

## GC31B-0463 PERMAFROST THAW AND REDISTRIBUTION OF CARBON FROM LANDS AND OCEANS TO THE ATMOSPHERE: THE EAST SIBERIAN REGION

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Wednesday, December 17, 2014 08:00 AM - 12:20 PM  
*Moscone West  
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Unlike other oceans, the Arctic Ocean is completely surrounded by permafrost, which is being degraded at an increasing rate under warming conditions most pronounced in East Siberian region and Alaska. The thaw and release of organic carbon (OC) from Arctic permafrost is postulated to be one of the most powerful mechanisms causing the net redistribution of carbon from lands and oceans to the atmosphere. The East Siberian Arctic shelf (ESAS) is the world's largest continental shelf, containing more than 80 % of the world oceans' subsea permafrost and the largest hydrocarbon reservoir on the planet, while the stability of this sequestered carbon, which exists primarily as CH<sub>4</sub>, is highly uncertain. This area is heavily influenced by subsea permafrost thaw, and CH<sub>4</sub> seeps from subsea permafrost reservoirs under warming conditions. Various other phenomena influence the area, including coastal erosion, mostly caused by onshore permafrost/coastal ice complex thaw; the input of dissolved and particulate OC through the Lena, Indigirka, and Kolyma rivers. The ESAS is also of particular interest for its carbon-climate couplings because thawing of onshore and offshore permafrost leads to the CH<sub>4</sub> and CO<sub>2</sub> emission to the atmosphere. The overall goal of the current research is to provide a quantitative, observation-based assessment of the dynamics of different ESAS carbon cycle components with emphasize on the emission of CO<sub>2</sub> and CH<sub>4</sub> to the atmosphere under changing climatic and environmental conditions.

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