

Alternative age model based on GICC05

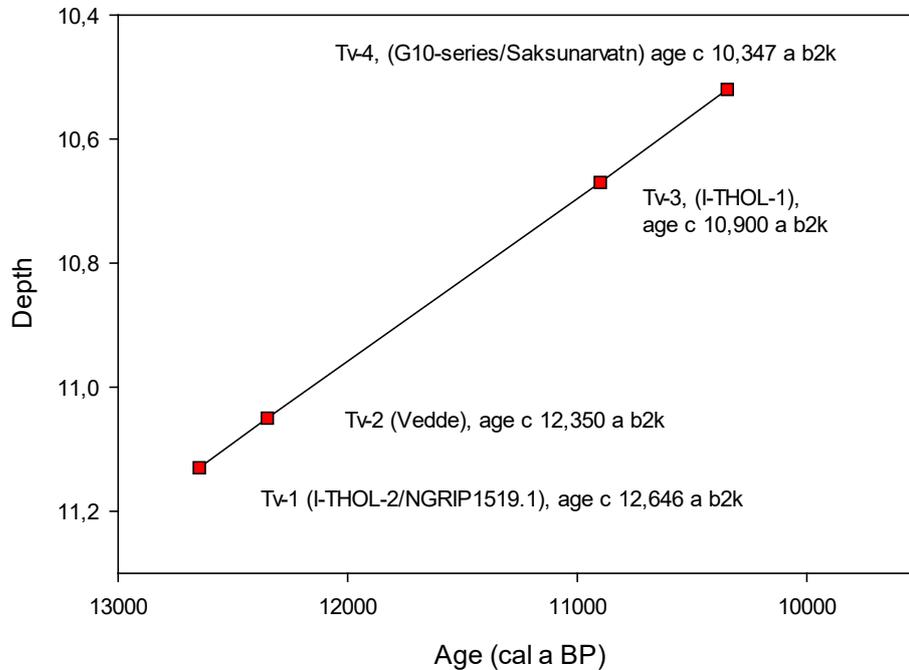


Fig 1:

This graph shows an alternative age model for the Torfdalsvatn core based on ice-core ages of the Tv-1 and Tv-4 tephras (Mortensen et al. 2005; Cook et al. 2022). The NGRIP1519-1 layer, dated to c 12,646 b2k was correlated with Tv-1/I-THOL-2 by Mortensen et al. (2005). Biplots (Fig. 2) suggest that the correlation is correct, but Mortensen et al. tentatively sourced the layer to Grímsvötn, not Hekla/Vatnafjöll.

The age-depth line is drawn as linear interpolation between Tv-1 (I-THOL-2/NGRIP1519-1) and Tv-4 (G10-series/Saksunarvatn) with ages from NGRIP. This suggests that Tv-2 (Vedde?) in Torfdalsvatn has an age of c 12,350 b2k and Tv-3 (I-THOL-1) ca 10,900 b2k. This is a slightly high age for Vedde, but firmly within the Younger Dryas/GS-1, and not early Holocene.

Fig. 2:

The biplots on next page show that there is a good agreement between the Tv-1 tephra from Torfdalsvatn and the NGRIP1519.1/GRIP1654.05 from Greenland ice. There is more spread in the ice core samples which might be due to smaller shards that were analysed, but all major elements overlap.

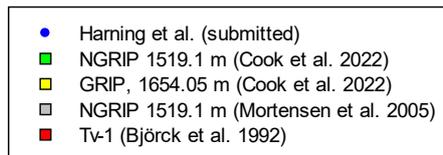
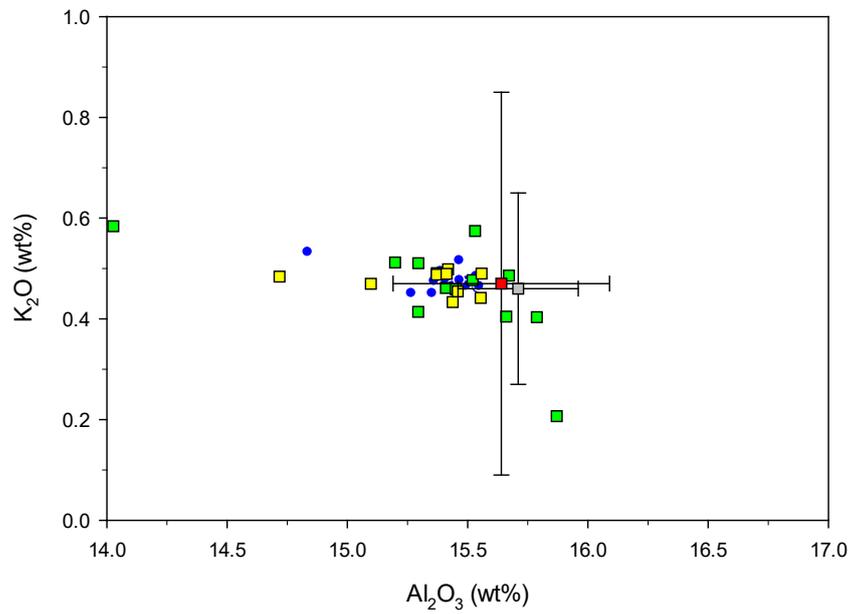
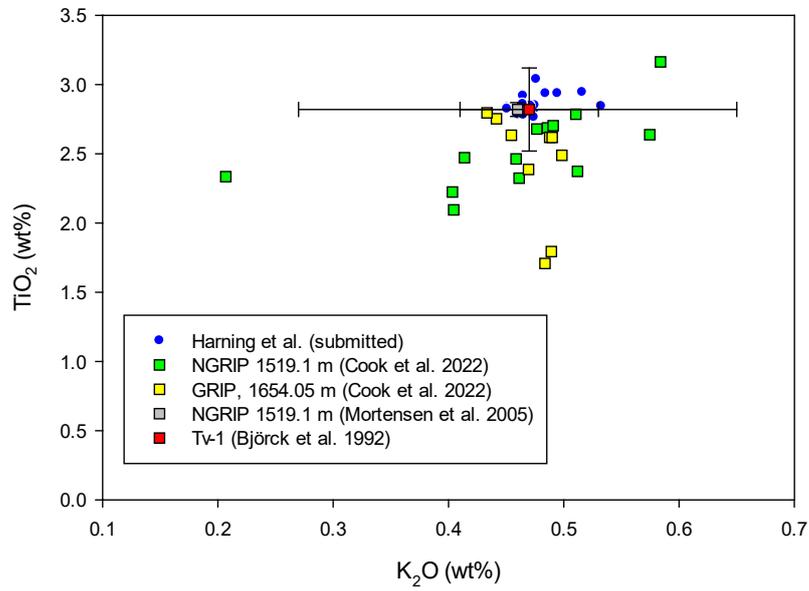


Fig. 3.

Fig. 2 from Rundgren (1995) showing organic C, litho- and tepthrostratigraphy, SIRM and pollen stratigraphy of the lowermost 1.05 m of sediments in L. Torfdalsvatn. The core is not the same that was investigated by Björck et al. (1992) but “was easily correlated with the previous one in the field on the basis of lithostratigraphy”. Note the detection of redeposition in T-4 indicating a high sedimentation rate during this zone. The increase in organic content and pollen concentration values at the beginning of zone T-6 is interpreted as the transition from the Younger Dryas cold event into the Preboreal warming which is in agreement with the radiocarbon date of 9890 ± 290 ^{14}C y BP (Ua-1889).

If the interpretation of the pollen stratigraphy is correct, then the Vedde Ash (Tv-2) is firmly within the Younger Dryas sediments. Furthermore, Tv-1/I-THOL-2 is placed just below the onset of T-3 which marks a dramatic drop in pollen influx and organic carbon that points to a sudden change to a colder climate with a shorter ice-free season in the lake (Rundgren, 1995, p 411), presumably the Younger Dryas cooling. This is not compatible with an early Holocene age of 11460 cal a BP for the Tv-1 tephra

