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Evaluation of Climate Change in northeastern China by means of d13C in tree-rings in the Great Xiang'An mountains region

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The northeastern forest region of China represents one of the southern boundary of the Asian boreal forest and also represents the boundary between humid- semi humid area and arid- semi arid area of China. These forests are mainly dominated by larch (Larix gmelinii) stands with small areas covered by birch and pine forests. Increases in air temperature and precipitation caused by climate change are expected to have a great effect on forest ecosystems boundaries. Accordingly, from 1963-2006, air temperature has increased 1.5 [U+2103] in this region. Tree-ring chronologies are commonly used as indicator of climate changes and in recent decades the combination with carbon stable isotopes has shown a higher resolution in the results. Since this combine technique has not been used in northeastern China, we applied this combined technique to reconstruct the climate in the Great Xing'an mountains of northeastern China. Preliminary results showed that tree growth has increased in the middle and southernmost site in the last century while in the northernmost site it decreased for the same period which is in agreement with the mean air temperature increase from south to north in this region under negligible changes in precipitation regime. In contrast, tree-ring δ13C shows a gradual but steady increase along the three sites selected for our study, however the highest being observed in the middle site which experience the largest increased in air temperature in the last decade. This appears to indicate that increases in air temperature produced a stress in the stomatal conductance that so far has translated into tree ring growth decline.