

**Proof****CONTROL ID:** 1817119**TITLE:** GOSAT CH₄ and CO₂, MODIS Evapotranspiration on the Northern Hemisphere June and July 2009, 2010 and 2011

ABSTRACT BODY: The Greenhouse gases Observing Satellite (GOSAT) operational since 2009 provides the ability to monitor CH₄ and CO₂ near-surface atmospheric concentrations on a global monthly basis. GOSAT utilizes interferometric Fourier Absorption Spectroscopy and Optical Imaging validated with the TCCON stations to achieve 0.3% (CH₄) to 0.4% (CO₂) accuracy. Changes in CH₄ and CO₂ concentrations derive from biogeochemical and energy cycles and anthropogenic activities. Our investigation is assessing GOSAT measurements relative to evapotranspiration (ET) and fire/wildfire locations (MODIS) for June and July 2009 through 2011 in two regions of Eurasia. Joint probability density functions identify significant modes with the highest probable values of background levels of CH₄ and CO₂ to ET. Background levels of CH₄, CO₂ and ET were not affected by the wildfires of 2010. Regressions of the joint probability modes indicate significant inverse relationships of CH₄ and CO₂ to ET in the industrialized western Russia region and no significant relationships in the Siberian discontinuous permafrost boreal ecosystem. CH₄, CO₂ and ET are significantly higher in the Siberian discontinuous permafrost boreal ecosystem region. Heterogeneity of boreal-steppe ecosystems, hydrology (including palsa, thaw lakes and wetlands), physical processes and geomorphology in the discontinuous permafrost zone of Siberia exists. CH₄ and CO₂ concentrations from anthropogenic activities in the industrialized western Russia region are orders of magnitude less than those in the Siberian discontinuous permafrost boreal ecosystem region. Thus our investigation shows anthropogenic carbon-related activities to be insignificant at the regional scale.

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CURRENT SECTION/FOCUS GROUP: Global Environmental Change (GC)**CURRENT SESSION:** GC049. Environmental, Socio-Economic and Climatic Changes in Northern Eurasia and their Feedbacks to the Global Earth System**INDEX TERMS:** 0475 BIOGEOSCIENCES Permafrost, cryosphere, and high-latitude processes , 1631 GLOBAL CHANGE Land/atmosphere interactions, 1640 GLOBAL CHANGE Remote sensing, 1818 HYDROLOGY Evapotranspiration.