reconstructions. Recently, statistical machine learning methods such as boosted regression trees and random forests have been applied to calibration problems (e.g. Simpson & Birks, 2012). These machine learning methods derive response relationships with the predictand from the data themselves without the user having to specify the functional form of those relationships. However, the resulting relationships can often be highly complex having partial-responses with the predictand that are hard to justify on ecological principals. We might reasonably ask whether these models are over fitted to the training data? Generalised additive models (GAMs) can be seen as falling somewhere between GLR and boosted regression trees. GAMs also allow for response relationships to be derived from the data rather than be specified a priori by the user, yet retain the formal statistical model of the GLR. Using recent theoretical and computational advances, GAMs can be constrained to largely avoid overly-complex response relationships thus helping to avoid over fitting. I discuss the above issues and compare a GAM-based calibration model with equivalent models fitted using GLR and boosted regression trees, highlighting the relative properties and advantages each approach using several well-studied training sets, including the SWAP and EDDI data sets.

S09-P-07 Can chironomids and chrysophytes be used to quantitatively reconstruct temperature in Polish lakes?

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The aim of the recently established project CLIMPOL (Climate of northern Poland during the last 1000 years: Constraining the future with the past) is a quantitative reconstruction of climate change from varved lakes in northern Poland during the last 1000 years. This reconstruction will be obtained using biological (chironomid head capsules, chrysophyte stomatocysts, diatoms, pollen), stable C- and O-isotopic, sedimentological and geochemical proxies. Here, we present the first high-resolution chironomid and chrysophyte-inferred temperature reconstructions in a Polish lake. The first 64 varves of Lake Żabińskie (54º07'54.5"N; 21º59'01.1"E) were analysed for chironomids, and a transfer function from eastern Canada (Larocque, 2008) was applied to quantitatively reconstruct mean August temperature. For the chrysophytes, an Austrian transfer function was used. However, in both cases, Polish transfer functions will be developed to reconstruct climate on longer time scales. Lake Żabińskie is located in the Masurian Lakeland. It is relatively small (40.1 ha) and deep (43.5 m). The lake has one major and several minor inflowing streams and one outflow connecting to the much larger Lake Gołdopiwo. The first measurements of physical and chemical properties of the lake water indicated a eutrophic, thermally stratified, hardwater lake with seasonal anoxia in the hypolimnion. The core ZAB-11/3 was collected in September 2011 from the central part of the deep basin using a UWITEC gravity corer. Each varve was subsampled and analysed for chironomids and chrysophytes. Preliminary results are presented.

S09-P-08 The relationship between chironomids and lake depth in Bosten Lake, Xinjiang, NW China

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A significant relationship between the distribution and abundance of chironomids and water depth has long been recognized. However, few studies have been done on this topic in arid regions where the chironomid community is usually controlled by water salinity. Thus Bosten Lake, the largest inland freshwater lake in China and located in the