



GOSAT CH₄ and CO₂, MODIS Evapotranspiration On the Northern Hemisphere June and July 2009, 2010 and 2011

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The Greenhouse gases Observing Satellite (GOSAT) provides the ability to monitor CH₄ and CO₂ near-surface atmospheric concentrations on a global monthly basis. Changes in CH₄/CO₂ pertain to biogeochemical and energy cycles and anthropogenic activities. Our investigation is assessing GOSAT observations relative to evapotranspiration (ET) and fire/wildfire locations (MODIS) for June and July 2009 through 2010 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 west-region and no significant relationships in the east-region. CH₄, CO₂ and ET are significantly higher in the east-region. Heterogeneity of boreal-steppe ecosystems, hydrology (including palsa, thaw lakes and wetlands), physical processes and geomorphology in the discontinuous permafrost zone of Siberian Plateau and southern Siberia are important factors.