NOAA 20 Cal Val Updates

- N20 Launched: Nov. 18 2017
- First Light Images – Public Release
- N20 Cal Val Progress:
  - Key Performance Parameters (KPPs) - Provisional Maturity
  - Integrated Calibration and Validation System (ICVS) for N20 fully functional
  - All SDRs/KPPs Operational
  - CrIS and ATMS SDRs have been in use in NWS GFS model since May 2018
  - ATMS, VIIRS Validated Maturity in June 2018
  - Active Fire EDR declared Operational Jun 2018
NOAA-20 vs SNPP Snow Fraction

N20 vs SNPP snow fraction
FSC comparison statistics
for 0.02<FSC<0.98

Correlation: 0.94
RMSD: 0.07
Bias: 0.01

NOAA-20 vs SNPP FSC:
- Strong spatial correlation between FSC estimates
- Small RMSD (< 0.1) with negligible bias
• Two satellite combination doubles image coverage over Alaska

• Northern Alaska - around 18 passes per day.

• Southern Alaska - 3-4 early morning and 3-4 afternoon passes per day.

• Negligible difference between SNPP and NOAA-20

Courtesy: CarL Dierking (GINA) & Nate Eckstein (NwS)
VIIRS RGB composites: NOAA-20 and S-NPP

SnowCloud RGB product:
1.6μm (I3), 0.64μm (I1),
11.45μm (I5 BT)

NOAA-20 @ 2010z
S-NPP @ 2100z
NOAA-20 @ 2150z
S-NPP @ 2240z
NOAA-20 @ 2331z
Welcome!

STAR JPSS 2018 Annual Science Team Meeting
“The JPSS Applications”

The First Year of NOAA-20
7 Years of extremely successful S-NPP Operations
8 Years since JPSS Program began

NOAA Center for Weather and Climate Prediction

JUL 2017 – AUG 2018
283 Table Updates
55 Alg DAPs delivered
29 PCT/LUT DAPs delivered
17 Reviews
13 Waivers / Mitigations
9 IDPS Mx Review / Checkouts
NOAA 20
9 cal / val maturity reviews
SNPP
21 cal / val maturity reviews
Since SEP 2013
# of DRs submitted - 407
# of DRs closed - 559
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<th>EDR Leads</th>
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<td>ATMS</td>
<td>Mark Liu (Gov Lead)</td>
<td>Mark Liu (Gov Lead); Chris Grassotti (Tech Lead)</td>
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<td>Ninghai Sun (Tech Lead)</td>
<td>Ralph Ferraro (Validation - Hydrology)</td>
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<td>Huan Meng (Snowfall Rate)</td>
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<td>Flavio Iturbide-Sanchez (Gov Lead)</td>
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<td>Yong Chen (Tech Lead)</td>
<td>Antonia Gambacorta (Tech Lead)</td>
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<td>Trevor Beck (Gov Lead)</td>
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<td>Jeff Key (Polar Winds, Snow, Sea Ice, Ice Surface Temperature)</td>
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<td>Shobha Kondragunta, Istvan Laszlo (Aerosols)</td>
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<td>Ivan Csizsar (Active Fires, Surface Reflectance)</td>
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<td>Bob Yu (Land Surface Temperature, Surface Albedo, Vegetation Index, Green Vegetation Fraction)</td>
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<td>GCOM-W/AMSR-2</td>
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<td>Paul Chang(Lead)</td>
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<td>Ralph Ferraro (Project Scientist)</td>
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STAR Strategic Objectives

• Support NESDIS mission and Strategic Plan:
  – Ensure continuity and success of GOES R, JPSS, Metop, Jason
  – Build a comprehensive, reliable, science-based enterprise that is agile, diverse and cost-effective, in support of NOAA users
  – Top-Quality, Cutting-edge & User-valued products, from core and emerging Obs. Systems, to maintain leadership and stewardship.

• Trust and Confidence with stakeholders

• Prioritize activities to
  – Address user requirements,
  – Optimize applications’ effectiveness and
  – Maintain cutting-edge innovation to increase efficiency and effectiveness
Science and Models – Moving to increased earth system understanding, coupling, higher resolution (spatial, temporal)

Operational Forecasters – Need integrated information products tied to use

Big Earth Data - processing, distribution, archive, easy access, security – all challenges

Technologies – AI, Deep learning, IOT, Cloud, HPC advances

Business models – Commercial Data, Citizen Science

New technologies in satellites and launch
Global Constellation of Earth Observing Satellites

How do we best harness it?
Example: Higher information content

2312 UTC 17 May 2018 4 panel of 0.5 degree radar reflectivity and ProbSevere All Hazards (upper left), ProbHail (upper right), ProbTor (lower left), and ProbWind (lower right) contours for a complex of storms in western South Dakota. ProbSevere helped forecasters rank storms to interrogate in this busy environment.
Forecaster screenshot from blog post on 16 May 2018.
Top left: 2-min sum of Flash Extent Density.
Top right: 2-min Average flash area.
Bottom left: 2-min sum of Total Energy.
Bottom right: ENTLN pulses (blue), flashes (green) and CG lightning (red).

: 1617 UTC 03 May 2018 GOES-16 6.19um “upper-level water vapor” imagery with GFS 500mb heights (white contour) and winds (white wind barbs).
Meeting the Challenges:
Partnerships and Transformation

- Enhance partnership and coordination
  - Operational and spaceflight Agencies around the World
  - Multi-lateral bodies - CGMS, CEOS, GEO, WMO committees
  - US Agencies including NASA, NAVY, USAF, USGS
  - NOAA Line Offices

- Transform how we do Algorithms, Data & Information Products
  - Business model move from mission focus only to enterprise (Level 2 and above)
    - Source agnostic, fit for purpose, application targeted, use inspired
    - Enterprise algorithm and product portfolio
  - Technology move to higher information content
    - Integrated, Blended, Fused Data Products
    - Advanced assimilation, calibration / validation
  - Expand operational satellite remote sensing
    - Advance Satellite Oceanography and Hydrology
    - Enable Coupling of Oceans, Atmosphere, Land, Space to meet NOAA Skill Improvement Objectives

Increase Agility, Expand Performance, Increase Value
**STAR**

- Satellites are an enabling contribution to NOAA’s mission skill
- JPSS and GOES R missions are foundation for NOAA satellite observations
- STAR is central to NOAA’s plans and objectives