

**GHRC UWG Report from the Onsite Meeting September 26-27, 2017**  
*National Space Science & Technology Center,*  
*University of Alabama – Huntsville*  
*Huntsville, Alabama*

## **Executive Summary**

A one and one-half (1.5) day meeting was held to review the progress towards meeting defined goals from the previous year's GHRC Users Working Group (UWG) meeting. As with previous UWG meetings, the GHRC staff put together a well-organized meeting, and the UWG found that the content presented directly addressed most of the recommendations made by the UWG in 2016. GHRC staff also made it very clear as to their FY18 goals. Eight recommendations were provided for by the 2016 UWG report, and now only two of those recommendations (in addition to four adjusted to "Suggestions") remain in this report. Most of the UWG 2016 recommendations have been successfully closed, and all were at least addressed in part. Four recommendations and four suggestions have been provided by the UWG to the GHRC, as a result of this year's meeting.

The main UWG recommendation that came out of this meeting is the need for NASA Headquarters (HQ), specifically the Earth Science Division's Weather Focus Area and NASA's Applied Science Division, and the GHRC UWG to work closely with GHRC staff towards developing the GHRC DAAC 5- to 10-year plan, and to fill critical gaps in their data holdings. While it is clear that the GHRC, as recommended by the 2016 UWG, has improved their lightning data holdings, clear gaps still exist within the hurricane and precipitation science components of the GHRC. With the help of HQ and UWG members, the UWG recommends that GHRC focus on identifying other precipitation validation datasets (including international partners) to support validation of NASA-sponsored precipitation products. The recent attention on high-impact, extreme events (Hurricanes Harvey, Irma, and Maria) also highlight the need for the GHRC to become an event-driven repository for major hydrometeorological events (i.e., offer a bundled set of datasets that enable rapid response-type research of high impact events).

Four new members of the UWG are needed for next year's meeting to replace retiring members (Kummerow [Passive Microwave Science], Bruning [Lightning], Wolff and Petersen [Precipitation Science]). Michael Peterson [UM/ESSIC] will be in the incoming Chair, and Pierre Kirstetter [NOAA/NSSL] will be the incoming Co-chair.

## 1. Meeting Report

A one and one-half (1.5) day meeting was held to review the progress towards meeting defined goals from the previous year's UWG meeting. 13 UWG members attended (4 were unable to attend). The expertise, names and e-mail address of the 2017 UWG members are provided for in Table 1 (those that were not able to attend are denoted in italics).

Expertise	Name	Email	Affiliation
Applications	Dave Jones	dave@stormcenter.com	StormCenter Communications, Inc.
	Eric Anderson	eric.anderson@nasa.gov	NASA MSFC (SERVIR)
Global Precipitation Measurement	David Wolff**	david.b.wolff@nasa.gov	NASA GSFC
	Pierre Kirstetter****	pierre.kirstetter@noaa.gov	NOAA
	Ana Barros	baros@duke.edu	Duke University
	Dan Cecil	daniel.j.cecil@nasa.gov	NASA MSFC
	Walt Petersen	walt.petersen@nasa.gov	NASA MSFC
Hurricanes	Jonathan Zawislak*	jzawisla@fiu.edu	U. Miami/CIMAS, NOAA/AOML/HRD, FIU
	<i>Haiyan Jiang</i>	hajian@fiu.edu	Florida International University
	<i>Jason Dunion</i>	jason.dunion@noaa.gov	Univ. of Miami/CIMAS, NOAA/AOML/HRD
Lightning	Stephanie Stevenson	sstepenson@albany.edu	SUNY Albany
	<i>Eric Bruning</i>	eric.bruning@ttu.edu	Texas Tech University
Passive Microwave	Michael Peterson***	michaeljp24@gmail.com	University of Maryland / ESSIC
	<i>Steve Goodman</i>	steven.j.goodman@noaa.gov	NOAA
Severe Weather	Joe Munchak	s.j.munchak@nasa.gov	NASA GSFC
	Christian Kummerow	kummerow@atmos.colostate.edu	Colorado State University
	Emily Berndt	emily.b.berndt@nasa.gov	NASA MSFC (SPoRT)

**Table 1: List of 2017 UWG members, their area of expertise, email, and affiliation: Jonathan Zawislak\* (U. Miami/CIMAS, NOAA/AOML/Hurricane Research Division, FIU) was the Chair; Dave Wolff\*\* (NASA/GSFC) was the Co-Chair. Michael Peterson\*\*\* (U. Maryland/ESSIC) will be the incoming Chair, and Pierre Kirstetter\*\*\*\* (NOAA/NSSL) will be the incoming Co-Chair.**

As in previous years, the first day consisted of several presentations discussing progress over the past year, effort made by the GHRC to address the recommendations provided by the UWG in their 2016 report, as well as plans for FY 2018. The second day consisted of a closed-door session (attended only by UWG members) during which the UWG evaluated GHRC progress on the 2016 recommendations, and decided if any new recommendations and suggests were to be made in this report.

On the first day, GHRC staff provided presentations that highlighted accomplishments made over the past year, since the previous UWG meeting. Highlights include: the development of a data publications portal (DAPPeR) for potential data providers to request data archival at GHRC; advances in their lightning data holdings (this includes the addition of LIS data, as recommended in 2016); addition of micro-articles (for describing instruments and summarizing publications using GHRC datasets) and data recipes (tutorials on data visualization and data format conversion for potential users of GHRC data); and, knowledge of basic user metrics (e.g., number of visitors, time spent viewing webpages, micro articles) and presentation of results from user feedback (Kayako) and surveys. There was also a separate breakout discussion period organized by GHRC in which the UWG split into two groups to discuss topics on which GHRC sought feedback. One

group discussed building user relationships and the GHRC user base, as well as organization of field campaign data from a usability perspective. The second group discussed the implications of moving GHRC data to the cloud, as well as metadata quality and discovery. Leaders from the UWG in each of those groups presented to the rest of the UWG and GHRC at the end of that discussion.

## 2. Disposition of Previous Recommendations

Recommendation	Description	Disposition
1	GHRC should continue to hold AMS and AGU town halls, develop and distribute information brochures that describe their capabilities to potential data providers (e.g. field campaign PIs) and data users, utilize the NASA Hyperwall, and pursue other opportunities (BAMS) to enhance GHRC visibility.	<b>Closed</b> <i>continue with Suggestion #1</i>
2a	As part of their 5–10 year plan, the UWG recommends that GHRC should become the data subject matter expert on those categories – either through datasets that they provide in house or links to outside data – and become known within the community as the go-to place for datasets related to these subjects.	<b>Merged to New Recommendation #1</b>
2b	Carry out dataset holdings analysis and create a reporting structure that categorizes what is available at GHRC and possibly elsewhere. This compilation should enable prioritization of efforts that will fill the most significant data voids, where these efforts align with the GHRC mission.	<b>Merged to New Recommendation #1</b>
2c	Update public dataset information pages to include data holding analysis results that might be helpful to the user community. Determine a set of useful user metrics, with feedback obtained from the UWG, which can be routinely updated and made available to the NASA sponsor, UWG and broader community. Analysis of these metrics should inform the five- to 10-year plan.	<b>Closed</b> <i>continue with Suggestion #2</i>
3	Create a data lifecycle process for GHRC that can be applied to current and future holdings. Ask NSIDC and PODAAC for their policies and assess utility within GHRC. Publish the data lifecycle on the website, along with a contact, to provide clarity on the process for investigators interested in providing data.	<b>Closed</b> <i>continue with Suggestion #3</i>
4	Determine LIS technical specifications for data products, latency, formats, etc. Publicize this future data source at appropriate venues.	<b>Closed</b>
5	Develop a single tool that can provide broad use to multiple field campaigns and data types.	<b>Closed</b> <i>continue with Suggestion #4</i>
6	Create data bundles for scientists who want to study processes. Demonstrate such bundling capabilities for review by the UWG.	<b>Closed</b>
7	Discuss the possibility of getting land data from SWOT mission at GHRC to complement hazardous weather related to floods caused by excess precipitation. This would complement other flood and extreme event (including precipitation) data sets.	<b>Open New Recommendation #4</b>
8	GHRC should include GOES GLM data in its portfolio of accessible data whether stored in house or as a virtual data set. Functionality should be seamless with other holdings.	<b>Closed</b>

Table 2 provides a list of the 2016 UWG recommendations as well as their disposition following the 2017 UWG meeting. Each of these recommendations were either closed, open (with a new recommendation number), merged into a new recommendation, or continued as a suggestion if sufficient progress was noted. Of the eight recommendations from 2016, only

two recommendations remain, with four changed to suggestions to continue to guide GHRC in successfully accomplishing previous recommendations, showing the continued progress the GHRC management and staff have made since the 2016 UWG meeting.

### **3. 2017 UWG Recommendations**

**Recommendation #1 (previously Recommendation #2a/b):** NASA Headquarters, the Weather Focus Area of the Earth Sciences Division, Applied Sciences Division, and the GHRC UWG should work with GHRC to provide strategic advice and support on creating a 5 and 10 year plan that improves the link between the mission of the GHRC, its data holdings, and potential applications. This should also involve more engagement between the GHRC and UWG members throughout the year (e.g., webinars with focus area representatives on the UWG).

This recommendation recognizes the key role that NASA HQ plays in helping the GHRC advance its user base and data holdings. The UWG envisions a more active engagement of HQ, specifically the Weather Focus Area of the Earth Sciences Division and the Applied Sciences Division, and the UWG with GHRC staff. This collaboration will subsequently allow the GHRC to strategically fill gaps in data holdings and continue to support its core mission and 5 to 10 year plan. The most notable gaps in the GHRC data holdings are within the precipitation (Recommendation #2 directly addresses precipitation science) and hurricane science. The UWG recognizes that members of the UWG, as well as scientists within the Earth Science Division and Applied Sciences Division, are likely better aware of datasets that could fill gaps within the GHRC data holdings. This would include international partners that could either have data hosted at GHRC, or at the minimum linked for GHRC users. The UWG also recognizes that unique niche of GHRC in applications, specifically their ability to build datasets around notable, high-impact weather events globally.

**Recommendation #2:** Data sets related to the validation of NASA-sponsored precipitation products are critical to both assessing and improving satellite products. The UWG should work with the GHRC to identify critical missing data elements in their holdings as well as data sets that would both help in validation efforts and be of great use to the end user community.

**Recommendation #3:** GHRC should pursue/develop a plan to become an event-driven repository for major hydrometeorological events (i.e., Hurricane Harvey) to provide a bundled set of datasets that enable researchers to analyze the event. GHRC should also pursue opportunities to submit supplemental funding requests (e.g., “Harvey”) through NASA to identify and collect relevant datasets.

GHRC is well positioned to become a leader in providing event-driven data tied to hazardous weather, which is the focus of their mission statement. Recent high-impact hazardous weather

events, such as Hurricanes Harvey, Irma, and Maria, are examples of prime opportunities that exist for the GHRC to house data relevant to such events. The UWG recommends that the GHRC develop a plan to subset and bundle data specifically for such events, with input from the UWG on what events are significant within the user community and relevant to the subject-matter experts championed by the GHRC. This pursuit would also act to increase the visibility of the GHRC, as many users actively seek such data following such high-impact hazardous weather events.

**Recommendation #4 (previously Recommendation #7): Determine the possibility of getting land data from SWOT mission at the GHRC to complement hazardous weather related to floods caused by excess precipitation. This would complement other flood and extreme event (including precipitation) data sets.**

GHRC staff will be meeting with PO.DAAC's Surface Water and Ocean Topography (SWOT) mission team to discuss how some of the SWOT products might fit at the GHRC DAAC. An update from this meeting should be provided during the 2018 UWG meeting.

#### **4. Closed 2016 UWG Recommendations with continuing Suggestions**

**Suggestion #1 (previously Recommendation #1): Extend outreach efforts beyond meteorological meetings. Carefully consider, survey, select and focus on topical professional meetings. Focus on more than just presentations and consider exhibitor booths.**

In the past year, GHRC staff have attended the 2016 AGU Fall Meeting, AMS Annual Meeting, and relevant science team meetings (TROPICS, CUASHI Hydroinformatics). They have also begun collaborations with MSFC Earth Science Office (with the SPoRT and DEVELOP [SERVIR] Programs). It's clear to the UWG that the GHRC is actively pursuing opportunities to expand their users through conference and science meeting attendance, and as such, 2016 Recommendation #1 is closed.

The UWG suggests that they become integrated with current and prospective communities of interest by seeking out other topical professional meetings as well, such as the American Society of Civil Engineers and meetings within the reinsurance industry. They should consider hosting an exhibitor booth at these meetings to increase exposure through actual demonstrations of their holdings and capabilities. Additionally, it may be beneficial to reach out to relevant undergraduate and graduate programs since the Kayako metrics indicated a large percentage of student users within academia.

**Suggestion #2 (previously Recommendation #2c): Explore adding advanced, impact-based user metrics that are more informative as to the end-to-end user activity.**

While GHRC indicated that they are keeping track of basic metrics (website visitations, data downloads, loiter time on micro articles), the UWG is concerned that these metrics could be misleading. Ideally, metrics should be more impact-based, such as an ability for tools to track the end-to-end usage by individual users (i.e., if a visitor views a micro-article or data bundle, do they download data, and subsequently publish a paper?). As the UWG does not know how these impact-based metrics are developed, we merely suggest that the GHRC pursue (perhaps in collaboration with other DAACs) how user metrics can be advanced to track not only what content/data users are looking at, but also what they subsequently did with the information. The ESDIS representatives suggested, and the UWG concurs, that GHRC should take better advantage of the more powerful Google Analytics for tracking and metrics.

**Suggestion #3 (previously Recommendation #3): Provide an update at the 2018 UWG meeting on the progress and usage of DAPPeR.**

**Suggestion #4 (previously Recommendation #5): Continue to provide updates on VISAGE and the development of FCX tools.**

## **5. Closed 2016 UWG Recommendations**

***Previous Recommendation #4: Determine LIS technical specifications for data products, latency, formats, etc. Publicize this future data source at appropriate venues.***

Excellent progress has been made on the release of the ISS-LIS beta versions (soft publication). “Splashing” of new data releases is already in the pipeline and when research-quality LIS dataset is ready this fall, the GHRC seems well prepared to affect the data release (including the public announcement).

***Previous Recommendation #6: Create data bundles for scientists who want to study processes. Demonstrate such bundling capabilities for review by the UWG.***

GHRC has developed a Lightning Virtual Collection (with subcategories of Geographic Trends, Climatology, Physical Processes, Science Application Areas, and Detection and Monitoring) to help with data discovery.

***Previous Recommendation #8: GHRC should include GOES GLM data in its portfolio of accessible data whether stored in house or as a virtual data set. Functionality should be seamless with other holdings.***

Currently a link to the NOAA CLASS system for GLM datasets is provided. The CLASS system is where NOAA hosts the GLM datastream for public access (not publicly released at present). The GHRC is building an archive for GLM Cal/Val data sets and activities and future development of datasets (e.g., ISS-LIS and GLM coincidence datasets) is possible.

## **6. New Member Suggestions for 2018 UWG**

The following is a list of suggested new members for the GHRC UWG. There are four current members leaving: Christian Kummerow, Walt Petersen, David Wolff, and Eric Bruning.

### *Applications / Hydrometeorology*

Konstantine Georgakakos ([KGeorgakakos@HRCwater.org](mailto:KGeorgakakos@HRCwater.org)) [Hydrologic Research Center]  
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### *Passive Microwave / Precipitation Science*

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### *Hurricanes / Passive Microwave*

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