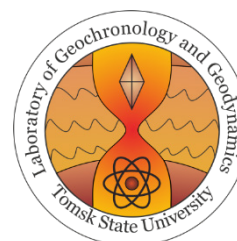


МИНИСТЕРСТВО НАУКИ И ВЫСШЕГО ОБРАЗОВАНИЯ РОССИЙСКОЙ ФЕДЕРАЦИИ
НАЦИОНАЛЬНЫЙ ИССЛЕДОВАТЕЛЬСКИЙ
ТОМСКИЙ ГОСУДАРСТВЕННЫЙ УНИВЕРСИТЕТ



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**LARGE IGNEOUS PROVINCES THROUGH EARTH HISTORY:
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METALLOGENY AND OIL-GAS, PLANETARY ANALOGUES
(LIP – 2019)**

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**КРУПНЫЕ ИЗВЕРЖЕННЫЕ ПРОВИНЦИИ В ИСТОРИИ ЗЕМЛИ:
МАНТИЙНЫЕ ПЛЮМЫ, СУПЕРКОНТИНЕНТЫ, КЛИМАТИЧЕСКИЕ
ИЗМЕНЕНИЯ, МЕТАЛЛОГЕНИЯ, ФОРМИРОВАНИЕ НЕФТИ И ГАЗА,
ПЛАНЕТЫ ЗЕМНОЙ ГРУППЫ (КИП – 2019)**

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U-Pb BADDELEYITE AGE OF A NE TRENDING DOLERITIC DYKE SWARM IN THE TAGRAGRA OF AKKA INLIER: ADDITIONAL CONSTRAINTS ON THE CA. 1416-1360 MA MESOPROTEROZOIC MAGMATIC EVENT(S) IN THE ANTI-ATLAS OF MOROCCO (WEST AFRICAN CRATON).

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In the Tagragra of Akka Inlier (Anti-Atlas, West African craton, Morocco), the Paleoproterozoic basement is crosscut by numerous dykes with various trends, and mostly of uncertain age. Four baddeleyite fractions from a NE trending doleritic dyke were analyzed using the ID-TIMS U-Pb method and indicate an emplacement age of 1359 ± 6 Ma (upper intercept age, MSWD = 1.8). This age is ca. 50 Myr younger than a N40°E trending dyke in the Bas Draa inlier, dated at 1416 ± 7 Ma using the LA-ICPMS U-Pb method (Söderlund et al., 2013). This ca. 1416 Ma age replaces the previously obtained U-Pb TIMS age of 1384 ± 6 Ma (El Bahat et al., 2013), which also casts some age uncertainties for a N135°E trending dyke in the Bas Draa inlier that yielded a U-Pb ID-TIMS age of 1381 ± 8 Ma (El Bahat et al., 2013). The cause of these seemingly conflicting results between dissolution and in-situ techniques presumably relate to a complex geological history involving zircon overgrowths, as discussed by Söderlund et al. (2013). Despite these age complications, the U-Pb baddeleyites dates represent further geochronological evidence for a ca. 1416-1360 Ma Mesoproterozoic magmatic event(s) in the Anti-Atlas. The poorly dated Taghdout and Taarotihate Groups of the Anti-Atlas could represent ca. 1.4-1.3 Ga rift magmatism and associated sedimentation (Youbi et al., 2013). The Atar Group in the Taoudeni basin (Mauritania) is also a good candidate for rift-related sedimentation although it postdates the 1416-1360 Ma mafic intrusions by ca. 270 Myr. The dated ca. 1415-1360 Ma dykes have a distinct negative Nb anomaly (a common feature in many Large Igneous Provinces, LIPs), and this suggests interaction with the lithosphere, which may have occurred at the level of the lithospheric mantle or the crust. The 1416-1359 Ma dykes may converge to the north of the Bas Draa inlier, suggesting a magmatic center (mantle plume?) along the northern margin, linked to rifting and possible breakup along that margin. Contemporaneous 1380-1390 Ma LIP magmatism in northeastern Laurentia (northern Greenland), in northern Siberia (Anabar shield), and in Baltica (southern Urals) can be reconstructed with that of the Tagragra of Akka and Bas Drâa Inliers (Anti

Atlas region of the West African Craton, WAC) into a single LIP extending over an area of > 1 million km², and associated with the final fragmentation of the Columbia (Nuna) supercontinent.

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