Geophysical Research Abstracts
Vol. 14, EGU2012-161, 2012
EGU General Assembly 2012

A NASA-NOAA Update on Global Fire Monitoring Capabilities for Studying Fire-Climate Interactions: Focus on Northern Eurasia

G. Gutman (1) and I. Csiszar (2)

(1) NASA Headquarters, Code YS, Washington, DC 20546, United States (ggutman@nasa.gov, +1 202 358-2770), (2) NOAA/NESDIS, Camp Springs, MD 20746, USA (icsiszar@noaa.gov)

The global, long-term effects of fires are not well understood and we are learning more every year about its global impacts and potential feedbacks to climate change. The frequency, intensity, severity, and emissions of fires may be changing as a result of climate warming as has been manifested by the observations in northern Eurasia. The climate-fire interaction may produce important societal and environmental impacts in the long run. NASA and NOAA have been developing long-term fire datasets and improving systems to monitor active fires, study fire severity, fire growth, emissions into the atmosphere, and fire effects on carbon stocks. Almost every year there are regions in the world that experience particularly severe fires. For example, less than two years ago the European part of Russia was the focus of attention due to the anomalous heat and dry wave with record high temperatures that caused wildfires rage for weeks and that led to thousands of deaths. The fires also have spread to agricultural land and damaged crops, causing sharp increases of global wheat commodity prices. Remote sensing observations are widely used to monitor fire occurrence, fire spread; smoke dispersion, and atmospheric pollutant levels. In the context of climate warming and acute interest to large-scale emissions from various land-cover disturbances studying spatial-temporal dynamics of forest fire activity is critical.

NASA supports several activities related to fires and the Earth system. These include GOFC-GOLD Fire Project Office at University of Maryland and the Rapid Response System for global fire monitoring. NASA has funded many research projects on biomass burning, which cover various geographic regions of the world and analyze impacts of fires on atmospheric carbon in support of REDD initiative, as well as on atmospheric pollution with smoke. Monitoring active fires, studying their severity and burned areas, and estimating fire-induced atmospheric emissions has been the subject of several research projects in the NASA LCLUC program over the globe, and, in particular, in Northern Eurasia.

As an operational agency, NOAA puts global fire monitoring as a priority and supports related GCOS, CEOS and GOFC-GOLD objectives. NOAA developed an operational quasi-global fire monitoring system using geostationary satellites that provides coverage over parts of Northern Eurasia. Fire products from the VIIRS (Visible Infrared Imager Radiometer Suite) sensor on the NPP (NPOESS Preparatory Project) satellite, launched in October 2011, and on subsequent JPSS satellites will ensure high quality global fire monitoring and will extent the AVHRR- and MODIS-based fire data record over Northern Eurasia.

This overview presents an update of NASA's and NOAA's fire monitoring capability and scientific achievements on fire-climate interactions. We will illustrate how combination of coarse spatial resolution polar orbiting satellite observations are combined with moderate spatial resolution observations to better monitor the location of fires and burned areas. While coarse resolution data have been more or less easily available, the utility of moderate resolution Landsat data has increased tremendously during the past couple of years once the data became freely available. Data fusion from polar orbiting and geostationary satellites will be discussed.