

TITLE: Composition and biolability of dissolved organic matter leached from the dominant endmembers of the Siberian Arctic

AUTHORS (FIRST NAME, LAST NAME): Miles Borgen¹, Robert G Spencer², Paul J Mann², Jorien Elisabeth Vonk³, Ekaterina B Bulygina², Robert Max Holmes²

INSTITUTIONS (ALL): 1. Western Washington University, Bellingham, WA, United States.

2. Woods Hole Research Center, Woods Hole, MA, United States.

3. ETH Zurich, Zurich, Switzerland.

ABSTRACT BODY: Terrigenous dissolved organic matter (DOM) has historically been thought to be refractory as it is mobilized into and transported through Arctic fluvial networks. However, a growing body of evidence suggests that this DOM, largely leached from vegetation, soils, and litter during the annual freshet, is highly biolabile. This study examined DOM leached from these dominant endmembers of the Kolyma River watershed in the Siberian Arctic. As leachates progressed through time, measurements of dissolved organic carbon (DOC), optical parameters to assess DOM composition, and biodegradation incubations were undertaken. This suite of measurements allowed examination of the rate and composition of leached DOC into the aquatic system and quantification of the biolability of the DOM from the diverse range of endmembers examined. Of all the endmembers, vascular plants leached the greatest amount of DOC and results will be presented relating DOC concentration and DOM composition to initial source material. Furthermore, controls on DOM biolability, enzymatic activity, and the ultimate fate of terrigenous DOC in Siberian fluvial systems will be discussed.