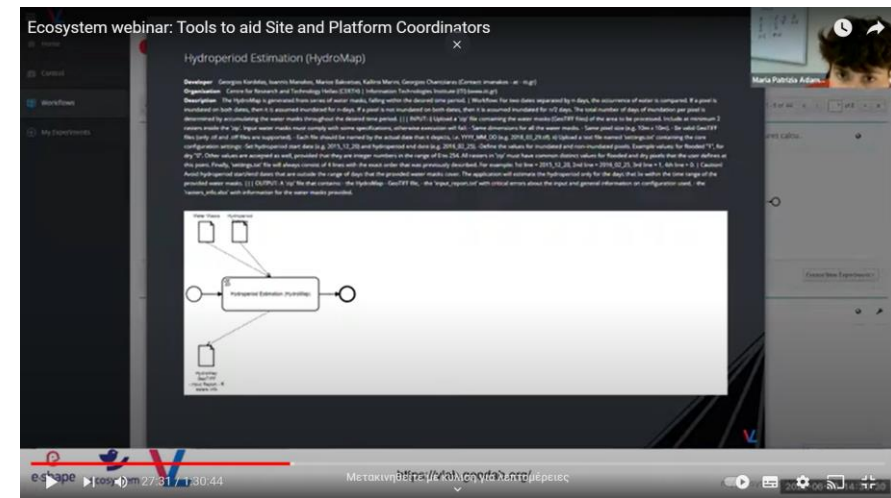
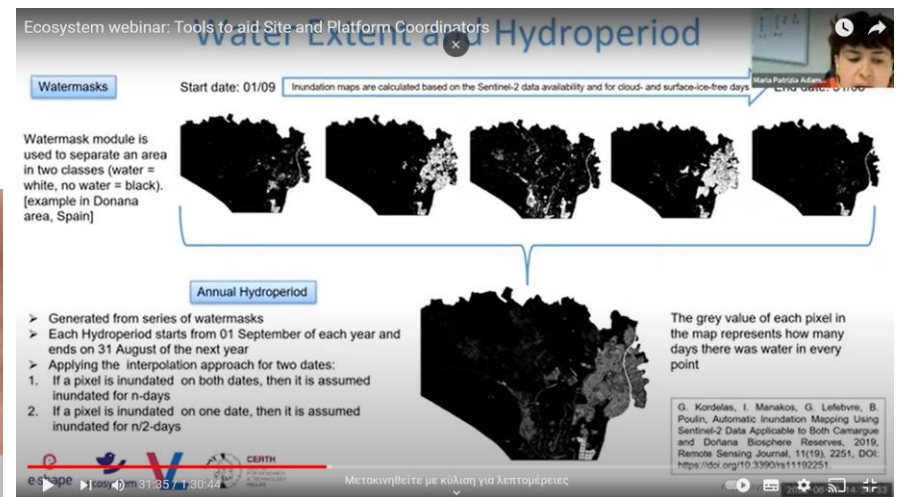
9.6.2022
 14:00 - 16:00 (CEST)
 Online

Get your best solutions at <https://helpdesk.e-shape.eu/>

e-shape Immersed
 accelerating Earth Observation solutions

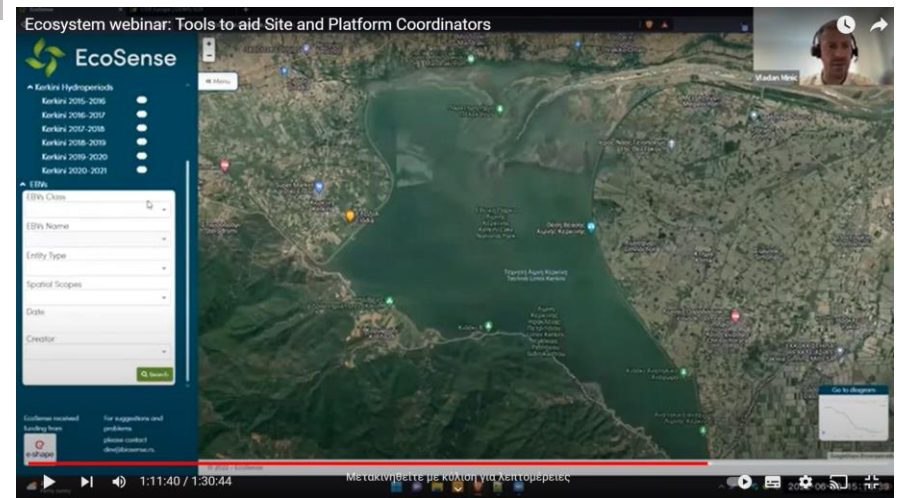
ecosystem

<https://e-shape.eu>
 #e_shape_immersed



09.06.2022

https://youtu.be/4Jk_Mq7WRxc



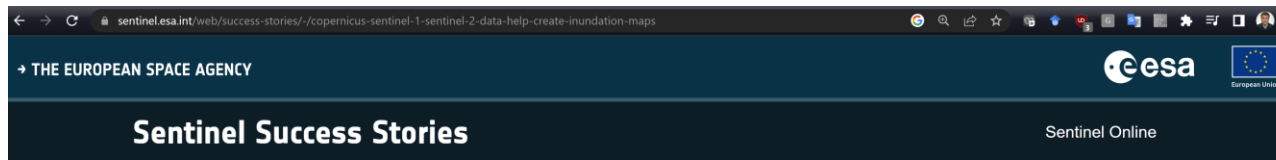
Showcasing the outcomes to Copernicus and ESA audience



30 March 2023
e-shape at the Ninth International Conference on Remote Sensing & Geoinformation of Environment

On the 3rd -5th of April, 2023 our e-shape partner Ioannis Manakos (CERTH) will participate in the Ninth International Conference on Remote Sensing and Geoinformation of Environment in Cyprus, Ayia Napa with a presentation entitled "Inundation mapping in service of land cover evidence-based change monitoring".

RSCy2023
 Ninth International Conference on Remote Sensing and Geo-information of Environment
 3-5 April, 2023 - Ayia Napa, Cyprus
www.cypriateremotesensing.com/rscy2023



Home / Story / Copernicus Sentinel-1 and Sentinel-2 data help create inundation maps

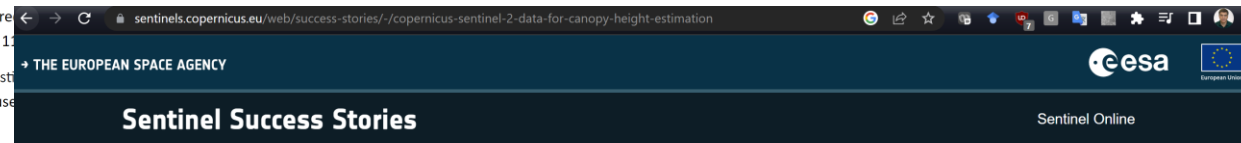
Success Stories

Copernicus Sentinel-1 and Sentinel-2 data help create inundation maps 16 December 2021

Earth Observation data offer a powerful approach for accurate and cost-effective monitoring of hydrological regimes and seasonal inundated transition zones. Leveraging the capacity provided by the Copernicus Sentinel-1 and Sentinel-2 missions, the Centre for Research and Technology Hellas (CERTH) has developed automatic services for the creation of inundation maps.

Lake Kerkini is an artificial reservoir located in Northern Greece with a spatial coverage of 70-76 km² and a basin extending over 100 km².

An ecosystem of notable diversity has developed here, hosted by the lake. Kerkini's ecosystem has been impacted from the intense use of fertilizers and uncontrolled, frequent and extreme flooding events.



Home / Story / Copernicus Sentinel-2 data for canopy height estimation

Success Stories

Copernicus Sentinel-2 data for canopy height estimation 11 November 2021

Canopy height of forests is a fundamental structural and biophysical parameter, useful to a wide variety of environmental studies and applications, such as biodiversity studies; conservation planning; biomass/carbon sources estimation and monitoring forest degradation at a large scale.

Estimating canopy height over large areas is essential for sustainable ecosystem management.

There are various solutions for estimating canopy height. For instance, terrestrial manual inspection, airborne imagery, LiDAR, etc. These solutions vary in terms of cost effectiveness, intrinsic methodological limitations and output resolution (meters/hours).

Extra research line in support towards detection of riparian forest changes, as requested by the Management Authority of Kerkini →



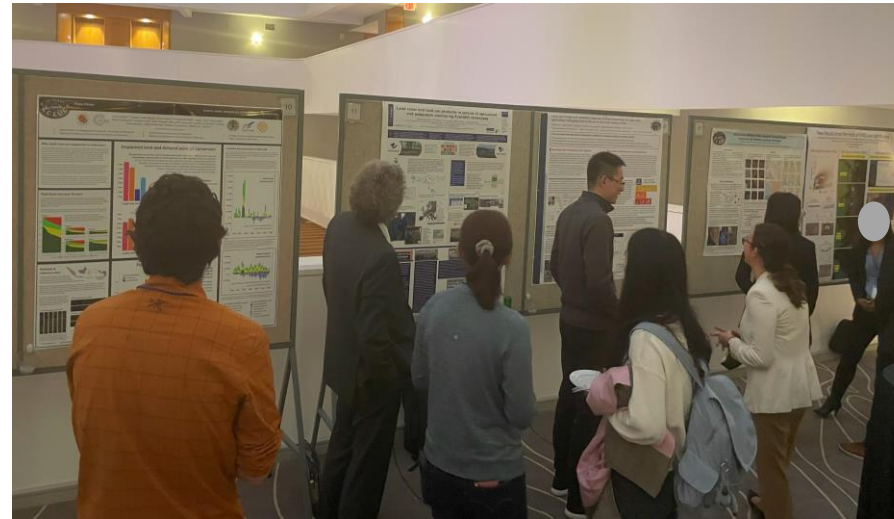
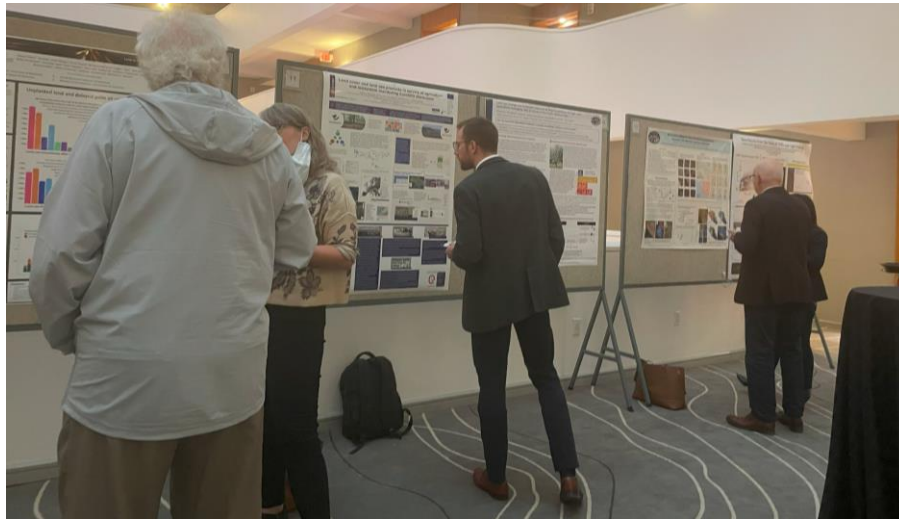
Showcasing the outcomes to NASA overseas audience



06 November 2022

e-shape project beyond the frontiers! NASA event

Our colleague Ioannis Manakos from the Centre for Research and Technology Hellas (CERTH project partner) exquisitely represented the flagship H2020 project e-shape at the 2021 -22 NASA LCLUC Science Team Meeting & Silver Jubilee Celebration on the 18th to 20th of October, 2022 in Maryland, USA.



Clustering with other EU projects

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Results of e-shape have been influenced from H2020 RIA ECO-POTENTIAL project and influence developments in further EU projects, such as H2020 IA SnapEarth, ENI CBC BSB PONTOS, H2020 CSA EOTiST, H2020 RIA WQeMS, and H2020 IA NextLand.



Way forward



The Management Authority of Lake Kerkini suggested cooperation in the production of further hydroperiod products, which are necessary for daily operations, and as the Management Authorities governance structure in Greece has been reshaped CERTH will search whether there is an interest of applying results at a national level.

Research lines are pursued and enriched within further EU projects and theses (PhD, MSc).

Continuous cooperation with partners of the consortium building up collaborations and synergies.

How did we reach a wider audience through
communicating e-shape?

With a smile and a vision

e-shape mySpace pilot members in the EuroGEO “biodiversity” action group

