Abstract

Fine-grained, wind-blown sediment (i.e., dust) from southern South America plays a significant role in regional and global systems by delivering micronutrients and important trace metals like iron to the Southern Atlantic Ocean. Dust from South America facilitates marine phytoplankton productivity, impacting atmospheric CO2 levels, and possibly global temperatures. Recent data indicate Pleistocene-Holocene loess in central Argentina is derived from multiple sources in the Andes and is closely tied to fluvial systems that deliver sediment to the Andean foreland. Climatic conditions and sediment transport pathways prior to this time remain unclear, but are equally important in that they record sedimentary histories, wind-patterns and potential dust-climate feedbacks over longer geologic-time scales. We examined Upper Miocene strata exposed in the Pampean Plains of central Argentina in an effort to reconstruct the provenance and sediment transport dynamics of windblown sediment during the Late Miocene (ca. 10-5 Ma). We collected approximately 15 samples from loess, paleosol and fluvial units in the upper Miocene Cerro Azul and Rio Negro formations for detrital zircon U-Pb geochronology and compared these results with previously analyzed Pleistocene-Holocene sediments. Preliminary data indicate the Miocene and Pleistocene-Holocene strata contain similar detrital zircon age populations, as well as noticeable differences. Both Miocene and Pleistocene-Holocene sediment contain populations of ca. 240-280 Ma detrital zircon grains, interpreted to have been originally derived from the Choiyoi magmatic province. The two data sets differ in the abundance and age of Cenozoic-age detrital zircon populations, derived from Andean volcanism. These preliminary results provide new insights into the provenance of upper Miocene wind-blown sediment in central Argentina and with additional data, will help bridge the gap between millennial and million-year climate system reconstructions in southern South America.
Geological Society of America Abstracts with Programs.
Vol. 54, No. 5, 2022 doi: 10.1130/abs/2022AM-381874