

Diagnose oscillation properties of $\delta^{18}\text{O}$ embedded in ice cores from Antarctica and Greenland

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Analysing water stable isotopes is one of the ways to understand global climate change in the past. The temperature proxy using ice cores has been established in glaciology, and is defined as oxygen isotope $\delta^{18}\text{O}$. The objective in our presentation is to investigate the relationship between the temperature proxy, $\delta^{18}\text{O}$ and solar activity.

Periodicities in an annual ice-core $\delta^{18}\text{O}$ record (Graf et al. 2002) obtained from Dronning Maud Land (DML), Antarctica, were examined. We obtained 21-year and 194-year cycles in the data with Fourier and Autoregressive model time series analyses. We will also discuss significance for the obtained power peaks and their relation with the known solar modulation cycles about 22-year and 200-year.

DML ice-core might be affected by the cosmic rays that directly reflected the solar magnetic activity. We will also analyze a Greenland ice core for comparison.

Keywords: oxygen isotope ratio, ice cores