



## Changes in Indian vegetation productivity under increasing CO<sub>2</sub> concentration

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Higher CO<sub>2</sub> concentration improves vegetation's water use efficiency by CO<sub>2</sub> fertilization effects. However, anthropogenic climate change increases temperature and thus atmospheric water demand and Evapotranspiration globally, which may cause more intense frequent agricultural and ecological droughts. India is an agriculture-dependent country, with most of the population working in the agriculture and allied sector. India is also the second-highest contributor to global greening, having two of the eight global hottest biodiversity hotspots. Studies have shown that the land-atmospheric feedbacks are strong in India, and climate drivers of Indian vegetation productivity vary from those of global tropical regions. However, the effects of changing climate on Indian vegetation are unclear. Here, using the Coupled Model Intercomparison Project, phase 6 (CMIP6) Earth System Models (ESMs), we project the changes in Indian vegetation productivity over India under Increasing CO<sub>2</sub> concentrations. We partition the radiative and biogeochemical effects of increasing CO<sub>2</sub> concentration and how these effects drive the changes in eco-hydrological processes over India. We also investigate the sensitivity of Indian vegetation in future drought scenarios.