

FIRST CALL



2nd international scientific conference

QUO VADITIS

Agriculture, Forestry and Society under Global Change?

 **19TH–21ST SEPTEMBER 2022**

On behalf of the Organizing Committee let us invite you to the 2nd international conference titled

**QUO VADITIS Agriculture, Forestry and Society under Global Change?
From understanding past and present Earth's processes to adaptations for the future.**

organized by the Global Change Research Institute CAS – CzechGlobe
and held on **19th–21st September 2022** at the Horal Hotel (Valachy Resort, www.valachy.cz)
in Velke Karlovice in the Beskid Mountains (Czech Republic).

Science must always be at the forefront of addressing global challenges. Such a challenge that man has arranged for himself is global change - change manifested by climate change and its effects not only on the biosphere but also on human society as a whole. The European Center of Excellence CzechGlobe, which has been in existence for 12 years, wants to share the interesting and essential results of its research in the field of global change. It wants to prove that science has an irreplaceable role to play in addressing climate change mitigation and adaptation, in meeting international climate change commitments and in the tasks of EU Strategy on adaptation to climate change.

Come and share your knowledge, discuss it professionally and together suggest how to use this knowledge in measures to mitigate the effects of climate change and in adaptations to it and also for a transformational change. The opportunity for this professional discussion will be the 2nd international scientific conference „Quo vaditis agriculture, forestry and society under Global Change? From understanding past and present Earth's processes to adaptations for the future.“ The date of the conference coincides with the period when the Czech Republic holds the presidency of the European Union, and although other important topics are of course resonating at present, we would like the topic of climate change and related issues to remain at the forefront of interest.

The conference will take place in five sections reflecting the basic directions of research at GCRI CAS – CzechGlobe:

- Through understanding the past and present processes to adaptation for the future
- From molecules to landscape: experimental and observatory studies for the future climate change
- Climate change impacts on terrestrial ecosystems, and the possible ways for their adaptation and climate change mitigation
- Creating the Transformation: Policy, Practice and Progress
- New approaches and technologies for climate adaptation and mitigation solutions



THROUGH UNDERSTANDING THE PAST AND PRESENT PROCESSES TO ADAPTATION FOR THE FUTURE

Scope:

The session will welcome contributions presenting the most recent findings in observed trends, their model and experimental explanation, analysis and proposed adaptation measures across various time and spatial domains. The particular attention will be paid to experiments, measurement network, remote sensing and modeling based solutions, as well as development of operational and forecast driven adaptation pathways.

The fields of interest are:

- climate and climate analysis as well as managed and unmanaged ecosystem responses
- extreme events and climate change attribution
- adaptation of agricultural and managed ecosystems
- integrated process based system modelling including landscape, agriculture and water resources
- large scale monitoring networks – from global scale to high-towers

FROM MOLECULES TO LANDSCAPE: EXPERIMENTAL AND OBSERVATORY STUDIES FOR THE FUTURE CLIMATE CHANGE

Scope:

Even though a significant advance regarding our knowledge on ecosystem analysis of different ecosystems and their components has been achieved during the last decades, there are still issues to be solved to improve our understanding of the impact of global climate change on particular ecosystems. This section invites to submit experimental and observatory studies at various hierarchical levels (from molecules to landscape), primarily at the level of terrestrial ecosystems.

The fields of interest are:

- long-term or short-term studies focused on measuring and modelling CO₂ and other GHG exchange between ecosystem and atmosphere
- studies using remote sensing data and methods, with particular interest in multisensor synergies
- studies focused on biogeochemistry of nitrogen in the forest ecosystem; and evaluation and modelling of changes in the hydrological cycle of forest catchment.
- studies focused on evolutionary ecology, population dynamics and stability of ecological communities using theoretical, experimental and field approaches.

NEW APPROACHES AND TECHNOLOGIES FOR CLIMATE ADAPTATION AND MITIGATION SOLUTIONS

Scope:

The session will focus on contributions on the most recent innovations, trends, concerns and practical challenges related to implementation of existing and development of new solutions in the fields of climate change adaptation and mitigation strategies. Topics on biology related solutions, including experimental and field work are expected, but not exclusive to.

Fields of interest are:

- water resources
- (smart) agriculture
- forestry
- fisheries
- alternative raw materials
- human health
- human settlements and infrastructures

CLIMATE CHANGE IMPACTS ON TERRESTRIAL ECOSYSTEMS, AND THE POSSIBLE WAYS FOR THEIR ADAPTATION AND CLIMATE CHANGE MITIGATION

Scope:

The session will welcome contributions dealing with the functional understanding of ecosystem responses to climate change represented particularly by the impacts of elevated atmospheric CO₂ concentration, reduced water availability, increasing temperature, increasing VPD including the mutual interactive effects. Welcomed are contributions focusing on understanding the responses at different scales from molecular (metabolomics, transcriptomics, proteomics), through physiological or functional responses (photosynthesis, transpiration, respiration) up to ecosystem-level responses (loss of diversity, ecosystem processes or functions) for individual ecosystem components (plants, soil microbiome, animals) or the whole ecosystem. Specific attention will be paid to the potential mechanisms and measures for ecosystem adaptation to climate change (water retention, drought tolerance, resistance to high temperatures) and also to the ways of improving the potential of ecosystems to mitigate climate change (carbon sequestration, reduction of CH₄ and N₂O emissions).

The fields of interest are:

- responses of plants, soil microbiota, animals, and whole ecosystems to the climate change, with specific focus on the impacts on ecosystem processes
- mechanisms and measures of ecosystem adaptation to climate change (specific focus on reduced water availability and warming)
- ways and measures for improving the mitigation role of ecosystems (carbon sequestration, reduction of CH₄ and N₂O emissions)

CREATING THE TRANSFORMATION: POLICY, PRACTICE AND PROGRESS

Scope

There is broad recognition that we need transformative change to address our sustainability crises, including climate change and declining resilience of ecosystem functions under biodiversity loss. Such transformations shift our relationships with each other and the life environment, reshaping sectors, societies and economies. Transformative change across the biodiversity nexus is a focus of two new IPBES assessments, and has been flagged as a key component in climate action by the IPCC (WGII). In this session, we explore the tools and techniques we have to create transformative change, including policies, tools, techniques and approaches to fostering future sustainable societies. We hope to see critiques of the potential and limits of transformative change at a range of scales, from individual, to local cases, to broad policy changes at national and international scales.

Fields of interest

Papers submitted to this session could include coverage of existing or emerging approaches to creating sustainability, including (but not limited to):

- tools and approaches, such as ecosystem accounting, nature based solutions to mitigate hydrological extremes in the landscape, land degradation and restoration assessment
- policies, such as the European Green Deal and its related strategies.
- future alternative approaches emerging from scenario planning, anticipatory governance and imaginaries
- we welcome contributions that look beyond the environment to highlight lessons for transformative change from other disciplines.