The South African fog-water collection experiment: Meteorological features associated with water collection along the eastern escarpment of South Africa

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Abstract

Recent experiments conducted in South America have indicated that fog is a potential source of domestic water in areas where advective clouds frequently move over the coastal mountain ranges. Advective and orographic clouds develop along the eastern escarpment of South Africa's Northern Province when onshore pressure gradients develop to the east of the country. Four synoptic patterns associated with high-elevation fog are identified. These usually give rise to winds with a south-easterly or north-easterly onshore component. The geographic position of sea-surface atmospheric pressure gradients associated with these patterns accompanying fog events is identified using discriminant analysis. Sea-surface atmospheric pressure gradients in the identified areas were found to predict 90% of the fog occurrence at selected test sites. The impact of the magnitude of these pressure gradients on fog occurrence is also investigated.