

## **Dendrometer studies in urban and rural environments in Stockholm, Sweden**

Eva Rocha and Steffen Holzkämper

Department of Physical Geography, Stockholm University, Stockholm, Sweden (steffen.holzkaemper@natgeo.su.se)

With this study we investigate growth performances of *Pinus sylvestris* growing under the influence of the Urban Heat Island of the city of Stockholm, Sweden, and trees growing in the rural surrounding of the city. The aims of this investigation are to see whether and how much the growth performances differ, and which climatic parameters control the tree growth at the respective locations. Stockholm holds one of the world's longest observational climate records, reaching back to AD 1756. Since climate data are collected at a location which today is well within the Urban Heat Island, it is relevant to quantify the correlation differences between climate and tree growth data from trees which actually grow under the same climate conditions and trees growing under natural, rural climate conditions.

Applied methods include Remote Sensing and GIS for identification and characterization of the Urban Heat Island, monitoring of tree growth at 30 min-resolution with point dendrometers (Ecomatik) and monitoring of local climate directly at the tree sites.

First results indicate emphasized growth differences between the urban and the rural sites, with distinctively higher daily diameter change amplitudes at the urban sites compared to the rural sites, which can be explained by differences in relative humidity and temperature ranges between the sites. We will present and discuss results from ~1 year of measurements, focusing on correlation analysis between climate and tree growth data from urban and rural sites, as well as practical issues with dendrometer measurements.