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**Climate of the Past Discussions**

# *Interactive comment on* "Climate change and the demise of Minoan civilization" *by* A. A. Tsonis et al.

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The following sentence (Page 803, lines 10-15) is not quite correct and needs more explanation, since a lot of things have changed since 1987: "However, in 1987 studies conducted at the Greenland ice cap dated frozen ash from the Thera eruption and concluded that it occurred in 1645 BC (Hammer et al., 1987); a result which has been confirmed by subsequent studies (Friedrich et al., 2006; Manning et al., 2006) and placing the event several hundred years before the destruction of the Minoan palaces around 1450 BC and the final disappearance of Minoans around 1200 BC."

Since 1987 the ice core date of the Minoan eruption (1645 BC) has been changed several times, e.g Clausen et al. 1997; Hammer et al. 2003, and Vinther et al. 2006. The latter set the ice core date of the Minoan eruption of Santorini (Thera) to 1642 $\pm$ 5



cal. years BC.

Furthermore, it has recently be discussed whether this acidity signal of 1642 BC in the Greenland ice cores was caused by the Minoan eruption of Santorini or the Alaskan volcano Aniakchak (Eastwood et al., 2004). Also Denton and Pearson (2008) postulate: "The geochemical evidence is however so compelling that no reasonable doubt can remain that the 1642 BC ice core ash is from Aniakchak". However, this postulate is rejected by Vinther et al., 2008).

Concerning "subsequent studies (Friedrich et al., 2006; Manning et al., 2006)" Both papers present radiocarbon dates of the Minoan eruption of Santorini which supplement each other. However, the most direct and precise date of the Minoan eruption is the one by Friedrich et al. 2006 because it is based on 72 growth rings of a branch of an olive tree that was buried alive in the ashes of the Minoan eruption. This investigation results in a 2 sigma range of 1627 - 1600 calendar years BC. A branch of a second olive tree is currently being investigated that stood only few meters away from the first olive tree (Friedrich 2009; Heinemeier et al. 2009).

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