

[Start](#) | [Author Index](#) | [View Uploaded Presentations](#) | [Meeting Information](#)

GSA Annual Meeting in Denver, Colorado, USA - 2016

Paper No. 82-21

Presentation Time: 9:00 AM-5:30 PM

FROM ISOTOPES TO ICE: CONSTRAINING SW GONDWANA ICE SOURCES VIA DETRITAL ZIRCON GEOCHRONOLOGY DURING THE LPIA

GRIFFIS, Neil¹, FEDORCHUK, Nicholas D.², MONTAÑEZ, Isabel P.¹, ISBELL, John L.², MUNDIL, Roland³, LOPES, Ricardo⁴, VESELY, Fernando⁵, IANNUZZI, Roberto⁶, GULBRANSON, Erik L.², PAGANI, M. Alejandra⁷, TABOADA, Arturo César⁷, SANBORN, Matthew E.¹, HUYSKENS, Magda¹, WIMPENNY, Josh¹ and YIN, Qing-zhu¹, (1)Department of Earth and Planetary Sciences, University of California, Davis, Davis, CA 95616, (2)Department of Geosciences, University of Wisconsin-Milwaukee, Milwaukee, WI 53201, (3)Berkeley Geochronology Center, 2455 Ridge Rd, Berkeley, CA 94709, (4)Universidade do Vale do Rio dos Sinos, São Leopoldo, Brazil, (5)Universidade Federal do Paraná, Curitiba, Brazil, (6)Departamento de Paleontologia e Estratigrafia, Universidade Federal do Rio Grande do Sul, Av. Bento Gonçalves, 9500, Porto Alegre, RS, 91.509-900, Brazil, (7)Museo Paleontológico, Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET), Trelew, U9100, Argentina, ngriffis@ucdavis.edu

The late Paleozoic Ice Age (LPIA) is the longest-lived and geographically most extensive glacial interval of the Phanerozoic Era, and the only time a metazoan dominated and vegetated world transitioned from an icehouse into a greenhouse climate. Despite widespread efforts, our ability to constrain the relative timing, scale and magnitude of the LPIA is largely precluded by a lack of radioisotopic age control for high-latitude glacial deposits, fragile reconstructions of ice centers and ice dynamics through the glaciation, which ultimately prohibits the reconstruction of ice volume. Recent high-resolution CA-TIMS analysis of zircon restricts the waning to the latest Carboniferous-Permian Boundary in the Paraná Basin. In the Tepuel Basin, a similar time period of waning is inferred from the youngest detrital zircons measured using less precise LA-ICP-MS ages. Here we present >500 detrital zircon U-Pb analyses from the stratigraphically lower- and upper-most glacial deposits of two key LPIA archives, the Paraná and Tepuel basins. Detrital zircons from diamictites are used to fingerprint sedimentary provenance, and thus constrain ice centers and investigate ice dynamics through the LPIA glaciation. Preliminary field and geochemical observations suggest a more proximal ice source in the lowermost portion of the sedimentary succession in both basins. The zircon analyses from the lower portion of the sections delineate a geochemical signature that strongly reflects local provenance and dilutes components of a distal sediment source. The upper-most units in both basins suggest a glacial waning that is reflected in a decrease of proximal ice indicators and relative increase in distal sediment sources. The U-Pb ages of the Paraná Basin glacial diamictites suggest agreement with Namibian bedrock ages likely confirming an SW African ice center. In the Tepuel basin the U-Pb and Hf isotopes match well with the Desado Massif of SE Patagonia as well as Antarctica and S Africa.

Session No. 82--Booth# 449

[T184. New Insights to the Dynamics of Stratigraphy and Sedimentation \(Posters\)](#)

Sunday, 25 September 2016: 9:00 AM-5:30 PM

Exhibit Hall E/F (Colorado Convention Center)

Geological Society of America *Abstracts with Programs*. Vol. 48, No. 7
doi: 10.1130/abs/2016AM-286818

© Copyright 2016 The Geological Society of America (GSA), all rights reserved. Permission is hereby granted to the author(s) of this abstract to reproduce and distribute it freely, for noncommercial purposes. Permission is hereby granted to any individual scientist to download a single copy of this electronic file and reproduce up to 20 paper copies for noncommercial purposes advancing science and education, including classroom use, providing all reproductions include the complete content shown here, including the author information. All other forms of reproduction and/or transmittal are prohibited without written permission from GSA Copyright Permissions.

[Back to: T184. New Insights to the Dynamics of Stratigraphy and Sedimentation \(Posters\)](#)

[<< Previous Abstract](#) | [Next Abstract >>](#)