



Synchroneity or asynchronicity of climate sequences between Japan and Greenland during the last deglaciation?

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Evolution of the East Asian monsoon (EAM) in the last deglaciation, synchronous with Northern Hemisphere (NH) thermal dynamics, has been predominately driven by solar insolation and NH climate. However, the mismatch of climate changes between Japan, located in the easternmost front of the EAM, inferred from Lake Suigetsu (Nakagawa et al., 2003, *Science*, v. 299, 688-691) and Greenland has been an unsolved puzzle. With a stalagmite stable oxygen record in the nearby Maboroshi Cave, Japan, we find that the EAM changes during 15.5-10.7 ka in Japan are aligned with those in Chinese caves and Greenland thermal dynamics. Our results support that there was vigorous teleconnection between the low- and high-latitudinal systems during the transitions into the Bølling-Allerød (BA) warming at 14.6 ka and the Younger Dryas cooling at 12.8 ka in the North Atlantic. However, our reconstructed summer EAM indicates monsoonal intensification during the BA, coincident with decreasing temperatures in Greenland from 14.6-12.8 ka. We attribute this decoupling to the interhemispheric climate dynamics. Discrepancies between Lake Suigetsu and the existing radiocarbon age calibration data sets can be removed when the Lake Suigetsu age model is adjusted with our absolute-dated Maboroshi cave record, which resolves temporal ambiguities in the Lake Suigetsu paleoclimate record.