

A humid climate of the last stage of the Little Ice Age in central Japan reconstructed using oxygen isotopes from tree-ring

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The Asian monsoon is an important part of the Earth's climate system that is characterized by variations in the strength and expansion of the summer rain band. Rainfall reconstructions in China have revealed changing patterns of rainfall during the Little Ice Age (LIA), but few hydroclimate reconstructions around Japan have hindered the understanding of physical processes associated with the atmospheric system in the western North Pacific. Here, we report on rainfall variations in the Meiyu/Baiu season from AD 1600-1959 by using tree-ring cellulose oxygen isotopes from central Japan; this is the longest record in the eastern most regions under the monsoon's influence. Data suggest that the wettest period occurred around AD 1790-1860, the final stage of the LIA. This shift was concurrent with sea surface temperature anomalies around the Philippines and off eastern Japan. Thus, meridional atmospheric circulation was likely weak during the last stage of the LIA.

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