

4th NEWSLETTER, SEPTEMBER 2025

Welcome to the 4th PANGEOS COST Action Newsletter! This issue highlights our recent activities, upcoming events, and dissemination efforts. Together, we continue to advance knowledge, strengthen collaborations, and contribute to the European Green Deal goals.

Field Day - Ås, Norway, Norwegian University of Life Sciences, 19-20 June 2025

In June 2025, PANGEOS members gathered at the **Norwegian University of Life Sciences (NMBU)** in Ås, Norway, for a joint WG1–WG2 Field Day held on 19–20 June. Hosted by Dr. Sahameh Shafiee and Prof. Morten Lillemo, the event provided participants with a hands-on opportunity to explore state-of-the-art remote sensing and proximal phenotyping technologies under real field conditions. UAV-based multispectral and hyperspectral sensors, field spectrometers, and chlorophyll meters were demonstrated on research platforms such as the PheNo Infrastructure, SmartWheat drought trials, and the ProteinBar nutrient trials. The objective was to showcase complementary data acquisition methods, encourage knowledge exchange across disciplines, and strengthen links between plant breeding and sensor-based monitoring.



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CA22136 - Pan-European Network of Green Deal Agriculture and Forestry Earth Observation Science.

Interdisciplinary Summer School on Forests 4-8 August 2025, Oxford / U.K.

The Interdisciplinary Summer School on Forest Ecosystems 2025 was successfully held at the University of Oxford, bringing together over 40 participants from 25 countries and four continents. Jointly organised by four COST Actions **3DForEcoTech**, **ARiF**, **CLEANFOREST**, and **PANGEOS**. The event provided a unique platform to strengthen interdisciplinary skills and advance forest ecosystem research. The programme combined lectures, keynotes, and hands-on training with field visits to Wytham Woods, one of the world's most intensively studied forests. Participants explored topics ranging from lidar and point cloud data to Earth observation tools.

PANGEOS contributed actively through its dedicated training sessions. Hands-on exercises on Earth observation and Google Earth Engine were delivered by lecturers **Esra Tunç Görmüş**, **Gordana Kaplan**, **Egor Prikaziuk**, and **Shawn Kefauver**, offering participants valuable skills in advanced geospatial analysis. These sessions were further enriched by a plenary lecture from **Maria J. Santos**, highlighting the integration of ecological and remote sensing approaches. Made possible through funding from the COST Association, the summer school not only enhanced technical expertise but also fostered collaboration across disciplines, cultures, and career stages—building capacity for the future of forest ecosystem science.



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Hackathon of WG1 and WG2 Aarhus, Denmark, 28-29 August 2025

On 28–29 August 2025, Aarhus University hosted a hackathon organised by PANGEOS Working Groups 1 and 2, focusing on improving crop growth models through the integration of remote sensing. The event brought together participants to explore crop growth modelling, vegetation trait retrieval, and data assimilation. Using combined datasets of remote sensing, meteorological, and ancillary data, participants developed crop yield models and shared their approaches.



Jūrmala, Latvia, Core Group meeting, 09 September, 2025

In addition to the conference program, the Core Group held a dedicated meeting to review progress, align strategies, and set priorities for the next phase of PANGEOS.

We extend our gratitude to all speakers, participants, and organizers whose enthusiasm and collaboration made this event a success, and we look forward to building on the insights and partnerships developed in Jūrmala as we continue to drive scientific innovation, sustainability, and stakeholder engagement within the PANGEOS network.



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Jūrmala, Latvia, PANGEOS COST Action Conference, 10-11 September 2025

The PANGEOS Cost Action Conference 2025 successfully concluded in Jūrmala, Latvia, bringing together researchers, academics, industry professionals, and policy-makers at the Great Hall of Bulduri Technical School under the theme “**Remote Sensing Applications Towards European Green Deal Strategic Goals.**” Over two days, participants engaged in inspiring keynotes, interactive sessions, and dynamic working group discussions that showcased the role of remote sensing in advancing sustainable agriculture, forestry, and climate action across Europe and beyond. Participants were also invited by the host Anta Sparinska and her team to tours of the Bulduri Technical School gardens and horticultural school installations.



Training School on the Terrestrial Carbon Community Assimilation System Hamburg, Germany, 22-23 September



The Training School on the **Terrestrial Carbon Community Assimilation System (TCCAS)** was held in Hamburg, Germany, on 22–23 September 2025. Supported by the **ESA Network of Resources Initiative**, the two-day course offered participants hands-on training and lectures on terrestrial biosphere modelling, with a strong focus on the carbon cycle, data assimilation, the D&B terrestrial biosphere model, and cloud-based applications of TCCAS. The event was led by a distinguished team of trainers—Holly Croft, Wolfgang Knorr, Thomas Kaminski, Tristan Quaife, Peter Rayner, Marko Scholze, Michael Vossbeck, and Songyan Zhu—who provided in-depth expertise and guidance throughout the programme.

Dissemination Activities



PANGEOS recently joined two key COST Connect events emphasizing collaboration and inclusivity across Europe. At the “Advancing a Clean and Healthy Environment” meeting in Brussels, over 30 researchers from 23 Actions shared insights on data sharing, citizen science, and ecosystem services, with contributions from UNEP, the European Commission, and UNESCO. PANGEOS also took part in the first COST Connect on Gender Equality Plans, contributing to discussions on integrating equity and diversity within COST Actions.



Grants in GP2



PANGEOS COST Action strengthens researchers by offering Short-Term Scientific Missions (STSM), fostering international collaboration, knowledge sharing, and skill enhancement. These grants offer a valuable chance for researchers to engage in innovative projects, broaden their professional networks, and advance the goals of the PANGEOS mission.

★ Short-Term Scientific Missions (STSMs):

4 funded and completed STSMs focused on topics such as Bark Beetle & SIF: Forest Recovery Monitoring via Terrestrial and UAV Laser Scanning. Advancing Crop Stress Evaluation with UAV-Based Thermal & Fluorescence Imaging. Data Collection Highlights – CA22136 WG1-WG2 Field Day (Norway).

★ Dissemination Conference Grants (DCGs):

1 funded DCGs presented topics on Dissemination Conference Grant for ECPA2025.

★ Conference Grants for Young Researchers (ITCG):

2 funded ITCGs covered topics like Characterisation and Calibration of Low-Cost IoT Monitoring Systems for Extreme Environmental Conditions and classification for beech species using satellite imagery

★ Young researcher and innovator conference grant

5 funded Young researcher and innovator conference grant covered topics like high- resolution multispectral images for the assessment of bud flush and damage, propagation in remote sensing, python software for estimating vegetation properties, deep learning for predicting regional temperature changes, Estimation of leaf area index using a newly deployed UAV-borne narrow-band hyperspectral imager.

★ Virtual Mobility (VM):

1 completed VM focused on Systematization of data and code of the Interdisciplinary Summer School on Forests.

This totals 9 funded projects across STSMs, DCGs, ITCGs, young researcher and innovator conference grant and VM activities during Grant Period 2.

For more information please visit our website: <https://pangeos.eu/gp2-reports/>

Participation in EGU 2025



At the European Geosciences Union General Assembly 2025 (EGU25), PANGEOS contributed to **Session ESSI4.11: Remote Sensing for Sustainable Agriculture and Forestry**, convened by Sheng Wang with co-conveners Shawn Kefauver, Holly Croft, and Egor Prikaziuk.

The session featured oral and poster presentations on advancing Earth observation for sustainable land management. PANGEOS members presented their work on **uncertainty propagation in remote sensing**, with contributions from Egor Prikaziuk, Gary Llewellyn, Laura Mihai, Agnieszka Bialek, Andreas Hueni, Mike Werfeli, Jose Luis Gomez-Dans, Jochem Verrelst, Jose Luis Garcia-Soria, Joseph Fennell, Dessislava Ganeva, and Shawn Carlisle Kefauver.

PANGEOS also co-organized a town hall meeting with other COST Actions, emphasizing the value of cross-network collaboration to address shared challenges such as data integration, modelling, and policy engagement, reinforcing its commitment to innovation and community building in Earth observation.

Announcements

We are pleased to announce the upcoming Special Issue ***Precision Agriculture: A PANGEOS COST Action Perspective***, guest-edited by Prof. Anshu Rastogi (WG1 Leader), Dr. Offer Rozenstein (WG2 Leader), and Dr. Shawn C. Kefauver (PANGEOS Action Chair). Open for submissions between **until 30 June 2026**. This Special Issue will bring together innovative research addressing the challenges of sustainable agriculture and forestry in the face of climate change, with a focus on **remote sensing, in-field sensors, modeling, and socio-economic insights**. We invite original research, reviews, and case studies on themes including ***data integration and analysis of multi-source information for actionable insights; decision support systems for spatial and temporal variability; resource use efficiency in water, nutrients, and energy; sustainability and climate adaptation through precision agroforestry; and standardization and uncertainty in data-driven management***. Contributions are particularly encouraged from participants of the **PANGEOS COST Action Conference 2025 (Jūrmala, Latvia)**, although submissions are open to all researchers working in this field. Please visit for submission: <https://link.springer.com/collections/dehjfbfha>

News...

PANGEOS has a GitHub page <https://github.com/pangeos-cost> for forking repositories relevant to the aims of the action and for the distribution of training materials. PANGEOS has a GitHub page for forking repositories relevant to the aims of the action and for the distribution of training materials.

AVAILABLE STSM AND ITC GRANTS !!! For more information please contact Egor Prikaziuk (email: e.prikaziuk@utwente.nl)

Follow us!

Join us in advancing remote sensing solutions for a more sustainable future!

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The PANGEOS COST Action aims to leverage state-of-the-art remote sensing (RS) technologies to advance field phenotyping workflows, precision agriculture/forestry practices and larger-scale operational assessments for a more sustainable management of Europe's natural resources.

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