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CLIMPHEN – a comprehensive analysis of Austria's plant and insect phenological observations 1951 - 2005

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In recent years phenology has emerged as highly valuable source of information in the field of climate impact assessment. An increasing number of studies report that plants and animals of the mid- and higher latitudes of the northern hemisphere have been responding to the temperature increase of the last decades. There are at least 3 factors stressing the importance of a comprehensive study of Austrian phenological time series from 1951 .- 2005:

1. In contrast to the 0.6˚C rise of the global mean temperature over the last 100 years, the temperature has risen more than twice the global rate in the Alpine area.

2. In the Austrian part of this temperature sensitive area of the Alps a phenological data set has been systematically collected since 1951, which allows for a climate response study of phenological phases.

3. The integral analysis of plant and insect phenological observations offers the unique opportunity to compare their respective trends and get an indication of possible changes in synchronies or asynchronies in the food chain.

The aim of this project is a comprehensive statistical description of the spatial and temporal behaviour of the Austrian plant and insect phenological observations. It will be studied, how entry dates of the plant and insect phenological phases move through space. The influence of the complex topography of the Alps on the phenological entry dates is of specific concern. The effect of temperature as the dominant atmospheric factor governing phenological events is evaluated. Trends of temperature and pheno-

logical time series are compared and it is to be seen, if the warming and the concomitant trend towards earlier entry dates in spring since 1989 are still being continued. Special emphasis is layed on changes of the cockchafer cycle in response to climate variability, for which about 1500 observations are availabel/year. A statistical downscaling of phenological observations based on future climate scenarios sheds light on possible future phenological developments in the frame of expected global change. A combined entomological and climatological evaluation of the results will summarise the project.