



Comparison of open-site and below-canopy temperature conditions in Switzerland during summer 2003

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We compared open-site and below-canopy climatic conditions from 14 different sites in Switzerland based on LWF data (Long-term Forest Ecosystem Research). The LWF program is integrated into both the ILTER (International Long-Term Ecological Research Network) and the ICP forests level II (International Co-operative Programme on Assessment and Monitoring of Air Pollution Effects on Forests).

The 14 sites represent different locations, orientations and elevations, from the Jura mountains to the southern side of the Alps, composed of deciduous, coniferous and mixed forests. Meteorological measurements are carried out under the canopy at the observation plots, and in open areas outside the plots. For the latter, the meteorological station is located less than 2 km from the plot, in a region of similar topography (altitude, slope orientation, distance from the bottom of a valley, etc.). LWF instruments measure air temperature and humidity, solar radiation, UVB and PAR radiation, precipitation, and wind speed and direction. At this stage, we can already use 10 years of data from 14 sites.

We analysed air temperature during summer 2003, in connection with the exceptionally high temperature measured during the summer and with the heatwave situation of August. We analysed both minimum and maximum daily air temperature and could measure the differences between open-site and below-canopy conditions. Our results show that extremes are usually less pronounced below the canopy, particularly for maximum temperature, with differences reaching 1 to 5°K. We found a significant correlation between the absolute value of maximum temperature and the difference between open-site and below-canopy temperature: the higher the temperature, the

stronger the difference. But two sites show opposite conditions. We suggest that this may be due to the vegetation type as the dominant species on both sites are *Pinus sylvestris* and *Pinus mugo*.