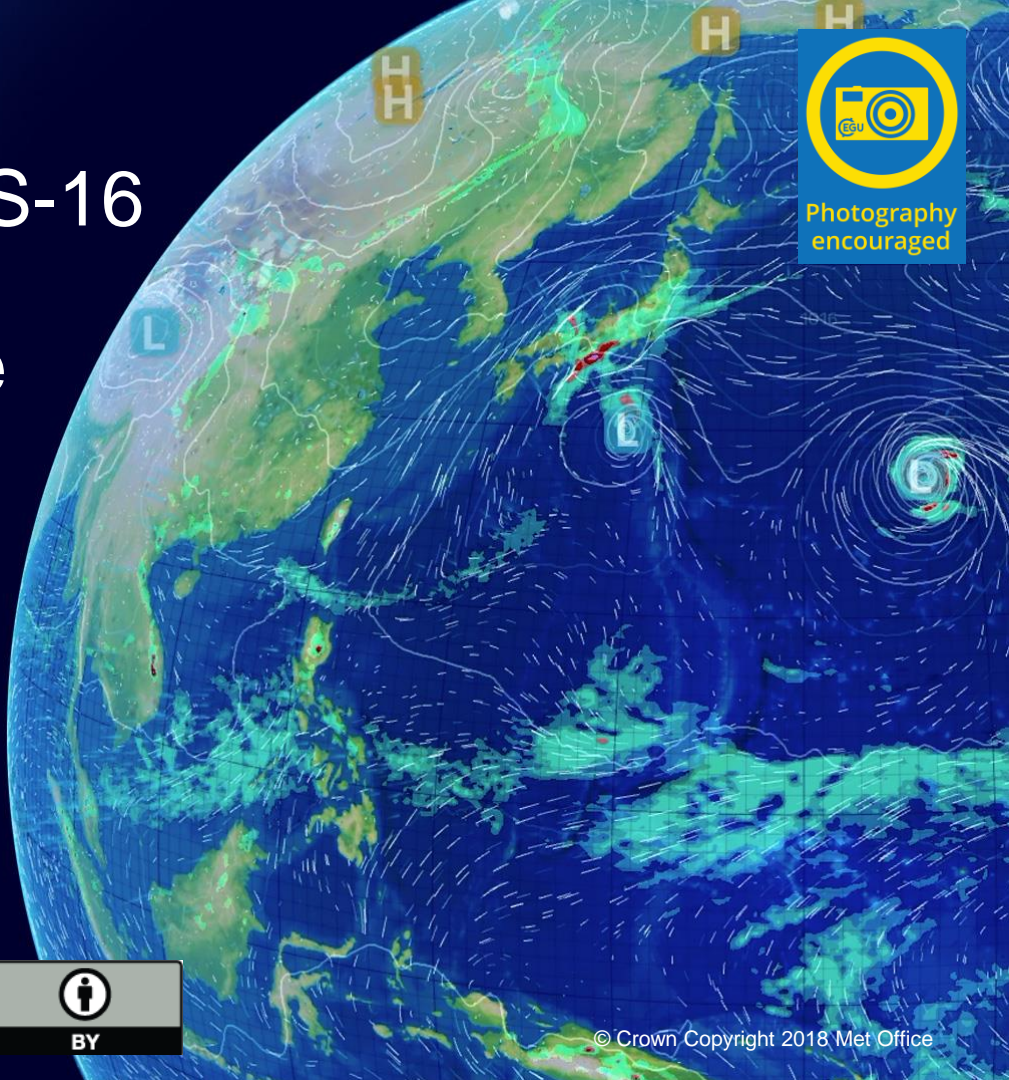


Assessment of the GOES-16 Geostationary Lightning Mapper for global severe convection aviation applications

Graeme Anderson
EGU 2019, Vienna
12th April 2019

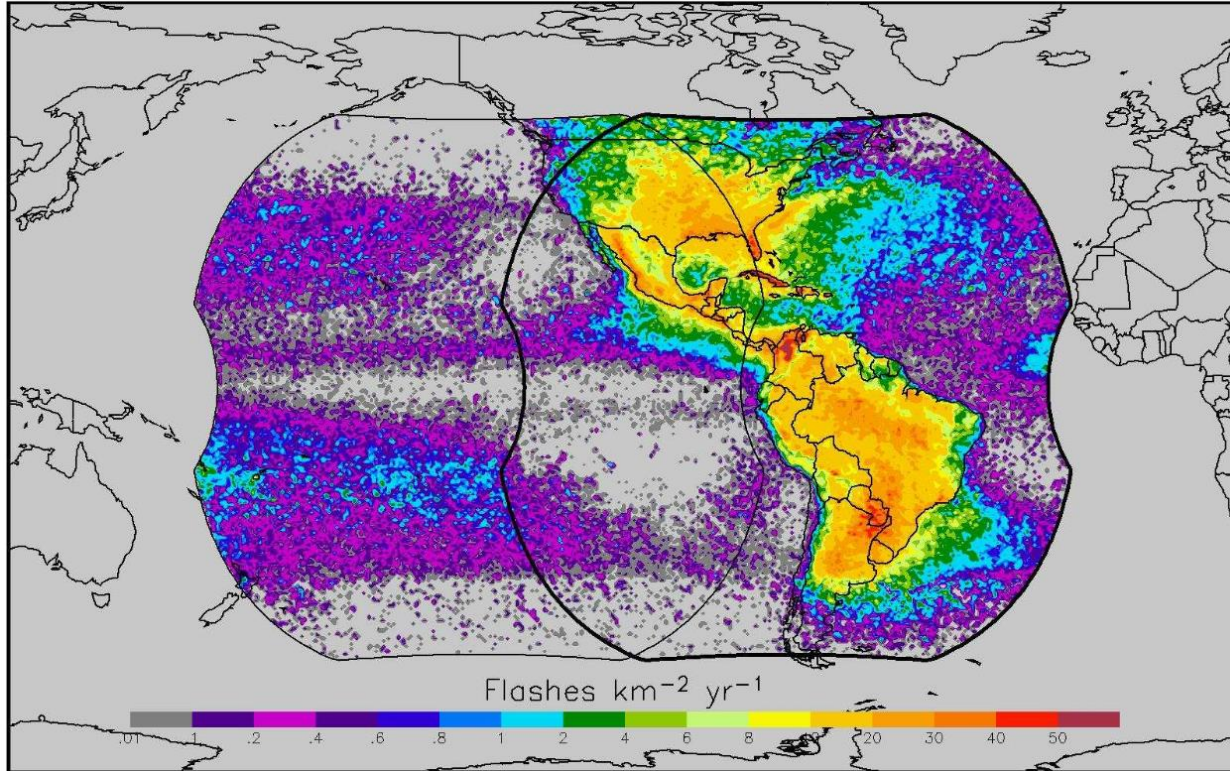


- What is a GLM?
- What can it do?
- What are the issues?
- How can it be used?

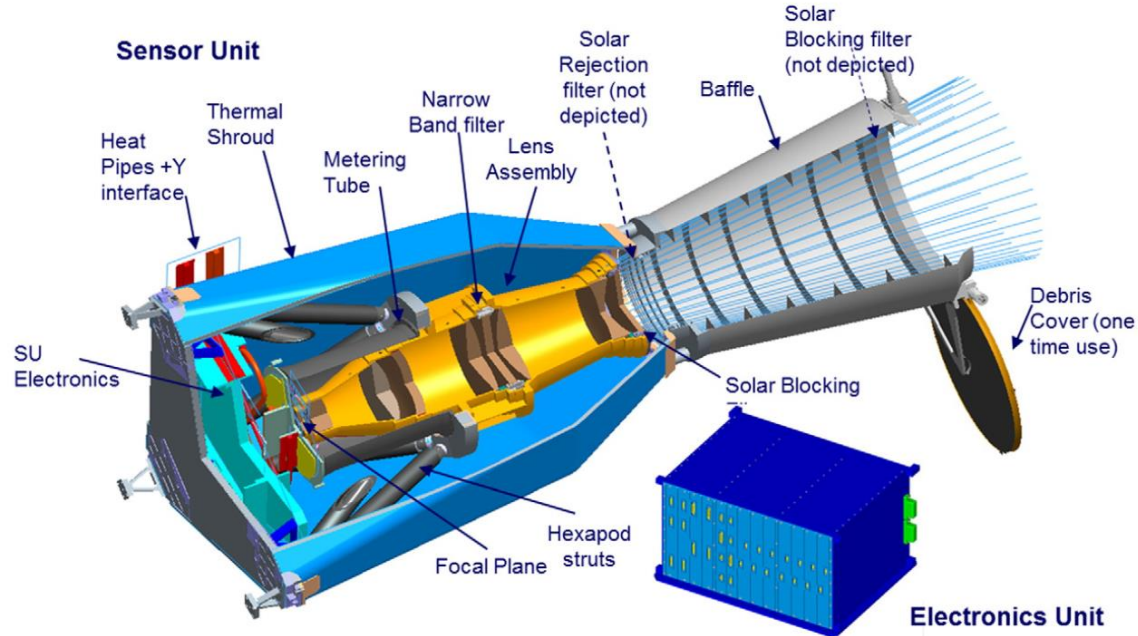
What is a GLM?

The GLM


- Instrument on US geostationary weather satellites.
- Optically locates lightning.

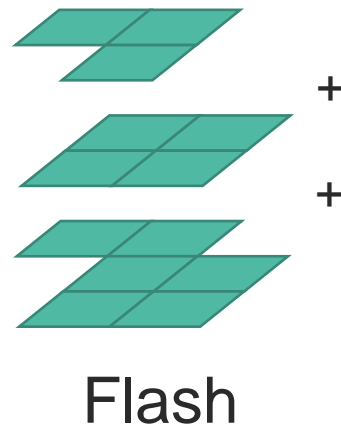
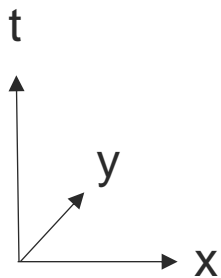


The GLM instrument



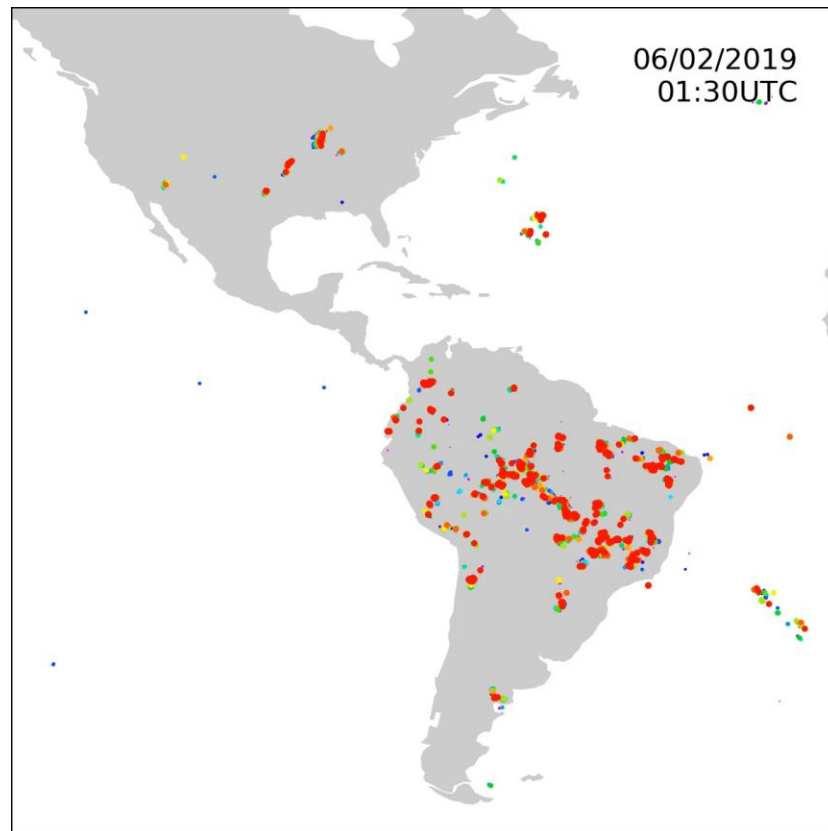
GLM Events, Groups and Flashes

 = Triggered pixel

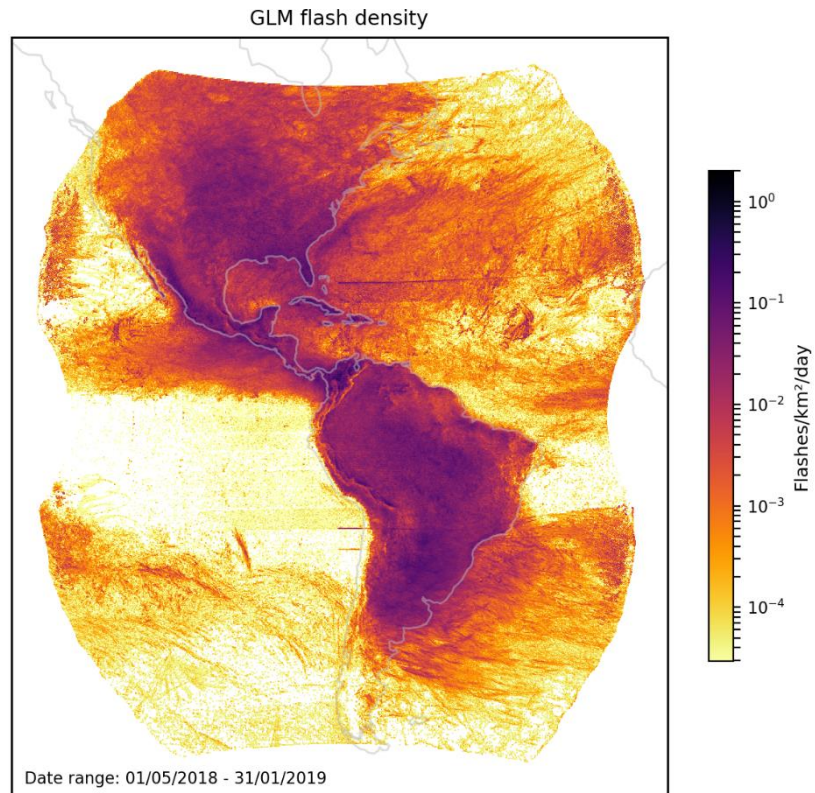


What can it do?

GLM data



GLM data



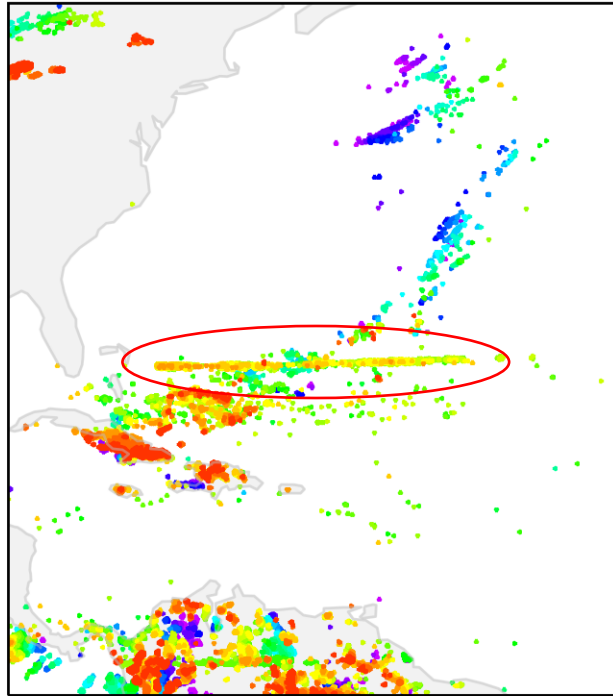
What are the issues?

Sensitivity issues

- Diurnal changes in sensitivity
 - 90% at night
 - 70% during the day
- High energy particles

'Stripes'

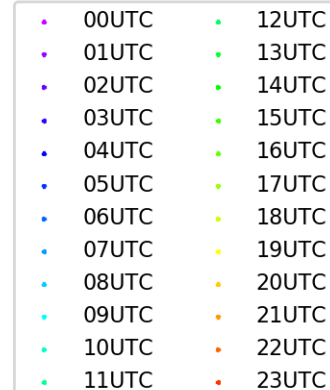
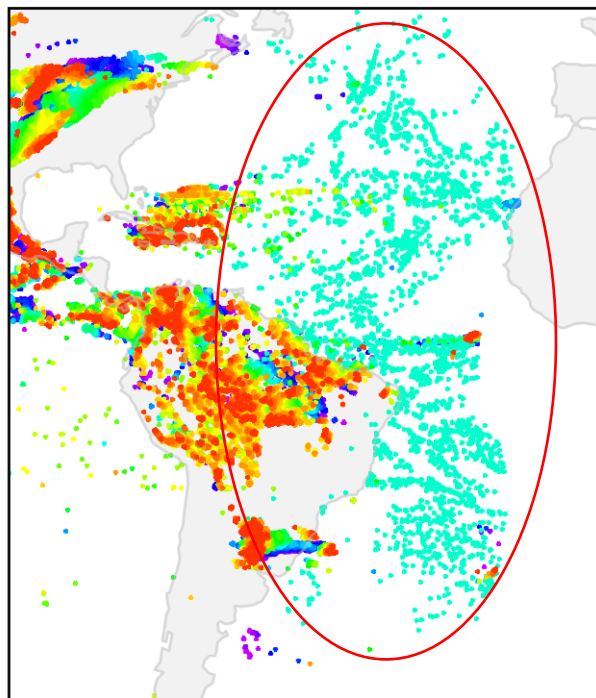
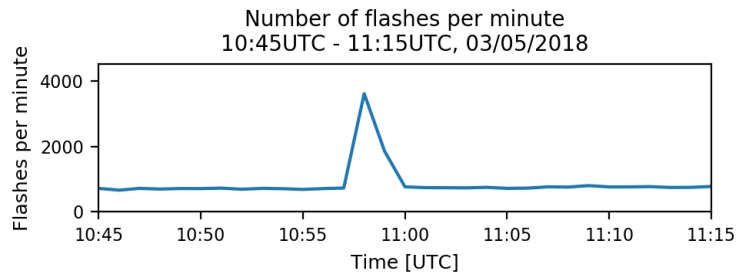
GLM flash data, 02/05/2018



• 00UTC	• 12UTC
• 01UTC	• 13UTC
• 02UTC	• 14UTC
• 03UTC	• 15UTC
• 04UTC	• 16UTC
• 05UTC	• 17UTC
• 06UTC	• 18UTC
• 07UTC	• 19UTC
• 08UTC	• 20UTC
• 09UTC	• 21UTC
• 10UTC	• 22UTC
• 11UTC	• 23UTC

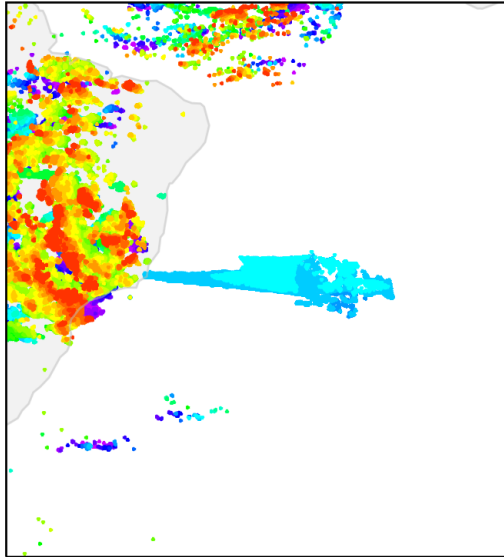
Widespread bursts of erroneous flashes

GLM flash data, 03/05/2018

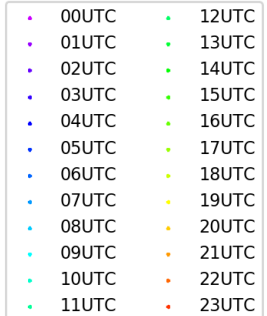
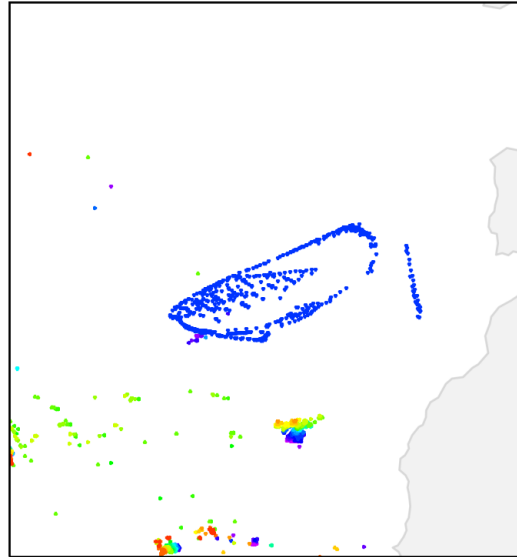


Sunglint and solar intrusion

GLM flash data, 22/12/2018

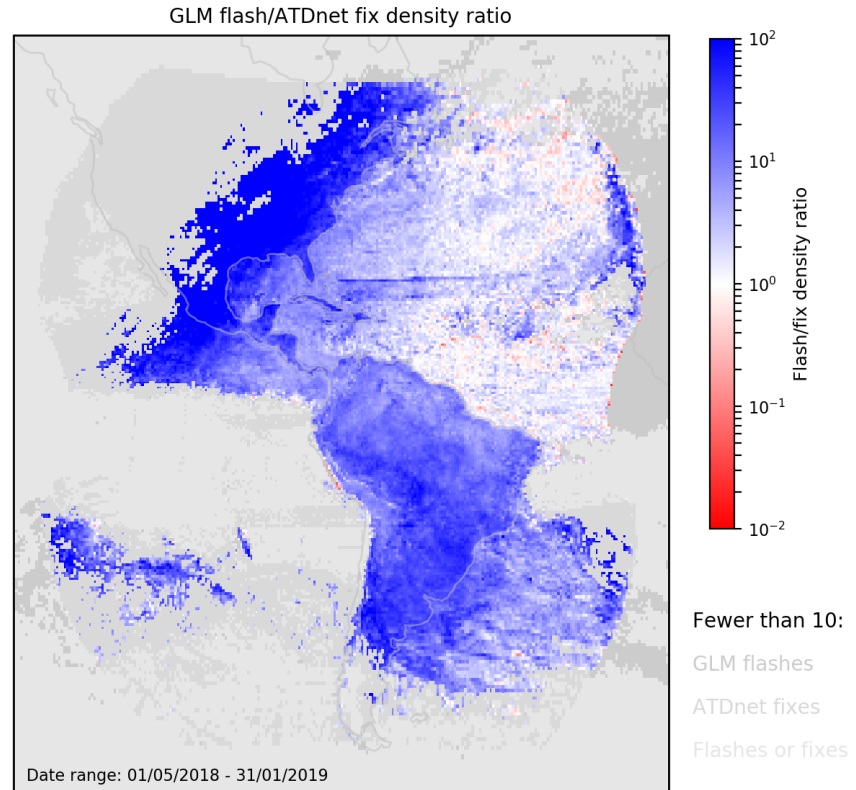


GLM flash data, 08/09/2018



How can it be used?

Comparison with ATDnet



Applications

- Forecasting
- Climatology
- Verification

Summary

- GLM provides lightning location data over the Americas and much of the Atlantic and Pacific.
- It detects over 1 million flashes per day on average.
- There are some issues with the data, but it is still beneficial.
- The Met Office will use the data for convection verification.