

EGU2020-1703

<https://doi.org/10.5194/egusphere-egu2020-1703>

EGU General Assembly 2020

© Author(s) 2020. This work is distributed under the Creative Commons Attribution 4.0 License.



Stable Isotope Evidence for Recent Global Warming Hiatus

Rui Wang and Zhongfang Liu

State Key Laboratory of Marine Geology, Tongji University, Shanghai, China (635529734@qq.com)

Global mean surface air temperature (SAT) has remained relative stagnant since the late 1990s, a phenomenon known as global warming hiatus. Despite widespread concern and discussion, there is still an open question about whether this hiatus exists, partly due to the biases in observations. The stable isotopic composition of precipitation in mid- and high-latitude continents closely tracks change of the air temperature, providing an alternative to evaluate global warming hiatus. Here we use the long-term precipitation $\delta^{18}\text{O}$ records available to investigate changes in SAT over the period 1970–2016. The results reveal slight decline in $\delta^{18}\text{O}$ anomaly from 1998 to 2012, with a slope of $-0.0004\text{‰ decade}^{-1}$ which is significantly different from that of pre-1998 interval. This downward $\delta^{18}\text{O}$ anomaly trend suggests a slight cooling for about $-0.001^{\circ}\text{C decade}^{-1}$, corroborating the recent hiatus in global warming. Our work provides new evidence for recent global warming hiatus and highlights the potential of utilizing precipitation isotope for tracking climate changes.