

Abstract

Southern South American dust impacts the global radiative forcing budget as well as the chemistry and biological productivity of the southern Atlantic Ocean. Characterizing dust production and transport pathways is fundamental for understanding how dust-climate feedbacks operate. We sampled fluvial, paleosol, loess, and eolian dune deposits from the Pampas of central Argentina for detrital zircon U-Pb geochronology. The majority of samples contain detrital zircon populations with ages between 240-280, and 0-30 Ma. These data are consistent with a model wherein sediment from the Andes was transported into the foreland by regional river systems, entrained by southwesterly winds, and deposited in the Pampas during the Pleistocene. Detrital zircons with ages between 0 and 30 Ma suggest a limited contribution of first-cycle volcanogenic zircons to the Pampas. These results are inconsistent with hypotheses suggesting sediment provenance related to the Patagonian Andes or the Altiplano of the Central Andes. One outlier, a sample of loess collected near the Rio Parana, contains Pan-African age detrital zircons (ca. 500-700 Ma), which matches the detrital zircons from modern sediment in the river. These new data indicate fluvial systems play an important role in the dust production pathways of southern South America. Heterogeneity within the extensive loess deposits of central Argentina are detectable through subtle but discernible differences in detrital zircon populations.

Geological Society of America Abstracts with Programs.

Vol 53, No. 6, 2021

doi: 10.1130/abs/2021AM-367081