NOAA GPM Workshop Breakout:
Accelerating the Use of GPM Data

Thursday, 19 August 2010

3rd Floor Class Room

Partcipants

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Objectives & Outcomes

- Objectives
  - To identify data requirements, gaps and needs; mechanisms and processes; testing and evaluation; training; engage users
  - What are “our” barriers to using the data?
- Desired Outcomes
  - To enable NOAA (broadly) to use GPM data to conduct research and to provide improved weather and water products and services
  - A plan that identifies a NOAA process to enhance and accelerate the use of GPM data.

Key Questions

I. What Cal/Val (sensors/algorithms) is needed?
   - Build confidence in the data/information

II. What do we need to do to prepare NOAA's infrastructure
   - To handle the data?
   - E.g. Routing data
   - For research and development and application

III. What R&D is needed?
   - E.g. we need to estimate biases between GPM and existing satellite precip products

IV. What is the role of testbeds/proving grounds?
   - How do we optimally use and coordinate them?

V. How do we transition and deliver science products and services?

VI. How do we integrate GPM data with other "systems"?
   - E.g. CMORPH; MPE; Q2; etc.
   - Assimilation
   - How does GPM complement (fill gaps) other satellite data used by NOAA to produce precipitation products?
     - What is the optimal use of GPM data

VII. What are our funding & resource gaps?

VIII. What training is needed?
   - How to develop and deliver it?
   - Role of COMET?

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I. What Cal/Val (sensors/algorithms) is needed?
   1. Build confidence in the data/information
   2. NOAA-NASA Workshops (esp. user workshops)
   3. NOAA focused effort needed
   4. Form NOAA working groups

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II. What do we need to do to prepare NOAA's ***infrastructure***: to handle the data (e.g. Routing data); also for research and development and application
    1. Clear understanding data pathway (NASA->NOAA) and NOAA archival
        1. opportunity for users to comment
    2. Meta data is needed
        1. Algorithms/products need to state uncertainty, "limitations", references
    3. Is model physics optimal for assimilation GPM data?
    4. New NOAA-NASA infrastructure at the Joint Center – could be utilized/coord needed for GPM
    5. What Physics do we need (NWP) – e.g. Cloud microphysics
    6. Reduce latency over conus

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III. What R&D is needed?

1. we need to estimate biases between GPM and existing satellite precip products)
2. How do we use existing research efforts (e.g. NASA-CSU WRF effort); see testbed (#4)
3. Impact of GPM on reanalysis efforts –
    1. seasonal forecasts & climate apps
    2. regional variability (over differ. Spatial scales)
    3. errors
4. Best way to integrate the GPM data for a long-term precipitation record (consistency; scaling issues)
    1. Use for developing sparse network records (from gages)
5. Multi-sensor/multi platform products (QPE, now-casting, QPF)
6. Algorithms beyond precip (e.g. clouds, moisture)…
7. Assimilation (e.g. JCSDA)
8. R&D considering broad applications (e.g. aviation, high impact weather)
9. Tap academic and Cis (grants)

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IV. What is the role of testbeds/proving grounds? How do we optimally use and coordinate them?
    1. Rec: USWRP facilitates coordination between testbeds and GPM
        1. Strategy to approach and engage is needed
    2. Testbeds provide relevant feedback to GPM program
        1. Testbeds need to identify liaison to GPM program
    3. JCSDA and DTC can help with NWP and Assimilation
    4. HMT
    5. JHT
    6. HWT
    7. GOES-R Proving Ground
    8. CTB
    9. Aviation testbed; SPoRT; others?
    10. Context: climate, weather and water

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V. How do we transition and deliver science products and services?
   1. Need for efficient implementation with feedback from stakeholders/users
   2. Open and transparent data availability (due consideration of timeliness, etc.)
   3. Data availability in different display and dissemination systems (AWIPS, NAWIPS – lesson of GOES data in AWIPS)

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VI. How do we integrate GPM data with other "systems"?

1. Need long-term strategy to intetrate GPM into a (unified/cosolidated) suite of products
2. E.g. CMORPH; MPE; Q2; etc.
3. Assimilation
4. How does GPM complement (fill gaps) other satellite data used by NOAA to produce precipitation products?
    1. What is the optimal use of GPM data

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VII. What are our funding & resource gaps?

1. "Ubiquitous and massive" ;-)
2. Like the HFIP model: can GPM address a grand weather and water challenge questions
3. R. Ferarro: identify small things, low hanging fruit to invest in early
4. Current funding is spotty and limited (sat alg testbed; sat proving ground; Berchoff's proving ground – frcst office of the future)
5. NOAA needs to fund the 'whole enchilada'
    1. Need to support the end-to-end process: development, sensor, assimilation, QC, applications; cal/val etc. (like NASA); engages users & developers
    2. "base funding" inadequate (see spotty above)
    3. Bridge funding is virtually non-existent (like GOES-R risk reduction has)
    4. External support

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VIII. What training is needed?

1. YES!
2. How to develop and deliver it?
3. Role of COMET? Probably a good idea
4. GOES-R has a couple of good examples (JPSS adopting this model)
    1. Product developer develops training for and interacts directly with the users.
    2. Training modules available from the NOAA Learning Center
    3. Users ('applier') train the developer (feedback loop between developer and user; two way street; co-creation)
5. R2O ⇔ O2R (O2R2O2R…)