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DISTINGUISHING BETWEEN THE SAND UNITS OF THE CARBONIFEROUS ITARARÉ SUBGROUP AND THE DEVONIAN FURNAS FORMATION IN PARANA STATE, BRAZIL

THOMSON, Olivia A., Department of Geological Sciences, University of Idaho, PO Box 443022, Moscow, ID 83844-3022, othomson@vandals.uidaho.edu, PAULS, Kathryn N., Geology Department, Augustana College, 639 38th St #1699, Rock Island, IL 61202, ROCHA-CAMPOS, A.C., Instituto des Geosciências, Universidade de São Paulo, Sao Paulo, 05450-001, Brazil, and COTTER, James F.P., Geology Discipline, University of Minnesota, Morris, Morris, MN 56267

Late Paleozoic glacial deposits of the Itararé Subgroup in the Paraná Basin, southern Brazil were generated during multiple advance-retreat phases of the Gondwanan ice sheet. The resulting glacial deposits were deposited on a glacially produced erosional contact with the Devonian Furnas Formation. The Carboniferous Itararé Subgroup contains interbedded layers of diamictite and sandstone (quartz arenite) and overlies cross-bedded sandstones (quartz arenites) of the Devonian Furnas Formation. Sandstones from both the Itararé and the Furnas are similar in hand sample and are difficult to distinguish from one another in the field. Normal faulting of horizontal stratigraphy in the Witmarsum area of Paraná State, southern Brazil as well as the different advance-retreat phases within the Itararé Subgroup makes mapping of these units difficult. This study focuses on distinguishing between the sandstones of the Furnas Formation and the sandstones of the Itararé Subgroup. Samples were collected from known field exposure locations of the Itararé Subgroup and Furnas Formation as well as drill core into the Furnas Formation. Both point counting of disaggregated sandstone samples (2 phi size) and SEM imaging of the grains were used to differentiate the sandstones. While the sandstones are similar in grain size and sorting, differences were noted. The Itararé Subgroup sand grains appear more weathered than the Furnas sand grains. Additionally, the Itararé sands contain greater amounts of lithics than the Furnas sands. Research for this study was funded by a grant from the N.S.F.-R.E.U Program (NSF-EAR 0640575).

19-7 BTH 19 Rathbun, Kathryn

SOURCE AND PALEOCLIMATIC SIGNIFICANCE OF LOESS IN SOUTHEAST SOUTH DAKOTA

RATHBUN, Kathryn, Earth Sciences Dept, University of South Dakota, 414 E Clark St, Vermillion, SD 57069, Kathryn.Rathbun@usd.edu and SWEENEY, Mark, Earth Sciences, University of South Dakota, 414 E. Clark Street, University of South Dakota, Vermillion, SD 57069

The Great Plains region of North America is covered by some of the most extensive loess deposits in the world. In South Dakota, loess deposits reach their maximum thickness in the extreme southeastern corner of the state. Loess can provide valuable paleoclimate information including paleowind patterns, and may provide clues to the timing of glacial retreat. Geochemical analysis via XRF and grain size analysis were performed to determine the character and provenance of South Dakota loess, and optically stimulated luminescence (OSL) dating was performed to determine the timing of deposition. Initial study results indicate that South Dakota loess has a similar character to Peoria Loess in Nebraska. The South Dakota loess samples exhibit a relative uniformity in grain size and geochemistry, and show a similar grain size distribution and K/Rb ratios to Peoria Loess. Ti/Nb ratios are slightly higher in South Dakota loess, possibly due to a dust source from Missouri River sediment. Results from OSL dating will confirm if South Dakota loess is time equivalent to the Peoria Loess. In addition, ages of loess mantling till may provide a minimum age for the retreat of the James Lobe of the Laurentide ice sheet in southeastern South Dakota during the Late Wisconsinan glaciation.

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