



VIIRS Imagery at Beta

CCR 12-417

DR 4545

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Brief summary of the Imagery EDR



- The Imagery EDR takes selected VIIRS SDRs and transfers radiance/reflectance/brightness temperature values on a Ground Track Mercator projection
 - All 5 I-bands
 - Six selectable M-bands
 - Near Constant Contrast derived from the Day Night Band
- GTM uses the nearest pixel, it does not use an average unless an isolated pixel has a bad value
- The NCC Imagery is on a separate schedule and is not part of this CCR



Imagery Requirements



- Current requirements based on the Level 1 Requirements Document (L1RD) are restricted to resolution, mapping accuracy, and latency
 - Quality requirements found in the old NPOESS program are no longer present
- Actually use of Imagery tied to ability of a human analyst to determine his/her features of interest through Imagery
 - If the operational user is not satisfied, the Imagery EDR has failed, independent of any quantitative requirements
- The Imagery validation team has focused on the later in the early stages of validation



General Guidelines



- The two most fundamental features of the Imagery at this stage was determination of clouds and sea ice edge
 - Quantitative validation of resolution and latency handled by other teams
 - Geolocation qualitatively addressed at this time
 - No issues found
- The fundamental question, may a user satisfactorily use Imagery without the presence of significant distractions (i.e. striping)?



Beta Definition



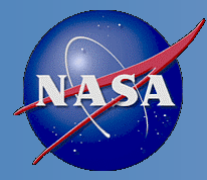
- Early release product
- Initial calibration applied
- Minimally validated and may still contain significant errors
- Available to allow users to gain familiarity with data formats and parameters
- Product is not appropriate as the basis for quantitative scientific publication studies and applications



Beta Evaluation



- Early release product
 - Imagery has not been extensively analyzed by operational users
 - Imagery is not available to real-time users on a timely basis
 - Neither NDE or AFWA can make Imagery available to their general set of customers in near real time as of this briefing
- Initial calibration applied
 - VIIRS SDRs declared “beta” earlier this month
 - No software changes have yet been made to the Imagery EDR



Beta Evaluation



- Minimally validated and may still contain significant errors
 - Striping has been identified but the overall impact has not yet been assessed
 - Typical users would not notice the striping under standard use
 - Other issues have dealt with missing data, not tied to the Imagery product or the algorithm directly
 - No other artifacts have been noted by Imagery SMEs
 - The only DRs written to non-NCC Imagery was to expand daytime beyond 85 degree solar zenith angle and to expand the number of available M-bands produced as Imagery
- Available to allow users to gain familiarity with data formats and parameters
 - Imagery may be retrieved through CLASS, GRAVITE, or the Atmosphere PEATE
 - Both NDE and AFWA working towards real-time support sometime this summer



Beta Evaluation



- Product is not appropriate as the basis for quantitative scientific publication studies and applications
 - Imagery, in general, does not contain quantitative applications
 - VIIRS SDRs only at beta stage
 - In fact, Imagery performance has been touted as good to excellent at many conferences that have already taken place (i.e. AMS)
 - In reality, Imagery is past this point



Beta Evaluation



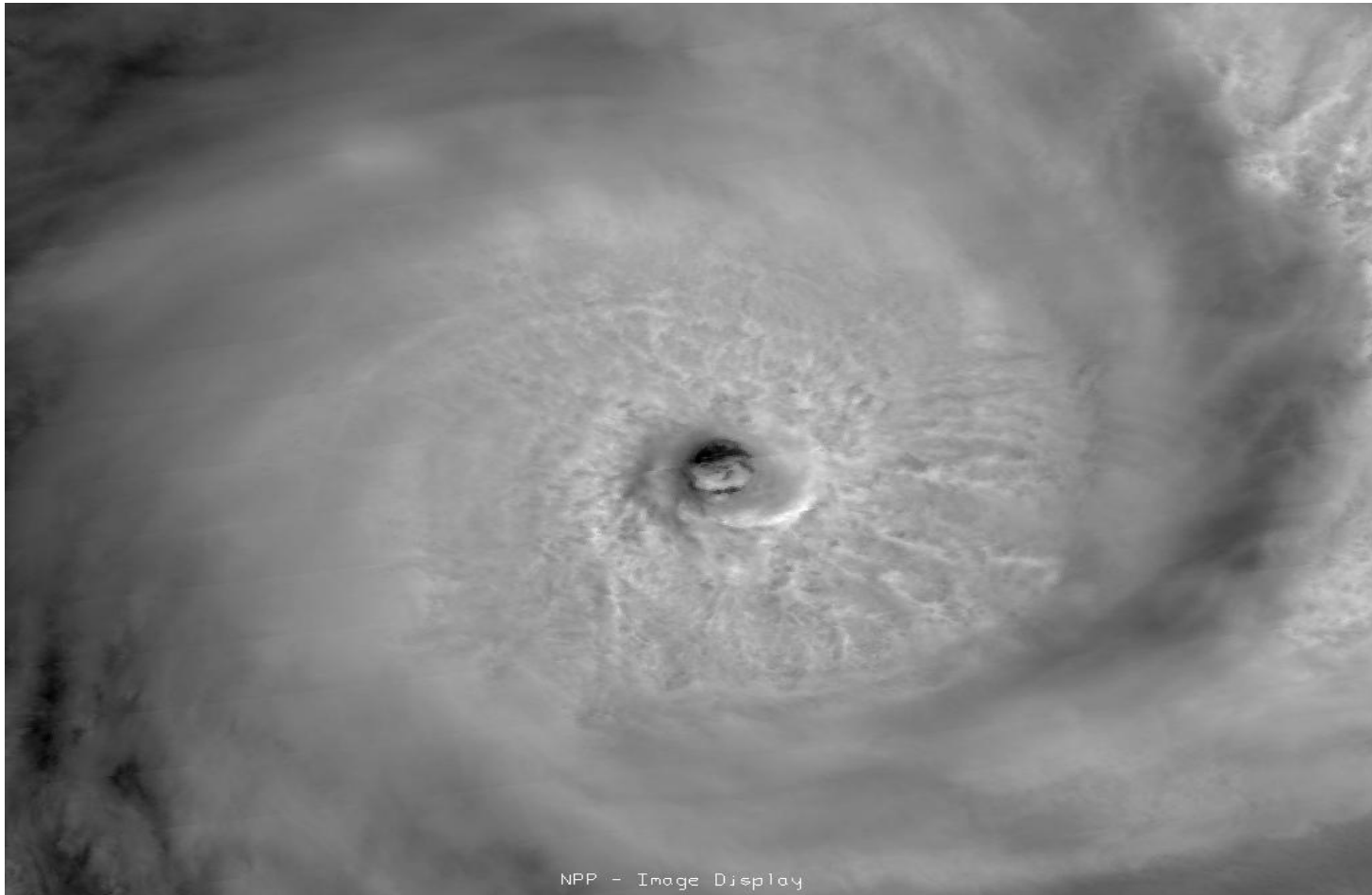
- Many examples have been already shown at other forums
 - AMS Annual Meeting
 - VIIRS Cal/Val Workshop
 - NOAA Science Week
 - JPSS System Readiness Review
- With this in mind, only a few examples of Imagery are shown



Tropical Storm Funso (IR)



- 15 – courtesy of Dan Lindsey (NOAA/STAR)

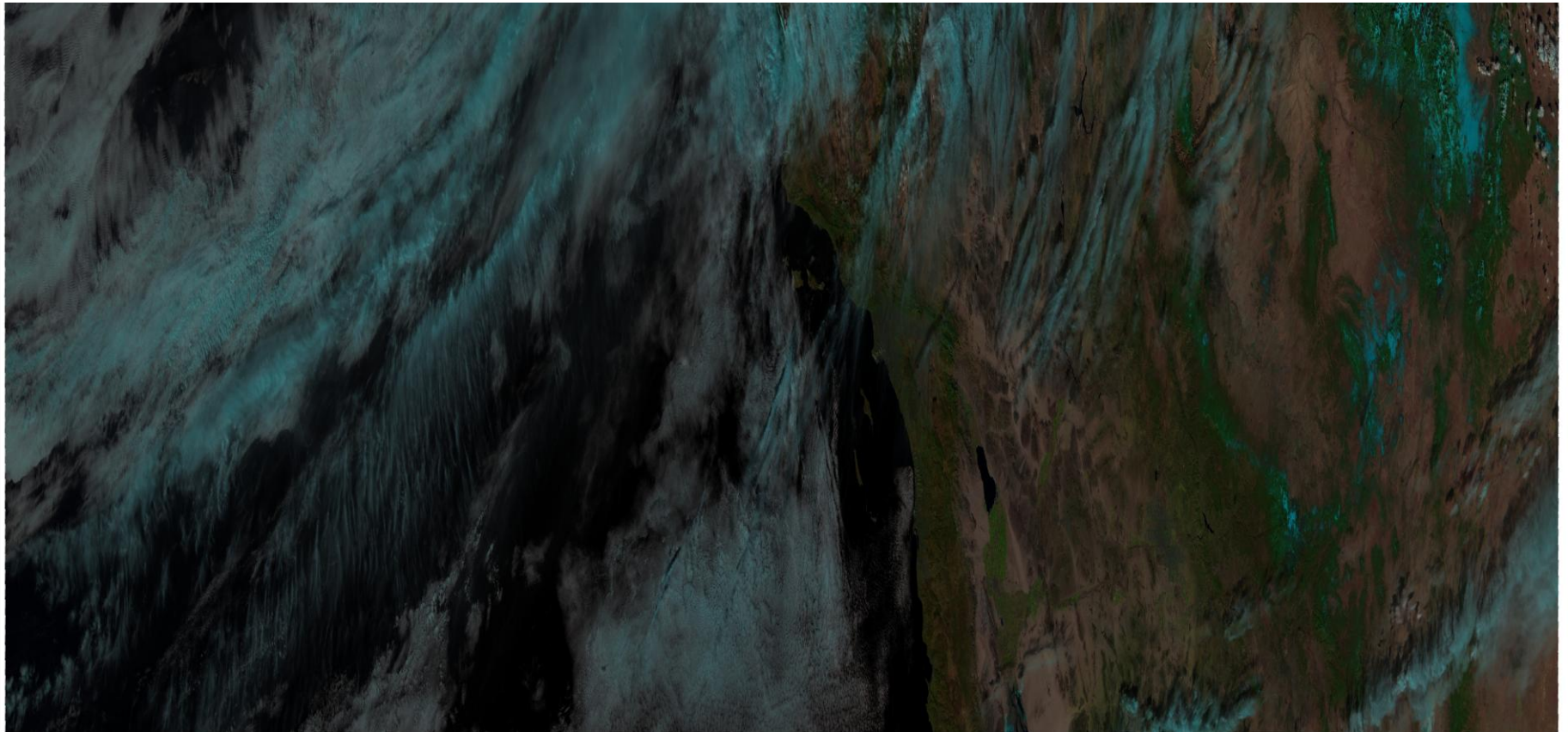


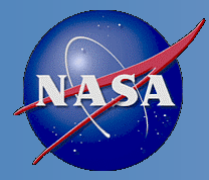


California Coast



- I3 (red), I2 (green), I1 (blue)

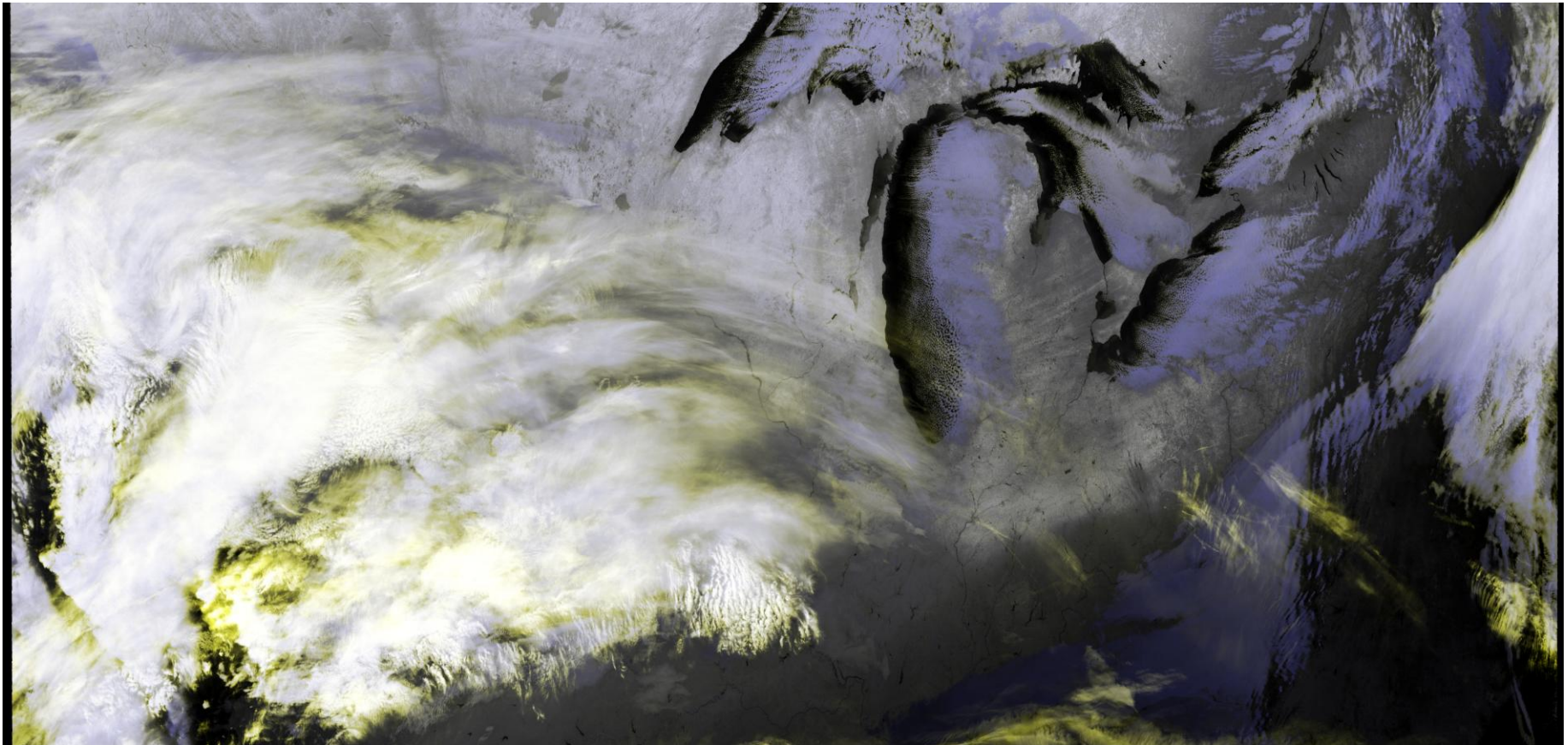




Great Lakes - Night



- 15 (red), 15 (green), 14 (blue)





Conclusion



- Non-NCC Imagery has met the beta stage based on the definitions and the evidence shown
 - It exceeds the definition of beta in some cases
- Remaining issues are known and at least a preliminary way ahead has been established
 - De-striping techniques are known
 - Striping not evident in most Imagery applications to date
- Although we are seeking the beta stage, note the only circumstance preventing operational use immediately is the lack of access to the Imagery in near real time by operational users