

Session 5:
*Enhancements to the
Operational Environment*

Tom Birchard, CPHC

Dave Jones, Storm Center Communications, Inc.

Brian Strahl, JTWC

Frank Marks, HRD

Mark DeMaria, NHC

Session 5

- “Enhancements in Operational Tools to Improve Forecasting Efficiency” Thomas Birchard (NOAA NWS/CPHC)
- "Real-Time Geospatial Data Sharing Across Platforms to Enhance NWS Operational Impact-based Decision Support Services to Core Partners". Dave Jones (Storm Center Communications, Inc.)
- “ATCF/AWIPSII Plans/Developments Update”. Mark DeMaria (NHC), Brian Strahl (JTWC), and Frank Marks (HRD)

Session 5:

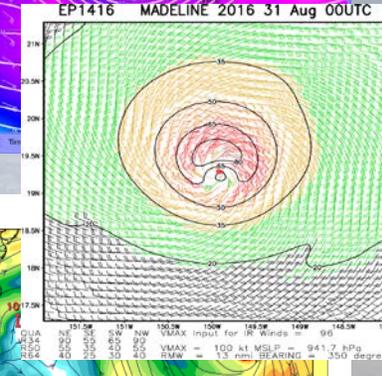
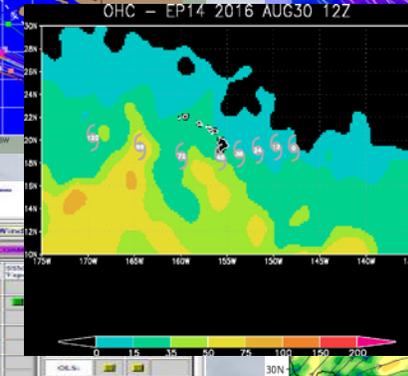
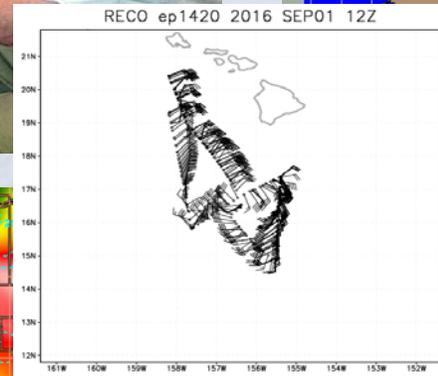
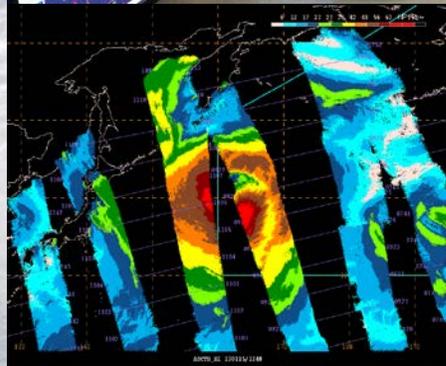
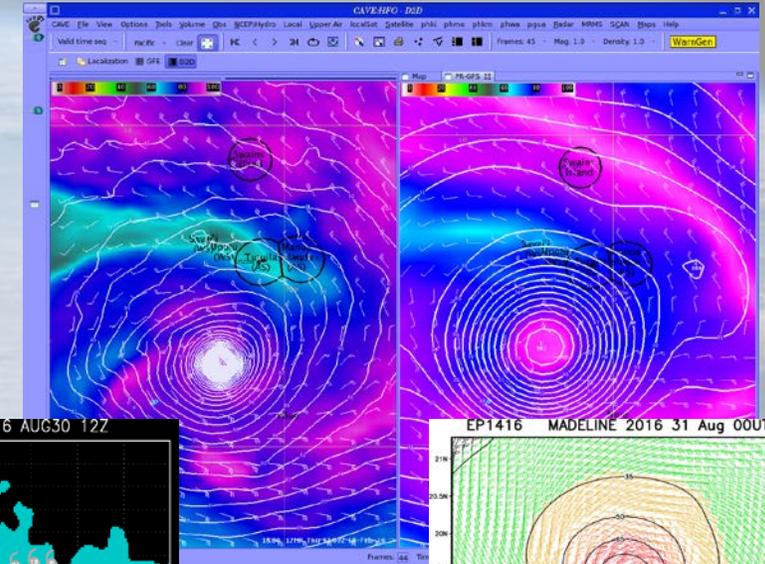
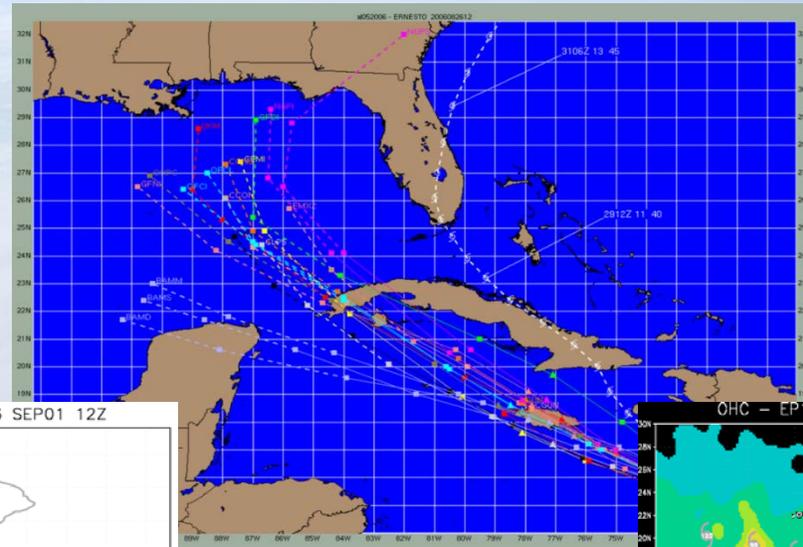
Premise:

The amount of real-time data available to operational tropical cyclone forecasters is increasing. Data sources include deterministic and ensemble track and intensity model forecasts, geostationary/LEO satellites, manned/unmanned aircraft obs, automated objective intensity estimates and wind field analyses, as well as ocean surface wind vector data. ***The need to efficiently assimilate and evaluate these diverse data sets requires improved data visualization methods.***

Enhancements in operational tools to improve forecaster efficiency

- *Current Forecast Environment*
- *Examples of increased data sources*
- *Examples of data visualization techniques*

Current Forecast Environment



NRL Tropical Cyclone Page

| Time | Lat | Lon | Max Wind | Pressure | Other |
|-------|--------|--------|----------|----------|-------|
| 0000Z | 18.0N | 165.0W | 15 | 1015 | |
| 0600Z | 18.5N | 164.5W | 15 | 1015 | |
| 1200Z | 19.0N | 164.0W | 15 | 1015 | |
| 1800Z | 19.5N | 163.5W | 15 | 1015 | |
| 0000Z | 20.0N | 163.0W | 15 | 1015 | |
| 0600Z | 20.5N | 162.5W | 15 | 1015 | |
| 1200Z | 21.0N | 162.0W | 15 | 1015 | |
| 1800Z | 21.5N | 161.5W | 15 | 1015 | |
| 0000Z | 22.0N | 161.0W | 15 | 1015 | |
| 0600Z | 22.5N | 160.5W | 15 | 1015 | |
| 1200Z | 23.0N | 160.0W | 15 | 1015 | |
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| 0000Z | 24.0N | 159.0W | 15 | 1015 | |
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| 1200Z | 33.0N | 150.0W | 15 | 1015 | |
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| 1200Z | 37.0N | 146.0W | 15 | 1015 | |
| 1800Z | 37.5N | 145.5W | 15 | 1015 | |
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| 1200Z | 39.0N | 144.0W | 15 | 1015 | |
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| 0600Z | 40.5N | 142.5W | 15 | 1015 | |
| 1200Z | 41.0N | 142.0W | 15 | 1015 | |
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| 0600Z | 76.5N | 106.5W | 15 | 1015 | |
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| 1800Z | 77.5N | 105.5W | 15 | 1015 | |
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| 0600Z | 88.5N | 94.5W | 15 | 1015 | |
| 1200Z | 89.0N | 94.0W | 15 | 1015 | |
| 1800Z | 89.5N | 93.5W | 15 | 1015 | |
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| 0600Z | 90.5N | 92.5W | 15 | 1015 | |
| 1200Z | 91.0N | 92.0W | 15 | 1015 | |
| 1800Z | 91.5N | 91.5W | 15 | 1015 | |
| 0000Z | 92.0N | 91.0W | 15 | 1015 | |
| 0600Z | 92.5N | 90.5W | 15 | 1015 | |
| 1200Z | 93.0N | 90.0W | 15 | 1015 | |
| 1800Z | 93.5N | 89.5W | 15 | 1015 | |
| 0000Z | 94.0N | 89.0W | 15 | 1015 | |
| 0600Z | 94.5N | 88.5W | 15 | 1015 | |
| 1200Z | 95.0N | 88.0W | 15 | 1015 | |
| 1800Z | 95.5N | 87.5W | 15 | 1015 | |
| 0000Z | 96.0N | 87.0W | 15 | 1015 | |
| 0600Z | 96.5N | 86.5W | 15 | 1015 | |
| 1200Z | 97.0N | 86.0W | 15 | 1015 | |
| 1800Z | 97.5N | 85.5W | 15 | 1015 | |
| 0000Z | 98.0N | 85.0W | 15 | 1015 | |
| 0600Z | 98.5N | 84.5W | 15 | 1015 | |
| 1200Z | 99.0N | 84.0W | 15 | 1015 | |
| 1800Z | 99.5N | 83.5W | 15 | 1015 | |
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Torres Strait COSMET

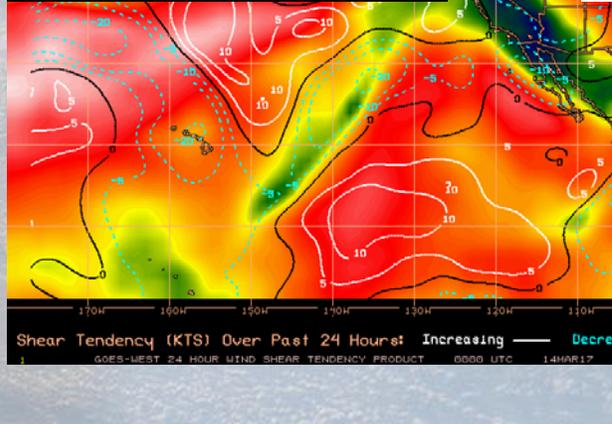
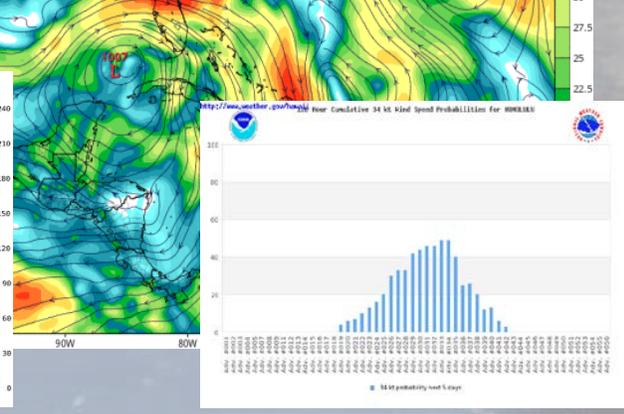
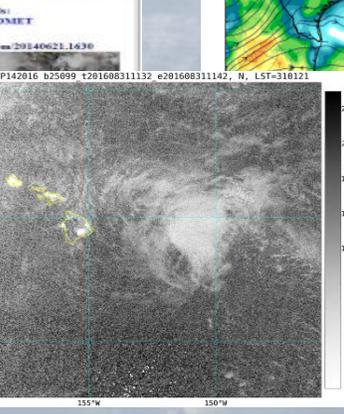
Latest via geo/Exec_www/20140621.1630

| Season | Lat | Lon | Max Wind | Pressure | Other |
|-----------|----------------------|------|----------------------|----------|-------|
| SOON | 0602 0497 E, F-18 | 0882 | 0602 0248 E, F-18 | 0789 | |
| TC_MARKEN | 0602 0492 E, F-18 | 0882 | 0602 0248 E, F-18 | 0847 | |
| TCR | 0602 0717 E, TRUMP | 0987 | 0602 0248 E, TRUMP | 0849 | |
| COE | 0602 0324 E, COE | 0980 | 0602 0248 E, COE | 0860 | |
| ANNE | 0602 0844 E, ANNE | 0980 | 0602 0844 E, ANNE | 0842 | |
| TRUMPAT | 0602 0842 E, TRUMPAT | 0980 | 0602 0842 E, TRUMPAT | 0842 | |
| ANNEB | 0602 0322 E, ANNEB | 0981 | 0602 0322 E, ANNEB | 0875 | |
| SCATY | 0602 0492 E, SCATY | 0984 | 0602 0492 E, SCATY | 0867 | |

(Click product for full-sized image)

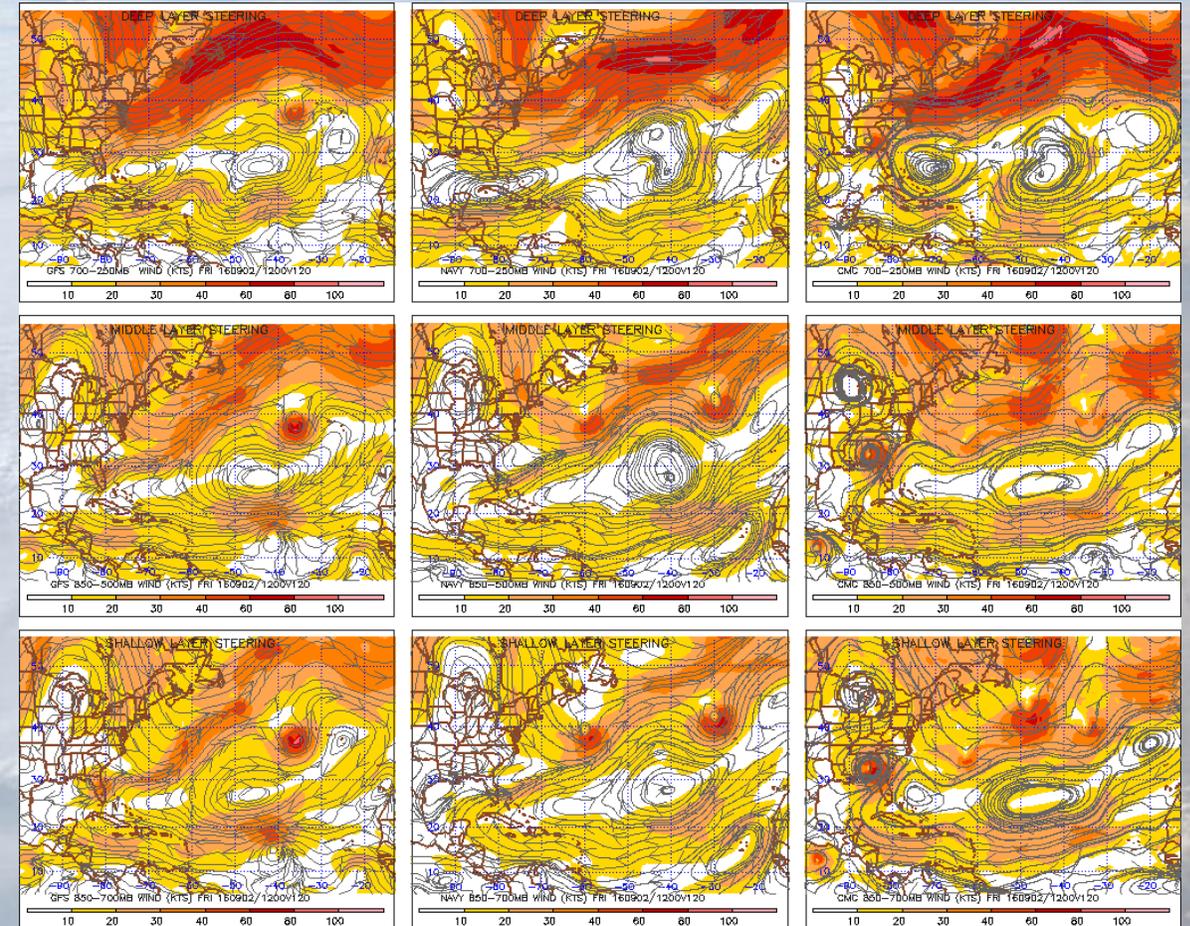
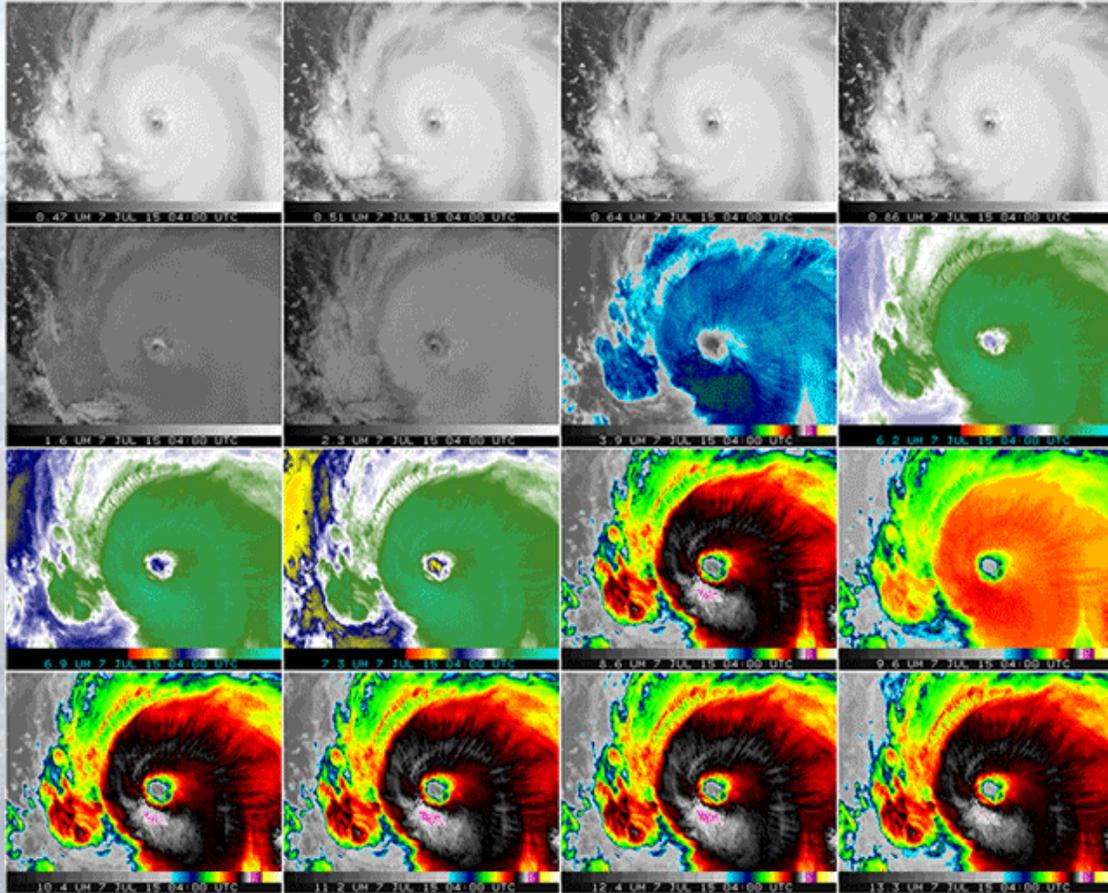
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Copyright: Sea June 20 16:02:00 UTC
 Page: 1 of 1
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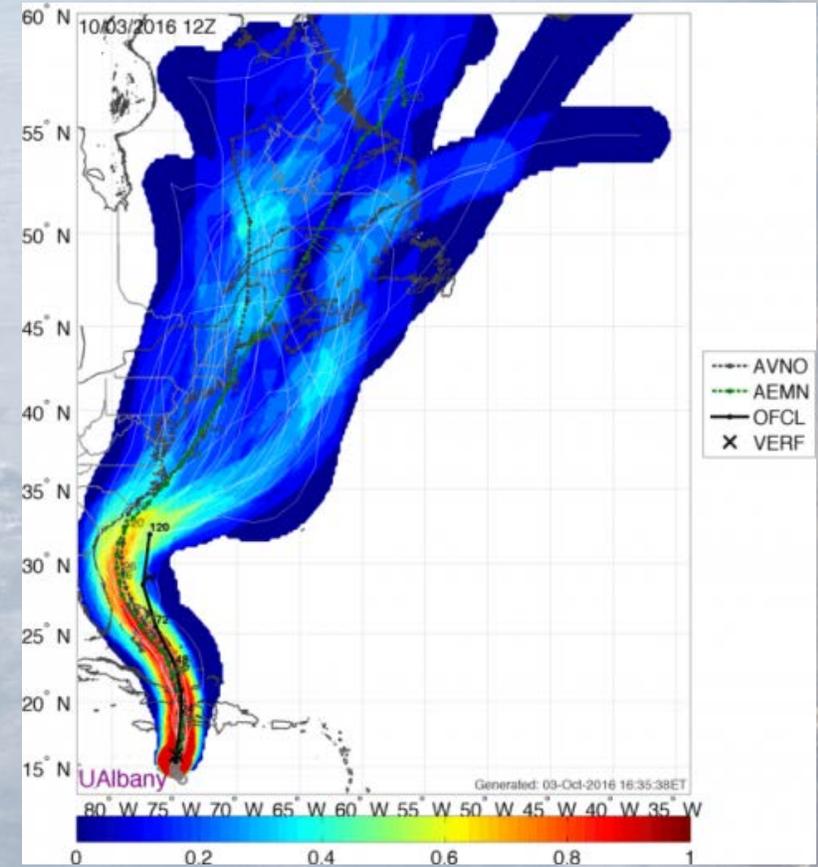
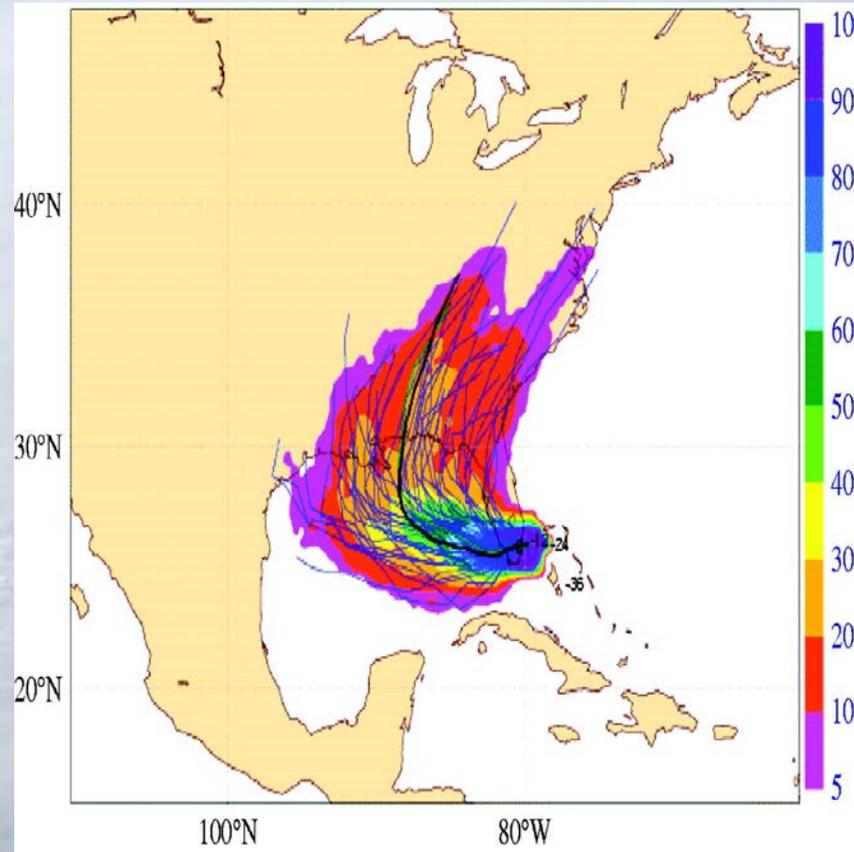
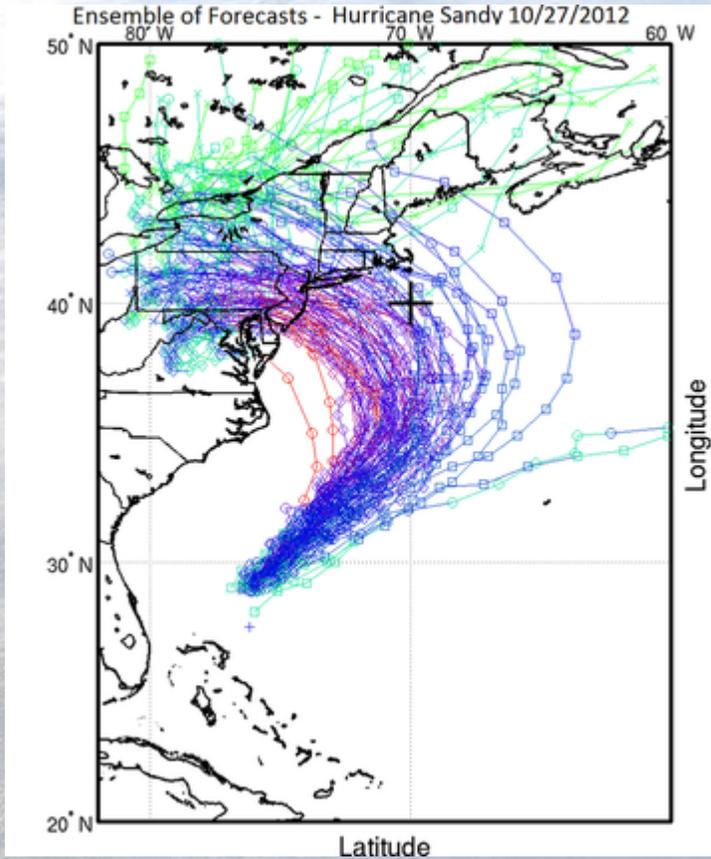
GOES-16/H-8

9/16 panel AWIPS2

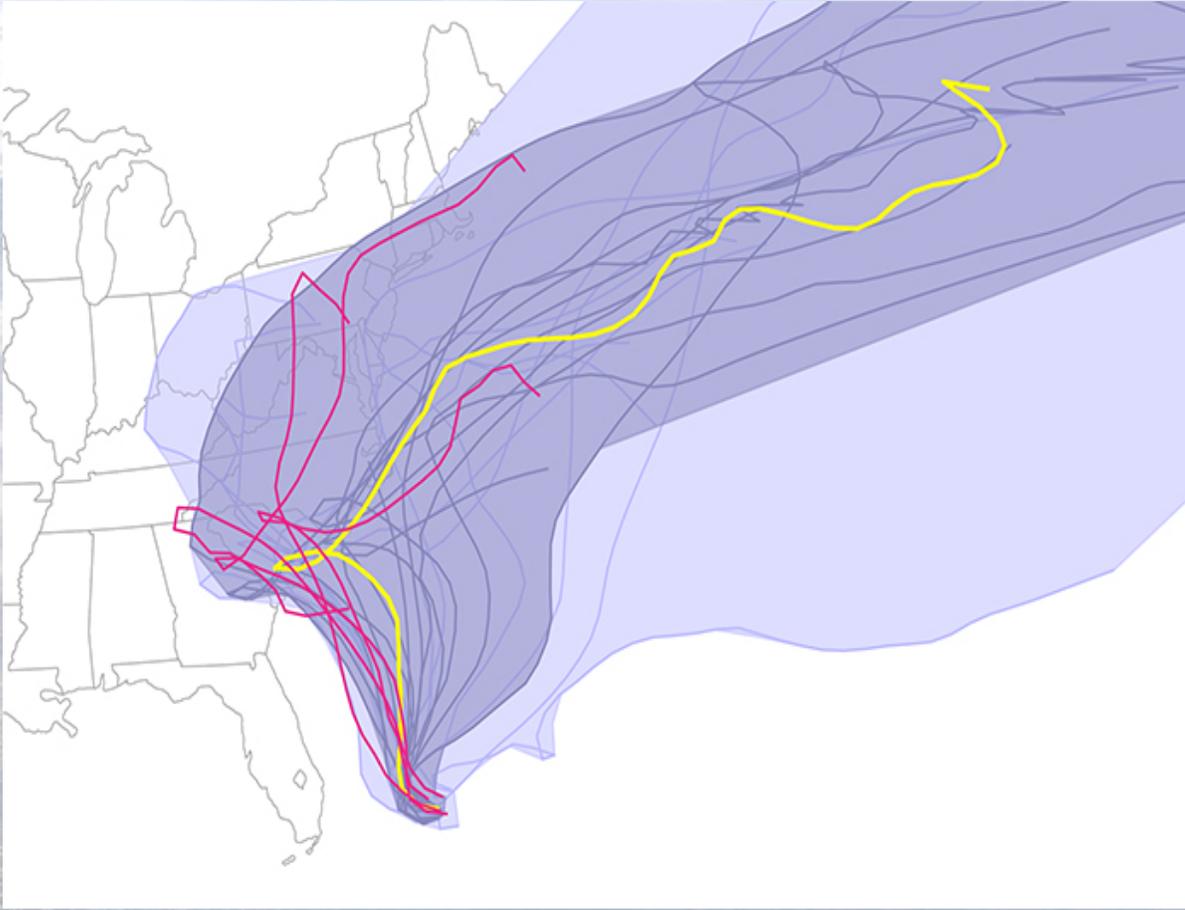


Courtesy: CIMSS

Enhancements in operational tools to improve forecaster efficiency



Enhancements in operational tools to improve forecaster efficiency



Dr. Mahsa Mirzargar, and her collaborators, Dr. Mike Kirby and Dr. Ross Whitaker, applied a “Curve Boxplot” analysis and visualization method to show Hurricane Joaquin forecast data. The median hurricane path and the 50% band (dark region). The light band denotes nearly 100 percent of the possible paths predicted. Red denotes outliers — those hurricane paths flagged as unlikely in reference to all other members of the ensemble.



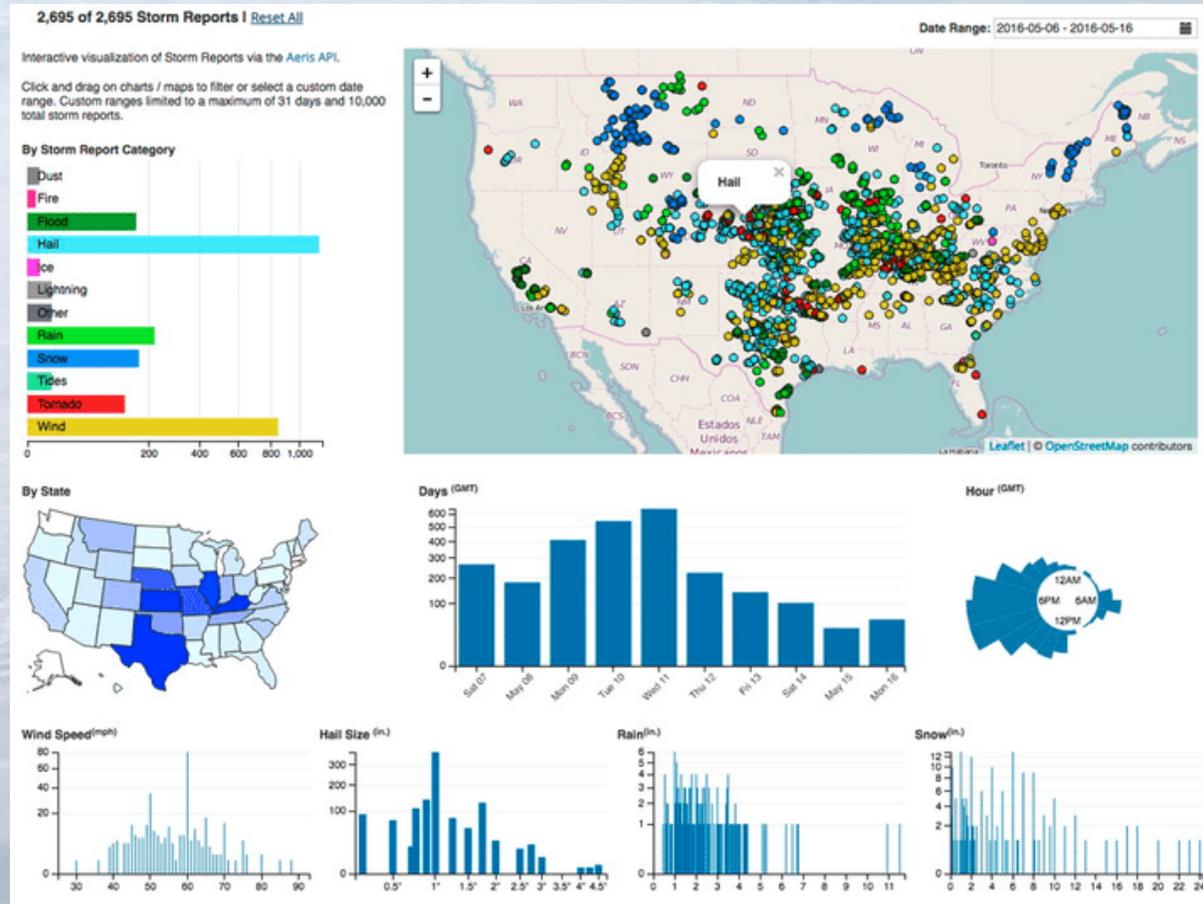
Visualizing Time-Specific Hurricane Predictions, with Uncertainty, from Storm Path Ensembles

L. Liu
M. Mirzangar
R.M. Kirby
R. Whitaker
D.H. House

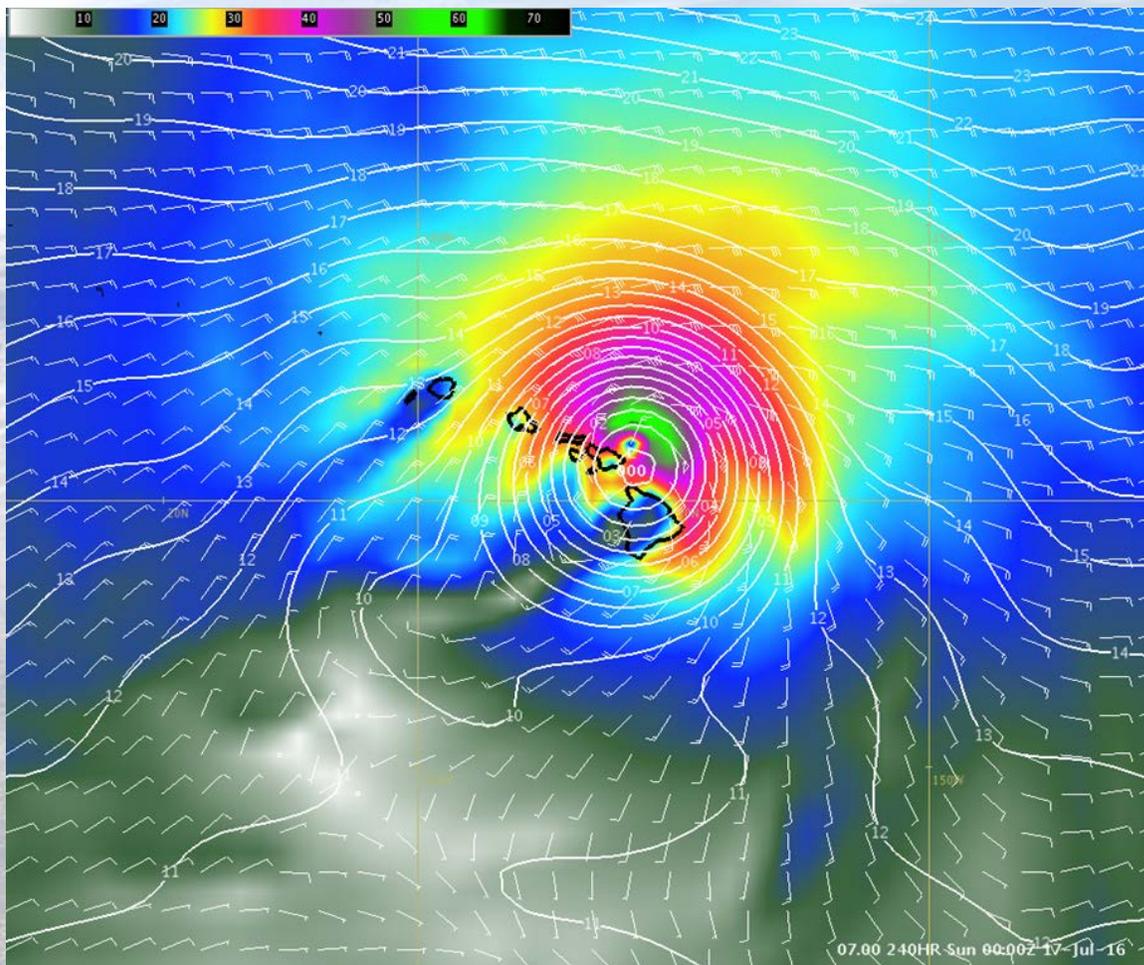
Enhancements in operational tools to improve forecaster efficiency



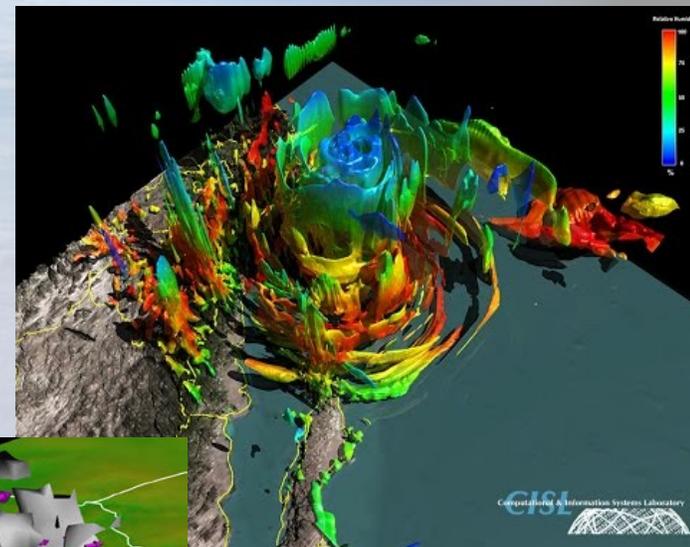
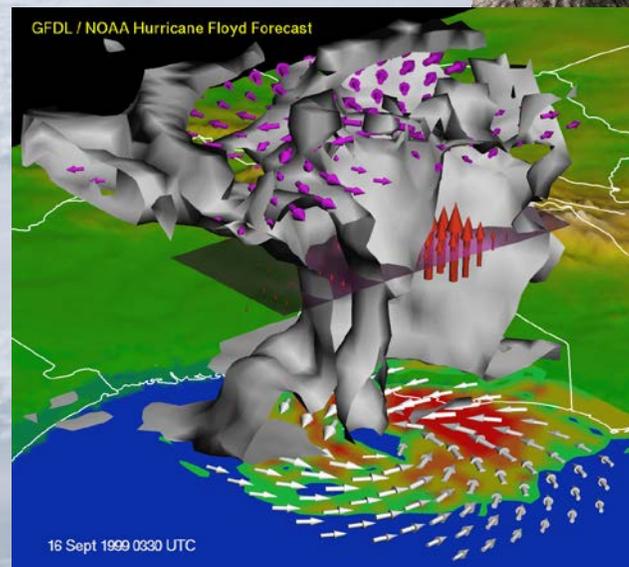
Interactive Storm Reports – Aeris Weather



PLAN vs 3-D



V
S



Enhancements in operational tools to improve forecaster efficiency

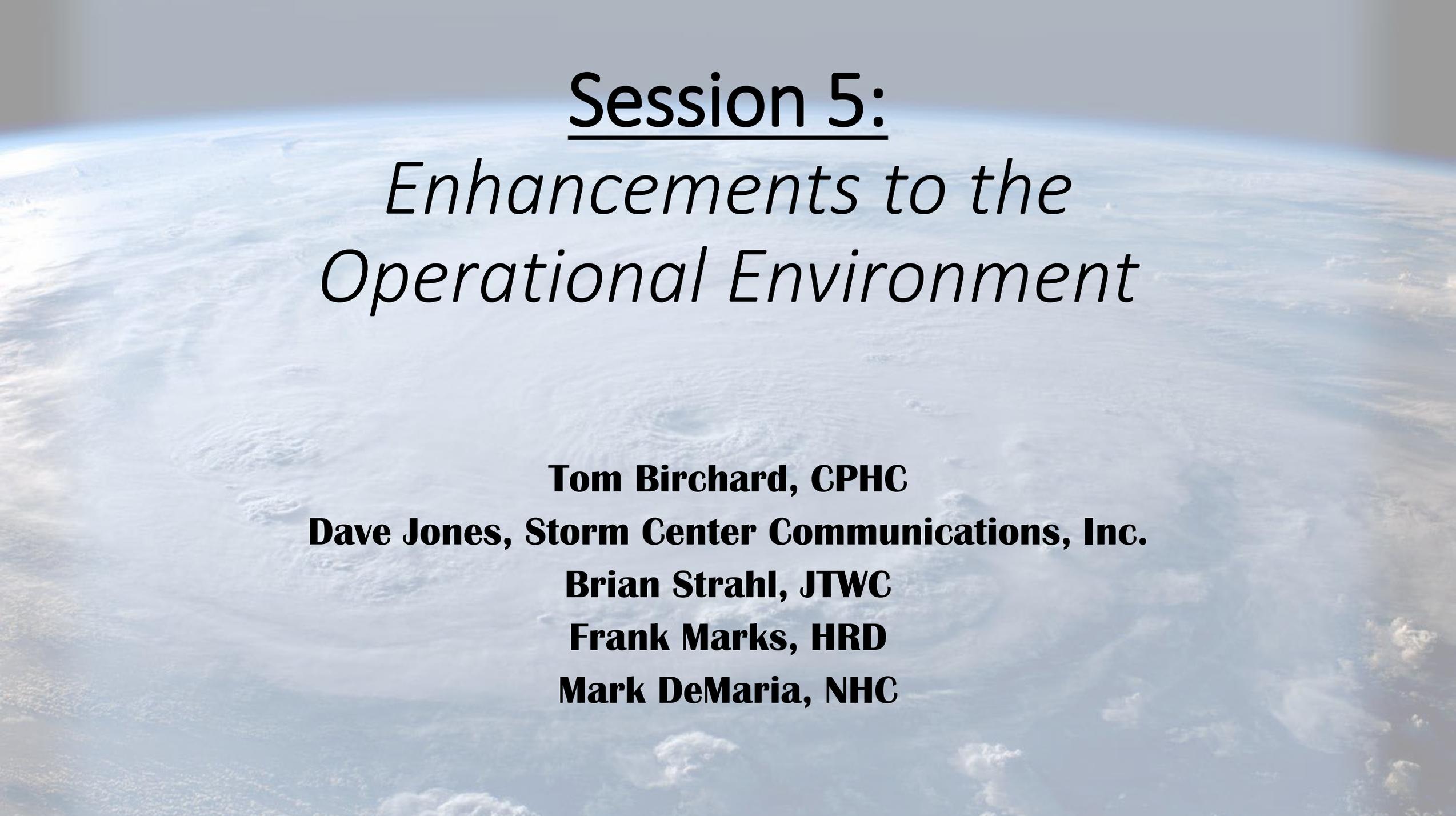
- Research community and government agencies should actively pursue improved data visualization methods;
- To ensure that operational TC forecasters are able to efficiently and effectively review observational and forecast data streams that will likely be increasing (short-range ensemble forecasts, etc)

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