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CzechGlobe - Center for Global Climate Change Impacts Studies

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We would like to introduce the CzechGlobe project, which is based on deep expert knowledge of the Global Climatic Change (GCC) issues and on the development of processes that would help eliminate the GCC impacts or help adapt to its effects. The resolution of the CzechGlobe project stems from three basic questions: To what extent is the biosphere of the Earth able to absorb evincible residue of carbon dioxide, which is induced into the atmosphere by humans and thus possibly leading to negative impacts on the greenhouse effect? Are terrestrial ecosystems really the most vulnerable part of carbon sinks of the planet Earth? Is the development of human society in the context of the Global Climate Change sustainable?

The project CzechGlobe links to the international network of European research infrastructure ICOS and other international networks monitoring the atmospheric pollution. It is based on a system of research activities under research programmes (RP) covering the scope of possible GCC influence in the segment of atmosphere, ecosystem and socio-economic system. Therefore, the RP outputs act as impulses for existing and newly created study programmes.

CzechGlobe consists from the four following main research programmes (RP): i) Climate analyses and modeling, ii) Ecosystem analyses, iii) Experimental studies of GCC impacts on physiology and metabolism in plants, and iv) Innovation for the mitigation of the GCC. The objectives of RP are:

RP1: Development of tools for modelling of climate extremes, tools for construction of climate change scenarios, development of regional climate model with very high spatial resolutions and creation of spatial study of GCC effects on controlled ecosystems.

RP2: Development of methodologies aiming to increase the ability of ecosystems to sequester CO2 from the atmosphere and to deposit carbon on the basis of long-term monitoring of greenhouse gases, methodologies of measures reducing negative impacts of GCC on hydrological and biogeochemical cycles of forest basins, development of remote sensing (RS) methods for the production of maps of biochemical and biophysical parameters of vegetation and ecosystems as indicators of carbon cycle processes and the effects of stress factors, development of methodologies reducing the negative impacts of GCC on biodiversity.

RP3: Methodologies of management of plant adaptation and regulation mechanisms connected with GCC impacts reducing the vulnerability of ecosystems to ongoing changes. Development of optical diagnostic methods for early stress detection, identification and utilization of metabolites with biological effects such as anti-stress agents, growth regulators, substances inducing resistance, antioxidants etc.

RP4: Development of tools and indicators for the analysis of socio-economic impacts related to GCC and for prediction of mitigation and adaptation measures effects. Investigation and utilization of the potential to capture CO2 from the air or combustion gases associated with the production of new-generation biofuels by photoautotrophic microorganisms, creation and utilization of tools for risk assessment and support of fast growing woody plants cultivation using growth models.

The CzechGobe project still welcomed young perspective scientists. Contract-founded research cooperation with foreign partners in the research areas of Remote sensing methods, secondary metabolites, anti-stress agents, cultivation screening methods, evaluation of biocorridors' importance, evaluation of socio-economic impacts of the GCC, cultivation of fast growing woody plants, biological CO2 capture and production of biofuel are still in initiation phase as well.

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