

5A-01 Annual ¹⁴C dating of floating dendrochronological sequences. Implication for the interhemispheric offset during the Younger Dryas event

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Tree rings are an important archive for the calibration of radiocarbon data. The younger part of the IntCal curve is based essentially on tree-ring chronologies, absolutely dated by dendrochronological analysis. For the Northern Hemisphere (NH), the absolute curve is starting at 12324 cal BP. During the Younger Dryas period, only a few floating dendrochronological sequences exist, essentially from Switzerland (Kaiser et al. 2012, *Quat. Sci. Rev.*; Reinig et al. 2018, *Quat. Sci. Rev.*) and France (Miramont et al. 2011, *Quaternaire*).

We present here ¹⁴C results from French subfossil trees (*Pinus sylvestris* L.) dated to the Younger Dryas. A floating dendrochronological sequence was built from nine trees from Barbiers River site. Results from two dendro-matched trees (Barb12-17) were already reported in Capano et al. (2018, *Radiocarbon*). Here we analyze new ¹⁴C data from two other dendro-matched trees (Barb13-14), extending the Barbiers record over the 312-year period of the chronology. Moreover, we analyzed the ¹⁴C content of tree Barb15, which is not yet synchronized with the Barbiers dendrochronological sequence.

All trees were sampled at annual resolution. So far, every third ring was pretreated for ¹⁴C analysis by using an ABA-B method before combustion and graphitization with the AGE system and measurement with AixMICADAS (Capano et al. 2018, *Radiocarbon*). In order to date our sequence against the Kauri record from New Zealand (Hogg et al. 2016, *Radiocarbon*), the Barbiers data were averaged at the same decadal resolution as the Kauri record. All averaging options were statistically compared with the Kauri sequence, leading to date Barbiers sequence between a start at 12902±10 and an end at 12594±10 cal BP. Assuming the existence of a solar event (producing a rise of 17‰ Δ¹⁴C in 12 years with a very rapid decrease) around 12680 cal BP, we tentatively refine the dating of the Barbiers sequence between ca. 12911 and 12603 cal BP.

The ¹⁴C sequence of Barb15 tree was compared with Barbiers sequences. The annual ¹⁴C measurements allowed its precise dating and it helped in finding the dendrochronological synchronization with other trees.

Our new record allows estimating the Inter-Hemispheric ¹⁴C gradient (IHG) over the overlapping period with the southern hemisphere Kauri sequence (Hogg et al. 2016, *Radiocarbon*). Depending on the dating option, the mean IHG varies (from ~26 to ~55 years), while a collapse is identified around 12850±10 - 12840±10 cal BP, which corresponds approximately to the beginning of the Younger Dryas event.