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Xianfeng WANG is a geochemist with research interests in climate science and isotope geology. He is currently working on tropical climate change by using cave carbonates and fossil corals. He obtained his B.A. and M.S. degrees in Earth Sciences at Nanjing University in China and received a Ph.D. in Geology from the University of Minnesota, US. Prior to joining NTU, he was a postdoctoral research fellow at Lamont-Doherty Earth Observatory of Columbia University, and held a position as a research associate at the University of Minnesota. Xianfeng was recently awarded a Singapore National Research Foundation (NRF) Fellowship. He is a Nanyang Assistant Professor at the Division of Earth Sciences, and also appointed as a Principal Investigator within the Climate Change group at the Earth Observatory of Sciences.

Isotope Chemistry, Climate Change and the Fate of the Chinese Dynasties

The Asian monsoon supports billions of people's livelihoods in the region. Change of its strength may cause catastrophes in our society. We developed a history of the Asian monsoon for the last 300,000 years, using radioactive and stable isotopes preserved in cave carbonates. Over the most recent 2,000 years, the Asian monsoon was strong during Europe's Medieval Warm Period (~950 to 1,250 C.E.), but weak during the Little Ice Age (~1,350-1,800 C.E.). When compared with Chinese historical documents, the Asian monsoon was found to be weak during the final decades of the Tang, Yuan, and Ming Dynasties, all times characterized by social turmoil. But the monsoon was strong during the first several decades of the Northern Song Dynasty, a period of increased rice cultivation and dramatic population increase.

Broadly speaking, human civilization has been benefited from a relatively stable climate through the last 10,000 years. However, when anthropogenic impacts surpass the natural limits, the consequence of future climate change on our modern society becomes enigmatic.