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The first attempt of spring precipitation reconstruction in South Kamchatka, using ring width of Stone Birch (Betula Ermanii Cham.)

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Tree-ring studies in Kamchatka begun in the late 1980s (Shiyatov, ITRDB) though, still there are a lot of potentials for climatic reconstructions in this area.

In the central and eastern Kamchatka larch chronologies were used for the spring – summer temperature reconstructions (Gostev et al.1996, Solomina et al., 2007). In South Kamchatka the conifers do not grow, while Stone Birch (*Betula Ermanii Cham.*) is dominating in the natural forests. It can reach the age up to 300-400 years and can be potentially used for dendrochronology. However, it is not always easy to sample, cross-date and find old birch trees. Therefore up till now only poorly replicated birch chronologies were constructed (Jacoby, personal communication, Solomina et al., 1999).

In is this study we aimed to estimate the potentials of the stone birch for dendrochronology (cross dating, climate signal, chronology construction and climate reconstructing).

In summer 2006 twenty-nine trees (58 cores) were samples from two sites in southern Kamchatka. The first site is located near the Nachiksky pass (N 53 06 441; E 157 50 459), at the upper tree limit (424 m a.s.l.). The second one is close to Paratunka village (N 52 58 229; E 158 15 308), at the lower tree limit at an altitude of 60 m a.s.l.

We used the COFECHA for cross-dating and had to reject eight complacent and eleven broken cores. In total we used 18 cores (1850-2005) from the lower tree limit and 21 (1821 to 2005) from the upper tree limit site to construct the chronology using the

ARSTAN program (conservative detrending).

In order to reveal a climatic signal we used monthly mean air temperature (1900 - 1996) and precipitation (1930 - 1988) recorded at the meteorological station Petropavlovsk, which is located in the vicinity of our sites. In turned out that both chronologies depend on the same climatic factors. Statistically significant correlation of May precipitation (R=0,47) was found for the lower tree limit site as well as for the upper tree limit (R=0,4 correlation with March-May R=0,45). The chronologies from the both sites shows positive, but weak correlation with July mean temperature (R=0,27 and R=0,28 for upper and lower tree limit, respectively).

Because of the highest coefficients of correlation with May precipitation we can assume that the amount of snow, which accumulates during the winter and remains until May has a positive effect on the birch growth in southern Kamchatka. Based on this model we can reconstruct the snow storage in South Kamchatka, which is important parameter not only for the vegetation, but also for the reconstruction of the avalanche activity in this area. The new chronology can be used as well in the future for cross-dating of wood very often found buried in volcanic sediments (Solomina et al., 2007).