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Issue: April 2022

Statement on the violence in Ukraine

Ukraine is currently under violent assault that has already claimed 1000s of casualties and is threatening the lives and wellbeing of millions more. **eLTER expresses its uncompromising solidarity with the people of Ukraine.**

eLTER RI is an emerging Pan-European infrastructure supporting long-term ecosystem, critical zone and socio-ecological research to provide the scientific foundation for continental and global sustainability transitions. Its >20 partner countries are committed to open, multi-disciplinary, and collaborative science across the European continent. In this context eLTER has been in dialogue with colleagues from **Ukraine AND Russia**.

Reflecting our commitment to peaceful and cooperative relations between sovereign countries, the eLTER scientific community expresses its total commitment to the wellbeing of its Ukrainian scientific colleagues and their families, and all citizens of the country. In concert with colleagues in scientific communities globally, including Russia, we express our abhorrence regarding the violent assault on Ukraine and call for an immediate cessation of hostilities and a **return of peace and respect for Ukraine's national sovereignty.**

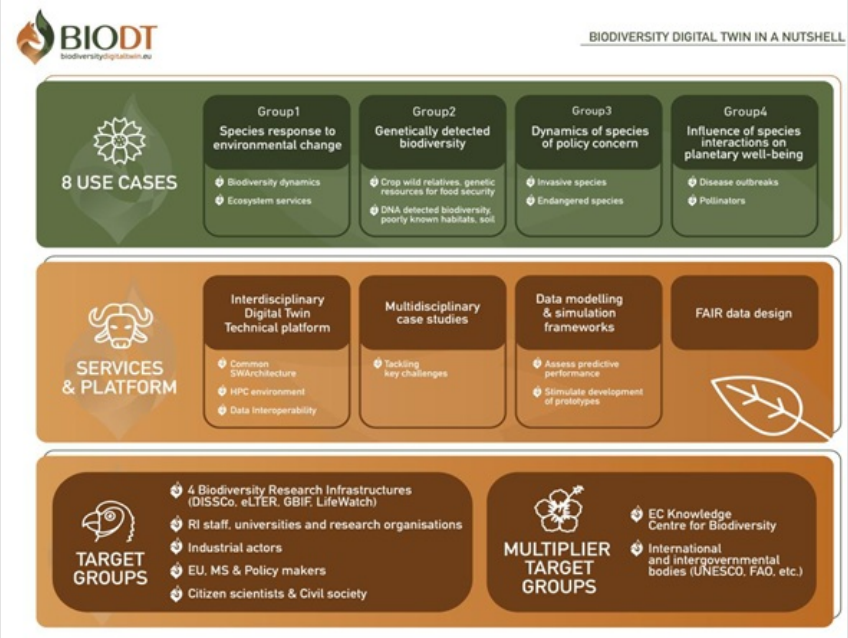
In our vision, the role of science is to advance human knowledge and to support peace and prosperity for all the planet's residents. We, as scientists, are therefore obliged to use our energy and innovation to address paramount global challenges for humanity, such as climate change, to assure a better future. In order to realize its full potential, science needs to bring people together, regardless of nation, religion, gender, or identity. **War and**

violence are antithetical to our goals, and thus must be opposed. eLTER urges governments and individuals to act in any way possible (e.g., direct assistance and charitable donations to responsible civil society organizations) to peacefully assist the victims of the conflict, including the refugees and those who remain under attack.

We in eLTER will continue to call for the reinstatement of safety and sovereignty of Ukraine and its citizens. **End the war NOW!**

Statement

Highlights



BioDT project accepted: Digital twin for advanced simulation, modelling and prediction capabilities

HORIZON-INFRA-2021-TECH-01-01

Lead by: Dr Damien Lecarpentier, CSC Finland

Budget: ~€12M

Lifespan: June 2022 – May 2025

The goal of BioDT is to **push the current boundaries of predictive understanding of biodiversity dynamics** by developing a Biodiversity Digital Twin (BioDT) providing advanced modelling, simulation and prediction capabilities. By using already existing technologies and data from relevant research infrastructures in new ways, the BioDT will be able to accurately and quantitatively model interactions between species and their environment. Scientists will be able to use the BioDT to 1) **better observe changes in biodiversity**, 2) relate these changes to possible causes, and 3) better predict effects of changes in biodiversity and their related causes.

The BioDT consortium brings together **experts in biodiversity, high performance computing, artificial intelligence, digital twinning and FAIR data** to develop the first BioDT prototype. It combines the unique potential of the flagship EuroHPC LUMI computing infrastructure with the scientific expertise and existing biodiversity data from four major research infrastructures: **GBIF, eLTER, DiSSCo, and LifeWatch ERIC**. This allows us to cover several application domains such as environmental and earth science, climate science, ecology, marine biology, genomics, natural history, biodiversity informatics, computer sciences, and mathematics / statistics.

BioDT and its infrastructure are envisioned to be an integral component of the **Destination Earth initiative** and its ambition to realise a full Digital Twin of the Earth. The long-term objectives of BioDT are also tightly interconnected with the EC vision for a robust, federated European computing and data infrastructure and initiatives such as the European Open Science Cloud (EOSC) and EuroHPC.

National comms team: Expanding the eLTER communication and dissemination network

Around **30 representatives from the 27 eLTER countries** make up the National comms team (NCT) as the next stage in the strategic communication and dissemination development of eLTER.

The team has three main specific tasks: to further distribute the eLTER projects' news across their communities, to focus more attention on the research and work being done by each national network, and to gather better knowledge of the specific communication difficulties and opportunities in each country.

The NCT will develop a **list of potential local organisations** through which eLTER could boost its audience and message reach, including science media outlets, online forums, NGOs, research and education institutions and government bodies. Additionally, an **overview of the national news and ecosystem landscape** will be made to assist in tailoring communication to specific countries and to raise awareness of eLTER and its impact on local ecosystems, research, society and policies.

The **first meeting of the NCT** was organized on 23 February where an overview of the NCT strategic mission was discussed and four initial tasks proposed. The team will meet twice a year, and will also establish a direct internal communication channel for everyday use and “fast response”. This is an important **stepping stone for eLTER as it will help distribute its influence and work across its seven stakeholder groups** in all 27 countries.

Strategic Section

Research Infrastructure Co-location – When the whole is greater than the sum of the parts

With our whole system, place-based approach, the eLTER RI is well placed to address some of the most pressing environmental problems facing Europe today. **However, a single Research Infrastructure (RI) cannot hope to generate all the knowledge** needed to build a sustainable future. Instead that knowledge has to come from multiple sources, including a range of RIs.

Co-location of multiple RIs at the same physical location offers a unique opportunity to create actionable knowledge synthesized from the

best information available using robust, state of the art analytical methods in a standardised manner. Observations made in this way support open, repeatable and refutable analyses and insights based on the best available data.

ICOS, the Integrated Carbon Observation System, is **one of the most important RIs for eLTER co-location**. The ICOS RI makes high quality, standardised carbon flux measurements at multiple sites across Europe. When these measurements are combined with eLTER observations on, e.g., biogeochemical process rates, land management actions and ecology, there is the potential to understand both "what is happening" and "why it is happening" in the terrestrial carbon cycle. **ICOS has unique strengths in documenting fluxes** while eLTER offers the contextual background needed to understand flux magnitude. Effectively, when eLTER and ICOS co-locate, the whole is greater than the sum of the parts.

Recently, representatives from the **ICOS and eLTER RIs took an important first step towards achieving this vision at a joint scoping meeting**. There are opportunities for synergies at the immediate, medium, and long-term time scales including collaboration on measurement protocols, IT systems and communication. There is a lot we can learn from ICOS, and there is even more that we have to offer.

Latest Research

eLTER Forum at GI_Salzburg22

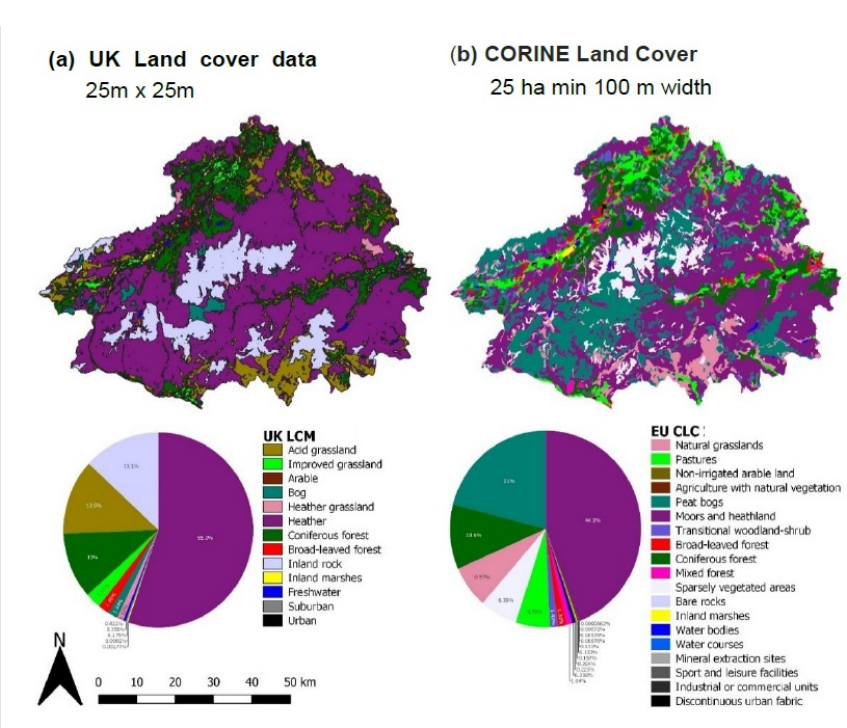
Under the aegis of the University of Salzburg, the Austrian Academy of Sciences and the Environment Agency Austria, **LTER-Austria and eLTER are organising a forum on “Potential and Challenges for GI Science in the context of Long-Term Ecosystem, critical zone and socio-ecological Research (eLTER)”** at the GI_Salzburg22 on July, 5.

The forum is aiming to provide information on eLTER and to show examples of using **data compiled by the network** to address different research questions, highlighting the specific needs for GIS and spatial analysis in this context.

In Session A, information on the emerging eLTER RI, especially on its **thematic background and its service portfolio linking to geo-informatics and spatial analysis**, will be given. Examples of application from different thematic areas will show the wide range of data analysis and modelling at European level fostered by eLTER. A discussion on the potential contribution of eLTER to meet the challenges of data analysis and data science in respect of LTER and related scientific topics will complete this session.

Session B is dedicated to the use of **long-term data for addressing global challenges and the issues of data consistency** and bridging of scales in this context. Selected use cases will provide an insight into how new methods of geo-informatics can help to support climate change and biodiversity research. The final discussion will consider which methods of geo-informatics and spatial analysis could be used, and will also look at how to address appropriate scales.

Read more



Workflow for use of statistical data in eLTER proposed

The eLTER discussion paper on key standard observation variables (SOV) suggested **179 variables of importance to eLTER** science. Now the eLTER PLUS project task 4.2 has identified data sources providing official statistics relevant for eLTER and has tested a way to make them available to the eLTER user community.

The team systematically screened almost **30 main EU and global data platforms** for statistical data relevant to SOV and identified **116 datasets related to 42 SOV**. Based on the pilot phase and feedback from eLTER community, a workflow for retrieval of statistical data relevant for SOV was proposed. It contains two branches: one for **statistical data retrieval and one for selection of regions of interest**. The proposed workflow is part of the conceptual framework of data flow and processing for the eLTER community; it foresees data processing in eLTER DataLabs applications.

The task 4.2 achievements are described in the report D4.2 Its annexes describe the data portals screened and provide metadata for all 116 datasets mentioned above. Metadata contains all information needed for future dataset incorporation to the eLTER Information System.

Report D4.2

Reporting Back

3rd eLTER Interim Council: Deciding on the Service Portfolio and Integrated Governance

The third meeting of the eLTER Interim Council (IC) was held virtually on January 27, 2022. All 18 countries were represented in the meeting, which decided on the ongoing process for eLTER **Service Portfolio development and on the strategic goals of eLTER Integrated Governance**.

The eLTER PPP project did initial screening of over **230 service workflows** that the RI can provide to identified stakeholder groups. Next, the work proceeds with careful mapping and prioritisation and detailed specification of the eLTER service portfolio, with indicative cost estimates for the different service areas.

The strategic goals of the eLTER Integrated governance are the fundamental basis for sustainable operations in the eLTER RI. eLTER seeks both to establish a formal, centralised governance for the research infrastructure and to integrate the achievements of the previous European LTER process, which was mainly initiated from bottom-up. The **purpose of integrated governance is to achieve the vision and mission of eLTER RI**, and to enable transparent decision-making, sustainable operation, and promotion of scientific excellence.

In addition, the IC discussed e.g., about the potential eLTER contributions to **Horizon Europe Work Programme 2023-24**, the first version of **eLTER ERIC** statutes and the process for defining the eLTER Standard Observations scheme, and heard news from Italy who recently had approved eLTER in their national RI Roadmap.

IC delegates were also introduced to the new eLTER website, results from an ecosystem reanalysis done in eLTER PLUS, and the results of first interim

review of the projects. Next IC meeting will be held on September 28-29, hopefully already face-to-face.

eLTER National Coordinators exiting pandemic times

eLTER can duly state to have made the best of the time since Covid-19 hit the globe. In teams from 26 countries, we have elaborated many components of the eLTER RI´s foundation.

However, **we all have experienced the limitations of virtual interaction** beyond certain group sizes, in attracting and integrating new experts and – specifically – when working on critical questions or complex matters.

Elaborating the **design of eLTER´s in-situ facilities** (categories of sites and platforms) and developing the Integrated Governance of the future eLTER ERIC does belong to these matters. They need undisturbed discussion time and varying formats to give everyone the chance to contribute, speak up and raise the concerns to be solved towards concepts agreeable across >20 countries.

As for the **categories of eLTER sites and platforms**: What shall be the scientific scope of the different site categories? How to deal with varying scientific foci? Which research challenges do the sites need to be fit for? What are the required fundamental observational data? How many sites do we need within one LTSER Platform? How can we balance between feasible criteria and eLTER´s vision of a Whole System Approach?

With respect to eLTER's future **Integrated Governance**: What are the best structural elements for our governance to enable transparent and efficient

decision making across partner countries, the scientific user communities, eLTER RI operations and the wider set of associated sites? How can we achieve a fair balance between contributions and benefits? How to interface with a wide range of user communities? How to enable an operable but also reflexive RI capable of dynamically responding to emerging challenges?

For these questions we have to find solutions agreeable across all eLTER networks **Concrete options elaborated by expert teams of the eLTER PPP and eLTER PLUS project had since months to be discussed with the national coordinators**. They have long-term insider knowledge of the national networks and communities' needs.

Meeting outcomes

eLTER celebrates International Women's Day 2022

Raising awareness on Gender Equality issues is part of eLTER's Strategic Plan. This year, as part of this objective, eLTER held a celebratory event to increase the visibility of research done by women in the network.

Many participants expressed the view that **gender affects them and their peers** with, for example, male friends and colleagues getting more support during their PhDs, getting positions quicker or easier, and occupying most leadership or senior positions. **Childbirth and family planning** were another frequently mentioned factor affecting professional advancement. Conversely, other participants suggested that gender had no impact on their careers.

Age and language were two non-gender related demographic variables that were mentioned as impacting progress. Pursuing a scientific career later in life or taking time off to raise a family is penalised, as young scientists are prioritised for proposal funding and positions. In addition, the predominance of English in academia places an additional hurdle for non-anglophone scientists.

To address the gender gap or inequality in science and research, participants proposed **raising individual and institutional awareness**, having female scientific role models from an early age, increasing the promotion of women into leadership positions, and eliminating male evaluation biases (e.g. a deeper and louder voice being equated with greater competence and assertiveness). Yet, participants stressed that the promotion of women should be accompanied by the preservation of quality and performance.

Read more

eLTER SPF workshops bring together 600 researchers from around the world

Over **600 researchers from all around the world** gathered for the three eLTER Sites and platforms forum workshops on time series analysis.

Based on the questionnaire results on training needs from sites, the first two workshops, led by Ulrike Obertegger (FEM-CRI, Italy), focused on time series analysis. They were open to everyone from students to researchers, independent of involvement in eLTER projects.

These **workshops gave an introduction to the challenges of time series data and demonstrated different analysis methods**. This was not a technical course but a practical demonstration of what can be done to solve certain ecological questions. All the analyses were done in R and thus a basic understanding of R coding was helpful but not necessary.

The third workshop used the article by Wauchope et al. 2021 "**Evaluating Impact using time-series data**" (Trend in Ecology & Evolution 36: 196-205) as a starting point and went deeper into the specific analysis of time

series data. The workshop covered change point analysis, linear modelling and interpretation of a three-way interaction.

More eLTER workshops and events are planned. In the meantime, you can watch the recording of the first workshop.

Video of the workshop

Upcoming and ongoing events

eLTER Sites and Platforms Forum

Date: 28 April and 03 May 2022 | **Place:** Online

The third Sites and Platforms Forum (SPF03) will take place on two mornings (9:30-13:00 CET), Thu 28 April and Tue 3 May 2022.

The programme is under preparation and will include at least introduction to the revised site categories, SPF working group sessions and site presentations.

Please mark the dates in your calendars. More information will be available later on.

Learn more

eLTER Mallorca Meeting

Date: 17-20 May 2022 | **Place:** Mallorca, Spain

The eLTER Mallorca Meeting will be a physical meeting, marking a change from the online format of the previous three events: Mercury, Venus and Mars.

Special attention will be paid to the participation of young scientists and strategic talents from across partnering institutions to learn about eLTER and encourage active engagements.

There will be a dedicated session about job opportunities created by RIs and specifically in the eLTER RI context in the mid term; as well as about communication and new communication platforms.

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Learn more

FORECOMON 2022 - The 10th Forest Ecosystem Monitoring Conference

Date: 30 May - 1 June 2022 | **Place:** Helsinki, Finland

The goal of FORECOMON is to highlight the extensive ICP Forests data series on forest growth, phenology and leaf area index, biodiversity and ground vegetation, foliage and litterfall, ambient air quality, deposition, meteorology, soil and crown condition.

It combines novel modeling and assessment approaches and integrate long-term trends to assess air pollution and climate effects on European forests and related ecosystem services. Latest results and conclusions from local scale to European scale studies will be presented and discussed.

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Learn more

EGU General Assembly 2022: eLTER co-convened session

BIOGEOMON Symposium on Ecosystem Behavior

Date: 23–27 May 2022
Place: Vienna, Austria

The EGU General Assembly 2022 will bring together geoscientists from all over the world for one meeting covering all disciplines of the Earth, planetary, and space sciences. The EGU aims to provide a forum where scientists, especially early career scientists, can present their work and discuss their ideas with experts in all fields of geoscience.

All presentations will be short orals that can be delivered and viewed both virtually or on-site. Registration is also available for on-site or virtual participation, on-site registration is open until 14 April 2022, 13:00 CEST due to Austrian event restrictions.

Learn more

Date: 26-30 June 2022
Place: Tartu, Estonia

This conference is a get together of the world's biogeochemistry researchers. The focus of BIOGEOMON is on the biogeochemistry of various ecosystems as influenced by anthropogenic and environmental factors.

The focus of BIOGEOMON is on the biogeochemistry of various ecosystems as influenced by anthropogenic and environmental factors.

Organisers invite empirical and modeling studies on fluxes and processes related to the turnover of major and trace elements at the ecosystem, watershed, landscape, and global scale. Abstract submission runs until April 2022

Learn more

AnaEE Conference 2022

Date: 27-30 June 2022 | **Place:** Prague, Czech Republic

n order to mark the official start of AnaEE, the first AnaEE Conference will be held under the theme “Ecosystems services under pressure: the role of experimentation” and will feature a series of review talks on the functioning of ecosystems and their behaviour under anthropogenic pressures.

A stakeholder meeting focusing on agroecology challenges as well as training will also be held on this occasion. The primary goals of the AnaEE Conference 2022 are to discuss the role of agriculture, forests and natural ecosystems in reducing greenhouse gas emissions and increasing carbon sequestration, as well as to discuss the importance of holistic approaches that integrate across ecosystem boundaries spanning from terrestrial to freshwater ecosystems.

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Learn more

Call for abstracts for AOGS2022

Date: 01-05 August 2022 | **Place:** Online

Asia Oceania Geosciences Society (AOGS) was established in 2003 to promote geosciences and their application for the benefit of humanity, specifically in Asia and Oceania and with an overarching approach to global issues.

The Asia Oceania region is particularly vulnerable to natural hazards, accounting for almost 80% of human lives lost globally. AOGS is deeply involved in addressing hazard related issues through improving our understanding of the genesis of hazards through scientific, social and technical approaches.

AOGS holds annual conventions providing a unique opportunity for exchanging scientific knowledge and discussion to address important geo-scientific issues among academia, research institutions and the public.

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Learn more

ESACSEE Annual Meeting

Date: 14-19 August 2022 | **Place:** Montréal, Canada

The 2022 Annual Meeting of the Ecological Society of America will be held at Palais des congrès de Montréal.

The organisers share the following view: Ecology is facing a disciplinary

reckoning. Therefore, where we go and how we get there must be a collective enterprise built on principles that broaden participation, promote equity, and diversify metrics of impact.

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Learn more

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 871126 (eLTER PPP) and No 871128 (eLTER PLUS)

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