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## BACKGROUND

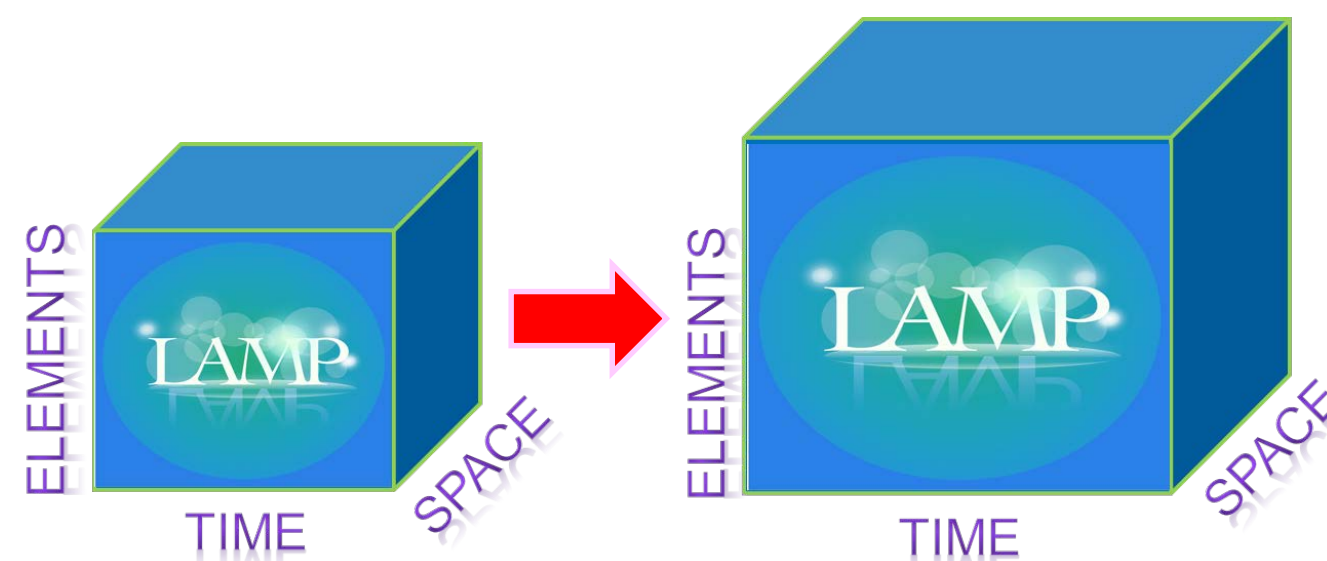
### National Blend of Models:

- The National Blend of Models (NBM) provides a skillful and spatially consistent gridded starting point for making National Digital Forecast Database (NDFD) forecasts.
- The NBM is a key component to the NWS's efforts to evolve and build a Weather Ready Nation.

### Localized Aviation MOS Program:

- The Localized Aviation MOS Program (LAMP) provides skillful aviation forecast guidance and is a critical component of the NBM in the very short term period.
- LAMP currently provides hourly updates of station-based and Gridded LAMP (GLMP) guidance on the NDFD 2.5-km grid in hourly increments to 25 hours.
- Recent upgrades to LAMP in **January 2018** include:
  - Added 1-h gridded convection and lightning guidance which statistically incorporates High Resolution Rapid Refresh (HRRR) model output, Multi-Radar Multi-Sensor (MRMS) data, and total lightning data
  - Modified LAMP/GLMP to use the most-recent METAR and SPECI observations and produce ceiling and visibility guidance every 15 minutes; issuances at :00, :15, and :45 go out 3-h, issuance at :30 goes out 25-h
- These upgrades result in improved GLMP guidance for aviation elements.

## OVERVIEW: NEXT LAMP UPGRADE



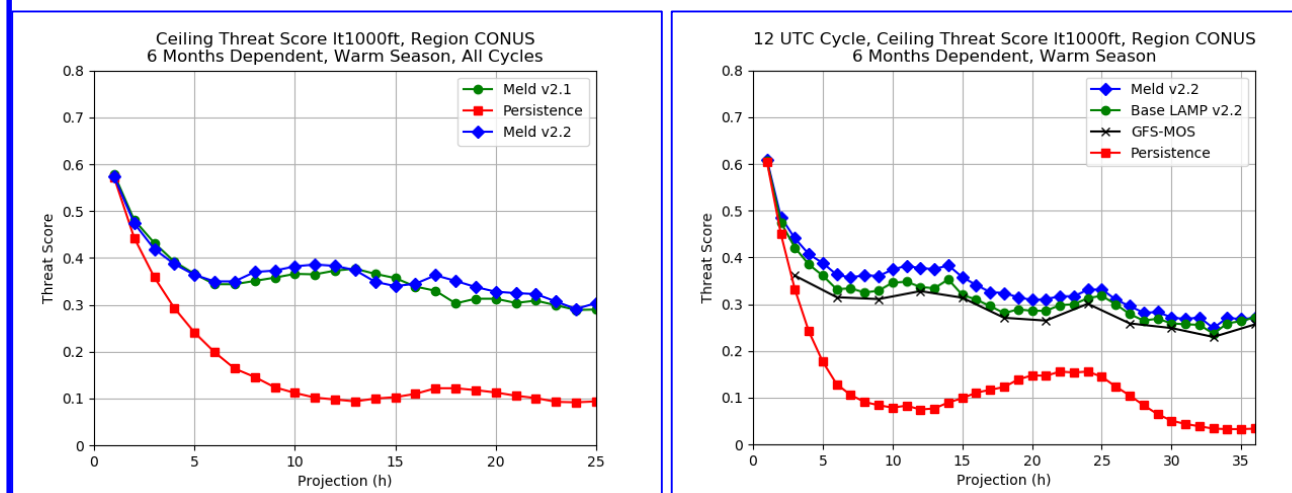
- LAMP and GLMP guidance upgrade consists of the following 4 improvements:
  - Redevelopment:** Ceiling and visibility guidance redeveloped to utilize the upgraded HRRR and GFS MOS inputs
  - Time:** Hourly guidance extended to cover **38 hours**

- LAMP and GLMP guidance upgrade consists (cont'd):
  - Space:** Grid coverage expanded to be consistent with the NBM grid for the CONUS, and some elements will be available on the NBM Alaska grid
  - Elements:** New elements added to provide additional inputs in support of the NBM

## RE-DEVELOPMENT AND TIME EXTENSION

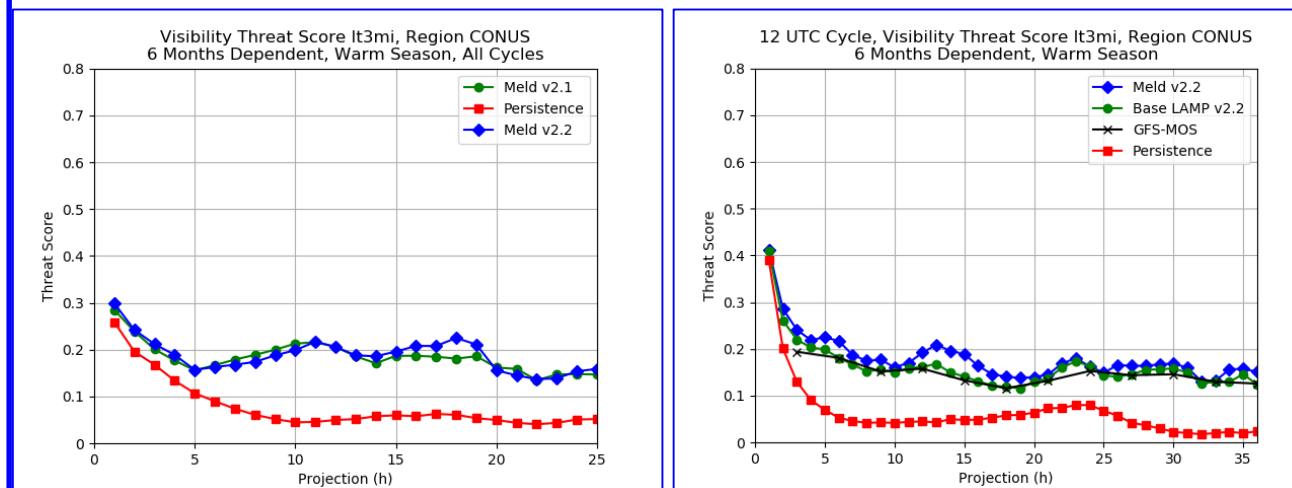
- LAMP Meld ceiling and visibility redevelopment verification shows added value in extended forecasts out to 38-h and improvement in OCONUS areas out to 25-h

### LAMP CONUS Meld Verification



CIG < 1000 ft out to 25 h

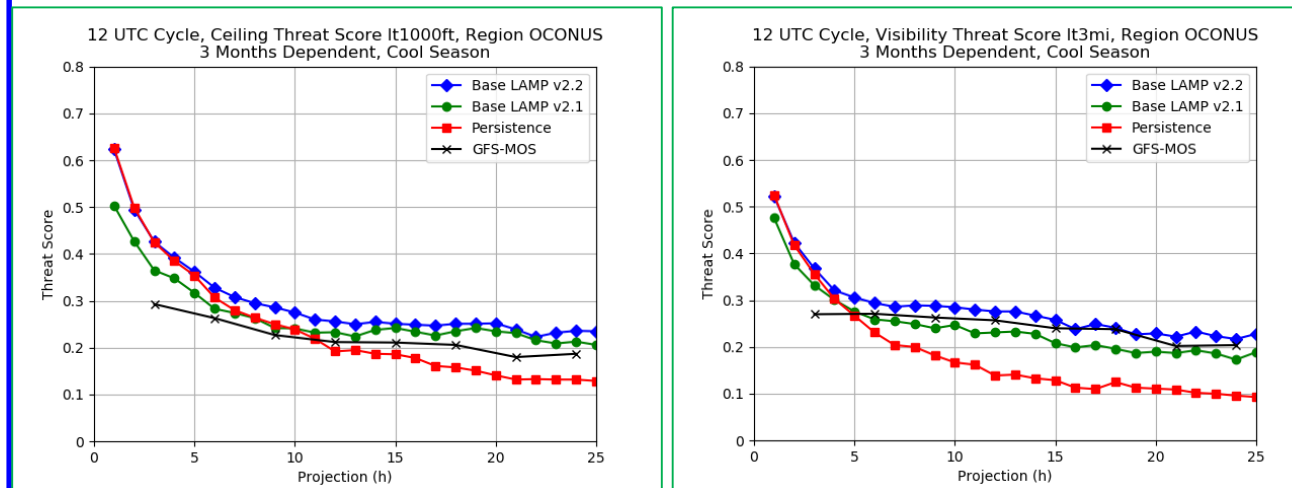
CIG < 1000 ft out to 36 h



VIS < 3 mi out to 25 h

VIS < 3 mi out to 36 h

### LAMP OCONUS Verification

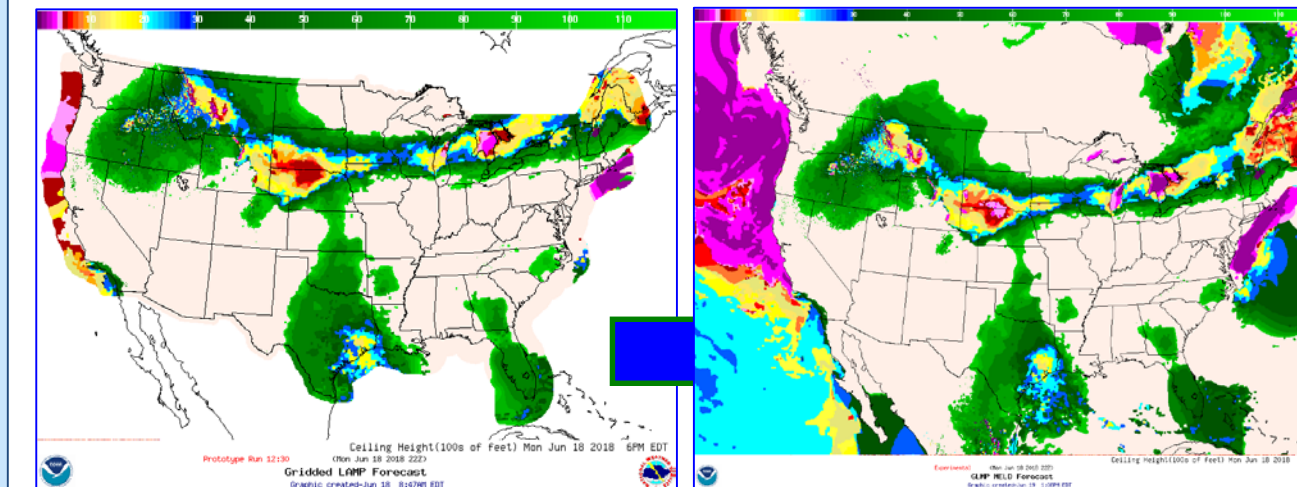


CIG < 1000 ft out to 25 h

VIS < 3 mi out to 25 h

## GRID EXPANSION FOR GRIDDED LAMP

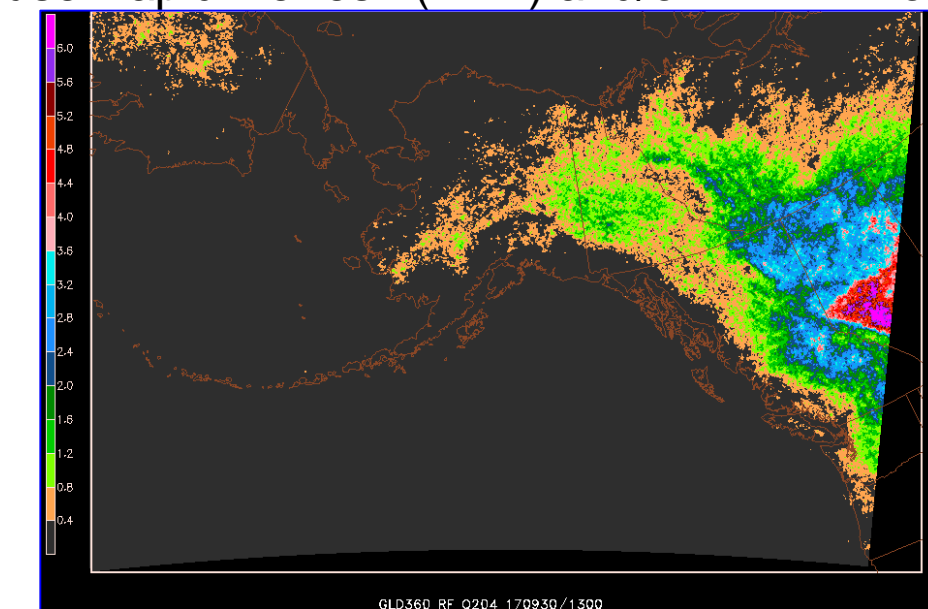
- The GLMP CONUS grid coverage is expanding:



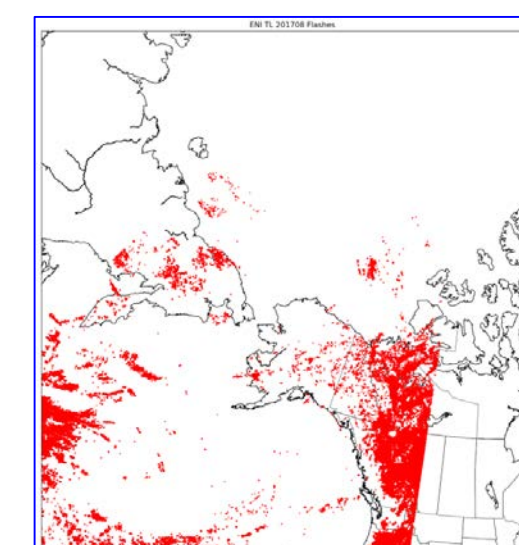
Current LAMP Grid

Expanded LAMP Grid

- In addition, the Gridded LAMP system is being extended to create gridded guidance for ceiling height, visibility, convection, and lightning valid over the Alaska domain (funding through the Office of Atmospheric Research's Joint Technology Transition Initiative).
- Alaska Gridded LAMP will:
  - follow existing methodology for CONUS Gridded LAMP
  - use Rapid Refresh (RAP) and/or HRRR model output



Predictor example: Relative Frequency of GLD360 lightning obs for 2013-2017, May – Sept. (data courtesy Vaisala, Inc.)

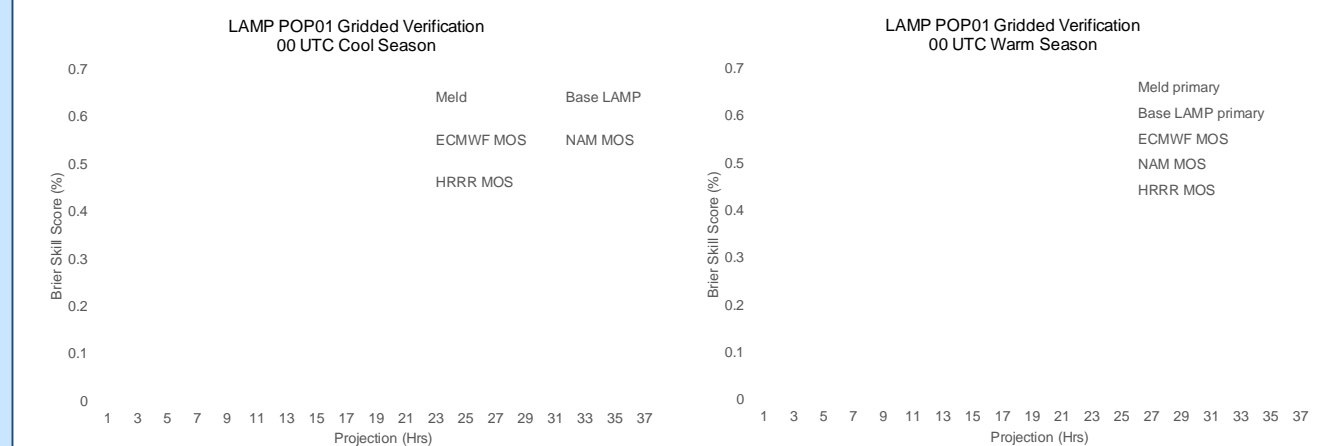


Example of archived Earth Networks Inc. lightning data over Alaska from MDL archive July 2017

## NEW LAMP ELEMENTS

- 1-, 6-, and 12-h Probability of Precipitation (POP01, POP06, POP12) to 38 h; POP01 guidance can aid fine scale timing and positioning of predicted precipitation

### LAMP POP01 Verification



POP01 00 UTC Cool

POP01 00 UTC Warm

### LAMP POP Examples

POP01 Hurricane Harvey 00 UTC Aug. 26, 2017

01-h Projection

24-h Projection

POP06 and POP12 00 UTC Jan. 14, 2017

POP06 06-h Projection

POP12 36-h Projection

## SCHEDULE

- Upgrade ceiling and visibility to 38 hours, expand domain, add of POP(01, 06, 12) to 38 hours:
  - Evaluation: September 2018, Implementation: February 2019
- Alaska Gridded LAMP prototype evaluations: Ceiling and visibility 2019; Convection and lightning 2020