

## Abstract

The Pampean Sand Sea of central Argentina represents the largest accumulation of eolian sediment in South America. Preserved Pleistocene landforms provide a unique record of wind directions and climatic conditions in southern South America during past glacial periods. We used digital elevation models and satellite imagery of central Argentina to measure the orientation of >1000 eolian landforms in order to reconstruct past wind patterns. Whereas the modern climate of central Argentina is dominated by northeasterly winds, eolian features in the Pampean Sand Sea indicate markedly different conditions during the past. Pleistocene deposits in the Pampean Sand Sea record an anti-clockwise wind pattern that was centered over central Argentina. As a result, much of the area experienced westerly and southwesterly winds. Eolian landforms vary across central Argentina, with parabolic dunes and blow-out features occupying the western and southern portion of the Pampa Sand Sea, and linear dunes and blow-out features occupying the eastern portion. These data suggest that much of the eolian sediment in the Pampean Sand Sea was derived from floodplain deposits of surrounding river systems like the Colorado and Desaguadero rivers. These data can be used to inform atmospheric and climate models that examine how regional wind patterns responded to past glacial episodes.

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