

Link between rainfall variability over the Southern African mainland and tropical cyclone activity in the Mozambique channel

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In the last two decades, there have been increasing instances of severe flooding often with substantial loss of life over Mozambique and parts of Zimbabwe and South Africa associated with tropical cyclone activity in the Mozambique Channel. Research has showed that tropical cyclones may become more intense in future with greater wind speeds and heavier precipitation. However, most countries in southern Africa are ill prepared to cope with intense storm damage and in communicating risks to society, particularly the rural poor. This study examines relationships between rainfall over the southern African mainland, tropical cyclone activity in the Mozambique Channel, large scale climate modes and how these have changed. The results suggest that changes in tropical cyclone activity in the Mozambique Channel may be a contributing factor to trends in extreme precipitation over some parts of the mainland and that these are sensitive to ENSO, the IOD and the subtropical South Indian Ocean dipole. Interactions between tropical cyclones and other synoptic systems were also found to lead to cases of extreme precipitation, particularly over South Africa. A case study of tropical cyclone Dineo, which was generated in the central Mozambique Channel on 15 February 2017, and interacted with the Angola Low and an approaching tropical extratropical cloudband to produce flooding and loss of life in parts of South Africa, Zimbabwe and southern Mozambique, is presented.