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Does ENSO affect the observing conditions in the Atacama Desert?

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Thanks to its hyper-arid climate, the Atacama Desert is now home to some of the most advanced telescopes in the world. In the face of climate change, however, there is a risk that these optimal climate conditions also change. Here we look into the El Niño Southern Oscillation (ENSO) and its effect on the climate in the Atacama region. We apply Empirical Orthogonal Functions to detect the ENSO signal in the variation of several meteorological parameters. We find that El Niño events affect in particular the southern Atacama, where they are associated with higher than normal cloud cover, slightly larger water content in the atmosphere, and enhanced precipitation during winter. On the other hand, La Niña correlates with reduced cloud cover, a drier atmosphere, but enhanced rainfall in the north-eastern Atacama. In light of the projected larger number of extreme El Niño and La Niña events, we expect therefore the north-eastern Atacama to provide the overall more advantageous observing conditions in the decades to come.