Improving User Utilization of JPSS products

Mitch Goldberg

Higher level products are often needed by users

- Blended product - data fusion – multiple satellites, insitu, etc
- Climatology for anomalies with respect to real-time products
  - Reprocessing - episodic – can be done at STAR, CI, etc
- Non – NOAA data for robustness and for added value - Sentinel 3 for ocean color and SST
- Develop enterprise algorithms and processing systems from multiple data streams
- Research testbed - to demonstrate concepts with user community before operational investments. However initial operational investments are needed to get the data
- Even if a blended product may be the end step, the initial step with a single data type. For example land data assimilation ideally would like a blend geo/leo albedo with high temporal refresh (to account for events such as burn scars) but it may be easier to begin with VIIRS especially if climatology is currently being used.
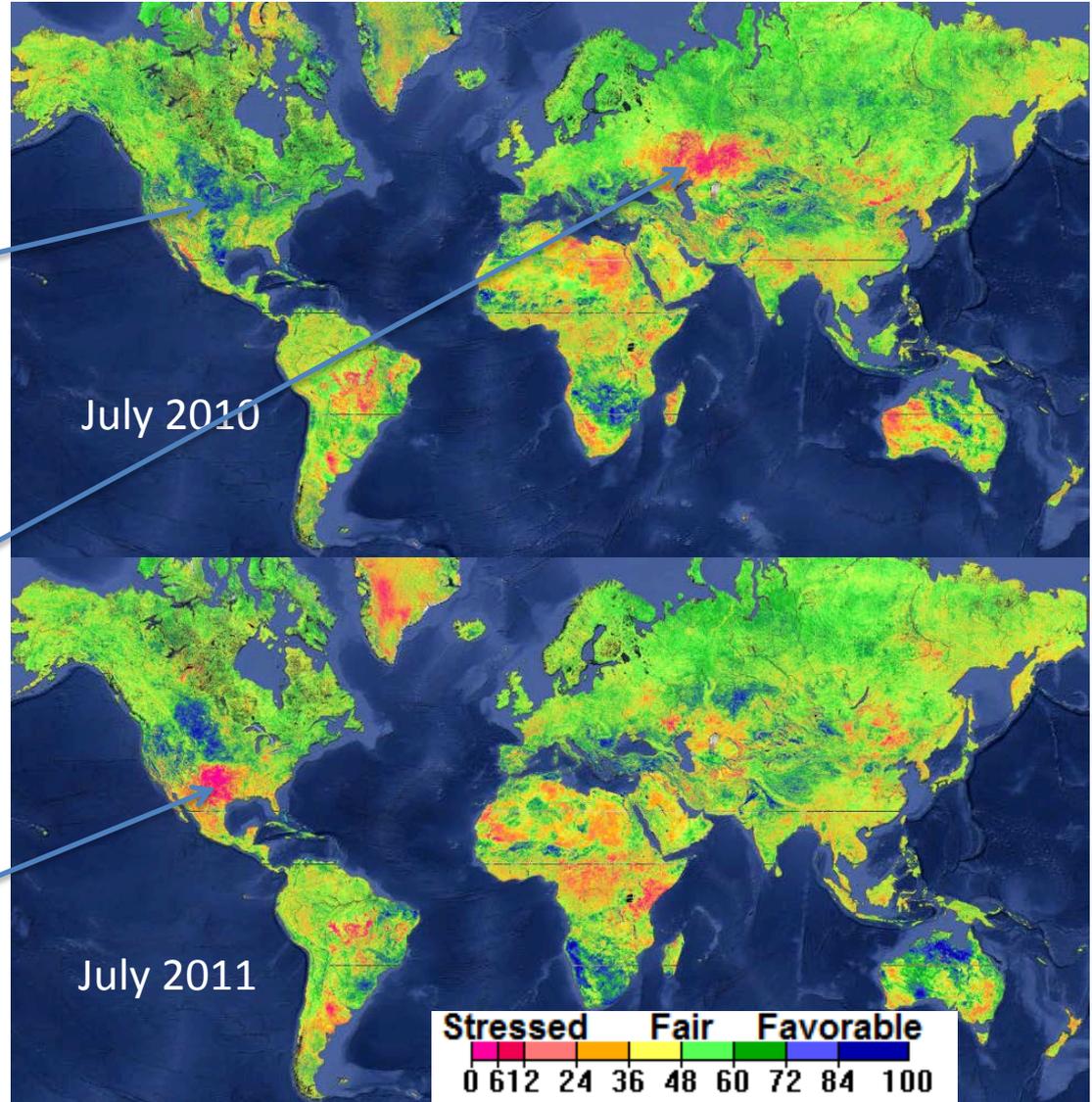
Vegetation Health from AVHRR

IMPACTS:

U.S. corn production in 2010
Hit a record high.
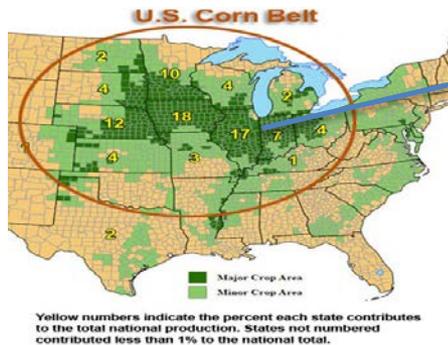
Wheat was down 27% in **Russia**, 32% in **Kazakhstan**, and 19% in the **Ukraine**.

Texas cotton production fell by more than half, from 7.84 million bales in 2010 to 3.5 million in 2011.

July 2010

July 2011

Stressed   Fair   Favorable
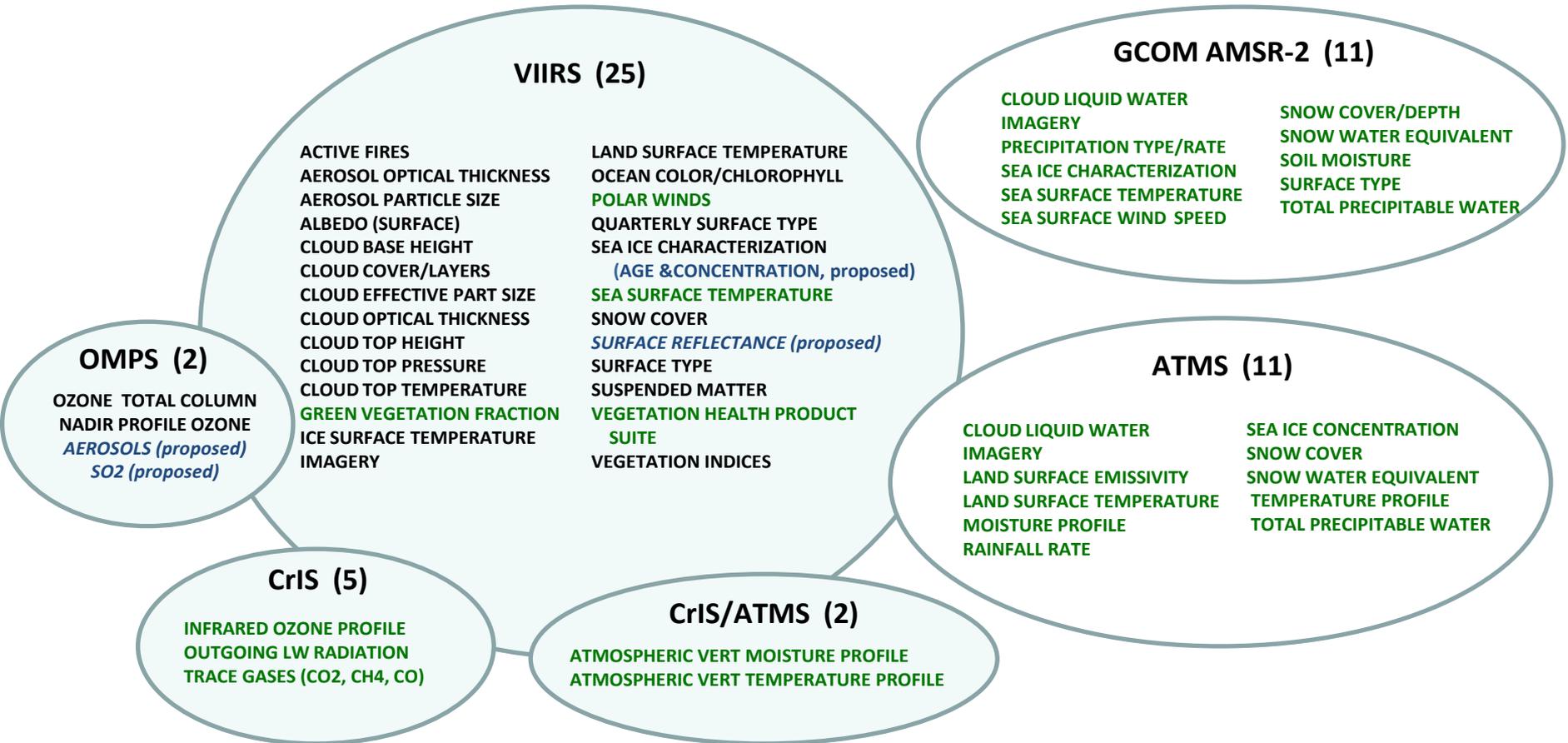0 6 12 24 36 48 60 72 84 100

Overarching goal

- We want SNPP/JPSS data , combined with other data if needed, to improve NOAA /Partner services.

- We need you the user of SNPP/JPSS data to demonstrate the value of SNPP/JPSS data and if there are issues we want to know and we want to help.

JPSS EDRs

VIIRS (25)

ACTIVE FIRES
AEROSOL OPTICAL THICKNESS
AEROSOL PARTICLE SIZE
ALBEDO (SURFACE)
CLOUD BASE HEIGHT
CLOUD COVER/LAYERS
CLOUD EFFECTIVE PART SIZE
CLOUD OPTICAL THICKNESS
CLOUD TOP HEIGHT
CLOUD TOP PRESSURE
CLOUD TOP TEMPERATURE
GREEN VEGETATION FRACTION
ICE SURFACE TEMPERATURE
IMAGERY

LAND SURFACE TEMPERATURE
OCEAN COLOR/CHLOROPHYLL
POLAR WINDS
QUARTERLY SURFACE TYPE
SEA ICE CHARACTERIZATION
    (AGE &CONCENTRATION, proposed)
SEA SURFACE TEMPERATURE
SNOW COVER
SURFACE REFLECTANCE (proposed)
SURFACE TYPE
SUSPENDED MATTER
VEGETATION HEALTH PRODUCT
    SUITE
VEGETATION INDICES

OMPS (2)

OZONE TOTAL COLUMN
NADIR PROFILE OZONE
AEROSOLS (proposed)
SO2 (proposed)

CrIS (5)

INFRARED OZONE PROFILE
OUTGOING LW RADIATION
TRACE GASES (CO2, CH4, CO)

CrIS/ATMS (2)

ATMOSPHERIC VERT MOISTURE PROFILE
ATMOSPHERIC VERT TEMPERATURE PROFILE

GCOM AMSR-2 (11)

CLOUD LIQUID WATER
IMAGERY
PRECIPITATION TYPE/RATE
SEA ICE CHARACTERIZATION
SEA SURFACE TEMPERATURE
SEA SURFACE WIND SPEED

SNOW COVER/DEPTH
SNOW WATER EQUIVALENT
SOIL MOISTURE
SURFACE TYPE
TOTAL PRECIPITABLE WATER

ATMS (11)

CLOUD LIQUID WATER
IMAGERY
LAND SURFACE EMISSIVITY
LAND SURFACE TEMPERATURE
MOISTURE PROFILE
RAINFALL RATE

SEA ICE CONCENTRATION
SNOW COVER
SNOW WATER EQUIVALENT
 TEMPERATURE PROFILE
 TOTAL PRECIPITABLE WATER

(GREEN - NOAA-LEGACY PRODUCTS)

Thread Analysis

- **All JPSS products have operational user requirements**

- **Thread analysis provides a description of the use of a given product and the weight of the thread (light, medium, heavy) provides insight on how robust the ground segment must be.**

- **Examples:**

  - 1) NCEP uses CrIS and ATMS SDRs in forecast models, low latency is needed, and its critical that the data flow is continuous, no interruptions -- THICK THREAD - the thread cannot break.

  - 2)   NCEP cloud modelers use VIIRS cloud products to validate their cloud models periodically. Latency is not a concern - THIN THREAD - if it breaks, you can fix it later.   However if a down stream product requires a thick thread and depends on cloud parameters then clouds become a defacto thick thread.

Basic questions

- Describe how SNPP/JPSS products provide continuity from legacy POES, METOP, DMSP, EOS?
  - Or is SNPP/JPSS a new capability for our application?
- What benefits or improvements do you expect from SNPP/JPSS?
  - Expected impact (low, medium, high) and why?
- Provide Details on:
  - when do you plan to use the SNPP/JPSS Product?
    - Is there an actionable plan?
    - Is it funded?
    - What is the priority?
    - Have you thought about how you will get the data and have you identified the issues with your operational use of SNPP/JPSS ?
  - Are the current legacy products well utilized?
  - Is the SNPP/JPSS product part of a blended product?
  - What additional work needs to be done to ensure that the SNPP/JPSS product is/will be well utilized?

Are enhancements needed for:

- Accessibility (data flow, latency, format)
- Product performance (accuracy, precision)
- User applications (modifications to modeling , decision tools, visualization to use the new products)

For breakout meetings

- Answer the questions on slides 3 and 4
- Report back at 1:30

Breakout groups

- Land data assimilation (Mike Ek, Ivan Csiszar) – Gary McWilliams
- Cryosphere (Sean Helfrich, Jeff Key) – Ray Godin
- Imagery /cloud applications (Michael Folmer, Don Hillger, Heidinger, Bill Ward) – Victoria Ozokwelu and Bill Sjoberg
- CrIS atmospheric chemistry (CO, CH4…) (Monika Kopacz, Chris Barnet) – Laura Ellen Dafoe
- CriS OLR (Pingping Xie, Mark Liu) – Murty Divakarla
- Microwave precipitation (Ralph Ferraro, Limin Zhao Dave Kitzmiller) – Lance Williams
- Ozone monitoring (Craig Long, Larry Flynn) - Wayne
- VIIRS aerosol assimilation (Shobha Kondragunta, Sarah Lu) Julie Price
- Ocean color (Menghua Wang, Rick Stumpf, Cara Wilson, EMC?) – Arron Layns
- SST (Alexander Ignatov, Ken Casey, Bob Grumbine) – John Furgerson