

EGU22-5847

<https://doi.org/10.5194/egusphere-egu22-5847>

EGU General Assembly 2022

© Author(s) 2022. This work is distributed under the Creative Commons Attribution 4.0 License.



Insights from the first analysis of Antarctic water stable isotope simulations for the historical period

Sentia Goursaud Oger¹, Louise Sime², and Max Holloway³

¹CEA, DAM, DIF, F-91297, Arpajon, France

²Ice Dynamics and Paleoclimate, British Antarctic Survey

³Scottish Association for Marine Science, Oban, UK

The historical period (from 1850 to present) yields a window when ice core and good historical data are both available. It thus represents an important period over which to test the relationship between ice core measurements, here stable water isotopes, and Antarctic climate. Water stable isotopes from ice cores from Antarctica have traditionally been used to infer past surface air temperatures. Here we run an ensemble over the period 1850-2004 using the UK Met Office HadCM3 general circulation model equipped with water stable isotopes. Simulations of water stable isotopes from general circulation model can help in the interpretation of Antarctic ice cores. This ensemble captures observed temperature and precipitation trends. Interestingly however the water isotopes exhibit little trend. This appears to be explained by compensating effect of two modes of atmospheric dynamics throughout the period. Further we use these results to examine the relationships used in Last Millennium reconstructions based on Antarctic stable water isotopes data from ice cores.