

Progress on Estimation of Global Gas Flaring With VIIRS Data

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Gas flaring is a commonly used practice for the disposal of natural gas in the oil production industry. There is substantial uncertainty regarding the location and magnitude of carbon emissions from gas flares due to the lack of consistent reporting. Satellite data offer the potential for global mapping and monitoring of gas flaring since the data are collected in a consistent manner and can be processed specifically for gas flares. We report on a global map of gas flares and preliminary estimates of flared gas volumes for 2012 and 2014 derived from data collected by the Visible Infrared Imaging Radiometer Suite (VIIRS). Nighttime VIIRS data were processed to take advantage of clear detections of gas flares in spectral bands designed for daytime imaging of reflected sunlight. At night these spectral channels provide unambiguous observations of combustion sources worldwide. Temperatures derived from Planck curve fitting allow gas flares to be separated from industrial sites and biomass burning. A calibration for estimating flared gas volumes was developed based on reported data from specific regions. The presentation will cover the global estimates and trends observed in specific regions.

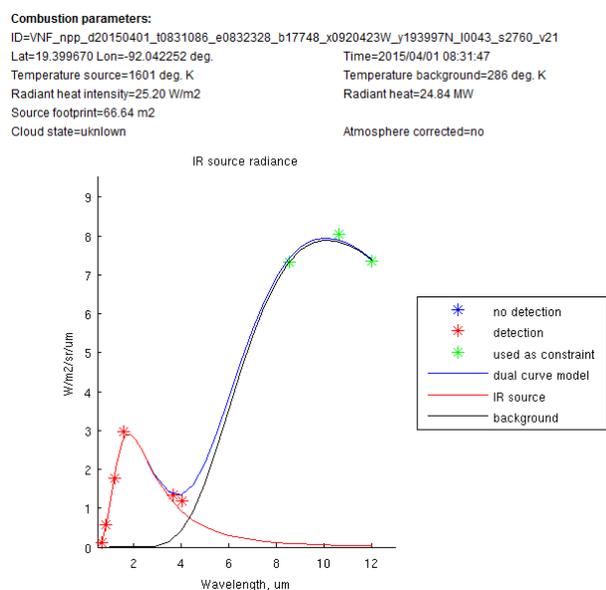


Figure 1. Typical results from a single observation of a large gas flare. The flare was detected in six spectral bands - marked red. At wavelengths under 2 μm - the full observed radiance can be attributed to the hot source. The 4 μm region contains signal from both the hot source and the background. Dual Planck fitting is used to allocate the 4 μm region radiance between the hot source and background.



Figure 2. Gas flares in the Khanty-Mansi Autonomous Okrug, Russia.