

This diploma thesis is focused on microclimatic differences at treelines on north-facing and south-facing slopes and their effect on tree growth. Thesis contains an overview of factors affecting development and timing of xylogenesis. The effects of slope orientation on treeline in relation to exposure effect are mentioned as well. The aim of the practical part of diploma thesis was to determine development, timing and the impact of temperature characteristics on xylogenesis of Norway spruce (*Picea abies*) on two localities with opposite slope aspect. Locations were situated in the Důl Bílého Labe valley, Krkonoše Mountains. Xylogenesis was studied using sections of micro-cores. Microcores were sampled every 10 days during the growing season. They were subsequently analyzed in dendrochronological laboratory. My results show that influence of air temperature recorded at the start of cambial cell division and the development of enlarging cells in the first part of the growing season. Climatic characteristics of both sites was similar, larger differences in temperatures were recorded at the beginning and at the end of the reference period.