[EE] Evening Poster | A (Atmospheric and Hydrospheric Sciences) | A-CG Complex & General

[A-CG35]Global Carbon Cycle Observation and Analysis

convener:Kazuhito Ichii(Chiba University), Prabir Patra(Research Institute for Global Change, JAMSTEC), Toshinobu Machida(国立環境研究所, 共同), David Crisp(Jet Propulsion Laboratory)
Tue. May 22, 2018 5:15 PM - 6:30 PM Poster Hall (International Exhibition Hall7, Makuhari Messe)
The Paris Agreement under the United Nations Framework Convention on Climate Change (UNFCCC) is a landmark agreement in the 21st Conference of the Parties (COP21) in December 2016, which aims at reduction of greenhouse gases (GHGs) emission for keeping the global warming below 2 degC. The national commitments and progresses should be carefully monitored and verified by international bodies.

In recent years, the number of observational platforms for monitoring atmospheric GHGs and air pollution species is increasing. National or regional emission inventories have also been prepared at greater resolution in space and time using different methodologies. However, due to uncertainties in modeling and sparse observation network, high uncertainty persists in global and regional sources/sinks estimations, particularly for CO2.

Developing integrated observation and analysis systems for GHGs are the most urgent tasks. Atmospheric transport models, inverse models, and process-based bottom-up models should be tested and improved. The "top-down" (with inverse models) and "bottom-up" (with surface flux/emission network data and ground-based models) estimations have to be reconciled for gaining confidence in verifying the national commitments.

The purpose of the session is to discuss state-of-the-art techniques for estimations of surface budget of GHGs and air pollutants. Ideally, these results would allow us to detect changes at an early stage under the changing climate and human activity, and to disseminate scientific knowledge for mitigation policies in a timely manner. Improved estimates of emissions from land use change, forest fires, and other anthropogenic sources (urban developments and thermal power station etc.) should be addressed. We also welcome discussions for designs and plans for future studies targeting city and country scale emission estimations using sophisticated modeling tools.

[ACG35-P01]Spectral Vegetation Index Data Continuity from MODIS to VIIRS: Product Inter-Comparison

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Keywords:Inter-comparison, VIIRS, MODIS, NDVI, EVI, EVI2

Spectral vegetation index (VI) time series data from moderate resolution sensors, such as Earth Observing System Moderate Resolution Imaging Spectroradiometer (MODIS), have widely been used to identify “hot spot” areas of vegetation changes and to scale-up in situ flux measurements at regional to global scales, to name a few. The Visible Infrared Imaging Radiometer Suite (VIIRS) sensor series of the Joint Polar Satellite System program is slated to continue the highly calibrated data stream initiated with MODIS. In this study, we inter-compared the capabilities of MODIS and VIIRS VI time series data on capturing vegetation dynamics in the Asia-Pacific region using their overlapped period of observations (2013-2017). Three VIs, the “top-of-canopy (TOC)” normalized difference vegetation index (NDVI), TOC enhanced vegetation index (EVI), and TOC two-band enhanced vegetation index (EVI2), were investigated. For all the three VIs, MODIS and VIIRS VIs were subject to systematic

differences in which VIIRS VIs were higher than the MODIS counterparts. However, both VIIRS and MODIS VIs showed the comparable spatial patterns in their temporal variations. Results of this study suggest the suitability of VIIRS data to extend the MODIS VI record for vegetation dynamics studies.