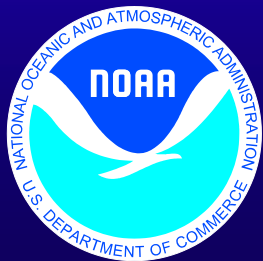


# National Weather Service Statistical Guidance: Ceiling and Visibility

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National Weather Service

Presented at: National Business Aviation Association  
Friends/Partners in Aviation Weather Meeting  
September 27, 2007



# MDL Statistical Guidance

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- Provides objective forecast guidance for sensible weather elements
- Guidance is
  - Probabilistic and deterministic
  - Station based
  - Gridded
- Products:
  - Text
  - Graphics
  - Binary Data (BUFR, GRIB2)

# Model Output Statistics (MOS)

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- MOS statistically relates sensible weather to output from Numerical Weather Prediction (NWP) Models
- Adds value to direct NWP model output
  - Objectively interprets model
  - Removes systematic biases
  - Quantifies uncertainty
  - Predicts what the model does not
  - Produces site-specific forecasts
- MOS guidance
  - Provides guidance of aviation elements: ceiling height, sky cover, visibility, and obstruction to vision
  - Goes out 72 hours in 3 hour projections
  - Station Guidance: All elements, >1600 stations, CONUS, Alaska, Hawaii, Puerto Rico
  - Runs 4 times a day (00, 06, 12, 18 UTC)

# GFS MOS Alphanumeric Bulletin

KATL	GFS MOS GUIDANCE																9/21/2007				1200 UTC			
DT	/SEPT 21/SEPT 22								/SEPT 23								/SEPT 24							
HR	18	21	00	03	06	09	12	15	18	21	00	03	06	09	12	15	18	21	00	06	12			
N/X							67				85				69				88		71			
TMP	78	80	76	72	70	68	69	76	82	84	80	76	73	70	71	81	85	87	82	74	72			
DPT	67	66	66	67	67	66	67	69	69	67	68	67	66	66	67	69	67	66	67	66	67			
CLD	OV	BK	BK	BK	OV	OV	OV	BK	BK								BK	SC	SC	FW	FW			
WDR	08	09	08	09	09	08	08	09	09								09	11	11	09	07			
WSP	13	11															07	07	05	04	06			
P06																	10		17	13	12			
P12																			24		19			
Q06																								
Q12																								
T06																								
T12																								
POZ	0	0																						
POS	0	0																						
TYP	R	R																						
SNW																								
CIG	5	6	7	7	6	4	3	6	8	8	8	8	8	8	8	8	8	7	8	8	8			
VIS	7	7	7	7	7	7	5	7	7	7	7	7	7	7	5	7	7	7	7	7	5			
OBV	N	N	N	N	N	N	BR	N	N	N	N	N	N	N	N	BR	N	N	N	N	BR			

CLD = Sky Cover

Visibility

- 1 = < 1/2 miles
- 2 = 1/2 - < 1 miles
- 3 = 1 - < 2 miles
- 4 = 2 - < 3 miles
- 5 = 3 - 5 miles
- 6 = 6 miles
- 7 = > 6 miles

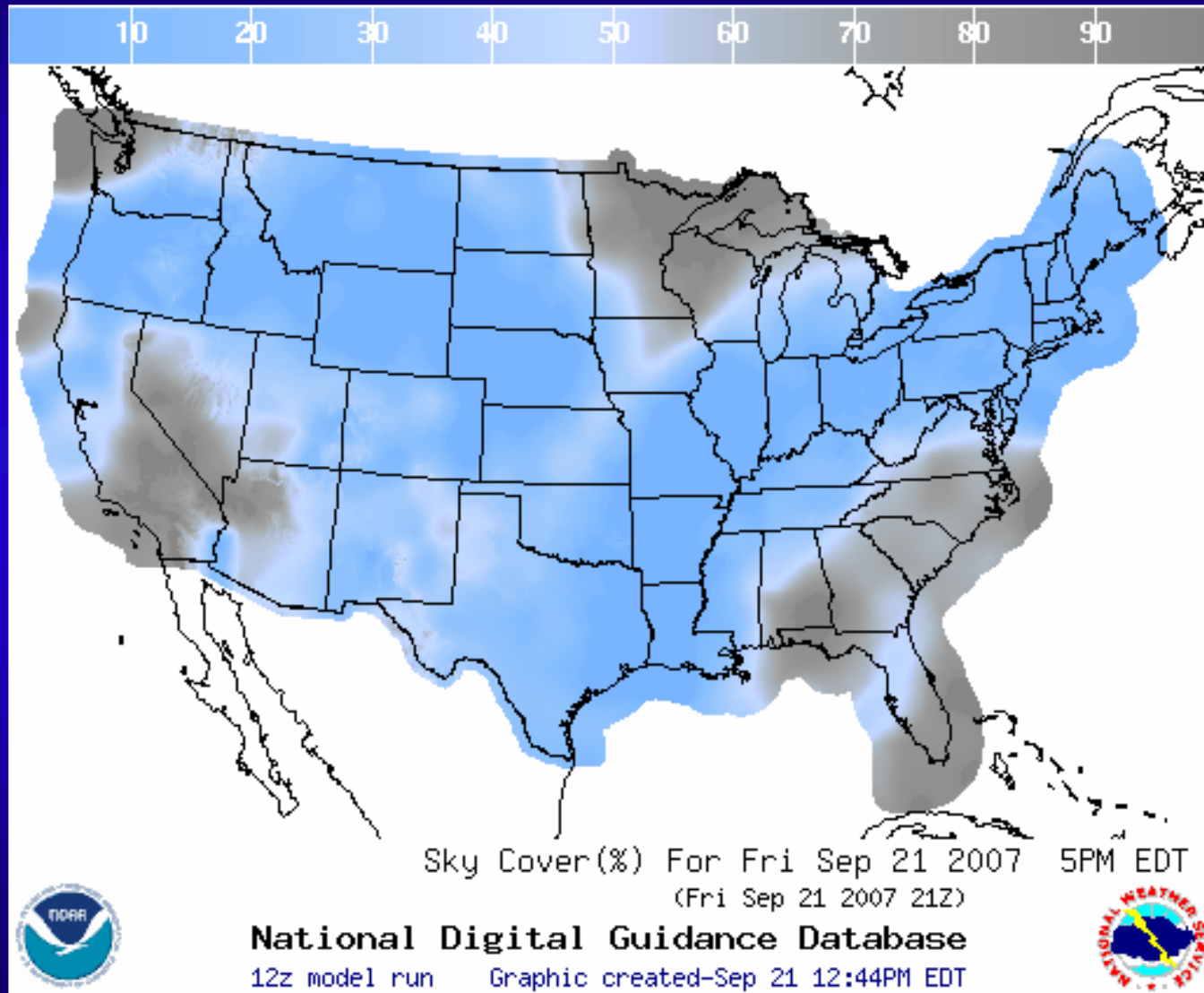
Ceiling Height

- 1 = <200 ft
- 2 = 200-400
- 3 = 500-900
- 4 = 1000-1900

Obstruction to Vision

- N = none
- HZ = haze, smoke, dust
- BR = mist (fog with vis >= 5/8 mile)
- FG = fog or ground fog (vis < 5/8 mile)
- BL = blowing dust, sand, snow

# Gridded MOS Sky Cover



# Localized Aviation MOS Program (LAMP)

- LAMP statistically relates sensible weather to output from MOS along with the most recent observations
- Acts as a rapid refresh update to MOS
- LAMP acts as a sophisticated interpolation between the observations and the MOS forecast
- LAMP guidance
  - Provides guidance of aviation elements: ceiling height, sky cover, visibility, and obstruction to vision
  - Goes out 25 hours in 1 hour projections
  - Station Guidance: All elements, ~1600 stations, CONUS, Alaska, Hawaii, Puerto Rico
  - Eventually will run 24 times a day (every hour)

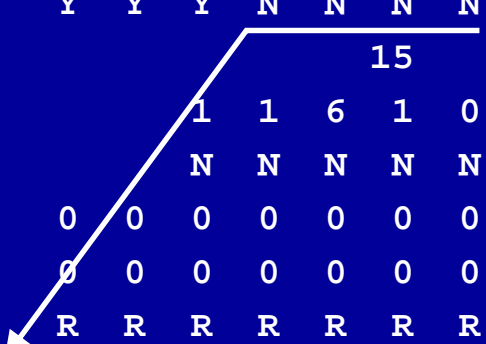
Available LAMP cycles (UTC) in green:

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

KATL	GFS		LAMP				GUIDANCE				9/21/2007				1200 UTC											
UTC	13	14	15	16	17	18	19	20	21	22	23	00	01	02	03	04	05	06	07	08	09	10	11	12	13	
TMP	68	68	69	71	73	74	76	77	77	78	77	76	74	73	73	71	71	70	69	69	68	69	69	69	70	
DPT	66	66	66	67	67	68	67	67	67	68	68	67	67	67	67	67	67	66	66	66	66	66	66	66	67	
WDR	08	08	08	08	08	09	09	09	09	09	09	09	09	09	09	09	09	09	09	08	08	08	08	08	08	
WSP	15	15	15	14	14	13	12	11	11	10	10	09	09	10	11	10	10	09	09	09	09	08	08	08	07	
WGS	NG	NG	21	NG	21	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	
PPO	40	43	35	7	5	3	3	3	4	4	4	5	3	4	4	4	2	2	7	5	4	3	2	3	4	
PCO	Y	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	
P06							15																		10	
TP2			1	1	6	1	0															0			0	
TC2			N	N	N	N	N															N			N	
POZ	0	0	0	0	0	0	0															0	0	0	0	0
POS	0	0	0	0	0	0	0															0	0	0	0	0
TYP	R	R	R	R	R	R	R															R	R	R	R	R
CLD	OV	OV	OV	OV	OV	OV	OV	OV	BK	BK	BK	SC	SC	SC	SC	SC	SC	SC	BK	BK	OV	OV	OV	OV	OV	
CIG	3	3	3	4	4	5	5	6	6	6	8	8	8	8	8	8	8	8	6	4	3	3	3	3	3	
CCG	3	3	3	3	4	4	5	5	5	6	6	6	6	6	6	6	5	5	4	5	4	3	3	3	3	
VIS	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	5	7	
CVS	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	
OBV	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

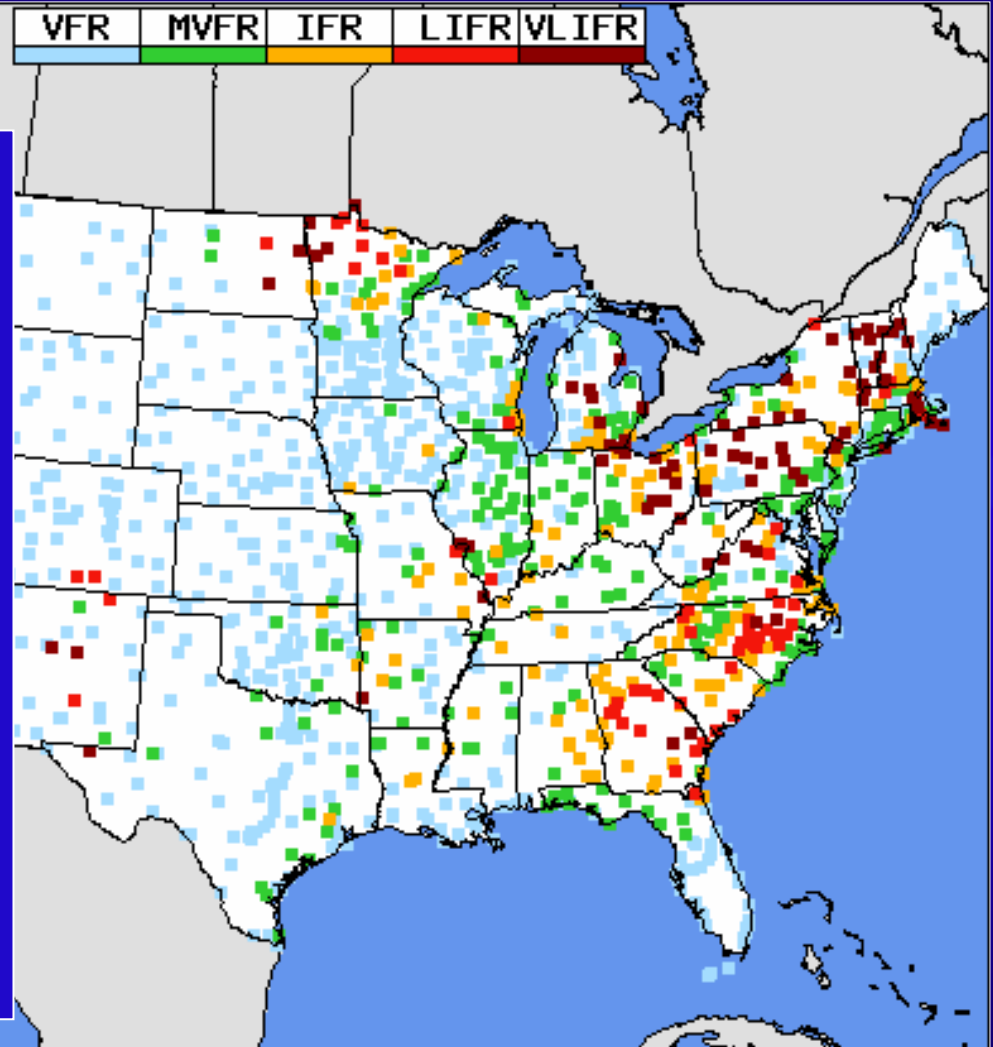
Aviation Elements  
 Elements in addition to MOS elements:  
 Conditional Ceiling Ht  
 Conditional Visibility  
 Same categories as MOS



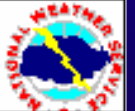
# LAMP Station Graphics

## Flight Categories

- Can loop through all 25 hours
- Other elements available:
  - Ceiling Height
  - Visibility
  - Obstruction to Vision
  - Total Sky Cover
  - Precipitation Type
  - Probability of Precipitation
  - Winds
  - Temperature
  - Dewpoint
- One click brings up region
- In region view, click on station for meteogram



09 UTC GFS-LAMP Flight Categories  
03 HOUR FORECAST VALID FOR 09-21-2007 12 UTC





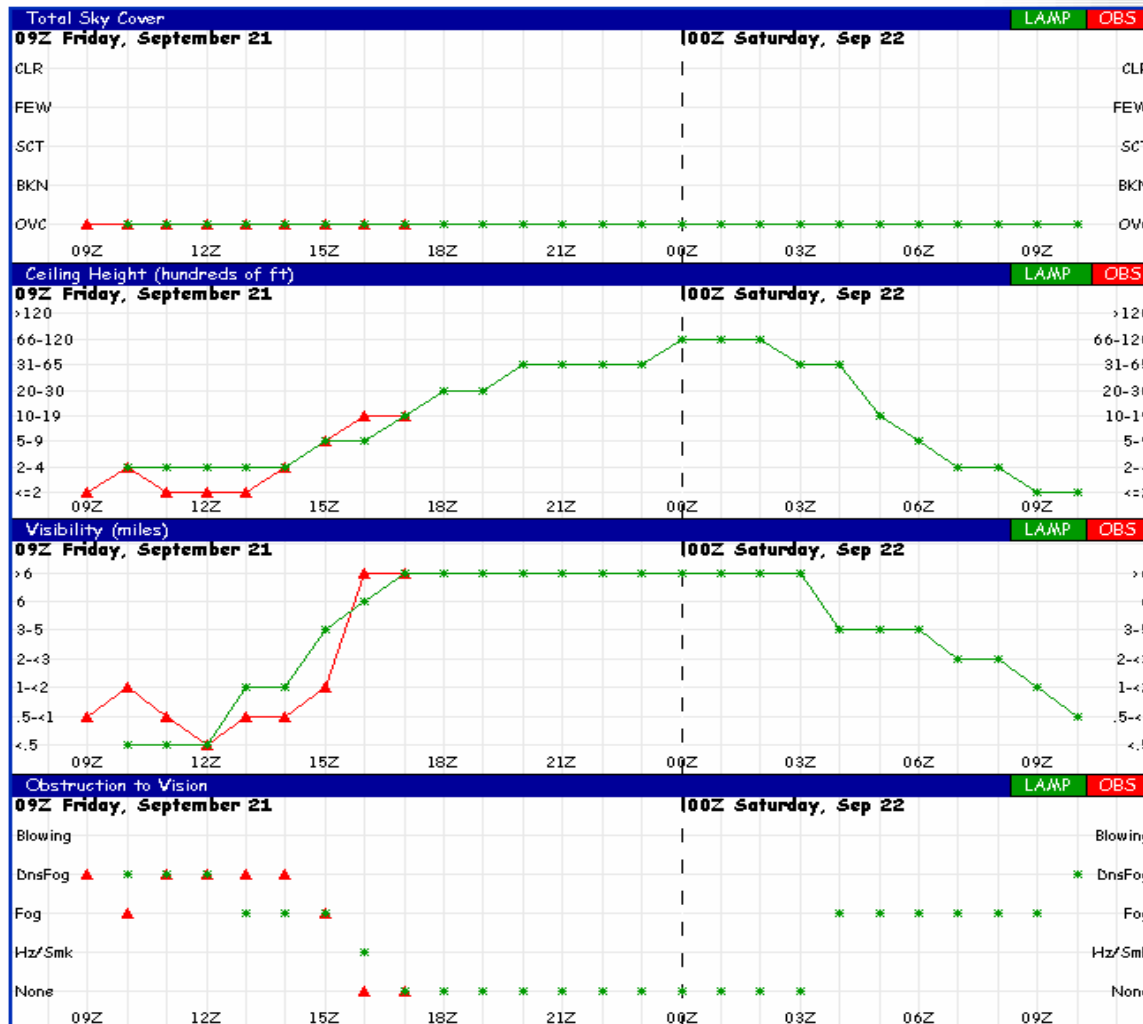
# LAMP Meteogram Graphics

## Localized Aviation MOS Product

- |                                      |   |   |  |                                       |
|--------------------------------------|---|---|--|---------------------------------------|
| <input type="checkbox"/> Temperature | <input type="checkbox"/> Wind Direction       | <input checked="" type="checkbox"/> Ceiling     | <input type="checkbox"/> Pcpn. Potential | <input type="button" value="Submit"/> |
| <input type="checkbox"/> Dewpoint    | <input type="checkbox"/> Wind Gusts           | <input checked="" type="checkbox"/> Visibility  | <input type="checkbox"/> Pcpn. Type      |                                       |
| <input type="checkbox"/> Wind Speed  | <input checked="" type="checkbox"/> Sky Cover | <input checked="" type="checkbox"/> Obstruction | <input type="checkbox"/> Thunderstorm    |                                       |

25-hour period starting: 09Z Friday, September 21 for RALEIGH-DURHAM (KRDU) NC

Return to station list or select another station  (hit Submit above)



# MOS and LAMP products

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- All formats available on
  - SBN/NOAAPort
  - NWS FTP Server
- Text and Graphics available on NWS Website:
  - MOS Products  
<http://www.nws.noaa.gov/mdl/synop/products.shtml>
  - LAMP Products  
<http://www.nws.noaa.gov/mdl/lamp>
- Contact info:
  - MOS: [Kathryn.Gilbert@noaa.gov](mailto:Kathryn.Gilbert@noaa.gov)
  - LAMP: [Judy.Ghirardelli@noaa.gov](mailto:Judy.Ghirardelli@noaa.gov)