

Detailed Ediacaran timeline for White Sea and Nama fossil assemblages (Namibia and Ukraine)

M. OVTCHAROVA^{1*}, F. MESSORI¹, U. LINNEMANN², M. HOFMANN², J. ZIEGER², G. GEYER³, P. VICKERS-RICH⁴, Y. SOLDATENKO⁵, A. EL ALBANI⁶

¹Dept. of Earth Sciences, University of Geneva, Switzerland
(*correspondence: maria.ovtcharova@unige.ch)

²Senckenberg Museum of Mineralogy and Geology, Dresden
01109, Germany

³Bayerische Julius-Maximilians-Universität, Lehrstuhl für
Geodynamik und Geomaterialforschung, Würzburg,
Germany

⁴School of Earth, Atmosphere and Environment, Monash
University, Melbourne (Clayton), Victoria, Australia

⁵Dnipro University of Technology, 49006, Dnipro, Ukraine

⁶Université de Poitiers, 86073, Poitiers, France

The complex middle to late Ediacaran (580-539 Ma) macro fossils are represented by a variety of organisms that are problematic to classify phylogenetically and most not linked to any modern group of animals. Remnants of Ediacaran biota are sparse, scattered across marine sedimentary sections and occurring on almost all paleocontinents. This hampers their stratigraphic correlation, leading to imprecise estimates for appearance and extinction dates of taxa, and resulting in poor understanding of evolutionary patterns. Attempts to place all known taxa in the Ediacaran biota into a spatial and temporal framework has resulted with their subdivision into three assemblages: Avalon, White Sea and Nama [1]. Here we present high-precision U-Pb CA-ID-TIMS zircon ages from silicified tuffs in Nama Group (Namibia, Nama assemblage) and from bentonites in Podolia Basin (Ukraine, White Sea assemblage). Our results indicate that (i) the onset of the diversification of the White Sea assemblage in the Podolia Basin occurred as early as 556.78 ± 0.18 Ma [2]; (ii) the Ediacaran-Cambrian boundary in Namibia is 2 Ma younger than previously assumed; and (iii) the transition from the Ediacaran to the Cambrian biota was rapid, occurring within less than 410 ka in Namibia [3]. Further work will improve the absolute temporal framework for the occurrence of the Ediacaran biota and its paleogeographic distribution, and provide a robust base for intercalibration of Ediacaran-aged marine sections elsewhere.

[1] Waggoner (2003) *Integr. Comp. Biol.*, **43**:104-113. [2] Soldatenko et al., (2019) *Scientific Reports*, **9**, 1675. [3] Linnemann et al. (2019) *Terra Nova*, **31**, 49-58.