DYLAN post-doc project: Long-term ecology of upland cultural landscapes - Vegetation history and land-use in a dynamic landscape

The goal of the post-doc project is to link the ecological and archaeological outcomes of DYLAN with the palaeoecological record. In the last decennium there has been a rapid progress towards the understanding of pollen dispersal and landscape reconstructions, even though these methods are still under development and the remaining problems should not be underestimated. In the post-doc project the use of composite dispersal functions, a new method partly developed within DYLAN, will be applied in order to achieve better pollen - vegetation relationship than earlier investigations. In combination with powerful GIS tools as the IDRISI Land Change Modeler, this will allow a link between ecology and archaeology with the fossil pollen record. The combined information will be used to evaluate long-term ecological processes and to reconstruct past landscapes, both important factors for knowledge-based management strategies of landscape conservation areas. The project can be divided in five specific work-packages:

1. *Pollen -vegetation relationship* - Moss pollsters will be collected from the investigation areas, the modern pollen content analysed and compared with the vegetation in the surrounding landscape. Pollen productivity and dispersal properties of the dominant taxa will be determined.
2. *Hypothetic landscape change model* - Important ecological processes in upland cultural landscapes will be identified and studied. Their hypothetic long-term impact on the landscape will be modelled using GIS tools.
3. *Model evaluation* - The hypothetic landscape change models will be compared with pollen from old peat and lake sediments. This will allow us to determine how well the tested ecological processes can explain actual long-term change in the landscape, and subsequently improve the models.
4. *Biodiversity and ecological forecasting* - The relationship between past long-term landscape changes and biodiversity will be assessed. We will also try to predict future biodiversity based on different management scenarios.
5. *Landscape reconstructions* - Here maps of specific "time-slices" of the landscape development will be reconstructed. These will not only contain past vegetation cover, but also archaeological and historical data of cultural and economical importance, and thus provide a more complete understanding and visualisation of past landscapes.

The post-doc project is administrated by NTNU Museum of Natural History and Archaeology, Trondheim, with working place at Tromsø University Museum. I addition to the core project described above I will help coordinating the DYLAN project in general, so new ideas, suggestions and comments are welcomed. I have a background in archaeology, geology and biology, with specialisation in palaeoecology. Previous research projects cover the long-term development of upland cultural landscapes in south Sweden, the Jura Mountains and the Alps, as well as coastal cultural landscapes in north Norway. This research also includes studies of the pollen - vegetation relationship, but the use of advanced GIS and strong link to (modern) ecological processes will be new for the post-doc, a challenge I look much forward to.

With kind regards,

Per Sjögren