



Cloud Session Introduction

Andrew Heidinger
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Cloud Team Lead

Cal/Val Team Members

PI	Organization	Team Members	Roles and Responsibilities
Andrew Heidinger	NOAA/NESDIS/STAR	Yue Li, Denis Botambekov and Tom Kopp (AERO)	Cloud Mask, Cloud Height and CCL
Michael Pavolonis	NOAA/NESDIS/STAR	Corey Calvert (CIMSS)	Cloud Phase/Type
Steve Miller	CIRA	Dan Lindsey, Yoo-Jeong Noh, Curtis Seaman, John Forsythe	Cloud Base and CCL
Andi Walther	CIMSS	Sam Tushaus	Daytime Optical Properties, Precipitation (RR)
Pat Heck/ Pat Minnis	NASA LaRC		Nighttime Optical Properties
Mike Foster	CIMSS	Denis Botambekov, Jay Hoffman	Long-term Monitoring / Reprocessing
Bob Holz	SSEC	Greg Quinn	Validation Tools
Ping Yang	Texas A&M		Cloud particle scattering models.
William Straka and Ruiyue Chen	ASSIST		Algorithm implementation into SAPF and verification of implementation

Cloud Product Enterprise Status

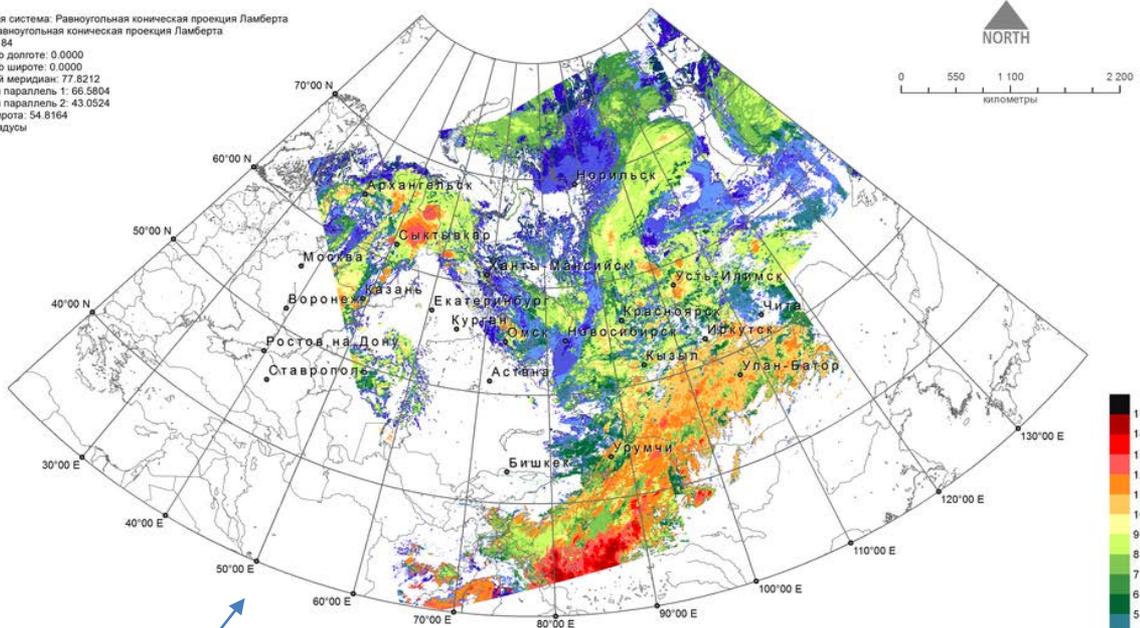
- All algorithms updated in April 2016.
- ASSIST provided multiple days of global output. Report generated.
- Algorithms and ATBD updates delivered to ASSIST on August, 2016 for January 2017 update.
- Updates included
 - ECM
 - includes a thin cirrus flag as requested
 - 3.75 micron test revised and table updated (tbd)
 - ACHA updated with improved
 - microphysical model
 - ocean inversion calculation
 - latitudinal variation in cirrus property first guess
- CSPP Leo / CLAVR-x updated with Enterprise algorithms delivered to ASSIST.
 - International user base is growing steadily

- The NOAA Enterprise Cloud Algorithms are distributed through UW/SSEC CSPP LEO.
- CSPP LEO runs NESDIS CLAVR-x.
- Provided good feedback for VIIRS Enterprise cloud products before operational in NDE this fall.
- Roughly 50 downloads
- Active communication with a Russian Remote Sensing Company that sells services to the Russian Weather Agency.
- Goal is to release updates in step with our deliveries to SAPF. (ahead of operations but in-sync with ASSIST)
- CSPP LEO supports VIIRS DNB usage. We hope to transition this to SAPF.



ФЕДЕРАЛЬНАЯ СЛУЖБА ПО ГИДРОМЕТЕОРОЛОГИИ И МОНИТОРИНГУ ОКРУЖАЮЩЕЙ СРЕДЫ
 ФГБУ "НАУЧНО-ИССЛЕДОВАТЕЛЬСКИЙ ЦЕНТР КОСМИЧЕСКОЙ ГИДРОМЕТЕОРОЛОГИИ "ПЛАНЕТА"
 СИБИРСКИЙ ЦЕНТР

Координатная система: Равноугольная коническая проекция Ламберта
 Проекция: Равноугольная коническая проекция Ламберта
 Датум: WGS 84
 Смещение по долготу: 0.0000
 Смещение по широте: 0.0000
 Центральный меридиан: 77.8212
 Стандартная параллель 1: 66.5804
 Стандартная параллель 2: 43.0524
 Исходная широта: 54.8164
 Единицы: градусы



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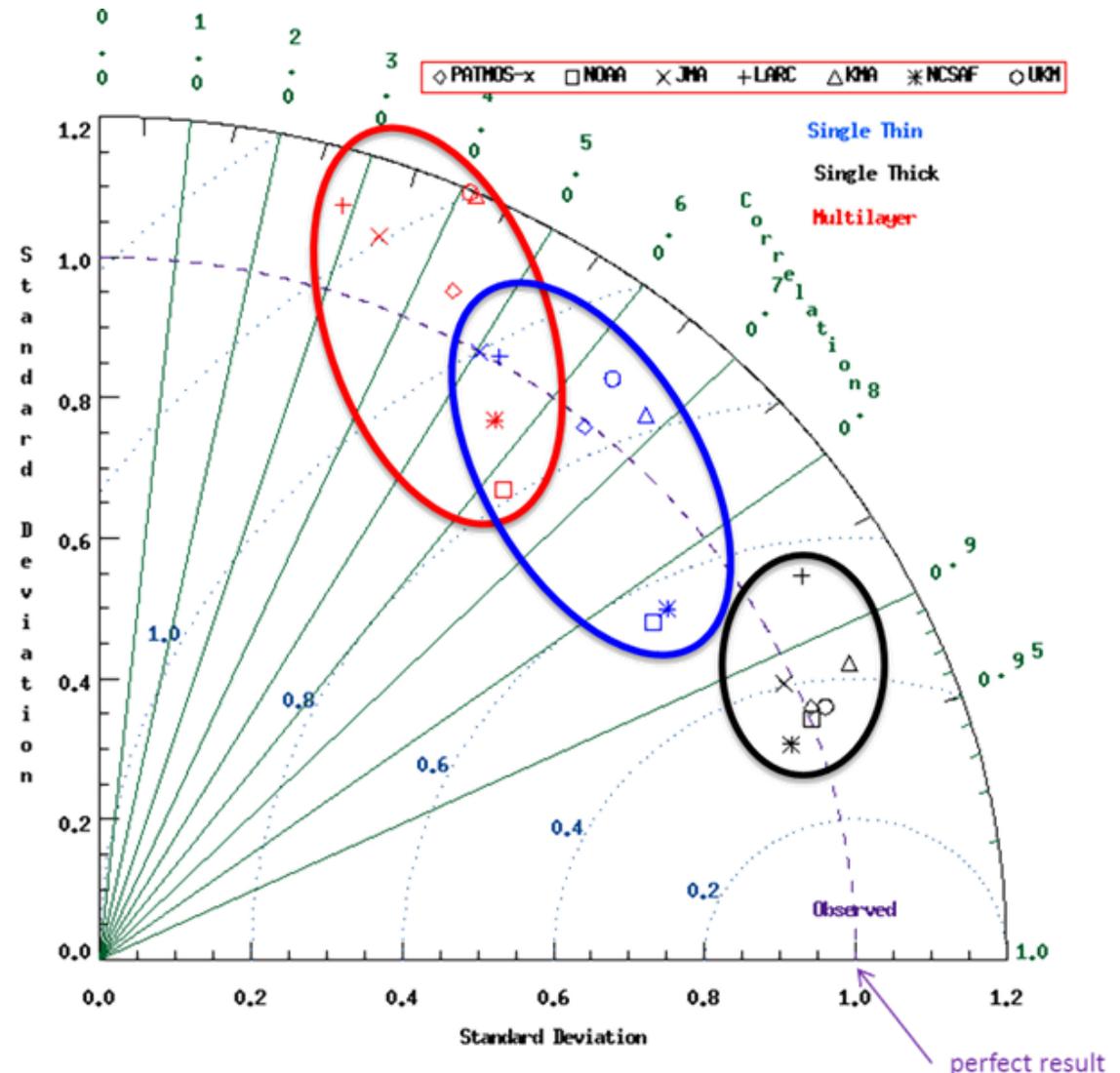
Монтаж космических изображений.
 Высота облачности.

M01_08.08.2016 г., 12:34 GMT
 M01_08.08.2016 г., 14:11 GMT
 M01_08.08.2016 г., 15:50 GMT

Example CSPP LEO CLAVR-x image provided by Russian CSPP customer

- The Enterprise cloud algorithms generated by the ASSIST were included in a recent algorithm intercomparison conducted by the International Cloud Working Group (ICWG).
- Data was for HIMAWARI/AHI but code was EXACTLY the same as delivered to ASSIST in April 2016.
- The cloud height comparisons are shown here.
- The comparison on the right shows each agency's data compared to NASA/CALIPSO.
- Data labelled NOAA are the Enterprise results (□)
- Data are stratified into single-thick, single thin and multilayer.
- Enterprise does relatively well in all 3 stratifications.
- ICWG is developing an analogous leo analysis for VIIRS.

Taylor Plot of AHI CTH Comparisons



- With support from JPSS-RR, the ECM is fully capable of using and benefiting from the VIIRS DNB coupled with the CIRA lunar model.
- The lunar analog of the daytime cloud optical and microphysical properties (DCOMP) is also ready for transition (when time is right).
- VIIRS cloud product rain rate also being developed for use in solar or lunar illumination. Provides a complement to the ATMS precip
- RR also funded the fusion of VIIRS and CrIS to provide MODIS-like IR channels. Algorithms being modified to make use of these data.
- An enhanced Cloud Cover Layers (eCCL) from VIIRS is also being developed to meet the requirements from NWS. Fusion of VIIRS and CrIS also helps this.
- It is time to extend the PATMOS-x AVHRR record onto VIIRS. Reprocessing over limited domains has shown this to be feasible. PATMOS-x VIIRS would expose the existing PATMOS-x AVHRR/GOES community to VIIRS. (not a RR proposal)

- ECM Performance in SAPF lags behind the same code implemented in CLAVR-x.
 - ASSIST has found some potential causes.
 - We hope tuning will solve this.
- ECM and other cloud products show “blockiness” due to lack of smoothing of ancillary data.
 - SAPF has the ability but the impact of smoothed NWP ancillary data on all algorithms is being assessed by ASSIST.
- ECM is still not tuned on SAPF output.
 - ASSIST has provided the ability to dump-out all ECM input from the Framework so that Cloud Team may train against it. Until now, we have had to use CLAVR-x.
 - Running the SAPF over the amount of data needed is still a challenge.
- The gfortran 4.4.7 restriction from OSPO limits the implementation of some known improvements into the SAPF.
- The M5 and M7 calibration errors do limit our ability to meet spec in several products.

- 1110 - 1130 Impact of VIIRS Enterprise Cloud Products for NWP (Heidinger)
- 1130 - 1150 The Newly Operational VIIRS Cloud Base and CCL (Noh)
- 1150 - 1300 Lunch
- 1350 - 1410 Enterprise Cloud Mask Status (Kopp)
- 1410 - 1430 JPSS Hydrological Initiative Activities (Forsythe)