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Will the southern African west coast fog be affected by climate change?

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Fog and dew constitute an important water source along the hyperarid and arid parts of the southern African west coast. In this region the annual amount of precipitation due to fog substantially exceeds water input of surface rainfall. As a consequence of these unique climate characteristics, many fog dependent species established along the southern African west coast. Furthermore, as the region's ground water levels are receding and rainfall is rather unreliable, fog harvesting can be a valuable additional water source for drinking water supply.

A major portion of fog precipitation along the southern African west coast region constitutes of advected fog, which generation is related to the transport of moist air masses over the cold sea surface of the Benguela Current. Because of its advective nature, fog patterns are directly linked to the region's circulation activities. Therefore, potential changes in future land sea circulation characteristics might significantly influence the occurrence of fog along the southern African west coast. To assess potential changes in future fog precipitation we implemented a basic fog diagnostics scheme based on Kunkel (1984) into the regional climate model REMO. The REMO model has already been applied over the southern African region in previous studies, e.g. for the generation of long-term high-resolution climate change projections (without a fog diagnostic). Here it has been shown, that REMO ably reproduces the regions climate characteristics. In the present study, we apply the REMO model including the fog diagnostics in two 10-years time slice experiments for current and future climate conditions. Potential changes in the future fog characteristics will be highlighted and the driving processes will be discussed.