

CzechGlobe - Institute of Global Change Research CAS

CzechGlobe - Ústav výzkumu globální změny AV ČR, v. v. i.

The CzechGlobe office in České Budějovice focuses on issues related to the human dimension of the impacts of global change. The Department of Landscape Ecosystem Function Analysis is primarily interested in studying (i) below-ground ecosystem processes in forest ecosystems at the level of individuals, communities and ecosystems, (ii) responses of forest ecosystems to environmental change at the ecosystem and landscape level, and (iii) the impact of global change on the role of biodiversity for the fulfilment of selected ecosystem functions, as a basis for the assessment of ecosystem services.

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Services

Services for the private sector:

- The department is dedicated to modelling and analysis of selected ecosystem functions of the landscape, from which all proposals for mitigation and adaptation measures based on the outputs of environmental modelling are usable for the private sector at a more detailed scale. These recommendations for practice are tailored to individual entities, taking into account local specificities - natural conditions, socio-economic indicators and the expected impacts of environmental change in a given region.

Services for the public sector:

- Proposals for measures to mitigate the impacts of climate change at the local level - typically for individual municipalities and ORP. Analysis of the degree of land and landscape degradation due to increasing anthropogenic pressure and climate change, which is manifested by loss of productive capacity and other ecosystem functions. Development of methodological procedures for qualified assessment of ecosystem functions of the landscape and assessment of the ecological status/potential of sub-components of the environment, using tools of multi-criteria analysis.

Equipment / infrastructure

The department has the basic laboratory equipment necessary for the application of molecular biological research methods. Environmental modelling is carried out using the latest software tools (including GIS), operated on modern hardware equipment. Long-term field research is carried out using specialised infrastructure (e.g. a network of meteorological stations, gauge overflows for the analysis of the hydrological balance of the landscape, equipment for monitoring the quality of surface water, etc.), located in the current areas of interest of the department (e.g. Šumava, Bohemian-Moravian Highlands, Giant Mountains, Southern Moravia).

Best practices / case studies of cooperation

In the context of research on the influence of the ecological status of habitats along water bodies on the transport of pollutants from agricultural production, cooperation is established with owners and users of agricultural land adjacent to watercourses. On the basis of regular information on the application of fertilisers or pesticides, it is possible to analyse the quality of the filtering function of these habitats and the subsequent level of pollution of surface waters. After evaluation of the data obtained, the information will be used, among other things, to propose appropriate measures to eliminate water pollution while maintaining current conventional management practices.

In our interest studies on the impact of negative factors on agricultural production, the outputs are always directed not only to the public/state sector (local government), but also to the private sector (e.g. cooperation with the Agricultural Cooperative Černovice, or with the private farmer Vladimír Šrůtek from Benešov).

For small landowners (e.g. private farmer Dana Kindlmann), as well as larger orchard owners (e.g. ZD Chelčice), a methodology has been developed to support natural pollinators.

Keywords

Ecosystem functions/services, environmental modelling, climate/environmental change, carbon sequestration, adaptation and mitigation measures, below and above ground biodiversity, impact of climate change on forest and agricultural ecosystems.