

Interactive comment on “The 3.6 ka Aniakchak tephra in the Arctic Ocean: a constraint on the Holocene radiocarbon reservoir age in the Chukchi Sea” by Christof Pearce et al.

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Author replies are in red.

This approach (i.e., the use of volcanic absolute age markers) has been used for the first time in the Chukchi Sea/western Arctic Ocean, correct, but has earlier been used in the Nordic Seas Fram Strait area (e.g., the use of the Vedde Ash).

We will mention that other studies using tephrochronology exist on the Atlantic side of the Arctic Ocean.

It might be useful to add in the map of Figure 1 the general atmospheric circulation pattern showing the pathway of dust/volcanic ash.

C1

The atmospheric circulation patterns of the Bering Sea and Chukchi Sea region are highly variable and the averaged, general patterns do not provide a clear pathway from the Aniakchak volcano to our core site. Below, in Figure 1, are plots of seasonal and annual sea level pressure, indicating the main atmospheric circulation pathways.

Our support for the atmospheric transport of the ash to the Chukchi Sea is the presence of a visible ash layer along the entire west coast of Alaska. Our core site lies in the extension of this atmospheric transport pathway.

The ash layers CFE I and CFE II discussed by Pearce et al. might also be identified in the sediment cores used by Stein et al. (2016) (see attached figure).

We will mention the cores studied in the recent publication Stein et al. 2016, and add the relevant sites to the map (ARA2B-1A, ARA2B-1B).

Are the ash layers visible in XRF scanning records?

No. We have XRF core scanning data at 1 cm resolution, and none of the elements shows any relation to the presence of tephra.

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C2

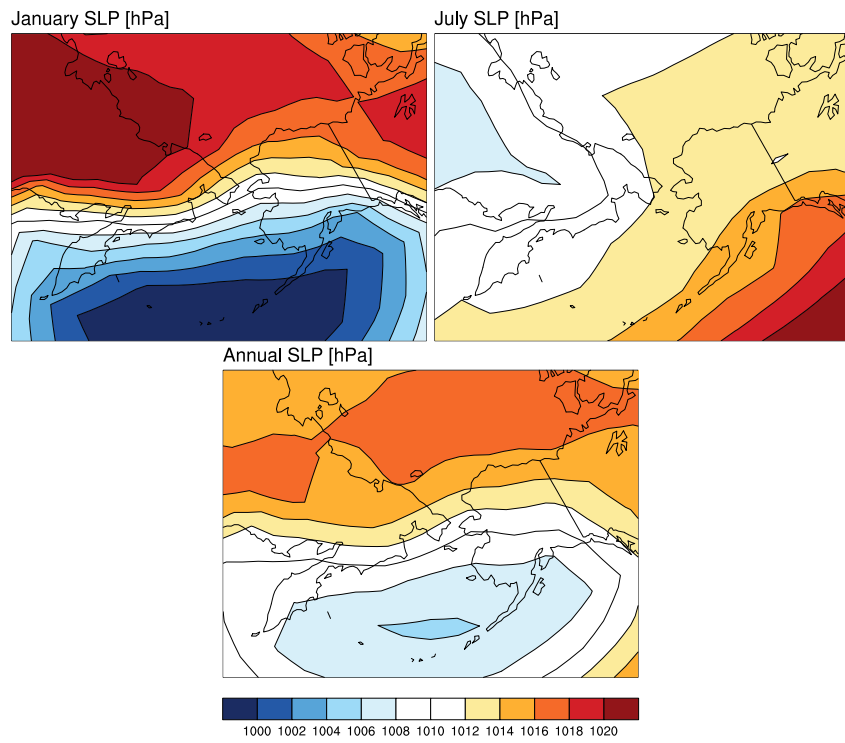


Fig. 1. Figure 1. Sea level pressure plots of average January, July and annual data from 1980 – 2000. Data from Hurrell et al (Eds.) "The Climate Data Guide: NCAR Sea Level Pressure."