NEWSLETTER

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Better Monitoring for Climate & Biodiversity – Together with Europe and China
An EU Horizon Europe research project integrating climate and biodiversity monitoring systems

Welcome to BioClima

Climate change and biodiversity loss are among the most pressing global challenges of our time. They are deeply interconnected, yet they are still too often monitored and addressed separately. BioClima is changing that. **BioClima is an international research project** funded by the **EU Horizon Europe programme**, bringing together **37 organisations** from **Europe** and **China** to develop integrated approaches to **climate and biodiversity monitoring**. By combining Earth observation, in-situ measurements, artificial intelligence and real-world pilot sites, BioClima supports better science, and better decisions, from local to global scale.

This Issue 1 of the BioClima Newsletter introduces the project, explains its scientific vision, highlights key activities from its foundational year, and outlines what comes next.

What is BioClima?

BioClima is an international scientific collaboration designed to strengthen how biodiversity and climate change are monitored across diverse ecosystems. The project integrates **field observations, satellite data, AI-based analysis** and **shared data standards** to ensure that environmental information is reliable, interoperable and actionable across regions and disciplines.

Working across Europe and China, BioClima aims to:
- combine satellite data, field observations and innovative sensors,
- use artificial intelligence to detect ecological change more rapidly and consistently,
- develop interoperable monitoring frameworks for biodiversity (EBVs) and climate (ECVs),
- support environmental policy and governance with robust, science-based insights.

The long-term ambition is clear: a global monitoring system where biodiversity protection and climate action reinforce one another.

Achieving this vision requires long-term collaboration between research communities, shared monitoring protocols, open standards and FAIR data principles, and advanced modelling and detection tools. These principles guide all aspects of the project from pilot activities to innovation and dissemination.

How it all started

BioClima officially launched with an **EU–China online kick-off meeting** in January 2025, bringing together partners from Europe and China. The meeting introduced the project objectives, governance structure, and the roadmap for the first year, while work package leaders outlined planned activities in climate and biodiversity monitoring, Earth observation, and AI-driven analysis. The kick-off marked an important step in strengthening EU–China scientific cooperation on environmental sustainability.

This was followed by a **hybrid kick-off meeting in Prague**, Czech Republic, in April 2025, where European partners met in person while Chinese partners joined online. The meeting aligned the consortium on project goals, work packages, pilot sites and collaboration workflows, setting the foundation for integrated research across Europe and China.

The project is **coordinated by the Faculty of Applied Sciences** (FAS), **University of West Bohemia in Pilsen** (UWB), which oversees overall project management and supports effective collaboration across the international consortium. This coordination role helps ensure smooth communication, alignment of activities, and balanced contributions from all partners involved.

Photo: Physical Kick-Off Meeting in Prague (CZ), held in the heart of the city

A year of building foundations, launching pilots and strengthening EU–China cooperation

During its first year, BioClima focused on establishing the structures, partnerships and shared understanding required for long-term international collaboration.

Key achievements included:
- regular coordination between European and Chinese partners,
- shared tools for collaboration and communication,
- the launch of the BioClima website as a central information hub,
- alignment with international biodiversity and climate frameworks.

These steps laid the groundwork for the scientific and operational activities that follow.

Towards a standardised monitoring ecosystem

A core objective of BioClima is the development of a standardised and interoperable monitoring ecosystem, aligned with the Open Geospatial Consortium (OGC) and international best practices.

In 2025, the consortium began:
- defining common metadata and data-sharing protocols,
- preparing standardised workflows for field and remote-sensing data,
- identifying OGC-compliant services to ensure interoperability across partners,
- aligning with global initiatives such as GEOBON and EuropaBON.

These efforts will allow BioClima to integrate data from Europe and China into a unified monitoring infrastructure, enabling robust joint analyses in the coming years.

Global standards & international cooperation

Strengthening international collaboration and standards alignment: BioClima actively contributes to international dialogue on climate and biodiversity monitoring, with a strong focus on global standards, interoperability and EU–China scientific cooperation.

China-side dissemination and collaboration: Chinese BioClima partners continued to **strengthen EU–China cooperation** in climate and biodiversity monitoring, with activities aligned to international frameworks such as the Kunming–Montreal Global Biodiversity Framework.

In late 2025, **expert exchanges and field visits** took place in Greece and the Netherlands as part of the BioClima project, with a Chinese delegation hosted by the University of Twente – Faculty of Geo-Information Science and Earth Observation (UT–ITC) and NEURALIO AI, strengthening EU–China scientific cooperation on integrated climate and biodiversity monitoring across European and Chinese demonstration sites.

BioClima in international expert forums

The project was also represented at **OGC Innovation Days 2025** in Frankfurt and participated in a joint **EU–China session on climate resilience** with the OGC Climate Resilience Domain Working Group. These engagements highlighted BioClima's role as a bridge between European and Chinese research communities and its contribution to international standardisation efforts.

BioClima contributed to the **14th Chinese–German Workshop** on Biodiversity and Ecosystem Services in Bonn, where project representatives presented GeoAI-enabled approaches to integrated climate–biodiversity monitoring.

Photo: Chinese–German Workshop in Bonn

BioClima at FBAS 2025 in Beijing

The BioClima project was presented at the **5th International Forum on Big Data for Sustainable Development Goals (FBAS 2025)**, held in Beijing. The forum brought together international experts, policymakers and research initiatives focusing on the use of big data and Earth observation to support the Sustainable Development Goals.

BioClima contributed to discussions on integrated climate and biodiversity monitoring, highlighting how Earth observation and AI-based approaches can strengthen evidence-based environmental policy. The participation underlined BioClima's role in advancing EU – China scientific cooperation and its alignment with global data-driven sustainability initiatives.

Together, these activities position BioClima as an active contributor to global efforts in harmonised climate and biodiversity monitoring.

BIOCLIMA USE CASES: WHERE WE WORK

European and Chinese use cases

BioClima's research activities are organised around a set of **European and Chinese use cases** - real landscapes where new monitoring approaches are tested.

The use cases cover forests, agricultural systems, protected habitats, coastal zones and restoration areas.

Preparatory work in 2025 focused on:
- selecting priority study areas,
- defining indicators for EBVs and ECVs,
- mapping available field infrastructure and datasets,
- planning integration of Earth observation and sensor data,
- aligning methodologies across continents.

Full field campaigns begin in 2026, with future newsletters presenting individual use cases in more detail.

From science to the field: pilot activities

Translating research into real-world monitoring:

BioClima's scientific concepts are being tested and refined through pilot activities across Europe and China, where integrated climate and biodiversity monitoring is applied in real landscapes.

Czech pilot enters operational phase:

In early summer 2025, **BioClima's Czech pilot site in the Žďársko region** became operational. Environmental **sensors** were installed to measure temperature, precipitation and soil moisture, supporting analyses of Essential Climate Variables (ECVs) and Essential Biodiversity Variables (EBVs).

Field activities were documented in a site report and featured in a **national television broadcast by Czech Television,** demonstrating how integrated field and satellite data support climate and biodiversity monitoring in agricultural and forest landscapes.

Photo: Pilot activity - Vysočina region, Czech republic

BIOCLIMA EXPERTISE

Expanding expertise & sharing knowledge

Beyond its core research activities, BioClima places strong emphasis on knowledge exchange, capacity building and the development of a vibrant international expert community. In 2025, the project expanded its scientific and professional network through several key initiatives. An **external Advisory Board** was established, bringing together international experts to provide strategic guidance, scientific feedback and links to related global initiatives.

BioClima also organised **open webinars** to support knowledge sharing across disciplines and regions. These included a technical webinar on **LiDAR technologies for forest monitoring**, which introduced participants to advanced methods for assessing vegetation structure and ecosystem change using airborne and remote-sensing data.

BioClima expands cooperation in Kazakhstan

In parallel, BioClima strengthened new international research cooperation, including emerging collaboration focused on forest ecosystems in the **Tian Shan mountain region**. This work combines Earth observation, UAV-based data collection and AI-driven analysis to explore climate and biodiversity dynamics in complex mountain environments.

VSUO is also strengthening stakeholder cooperation through collaboration with partners in **Kazakhstan** near the Chinese border, including a planned joint expedition to the **Tian Shan Mountains** in June to support cross-border knowledge exchange.

Photo: Tian Shan mountains, Kazakhstan

New Scientific Publications on Remote Sensing and Biodiversity

As part of Bioclima's dissemination activities, **VSUO (Research and Breeding Institute of Pomology Holovousy Ltd)** is preparing an impact-factor journal Remote Sensing (JCR - Q1 (Geosciences, Multidisciplinary) / CiteScore - Q1 (General Earth and Planetary Sciences)) article titled "**Monitoring of Agricultural Crops by Remote Sensing in Central Europe: a Comprehensive Review**", focused on crop monitoring and its links to biodiversity in intensively farmed landscapes. The manuscript is planned for submission by the end of January, with expected acceptance in late February/early March. The paper is being developed in collaboration with the Faculty of Engineering at the Czech University of Life Sciences Prague.

In parallel, VSUO is preparing a second technical publication (working title "**Eyes on the Fields**"), aimed specifically at vertical layers and sensors in remote sensing and environmental and agricultural applications under Central European conditions.

EUROPEAN CASE STUDIES

BioClima's **EU case studies** translate scientific data and insights into actionable strategies, linking research with policy-relevant and conservation outcomes. Together, partners test and demonstrate integrated approaches to climate and biodiversity monitoring across Europe's diverse biogeographical regions.

1

Northern Finland

Optimise decision-making by integrating modelled carbon balance estimates and EO data on natural habitats, identifying areas with high biodiversity and carbon sequestration potential using the Prebas and Zonation models

Austria

Identifying future forest fire hotspots and their impact on ecosystem services using IIASA's FLAM model, considering climate change and management scenarios to upscale modelling to a European scale

2

Dobrogea Region

Explore the ecological impacts and climate resilience of agroforestry systems using EO and AI-driven time-series analysis, focusing on biodiversity-rich yet aridity-exposed areas including the Danube Delta and coastal habitats

3

Vysocina Region

Assess the ecological impacts and climate resilience of agroforestry systems, integrating diverse plant species

4

European Arctic

Analysing the impact of environmental changes on Arctic terrestrial ecosystems, particularly vegetation diversity and its effects on species habitats, carbon dynamics, greenhouse gas fluxes

5

6

Crete

Retrieve EBVs to understand the impact of climate change on forest ecosystems health and biodiversity dynamics, enhancing monitoring practices

North of Belgium

Explore rural landscapes and ecosystem functioning, focusing on the interplay between land use, climate change, and soil and water management
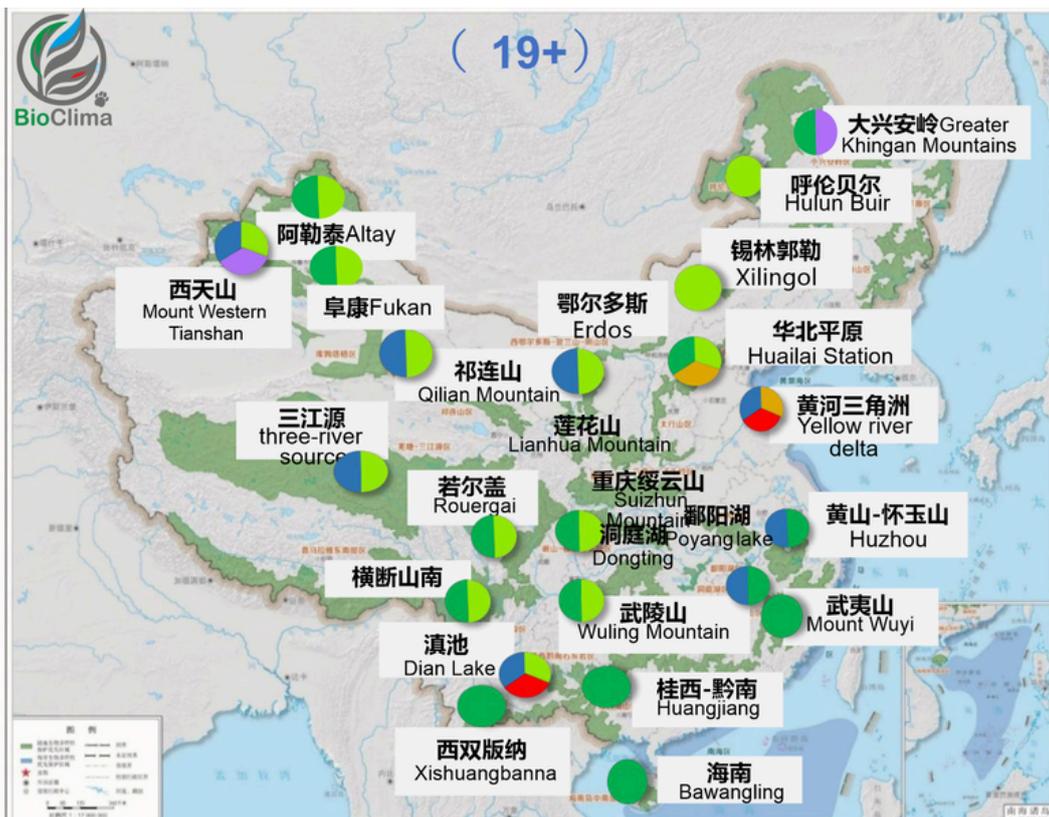
7

CHINESE CASE STUDIES

All selected sites represent current priority conservation areas, chosen based on optimal conditions for cooperation and high data availability. These areas encompass representative ecosystems with a coordinated geographical distribution and are significantly affected by climate change. Importantly, the ecosystems in these regions can serve as control groups for Central Europe at comparable latitudes.

Control group sharing the same latitude
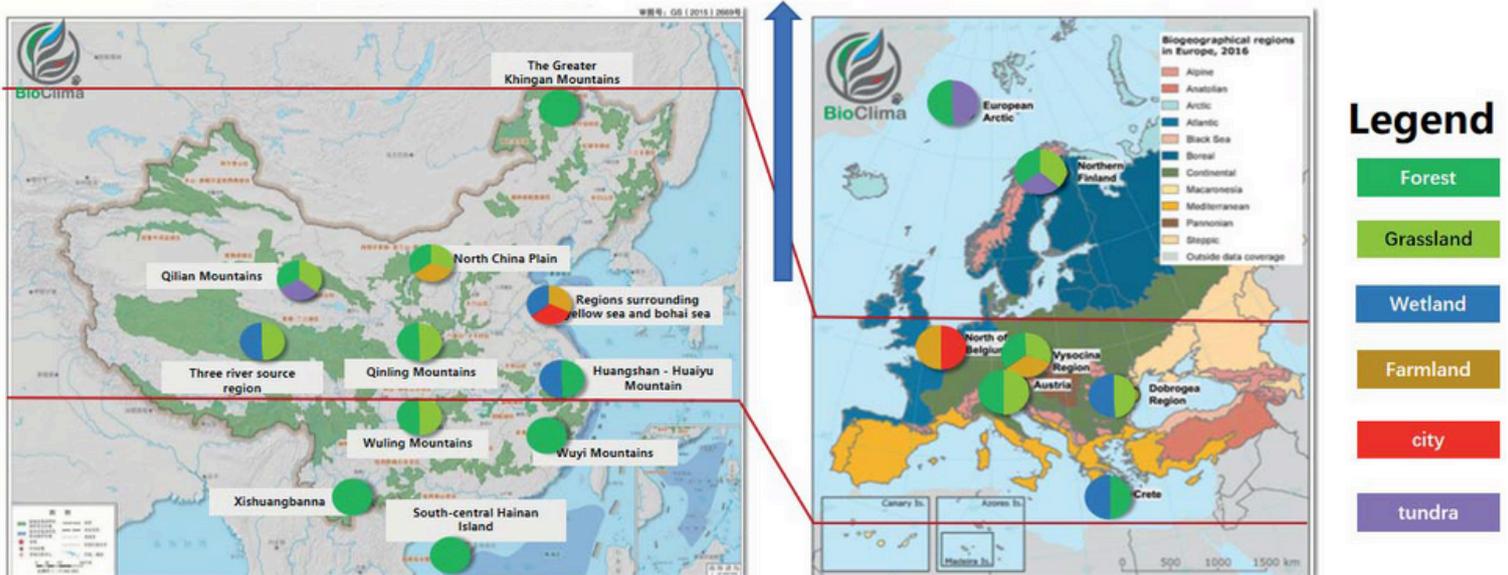
China contributes **case studies** from more than 19 major conservation areas, covering forests, mountains, coastal zones, and tropical regions.

Funded by the European Union

BIOCLIMA PARTNERS

Meet the BioClima partners

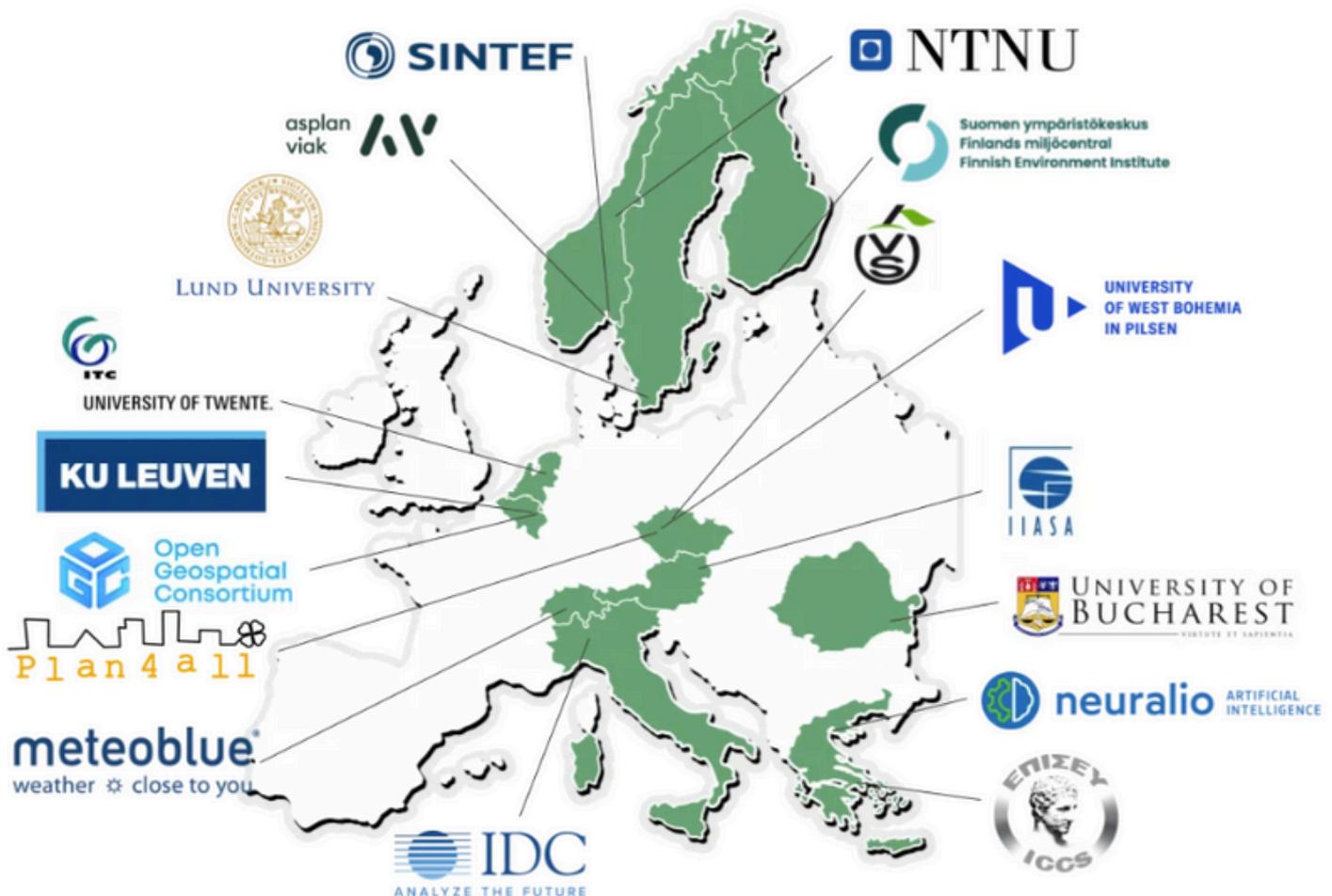**Bioclima** has a diverse consortium driving integrated climate–biodiversity monitoring.

BioClima brings together a unique consortium of **37 organisations** from **Europe** and **China**, including universities, research institutes, environmental agencies, technology providers, SMEs and international organisations.

This diversity enables BioClima to compare monitoring approaches across different ecosystems, climates and governance contexts, and to jointly develop interoperable methods that work across regions and disciplines. Close collaboration between partners ensures that scientific innovation, technical development and policy relevance advance hand in hand.

Throughout 2026, the BioClima website will feature **partner profiles, interviews and thematic spotlights**, offering deeper insight into the expertise and contributions of individual organisations.

In Issue 1 we will introduce you: University of West Bohemia in Pilsen, University of Twente, Research and Breeding Institute of Pomology Holovousy Ltd, Finnish Environment Institute, Institute of Communication and Computer Systems.

European partners

EUROPEAN PARTNERS INTRODUCTION

University of West Bohemia in Pilsen - Faculty of Applied Sciences - UWB (Czechia)

- Project coordination, system architecture and integration of climate–biodiversity data.
- **More information**

University of Twente – Faculty of Geo-Information Science and Earth Observation - ITC (Greece)

- Linking Earth observation with Essential Climate and Biodiversity Variables; pilot activities in Greece.
- **More information**

Research and Breeding Institute of Pomology Holovousy Ltd. - VSUO (Czechia)

- Lead partner of the Czech pilot, focusing on agricultural and forest landscapes.
- **More information**

Finnish Environment Institute – SYKE (Finland)

- Climate and land-use impacts on ecosystems and ecosystem services in northern environments.
- **More information**

Institute of Communication and Computer Systems (Greece)

- Scalable cloud-based processing of Earth Observation data and AI-enabled digital infrastructure; leading development of automated EO data services in BioClima.
- **More information**

Chinese partners

The BioClima project advances biodiversity and climate monitoring through **EU−China collaboration**. This cooperation involves a broad network of **Chinese research organisations** supporting harmonised biodiversity and climate monitoring, including:

- Aerospace Information Research Institute, Chinese Academy of Sciences
- Institute of Zoology, Chinese Academy of Sciences
- Institute of Semiconductors
- Nanjing Institute of Environmental Sciences, Ministry of Ecology and Environment
- Fujian Space Carbon Technology Co.,Ltd.
- Institute Of Geographical Sciences And Natural Resources Research, Chinese Academy Of Sciences, Lanzhou Jiaotong University
- Qingdao University of Technology
- Hangzhou City University
- EllipSpace (Beijing) Technology Co., Ltd.
- Wuyi University
- China University of Mining and Technology
- Zhejiang University
- Institute of Agricultural Resources and Regional Planning CAAS
- Ecology and Nature Conservation Institute,Chinese Academy of Forestry
- Beijing Normal University
- Institute of Subtropical Agriculture, Chinese Academy of Sciences
- Foreign Environmental Cooperation Center (FECO), Ministry of Ecology and Environment
- Environmental Development Center of the Ministry of Ecology and Environment
- Institutes of Science and Development, Chinese Academy of Sciences
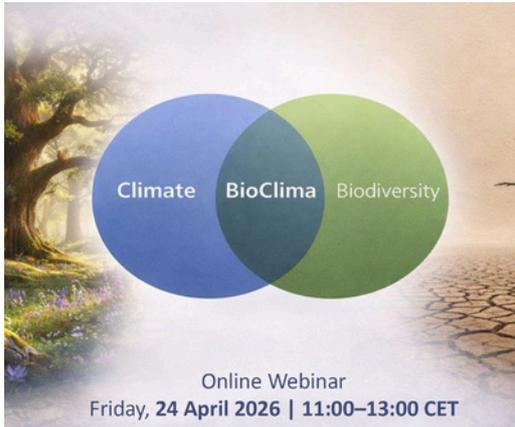
BioClima Webinar (online)

An **online webinar** titled Understanding Biodiversity in Times of Climate Change will take place on **Friday, 24 April 2026, 11:00–13:00 CET.** Organised within the **BioClima project**, the webinar will focus on climate change impacts on biodiversity and the use of data and Earth observation to support research and informed decision-making. The event will be held online via the AGORA OGC platform and is open to researchers, policy makers, public authorities and technical experts. Registration details and the full programme will be announced on the BioClima website and social media channels

Climate | BioClima | Biodiversity

Online Webinar
Friday, 24 April 2026 | 11:00–13:00 CET

World Biodiversity Forum

The University of Twente – Faculty of Geo-Information Science and Earth Observation will contribute to the **World Biodiversity Forum 2026**, taking place **14–19 June 2026** in **Davos, Switzerland**, with two dedicated sessions on Biodiversity Insights from Space. The sessions will highlight links between Earth Observation data and biodiversity science and present selected results from ongoing research on remote sensing of ecosystem functioning and health under climate change.

WORLD BIODIVERSITY FORUM

What´s next?

With operational pilots, growing international cooperation and strong engagement in global standardisation, BioClima is now entering its next phase.

The coming period will focus on:
- expanded field data collection and monitoring campaigns,
- AI model development,
- stakeholder engagement,
- innovation and training activities.

Partners will continue regular **online coordination meetings** to review progress, align activities across pilot areas and support ongoing EU–China collaboration within the BioClima framework.

European partners are also expected to visit China in May 2026 to support further joint workshops, field activities and the development of shared pilot studies.

Stay connected

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Follow BioClima for the latest news, events and technical updates on integrated climate and biodiversity monitoring.

If you would like to contribute to a future BioClima Newsletter with a story, project highlight or use-case update, please **contact the BioClima communication team.**

EU Funding Acknowledgement: