Synergy Between HMT & GPM

1st NOAA GPM User’s Workshop
College Park, MD • August 18-19, 2010

There will be a symbiotic relationship between GPM and the Hydrometeorological Testbed.

Box 4.2 in “NOAA’s Role in Space-Based Global Precipitation Estimation and Application” (2007)

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Synergy

I. USWRP Program
   • Fostering the development of testbeds
   • Coordinating testbed efforts (e.g. Annual testbed workshops)
   • Coordinating with NOAA and NASA to directly support PMM/GPM projects

II. NOAA’s Steering Group on Precipitation Measurement from Space
   • Monitor NOAA PI’s on PMM Science Team
   • “Working” the NOAA planning and budgeting process
   • Developing broad-based NOAA GPM users/stakeholders

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Synergy

I. Ground Validation
   • Focused on the validation of GPM algorithms

II. Observing Infrastructure
   • HMT-SE (2013)
   • Proposed: OLYMPEX (2014; w/HMT-NW)

III. Hydrologic Applications
   • Connecting research and operations (through national centers & field offices)
   • A “place” to develop and test ideas, products, tools and devices
HMT is about Hydrologic Forcings

QPF
QPE
Snow Info
Srfc. Processes & Hydro
Verification
DSTs
Obs Network

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http://hmt.noaa.gov/
Timeline & Overall Effort

Projected: based on the President’s Budget Request for FY2011
A National Testbed Strategy

- HMT West
- Northwest – Cool Season (2009+)
- HMT “Next” (TBD)
- Mini-HMTs – AZ (2008+); CO (2009+)
- HMT Southeast – All Season (2011 ramp to 2013+)
A National Testbed Strategy
Northwest – Cool
HMT West
Mobile Atmospheric River Monitoring System Deployment – 1 Nov/09

Westport

Seattle CSMA

Olympic Mts

Green River outlet

Precip Monitoring Howard Hanson Dam

Green River Basin

Portland CSMA

Mt. Rainier

RTX

ARO

Portland CSMA

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http://hmt.noaa.gov/
HMT-Southeast

- Guiding documents being developed
  - science plan
  - implementation plan
- New challenge for HMT – all season phenomena
  - *Warm season focus*, but…
  - Land-falling tropical (named) storms
  - Cool season phenomena
- Geographic scope:
  - Centered on the Piedmont in NC
    *(see map)*
- Priorities & Requirements
  - HMT is driven by NOAA priorities
  - Workshops identified ~47 requirements
  - GPM-2013/2014

- Nature & scope of observations
  - Profiling sites
  - Surface sites
  - Scanning radar
  - Mobile balloon systems
- Modeling
  - Regional
  - Large scale
  - Coupled

*Hurricane Floyd*
Domain

Comparable to HMT-W Regional-Scale Map
Comparable to HMT-W Basin-Scale Map

For Reference

American River Basin
~1830 mi²
North Fork: ~338 mi²
Cool Season (Nov-Mar)

Tar-Pamlico River Basin
~5375 mi²
All season

Neuse River Basin
~6225 mi²
All season
• **Physical validation**  
  - i.e. experimentation with physical assumptions in GPM algorithms

• **Precipitation estimation**  
  - ocean-coastal-mountain  
  - i.e. validation of its accuracy from satellite instruments mounted on aircraft

• **Hydrological applications**  
  - i.e. testing the efficacy of GPM to improve streamflow forecasting in complex terrain

• **November-December, 2014**

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**Contacts:**  
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Rob Cifelli
Thank You!

August 18−19, 2010

1ST NOAA GPM USER’S WORKSHOP

http://hmt.noaa.gov/

Hydrometeorology Testbed

Tools for Water in a Changing Climate

What’s New...

August 4, 2010
Hollings Scholar Completes Comparative Analysis of Soil Moisture in California’s American River Basin

July 15, 2010
Two Projects Extend HMT Findings on Atmospheric Rivers

Major Activity Areas

Decision Support
Hydrologic Applications
Quantitative Precipitation Estimates

Quantitative Precipitation Forecasting
Snow Information

HMT is a national research strategy of regional demonstration projects directed to improving the accuracy and lead time of extreme precipitation and flood forecasts and warnings, to better understand and manage water resources in a changing climate.

http://hmt.noaa.gov/
HMT Observing Systems

Scanning Radars
- SKYWATER
- HYDRO-X
- SMART-R

Profiling Radars
- 915 MHz
- 449 MHz
- S-band

GPS IWV & Sounding Systems

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HMT Observing Systems

Precipitation Gauges

Precipitation Disdrometers

Impact

Optical

Surface Meteorology & Snow Depth

Soil Moisture

Stream level

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A National Testbed Strategy

Northwest

- Cool

Season (2009+)

HMT West

Soil Moisture
Soil Temperature
Latent Heat Flux
Sensible Heat Flux
Heated Tipping Bucket
Snow Depth
Standard Surface Met

HMT Southeast


Upper Colorado

- All Season (2011 ramp to 2013+)

Mini-HMTs – AZ (2008+); CO (2009+)

Soil Temperature
Heated Tipping Bucket
Snow Depth
Surface Temp and RH

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