Water Resources Management Using NASA Earth Science Data

COURSE DATES: EVERY Tuesday, October 13, 20, 27; November 3, 10
TIME: 10 TO 11 AM AND 2 TO 3 PM Eastern US Time
(UTC-4 Hours for October and UTC-5 Hours for November)
Webinar Outline

**Week 1**

NASA Remote Sensing Data and Applications for Water Resources Management

**Week 2**

Precipitation and Soil Moisture Data

**Week 3**

Run off, Streamflow and Reservoir Level Data

**Week 4**

Evapotranspiration and Ground Water Data

**Week 5**

Land Data Assimilation for Water Budget Estimation and Case Studies with GIS Applications
Training Team

Instructors:

- Amita Mehta (ARSET): amita.v.mehta@nasa.gov
- Cynthia Schmidt (ARSET): cynthia.l.schmidt@nasa.gov
- Brock Blevins (ARSET): brockbl1@umbc.edu (Week 5)
- Kyle Matty (UMBC/ARSET): kmatty1@umbc.edu (GIS helper)

Guest Speakers:

- Eni Njoku (NASA-JPL): eni.g.njoku@jpl.nasa.gov (Week-2)
- Brian Thomas (NASA-JPL): Brian.F.Thomas@jpl.nasa.gov (Week-4)
- Sujay Kumar (NASA-GSFC): sujay.v.kumar@nasa.gov (Week-5)

Spanish Translation:

- David Barbato (ARSET): barbato1@umbc.edu

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- Ana Prados (ARSET) aprados@umbc.edu
Week-5 Agenda

- Overview of Land Data Assimilation Models
- GIS Demonstration: Import, Display, and Analyze Water Budget Components over California
- Training Summary and Important Announcements
Training Summary
Water Resources Data Applications

Freshwater components crucial for the following Activities

- **Water Allocation**
  - Water Budget including all the freshwater components

- **Agricultural and Irrigation Management**
  - Precipitation
  - Soil Moisture
  - Evapotranspiration

- **Flood/Drought Management**
  - Precipitation
  - Runoff/Streamflow
  - Soil Moisture
  - Evapotranspiration
  - Ground Water

- **Reservoir/Dam Management**
  - Reservoir Height
  - Precipitation
  - Runoff/Streamflow
This Training Covered the Following Satellites and Models for Monitoring Freshwater Components

- Rain Amount (TRMM, GPM)
- Snow Cover (Terra and Aqua MODIS)
- Soil Moisture (SMAP, NLDAS/GLDAS)
- Evapotranspiration (Terra and Aqua MODIS, Landsat, NLDAS/GLDAS)
- Runoff/Streamflow (TRMM, GPM, NLDAS/GLDAS)
- Lake Level Height (Jason-2)
## Multiple Web-based Tools for Water Resources Data Search, Analysis, and Download

<table>
<thead>
<tr>
<th>Data Portal/Tool</th>
<th>URL</th>
<th>Parameters</th>
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<tbody>
<tr>
<td>Mirador</td>
<td><a href="http://mirador.gsfc.nasa.gov">http://mirador.gsfc.nasa.gov</a></td>
<td>Precipitation (TRMM &amp; GPM), Soil Moisture, ET, Run Off (NLDAS &amp; GLDAS)</td>
</tr>
<tr>
<td>Giovanni-4 Geospatial Interactive Online Visualization And aAnalysis</td>
<td><a href="http://giovanni.gsfc.nasa.gov/giovanni">http://giovanni.gsfc.nasa.gov/giovanni</a></td>
<td>Precipitation (TRMM and GPM), Soil Moisture, ET, Run Off (NLSDAS and GLDAS)</td>
</tr>
<tr>
<td>GFMS Global Flood Monitoring System</td>
<td><a href="http://flood.umd.edu/">http://flood.umd.edu/</a></td>
<td>Streamflow, Run Off (TRMM &amp; Hydrology Model)</td>
</tr>
<tr>
<td>USDA Crop Explorer Reservoir Height</td>
<td><a href="http://www.pecad.fas.usda.gov/cropexplorer/global_reservoir">http://www.pecad.fas.usda.gov/cropexplorer/global_reservoir</a></td>
<td>Lake Level Height (Jason-2)</td>
</tr>
<tr>
<td>PPS/STORM</td>
<td><a href="https://storm.pps.eosdis.nasa.gov/storm">https://storm.pps.eosdis.nasa.gov/storm</a></td>
<td>Precipitation (TRMM &amp; GPM)</td>
</tr>
<tr>
<td>National Snow and Ice Data Center</td>
<td><a href="http://nsidc.org/">http://nsidc.org/</a></td>
<td>Snow Cover (MODIS), Soil Moisture (SMAP)</td>
</tr>
<tr>
<td>Reverb/ECHO</td>
<td><a href="http://reverb.echo.nasa.gov/reverb">http://reverb.echo.nasa.gov/reverb</a></td>
<td>Precipitation (TRMM &amp; GPM), Snow Cover (MODIS), Soil Moisture, ET, Run Off (NLDAS &amp; GLDAS)</td>
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<td>MODSCAG (MODIS Snow Covered-Area and Grain size)</td>
<td><a href="http://snow.jpl.nasa.gov/portal/browse/dataset/urn:snow:MODSCAG">http://snow.jpl.nasa.gov/portal/browse/dataset/urn:snow:MODSCAG</a></td>
<td>MODIS Snow Cover</td>
</tr>
<tr>
<td>SMAP ASF API</td>
<td><a href="https://portal.asf.alaska.edu/get-data/api">https://portal.asf.alaska.edu/get-data/api</a></td>
<td>Soil Moisture (SMAP) (L1 and L2)</td>
</tr>
<tr>
<td>SMAP Vertex</td>
<td><a href="https://vertex.daac.asf.alaska.edu">https://vertex.daac.asf.alaska.edu</a></td>
<td>Soil Moisture (SMAP) (L1 to L4)</td>
</tr>
<tr>
<td>Worldview</td>
<td><a href="https://worldview.earthdata.nasa.gov/">https://worldview.earthdata.nasa.gov/</a></td>
<td>MODIS Images, Selected Soil Moisture and Precipitation data from SMAP &amp; GPM</td>
</tr>
<tr>
<td>MODIS Global Evapotranspiration Project (MOD16)</td>
<td><a href="http://www.ntsg.umt.edu/project/mod16">http://www.ntsg.umt.edu/project/mod16</a></td>
<td>Evapotranspiration</td>
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Concluding Remarks

- There are multiple water resources data products available from NASA with different spatial and temporal resolutions and coverage, data selection depends on the applications they are used for.

- Regional validation is highly recommended to assess accuracy of the water resources data products.

- ARSET provides advanced on-line and in-person trainings for Air Quality, Land, Water Resources and Disasters Management. If you are interested, you can request a training for your organization or region at [http://arset.gsfc.nasa.gov/training](http://arset.gsfc.nasa.gov/training)
Important Information
Certificate of Completion (upon request):

You must have attended all 5 live sessions
You must submit the homework assignments

Certificate Request Form (Due December 15, 2015)
https://docs.google.com/forms/d/1CmeWM3PfFnoI9t41LAXGgNtqezxYnSkWm2pepCcAu7Q/viewform?usp=send_form
Homework Assignments

Week 1 Assignment (Due November 15, 2015)
https://docs.google.com/forms/d/1xDzBArgzUMsh3-JolBacWBw1I_QWZG6lrtKpkV-KDp0/viewform?usp=send_form

Week 5 Assignment (Due December 15, 2015)
https://docs.google.com/forms/d/1wpvQ9LyCjRxC7TMY_KPmo_BJ-0cjfwX62WYPHaOHixA/viewform?usp=send_form
If requested, the Certificate of Completion will be emailed after January 15th 2016

For further information contact: Marines Martins
Email: marines.martins@ssaihq.com
Course Survey

To help us evaluate our trainings and determine future remote sensing training topics, please take a couple minutes now to fill out this survey by clicking the link in the Q & A box.

We will pause to allow you to begin the survey.
Thank You!

Amita Mehta
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