

NAVARINO ENVIRONMENTAL OBSERVATORY

NEO Management

Thursday, 22 October 2020

NEO NEA #35 (April 2020 - September 2020)

NEO stands for Navarino Environmental Observatory. But NEO in Greek (νέο) means news as well and NEA (νέα) is its plural. So, this is our most recent news!

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Foreword

The COVID-19 pandemic had, and still has, implications on NEO activities, as all the organised field courses, researchers' visits and workshops from abroad, and most from Greece, from March 2020 and onwards were cancelled. With the hope that the situation will improve in the future, some of the visits are already rescheduled for 2021.

With limited visits at NEO station, NEO management has been active with handling core tasks of environmental observations (Atmospheric laboratory in Methoni, Gialova wetland), station management, development of NEO communication platform, the initiation of a new project, and the submission of project proposals for additional funding.

Last but not least, we are glad to announce that **Professor Georgia Destouni** is now part of the scientific advisory committee of: CLIMPACT - Εθνικό Δίκτυο για την Κλιματική Αλλαγή - a Greek national network for climate change research, coordinated by NOA. <https://www.facebook.com/CLIMPACT-Εθνικό-Δίκτυο-για-την-Κλιματική-Αλλαγή-103548691367278/>.

You can read more about the developed tasks below!



Figure 1: A family of swans at Gialova lagoon.

Activities

The COVID-19 pandemic affected Greece in March 2020, and a complete lockdown was imposed by the Greek government till May. Since July 15, the Greek borders are open again, but due to strict protocols for visitors from abroad (tests, possible quarantine, etc.) visits to NEO station are still difficult to manage. As expected, this situation had, and still has, implications for NEO activities, as all the planned activities from abroad, and many from Greece, were cancelled (Table 1). With the hope that the situation will improve in the future, some of the visits are already rescheduled for 2021.

Environmental Observations

NEO Atmospheric station

The plans for upgrade work at Methoni station during summer 2020 were cancelled due to the COVID-19 situation. At present, all the instruments are working properly and NEO Assistant is actively controlling them in a weekly basis.

Gialova wetland

In July, NEO manager and NEO assistant visited the Gialova lagoon and uninstalled all the instruments that were firstly installed in the lagoon and the wetland in 2016. After the proper maintenance and calibration, these sensors will be used for monitoring basic parameters of groundwater resources in the surrounding catchment (more information below under session: *The Gialova Project*). Since then, and until the installation of new sensors, the monitoring of the wetland is based on bimonthly field visits (Figure 2).



Figure 2: Sampling points in Gialova wetland for measuring EC (Electrical Conductivity), Temperature, pH, ReDox potential and dissolved oxygen, during field campaigns.

Table 1: Implications of COVID-19 pandemic on NEO activities. Each row of the table contains information about the activity (in bold), and the main co-organizer of the activity. For more information on completed activities please click the blue items which will redirect you to NEO social media.

Field courses @ NEO	Planned for	Status
BSc course in "Physical Geography" Dep. of Physical Geography, Stockholm University Tweets: 1 , 2 , 3	February 2020	Completed
MSc course in "Cultural Heritage Materials and Technologies" Dep. of History and Archaeology, University of Peloponnese	March 2020	Cancelled
MSc course in "Plant Biodiversity and evolution - a global perspective" Dep. of Biology Education, Stockholm University	May 2020	Cancelled
MSc course in "Ecohydrology: a Mediterranean perspective" Dep. of Physical Geography, Stockholm University	June 2020	Cancelled
BSc course in "Environmental Studies" American College of Greece	June 2020	Cancelled
Upper secondary class course in "Natural disasters form a natural- and social science perspective" Värmdö Gymnasium, Stockholm	September 2020	Postponed to 2021 (spring)
BSc, MSc course in "Climate, Climate Change Impacts: Greece" Dep. of Geography, Justus-Liebig University of Giessen	September 2020	Postponed to 2021 (spring)
Summer schools @ NEO	Planned for	Status
International PhD summer school in "Theory and practice of aerosol chemistry and engineering for climate, air quality, emissions and health effects, by means of In-Situ and Remote Sensing Observations" Hellenic Association of Aerosol Research (HAAR)	June 2020	Cancelled
Internships @ NEO	Planned for	Status
Participation of BSc and MSc students from Greece and abroad, at NEO environmental observations (e.g. Water quality in the lagoon, Groundwater resources, Pressures on coastal zone, etc.) In collaboration with Universities from Greece and abroad	Summer 2020	Cancelled
Workshops @ NEO	Planned for	Status
Adapt-NET Workshop: Climate change and Agriculture Agricultural University of Athens, Academy of Athens	February 2020	Completed
COASTAL workshop: Multi Actor meeting Hellenic Centre of Marine Research	March 2020	Rescheduled for 2020 (late autumn)
PELOPS workshop – Past climate and societies Department of Archaeology and Ancient History Uppsala University	March 2020	Rescheduled for 2021 (spring)
NEO Communication platform Gullers Grupp	May 2020	Cancelled
Gialova project – meeting with stakeholders University of Ioannina Hellenic Centre of Marine Research Captain Vasilis Foundation Management Body of Protected Areas of S. Peloponnese and Kythira island Divari (fishing company) Policy stakeholders	June 2020	Completed
Climate change and climate refugees. A reality or a denial? University of Athens (UoA) National Technical University of Athens	October 2020	Rescheduled for 2021
Researchers' visits	Planned for	Status
Feasibility evaluation of water use efficiency study Department of Physical Geography, Stockholm University Imam Khomeini International University, Iran UMR G-EAU, SupAgro, France	June 2020	Cancelled
Maintenance and upgrade at Methoni station Department of Environmental Sciences (ACES), Stockholm University Institute of Environmental Research and Sustainable Development (IERSD), National Observatory of Athens	July 2020	Cancelled
Other visits at NEO	Planned for	Status
Visit from a Greek school Avlonari high school (upper grade), Greece	March 2020	Cancelled
Ambassador and staff of the Swedish Embassy in Athens Swedish embassy in Athens	September	Completed

Research publications (NEO researchers in bold, presenters underlined)

- Ferreira, Carla**, Sandra Mourato, Milica Ksanin-Grubin, António Ferreira, **Georgia Destouni** and **Zahra Kalantari**. 2020. "Effectiveness of Nature-Based Solutions in Mitigating Flood Hazard in a Mediterranean PeriUrban Catchment". *Water* 12, 2893. <https://doi.org/10.3390/w12102893>.
- Manzoni, Stefano**, **Giorgos Maneas**, Anna Scaini, **Basil E. Psiloglou**, **Georgia Destouni**, and Steve W. Lyon. 2020. "Understanding Coastal Wetland Conditions and Futures by Closing Their Hydrologic Balance: The Case of the Gialova Lagoon, Greece." *Hydrology and Earth System Sciences* 24 (7): 3557–71. <https://doi.org/10.5194/hess-24-3557-2020>.
- Vigouroux, Guillaume, Yuanying Chen, Anders Jönsson, Vladimir Cvetkovic, and **Georgia Destouni**. 2020. "Simulation of Nutrient Management and Hydroclimatic Effects on Coastal Water Quality and Ecological Status—The Baltic Himmerfjärden Bay Case." *Ocean and Coastal Management* 198 (October 2019). <https://doi.org/10.1016/j.ocecoaman.2020.105360>.
- Bennich, Therese, **Giorgos Maneas**, Sofia Maniatakou, Luigi Piemontese, Christina Schaffer, Marie Schellens, and Carl Österlin. 2020. "Transdisciplinary Research for Sustainability: Scoping for Project Potential." *International Social Science Journal*. <https://doi.org/10.1111/issj.12245>.
- Sakka, Arezina, **Evangelos Gerasopoulos**, Eleni Liakakou, Iphigenia Keramitsoglou, and **Nikolaos Zacharias**. 2020. "Spatial Variability of Aerosols over Greek Archaeological Sites Using Space-Borne Remote Sensing." *Journal of Cultural Heritage*, 1–11. <https://doi.org/10.1016/j.culher.2020.07.001>.
- Eleftheratos, Kostas, John Kapsomenakis, **Christos S. Zerefos**, Alkiviadis F. Bais, Ilias Fountoulakis, Martin Dameris, Patrick Jöckel, et al. 2020. "Possible Effects of Greenhouse Gases to Ozone Profiles and Dna Active Uv-b Irradiance at Ground Level." *Atmosphere* 11 (3): 1–19. <https://doi.org/10.3390/atmos11030228>.
- Zerefos, Christos**, Stavros Solomos, Dimitris Melas, John Kapsomenakis, and Christos Repapis. 2020. "The Role of Weather during the Greek-Persian 'Naval Battle of Salamis' in 480 B.C." *Atmosphere* 11 (8): 1–16. <https://doi.org/10.3390/ATMOS11080838>.
- Destouni, Georgia**, Vigouroux, Guillaume, Seifollahi-Aghmiuni, Samaneh, and **Kalantari, Zahra**. 2020. "Multiple drivers of change in coastal water quality and ecosystem status: From participatory mental mapping to systems modelling." 3rd International Baltic Earth Conference on Earth System Changes and Baltic Sea Coasts, to be held in Jastarnia, Hel Peninsula, Poland, 1-5 June (Held online, 2-3 June).
- Seifollahi-Aghmiuni, Samaneh**, **Kalantari, Zahra**, and **Destouni, Georgia**. 2020. "Understanding the coupled land-sea system dynamics in coastal regions through a participatory approach: A Baltic case study." European Geoscience Union (EGU), held online, 4-8 May.
- Destouni, Georgia**. 2020. "Groundwater shifts and critical thresholds in the changing hydro-climate." European Geoscience Union (EGU), held online, 4-8 May.
- Darvishi, Mehdi**, **Destouni, Georgia**, and Jaramillo, Fernando. 2020. "Lake Mead and Hoover Dam monitoring in Nevada and Arizona states, USA, using InSAR." European Geoscience Union (EGU), held online, 4-8 May.
- Ghajarnia, Navid**, **Kalantari, Zahra**, and **Destouni, Georgia**. 2020. "A historical database of key hydroclimatic variables in and across 6400 catchments around the world." European Geoscience Union (EGU), held online, 4-8 May.
- Page, Jessica, **Jonsson, Elisie**, **Kalantari, Zahra**, and **Destouni, Georgia**. 2020 "Carbon emissions and sequestrations in urban landscapes and their various and changing land and water covers." European Geoscience Union (EGU), held online, 4-8 May.
- Åhlen, Imenne**, Hambäckm Peter, Thorslund, Josefin, Frampton, Andrew, **Destouni, Georgia**, and Jarsjö, Jerker. 2020. "Wetlandscape size thresholds for multiple ecosystem service delivery." European Geoscience Union (EGU), held online, 4-8 May.
- Orth R, **Destouni G**, Jung M, Reichstein M, Large-scale biospheric drought response intensifies linearly with drought duration, *Biogeosciences*, 17, 2647–2656, 2020. <https://doi.org/10.5194/bg-17-2647-2020>.
- Albert JS, **Destouni G**, Duke-Sylvester SM, Magurran AE, Oberdorff T, Reis RE, Winemiller KO, Ripple WJ, Scientists' warning to humanity on the freshwater biodiversity crisis, *Ambio*, 2020. <https://doi.org/10.1007/s13280-020-01318-8>.
- Borja S, **Kalantari Z**, **Destouni G**, Global wetting by seasonal surface water over the last decades, *Earth's Future*, 8, e2019EF001449, 2020. <https://doi.org/10.1029/2019EF001449>.
- Ghajarnia N, **Destouni G**, Thorslund J, **Kalantari Z**, Åhlén I, Anaya-Acevedo JA, Blanco-Libreros JF, Borja S, Chalov S, Chalova A, Chun KP, Clerici N, Desormeaux A, Garfield BB, Girard P, Gorelits O, Hansen A, Jaramillo F, Jarsjö J, Labbaci A, Livsey J, **Maneas G**, McCurley K, Palomino-Ángel A, Pietroñ J, Price R, Rivera-Monroy VH, Salgado J, Sannel ABK, **Seifollahi-Aghmiuni S**, Sjöberg Y, Terskii P, Vigouroux

G, Licero-Villanueva L, Zamora D, Data for wetlandscapes and their changes around the world, Earth System Science Data, 12, 1083–1100, 2020. <https://doi.org/10.5194/essd-12-1083-2020>.

Ghajarnia N, **Kalantari Z**, Orth R, **Destouni G**, Close co-variation between soil moisture and runoff emerging from multi-catchment data across Europe, Scientific Reports, 10, 4817, 2020. <https://doi.org/10.1038/s41598-020-61621-y>.

EU projects

COASTAL EU project

The COVID-19 pandemic has also affected the progress of COASTAL EU project in SW Messinia MAL (multi-actor workshop), mainly with regards to physical meetings with local partners and stakeholders. All the workshops and meetings were postponed to autumn 2020.

Despite the challenges, the Greek MAL has been active in stock-flow modelling, focusing their efforts on conceptualizing and quantifying the common vision of the stakeholders, which can be summarized as: **“Join forces to create the brand name of Sustainable Messinia that will expand across all sectors and activities”**. Starting from current conditions (e.g. conventional olive-trees farming, increased salinity in the lagoon, seasonal tourism), the basic aim of the model is to investigate the impact of:

- more integrated farming practices,
- increased fresh water inputs in the wetland
- alternative forms of tourism,

and establish the baseline for achieving the common vision of stakeholders for SW Messinia.

New projects

CIVIS PhD network in SOLID EARTH SYSTEM DYNAMICS

The department of Physical Geography, Stockholm University (contact person: Prof. Georgia Destouni) and NEO are part of the CIVIS PhD network in SOLID EARTH SYSTEM DYNAMICS. The network is in the core of CIVIS Hub 1 Activities: Climate, Environment and Energy, with focus on Environment linked with Climate change and Natural and Geo-energy resources. Partners involved in this network:

1. National and Kapodistrian University of Athens,
2. University of Bucharest,
3. Sapienza Università di Roma,
4. Stockholm University

CIVIS – European Civic University Alliance network brings together over 384,000 students and 55,000 employees at eight universities in Europe ([SU-CIVIS](#)). The purpose of CIVIS is to facilitate cooperation across national borders and to increase the mobility of students, teachers and other staff. The alliance focuses on five global challenges:

- Health
- Cities and mobility
- Climate, environment, energy
- Digital and technological transformations
- Society, cultures and heritage

The collaboration creates opportunities for research, teaching, cultural exchanges and citizen engagement from the Mediterranean to the Baltic, with connections to the whole world. The alliance is supported by the European Commission via the Erasmus + call "European Universities" which aims to increase collaboration between European universities and thereby increase the quality and attractiveness of higher education in Europe.

The Gialova-project

The Gialova-project, aims to bring researchers, practitioners and policy makers to work together for tackling challenges related to management of multi-functional areas within the Gialova wetland. The overall idea behind the Gialova-project is to provide scientific knowledge to support the gradual restoration and the co-management of the wetland considering both environmental and economic factors, under different climatic scenarios. To that end, the project will:

- Examine the hydrological status of the wetland in relation to: (a) the conservation status of the fish fauna and benthic communities, (b) the conservation status of rare, endangered and protected species and habitats and (c) the needs of other users within the wetland.
- Set the water management goals under a changing climate, and provide suggestions (and interventions) for: (a) improving environmental and ecological status, (b) maintaining and enhancing (as far as possible) ecosystem services provided by the wetland and (c) meeting the needs of other anthropogenic activities developed within the wetland area.

Scientific experience and expertise will be collected within the project by engaging researchers from Navarino Environmental Observatory/ Stockholm University (NEO/SU), the Hellenic Centre of Marine Research (HCMR), and the University of Ioannina (UI). A bird expert will also join the consortium. The participation of Captain Vasilis and Karmen Konstantakopoulos Foundation (CVKKF), will ensure the engagement of local stakeholders. The participation of the local Management Body (or any other relevant authority indicated by the Hellenic Ministry of Environment) will ensure that the recommendations provided by the project team will be in line with the aims of the Natura2000 management framework. The project is supported and partly funded by the local fishermen, a company which aims to perform sustainable fishing activities. The coordination of the project is under NEO/ SU.

The project started on July 2020, and will be developed over 36 months. The implementation of the project is divided in 4 steps (Figure 3). The outcomes of each step include water management measures and interventions for the gradual improvement of hydrological, environmental and ecological conditions within the wetland. The final deliverable of the project will be a Decision-Making Support System, which will be used long after the completion of the project.

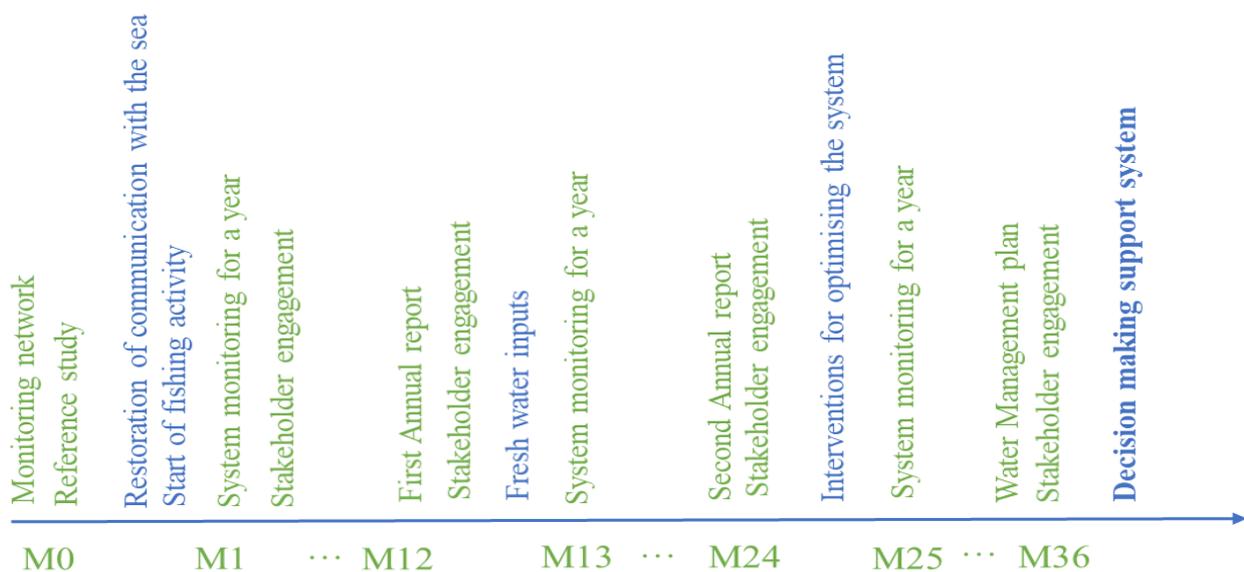


Figure 3. The course of the project in monthly development (M1-M36). The green fields depict work which will be implemented by the research team. The blue fields refer to actions/interventions which will be justified in the deliverables of the project

The project team, has already completed and presented the Reference Study to the relevant policy makers and stakeholders. The outcome from the workshop was a joint decision for the re-opening of the sea-lagoon

channel, an intervention which was suggested by the project team as a first step towards improving the conditions within the wetland. The project team is now working on installing new sensors for monitoring basic water physical-chemical parameters within the wetland and at the surrounding groundwater aquifers (to be completed in autumn 2020). Water samples for nutrient analysis will be collected on a monthly basis and will be analysed at NEO station. Field campaigns for fish and benthic communities' analysis and birds' status will be held on a seasonal basis.

Submitted research proposals

While the final decisions on recently submitted proposals are still pending, NEO researchers have additionally submitted two new proposals in collaboration with colleagues from Greek and European Universities and Institutions (Table 2).

<i>Proposal</i>	Consortium	Funding by	Status
<i>Research, Innovation and Dissemination hubs</i>	Stockholm University (NEO), LTER-GR network	Greek General Secretariat for Research and Technology	Pending decision
<i>Research for all – Discovering the value of ecosystem services in Messinia, in terrestrial, aquatic and virtual environments</i>	Stockholm University (NEO), Institute of Environmental Research and Sustainable Development (National Observatory of Athens)	Greek General Secretariat for Research and Technology	Pending decision
<i>Coastal zone geomorphological interactions: natural vs human-induced factors</i>	National and Kapodistrian University of Athens, University of Aix-Marseille, Stockholm University (NEO)	CIVIS, a European Civic University	Submitted
<i>The CHAIN project – Responding to threats: cultural heritage in action</i>	Athena Research Centre (Greece), Stockholm University; Eindhoven University of Technology, National and Kapodistrian University of Athens	The Joint Programming Initiative on Cultural Heritage and Global Change (JPI CH) – the Swedish Research Council (VR)	Submitted

Communication platform

The work plan for development of the NEO's communication strategies and platform was structured in February 2020 in collaboration with the Gullers Grupp (<https://gullers.se/>). Due to the COVID19 pandemic and changes in working conditions, the work plan was updated in May 2020 by the Gullers Grupp and NEO's Director. As part of the updated work plan and following the individual interviews with NEO's researchers and partners, an online workshop was held in June with the NEO's Steering Committee to create a story about what NEO is and could be with the right partners, cooperation and resources. This workshop also provided further information about NEO's future vision. Based on the workshop's outcome, Gullers Grupp further developed this platform in June, and has re-structured and edited it based on the comments and suggestions from NEO's Director and Manager during August and September. This is still an ongoing process and the first draft will be shared with the Steering Committee soon to collect their feedback.

NEO website

A new way for the dissemination of NEO research and relevant publications is now available on our site (www.navarinoneo.se/). The clustering of NEO's scientific publications according to the defined themes based on Missions and Research and Innovation prioritize in Horizon Europe, provides new insights on the extend of NEO research and better linkages to contemporary research themes (Figure 4).

No. NEO's Scientific Publications

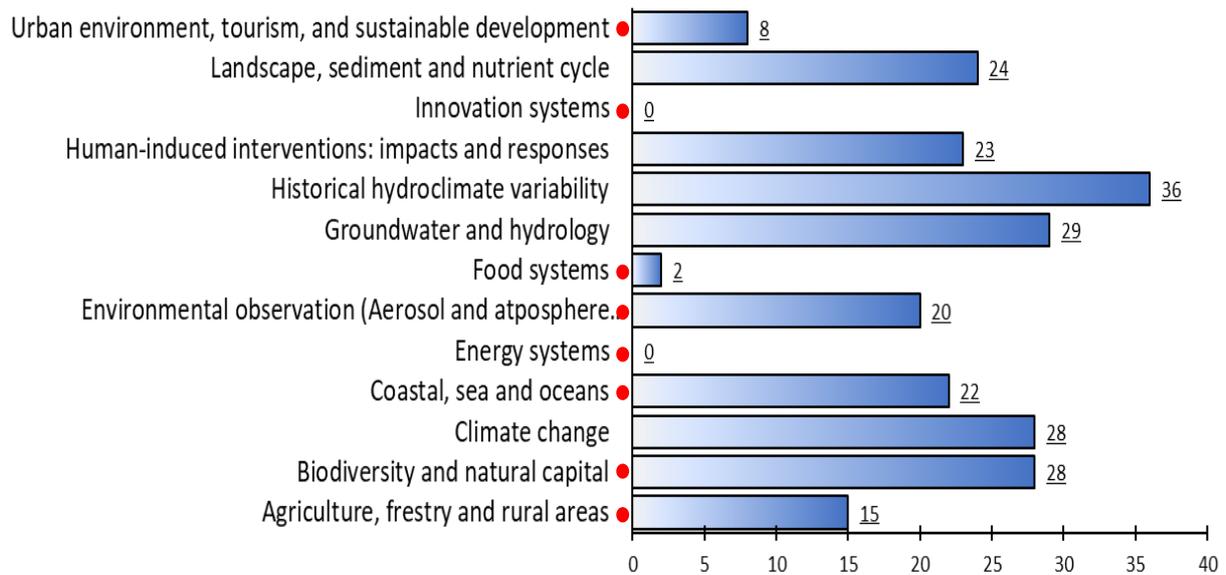


Figure 4. Clustering NEO's scientific publications according to the defined themes based on Missions and Research and Innovation prioritize in Horizon Europe.

NEO management

Dr. Samaneh Seifollahi has got involved in NEO's research from March 2020. She is an expert in natural resources and environmental management, stakeholder engagement, and system dynamics analysis with an extensive background in theoretical and conceptual modelling and development of decision support tools for water resources management. Samaneh holds a PhD of Science in Water Resources Management from University of Tehran, Iran, and currently works as a research fellow at Stockholm University. She has mainly contributed to the development of NEO's communication platform and supported the NEO's website update. Further, she will support NEO in developing research on impacts of climate change and anthropogenic activities and their future developments on natural resources in Mediterranean region, involvement of actors in NEO's activities to support regional sustainable development capacity, and preparation of project proposals for relevant grant calls.

Dr. Carla Ferreira has got involved in NEO's research from September 2020. She is an expert on land degradation, particularly on soil erosion and anthropogenic impacts on surface hydrology and water quality, and has been focusing on nature-based solutions to mitigate environmental problems, with wide experience in working with stakeholders. Carla is a post-doctoral researcher at Stockholm University. Under NEO, she has mainly contributed to the development of NEO's communication platform and developing research on land degradation problems in the Mediterranean region, and supporting preparation of project proposal for relevant grant calls.