Records of Late Holocene moisture regime from wetlands in Nova Scotia, Canada

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At Baltzer Bog, Brier Island Bog and Pleasant River Fen, Nova Scotia, data from excavated sections and core samples were used to elucidate the timing of effective moisture variability during the Late Holocene. Baltzer Bog is located in an elevated, closed basin on an extensive Wisconsinan glacial deposit. A 2.3 m thick peat deposit contains three distinct wood mats that are interbedded with sphagnum-dominated organic deposits. An upright stump at the base of the section was dated at 3260 cal BP. A rapid transition to wood-free sphagnum and an increase in the bog surface wetness index indicates an increase in local water table occurred shortly after this time. Two other woodland – wetland transitions were dated at 1640 cal BP and 1045 cal BP. Sphagnum humification data indicate that these paleobotanical transitions were also associated with significant effective moisture variability. At Brier Island Bog a thin wood mat in sphagnum at 90 cm depth was dated at 1760 cal BP. At Pleasant River Fen, pollen and stratigraphic data indicate that around 1950 cal BP a transition from open water to fen environment occurred which is broadly correlative with woodland development at Brier Island Bog and Baltzer Bog; an increase in local arboreal pollen at 1050 cal BP is correlative with woodland development at Baltzer Bog. Though other high resolution paleoclimate records from the region indicate that the Late Holocene was a time of increasing precipitation and cooler air temperatures, these wetland records demonstrate that in Nova Scotia this time period was characterized by rapid variations in effective moisture and that significant and sustained dry periods likely occurred.

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