



Role of the Asian Summer Monsoon Heating in the Link between Asian and African Climate

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Changes in the summer climate over Asia and Africa are closely linked by the lateral component of the Asian monsoon circulation. This transverse monsoon is stronger than the meridional monsoon, and the associated lateral thermal gradient is larger than the meridional thermal contrast.

Both observational analysis and climate model experiments show that the enhanced thermal condition over Asia well explains the long-term decline of the African monsoon, especially the Sahel rainfall, in the past decades. This feature demonstrates the changes in the Asian-African climate link and the transverse component of the Asian summer monsoon. The study also reveals the relative importance of the changes in the thermal condition of the Tibetan Plateau and the Asian continent for modifying the African climate. The “bridge” role of the Tibetan Plateau in the Asian-African climate link is clearly demonstrated in this study.