**Modeling dissolved organic matter in northeastern Siberian lakes and rivers using Landsat TM and ETM+ satellite imagery**

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The Kolyma River in northeastern Siberia, one of the six largest rivers draining to the Arctic Ocean, has experienced significant climate warming over the past century and is poised to experience even more dramatic warming over the coming decades. The Kolyma River basin is particularly sensitive to climate change, as the region is underlain by vast deposits of carbon-rich Pleistocene loess known as yedoma, most of which are currently stored in icy permafrost. Understanding how soil carbon is released into rivers and lakes upon permafrost degradation is critical to assessing how regional carbon cycling may impact an already warming climate. Spatially extensive sampling is logistically difficult in this expansive, sparsely populated region with little infrastructure. We present a model that estimates chromophoric dissolved organic matter (CDOM) in rivers and lakes in the vicinity of Cherskiy, Russia in northeastern Siberia using Landsat-5 Thematic Mapper (TM) and Landsat-7 Enhanced Thematic Mapper-plus (ETM+) imagery. Twenty-one field samples were collected in July 2008 and 2009 from lakes and rivers along a ~250 km transect of the northern Kolyma River basin. Reflectance values and band ratios were extracted from TM and ETM+ images from July of both 2008 and 2009, then regressed against 21 field observations of CDOM. Regressing TM3 and TM1:TM4 against field observations produced the best results of $R^2$=0.633. CDOM is an important factor in the spectral characteristics of Kolyma Basin rivers and lakes and can be used to produce invertible models to spatially extrapolate CDOM across all lakes and rivers in an entire Landsat scene. This study is part of the Polaris Project, an NSF-funded undergraduate field program based out of Cherskiy, Russia (www.thepolarisproject.org).