INCREASE: An Integrated Network on Climate Research Activities on Shrubland Ecosystems

The climate is changing and ecosystems will be affected by changes in atmospheric CO2, temperature and precipitation, all key factors in the regulation of biological processes. Climate change poses a serious challenge for the scientific communities to develop new concepts for research and modelling to provide better and more realistic answers and predictions of what the impacts will be. INCREASE is an EU-funded infrastructure of seven large-scale climate change experiments in shrublands, which will meet these challenges by further developing non-intrusive technologies for realistic climate manipulations, by devising non destructive sampling methodologies and by creating a climate change model for shrublands.

UNDERSTANDING CLIMATE CHANGE

Atmospheric and climate changes in shrubland ecosystems will have a significant impact on human welfare and is a concern felt the world over. Research groups across the globe are investigating the effects of climate change on terrestrial ecosystems. This is done in a number of manipulation experiments include evaluating the impact of elevated CO^2, increased temperature and changes in precipitation levels and patterns. These experiments, however, have involved a number of unintended ecosystem changes and there is now a need for more sophisticated techniques. This is where INCREASE comes into the play. INCREASE experiments involve nonintrusive manipulations with realistic changes of temperature and precipitation. So far, the temperature rise observed has been due to increased minimum night-time temperatures. In the field experiments, the night-time warming is mimicked by covering the ecosystem during the night. Further, extended drought periods during the summer months mimic changes in precipitation patterns. Beside the manipulation of the climate in-situ, the INCREASE infrastructures are located along the north-south (temperature) and east-west (precipitation) climatic gradient, giving access to a variety of research sites.

The research has generated a large volume of data on the effects of climate change on terrestrial ecosystems. Creation of networks that share ideas, experiences and data are important for the scientific output so experimental data can be shared by researchers and the results used by policy-makers. INCREASE will stimulate collaboration within the scientific community by creating a strong infrastructure of climate research facilities and the scientists involved. To support the process, research results obtained over the course of the INCREASE project together with former research results will be gathered in a database. Further, based on these longer term data from climate change experiments across Europe an ecosystem model will be created. The model is an important tool for prediction of future shrubland ecosystem responses to climate change.

SEVENTH FRAMEWORK PROGRAMME

EUROPEAN COMMISSION

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A core activity in the INCREASE project is to provide transnational access for researchers from across Europe to conduct research of their own in the infrastructures. The six infrastructures and one phytotron provide excellent facilities for studies of climate change effects on shrubland ecosystem. With the support from the European Commission, it is possible to provide access and logistic support for European scientists and bring them together in a stimulating environment. This also has a great potential for educating young scientists about the relationship between climate change and shrubland ecosystems.

increase

Project acronym: INCREASE

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EU project officer: Anna-Maria Johansson

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Partners:
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Technical University of Denmark (DK)
University of Amsterdam (NL)
Natural Environment Research Council (UK)
University of Tuscia (IT)
National Research Council of Italy (IT)
Università degli Studi di Sassari (IT)
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