Goldschmidt 2024 Abstract
https://doi.org/10.46427/gold2024.22877

The prevailing Taklimakan provenance for Tibetan Plateau ice core dust: evidence from Sr and Nd isotope

DR. WU GUANGJIAN AND JU HUANG

Institute of Tibetan Plateau Research, Chinses Academy of Sciences

Presenting Author: wugj@itpcas.ac.cn

Asian arid regions, including the West, Central, East and Southwest Asia, are the major dust source over the Northern Hemisphere. The Tibetan Plateau (TP) is located downward to and receives amount of dust from those deserts. Dust on the glacier surface could effectively decrease the albedo and promote glacier melting, especially under the perspective of extraordinary warming on the TP. The spatial distribution of MODIS AOD shows that the northern and western TP has a higher aerosol load than in the southern part, also suggesting that the dust transport route over the TP is generally from the northwest to the southeast. While the exact source of dust over the TP is not clear. In this study, we carried out a systematic study on the strontium and neodymium isotopic composition of dust extracted from 14 ice cores across the whole TP in purpose of provenance tracing. Compared to the potential sources, such as West Asia, East Asia, SW Asia, and the local materials, those ice core dust show a Sr-Nd isotopic composition that similar with the East Asia, especially the upward Taklimakan Deserts. The rest potential regions seem to have different isotopic composition that can’t match that of those ice core dust. Our result suggests that dust over the TP is dominantly derived from the upwind Taklimakan, while the contribution from other potential source regions is limited. In the southern TP, local contribution seems have a little contribution.