

Nd, Pb and Hf Isotope Provenance of Glacial Granitic Pebbles in Late Ordovician Diamictites of the Taurides, S Turkey

*S GÜRSU^{1,2}, A MÖLLER², P. A. MUELLER³, S.
KÖKSAL⁴, G. KAMENOV³ AND M. C. GÖNCÜOĞLU⁵*

¹ *Muğla Sıtkı Koçman University, Muğla, Turkey,
semihgursu@mu.edu.tr*

² *The University of Kansas, Department of Geology, IGL,
USA, amoller@ku.edu*

³ *The University of Florida, Department of Geology, USA,
pamueller@ufl.com, kamenov@ufl.com*

⁴ *Middle East Technical University, Central Laboratory,
Ankara, Turkey, skoksal@metu.edu.tr*

⁵ *Middle East Technical University, Ankara, Turkey,
mcgoncu@metu.edu.tr*

Late Ordovician glacial successions in the Central (CT) and Eastern Taurides (ET), S Turkey contain unique rounded/sub-rounded granitic pebbles. LA-ICP-MS U-Pb zircon ages of the individual granitic pebbles are 576.5±3.3 Ma for DPK44 (ET), 576.7±5.7 Ma for DPK27 (ET), 598.4 ±5.7 Ma for DPK72 (CT), 717.5±8.0 Ma for DPK30 (ET), 789.5±3.7 Ma for DPK17A (ET) as well as age of 964.6±4.6 Ma for DPK46 (ET). The individual granitic pebbles DPK17A, DPK44 and DPK72 have sub-alkaline affinity and display enriched LREE with moderately to highly fractionated (La/Yb)_N ratios (2.84 to 10.85), as well as negative anomalies in Nb and Ti. All other pebbles have low to moderately fractionated (La/Yb)_N ratios (0.76 to 6.99) with negative anomalies in Nb and Ti, except DPK27. The combinations of εNd_(T), Pb-Pb and zircon εHf_(T) isotopic data of the individual granitic pebbles suggest that they might have been derived from arc-like sources. Island-arc type sources fit well with the petrogenetic/isotopic features of DPK17A and DPK30 and are compatible with their juvenile Hf-T_{DM} and Nd-T_{CR} modal ages. However, A-type affinity of DPK27, DPK44 and DPK72 show that they may have been derived from mixing of the juvenile mantle and older crustal sources having older Hf-T_{DM} and Nd-T_{CR} modal ages in their genesis. However, DPK46 have early Paleoproterozoic and Neoproterozoic Hf-T_{DM} and Nd-T_{CR} modal ages implying involvement of the pre-Neoproterozoic crustal source in its genesis. The Nd, Pb and zircon Hf isotopic signatures of the individual granitic pebbles of the glacial successions in CT and ET imply that they might have been eroded from Neoproterozoic granitic/meta-granitic/meta-granodioritic rocks in the northern Nubian Shield (Egypt) and were then transported to the Tauride-Anatolide Platform by the Late Ordovician glacial sheets.