Remote Sensing of Carbon Dioxide and Methane in Earth’s Atmosphere

Message from the Guest Editors

Carbon dioxide (CO\textsubscript{2}) and methane (CH\textsubscript{4}) are the two most important greenhouse gases that have led to a significant fraction of the increase in earth’s surface temperature in the past 100 years. Studies have shown that these increases in concentration are due to the increase in anthropogenic activities on the earth’s surface, leading to higher emissions. However, there has not yet been a clear attribution of the processes involved in this increase of emissions and the role of other environmental factors, mainly due to the lack of observational data coverage. To alleviate the sparseness in observations, satellite remote sensing has become a major focus in the past couple of decades for monitoring greenhouse gases from space. The first dedicated mission for greenhouse gas monitoring was launched by JAXA in 2009, the Greenhouse Gases Observation Satellite (GOSAT). This Special Issue is dedicated to the past progress and new developments in satellite remote sensing of long-lived greenhouse gases, with a focus on CO and CH\textsubscript{4}.