

# Interannual and seasonal variations of $\delta^{13}\text{C}$ of East Siberian tree rings and its relation to the water environment

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The relationships between early/latewood width, cellulose carbon-13/carbon-12 ratio ( $\delta^{13}\text{C}$ ), and soil water content of trees growing on a *Larix gmelinii* and a *Pinus sylvestris* stand in Yakutsk, Eastern Siberia were studied. The two sites differed considerably in soil water content, because flooding caused by snowmelt in spring and subsequent drought by dry summer climate provided a marked contrast in soil water condition between early- and latewood formation period. In order to examine whether drought influence  $\delta^{13}\text{C}$  - ring width relation, we collected wood samples from eight *L.gmelinii* and four *P.sylvestris* trees from the two sites and measured both ring widths and  $\delta^{13}\text{C}$  of early- and latewoods formed during 1996-2000. Growth season precipitation correlated well with latewood  $\delta^{13}\text{C}$ , and seasonal soil water content change also corresponded to intra-ring  $\delta^{13}\text{C}$ . We found negative  $\delta^{13}\text{C}$  - latewood width correlation ( $r = -0.79$  for *Larix* and  $-0.84$  for *Pinus*,  $p = 0.005$  for both) only at the *Pinus* site (dry site). Decrease and/or early cessation of latewood growth and increased  $\delta^{13}\text{C}$  under water-stressed condition may explain this negative correlation. This signifies the possibility of using the correlation as a drought indicator of trees in this region and potential of using latewood  $\delta^{13}\text{C}$  from the *Pinus sylvestris* site for the reconstruction of soil water environment.