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Distribution of plant wax derived n-alkanes and alkanoic acids from lacustrine sediments and climatology along the western side of the Andes

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The climate in central-south western South America (SA) is projected to become significantly warmer and drier over the next several decades to centuries [1]. However, the network of meteorological stations is sparse, inhibiting our ability to accurately model future projections and design appropriate strategies for mitigation. Paleoclimate proxies are a helpful approach to collect climate data beyond the instrumental record, and compare with climate model results and evaluate future climate scenarios. Sedimentary leaf wax derived long chain alkanes ($>C_{25}$) and alkanoic acids ($>C_{24}$) are among the most long-lived and widely utilized proxies of terrestrial organic matter. The distribution (e.g. average carbon chain length, ACL) of sedimentary plant wax had been intensively used in paleoclimate studies (e.g. [2]). Recent studies of modern plant waxes have challenged the use of carbon distribution from sedimentary alkanes and alkanoic acids as realible indicators of vegetation [3, 4, 5]. Here we discuss both long chain alkane and alkanoic acid abundances and distribution from a suite of ~50 lake core top sediment samples spanning the transition from a Mediterreanean climate (central Chile) to a rainy temperate climate (southern Chile). The molecular proxy data is compared with latitudinal and orographic climatic trends extracted from monthly gridded reanalysis products of the Climate Forecast System Reanalysis (CFSR), based on the NCEP global forecast model, from January 1979 to December 2010 with a 0.5° horizontal resolution.

[1] Intergovernmental Panel on Climate Change, 2013 [2] Pancost & Boot (2004) *Mar. Chem.* **92**, 239-261. [3] Diefendorf *et al.* (2010) *PNAS* **107**, 5738-5743. [4] Diefendorf *et al.* (2011) *GCA* **75**, 7472-7485. [5] Bush & McInerney (2013) *GCA* 11**7**, 161-169.