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Volcanism and carbon cycling in the High Arctic during the Late Jurassic – Early Cretaceous

Madeleine L. Vickers¹, Mads E. Jelby¹, Jennifer M. Galloway², Lawrence Percival³, Feiyue Wang⁴, Hamed Sanei⁵, Kasia K. Śliwińska⁶, Gregory D. Price⁷, Clemens V. Ullmann^{8,9}, Iben W. Hougård¹, Ivar Midtkandal¹⁰, Tamsin Mather⁹, and Christoph Korte¹

¹University of Copenhagen, Department of Geosciences and Natural Resource Management, Geology Section, Copenhagen K, Denmark (mlv@ign.ku.dk)

²Geological Survey of Canada / Commission géologique du Canada, Natural Resources Canada / Ressources naturelles Canada, 3303 33rd St N.W., Calgary, Alberta T2L 2A7, Canada

³Analytical, Environmental, and Geochemistry Group, Vrije Universiteit Brussel, 1050 Brussels, Belgium

⁴Centre for Earth Observation Science (CEOS) & Department of Environment and Geography 588 Wallace Building Clayton H. Riddell Faculty of Environment, Earth, and Resources, University of Manitoba, Winnipeg, MB R3T 2N2, Canada

⁵Department of Geoscience, Aarhus University, Høegh-Guldbergs Gade 2, Building 1671, 223, 8000 Aarhus C, Denmark

⁶Geological Survey of Denmark and Greenland, Department of Stratigraphy, Øster Voldgade 10, DK-1350 Copenhagen K, Denmark

⁷School of Geography, Earth and Environmental Sciences, Plymouth University, Drake Circus, Plymouth, PL4 8AA, U.K.

⁸Camborne School of Mines, University of Exeter, Penryn Campus, Penryn, Cornwall TR10 9FE, U.K.

⁹Department of Earth Sciences, University of Oxford, South Parks Road, Oxford, OX1 3AN, UK

¹⁰Department of Geosciences, University of Oslo, 0316 Oslo, Norway

Arctic carbon cycling and its regional climate have been observed to deviate from global trends in the Late Jurassic and across the Jurassic–Cretaceous boundary interval, but appear to recouple with global trends in the Early Cretaceous (Galloway et al., 2019; Jelby et al., 2020). We investigate the possible link between these observed trends and volcanism by examining the mercury (Hg) and other element records from Arctic sites in Svalbard (Norway) and the Queen Elizabeth Islands, Canada. We assess whether pulsed phases of the High Arctic Large Igneous Province, or the globally significant emplacement of Paraná-Etendeka or Greater Ontong-Java Plateau, are expressed by stratigraphic Hg trends recorded in the studied sites of Arctic Canada and Svalbard, and how any signals correlate with the regional stable carbon-isotope ($\delta^{13}\text{C}$) record. We compare these new data to Hg and $\delta^{13}\text{C}$ records from other globally distributed sites, focusing on the carbon isotope excursion (CIE) intervals: the Arctic-wide Volgian CIE (“VOICE”), the global Valanginian positive CIE (“Weissert Event”), and the global early Aptian CIE associated with Ocean Anoxic Event 1a (OAE1a).