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Comparison of instrumental and reconstructed climate data from Maritime Canada

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Ombrotrophic peat bogs are an important ecosystem containing a large amounts of palaeohydrological information as they derive all of their moisture inputs from the atmosphere. By exploiting this relationship to the atmosphere, peat bogs have long become an established source of information about past climate change. Past changes in atmospheric moisture availability, which in Maritime Canada are closely linked to changes in the North Atlantic, can be determined by reconstructing change in bog surface wetness (BSW). The exact processes driving BSW, however, still remain subject of debate and further work into the autogenic and external processes driving BSW is still needed. The overall consensus points to summer moisture deficit as the driver of changes in reconstructed BSW, which in turn is mainly driven by summer precipitation with temperature as a secondary factor (Charman *et al*. 2009; Booth, 2010). In order to address the issues concerning the factors driving BSW, this paper presents a comparison of reconstructed high-resolution climatic data to instrumental summer and winter climate records for the past century.

The large majority of work comparing reconstructed records from peat bog proxies to instrumental data has been carried out using testate amoebae based reconstructions. To gain a better understanding of the climate parameters driving BSW, analysis of a wider set of climate-proxies is needed. Results from correlation comparisons of summer and winter signals from environmental factors such as precipitation, temperature, effective precipitation and cloudiness with reconstructed data derived from stable isotopes ($\delta^{18}O$, $\delta^{13}C$), plant macrofossil remains, testate amoebae and peat humification are presented in order to determine to what extent modern BSW is driven by external processes and which of these processes are most dominant. In order to carry out these comparisons, two ombrotrophic plateau bogs from Maritime Canada (Nordans Pond Bog, Newfoundland and Villagedale, Nova Scotia) were analysed.

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