Geostationary Lightning Mapper (GLM) Products within NASA SPoRT's Lightning Viewer & User Feedback

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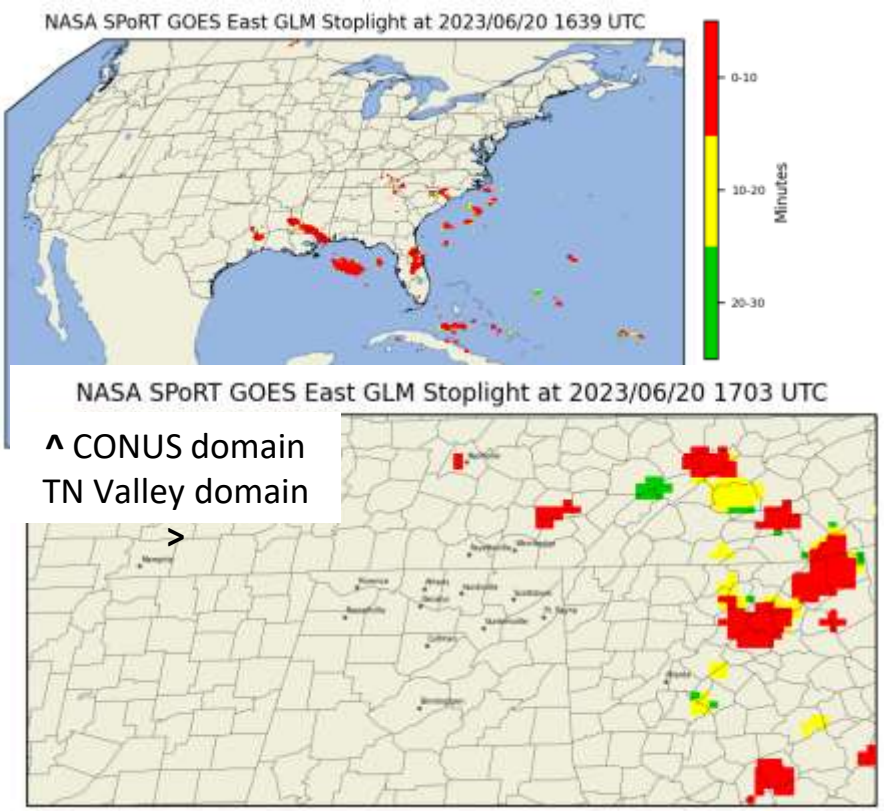
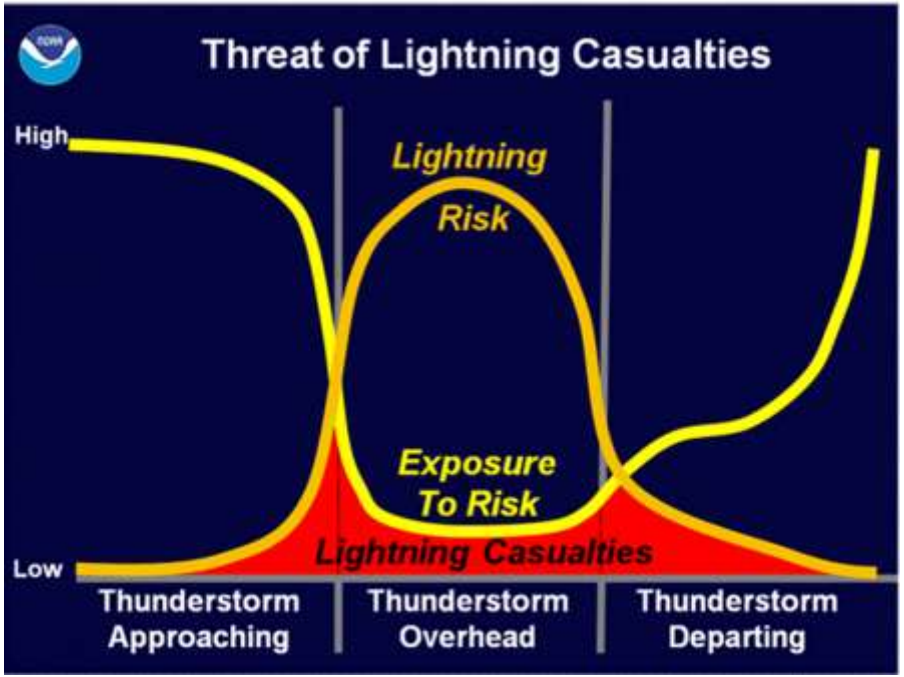
GLM Stoplight Product

- A visual tool that shows the location and age of lightning derived from GLM flash extent density (FED)
- If lightning is present in the grid box/pixel, it is assigned a color based on how recent that lightning flash occurred
- The lightning age is binned in 10 minute increments



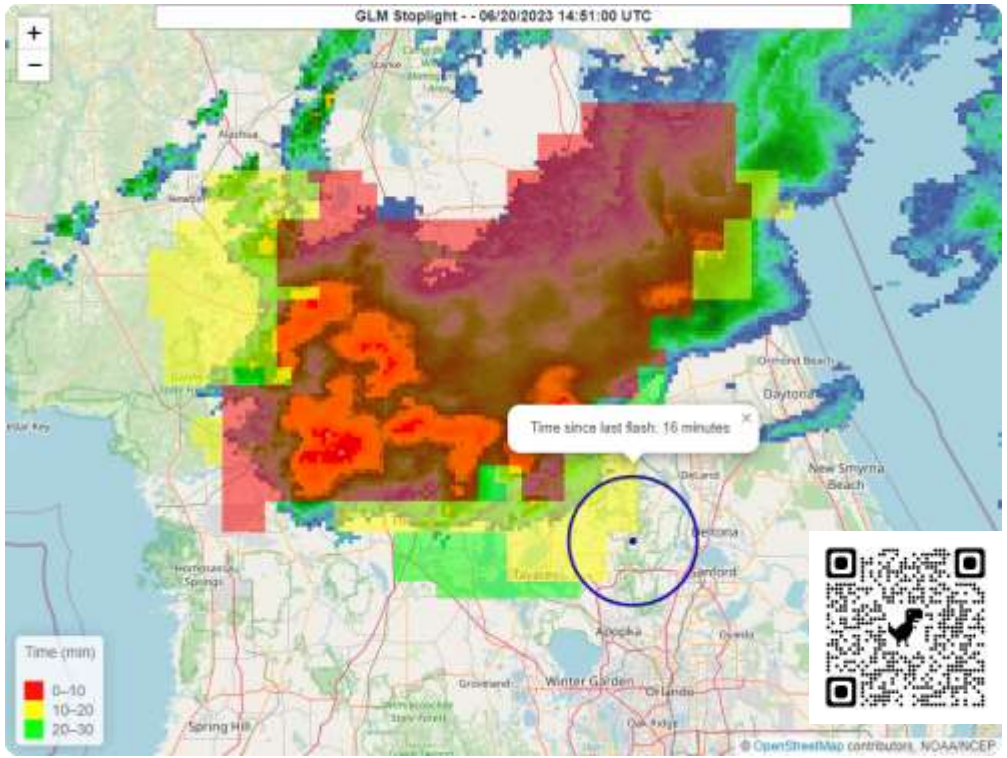
Why is it important?

- People are most often struck by lightning as a storm is approaching or departing a location
- This tool helps end-users make informed decisions about their safety with respect to the threat of lightning
- Provides spatial and temporal context about lightning to aid decisions on “all-clear”/ when to resume outdoor activities



Assessment of GLM Stoplight and Lightning Viewer

- Tasked 19-20 end users (NWS employees) to fill out a feedback form after using product and lightning viewer
- New lightning viewer incorporated more interactive features. Participants were able to zoom in to their desired location, create a range ring, find user GPS location, layer Stoplight with additional data (radar imagery, base map, etc.)
- Users provided feedback, suggestions, and details of their specific application



Assessment Questions & Feedback Examples

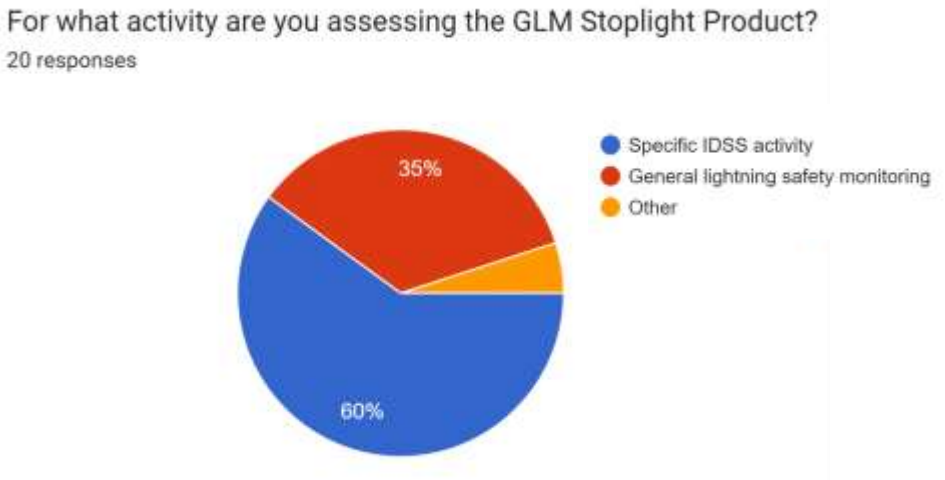
Respondents were asked…

- If they were using the Stoplight product for specific impact-based decision support services (IDSS) or other general safety monitoring or situational awareness.
  - Dates and times were also requested, along with details about the use of the data
- Their rating of the overall utility of the product
- If the appearance of the Stoplight product allowed for proper interpretation
- Their use of the Stoplight product (if any) to inform partners/customers
- For any suggestions about the Stoplight product
- Their use of features within the SPoRT lightning viewer
- To share experiences (positive or negative) regarding the lightning viewer

Assessment Questions & Feedback Examples

Stoplight Product Use-case Activities

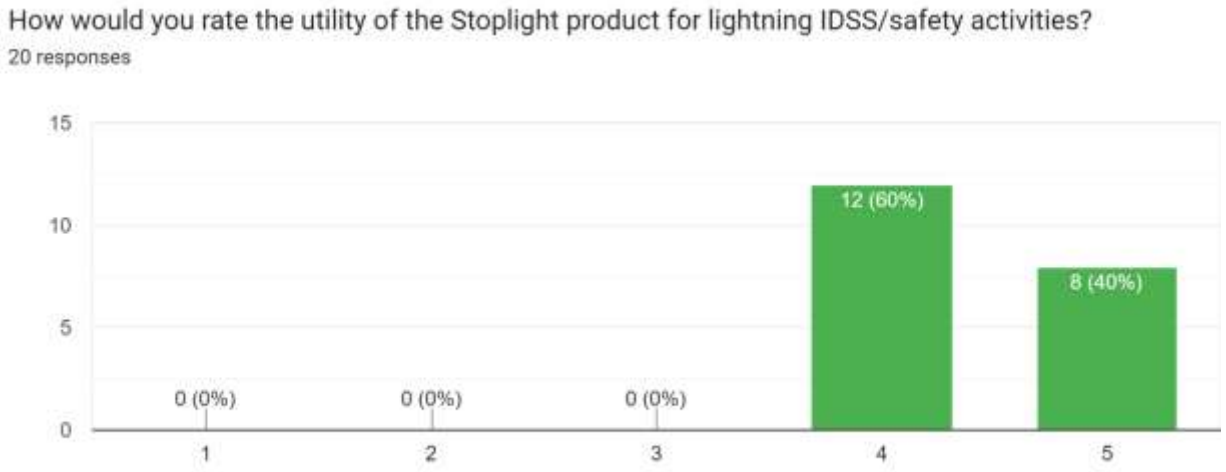
- Most respondents indicated there were using the product for specific IDSS activities.
- Example cases included:
  > music events, sporting events, arts festivals, graduations, and airport weather warnings.
- “General” or other usage involved situational awareness of lightning recency, and lightning recency over metro areas and lakes, for example.



Assessment Questions & Feedback Examples

Stoplight Utility (1-Very Poor to 5-Exceptional)

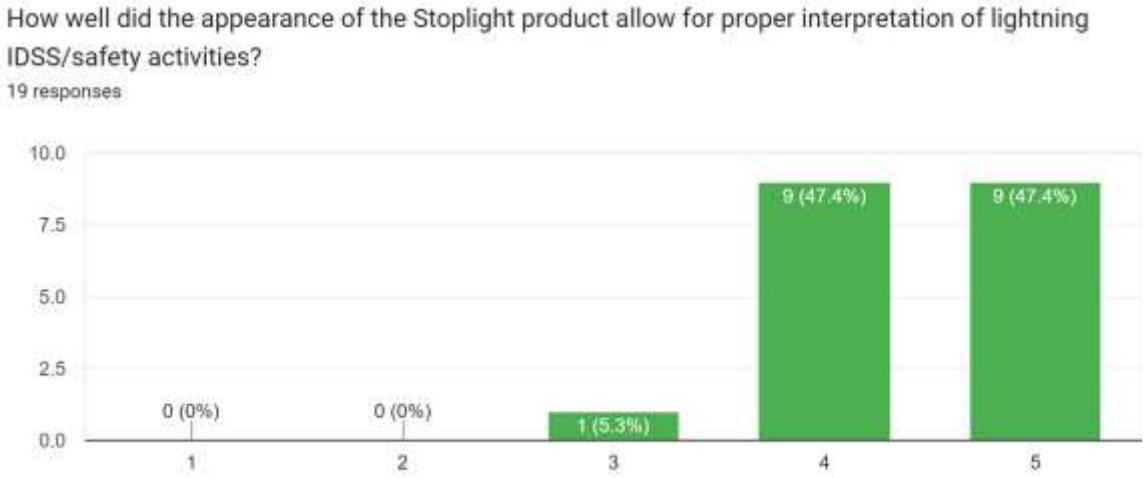
- Most respondents rated the product 4 out of 5, with some rating 5 out of 5. None rated below 4.



Assessment Questions & Feedback Examples

Stoplight Appearance for Proper Interpretation (1-Very Poor to 5-Exceptional)

- Ratings were tied for 4 and 5 out of 5, but one respondent indicated a 3 rating.



Assessment Questions & Feedback Examples

Example respondent elaboration on previous ratings…

"A little course…but a limitation of the GLM."

"...very simple to diagnose and interpret with the simple color scheme…great tool for situational awareness…many forecasters in my office would like to use this more in operations…"

"…pixels that are off a bit due to parallax…"

"...good product for determining lightning cessation…concerned with…lightning flash potential…within a trailing stratiform region…"

"...product is great…it's utility is very important for IDSS…"

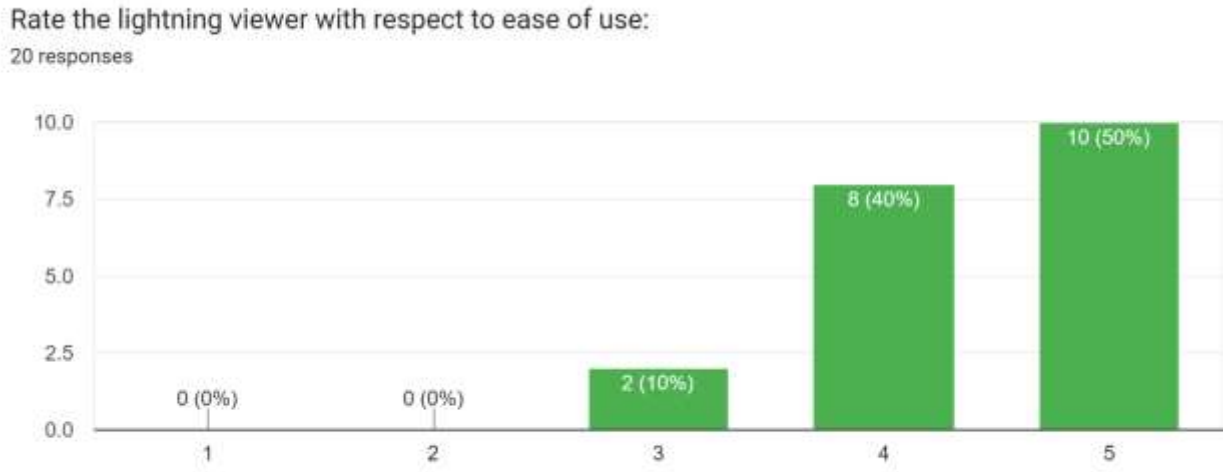
"...should be used in conjunction with other products…"

"...I might prefer another color scale, although it may not be appropriate to call it the Stoplight product anymore…a simple gray color scale may be best…should be available on user's preferences."

Assessment Questions & Feedback Examples

Lightning Viewer Use (1-Very Poor to 5-Exceptional)

- 10 Ratings for 5 out of 5…with 8 rating 4 out of 5, and 2 ratings for 3 out of 5.



Assessment Questions & Feedback Examples

Example experiences and suggestions for the lightning viewer…

"The colorblind color palate is much easier to use when overlaid on radar…"

"I really like the Art Tool and Location Tools for IDSS events--being able to overlay reflectivity and customize the color setting for different things."

"it'd be great if it also included some probabilistic lightning data for future lightning potential…"

"Add counties to the list of layers…"

"...audio alarm…when a certain threshold is reached…"

"We would like to see the capability to search an address or latitude/longitude on the map when placing an event ring…Multiple ring placement…add in some additional MRMS products related to lightning/ice production…having multiple sources can add confidence as well as additional actionable information for an EM during DSS…"

"...could be worth exploring the ability to display multiple locations with range rings if multiple events are being monitored for at the same time…"

"Incorporating other network data in some manner would be useful."

Next Steps…

- **Implement a few initial user suggestions, and determine which other suggestions are feasible for later updates**

- **Examples of user suggestions:**
  - “Ability to add multiple range rings”
  - “Auto-update should default to on” ✓
  - “Include capability to enter lat,lon when placing a range ring”
  - “Add counties to the list of layers “
  - “Include capability to enter lat,lon when placing a range ring”
  - “Would be good to have a pause at the end of the loop function” ✓

- **Add NASA SPoRT Lightning-AI product (prediction of lightning flashes) to the lightning viewer & do a user assessment** ✓

- **Add a GLM FED layer** ✓

https://weather.ndc.nasa.gov/sport/lightning-viewer/

Thanks to our collaborators…

Thanks for your time and interest! Any questions?

Special thanks to Roger Allen & Michael Antia (NASA SPoRT / Jacobs Space Exploration Group)

Thanks to our collaborators for their feedback…

Mike Johnson
Jennifer Saari
Brian Curran
Brooke Williams
Megan Terry
Jason Schaumann
Dave Hotz
Dylan Lusk
Andrew Moulton
Samuel Meltzer
Matthew Brothers
Nathan Wellington
Cory Rothstein
Aaron Treadway
Mack Morris
Shelby Melto
Gail Hartfield