Evaluating distribution and carbon isotope signature of plant wax derived n-alkanes from lacustrine sediments as climate proxies along the western side of the Andes

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Sedimentary carbon isotope values ($\delta^{13}C$) of bulk organic matter and long chain (C_{25} to C_{35}) n-alkanes are among the most long-lived and widely utilized proxies of organic matter and vegetation source. The carbon distribution (e.g. average carbon chain length, ACL) and isotope signature from long chain n-alkanes had been intensively used because they are less influenced by diagenesis, differential preservation of compound classes, and changes in the sources of organic matter that otherwise complicate interpretations of bulk $\delta^{13}C$ values (e.g. [1]). Recently, studies of modern plant n-alkanes have challenged the use of carbon distribution and carbon isotope signature from sedimentary n-alkanes as realible indicators of vegetation and climate change [2-4].

The climate in central-south western South America (SA) is projected to become significantly warmer and drier over the next several decades to centuries in response to anthropogenically driven warming (Intergovernmental Panel on Climate Change, 2013). Paleolimnological studies along western SA are critical to obtain more realistic and reliable regional reconstructions of past climate and environments, including vegetation and water budget varaibility. Here we discuss bulk $\delta^{13}C$, distribution and $\delta^{13}C$ n-alkanes from a suite of ~40 lake surface sediment samples spanning the transition from a Mediterreanean climate with a patchwork of cultivated vegetation, pastureland, conifers in central Chile to a rainy temperate climate dominated by broadleaf decidous and evergreen forest. Data are compared to the orographic climatic trends of the Andes, as well as to other climate data.

[1] Pancost & Boot (2004) *Mar. Chem.* **92**, 239-261. [2] Diefendorf *et al.* (2010) *PNAS* **107**, 5738-5743. [3] Diefendorf *et al.* (2011) *GCA* **75**, 7472-7485. [4] Bush & McInerney (2013) *GCA* **117**, 161-169.