Executive Summary

In FY2007, fourteen products and product systems were successfully transitioned into the ESPC operations.
- GOES SST Frontal Product (1)
- CLAVR-X (1)
- Solar Backscatter Ultraviolet Spectral Radiometer (SBUV/2) Version 8 (1)
- GOES SST Level 2 product (1)
- Polar Microwave Imagery on AWIPS (2)
- Fully Automated TRaP (1)
- GOES Sounder Gridded Cloud Products (3)
- MIRS Phase-I/II Products from NOAA-18/MetOp-A (4)

A complete description of these products and their utility can be found in ANNEX A. These products provide all required outputs and continue to satisfy the required customer focused outcomes.

ESPC is managed within the National Environmental Satellite, Data and Information Service/Office of Satellite Data Processing and Distribution (OSDPD) located in Suitland, Maryland.
Environmental Satellite Processing Center (ESPC) will combine two National Environmental Satellite Data and Information Service (NESDIS) operations: Central Environmental Satellite Computer System (CEMSCS) and Satellite Environmental Processing Systems (SATEPS). The combined system(s) ingest environmental data from NOAA's polar and geostationary spacecraft and produce environmental products and imagery, thus directly supporting the NESDIS Mission: "To Deliver accurate, timely and reliable satellite observations and integrated products and to provide long term stewardship for global environmental data in support of the NOAA mission."

Prior to FY 2006, CEMSCS and SATEPS are operated separately, and ESPC represents the integration effort. The primary product applications residing in CEMSCS and SATEPS are real-time remapped imagery, interactive products, and automated products. Remapping is the process of mapping imagery data into conventional map projections required by National Weather Service (NWS) field office meteorologists to generate timely and accurate weather forecasts and warnings. The real-time remapping system generates infrared, water vapor, and visible sectors, converting the perspective from the satellite to a standard map, (e.g. Mercator) in the process. Interactive satellite products are generated via the manual interpretation of various satellite data sets by trained analysts in the Satellite Analysis Branch of the Satellite Services Division in OSDPD. Examples of these interactive products include ice/snow cover maps, detection and height of volcanic ash, location and extent of fires/smoke plumes, rainfall estimates and position and intensity of tropical cyclones. Automated products are routinely generated from CEMSCS and SATEPS with minimal human intervention except for maintenance and quality monitoring activities. Automated products, such as atmospheric temperature/moisture profiles, sea surface temperature maps, aerosol optical thickness composites and total ozone analyses, provide critical input to environmental modeling programs thus improving the predictive capability of weather and water forecasts.

ESPC will maximize the benefits of the common IT environment by combining processes, eliminating redundancies, and lowering refresh costs. Consolidation of systems and staff at NOAA Satellite Operations Facility (NSOF) will allow ESPC to reduce operator/admin and telecommunication expenses. ESPC will utilize current CEMSCS management schema, which has undergone NOAA Information Technology Review Board (NITRB) and the Department of Commerce (DOC) CITRB review. The CEMSCS management schema requires the ESPC project to be reviewed by a project management team which meets weekly for a staff meeting and monthly for a complete progress review of all tasks. Senior management will review major decisions monthly. Review by both the NITRB and the CITRB will be conducted as required.

NOAA has identified a performance gap in the computational resources available to support climate change and other environmental research, ESPC partially fills this gap by supporting NOAA's ability to transition space weather models, products, and data into operations.

1.0 Customer Results

In FY2007, fourteen products and product systems were successfully transitioned into the ESPC operations. These products provide the required outputs and continue to satisfy customer focused outcomes. For example, ocean color and sea surface temperature products support the identified outcome of the NOAA Ecosystem Goal to ensure “healthy and productive coastal and marine ecosystems that benefit society”. Similarly, new cloud cover products, aerosol/smoke products and the tropical cyclone formation parameter support the NOAA Weather and Water Goal outcome of “reduced loss of life, injury and damage to the economy”.

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The ESPC program operates 24 hours per day/7 days per week. The primary customers are the National Weather Service (NWS), the Department of Defense, other agencies and the private sector companies that protect life and property as well as providing for the economic well being of the Nation.

1.1 Customer Requirements

The current ESPC program supports the customer’s requirements. Four performance measures track the timeliness and accuracy of ESPC program’s performance:
(1) Accuracy of Service delivered – Customer requirements reviewed and revalidated;
(2) Products Transitioned per operational year;
(3) % of data processed and delivered within targeted time;
(4) % of non-NOAA satellite data processed and distributed within targeted time.

1.2 Performance Measures

The performance measures evaluate the accuracy and timeliness of the data transmitted from the polar satellites to our primary and end-user customers. In FY07, ESPC is adding milestones that link to the established Performance Measures. These milestones are for the transition of new METOP products and Microwave Integrated Retrieval System into operations. Metrics will be reported on a quarterly basis.

Table 1 summarizes the performance measures – note that as the measures were new there is no 2004 baseline.

<table>
<thead>
<tr>
<th>Measurement Area</th>
<th>Indicator</th>
<th>FY2006 Baseline</th>
<th>FY2007 Actual Result</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer Results</td>
<td>Customer Requirements Reviewed</td>
<td>1 per year</td>
<td>2 (+100%)</td>
<td>Actual result is through 4th Quarter FY07</td>
</tr>
<tr>
<td>Mission and Business Results</td>
<td>Products Transitioned</td>
<td>6 per year</td>
<td>14 (+233%)</td>
<td>Actual result is through 4th Quarter FY07</td>
</tr>
<tr>
<td>Processes and Activities</td>
<td>Timeliness</td>
<td>98%</td>
<td>98%</td>
<td>Actual result is through 4th Quarter FY07</td>
</tr>
<tr>
<td>Technology</td>
<td>Percent of non-NOAA Satellite data processed and distributed within targeted time</td>
<td>85%</td>
<td>90% (+6%)</td>
<td>Actual result is through 4th Quarter FY07</td>
</tr>
</tbody>
</table>

2.0 Strategic and Business Results

The ESPC program is meeting its own goals and objectives as well as those of the agency. Program management and controls are in place to ensure the program continues to meet its goals and objectives and monitor how well the ESPC program performs.
2.1  **ESPC Helps to Achieve Strategic Goals**

The ESPC program directly facilitates NOAA’s Strategic Goal to "Advance understanding and predict changes in the Earth’s environment to meet America’s economic, social and environmental needs.”

Within the Agency Enterprise Architecture, ESPC supports NOAA’s “Produce Products / Services” component: “Processing of NOAAs 1A and 1B data sets into approx. 400 products that specifically address atmospheric, oceanographic, land, and solar application requirements”.

2.2  **Business Results**

In March 2007, the physical move between the Suitland Federal Building 4 and NSOF was completed. This move included transitioning 259 government and contractor employees. ESPC hardware was required to meet the security requirements mandated by DOC.

- All of the SATEPS geostationary satellite ingestors were moved to NSOF. Ingested GOES data at NSOF is currently being sent to both the SATEPS servers in the WWB and the new servers in NSOF.
- The new IBM servers which will support the SATEPS processing in NSOF have been setup and the applications have been ported to the NSOF system. Currently there is testing of the ported programs at NSOF before going operational.
- The Dell/Linux servers which support applications not ported to the new IBM servers have been moved to NSOF.

In 2007, the implementation of SATEPS functionality currently located at the World Weather Building in Camp Spring, MD in NSOF began with an expected completion date of March 2008. The GINI system, which supplies the satellite images to all of the NWS AWIPS systems, was moved from the WWB to the NSOF building. A backup system was also installed at Wallops, Virginia. The old unused GINI equipment at the WWB was surplused.

2.2.1  **Program Management and Controls**

ESPC will maximize the benefits of the common IT environment by combining processes, eliminating redundancies, and lowering refresh costs. Consolidation of systems and staff at NSOF will allow ESPC to reduce operator/admin and telecommunication expenses. ESPC will utilize current CEMSCS management schema, which has undergone NOAA Information Technology Review Board (NITRB) and the Department of Commerce (DOC) CITRB review. The CEMSCS management schema requires the ESPC project to be reviewed by a project management team which meets weekly for a staff meeting and monthly for a complete progress review of all tasks. Senior management will review major decisions monthly. Review by both the NITRB and the CITRB will be conducted as required.

The ESPC performs extensive, continuous Operational Analysis on the performance of its components. This ensures system resources and ancillary supporting infrastructure (security, training, facilities, etc.) as well as labor resources remain optimally functional and configured to suit the NESDIS/NOAA’s goals.

ESPC management conducts an objective measurement of resource and performance metrics of the ESPC elements. The ESPC Contract Administration Plan established a formal process for the evaluation of contractor performance. The ESPC Performance Evaluation Board meets twice a year to evaluate all task
areas of the contract. This process includes an award fee pool that is distributed to the contractor based on performance. For all IT components, performance thresholds have been established. For IT systems, performance is measured continuously through an automated process and augmented by a manual process when required. Performance data is gathered at the functional level and reported to management on a weekly basis. Management reports to the NESDIS Program Office on a weekly basis. Performance deficiencies in the system resulting from hardware downtime are referred to the maintenance contractor for remediation. Performance deficiencies for IT systems resulting from software problems, such as bugs are referred to in-house software maintenance group for resolution. Key performance issues and risks are identified through these reviews and tracked by management.

Given that the ESPC operational environment includes a large IT component, keeping abreast of changes in technology that would impact operations is crucial. Often, this is done in conjunction with the Office of Systems Development (OSD), which performs system development and identification of new technologies on behalf of ESPC. These changes identify risks, such as, incompatible software or hardware to current operations in addition to identifying viable alternatives for improving systems and processes. The results of this analysis are the basis for ESPC input to the Ground System Five Year Plan.

### 2.2.2 Monitoring Cost, Schedule and Performance

**Cost** – The ESPC conducts a variety of budget analyses throughout the fiscal year. Obligations and expenditures are tracked on a weekly basis. Labor costs and full time equivalent usage are tracked on a bi-weekly basis. Variances to budget plans are analyzed monthly and reported to ESPC and OSDPD Management as well as NESDIS management. A Needs Analysis is conducted annually in conjunction with the Planning, Programming, Budgeting and Execution System (PPBES) and Ground System processes. Key budget issues and risks are identified through these reviews and tracked by ESPC management.

**Schedule** – The annual operating plan is used to track key milestones. The final matrix annual operating plan, based on FY07 appropriations established the FY07 schedule. Weekly Staff meeting and quarterly reviews of all contractor tasks allow the program manager to track progress towards key milestones and other operational aspects of the program (e.g., IT security compliance, data availability, etc.).

**Performance** – Contract performance is monitored to support both budget and performance measurements. ESPC operations are conducted utilizing contractors. For these contracts, ESPC management receives monthly status reports and meets as least quarterly with contract management to review performance, priorities, lessons learned, and work plan. A more formal review is held at the end of each contract year to assess the performance, come to agreement on ways to maximize the efficiency and productivity, and decide on potential corrective actions and milestones. Hardware maintenance contracts are reviewed on a semi-annual basis for technology advances impacting system maintainability, reliability, and interoperability.

All of these elements are provided to Ground Systems management via a monthly project report summarizing cost, schedule, and performance.

### 2.3 Reviews

As part of the NOAA program structure, the ESPC program is reviewed on an annual basis. The last review took place as a NESDIS and NOAA CIO desktop systems review in July 2007.
The ESPC project is continuing to meet the customer’s needs and the program is delivering the services that it is intended to deliver. All program metrics are at or above expectations. The program continues to effectively and efficiently support NOAA’s Strategic Goal to “Advance understanding and predict changes in the Earth's environment to meet America’s economic, social, and environmental needs.”

### 2.4 Security

ESPC is a government system, operated by government staff and contractors, using government-owned equipment, and residing in a government facility. Contractors provide operational and development services. The required security clauses are inserted in the ESPC IT services contracts by the Contracting Officer and independently verified by the Information Technology Security Officer. Upon contract award, contractor employees required to access this system must be approved for a NOAA badge and undergo the appropriate background check to ensure employee trustworthiness. The Contractor Officer's Technical Representative verifies the identity of each contractor employee and submits appropriate forms to the NOAA Security Office for a background check and employee badge. A personnel security professional within the NOAA Security Office ensures that all information provided by the Contractor Officer's Technical Representative is correct and initiates a security background check for the contractor employee through the Office of Personnel Management.

After OPM performs the contractor employee's background check, the NOAA Security Office is notified and a personnel security specialist reviews the results of the background check and subsequently approves issuance of a NOAA badge. The expiration date of a NOAA badge worn by a contractor employee must coincide with the contract's end date. This process is repeated for each new contractor employee. Contractors do not store, process or transmit data/information with any of the government system(s) identified in this investment. As a result, contractors are not required to undergo certification and accreditation activities for their information systems and submit a C&A package to the Contracting Officer and Information Technology Security Officer for review.

ESPC has an approved System Security Plan, Risk Assessment, and Contingency Plan in place. Management, operational and technical security controls are in place to ensure the confidentiality, integrity, and availability of information.

### 2.5 Performance Measures

The performance measures in Table 2 show the ESPC program’s performance with respect to Strategic and Business Results.

![Table 1: Customer Results Performance Measure](image-url)

<table>
<thead>
<tr>
<th>Measurement Area</th>
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<th>FY2006 Baseline</th>
<th>FY2007 Actual Result</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contractor Performance</td>
<td>Requirements and Metrics are</td>
<td></td>
<td></td>
<td>Completed in 2nd and 4th Quarters FY07</td>
</tr>
<tr>
<td></td>
<td>Reviewed by Evaluation Board</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>
3.0 Financial Performance

3.1 Current Performance vs. Baseline

Cost – The program planned costs vs. actual costs are shown in Figure 1. Program costs consist of labor and benefits for full time permanent staff dedicated to ESPC, travel, communications, supplies and equipment, and corporate overhead. To date, actual costs are equal to budgeted costs.

The dollars on the Y-axis are in thousands. Total planned expenditures for the Fiscal Year 2007 were approximately $8,655,000; actual expenditures were approximately $8,658,000.

![Figure 1: Budget vs Actual Costs](image)

The ESPC operational expenses remain within the approximate operational budget planning threshold of +/-10%.

Schedule – All ESPC Operations and Maintenance activities to date are on schedule.

3.2 Performance Measures

The ESPC contract was awarded on September 30, 2005, the first year of the contract there was only one performance evaluation after nine months. Beginning in FY07, the ESPC contract will be evaluated by the ESPC Performance Evaluation Board two times instead of one.
3.3 Cost Benefit Analysis

An analysis of the socio-economic benefits, or the cost-benefit analysis, of the ESPC program was done in 2003. The analysis provides an economic perspective and helps determine present and future impacts of ESPC activities. The estimate concluded that for every Federal dollar spent on the program the Nation derived more than 7 dollars in benefit.

3.4 Financial Performance Review

Financial performance is typically subjected to a periodic review for reasonableness and cost efficiency. Monthly budget reviews are held with the program manager, contracting officers’ representative and contract managers to ensure contracts are within cost and on schedule. Monthly reports from contractors are required to ensure the Government has the information it needs to evaluate cost performance. A detailed review of work and priorities is undertaken if cost is significantly above base lined values. Also, any necessary corrective actions are also identified and implemented.

4.0 Innovation to Meet Future Customer Needs

4.1 Improve 24/7/365 Customer Services

The ESPC will maximize the benefits of the common IT environment by combining processes, eliminating redundancies, and lowering refresh costs. The two systems and staff will be physically consolidated at the NOAA Satellite Operations Facility (NSOF). As a result of this consolidation, NESDIS will begin to provide our operational customers of environmental data and products a single point interface for any operational issues and customer problem resolution. These improvements are manifest in the following areas.

4.1.1 Improvements to Pre and Post Launch Operations

Improvements to the ESPC Pre- and post launch activities will include the following areas: (1) Streamlined simulation and analysis of spacecraft mission data; (2) Improvements to validation processes of instrument calibration; and (3) Generation of improved statistical data and reports of instrument thermal vacuum data that serves as key information between instrument scientists and manufacturers for purposes of specification validation.

4.1.2 Improvements to Ingest Operations

ESPC ingest requirements for the following elements will be improved: (1) Downstream product processing timeliness requirements, (2) Dual interfaces and interactions with our Satellite Operations Control Center (SOCC) and indirect interfaces and interactions with our Command Data Acquisitions Stations (CDAs) for all satellite data sources streams including those that are not NOAA assets; (3) ESPC hardware, software and equipment similarities and differences which involve the operational ingest and pre-processing of NOAA GOES and POES spacecraft mission sensors, DMSP, non-NOAA GOES and POES and Earth Observing System (EOS) data and by-products;

4.1.3 Improvements to Processing Operations

ESPC improvements to operational product requirements will include the following areas:
(1) Timeliness of data and products from ingest to delivery to its user.  
(2) Performance metrics and quality control parameters and systems utilized in each product processing subsystem;  
(3) Technology solutions that could streamline and integrate ingest and processing requirements for all sensor data and product types, such that economies in processing and distribution times can be realized and passed on to our for faster assimilation into their respective applications.  
This streamlining may range from the fusion of a few or several product and/or data types into a new product;  or the integration of several products form several different data sources in to comprehensive retrieval package that a user can select-on-demand geographic areas of interest and resolution on a global-wide scale.

4.1.4 Improvements to Data and Product Distribution Operations

The ESPC services a large, unique set of customers for its respective data and derived products.  
Improvements to communication network and distribution methodologies will be required that will provide more robust solutions that will accommodate the heavier volumes of data anticipated from NPP/NPOESS and GOER R through 2012 and beyond.
Annex A: ESPC Products Transitioned into Operations in FY2007 (total of 14 products)

**GOES SST Frontal Product (1)**
A new GOES SST frontal product was approved for the transition into operations by the Satellite Products and Services Review Board (SPSRB) on Wednesday, November 15. The product became operational with an 8 by 5 support level on December 14th, 2006. A graphical depiction of the product is available on the West Coast CoastWatch browser site at [http://coastwatch.pfeg.noaa.gov/coastwatch/CWBrowser.jsp](http://coastwatch.pfeg.noaa.gov/coastwatch/CWBrowser.jsp) and also on their OceanWatch North Pacific Demonstration Project live access server at [http://las.pfeg.noaa.gov/oceanWatch/oceanwatch_safari.php](http://las.pfeg.noaa.gov/oceanWatch/oceanwatch_safari.php). The CoastWatch Oceanic Front Probability Index measures the probability of sea surface temperature front formation based on data from NOAA's GOES satellites. Fronts play an important role in upper ocean processes. Fronts can impact ocean fisheries, for example, by influencing the spatial distribution of biological productivity and by controlling the accumulation of marine debris, which serves as a beacon to higher trophic levels.

CoastWatch generates the frontal probability index from the GOES SST dataset. Daily average SST is generated from the GOES data. Fronts are identified by applying an edge detection algorithm to this daily averages SST field (Breaker et al., 2005). Pixels with gradients greater than 0.375 degrees C per pixel are classified as a front. The probability index is then calculated as the number of times a pixel is classified as a front divided by the number of cloud free days for the given time period. Days when the pixel is cloudmasked do not count towards this calculation. Initial data validation was performed by comparing the data to in situ observations by a research ship on a California Cooperative Oceanic Fisheries Investigations (CalCOFI) cruise. Additional evaluation and validation is in progress by a number of organizations (e.g. Castelao et al., 2006). The data are mapped to an equal angle grid (0.05 degrees latitude by 0.05 degrees longitude) to produce composite images of various durations (e.g., 5-day, 10-day, 14-day).

**CLAVR-X (1)**
The Clouds from AVHRR Extended (CLAVR-x) series of algorithms was approved for the transition into operations by the SPSRB on January 11, 2007. The current algorithm (version 4), uses NCEP’s GFS model 12-hour forecasts of temperature profiles and water vapor to account for radiative effects in the estimation of cloud pressure and cloud heights. It also takes advantage of monthly surface reflectance maps derived from 4 years of CLAVR-x data to improve cloud detection and cloud optical depth retrievals. Clear sky radiative transfer parameters are computed from the NOAA operational atmospheric standard model PFAST, instead of using the non-standard lookup tables as in the previous versions. It also adopts the MODIS scattering model and produces cloud optical depths, particle size distribution and the cloud height estimates more physically consistent with those from MODIS. CLAVR-x also incorporates features suggested by the METOP-SST team and is expected to satisfy current and future SST requirements. The system produces various pixel level products in HDF format including cloud properties (liquid and ice water content, optical depth, emissivity and reflectivity), cloud mask, cloud height, quality flags and composite gridded products. Product distribution to NCEP and other users is handled via the NESDIS Data Distribution System (DDS). Selected daily products and 7 days loops are shown through the OSDPD web site [http://www.ssd.noaa.gov/PS/CLAVRXGRIDCELL/](http://www.ssd.noaa.gov/PS/CLAVRXGRIDCELL/).

The implementation of the CLAVR-x operational system makes CLAVR-x cloud products from the NOAA’s operational polar satellites available to users, such as NCEP, in near real-time through the
NESDIS DDS. CLAVR-x version 4 incorporates numerous algorithm and processing improvements developed in previous versions. The pixel level and gridded products produced in HDF format provides an easy, straight-forward, and self-describing means of sharing scientific data.

**Solar Backscatter Ultraviolet Spectral Radiometer (SBUV/2) Version 8 (1)**

On February 21, the Satellite Products and Services Review Board (SPSRB) declared the new Version 8 SBUV/2 product operational. Donna McNamara sent out user notification. The current Version 6 products will be distributed in parallel until December 1, 2007, to allow environmental modeling centers enough time to switch their operations to the new products. V8 products, containing total and profile ozone information, are created orbitally and daily in binary and BUFR format.

The V8 algorithm represents a significant advance for the SBUV/2 retrieval algorithm. This is the first new algorithm to be implemented since the Version 6 algorithm in 1990. It uses better a priori information, better diagnostics, and provides an averaging kernel for use in data assimilation. Most significant improvements are expected in profile ozone, which is now provided at 21 levels instead of the previous 12.

**GOES SST Level 2 product (1)**

GOES-SST Level 2 (L2P) product is a SST retrieval from GOES E/W put into a standard format (netCDF) with ancillary information added, including environmental conditions and retrieval errors. The GOES-SSTL2P product, with a 5km spatial resolution and 0.5 deg C accuracy, is generated every ½ hour for GOES-E & W, N & S sectors, ~0.5 TB → 24 GB day. This GOES L2P products is used by the Global Ocean Data Assimilation Experiment (GODAE), NWS/NCEP/Ocean Modeling Branch (W&W Goal), Coral Reef Watch (Climate Goal) and fisheries (C&T Goal). The GOES L2P product removes retrieval bias, generates error estimates for each observation and provides diurnal cycle information.

A GOES L2P netCDF product file has 22 parameters for each pixel:

- SST
- Time, Latitude, Longitude
- Satellite Zenith Angle
- Aerosol Optical Depth
- Surface Solar Irradiance
- Wind Speed
- Uncertainty estimates (bias and S.D.)
- Proximity Confidence Value
- QC flags (including cloud and land)
- Ice concentration
- Deviation from analysis SST
- Temporal coincidences of ancillary data c.f. SST observation
- Source codes for ancillary data
- Probability of clear-sky (optional field).

**Polar Microwave Imagery on AWIPS (2)**

Sectors of Total Precipitable Water (TPW) and Rain Rate (RR) derived from NOAA POES Advanced Microwave Sounding Unit (AMSU) and DMSP Special Sensor Microwave/Imager (SSM/I) were implemented into the Advanced Weather Interactive Processing System (AWIPS) on
May 1, 2007 at 10:00 AM EDT. Containing data from the new orbits, sectors are disseminated on an hourly basis to AWIPS. This product start-up initiates the test and utilization period that will extend through July 24, 2007; the NWS plans to officially declare the AWIPS product operational on this date.

Mostly ocean based, the TPW products enable the NOAA forecaster to monitor “rivers” of high level moisture prior to making landfall. It has been demonstrated in many scientific journals and from hydrometeorological experience, that these moisture plumes, especially when having a long fetch over the ocean, are highly conducive to producing heavy precipitation. The RR products on land are also an important tool as they corroborate the data found in the TPW products. When these critical tools are used in conjunction, NOAA forecasters expect improvements in monitoring and forecasting of heavy precipitation events; with these improvements, it is the objective to increase the amount of lead time to issue warnings, such as flash flooding and heavy snow, to the general public.

**Fully Automated TRaP (1)**
The Satellite Services Division (SSD) debuted the fully automated version of the Tropical Rainfall Potential (TRaP) (http://www.ssd.noaa.gov/PS/TROP/trap.html) on its web site on 10 April following several months of development. The TRaP provides guidance to operational forecasters on rainfall associated with landfalling tropical cyclones using official track forecasts from Regional Specialized Meteorological Centers (RSMC) and the Joint Typhoon Warning Center (JTWC) and rain rate data from microwave sensors. Full automation was made possible by the efforts of Ms. Jianbin Yang, QSS, who played the lead role in program development, and Ms. Nancy Merckle, SSD web focal point, who renovated the web page to better handle the increased volume of TRaPs. Complete automation of the TRaP process will result in an increase in the amount of TRaPs that are available to customers while relieving meteorologists in SAB of the duty to vet and disseminate them manually.

**GOES Sounder Gridded Cloud Products (3)**
The GOES Sounder Gridded Cloud Product (GCP) was approved for transition into operations by the SPSRB May 16, 2007. The GCP is a suite of three soundings products. The cloud-top height, cloud-top temperature, and fractional cloud amount (ECA), are placed hourly into Lambert Conformal Grid, covering the CONUS at 10km resolution in GRIB2 format. This product is placed on the FTP Server and retrieved by National Weather Service (NWS)/Mesoscale Development Laboratory (MDL). NWS/MDL uses these three products to improve Aviation terminal forecasts of ceiling height and total cloud cover. This is a part of the redevelopment of their Local AWIPS MOS Program (LAMP) model that is designed to provide detailed short-range weather Model Output Statistics (MOS) guidance forecasts. LAMP is one of several tools which will supply initial conditions for the Interactive Forecast Preparation System (IFPS), which is a key component of AWIPS. When these three products were viewed by NWS managers, they began to see the potential for use of one of the products (ECA) in the RTMA project and added a second requirement to the list. They requested that the ECA SFOV product be placed into a 5km resolution grid for use in AWIPS. They saw how this product along with equivalent observations from other observing systems could improve the long-term forecast since the forecaster could better assess model or forecast grids and accuracy. The ECA gridded 5km GRIB2 product is now being placed into the National Digital Forecast Database (NDFD). This will facilitate the seamless integration of satellite derived products with equivalent model-derived quantities, along with equivalent observations from other observing systems. These high resolution GCP sounding products will be used by the NWS forecasters to validate NWP model output resulting in improved forecast. This product will be used as a type of ground truth to model data.
MIRS Phase-I/II Products from NOAA-18/MetOp-A (4)
On August 30, 2007, official notification to the user community on the operational availability of Microwave Integrated Retrieval System (MIRS) products was issued. Microwave Integrated Retrieval System (MIRS) Phase-I & -II products, including temperature and moisture profiles over ocean, Total Precipitable Water (TPW) over ocean, and land surface temperature and land surface emissivity over all Advance Microwave Sounding Units-A (AMSU-A) and Microwave Humidity Sounder (MHS) channels, were declared operational with the full strength of 24/7 support. These products are made available to both real-time users and climate users through NESDIS Environment Satellite Processing Center (ESPC) Data Distribution Server (DDS) and Comprehensive Large Array-data Stewardship System (CLASS), and can also be accessed through http://www.osdps.noaa.gov/PSB/mirs/. Having a state-of-the-art operational retrieval system that is adaptable to all microwave sensors would insure physical consistency and minimal bias of products from various sensors, therefore, improved quality for climate data records. The profiling capability of MIRS would extend NESDIS sounding capability to all-weather and over all-surface conditions. These improved/advanced operational products would improve the assimilation and validation of NWP models, and enhance NOAA’s weather forecasting and climate monitoring capability.