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**Divergent influences of the Greenland and Antarctica climates on the Asian monsoon during a stadial to interstadial cycle**

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**Abstract** Despite the links of Asian monsoon with climates at high northern and southern latitudes, it remains unclear that at which time and to what extent the Asian monsoon variation is dominated by one of the two drivers throughout a Greenland Stadial (GS) to Greenland Interstadial (GI) cycle. Here we provide a Chinese stalagmite  $\delta^{18}\text{O}$  record to study their teleconnections throughout the GS-6 to GI-5.2 cycle. The resemblance between the stalagmite and Greenland records, in timing, duration and abruptness of GI-5.2, supports that the occurrence and termination of GIs are paced by the northern driving force. During the intervals of GI-5.2 and GS-6, however, the Asian monsoon fluctuated concomitantly with variation in temperature over Antarctica, instead of over Greenland. This covariation indicates dominant influences of the Antarctic climate during the climatically stable intervals of stadials and interstadials. This study updates our knowledge on mechanical dynamics of the Asian monsoon change and global climate change throughout a GS to GI cycle.

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