Poster session i1

GLOBAL POLLEN DATABASES

The Irish palaeoecological data synthesis and analysis project

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The Irish Palaeoecological Data Synthesis and Analysis Project (IPAL), funded under the Marie-Curie Fellowship scheme is based within the Department of Botany, Trinity College, Dublin. The project can be divided into two phases, primarily, the project is constructing a database of pollen-based research activity carried out in Ireland since the pioneering work of Jessen in the 1930's. Secondly, the database is used to investigate aspects of spatial and temporal vegetation dynamics in Ireland such as the interaction with climate change, human populations and links between palaeoecological and climate / vegetation model based reconstructions.

The database contains the raw pollen data (counts) and associated metadata (analyst, publications, radiocarbon, site details and stratigraphy) set up within a MS access format. To facilitate investigations on aspects of spatial and temporal vegetation dynamics in Ireland, such as the interaction with climate change, human populations and links between data and climate / vegetation model based reconstructions; the database is linked to a GIS (ArcView). The database engenders a range of investigates examples of two are provided. Firstly, we focus on the response of Irish vegetation to late glacial climate change by investigating the affinity scores to a suite of biome. Secondly, we investigate the role of the taxa in responding to environmental change, and emphasis the potential of overlaying the individual taxa. The database will be of long-term benefit to the Irish palaeoecological community, and will be developed and used outside the initial scope and duration of the project.

Poster session i2

APPLICATIONS OF POLLEN DATABASES

Modern pollen-climate relationships and inferred paleoclimatic patterns in the United States and Canada

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Modern climate-vegetation relationships at a continental scale deomstrate taxon-specifc relationships consistent with the individualistic Quaternary histories of North American plant taxa. This paper and the companion paper by Williams et al. present a new atlas of modern pollen distributions for the United States and Canada, grounded upon an expanded surface pollen dataset comprising over 5,400 samples. The dataset, built from data holdings at the Global Pollen Database, Brown University, University of Ottawa, Paleoenvironmental Arctic Sciences (PARCS), and the University of Arizona, will be archived at the World Data Center for Paleoclimatology upon publication. All modern surface sample locations have been assigned climatic values based on Climate Research Unit 10-minute gridded data, and adjusted to account for local lapse rates. We demonstrate the distribution of pollen abundances within climate space, and evaluate the relationship between pollen abundances and both traditional climatic variables (e.g., mean January and July temperatures) and "bioclimatic" variables (e.g., growing degree days). Here we show differences in the climate-pollen relationships at different scales by comparing the continental relationships with those from a subset of data from eastern North America. We then use these relationships to infer trends in Holocene climate conditions.

Quantitative relationship between modern pollen and climate for the Pampa grasslands, Argentina

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Modern pollen, potential vegetation and climate relationship for the Pampa grasslands and their ecotone with the xerophytic woodland of Argentina were examined using isopollen maps, scatter and percentage diagrams and Correspondence Analyses (CA). These studies are based on an array of 126 modern pollen samples extending between 34°- 41° lat S and 56°- 67° long W. In the Pampa grasslands were defined three potential vegetation units: humid pampa, inland dry pampa and southern dry pampa whereas in the xerophytic woodland were defined two units: Caldenal, in the southern west boundary, and Talar, in the northeast boundary of Pampa grasslands. Despite human disturb on the Pampa grasslands the CA and isopollen maps show a good correspondence between potential vegetation units and pollen samples.

Correlations and scatter diagrams between thirteen pollen variables: *Prosopis*, *Schinus*, *Condalia*, *Ephedra*, other xerophytic taxa, Poaceae, Cyperaceae, Chenopodiaceae, Asteraceae subf. Asteroideae, Asteraceae subf. Cichorioideae, Brassicaceae, Apiaceae and other herbs, and mean annual and seasonal temperature, precipitation and hydric availability are presented. Pollen taxa (except Brassicaceae and other herbs) show significant correlation with mean annual or seasonal precipitation and hydric availability. Only *Ephedra*, Cyperaceae, Chenopodiaceae, Asteraceae subf. Asteroideae, Asteraceae subf. Cichorioideae, Brassicaceae and other herbs present significant correlation with mean annual or seasonal temperature.

Hydric availability is the ecological factor that relate to the modern pollen distribution of the most important pollen types. These results suggest the potential of this database for quantitative climate reconstructions, particularly for precipitation and hydric availability.

Croatian pollen database

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Herbaria collection of some recent autochthonous and cultivated Croatian plant taxa and their anthers was used as the starting point for Croatian computer pollen database («Pelud» - Fig. 1). This is a preliminary database which will form the basis for the future complete Croatian pollen database of recent plant taxa.