APPLICATIONS OF NOAA MODIS NEAR-REAL-TIME DATA

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1. INTRODUCTION

This poster session will display sample products, example applications, and performance analysis of NANOOK, NOAA's near-real-time processor.

NANOOK is a combined scheduler and processing system for MODIS (Moderate Resolution Imagine Spectrometer) data. NANOOK is a hybrid system containing both a task scheduler and processing control system developed under the CSC Central Satellite Data Processing Center (CSDPC) contract, and a suite of NASA-built product generation software.

NANOOK accepts Rate Buffered Data from EDOS (Earth Observing System Data Operations System) and converts it to the Level 0 data format required by MODAPS (MODIS Adaptive Processing System) science software packages. The scheduler, as written by NOAA is then in charge of managing all incoming and ancillary data, passing the data through various modules of the science code (and additional NOAA produced production code), and proper distribution of all output products.

In order to facilitate accurate forecasting, NOAA has set an objective to provide near-real-time products to various customers using the MODIS instrument. While the products produced by NANOOK are not much different from those produced by NASA, some care must be used in evaluating this near-real-time data. NASA uses more complete and sophisticated data checking and actual (not predicted) ancillary data to produce the most accurate data products for long-term research. However, this delays the final products for periods of time from 3 days to 2 weeks, preventing its use for real-time analysis.

2. APPLICATIONS

MODIS products have been shown to be applicable to the average US citizen by being instrumental in helping save lives and property during a national disaster. During the weeks around Labor Day 2000, forest fires in Montana and Idaho prevented normal reconnaissance flights due to heavy smoke and fire. The National Fire Service turned to NOAA for access to the developmental Level 1B data products being produced by NANOOK. Using the infrared scanners the National Fire Service was able to track the movement and extent of the fires even through the thick smoke. Today, a newly developed fire detection product is being tested which will allow hot spots and potential fires to be detected and identified.

Other MODIS products that will be displayed include more traditional visual images of hurricanes, snow and ice, ocean color, and sea surface temperature products. See the back cover of the 17th International conference IIPS for Meteorology, Oceanography, and Hydrology proceedings for an example of Hurricane Keith.

A web calendar has been created as a means to quickly display thumbnail and low-resolution granule imagery of CONUS and selected regions. This is useful for development purposes to quickly evaluate coverage and data availability. Selected NOAA staff involved in validation of the products can use these pages to determine which data sets to request, thus saving time and bandwidth in large download transfers. Some of this data is available to the public via the OSDPD web server at: *http://www.osdpd.noaa.gov/MODIS*

3. PERFORMANCE OF NANOOK

The problems associated with NANOOK as a near-real-time processing system generally center around the transferring and processing of voluminous data sets. Statistics have been gathered and analyzed to illustrate the problem with latency in retrieving both raw data through the NASA network, and ancillary data which is necessary for improving the quality of the data products.

Lastly, data files are unusually large, thus consuming vast amounts of storage and network bandwidth. Although NOAA has accommodated this problem by acquiring Terabyte RAID storage systems and building Gigabit Ethernet networks to hand the full data flow, the problems will still need to be resolved by NOAA's potential customers, who will need to make sure that adequate storage and network bandwidth are allocated at their local sites to handle whatever products and regions of interest are desired.

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