

RAPID Resource Applications

In July 2025 Central Texas Floods

Jiang Zheng | PhD Candidate in Urban & Regional Sciences | Texas A&M University
Galen Newman, Shannon Van Zandt, Michelle Meyer, Michael McNair | Texas A&M University

June 17, 2026 | The 51st Natural Hazard Workshop



TEXAS A&M UNIVERSITY
SUPERFUND
RESEARCH CENTER



TEXAS A&M UNIVERSITY
Hazard Reduction
& Recovery Center



NSF NHERI
RAPID



National
Science
Foundation

Deadliest Inland Flooding In The US Since 1976

2025 Central Texas Floods

Confirmed deaths:

136 people

Remained missing:

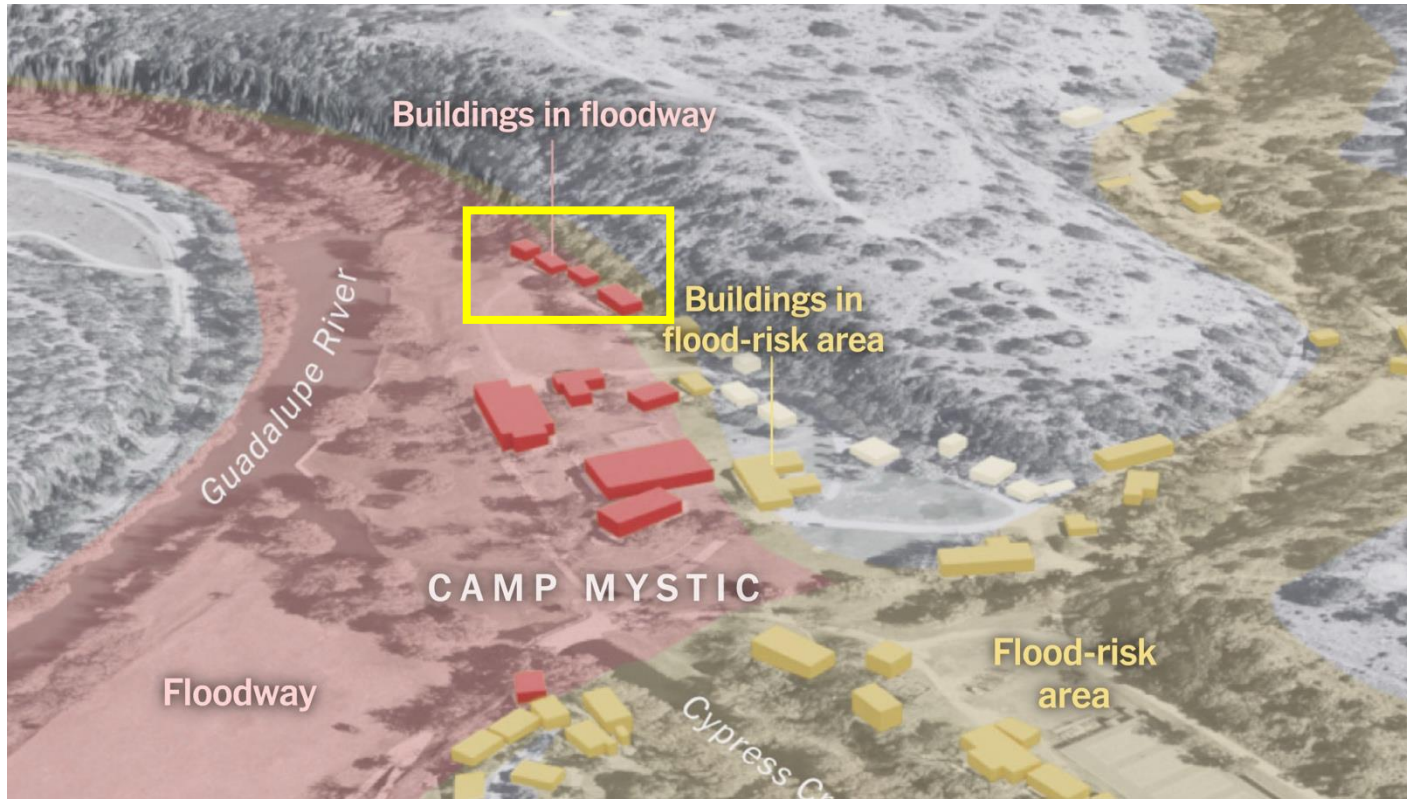
3 people



©The Heaven's 27 Foundation

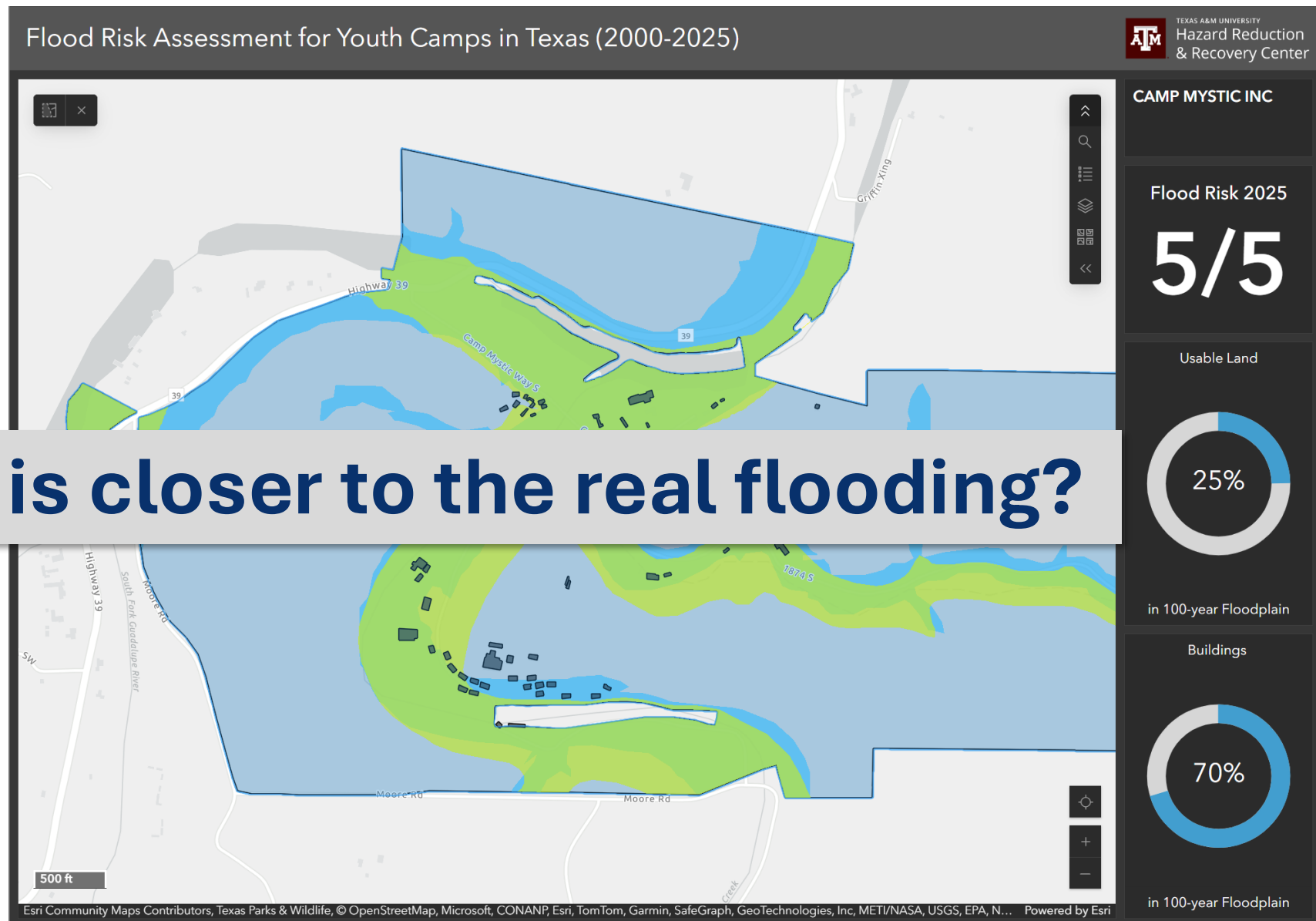
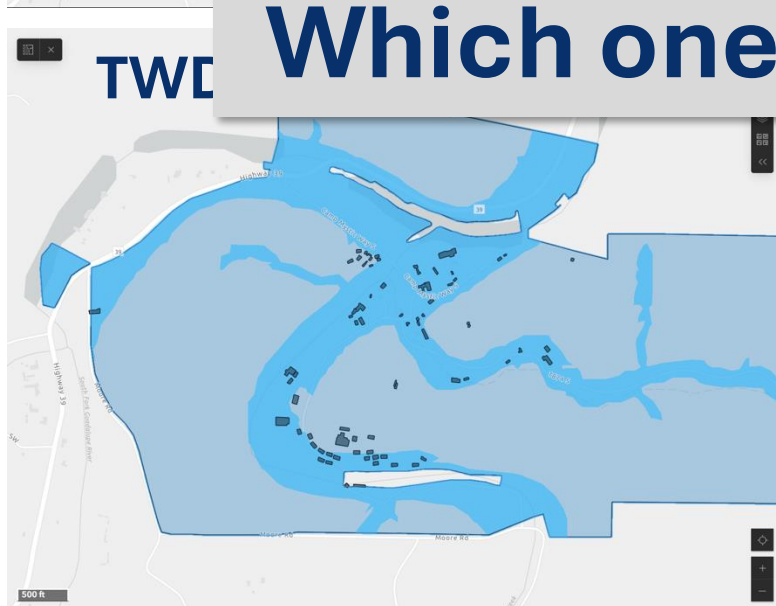
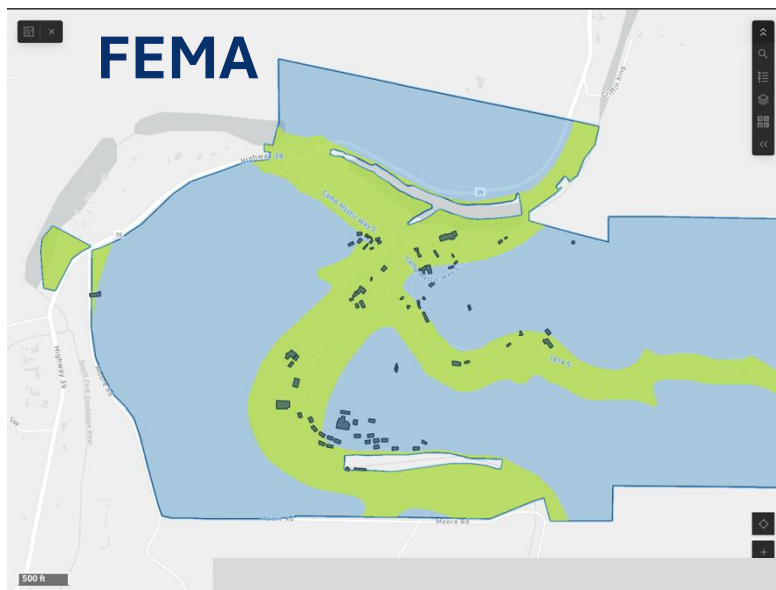
28 Deaths + 1 Still Missing
In One Single Youth Camp

Camp Buildings In Floodplains



©The New York Times

**Why built in
floodplain?**



Happening Now

1. First responders have first priority
2. **Hazard traces** are being removed
3. **Restricted site access** for researchers

However,

1. Drones can offer site access in complicated site conditions
2. Texas laws provide research exempt

INDEPENDENCE DAY FLOODS

Judge halts renovations at Camp Mystic Guadalupe site as flood victim's family fights to prevent reopening

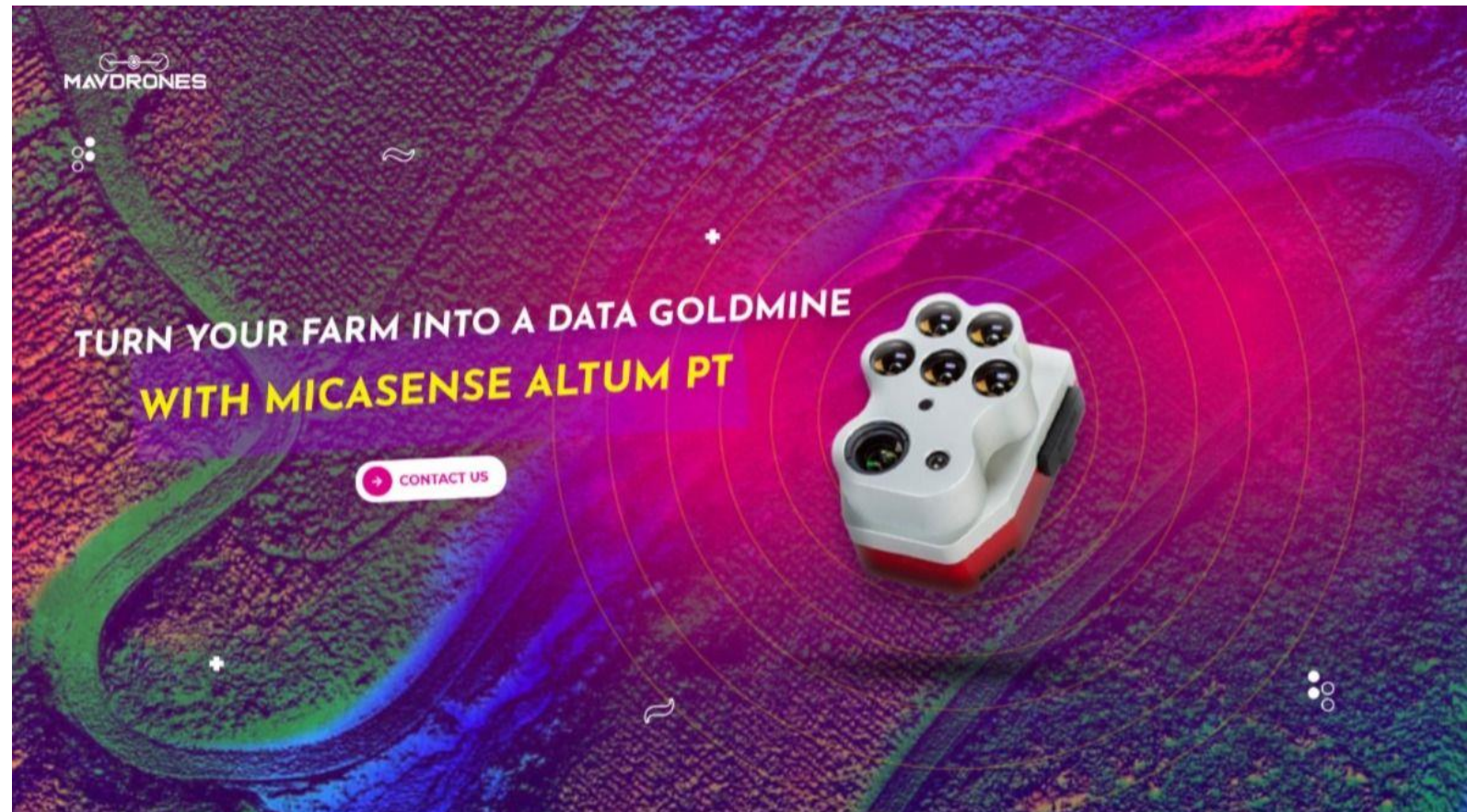
by: [Avery Travis](#)

Posted: Mar 5, 2026 / 08:04 PM CST

Updated: Mar 5, 2026 / 10:27 PM CST

“High-water marks that were previously visible in the Rec Hall building are no longer present,” the filing from the Steward family attorneys reads. “Several cabins on the Camp Mystic property contain new framing materials and structural components. In the cabin where Cile was housed, the mattresses, bunk beds, and bed frames have been removed, and the interior has been cleaned.”

Multispectral and Thermal Camera



Reached Out For Help

Inquiry About Micasense Altum Camera

External

Inbox x



Jiang Zheng <jiangzla@tamu.edu>

to unwrapid ▾

Wed, Sep 3, 10:12 AM



Hi RAPID Team,

My name is Jiang Zheng and I'm from Texas A&M University. I'm working on a project funded by Natural Hazard Workshop and NSF. We're doing flood risk assessment for youth camps in Texas in response to the tragic flooding event happened in July. Our plan is to have a site visit and collect drone footage data. We have Prof. Dingding Ren who participated your workshop this summer and he told us the Micasense Altum multispectral and thermal camera will be a great fit for our research. We currently have Yuneec H520 Drone. But we're not sure whether we need any specific adapter for using this camera. Could you introduce more about this camera and its compatible drones with RTK-GPS?

Also, since we're in Texas, could you introduce a bit more about the shipping time and how many days we should rent for this camera if we're planning for a weekend visit?

Let me know if there is other tool you recommend you think will be a good fit for this research.

Best,

Jiang Zheng

Teaching Assistant | Ph.D. Student in Urban & Regional Sciences

Department of Landscape Architecture and Urban Planning

Texas A&M University

T: 9792180868

Sep 3
61 Days
Since Jul 4

Replied In 47 Mins



UW NHERI RAPID Facility <uwrappid@uw.edu>
to Jeff, Joseph, me ▾

Wed, Sep 3, 10:59 AM ☆ ↶ ⋮

This Message Is From an External Sender
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Hi Jiang,

Thank you for reaching out and sharing details about your project. We would love to assist with this effort, and it's great to hear that Professor Ren connected you with us after attending our workshop this summer. Our team has two models of the Micasense Altum multispectral camera and a couple of configurations for flying them with our own drones.

The next step will be to set up a Zoom meeting so we can walk through your project needs, discuss the configurations available, and provide guidance on timelines for use of the instrument and associated use fees. Could you let us know your availability over the coming week so we can schedule a call?

Looking forward to the conversation.

Best regards,
Jaqueline

JAQUELINE ZDEBSKI
Exposure & Health Team Lead
NSF NHERI RAPID Experimental Facility

University of Washington
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Gardner, M., Nichols, E., Stark, N., Lemnitzer, A., & Frost, D. (2023).
*Multispectral Imaging for Identification of High-Water Marks in
Postdisaster Flood Reconnaissance.*
<https://doi.org/10.1061/NHREFO.NHENG-1735>



Sep 3
61 Days
Since Jul 4

Meet In 27 Hours



UW NHERI RAPID Facility uwrapid@uw.edu via tamucs.onmicrosoft.com
to Michael, Jiang, Jeff ▾

Wed, Sep 3, 2:08 PM ☆ ↩ ⋮

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Hi Jiang and Ernie,

Thank you both for sharing your availability. Would tomorrow, Thursday at 3:00 PM Central / 1:00 PM Pacific, work for you to meet over Zoom? If that time is good, I'll send over the link.

Looking forward to our conversation.

Best regards,
Jaqueline

JAQUELINE ZDEBSKI
Exposure & Health Team Lead
NSF NHERI RAPID Experimental Facility
University of Washington
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3760 E Stevens Way NE, Seattle, WA 98195-2700
206.616.3318 / cell 360.830.6810
uwrapid@uw.edu / jaqz@uw.edu



Sep 4
62 Days
Since Jul 4

Started Flight Request In 2 days

TAMU Flight Request Application Inbox x



Jiang Zheng <jiangzla@tamu.edu>

to Michael ▾

Fri, Sep 5, 10:17 AM



Hi Prof. McNair,

I just visited Office of Environmental Health and Safety(Risk Management). Bradley Urbanczyk is the person who in charge of this. I talked to him about out request. At first he said A&M cannot use DJI for any research project. After I explaining the camera compatibility issue and NSF ownership over the drones and cameras, he said there might be an exempt. I also mentioned about the urgency of collecting the perishable data and NSF's device availability. He said if we could submit today or early Monday, they will try their best to determine whether the next weekend flight can happen. But we still have to apply for a [flight request](#).

The application asked form quite a lot details, including your UAS rPIC Pilot Certification Number, drone's tail number, location map of the site (with 4 corners' latitude).

I will send an email to RAPID team right now for further information of their devices. And also look for device availability for the other weekend if next weekend is not possible.

Best,

Jiang Zheng

Teaching Assistant | Ph.D. Student in Urban & Regional Sciences

Department of Landscape Architecture and Urban Planning

Texas A&M University

T: 9792180868

**Aim For
Sep 21**

**Sep 5
63 Days
Since Jul 4**

However ...



EHS-UAS <ehs-uas@tamu.edu>

to Jiang, Galen, Michael, live-replyto-10955.b0409ff0-fcee-412c-a492-1c3ad67298bc@email.prod.us.origamirisk.com ▼

Howdy,

Thank you for all the information.

The flight application has been sent to the SA Committee. We will keep you posted!

Respectfully,

Wed, Sep 10, 2:04 PM



UPDATE - Request for expedited Review: Drone External Inbox x



EHS-UAS <ehs-uas@tamu.edu>

to Jiang, Galen, Michael, live-replyto-10955.b0409ff0-fcee-412c-a492-1c3ad67298bc@email.prod.us.origamirisk.com ▼

Forgot to mention, we have begun the process for requesting a campus exemption, which will require approval from the President. Once received, we will let you all know. Appreciate your patience during this time!

Respectfully,

Wed, Sep 10, 2:17 PM



**Aim For
Sep 21**

**Sep 10
68 Days
Since Jul 4**

However ...



EHS-UAS <ehs-uas@tamu.edu>

to Jiang, Galen, Michael, live-replyto-10955.b0409ff0-fcee-412c-a492-1c3ad67298bc@email.prod.us.origamirisk.com ▼

Howdy,

The memo has been sent to the President for signature. It's supposed to be returned to us upon approval; once we have it, we will be sure to let you all know.

Again, appreciate yawl's patience.

Respectfully,

EHS UAS Team



Sep 17, 2025, 8:20 AM



sent to the President for signature.

**Aim For
Sep 21**

**Sep 17
75 Days
Since Jul 4**

However ...

AP

WORLD U.S. POLITICS SPORTS ENTERTAINMENT BUSINESS SCIENCE FACT CHECK ODDITIES MORE

UPS plane crash Seditious behavior Frida Kahlo self-portrait Miss Universe Dick Cheney's funeral

U.S. NEWS

Texas A&M president steps down but doesn't say if controversial classroom video was a factor



1 of 3 | Texas A&M University President Mark Welsh, accompanied by his wife, Betty, exits the administration building after resigning in College Station, Texas, on Friday, Sept. 19, 2025. (Jay Janner/Austin American-Statesman via AP)

**Aim For
Sep 21**

**Sep 19
70 Days
Since Jul 4**

However ...



**Aim For
Sep 21**

**Sep 19
70 Days
Since Jul 4**

However ...



EHS-UAS <ehs-uas@tamu.edu>

to Jiang, Galen, Michael, live-replyto-10955.b0409ff0-fcee-412c-a492-1c3ad67298bc@email.prod.us.origamirisk.com ▼

Tue, Sep 30, 10:18 AM



Unfortunately, since this flight application is for a specific date/flight location, i.e. Camp Mystic, a new flight application or blanket flight application will need to be filled out to cover all areas of flight request.

Please advise on how you all would like to proceed.



a new flight application or blanket flight application will need to be filled out

Sep 30

88 Days

Since Jul 4

Lifesaver – RAPID Team



UW NHERI RAPID Facility <uwrapid@uw.edu>
to me, Michael, Michael, Jiang, Jaqueline, Jeff ▾

Oct 1, 2025, 4:55 PM ☆ ↶ ⋮

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Hi Jiang,

Meeting details are attached below; you should see a calendar invite as well.
Join Zoom Meeting: <https://washington.zoom.us/j/95407362047>
Meeting ID: 954 0736 2047

Warmly,
Matias

THE RAPID FACILITY TEAM
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uwrapid@uw.edu / rapid.designsafe-ci.org/



...
...

[Message clipped] [View entire message](#)

**Aim For
Oct 9**

Oct 1
89 Days
Since Jul 4

Template Letter To Property Owners



Michael J Grilliot <grilliot@uw.edu>
to me, UW, Michael, Jiang, Jaqueline, Jeff ▾

Oct 2, 2025, 1:00 PM ☆ ↶ ⋮

This Message Is From an External Sender

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Hi Jiang,

I've attached a template letter to property owners that might be useful to you. A student we previously collaborated with sent a version of this to landowners. Feel free to use this as an example, but be sure to change the yellow highlights to more closely reflect your project. But, remember to keep your explanations simple and general.

You can use the [National Map](#) to take a screenshot of a DTM for the area to show topography for the back side. This is a straightforward explanation, as I'm sure many people are interested in examining the changes to the river after the flood. E.g.



**Aim For
Oct 9**

**Oct 2
90 Days
Since Jul 4**

Detailed Instructions Before Leave

 **Michael J Grilliot** <grilliot@uw.edu>
to me, UW, Michael, Jiang, Jaqueline, Jeff ▾

This Message Is From an External Sender
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Hi Jiang,
The weather looks good for Thursday; it's going to be hot and sunny, so we're all set to go. We plan to stay in Kerrville, which is close to the site. We will drive down Hwy 39 on Wednesday night to scout our take-off locations and access.

Meet-up:
Can you plan on meeting us at the [PAX coffee shop in Kerrville, TX](#), at 9:00 a.m. on Thursday, October 6th?

Contact Info:
Can you please send me your cell #?
Michael Grilliot: 208-833-5975.

I'll keep you apprised via text of our travel progress.

- Please bring:**
1. The M300 Battery case. PLEASE CHARGE. [Watch this video on how to charge the station](#). The charging cable is in the zippered pocket on the lid. Be mindful of the plastic latch covering the power cable port. It prevents the lid from clc
 2. 12 print-outs of the letter you sent to landowners. Be prepared to pass these out and speak to anyone who asks what we are doing. We'll brief more about this in person when we meet for coffee.

Flights:
Your Camp Mystic flight is close to maxing out the flight time with the Trinity, but we should be able to capture it all in one flight. We can easily modify the boundaries if needed, though. The RV Park is relatively short, so we can do that on



**Aim For
Oct 9**

**Oct 6
94 Days
Since Jul 4**

Check Before Deploy



**Aim For
Oct 9**

**Oct 8
96 Days
Since Jul 4**

Deploy At Camp Mystic



Oct 9
97 Days
Since Jul 4

Camp Mystic: 180 Acres



Oct 9
97 Days
Since Jul 4

Camp Mystic: 180 Acres



Oct 9
97 Days
Since Jul 4

Field Work



Oct 9
97 Days
Since Jul 4

Shutdown

43 days and completely overlapped with our study period

AP

WORLD U.S. POLITICS SPORTS ENTERTAINMENT BUSINESS SCIENCE FACT CHECK ODDITIES MORE

U.S. GOVERNMENT SHUTDOWN ENDS FAA lifts flight restrictions Reopening efforts Funding bill What to know

POLITICS

A historic shutdown is over. It leaves no winners and much frustration



1 of 4 | US Speaker of the House Mike Johnson said Wednesday he was relieved to see the end of the longest government shutdown in history, saying the Democrats used the "American people as leverage in this political game."

BY KEVIN FREKING

Updated 9:46 PM CST, November 12, 2025

[Leer en español](#)

Add AP News on Google Share 30

Nov 12
131 Days
Since Jul 4

Texas CORS Stations Back Online



Karen Dedinsky

to me, UW, Julia, Michael, Jiang, Jeff, Michael ▾

Tue, Nov 25, 1:20 PM (7 days ago) ☆ ↶ ⋮

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Hi Jiang,

I just returned from being away. Looks like the CORS stations are now accessible. I will prioritize this processing and will do my best to provide some deliverables before your meeting. I will send updates.

Thanks,
Karen



Nov 25
144 Days
Since Jul 4

Magic Speed of RAPID – 1 Week Processing



Karen Dedinsky

to Michael, Jiang, Julia, Jeff, Michael, me, UW ▾

4:34 PM (3 hours ago) ☆ ↩ ⋮

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The data is up!

Karen



Dec 2
151 Days
Since Jul 4

Processed Data-RGB

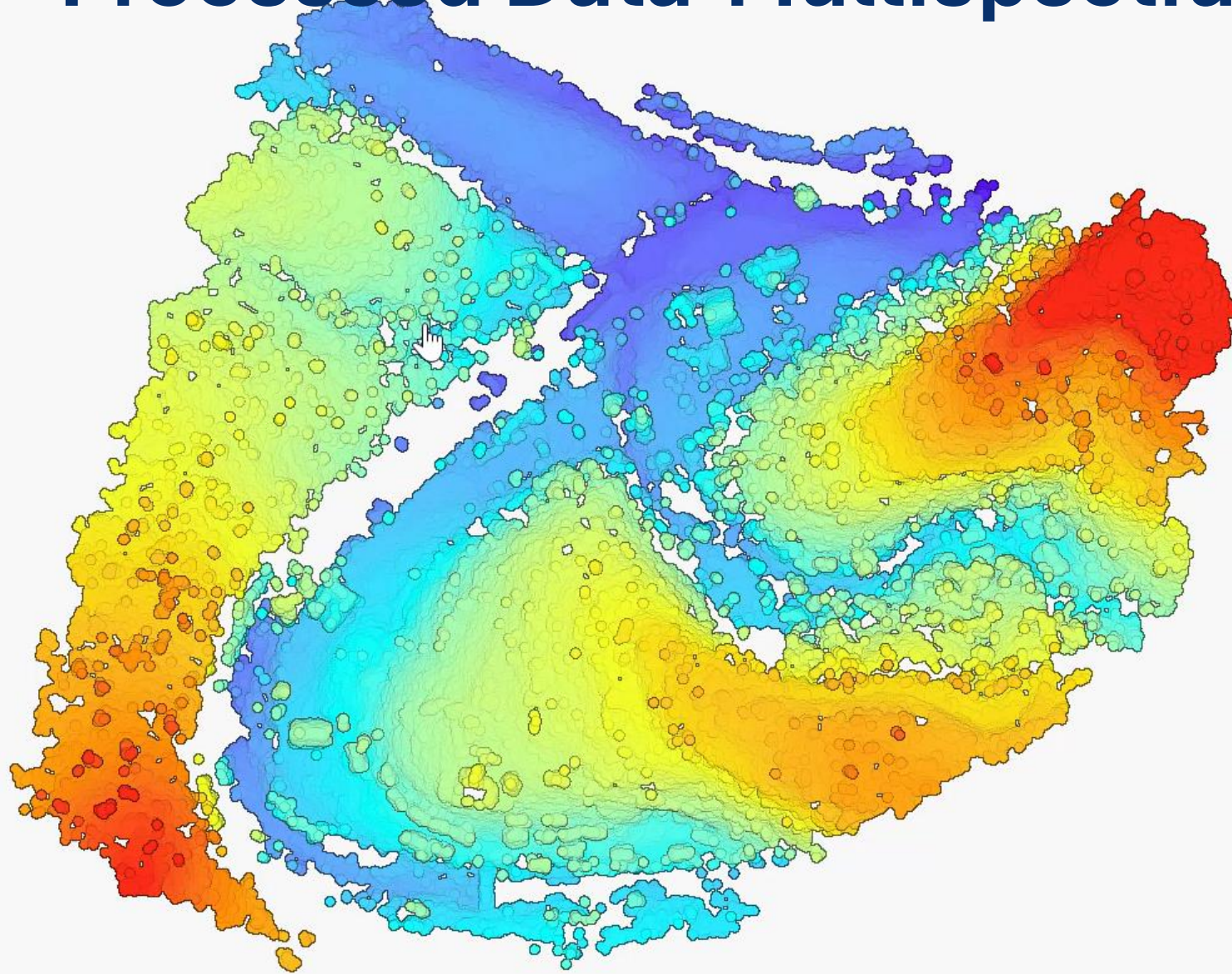


3D model (Structure from Motion)

High resolution plan view

Dec 2
151 Days
Since Jul 4

Processed Data-Multispectral



A 3D Model with elevation info

Dec 2
151 Days
Since Jul 4

Post-Flood High-Water Mark Detection

Technical Note

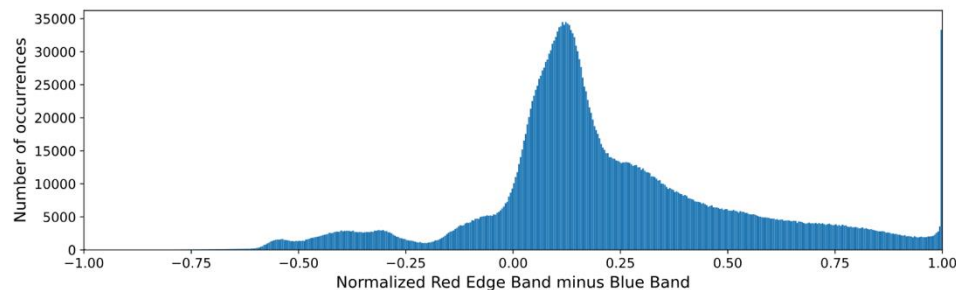


Multispectral Imaging for Identification of High-Water Marks in Postdisaster Flood Reconnaissance

Michael Gardner, M.ASCE¹; Elliot Nichols, S.M.ASCE²; Nina Stark, A.M.ASCE³; Anne Lemnitzer, A.M.ASCE⁴; and David Frost, F.ASCE⁵

Normalized difference
between red-edge and
blue bands (NDRE-B) =
**(Red-Edge - Blue) / (Red-
Edge + Blue)**

(Gardner et al., 2023)



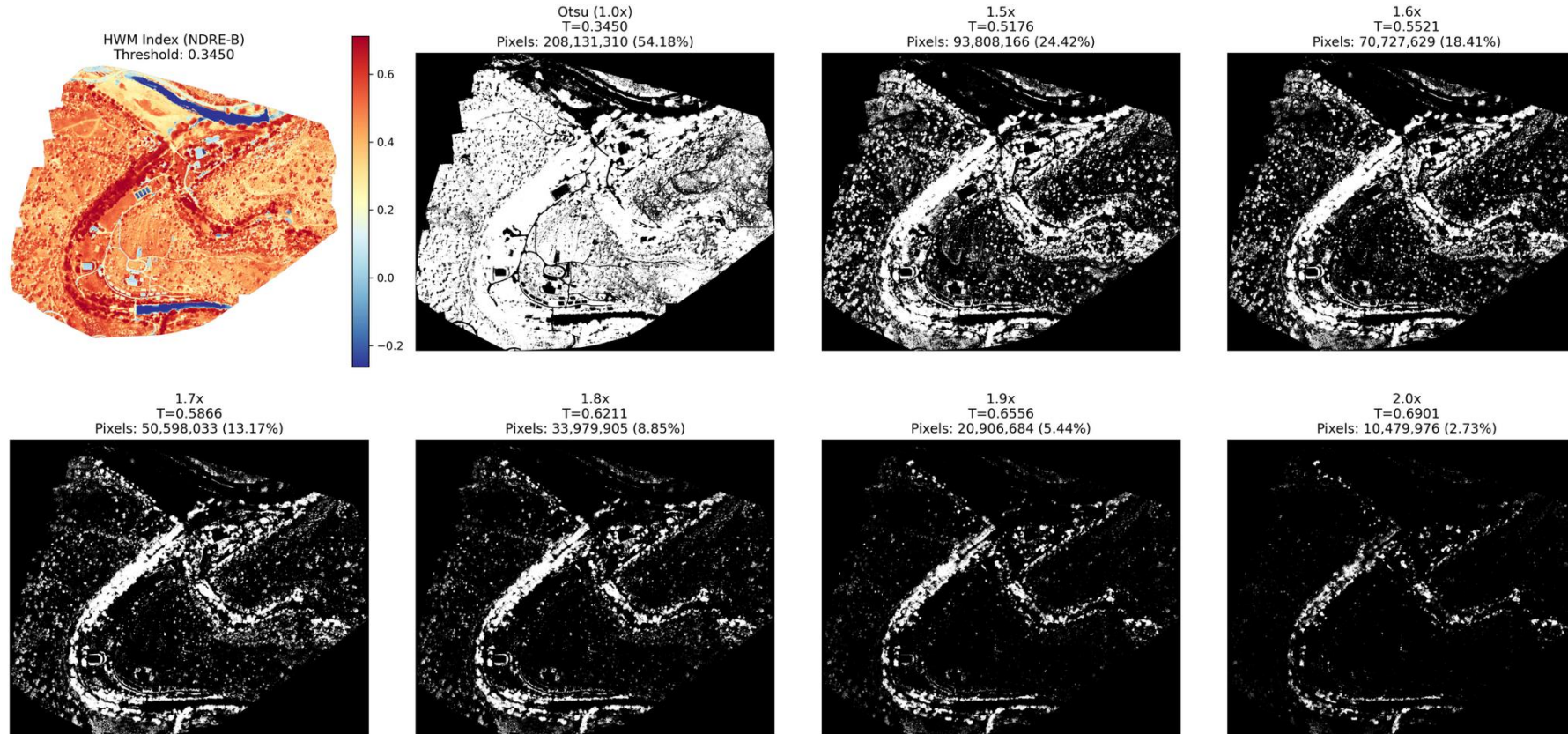
(a)



(b)

Fig. 9. Normalized difference between red-edge and blue bands (NDRE-B): (a) histogram of NDRE-B pixel values showing single mode ranging from approximately 0.0 to 0.2; and (b) pixels with NDRE-B ranging from 0.0 to 0.2. Shady areas immediately beneath roof also yielded a high value for this index. (Images by authors.)

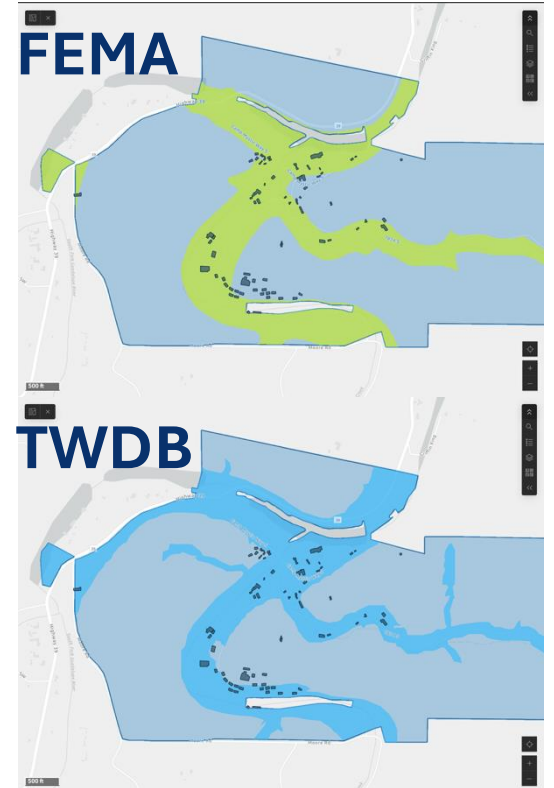
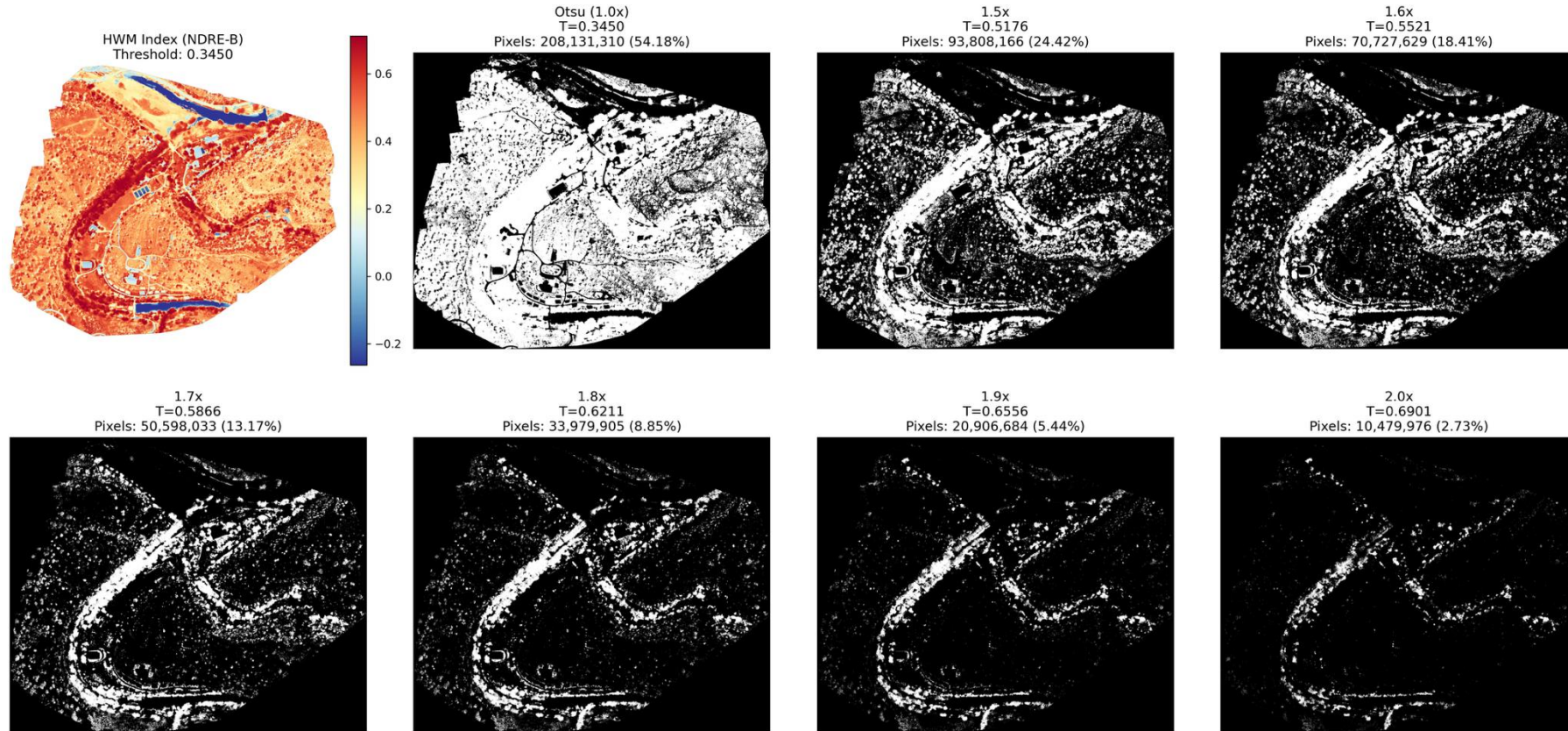
Post-Flood High-Water Mark Detection



Normalized difference
between red-edge and
blue bands (NDRE-B) =
 $(\text{Red-Edge} - \text{Blue}) / (\text{Red-Edge} + \text{Blue})$

(Gardner et al., 2023)

Which floodplain is closer to the simulation?



Working with RAPID: Best Practices

Trusted partner for disaster research — fast, reliable, and equipped for complex field conditions.

1. Define Your Question (Social Scientists) & Data Needs (Engineers)

Be clear on what you want to measure.

2. Identify Equipment & Contact RAPID

Confirm tools early for smooth planning.

3. Act Fast for Perishable Data

Skip delays — request RAPID support immediately.

4. Arrive Early & Stay Flexible

Review plans on-site and adapt as needed.

5. Be Transparent & Professional

Communicate openly, respect stakeholders, avoid conflict.

6. Avoid Government Shutdown Period (if you can)

Thank you!



Acknowledgement

Funding Source:

Flood Risk Assessment for Program-Based Camps in Texas

P.I. Zheng, J. & Co-P.I.'s Newman, G., Van Zandt, S., Meyer, M. (\$5,000) , August 19, 2026-February 19, 2026. Natural Hazards Center Quick Response Research Award Program, based on work supported by the National Science Foundation (NSF Award #1635593)

Faculty Support:



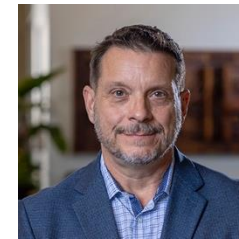
Dr. Galen Newman



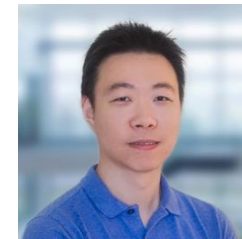
Dr. Shannon Van Zandt



Dr. Michelle Meyer



Dr. Michael McNair



Dr. Lei Zou

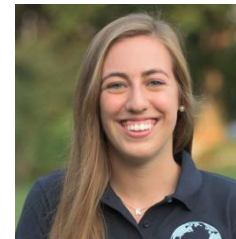
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Dr. Michael Grilliot



Alex Johnson



Karen Dedinsky



Jaqueline Zdebski

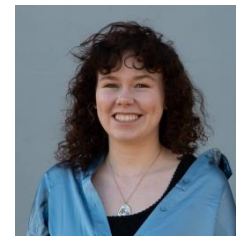
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