

# The Impact of Land-Sea Contrast on the Circulation of the Asian Summer Monsoon

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The role of land-sea contrast especially the lands in the tropics in the formation of the Asian summer monsoon is examined through a series of idealized numerical experiments. Results show that the existence and geometric shape of land-sea distribution crucially affect the Asian summer monsoon. In an aqua-planet case, no monsoon is observed. In an experiment in which only the subtropical Eurasian landmass exists, there is a weak summer monsoon over its southeastern corner, but there is no tropical summer monsoon. The existence of tropical lands induces cross-equatorial flows and strong low-level southwesterlies over the tropical regions, leading to the formation of the Asian summer monsoon over India, the Bay of Bengal, and the South China Sea. The extension of the subtropical continent into the tropics greatly enhances the