

INTIMATE COST action ES0709

<http://cost-es0907.geoenvi.org/>

The INTIMATE project (INtegration of Icecore, MArine and TErrestrial records) is recognized and supported by INQUA and has existed since 1995, but the activity has increased in 2010 when INTIMATE was established as a European Union-funded COST Action (ES0907).

INTIMATE aims at developing common protocols and methods to reconstruct abrupt and extreme climate change across the full range of environments (ice, marine and terrestrial) over the period 60,000 to 8,000 years ago. The aim is to better understand the mechanisms and impact of change, and thereby reduce the uncertainty of future prediction.

It is crucial that independent records of abrupt climate change across Europe are generated and robustly compared to test for leads/lags in the climate system and the interaction between different climate forcing mechanisms. Doing so will critically underpin our ability to model future climate change and ecosystem response.

The main objectives of INTIMATE are thus to standardize methodologies, incorporate reconstructions within climate models, and facilitate interdisciplinary science collaborations.

INTIMATE is organised in 4 working groups that focus on 1) Dating and Chronological Modelling; 2) Quantification of Past Climate; 3) Modeling Mechanisms of Past Change; 4) Climate Impacts.

WG-4 Climate Impacts

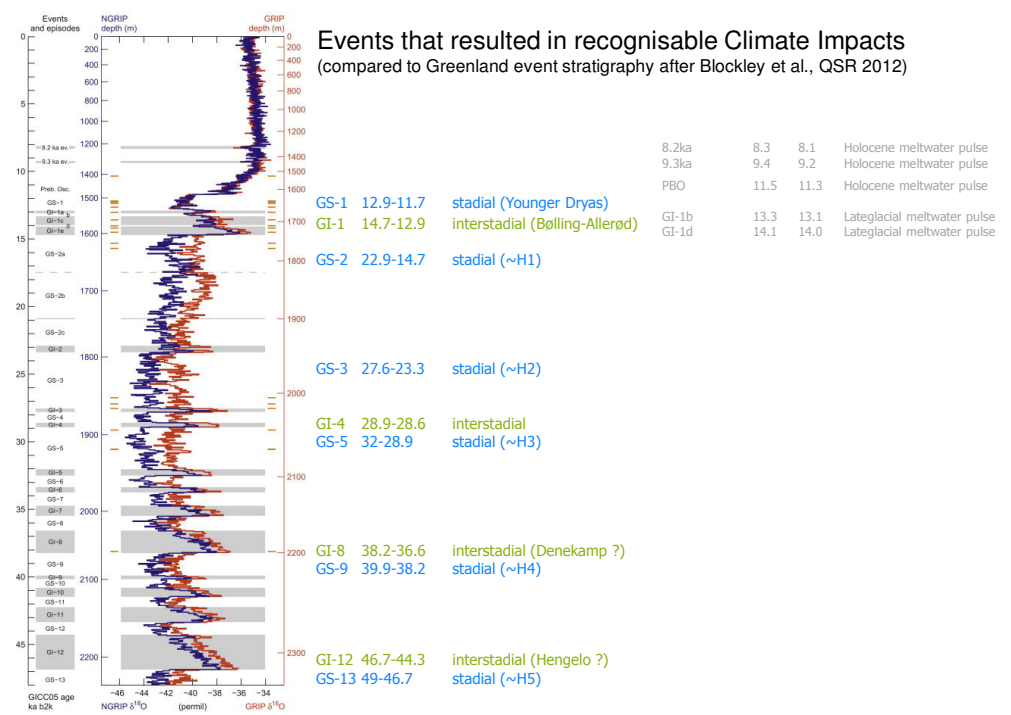
The time period from 60-8 ka cal BP is marked by a series of abrupt climate events that became apparent from especially the Greenland Ice core records. These ice core records furthermore provided a precise and detailed chronology for the occurrence of these climate events. In the European terrestrial environment numerous studies have shown that these climate events have had an impact on the environment, ranging from geomorphological changes, changes in vegetation composition, faunal composition, and human behaviour and development. However, the recognition of the impact of the different events is strongly dependent on reliable age models for the environmental records. This requires a careful selection and analysis of existing data.

Working Group 4 of the INTIMATE COST action aims to review the nature and quality of climate reconstructions of past environmental change across the full range of European environments (Mediterranean to sub-Arctic). For this we try to enlarge the European network of researchers, stimulate data sharing and eventually synthesise thematic environmental datasets. Important aspects are to identify the impacts of abrupt and extreme change and reveal the timing, duration and thresholds of climate impact. The first results for selected climate events show that clear gradients and thresholds exist, especially in ecotonal environmental settings. We aim to identify sensitive areas for study from where we will obtain the most useful information about the impacts of climate changes.

Integration

The main results from WG-1 form a time-stratigraphical framework that can be used to pin-point the recorded events in time. Furthermore, the application of time-stratigraphic marker horizons such as tephras allows for the detailed correlation between individual records. This is solid for the time back to 15.0 ka, for older events there is still a lot of uncertainty. WG-2 results, together with chronological modeling tools from WG-1 yield records of climate (temperature, precipitation) changes in time for selected locations in marine and continental Europe. These records of climate change in combination with responses in landscape, vegetation, fauna and human activity are used to investigate the impact on past ecosystems both in timing and amplitude.

Based on the combined results from the different working groups, we see a picture emerging that will be tested with climate modeling (WG-3). Resilience and inertia of the ecosystem and its components will determine whether thresholds are crossed or not and whether changes are so large that they could be considered as a regime shift (for example the change from tundra or steppe to forest). Like geomorphological response, biotic responses will always lag the climate driver by very small to considerable amounts of time due to lag- or adaptation-time. Above this, ecosystems will likely be resilient to the impact of certain climate perturbations and, hence, no climate impact will be recorded. Therefore, we focus on the recognisable events that are apparent in many but far from all of the records.



INTIMATE activities

Within the framework of the INTIMATE COST action (2010-2014) several international workshops are organised focusing on the topics of the different Working Groups and overall aims.

For the INTIMATE COST action a number of grants for Short Term Scientific Missions (STSMs) are available. Funding can be sought for partial funding of research visits to collaborating institutions. The goal of the research visits must be to facilitate correlation between environments (i.e. ice, marine and terrestrial) and/or research groups, or to learn a new technique or to take measurements using instruments and/or methods not available in their own institution/laboratory.

In July 2013, INTIMATE is organising a Research and Training School: **An INTIMATE Example, see flyer below.** Registration is now open, for more information, visit <http://tinyurl.com/intimateexample>

For more information on the INTIMATE project and how to join the network, visit <http://cost-es0907.geoenvi.org/>