

AGU Fall Meeting Abstract

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Title: Measuring biogenic volatile organic compounds in the marine boundary layer over the North Pacific Ocean using proton transfer reaction mass spectrometry (PTR-MS) and solid absorbent cartridges

Authors:

Brian Seok, University of Colorado Boulder and Institute of Arctic and Alpine Research

Tae Siek Rhee, Korea Polar Research Institute

Saewung Kim, National Center for Atmospheric Research \*now at University of California Irvine

Alex Guenther, NCAR

Abstract:

Approximately 70% of Earth's surface is covered by the ocean and the cryosphere. It has been recognized that these environments play an important role in exerting feedbacks on the global climate system. For instance, in the marine boundary layer, it is hypothesized that the emission of biogenic volatile organic compounds (BVOCs) contributes to cloud formation with resulting changes in temperature and radiation initiating climate feedback. However, measurements of BVOC concentrations are limited, thus the concentration and emission of BVOCs are typically estimated using satellite observed phytoplankton abundance (i.e., chlorophyll-a concentration). To help validate the modeled relationship between chlorophyll-a concentration and isoprene emission that current chemistry models are using, BVOCs were measured during the 2012 SHIPPO (SHIP Pole-to-Pole) cruise over the Yellow Sea, the East Sea (or the Sea of Japan), the North Pacific Ocean, and the Bering Sea from 13 July to 29 July. BVOCs were measured using two different methods: proton transfer reaction mass spectrometry and solid absorbent cartridges. The results from these two different measurement techniques will be presented and

discussed. In addition, observed BVOC concentrations will be discussed in relation to the phytoplankton abundance and other biological and meteorological parameters measured along the cruise track.

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