Geophysical Research Abstracts
Vol. 13, EGU2011-5343-1, 2011
EGU General Assembly 2011

Examining the sediment retention function of wetlands in response to forestry activities in British Columbia

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Information is currently lacking regarding the variability of a wetland's sediment storage function over time, and the impacts of increased sediment delivery to this function. To address this issue, two wetlands in the Quesnel River Basin in Central British Columbia, whose surrounding catchments were logged, were studied. Sediment cores were collected in 2009 from both wetlands, as well as their adjacent lakes, to determine the relative proportion of sediment retained by each feature prior to, during and after forestry practices. Analysis of radionuclides (210Pb and 137Cs) was undertaken to determine core chronology and sedimentation rates. Other proxy indicators (magnetic susceptibility, loss-on-ignition, particle size distribution, C:N ratio and geochemical indicators) were used to assess wetland filtration over time, and to trace the movement of allochthonous sediment through the catchment. Climate data were also used to examine whether fluctuations in sedimentation rates are better explained by climatic factors (e.g. precipitation, temperature). Results suggest that there were periods of increased sedimentation associated with forestry practices and other changes in land use. Despite increases in sediment delivery due to forestry practices the wetlands performed important buffering functions.