



## **The Dansgaard-Oeschger events are noise-induced: Statistical investigation of the proposed 1470 yr cycle.**

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The significance of the apparent 1470 years cycle in the recurrence of the Dansgaard-Oeschger (DO) events, observed in the Greenland ice cores, is debated. Here we present several statistical significance tests of this periodicity. The detection of a periodicity relies strongly on the accuracy of the dating of the DO events. Here we use both the new NGRIP GICC05 time scale based on multi-parameter annual layer counting and the GISP2 time scale where the periodicity is most pronounced. For the NGRIP dating the re-occurrence times are indistinguishable from a random occurrence. This is also the case for the GISP2 dating, except in the case where the DO9 event is omitted from the record. Whether or not the record shows a truly periodic beating has strong implications for identifying the underlying cause. If the recurrence is periodic it suggests an external cause, such as a hitherto undiscovered solar period, or a beating of several periodic forcings. If the recurrence of DO events is not periodic it points to triggering mechanisms internal to the climate system being manifested at the millennial timescale.