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Another COST Success Story: Phenological Responses to Climate Change in Europe

“Establishing a European Phenological Data Platform for Climatological Applications” is the title of COST Action 725 which runs from 2004 to 2009 with 27 participating countries. The Action deals with “Phenology” i.e. the study of the timing of recurring biological events in the animal and plant world and the causes of their timing with regard to biotic and abiotic forces. The main objective of the Action is the establishment of a comprehensive European reference data set of phenological observations that could be used for climatological purposes, particularly climate monitoring and the detection of changes.

At the workshop of COST Action 725 in autumn 2005, Annette Menzel from the Technical University Munich (Germany) proposed the idea of a European phenological “meta” analysis. The response to her request for contributions of the COST Action 725 participating countries was enormous. During a Short-term Scientific Mission funded by COST, Menzel and Tim H. Sparks, from the CEH Monks Wood (United Kingdom), analysed the national reports received. Shortly after, in 2006, the COST Action 725 study “European phenological response to climate change matches the warming pattern” was published and found immediately a European wide echo.

The COST Action 725 study is one of the major contributions for the assessment of observed changes and responses in natural and managed systems, using 125 000 observational series of 542 plant and 19 animal species in 21 European countries for the period 1971-2000. The aggregation of the time series revealed a strong signal across Europe of changing spring and summer phenology.

Spring and summer exhibited a clear advance by 2.5 days/decade in Europe. Mean autumn trends were close to zero, but suggested more of a delay when the average trend per country was examined (1.3 days/decade). The patterns of observed changes in spring (leafing, flowering and animal phases) were spatially consistent and matched measured national warming across 19 European countries; thus the phenological evidence quantitatively mirrors regional climate warming. The findings strongly support previous studies in Europe, confirming them as free from bias towards reporting global climate change impacts.

This study found a prominent place in the 4th Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) to which four members of COST Action 725 gave an important contribution on the basis of their expertise in assessing climate change responses in wild plants, agricultural systems and animals.



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