Satellite Sounder Science and Products

ITSC-17 Working Group members:

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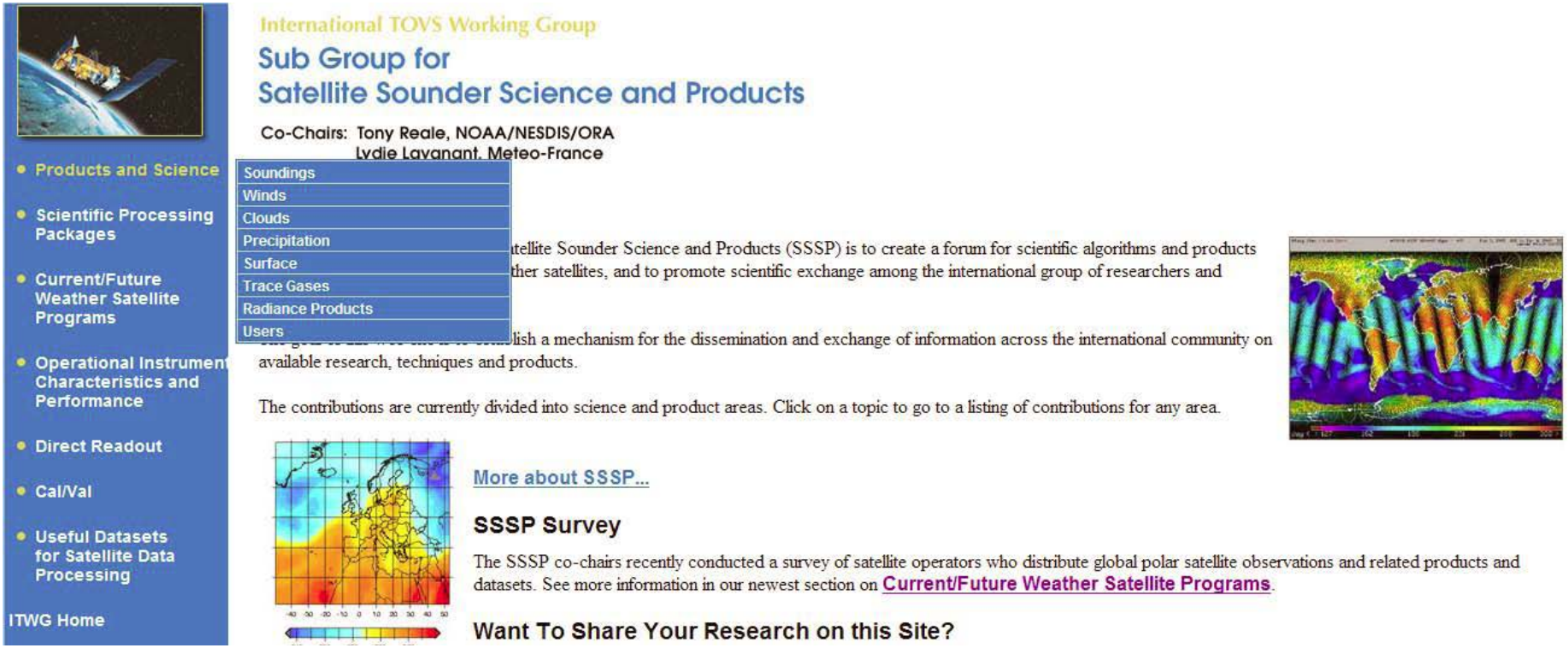


Working Group Mission

At ITSC-17, the WG members recognized that the SSSP group through its Web site provides valuable information to the international research community but needs a more targeted focus to be more effective.

It was proposed emphasizing the following topics:

1. upgrade of the SSSP Web site. Investigation of new fonctionalities to become a more useful forum for information exchange
2. ‘merge’ information of the direct broadcast technical sub-group and the SSSP WG
3. support to users of packages/products. Evaluate their requierements through survey
4. clear specification of product performance from global centers
5. preparation for new instruments
6. dissimination of validation reports (case studies, inter-comparison products, ….)
7. making available information/links on validation datasets (JAIVEX, AQUA-Train coregistrations,..), on ancillary useful datasets (atlas…) required for product processing

SSSP Web site maintenance

The target audience of the SSSP Web site ranges from experts in the field of satellite remote sensing to those less familiar with the jargon and acronyms normally associated with this world. To facilitate this varied audience, it was proposed to investigate potential upgrades to:

- improve the Web site functionality allowing all users to more readily search the site contents via theme, product, instrument or experiment types, agencies and contacts.
- investigate tools to facilitate an easy upkeep of the Web site and to control the content of the web pages and the links to contacts (very quickly several links are out of date)

To become a more useful forum for information exchange, it is suggested :

- that the web site includes some interactive elements (e.g., wiki, forum).
- to remove some Web site areas already covered by others Web sites and difficult to maintain (e.g. “Current/Future Weather Satellite Programs” and “Operational Instrument Characteristics and Performance”)
- include summary tables for novice users
- facilitate expansion of the Cal/Val area to other global centers.

Direct Broadcast Processing Packages

The WG members agreed that the direct broadcast processing packages are a critical area of SSSP. The best interest of both, the SSSP and the DB technical sub-group should be served by absorption of the technical sub group into the SSSP WG. This will allow a more useful information exchange on software packages and practical information on running them.

The direct broadcast technical sub-group is meeting at ITSC18; closer integration with the SSSP WG is an aim.

The following actions will be conducted:

- merge the Web page areas “Scientific Processing packages” and “Direct Readout” into “Direct Readout and Scientific Processing Packages”.
- include the technical report “Report on DB Processing Packages”
- append a table to the technical report “Report on DB Processing Packages” that presents the supported functionalities in a one page summary

Direct Broadcast Processing Packages

NPP Processing Package:

NPP was launched in October 2011. Today, the NASA/IPOPP and CSPP DB packages (developed at CIMSSS with fundings of JPSS, linux version of the operational processing software that currently runs in NESDIS operations) will be/are available to beta-testers with a set of test data.

Public release of version 1.0 of the CSPP SDR software for VIIRS, CrIS, and ATMS is expected by April 15, 2012.

Metop-A/B Direct Broadcast Level-2 IASI Processing Package

At present there is no publicly available level 2 retrieval package for Metop IASI direct broadcast. The SSSP group believed it is imperative that such a package be funded and released for Metop, since it would be extremely beneficial for local applications of NWP assimilation, weather forecasting, and environmental monitoring.

The SSSP WG sent a recommendation to JPSS.

The development of the processing package for level1&2 is done. It will be implemented in CSPP and released soon.

Support to users of products/packages

Summary tables of the currently available products

The SSSP group recommended to make available summary tables of the currently available products, initially focusing on sounding and trace gases, within the Products area of the Web site. The goal is to provide users with a comprehensive technical overview detailing information such as the required input data, data formats and science.

Web pages have been produced containing summarizing information about a small handful of products for:

- sounding products (…/itwg/sssp/products/soundings) : AAPP, ECMWF 1DVAR, SSMIS Unified Pre-Processor, SSMIS Averaging module
- trace gas products (…/itwg/sssp/products/trace_gases) : OMI ozone and trace gases, IASI trace gases, AIRS v5 tropospheric CO2 products.

Support to users of products/packages

IAPP maintenance for climate applications

It was recognized important to continue the support and development of IAPP in order to maintain its operational use at facilities such as the Satellite Application Facility on Climate Monitoring (CM-SAF). This support should include updates, as well as inclusion of new sensors.

CMSAF has received support from CIMSS during the last two years and would like to get support for new satellites (e.g. Metop-B and NPP).

Visualization Packages

Data analysis and visualization tools are used by most atmospheric scientists. There are many packages available, both commercial and open source, that provide tools and libraries for data analysis and visualization.

Action: to conduct a survey in the WG's user community to provide a comprehensive table of available packages for data analysis and visualization of atmospheric science data.

Support to users of products/packages

Interface to WMO Web Site

WMO developed a Web site including similar topics than SSSP on satellite product information, satellite missions and agencies (htpp://www.wmo.int/pages/prog/sat/index_en.html). The Web site also provides access to highly advanced reference material for download, on satellite instrumentation characteristics and corresponding product performances.

The SSSP WG recommended to promote the WMO Web site and a link is alive on SSSP site (…/itwg/sssp/satelite_programs)

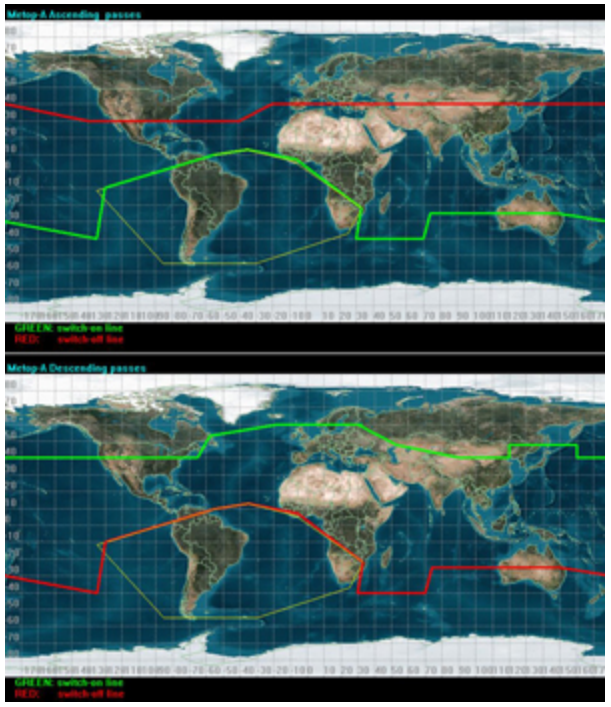
The group also recommends a continious WMO and SSSP co-ordination for coherent and complementary information dissemination.

Metop-A Direct Broadcast

There is a limited availability of Metop-A direct broadcast data due to an earlier failure of the Metop-A AHRPT side A. The root cause was heavy ion radiation, causing the failure of a component of the AHRPT Solid State Power Amplifier.

The SSSP WG recommended to expand the areas of direct readout observations.

EUMETSAT implemented a 'partial' AHRPT service in those areas where the risk of damage from heavy ion radiation is reduced. For southbound passes, AHRPT is activated for all orbits over the North Atlantic and European area, starting at around 60°N. It is then switched off before the satellite reaches the Southern Atlantic Anomaly region around 10°N. For the ascending orbits, AHRPT operations are made but more restricted than for the descending passes given the availability of data via the Fast Dump Extract System which cover the North Hemisphere.



See:

www.eumetsat.int/Home/Main/Satellites/Metop/Services/SP_20100341628246 50?l=en

Preparation for new instruments

Data rates

As hyperspectral and active remote sensing instruments are developed, product users must stay aligned with the requirements in terms of capacity to process, assimilate, and use these data.

The WG recommends that product user groups have input, enough in advance, into plans of data providers to accommodate high data rates for hypersprectral and active remote sensing instruments.

The goal is to determine requirements for issues such as infrastructure needs as well as methods for data acquisition or development of algorithms to be able to process in the timeframes required by operational organizations, these large quantities of data.

Preparation for new instruments

Preparation for Metop-B

The launch of Metop-B is scheduled for May 2012. In support of the currently available processing packages (AAPP), it is mandatory to have the calibration datasets for the Metop-B instruments available prior to launch.

The SSSP WG recommended that EUMETSAT makes the datasets available via the EUMETSAT Web site.

Datasets can be find at:

http://www.eumetsat.int/Home/Main/Satellites/Metop/Resources/index.htm?l=en

They include calibration parameters and filters for AMSU, MHS, AVHRR and HIRS in AAPP format and also include the antenna correction factors for the correction of the Earth view radiances dependent of the scan angle for AMSU and MHS.

ITSC-18 SSSP suggested discussion topics

- Stategy for an efficient maintenance of the SSSP Web site. Should it become a forum, a wiki ?
- New data: Meteor-M, FY3B, Metop-B, NPP, Meghatropiques, GIFTS…
- Pre-launch preparations: simulated data, formats, instrument characteristics, global distribution
- Real time data dissemination: RARS, Geocast, SafetyNet, software packages for DB.
- Strategy for lossy data compression: PC data dissemination, level 2 products,..
- Surface information: Ancillary datasets, realistic representation of the surface,…
- Validation: sharing and joint analysis of results during cal/val phase, validation datasets, field campaigns, NWP monitoring and assimilation as a validation
- Visualization packages for sounder data
- Infrared FOV size: trade off versus other characteristics
- Cal/val activities: GSICS, GRUAN, CLARREO