GLM in the GOES-R Proving Ground and HWT Spring Experiment

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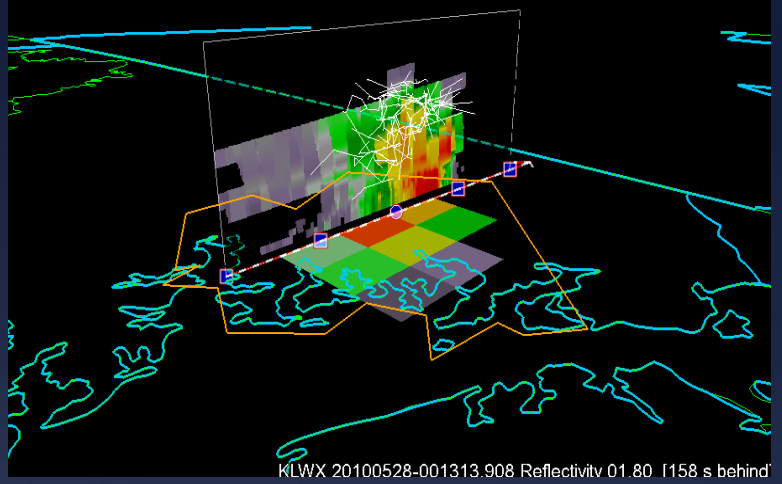
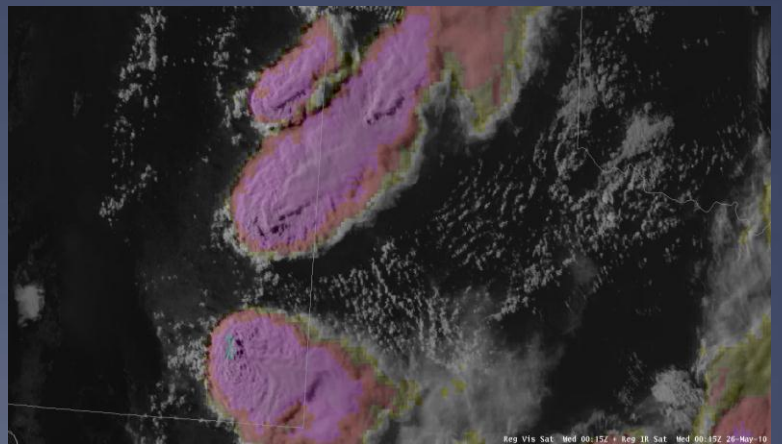
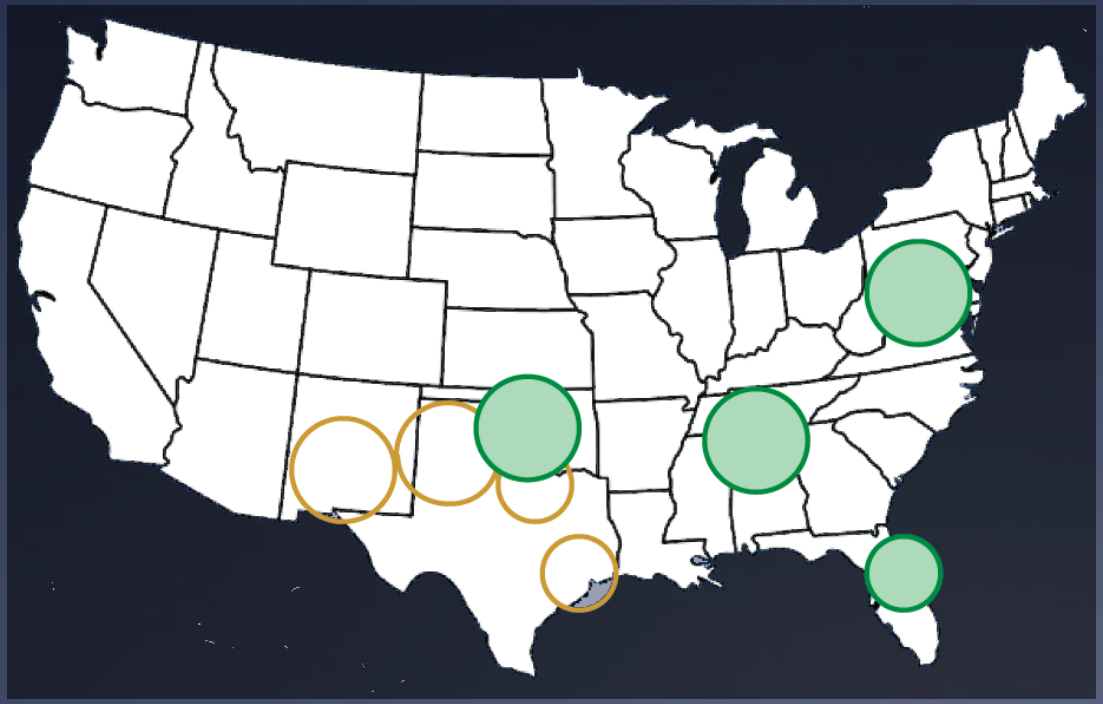
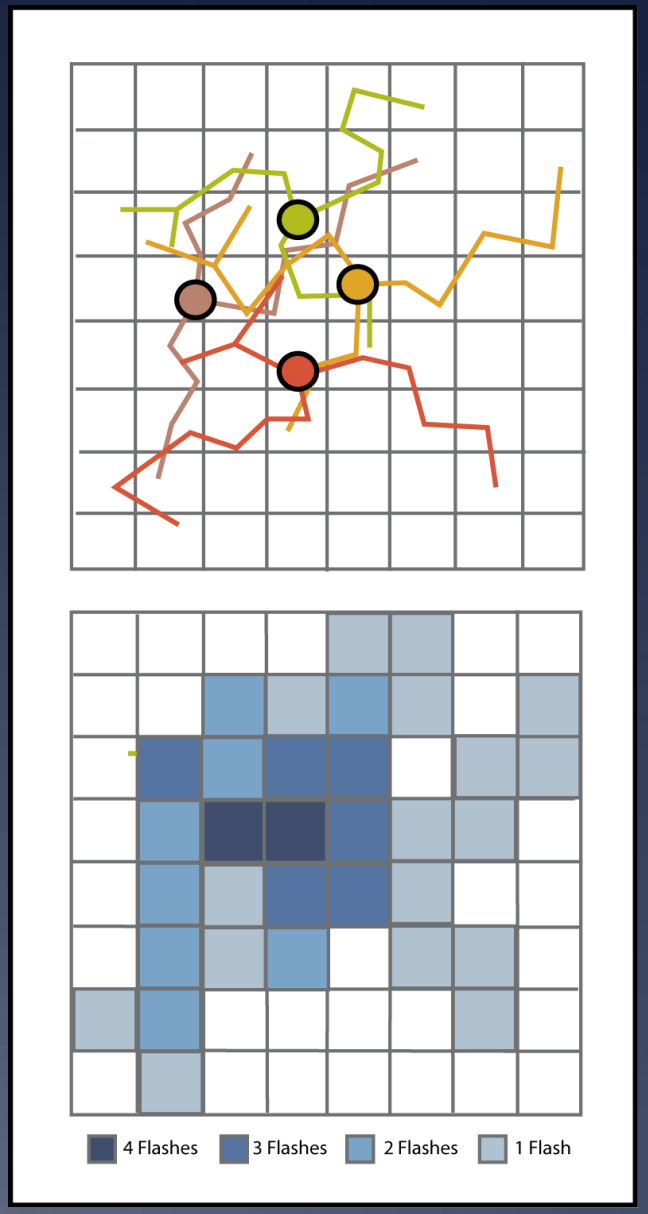




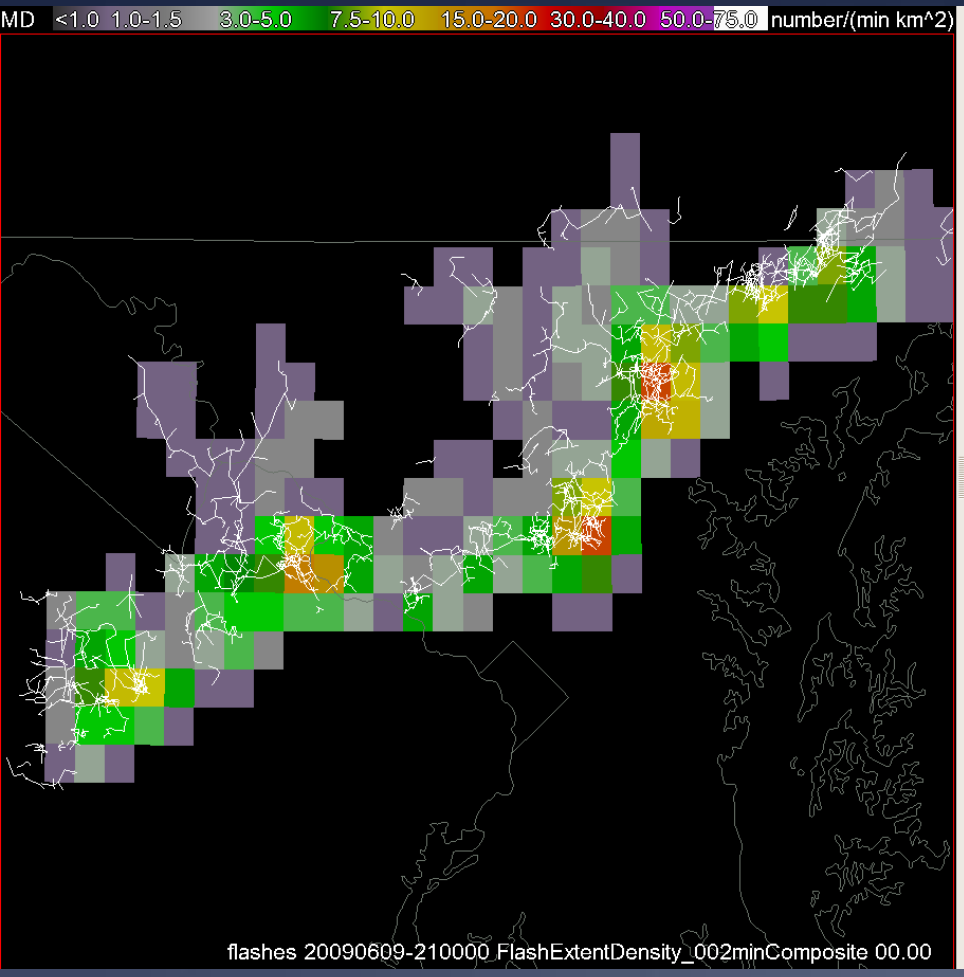
Creation of the PGLM product

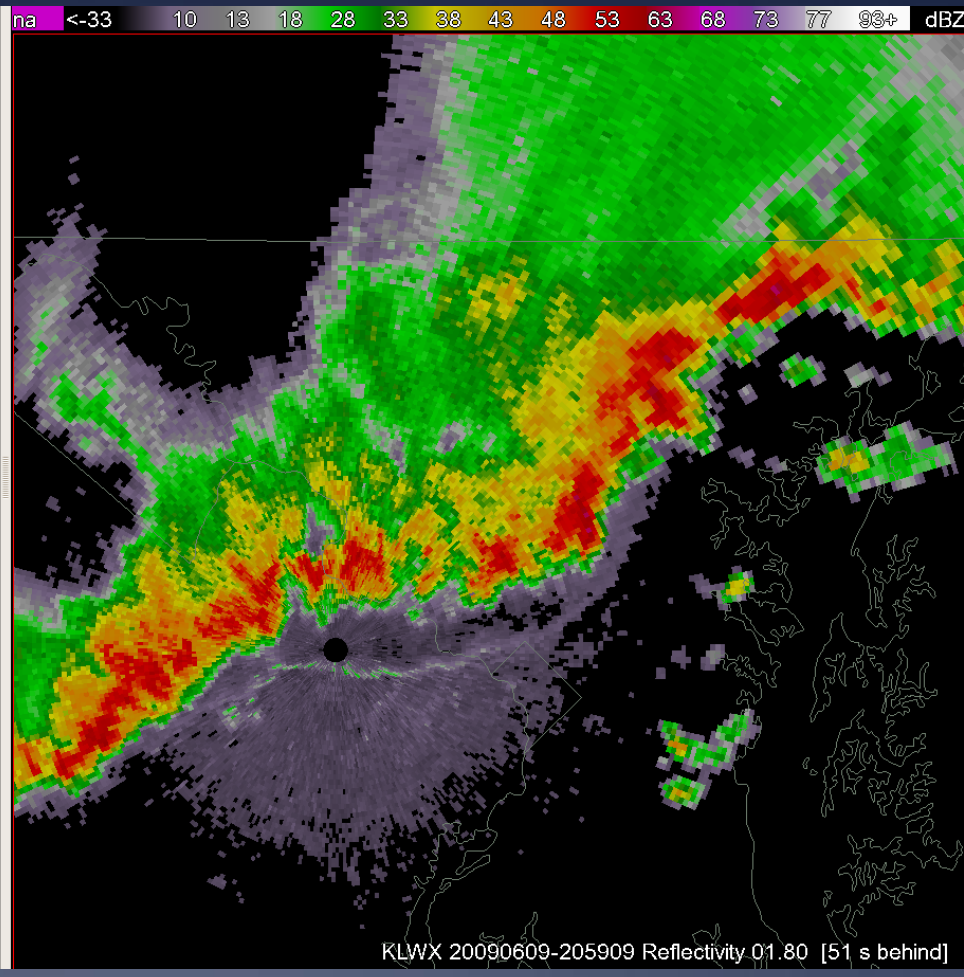
- Flash sorting – real-time - WDSSII
- Flash Extent Density – Flash Footprint





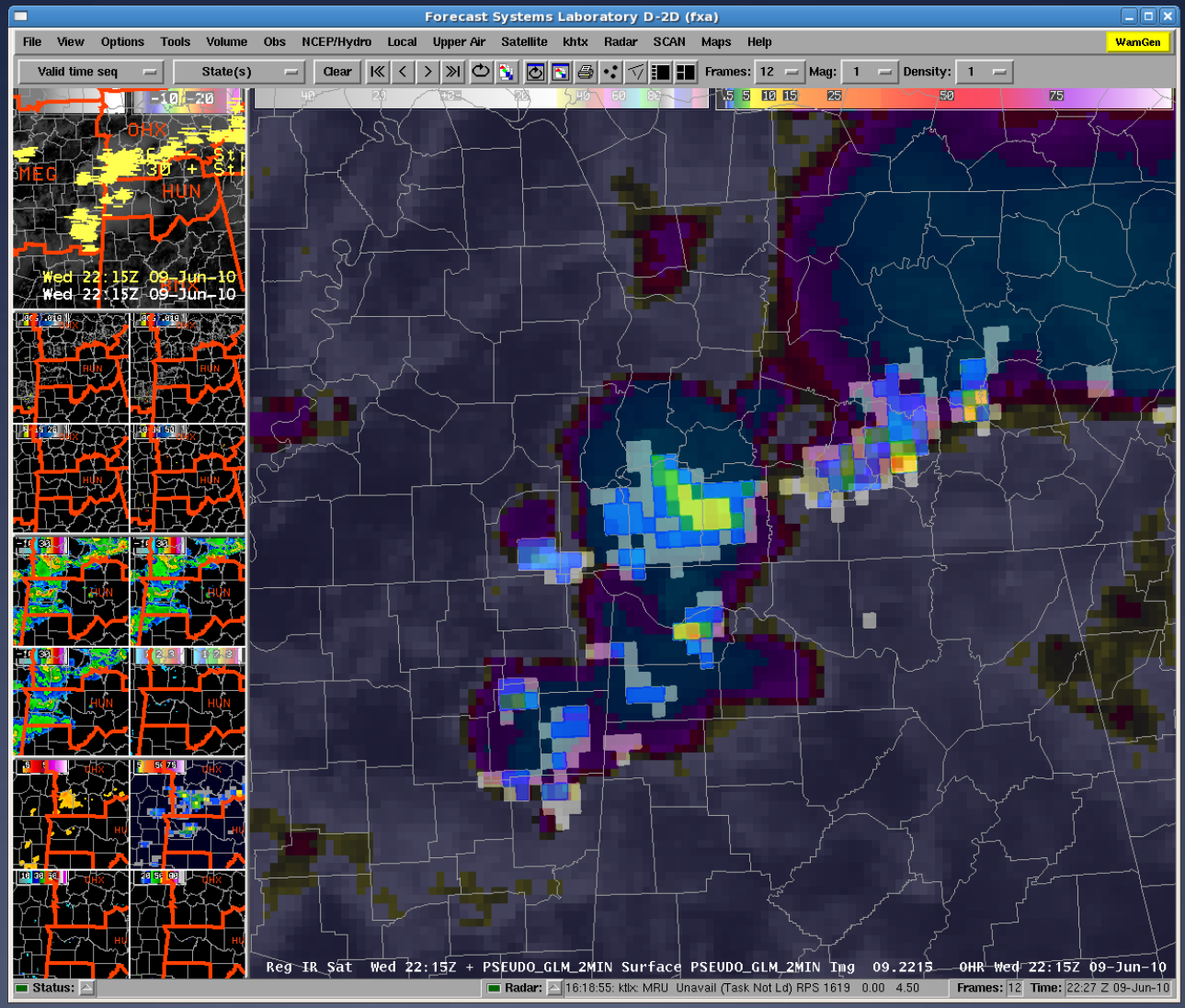
Creation of the PGLM product





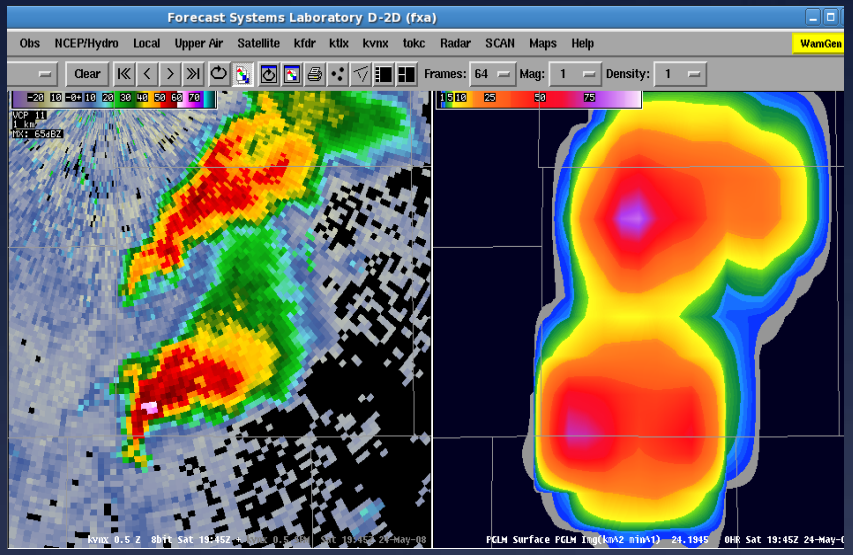
Real-time display in AWIPS

- For use in storm interrogation and warning decision making.
- Forecaster chosen overlays and display methods



Archive Case Event

24 May 2008; 1700-2100 UTC



Event Lead Times			
Forecaster	Tornado #1 (1927-1939)	Tornado #2 (1945-1956)	Tornado #3 (2007-2016)
A	24	18	22
B	22	17	39
C	20	16	7
D	32	17	14
E	11	29	11
F	20	22	44
G	2	20	42
H	15	18	40
I	20	38	15
J	9	27	35
K	0	15	25
L	0	0	0
ACTUAL	6	24	20

- "The pseudo-GLM provided frequent updates to monitor updraft strength and character between scans."
- "The lightning data was helpful, yet confusing, because there were several lightning jumps as the updrafts cycled."
- "I felt that lightning data greatly aided me in the forecast process. I would reference it many times in the formation of my warning polygons and to make sure I was confident in my warnings."

Forecaster Feedback from 2010

* "We saw several instances where the total lightning was picking up on storms before the AWIPS lightning [NLDN] program picked up on them. One could see the utility of this in the future, bringing with it a potential for lighting statements and potentially lightning based warnings."

  -Pat Spoden (SOO, NWSFO Paducah, KY)

* http://ewp.nssl.noaa.gov/
* http://goesrhwt.blogspot.com/

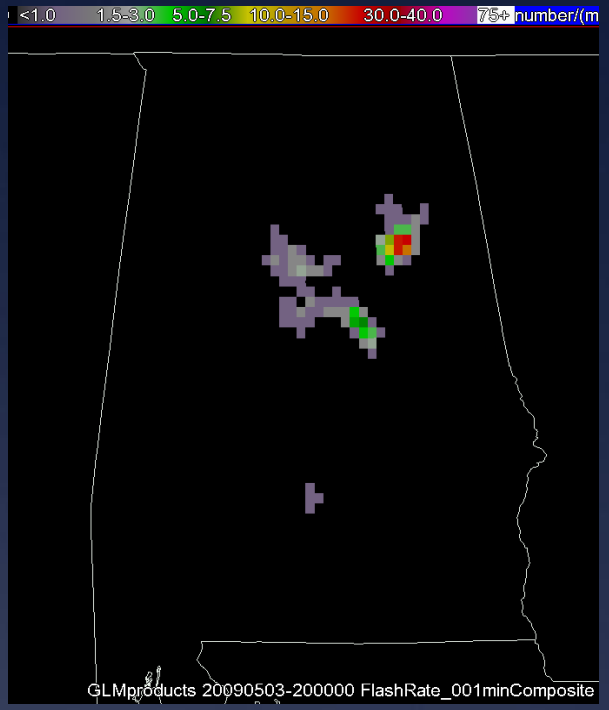
Forecaster Feedback from 2010

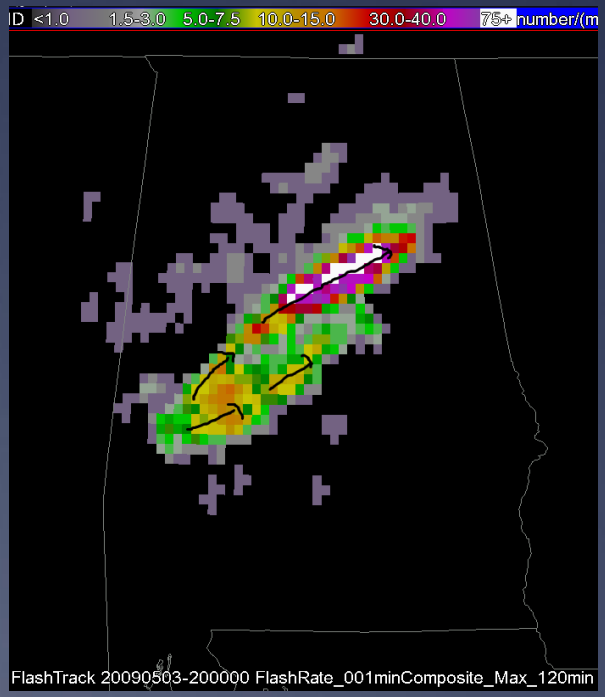
- "lightning data provide a reassurance that I can see leading me to make a warning decision a little earlier due to having more confidence in imminent severe weather."
- "would be of great benefit to aviation forecasting in those situations where there is a developing shower or embedded thunderstorms in stratiform rain."
- "[GLM] will also prove very beneficial as we get more into decision support services, especially to support the safety of responders to incidents who are exposed to lightning hazards."

  -- Frank Alsheimer (SOO, NWSFO Charleston, SC)

Suggestions for future testing:

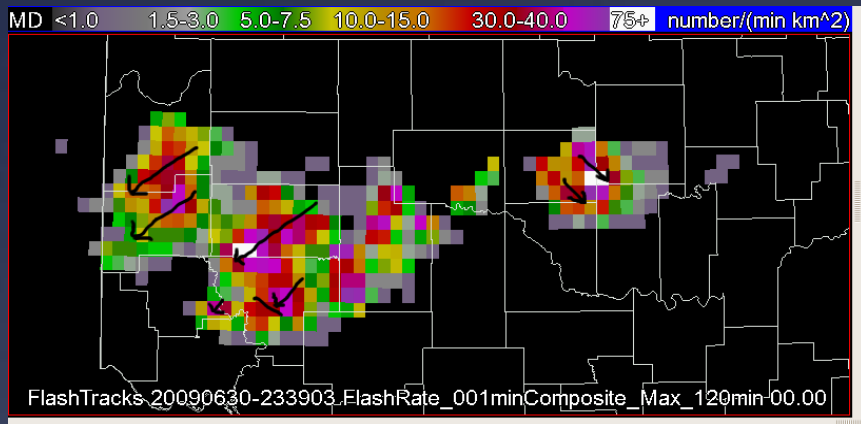
- Additional Products:
  - Rate of change of flash rate (as a gridded product, not a line graph)
- More Events:
  - Winter Weather (convective snow bands)
  - Landfalling tropical cyclones
  - Fire & Aviation Applications
- Increased guidance from research
  - Flash rates expected with different convective modes and associated severe weather occurance
  - Relationship of flash density with radar signatures typical of severe weather

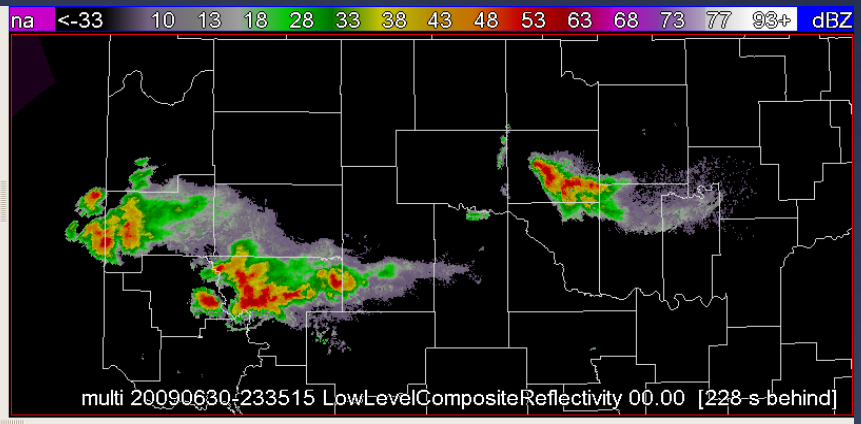


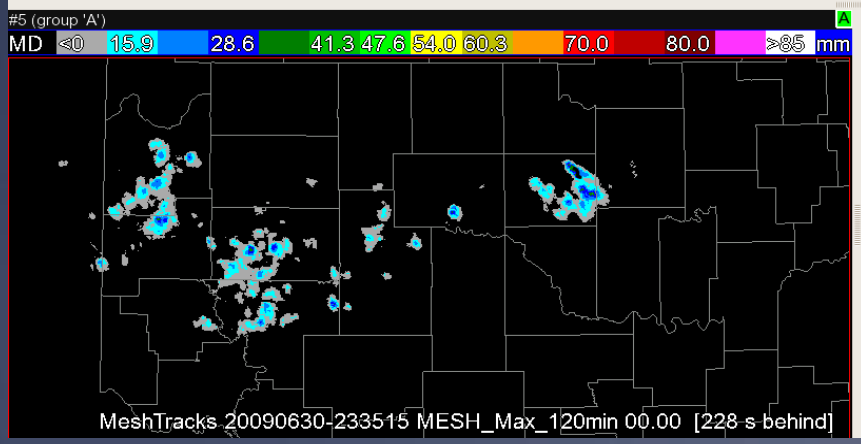


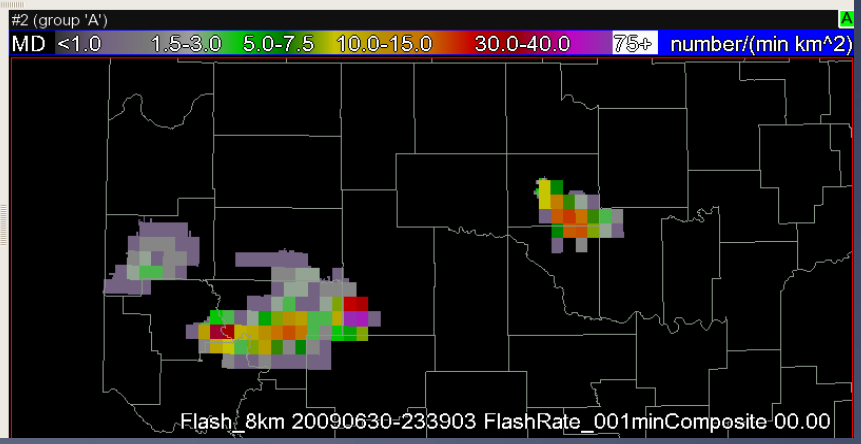
Products for 2011

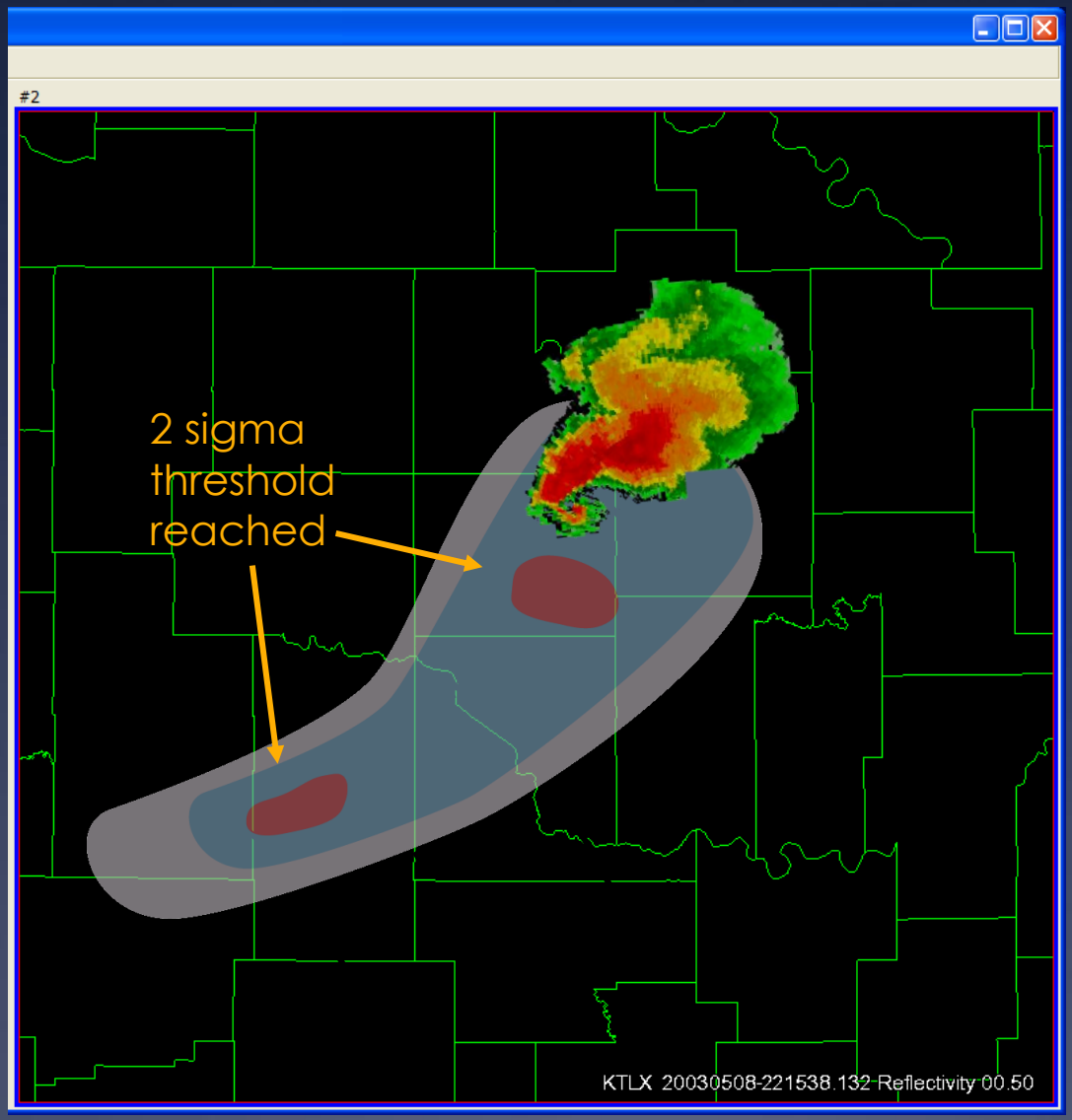
- Flash Initiations (First Group) - (similar to NLDN displays or density product)
- Flash rate track product (similar to MESH/rotation track products also available)
- Lightning Probability







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