Intercomparison and validation of AVHRR and MODIS fire products over Northern Eurasia

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ABSTRACT – Research is carried out to ensure the continuity of the long-term space-based inventory of biomass burning from moderate resolution sensors on board polar orbiting environmental satellites. The overall senser are the Advanced Very High Resolution Radiometer (AVHRR) on board the operational NOAA environmental satellites and the Moderate Resolution Imaging Spectroradiometer (MODIS) on board the NASA Terra and Aqua satellites. The MODIS instrument provides better spatial and temporal resolution than AVHRR, but both sensors provide unique data for long-term fire monitoring. The current sensors are the Advanced Very High Resolution Radiometer (AVHRR) on board the NOAA environmental satellites, which can be used to obtain accurate burn-area estimates. The MODIS instrument provides more detailed information on the burned area. The MODIS data are used to provide a long-term record of biomass burning in Northern Eurasia.

OBJECTIVES

• Establish procedures to ensure the consistency, improve the accuracy, and understand the uncertainties of the satellite-based record of biomass burning in the Northern Eurasian region of Russia.
• Establish a long-term AVHRR-based inventory of active fires and burned areas for the 1998-2002 period.

AVHRR – MODIS comparison

MODIS hotspots from the MODIS Land Rapid Response System have been transferred daily from UMD to the Space Research Institute in Moscow.

Active fire validation with in-situ data

Fire data from the Russian Airborne Fire Protection Service ("Avialesokhrana") have been collected into a digital database and merged with AVHRR and MODIS data for quantitative analysis at the Space Research Institute in Moscow.

FUTURE PLANS

• Adapt and validate MODIS burned area mapping algorithms in the Northern Eurasian part of Russia.
• Validate and refine MODIS and AVHRR active fire and burned area algorithms if appropriate.
• Compare the MODIS and AVHRR burned area and active fire estimates during a data overlap period.
• Make adjustments to the AVHRR-based active fire and burned area algorithms.
• Define the requirements for continuity fire products from the NPP VIIRS instrument.

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