

# Chronology, stratigraphy and hydrological modelling of extensive wetlands and paleolakes in the hyperarid core of the Atacama Desert during the late quaternary

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© 2018 Elsevier Ltd The halite-encrusted salt pans (salars) present at low elevations in the hyperarid core of the Atacama Desert in northern Chile are unique features of one of the driest and possibly oldest deserts on Earth. Here we show that these landscapes were shallow freshwater lakes and wetlands during the last glacial period and formed periodically between 46.9 ka and 7.7 ka. The moisture appears to have been sourced from increased Andean runoff and most of our chronologies for these deposits were coeval with the Central Andean Pluvial Event (17.5–14.2 ka and 13.8–9.7 ka), but we also find evidence for older as well as slightly younger wet phases. These environments supported a diverse hygrophytic-halophytic vegetation, as well as an array of diatoms and gastropods. Using a regional hydrological model, we estimate that recharge rates from 1.5 to 4 times present were required to activate and maintain these wetlands in the past. Activation in the late Pleistocene was part of a r