



Impact of Sunda shelf exposure on Southeast Asian atmospheric circulation and on Indonesian Throughflow.

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The West Indonesian archipelago registered drastic paleogeography changes over the Plio-pleistocene in response to sea-level oscillations or basement vertical deformation that enabled the periodic emergence of the Sunda shelf. The emergence of this wide continental platform in the heart of the Maritime Continent may have modified the regional/global climatic system. We investigate the effect of the Sunda shelf exposure on atmospheric and oceanic dynamics using a set of sensitivity experiment within the global coupled model IPSL-CM5A2.

Our results show that the diurnal heating of the continental platform surface enhances lower level convergence and convection, and results in increased air moisture and local precipitations. This effect is enhanced by increased turbulent heat flux driven by vegetated surface properties such as roughness. Increasing precipitation over the exposed platform also impacts the fresh water export into seawater (Indian ocean and Indonesian throughflow salinity), highly depending on the routing scheme over the exposed shelf.