



## **CLIMATE CHANGE AND REGIONAL SEA LEVEL RISE; AN INDIAN OCEAN PERSPECTIVE**

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Sea level rise is one of the dominant impacts of anthropogenic global warming having major societal and geopolitical ramifications. Global mean sea level rise is caused by the warming of the ocean and by the melting of ice and glaciers. However, regional sea level rise deviate substantially from those of the global mean. Spatial patterns of sea level rise in the north Indian Ocean (NIO) show significant rise during last 3-4 decades. Analysis of long-term climate datasets and ocean model sensitivity experiments identifies a mechanism for the sea level rise in NIO relative to the global mean. Our results indicate that NIO sea level rise is accompanied by a weakening summer monsoon circulation. Given that Indian Ocean meridional heat transport is primarily regulated by the annual cycle of monsoon winds, weakening of summer monsoon circulation has resulted in increased retention of heat and increased thermosteric sea level rise in the NIO. These findings imply that rising north Indian Ocean sea level due to weakening of monsoon circulation demand adaptive strategies to enable a resilient South Asian population.