Focus 4 addresses the long-term interactions among past climate conditions, ecological processes and human activities during the Holocene. Emphasis lies in comparing regional-scale reconstructions of environmental and climatic processes using natural archives, documentary and instrumental data, with evidence of past human activity obtained from historical, paleoecological and archeological records. The Focus promotes regional integration of records and dynamic modeling to: 1) Understand better the nature of climate-human-ecosystem interactions, 2) Quantify the roles of different natural and anthropogenic drivers in forcing environmental change, 3) Examine the feedbacks between anthropogenic activity and the natural system, and 4) Provide integrated datasets for model development and data-model comparisons.

The research enhances the use of paleorecords and other archives to provide past perspectives of environmental change that may be used to understand the functioning of present and future ecosystems. In this respect, the Focus is forward-looking, with the ultimate goal of delivering tools and strategies for the sustainable management of ecosystems and landscapes.

This Focus has taken the name "PHAROS" from Alexander the Great’s iconic lighthouse that served to warn travelers of danger, and illuminated their past and future directions.

**Aims**

- To describe how human and climate impacts have interacted with internal system dynamics. For example, the extent to which river channel changes are a consequence of external forces, such as land use and climate, or internal forces, such as hydraulic dynamics and system configuration.
- To explore the sensitivity and resilience of modern ecological systems to new or increased stresses from human activities and climate change. For example, to identify those ecological processes that have been the most responsive to past rapid climate change and which may be sensitive to projected climate change in the future.
- To describe the multi-annual to multi-decadal climate variability of past human-ecosystem interactions in order to help develop appropriate sustainable management strategies. For example, determining the historical range of variability in natural disturbance regimes, the reference conditions that are most relevant for ecosystem restoration, or the land use that appears most appropriate in the face of projected change.
- To synthesize and integrate findings on past human-climate-ecosystem interactions in order to help develop appropriate sustainable management strategies. For example, determining the historical range of variability in natural disturbance regimes, the reference conditions that are most relevant for ecosystem restoration, or the land use that appears most appropriate in the face of projected change.
- To understand and quantify the nature of human-climate-ecosystem interactions in order to help develop appropriate sustainable management strategies. For example, determining the historical range of variability in natural disturbance regimes, the reference conditions that are most relevant for ecosystem restoration, or the land use that appears most appropriate in the face of projected change.