EDR Review Panel Feedback

Mitch Goldberg
National Oceanic & Atmospheric Administration | NOAA
JPSS Program Scientist

Review Panel Members

- Mitch Goldberg, Chair, JPSS Program Scientist, LORWG Chair
- James Gleason, SNPP and JPSS Project Scientist
- James Yoe, NWS/NCEP & JCSDA Chief Administrative Officer , LORWG
- Mike Johnson, NWS/OST, LORWG
- Rick Stumpf, NOS, Center for Coastal Monitoring and Assessment, LORWG
- Tom Schott, NESDIS/ OSD/ NDE Product Dev. Mgr./LORWG Co-Chair
- Eric Gottshall, NESDIS/NJO/ DPA (IDPS) Product Manager
- Lihang Zhou, NESDIS/STAR/ JPSS Algorithm Science Manager

Overarching Message

- The review panel was generally very impressed with the details of the presentations and the dedication of the scientists supporting the EDR validation. The EDR teams are well managed. The EDRs have met their goals of either provisional or validated stage 1 with exception of night COP for water clouds .
- Algorithm choice is important. Algorithms are available to resolve most problems.
- Need user guides, use SPSRB template and consider current documents Internal (maintenance) vs external user guides
- Quality flags are critical for user to tell them where not to use the data
- We care about persistent errors. So for outliers even though spec has been achieved, we want to know if these are systematic or random. And if they are systematic how would that impact an end user.

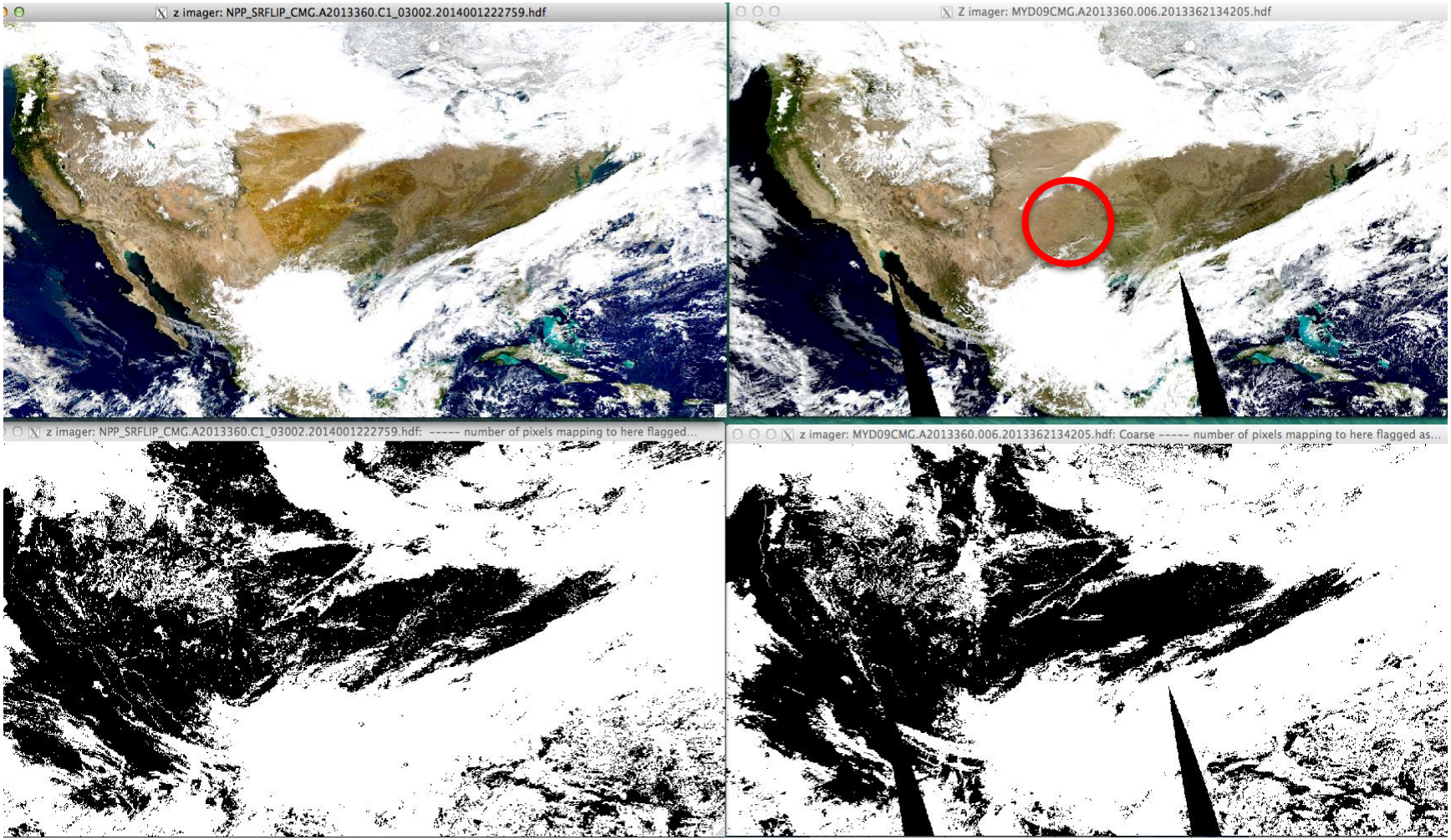
Summary for VCM

- Outstanding progress and presentation by the VCM team
- VCM team was very successful in resolving issues identified during beta and provisional
- Presentation was very clear and demonstrated that the VCM meetings the validated stage.
- By definition the VCM is at least stage 2.
- Two years should be analyzed to reach stage 3 for quantitative products
- Remember, following stage 3 is long term monitoring and science maintenance which allows for continued improvements.

- VCM cannot be expected to be perfect for all downstream algorithms. Downstream algorithms should build upon VCM and apply additional tests if needed. Such as screening for aerosols with respect to SST.

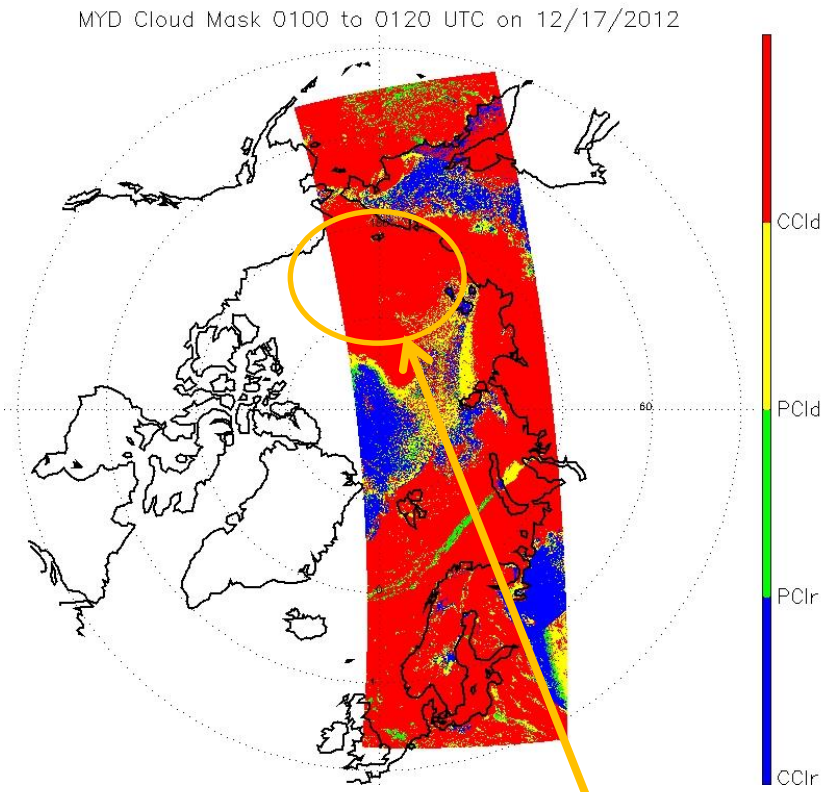
- Should look at best approach for providing updated NDVI and snow/ice maps.
- Snow/ice maps should come from IMS – which uses multiple sensors – not just VIIRS .
- Feedback from Vermote was very positive. Jeff Key still showed some issues
- Assess those issues - confirm versions that Jeff is using.
- Compare with CLAVR-X (for slide 6)

Cloud mask compare well with some small difference in snow/cloud (not a concern to us)

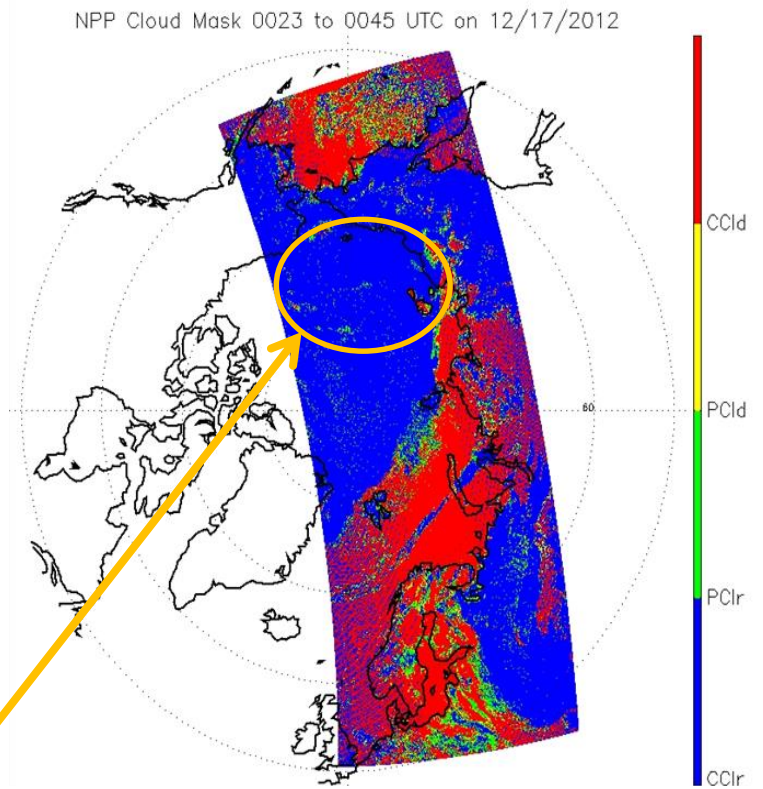


VIIRS/MODIS Cloud Confidence Discrepancy Observed in Night Arctic Scenes

MODIS Cloud Mask 17 Dec . 2012 (0100-0120)



VIIRS Cloud Mask 17 Dec . 2012 (0023-0045)



Confidently Cloudy = Red
Confidently Clear = Blue

Region of discrepancy

Large region shown by MODIS cloud mask as confidently cloudy is shown as confidently clear by the VCM. This region is inspected in detail on (slide 10)

Address Jeff's Summary

- Analysis of Snow Cover EDR based on post MX 7.2 Build data indicates that occurrences of false snow are often associated with VCM cloud leakage and occurrences of missing snow often associated with VCM false alarms that occur frequently near edges of snow fields and mountainous regions. Missing snow was also found to be associated with cloud shadow regions.

- Analysis of pre-MX 7.2 Build data detected occurrences of false ice associated with cloud leakage and missing ice associated with undetected cloud shadows particularly near terminator regions.

- Currently the VCM cloud shadow algorithm is limited to performing shadow detection up to a Solar Zenith Angle (SZA) threshold of 75°. Extending shadow detection capability up to the day/night limit is desirable but may require significant effort beyond extending the SZA threshold.

- Validation Level 2 efforts will include analysis of the post MX 7.2 Build VCM update impacts on the IST and Sea Ice Characterization EDRs to confirm mitigation of the observed problems related to false and missing ice detection.

Algorithm Assessment Outcome Categories

1. NPOESS algorithm has evolved into the NOAA-endorsed JPSS algorithm.
2. NPOESS algorithm will not meet requirements or efforts to do so is too large, replace with NOAA-endorsed JPSS algorithm
3. NOAA-endorsed algorithm should be used even if NPOESS algorithm meets performance because of legacy, enterprise, blended products, and other considerations.

Cloud Provisional Recommendations

- All cloud products except Night COP for Water Clouds are provisional.
- The Cloud Team feels that remaining issues with Day COP are significant enough to prevent Validation Stage 1.
- The Review Board recommends assessment of CLAVR-X algorithms as the replacement algorithms. Freeze further NPOESS cloud property algorithm improvements.
  - Action to Andy Heidinger to present to review panel within 30 days results based on CLAVR-X with similar rigor shown in this review.
  - CLAVR-X = clouds from AVHRR and beyond.
    - Beyond = VIIRS, ABI = Enterprise Algorithm
- CLAVR-X is in CSPP with user engagement .

Imagery Summary

- Imagery results demonstrates **Validation stage 3**
  - All **requirements** have been met or exceeded
  - All **documentation** is up-to-date
  - All Imagery EDR quality-related **DRs** are closed
    - Note **stray light** is a DNB DR and not an Imagery DR
- The Imagery Team remains deeply concerned with the disconnects between the requirements themselves, the capabilities of today's IDPS, and the feedback we are receiving from those we interact with on a monthly basis
  - Non-NCC Imagery has **no "quality" requirements**
  - NCC Imagery has **no requirements**
  - Key products (such as **true-color imagery**) are not available from the operational system
  - The **number of KPP (priority 1) bands** (6), the number of bands created as Imagery from the operational system (12), and the total number of bands (22), do not match
- ~~**Validation 2**~~ Long term monitoring, science maintenance and proving ground stage will increase interactions with real-time operational users to the maximum extent possible

Surface Type Provisional Status Summary

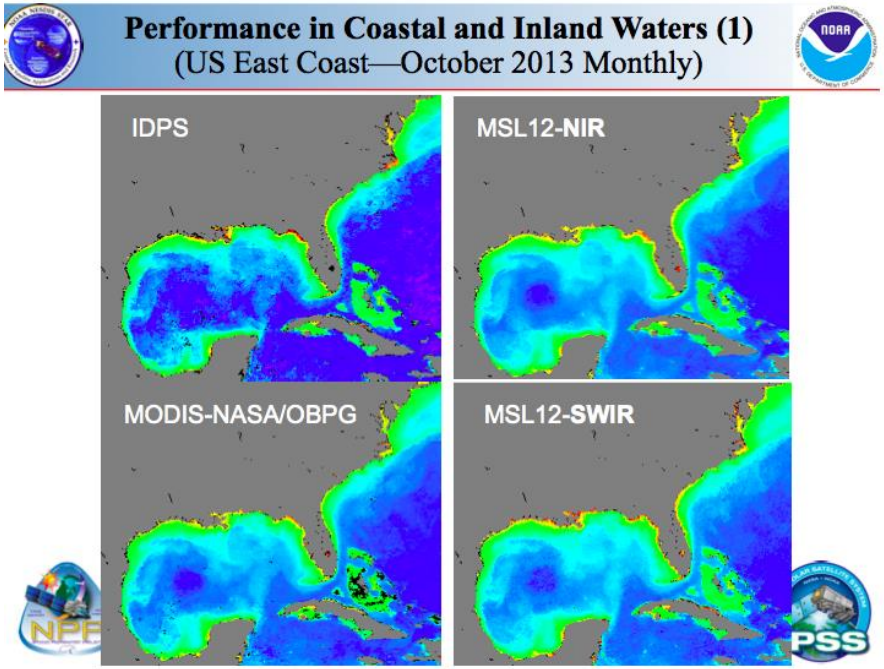
- Meets provisional status
- Change quarterly to annual ST
- PEATE support is appreciated for 2012 annual ST
- Gridding/compositing/annual metrics (GCAM) is a huge job
  - Solution to use UMD seems reasonable since it is an offline computation.
  - But what is the long-term solution? Need to generate annual ST in perpetuity.

SST

- SST is provisional
- However algorithm and user choice is ACSPO
- SST falls into category 3:
  - NOAA-endorsed algorithm should be used even if NPOESS algorithm meets performance because of legacy, enterprise, blended products, and other considerations.
  - Other consideration -- NDE is providing this SST operationally to users. There is no IDPS users.
  - Same rationale as NUCAPS decision
- Stop IDPS algorithm work and focus cal/val on ACSPO.

Ocean Color

- Provisional level has been demonstrated.
- Algorithm choice is MSL12-NIR/SWIR for coastal.
- Work with DPA to determine effort to have this algorithm in IDPS or ESPC. Meanwhile consider providing product experimentally from STAR to NOS and NMFS until problems are resolved
- SDR issues can be addressed in parallel or after NOS and NMFS has secured products using MSL12-NIR/SWIR for coastal regions.



Ice Temperature and Snow Cover

- Both are at validated stage
- End users at NOAA will use IMS, but VIIRS snow cover is used for guidance.
- IMS should feed back into products dependent on snow/ice information, since IMS should be more accurate because it uses multiple sensors

Soundings

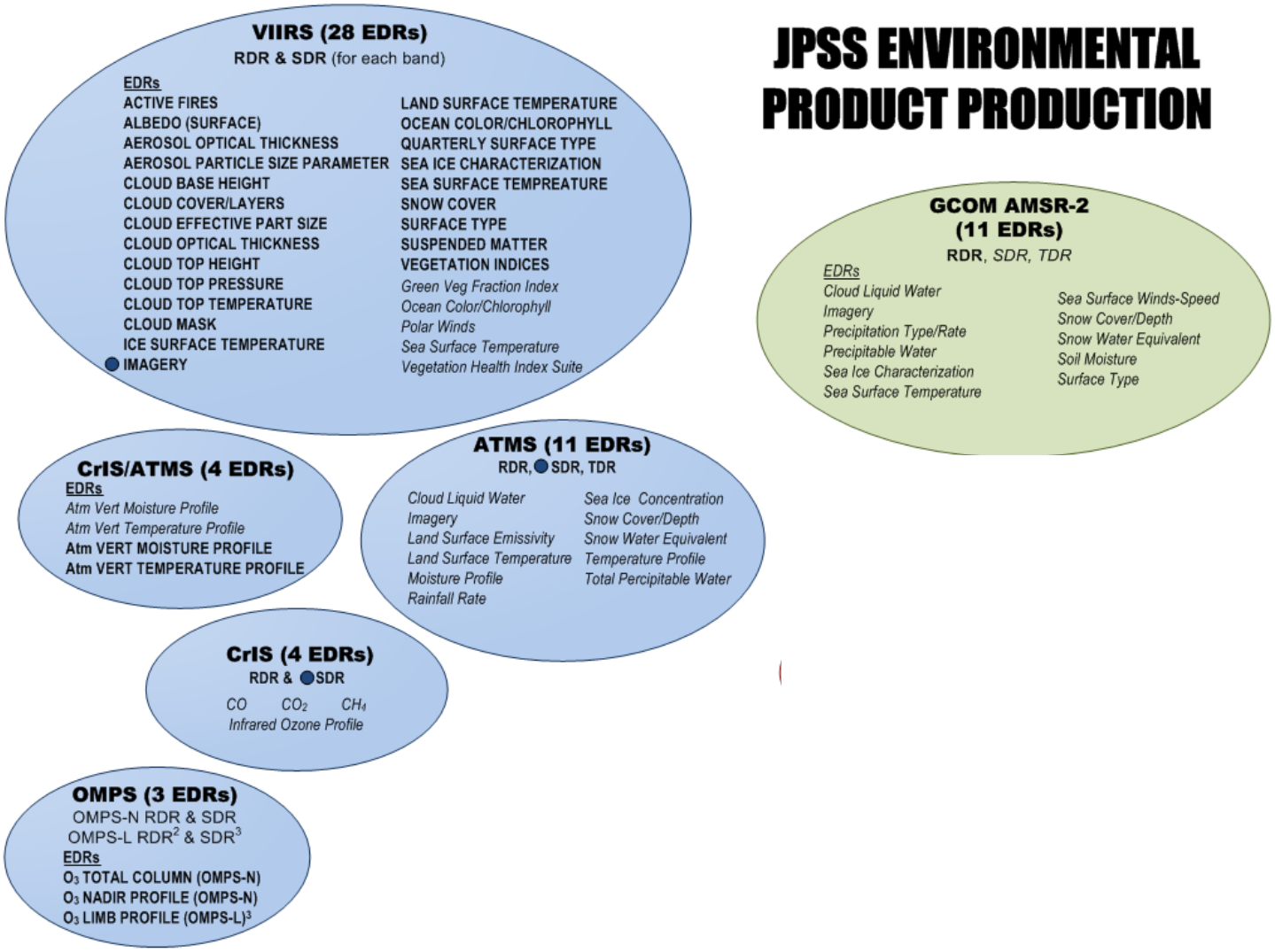
- Validated stage 1 for NUCAPS for tropical maritime cases has been achieved

- But generally at the Provisional stage.
- Need to evaluate NUCAP validation plan.
- Understand differences between validation results from MIRS presented by the MIRS team and those presented by Tony.

- Focus on NUCAPS not CrIMSS.

- Microwave only from NUCAPS needs to be revisited since NPOESS did not have a ATMS only sounding product. NDE has MIRS now. Microwave only is provided by MIRS.

- Support dual launches ($). GPS-RO, ACARS.

- Proving Ground project is installing NUCAPS into CSPP
- Jordan Gerth from CIMSS is the JPSS Liaison

Need EDR reviews for the other JPSS products by this review panel