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User Evaluation Information for LAMP/GLMP v2.7*

Outline

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- LAMP Background
- Summary of v2.7 upgrades
 - Upgrade benefits
 - Real-time experimental products
 - Feedback and Schedule

LAMP Background



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LAMP Background

- What is LAMP? LAMP is a statistical system that uses observations, MOS output, and model output to provide guidance for aviation forecasting.
- LAMP acts as an update to MOS guidance.
- LAMP bridges the gap between the observations and the MOS forecast.
- LAMP guidance covers the short-range period of 1-38 hours
 - (1-25 hours for a few elements).
- Runs every hour in NWS operations (every 15 minutes for ceiling and visibility).
- LAMP supports the National Blend of models (NBM).



12 UTC Cycle, Ceiling Threat Score It1000ft, Region CONUS 6 Months Dependent, Warm Season

Building a Weather-Ready Nation // 4

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LAMP Background: Guidance Details

- LAMP provides station-oriented guidance for:
 - 2313 stations (as of v2.6)
 - CONUS, Alaska, Hawaii, Puerto Rico
- Gridded LAMP provides gridded guidance for:
 - Lightning & Convection
 - Temperature & Dewpoint
 - Wind Speed / Gusts / Direction
 - Ceiling Height, Visibility, Sky Cover
 - Probability of Precipitation
- Available:

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- At NWS WFOs in AWIPS
- Via NCEP NOMADS
- Via website: <u>https://vlab.noaa.gov/mdl/lamp</u>



- Temperature and dewpoint
- Wind speed, direction, and gusts
- Probability of precipitation (on hr)
- Probability of measurable
- precipitation (1-, 6- and 12-h)
- Precipitation type
- Precipitation characteristics
- Lightning/Convection
- Ceiling height
- Conditional ceiling height
- Opaque sky cover
- Visibility
- Conditional visibility
- Obstruction to vision

LAMP Background: Meld Technique

• Step 1: Base LAMP:

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- Station-based Base LAMP = Observations + locally-run models + GFS MOS
- Technique = Linear Regression where predictors are statistically related to predictands via regression equations
- Gridded Base LAMP = Station-based Base LAMP analyzed to a grid
- Step 2: Meld LAMP:
 - Station-based Meld LAMP = Obs + Base LAMP + HRRR MOS
 - Gridded Meld LAMP = Gridded Obs Base LAMP + Gridded forecasts Base LAMP + Gridded HRRR MOS
 - Combining HRRR information with Base LAMP results in increased skill

MOS = Model Output Statistics, GFS = Global Forecast System, HRRR = High Resolution Rapid Refresh

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LAMP Background

- LAMP supports the 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.
 - NBM is key component to NWS efforts to evolve and build a Weather Ready Nation.

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LAMP/GLMP v2.7 Upgrade Highlights

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LMP/GLMP v2.7 Upgrade Highlights

- 1. Addition of station-based guidance for ceiling height and visibility that provides the forecasted start and end times of flight categories and provides probabilistic information:
 - I. 15-minute periods out to six hours updating every 15 minutes (96 cycles per day)
 - II. Hourly updating guidance for hourly projections out to 38 hours
- 2. Updated hourly visibility guidance at stations in the CONUS and Alaska to improve overforecast biases.
- 3. Addition of ceiling height and visibility guidance for 335 stations in the "LAV" and "LEV" text bulletins and BUFR message.
- 4. A bug fix to correct a misrepresentation of unlimited ceiling height in the Alaska GLMP ceiling grids.

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LAMP/GLMP v2.7 Upgrades: New Text Bulletin Products for Flight Category Start/End Times



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- FAA Traffic Flow Management (TFM) has identified a need for rapidly updating ceiling and visibility (C&V) guidance that indicates start and end times of flight categories at airport terminals.
- FAA's Aviation Weather Research Program (AWRP) funded MDL to generate various text bulletin products that provides start and end times of flight categories:
 - 1. Sub-hourly bulletin containing guidance valid for 15-minute periods out to six hours, updating every 15 minutes (96 cycles per day).
 - 2. Extended hourly bulletin containing guidance for hourly projections out to 38 hours, updating each hour at the nominal HH:30 UTC LAMP cycle times.
 - 3. Simplified bulletins (subhourly out to six hours and hourly out to 38 hours) that indicate only the start day and time and end day and time in UTC for each flight category.

<i>त्रौं</i> ।	KOF2 BOWIE MUNI ARPT GFS LAMP 1630 UTC 2/05/2025 UTC 16 17 17 17 18 18 18 19 19 19 20 <th>1 21 21 0 15 30 3 3 3 7 7 7</th> <th>21 45 3 3 7 7</th> <th>22 00 3 7</th> <th>22 15 3 7</th> <th>22 30 3 7</th> <th></th>	1 21 21 0 15 30 3 3 3 7 7 7	21 45 3 3 7 7	22 00 3 7	22 15 3 7	22 30 3 7																	
	Current sub-hourly bulletin						Pr	ор	ose	ed	su	b-ł	າວບ	irly	' bı	ılle	etir	ו					
*>		K0F2 UTC MIN FLT VFR MVF	B0 16 45 VL	WIE 17 00 VL	MUI 17 : 15 : VL V	NI A 17 1 30 4 VL V	RPT 7 18 5 00 7L 1	3 18) 15 L L	0 18 30 L	GFS 1 18 1 45 1 L	LAM 19 00 L	P 16 19 1 15 3 L	30 U 9 19 0 45 L I	TC 20 00 L	2/ 20 15 L	05/ 20 30 L	202 20 45 L	5 21 00 I	21 15 I	21 2 30 4 I	L 22 5 00 I 2	2 22 0 15 I I	22 30 1 1
哭	Current sub-hourly bulletin is being expanded to add flight	IFR LIF VLI CIG VIS CIGH	1 2 1	1 2 2	1 2 2	1 2 2	+ -/ 2 2 5 5	2 2 2 2 5 5	2 2 2	2 2 2	2 2 2	2 3 2	2 2 2 2 2 2	2 2 2	2 2 2	2 3 3	+ -/ 2 7 4	3 7 5	 3 7 6	3 7 8	3 : 7 ⁻ 9	3 3 7 7 9 9	3 3 7 7 7 7
⊿	category start/end times and various probabilistic information.	CPVL CPL CPI CP2K CPM CPVFR VPVL	14 98 98 99 99 1 17	14 91 95 99 99 1	12 86 96 99 99 1 10	11 1 81 8 94 9 99 9 99 9 1 9 1	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	9 3 7 2 9 1 2 6 2 6 2 6 2 6 2 6 2 6 2 6 2 6 6 6 6 7 0 1 1 1 1 1 1 1 1 1 1 1 1 1	9 68 88 95 99 1 6	8 62 85 91 95 5 7	9 66 85 92 95 5 8	7 66 6 81 8 89 8 95 9 5 7 7	6 5 5 60 0 75 9 83 4 90 6 10 8 10	65 78 82 86 14 18	6 60 82 83 86 14 15	4 79 83 86 14 11	3 38 73 80 81 19 5	2 24 66 81 81 19 2	2 18 50 78 82 18 1	2 15 1 40 3 75 7 80 7 20 2 4	1 1 3 3 3 6 3 6 7 3 0	2 2 4 13 5 35 4 61 8 65 2 35 0 2	2 15 42 69 570 530 20
91.23 1		VPL VPI VPM VPVFR	92 95 95 5	64 93 99 1	42 77 96 4	45 4 71 6 88 8 12 1	2 40 56 62 51 75 .9 25) 32 2 53 5 68 5 32	30 48 63 37	31 43 69 31	30 42 60 40	282 383 494 515	9 31 8 36 6 44 4 56	34 42 46 54	27 37 41 59	23 37 37 63	14 24 76	4 10 18 82	9 16 84	4 7 14 1 86 9	L (5 1) ! 0 9!) 3 1 4 5 5 5 95	; 1 3 ; 4 ; 96

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1. Expanded sub-hourly bulletin - 15-minute periods through six hours

K0F2	В	JWI	E MU	JNI	ARI	PT.		(GFS	LAN	1P 1	L630) U	C	2,	/05,	/202	25						
UTC	16	17	17	17	17	18	18	18	18	19	19	19	19	20	20	20	20	21	21	21	21	22	22	22
MIN	45	00	15	30	45	00	15	30	45	00	15	30	45	00	15	30	45	00	15	30	45	00	15	30
FLT	VL	VL	VL	VL	VL	L	L	L	L	L	L	L	L	L	L	L	L	Ι	I	I	I	I	I	I
VFR																								
MVF																								
IFR																	-	+						
LIF					-	+											/							
VLI ·					/																			
CIG	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3
VIS	2	2	2	2	2	2	2	2	2	2	3	2	2	2	2	3	7	7	7	7	7	7	7	7
CIGH	1	2	2	2	5	5	5	2	2	2	2	2	2	2	2	3	4	5	6	8	9	9	9	7
CPVL	14	14	12	11	11	10	9	9	8	9	7	6	5	7	6	4	3	2	2	2	2	2	2	2
CPL	98	91	86	81	80	73	70	68	62	66	66	65	60	65	60	48	38	24	18	15	14	14	13	15
CPI	98	95	96	94	92	92	91	88	85	85	81	80	75	78	82	79	73	66	50	40	39	35	35	42
CP2K	99	99	99	99	97	98	97	95	91	92	89	89	83	82	83	83	80	81	78	75	73	64	61	69
CPM	99	99	99	99	99	99	99	99	95	95	95	94	90	86	86	86	81	81	82	80	73	68	65	70
CPVFR	1	1	1	1	1	1	1	1	5	5	5	6	10	14	14	14	19	19	18	20	27	32	35	30
VPVL	17	18	10	9	10	12	6	6	7	8	7	8	10	18	15	11	5	2	1	4	0	0	2	0
VPL	92	64	42	45	42	40	32	30	31	30	28	29	31	34	27	23	7	4	3	4	1	0	3	1
VPI	95	93	77	71	66	62	53	48	43	42	38	38	36	42	37	37	14	10	9	7	6	1	4	3
VPM	95	99	96	88	81	75	68	63	69	60	49	46	44	46	41	37	24	18	16	14	10	5	5	4
VPVFR	5	1	4	12	19	25	32	37	31	40	51	54	56	54	59	63	76	82	84	86	90	95	95	96

- Derived from 15-minute LAMP/GLMP guidance
- Updates every 15-minutes (96 cycles per day)
- 1818 stations including San Mateo Bridge in CA (identifier KSMB)

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1. Expanded sub-hourly bulletin - 15-minute periods through six hours

K0F2	B	DWIE	E MU	JNI	ARI	PT		(GFS	LAN	IP 1	1630) U'	ГС	2,	/05,	/202	25							1								
UTC	16	17	17	17	17	18	18	18	18	19	19	19	19	20	20	20	20	21	21	21	21	22	22	22	П	ГС	• _ T	En	din	a h	our	of	1
MIN	45	00	15	30	45	00	15	30	45	00	15	30	45	00	15	30	45	00	15	30	45	00	15	30					uin	y n	Jui	U	
FLT	VL	VL	VL	VL	VL	L	L	L	L	L	L	L	L	L	L	L	L	Ι	I	Ι	I	I	I	I	in '	1.17	тс	• tir	no				
VFR																												/ ui	ne				
MVF																									1								
IFR																	-	+															
LIF					-	+											/								1								
VLI -					/																				1								
CIG	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3	1								
VIS	2	2	2	2	2	2	2	2	2	2	3	2	2	2	2	3	7	7	7	7	7	7	7	7	1								
CIGH	1	2	2	2	5	5	5	2	2	2	2	2	2	2	2	3	4	5	6	8	9	9	9	7	1								
CPVL	14	14	12	11	11	10	9	9	8	9	7	6	5	7	6	4	3	2	2	2	2	2	2	2	1								
CPL	98	91	86	81	80	73	70	68	62	66	66	65	60	65	60	48	38	24	18	15	14	14	13	15	1								
CPI	98	95	96	94	92	92	91	88	85	85	81	80	75	78	82	79	73	66	50	40	39	35	35	42									
CP2K	99	99	99	99	97	98	97	95	91	92	89	89	83	82	83	83	80	81	78	75	73	64	61	69	1								
CPM	99	99	99	99	99	99	99	99	95	95	95	94	90	86	86	86	81	81	82	80	73	68	65	70	1								
CPVFR	1	1	1	1	1	1	1	1	5	5	5	6	10	14	14	14	19	19	18	20	27	32	35	30	1								
VPVL	17	18	10	9	10	12	6	6	7	8	7	8	10	18	15	11	5	2	1	4	0	0	2	0	1								
VPL	92	64	42	45	42	40	32	30	31	30	28	29	31	34	27	23	7	4	3	4	1	0	3	1	1								
VPI	95	93	77	71	66	62	53	48	43	42	38	38	36	42	37	37	14	10	9	7	6	1	4	3	1								
VPM	95	99	96	88	81	75	68	63	69	60	49	46	44	46	41	37	24	18	16	14	10	5	5	4									
VPVFR	5	1	4	12	19	25	32	37	31	40	51	54	56	54	59	63	76	82	84	86	90	95	95	96									
																									1								

5-minute period

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1. Expanded sub-hourly bulletin - 15-minute periods through six hours

K0F2	BC	DWIE	E MU	JNI	ARI	PT.		(GFS	LAN	IP 1	L63() U	ГС	2,	/05,	/202	25							
UTC	16	17	17	17	17	18	18	18	18	19	19	19	19	20	20	20	20	21	21	21	21	22	22	22	
MIN	45	00	15	30	45	00	15	30	45	00	15	30	45	00	15	30	45	00	15	30	45	00	15	30	
FLT	VL	VL	VL	VL	VL	L	L	L	L	L	L	L	L	L	L	L	L	Ι	Ι	I	I	Ι	Ι	I	
VFR																									l n
MVF																									P
IFR																	-	+							
LIF					-	+											/								
VLI -					/																				
CIG	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3	
VIS	2	2	2	2	2	2	2	2	2	2	3	2	2	2	2	3	7	7	7	7	7	7	7	7	
CIGH	1	2	2	2	5	5	5	2	2	2	2	2	2	2	2	3	4	5	6	8	9	9	9	7	
CPVL	14	14	12	11	11	10	9	9	8	9	7	6	5	7	6	4	3	2	2	2	2	2	2	2	
CPL	98	91	86	81	80	73	70	68	62	66	66	65	60	65	60	48	38	24	18	15	14	14	13	15	
CPI	98	95	96	94	92	92	91	88	85	85	81	80	75	78	82	79	73	66	50	40	39	35	35	42	
CP2K	99	99	99	99	97	98	97	95	91	92	89	89	83	82	83	83	80	81	78	75	73	64	61	69	
CPM	99	99	99	99	99	99	99	99	95	95	95	94	90	86	86	86	81	81	82	80	73	68	65	70	
CPVFR	1	1	1	1	1	1	1	1	5	5	5	6	10	14	14	14	19	19	18	20	27	32	35	30	
VPVL	17	18	10	9	10	12	6	6	7	8	7	8	10	18	15	11	5	2	1	4	0	0	2	0	
VPL	92	64	42	45	42	40	32	30	31	30	28	29	31	34	27	23	7	4	3	4	1	0	3	1	
VPI	95	93	77	71	66	62	53	48	43	42	38	38	36	42	37	37	14	10	9	7	6	1	4	3	
VPM	95	99	96	88	81	75	68	63	69	60	49	46	44	46	41	37	24	18	16	14	10	5	5	4	
VPVFR	5	1	4	12	19	25	32	37	31	40	51	54	56	54	59	63	76	82	84	86	90	95	95	96	

MIN - Ending minute of 15-minute period in UTC time

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1. Expanded sub-hourly bulletin - 15-minute periods through six hours

K0F2	B	OWI	E MU	JNI	ARI	РΤ		C	GFS	LAN	1P 1	630	UI (C	2/	05/	202	25							
UTC	16	17	17	17	17	18	18	18	18	19	19	19	19	20	20	20	20	21	21	21	21	22	22	22	
MIN	45	00	15	30	45	00	15	30	45	00	15	30	45	00	15	30	45	00	15	30	45	00	15	30	
FLT	VL	VL	VL	VL	VL	L	L	L	L	L	L	L	L	L	L	L	L	Ι	I	I	I	Ι	I	Ι	ELT Lowest forecasted flight catego
VFR																									I LI - LOWEST IDIECASTED HIGHT CATEGO
TFD																	_	L							during the 15-minute period:
LTF					-	+											/								
VLI					/												'								V = Visual Flight Rules
CIG	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3	M - Mercinel Viewel Elight Dules
VIS	2	2	2	2	2	2	2	2	2	2	3	2	2	2	2	3	7	7	7	7	7	7	7	7	M = Marginal Visual Flight Rules
CIGH	1	2	2	2	5	5	5	2	2	2	2	2	2	2	2	3	4	5	6	8	9	9	9	7	L = Instrument Flight Rules
CPVL	14	14	12	11	11	10	9	9	8	9	66	6	5	65	6	4	3	2	10	15	2	2	12	2	
CPL	90	91	96	91 91	92	92	91	00	02 85	85	80 81	80	80 75	05 78	82	40 79	30 73	24 66	10 50	40	14 39	14	13 35	42	L = Low Instrument Flight Rules
CP2K	99	99	99	99	97	98	97	95	91	92	89	89	83	82	83	83	80	81	78	75	73	64	61	69	
CPM	99	99	99	99	99	99	99	99	95	95	95	94	90	86	86	86	81	81	82	80	73	68	65	70	VL = Very Low Instrument Flight Ru
CPVFR	1	1	1	1	1	1	1	1	5	5	5	6	10	14	14	14	19	19	18	20	27	32	35	30	
VPVL	17	18	10	9	10	12	6	6	7	8	7	8	10	18	15	11	5	2	1	4	0	0	2	0	
VPL	92	64	42	45	42	40	32	30	31	30	28	29	31	34	27	23	7	4	3	4	1	0	3	1	
VPI	95	93	.17	71	66	62	53	48	43	42	38	38	36	42	37	37	14	10	9	7	6	1	4	3	
VPM	95	99	96	88 10	81 10	15	68	63 27	69 21	60	49 51	46	44 56	46	41 50	51	24	18	10	14 06	T 0	5	5	4	
VFVFR	5	1	4	エム	т Э	20	52	51	5 I	40	JT	54	50	54	53	03	10	oΖ	04	00	90	90	90	20	

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1. Expanded sub-hourly bulletin - 15-minute periods through six hours

K0F2	BC	OWIE	E MU	JNI	ARI	РΤ		(GFS	LAN	MP 1	1630) U	ГC	2.	/05	/20	25							
UTC	16	17	17	17	17	18	18	18	18	19	19	19	19	20	20	20	20	21	21	21	21	22	22	22	
MIN	45	00	15	30	45	00	15	30	45	00	15	30	45	00	15	30	45	00	15	30	45	00	15	30	
FLT	VL	VL	VL	VL	VL	L	L	L	L	L	L	L	L	L	L	L	L	I	I	I	I	I	I	I	
VFR																									
MVF																									
IFR																		+							Start (+), prevailing (), and end (/)
LIF					-	+											/								
VLI -					/																				times of each flight category
CIG	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3	
VIS	2	2	2	2	2	2	2	2	2	2	3	2	2	2	2	3	7	7	7	7	7	7	7	7	
CIGH	1	2	2	2	5	5	5	2	2	2	2	2	2	2	2	3	4	5	6	8	9	9	9	7	
CPVL	14	14	12	11	11	10	9	9	8	9	7	6	5	7	6	4	3	2	2	2	2	2	2	2	
CPL	98	91	86	81	80	73	70	68	62	66	66	65	60	65	60	48	38	24	18	15	14	14	13	15	
CPI	98	95	96	94	92	92	91	88	85	85	81	80	75	78	82	79	73	66	50	40	39	35	35	42	
CP2K	99	99	99	99	97	98	97	95	91	92	89	89	83	82	83	83	80	81	78	75	73	64	61	69	
CPM	99	99	99	99	99	99	99	99	95	95	95	94	90	86	86	86	81	81	82	80	73	68	65	70	
CPVFR	1	1	1	1	1	1	1	1	5	5	5	6	10	14	14	14	19	19	18	20	27	32	35	30	
VPVL	17	18	10	9	10	12	6	6	7	8	7	8	10	18	15	11	5	2	1	4	0	0	2	0	
VPL	92	64	42	45	42	40	32	30	31	30	28	29	31	34	27	23	7	4	3	4	1	0	3	1	
VPI	95	93	77	71	66	62	53	48	43	42	38	38	36	42	37	37	14	10	9	7	6	1	4	3	
VPM	95	99	96	88	81	75	68	63	69	60	49	46	44	46	41	37	24	18	16	14	10	5	5	4	
VPVFR	5	1	4	12	19	25	32	37	31	40	51	54	56	54	59	63	76	82	84	86	90	95	95	96	

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1. Expanded sub-hourly bulletin - 15-minute periods through six hours

K0F2	В	IWC	E MU	JNI	AR	PΤ		(GFS	LAN	4P 1	1630) U1	ГC	2/	/05,	/20	25							
UTC	16	17	17	17	17	18	18	18	18	19	19	19	19	20	20	20	20	21	21	21	21	22	2 2 2	22	
MIN	45	00	15	30	45	00	15	30	45	00	15	30	45	00	15	30	45	00	15	30	45	00) 15	30	CIG - the lowest forecasted LAM
FLT	VL	VL	VL	VL	VL	L	L	L	L	L	L	L	L	L	L	L	L	I	I	I	I	I	: I	I	
VFR																									categorical ceiling during the 15-r
MVF																									u a mia al
IFR																	-	+							period
LIF					-	+											/								
VLI					/	2	2	2	2	2	2	2	2	2	2	2	2	2	C	2	C	-		2	1 < 200 feet
UIG	1	1 2	1	1	7	2	2	2	2	2	2	2	2	2	2	2	2	3	3	3	3	3	5 3 7 7	3	
	2	2	2	2	2	2	2 5	2	2	2	2	2	2	2	2	2	, л	5	6	0	, 0	, c	, , , ,	, 7	2 200 - 400 feet
CPVL	14	14	12	11	11	10	g	9	2	9	2	6	5	2	6	4	7	2	2	2	2	2	, , , ,	2	
CPL	98	91	86	81	80	73	70	68	62	66	66	65	60	65	60	48	38	24	18	15	14	14	113	15	3 500 - 900 feet
CPI	98	95	96	94	92	92	91	88	85	85	81	80	75	78	82	79	73	66	50	40	39	35	5 35	42	4 1000 - 1900 foot
CP2K	99	99	99	99	97	98	97	95	91	92	89	89	83	82	83	83	80	81	78	75	73	64	61	69	4 1000 - 1500 leet
CPM	99	99	99	99	99	99	99	99	95	95	95	94	90	86	86	86	81	81	82	80	73	68	8 65	70	5 2000 - 3000 feet
CPVFR	1	1	1	1	1	1	1	1	5	5	5	6	10	14	14	14	19	19	18	20	27	32	2 35	30	
VPVL	17	18	10	9	10	12	6	6	7	8	7	8	10	18	15	11	5	2	1	4	0	С) 2	0	6 3100 - 6500 feet
VPL	92	64	42	45	42	40	32	30	31	30	28	29	31	34	27	23	7	4	3	4	1	С) 3	1	
VPI	95	93	77	71	66	62	53	48	43	42	38	38	36	42	37	37	14	10	9	7	6	1	. 4	3	7 6600 - 12,000 feet
VPM	95	99	96	88	81	75	68	63	69	60	49	46	44	46	41	37	24	18	16	14	10	5	5 5	4	0 > 12,000 foot or unlimited colling
VPVFR	5	1	4	12	19	25	32	37	31	40	51	54	56	54	59	63	76	82	84	86	90	95	95	96	a ≥ 12,000 teet or unimited celling

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1. Expanded sub-hourly bulletin - 15-minute periods through six hours

K0F2	B	OWI	ΕM	JNI	ARI	РΤ		(GFS	LAN	4P 1	1630) U1	ГC	2,	05/	/202	25										
UTC	16	17	17	17	17	18	18	18	18	19	19	19	19	20	20	20	20	21	21	21	21	22	22	22				
MIN	45	00	15	30	45	00	15	30	45	00	15	30	45	00	15	30	45	00	15	30	45	00	15	30			vest forecaster	
FLT	VL	VL	VL	VL	VL	L	L	L	L	L	L	L	L	L	L	L	L	Ι	Ι	Ι	I	Ι	I	Ι	VIO - U			
VFR																									catego	rical	visibility during	the 15
MVF																									Catego	ncai	visibility during	
IFR																	-	+							minute	nerio	hd	
LIF					-	+											/								minute	pen	54	
VLI ·					/	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~				
CIG	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3		1	< 1/2 miles	
VIS	2	2	2	2	2	2	2	2	2	2	3	2	2	2	2	3	/	/	1	/	/	/	/	/		·	· // 2 miles	
CIGH	1 4	14	10	2	5	10	5	2	2	2	2	2	2	2	2	3	4	5	6	8	9	9	9	2		2	1/2 - < 1 miles	
CPVL	14	14	12	11 01	0 O	10 72	9	9	62	9	66	6	5	65	60	4	2 20	24	10	15	∠ 1 ۸	ے 1 م	12	15		_		
CPL	90	91	90	0 1 0 1	00 02	02	01 01	00	02 85	00 85	00 91	80	00 75	78	82	40 70	30 73	24 66	10 50	10	14 30	14 35	35 13	12		3	1 - < 2 miles	
CP2K	90	90	90	94	92	92	91	95	91	92	80	89	23	82	83	83	80	81	78	40 75	73	64	61	42 69				
CPM	99	99	99	99	99	99	99	99	95	95	95	94	90	86	86	86	81	81	82	80	73	68	65	70		4	2 - < 3 miles	
CPVFR	1	1	1	1	1	1	1	1	5	5	5	6	10	14	14	14	19	19	18	20	27	32	35	30				
VPVL	17	18	10	9	10	12^{-1}	6	6	7	8	7	8	10	18	15	11	5	2	1	4	0	0	2	0		5	3 - 5 miles	
VPL	92	64	42	45	42	40	32	30	31	30	28	29	31	34	27	23	7	4	3	4	1	Ő	3	1				
VPI	95	93	77	71	66	62	53	48	43	42	38	38	36	42	37	37	14	10	9	7	6	1	4	3		6	6 miles	
VPM	95	99	96	88	81	75	68	63	69	60	49	46	44	46	41	37	24	18	16	14	10	5	5	4				
VPVFR	5	1	4	12	19	25	32	37	31	40	51	54	56	54	59	63	76	82	84	86	90	95	95	96		7	> 6 miles	
																									1			

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1. Expanded sub-hourly bulletin - 15-minute periods through six hours

K0F2	B	OWIE	E MU	JNI	ARI	PT.		(GFS	LAN	1P 1	630	נט (ГC	2/	/05,	/202	25						
UTC	16	17	17	17	17	18	18	18	18	19	19	19	19	20	20	20	20	21	21	21	21	22	22	22
MIN	45	00	15	30	45	00	15	30	45	00	15	30	45	00	15	30	45	00	15	30	45	00	15	30
FLT	VL	VL	VL	VL	VL	L	L	L	L	L	L	L	L	L	L	L	L	I	I	I	I	I	I	Ι
VFR																								
MVF																								
IFR																	-	+						
LIF					-	+											/							
VLI -					/																			
CIG	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3
VIS	2	2	2	2	2	2	2	2	2	2	3	2	2	2	2	3	7	7	7	7	7	7	7	7
CIGH	1	2	2	2	5	5	5	2	2	2	2	2	2	2	2	3	4	5	6	8	9	9	9	7
CPVL	14	14	12	11	11	10	9	9	8	9	7	6	5	7	6	4	3	2	2	2	2	2	2	2
CPL	98	91	86	81	80	73	70	68	62	66	66	65	60	65	60	48	38	24	18	15	14	14	13	15
CPI	98	95	96	94	92	92	91	88	85	85	81	80	75	78	82	79	73	66	50	40	39	35	35	42
CP2K	99	99	99	99	97	98	97	95	91	92	89	89	83	82	83	83	80	81	78	75	73	64	61	69
CPM	99	99	99	99	99	99	99	99	95	95	95	94	90	86	86	86	81	81	82	80	73	68	65	70
CPVFR	1	1	1	1	1	1	1	1	5	5	5	6	10	14	14	14	19	19	18	20	27	32	35	30
VPVL	17	18	10	9	10	12	6	6	7	8	7	8	10	18	15	11	5	2	1	4	0	0	2	0
VPL	92	64	42	45	42	40	32	30	31	30	28	29	31	34	27	23	7	4	3	4	1	0	3	1
VPI	95	93	77	71	66	62	53	48	43	42	38	38	36	42	37	37	14	10	9	7	6	1	4	3
VPM	95	99	96	88	81	75	68	63	69	60	49	46	44	46	41	37	24	18	16	14	10	5	5	4
VPVFR	5	1	4	12	19	25	32	37	31	40	51	54	56	54	59	63	76	82	84	86	90	95	95	96

CIGH - the lowest forecasted ceiling height during the 15-minute period (100's of feet, unlimited = -88), obtained by interpolation from the 15-minute GLMP ceiling grids [note - when disagreements between the grid and station category (CIG) occur, deference is given to the station category, and the CIGH value in the bulletin is increased or decreased accordingly to be consistent with CIG.]

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1. Expanded sub-hourly bulletin - 15-minute periods through six hours

K0F2	В	DWIE	E MU	JNI	ARI	PT.		(GFS	LAN	MP 1	L630) U	ГC	2,	/05,	/202	25						
UTC	16	17	17	17	17	18	18	18	18	19	19	19	19	20	20	20	20	21	21	21	21	22	22	22
MIN	45	00	15	30	45	00	15	30	45	00	15	30	45	00	15	30	45	00	15	30	45	00	15	30
FLT	VL	VL	VL	VL	VL	L	L	L	L	L	L	L	L	L	L	L	L	I	I	I	I	I	I	I
VFR																								
MVF																								
IFR																	-	+						
LIF					-	+											/							
VLI ·					/																			
CIG	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3
VIS	2	2	2	2	2	2	2	2	2	2	3	2	2	2	2	3	7	7	7	7	7	7	7	7
CIGH	1	2	2	2	5	5	5	2	2	2	2	2	2	2	2	3	4	5	6	8	9	9	9	7
CPVL	14	14	12	11	11	10	9	9	8	9	7	6	5	7	6	4	3	2	2	2	2	2	2	2
CPL	98	91	86	81	80	73	70	68	62	66	66	65	60	65	60	48	38	24	18	15	14	14	13	15
CPI	98	95	96	94	92	92	91	88	85	85	81	80	75	78	82	79	73	66	50	40	39	35	35	42
CP2K	99	99	99	99	97	98	97	95	91	92	89	89	83	82	83	83	80	81	78	75	73	64	61	69
CPM	99	99	99	99	99	99	99	99	95	95	95	94	90	86	86	86	81	81	82	80	73	68	65	70
CPVFR	1	1	1	1	1	1	1	1	5	5	5	6	10	14	14	14	19	19	18	20	27	32	35	30
VPVL	17	18	10	9	10	12	6	6	7	8	7	8	10	18	15	11	5	2	1	4	0	0	2	0
VPL	92	64	42	45	42	40	32	30	31	30	28	29	31	34	27	23	7	4	3	4	1	0	3	1
VPI	95	93	77	71	66	62	53	48	43	42	38	38	36	42	37	37	14	10	9	7	6	1	4	3
VPM	95	99	96	88	81	75	68	63	69	60	49	46	44	46	41	37	24	18	16	14	10	5	5	4
VPVFR	5	1	4	12	19	25	32	37	31	40	51	54	56	54	59	63	76	82	84	86	90	95	95	96

Cumulative probabilities for each flight category ceiling threshold occurring during the 15-minute period:

CPVL - probability of VLIFR (< 200 ft) CPL - probability of LIFR (< 500 ft) CPI - probability of IFR (< 1000 ft) CP2K - probability of ceiling <= 2000 ft CPM - probability of MVFR (<= 3000 ft) CPVFR - probability of VFR (> 3000 ft (= 100 - probability of MVFR)

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1. Expanded sub-hourly bulletin - 15-minute periods through six hours

K0F2	B	DWI	E MU	JNI	ARI	PT.		(GFS	LAN	4P 1	1630) U	ГС	2,	/05,	/202	25							
UTC	16	17	17	17	17	18	18	18	18	19	19	19	19	20	20	20	20	21	21	21	21	22	22	22	
MIN	45	00	15	30	45	00	15	30	45	00	15	30	45	00	15	30	45	00	15	30	45	00	15	30	
FLT	VL	VL	VL	VL	VL	L	L	L	L	L	L	L	L	L	L	L	L	I	I	I	I	I	I	I	
VFR																									
MVF																									
IFR																	+	+							
LIF					-	+											/								
VLI					/																				
CIG	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3	
VIS	2	2	2	2	2	2	2	2	2	2	3	2	2	2	2	3	7	7	7	7	7	7	7	7	
CIGH	1	2	2	2	5	5	5	2	2	2	2	2	2	2	2	3	4	5	6	8	9	9	9	7	
CPVL	14	14	12	11	11	10	9	9	8	9	7	6	5	7	6	4	3	2	2	2	2	2	2	2	
CPL	98	91	86	81	80	73	70	68	62	66	66	65	60	65	60	48	38	24	18	15	14	14	13	15	
CPI	98	95	96	94	92	92	91	88	85	85	81	80	75	78	82	79	73	66	50	40	39	35	35	42	
CP2K	99	99	99	99	97	98	97	95	91	92	89	89	83	82	83	83	80	81	78	75	73	64	61	69	
CPM	99	99	99	99	99	99	99	99	95	95	95	94	90	86	86	86	81	81	82	80	73	68	65	70	
CPVFR	1	1	1	1	1	1	1	1	5	5	5	6	10	14	14	14	19	19	18	20	27	32	35	30	
VPVL	17	18	10	9	10	12	6	6	7	8	7	8	10	18	15	11	5	2	1	4	0	0	2	0	
VPL	92	64	42	45	42	40	32	30	31	30	28	29	31	34	27	23	7	4	3	4	1	0	3	1	
VPI	95	93	77	71	66	62	53	48	43	42	38	38	36	42	37	37	14	10	9	7	6	1	4	3	
VPM	95	99	96	88	81	75	68	63	69	60	49	46	44	46	41	37	24	18	16	14	10	5	5	4	
VPVFR	5	1	4	12	19	25	32	37	31	40	51	54	56	54	59	63	76	82	84	86	90	95	95	96	

Cumulative probabilities for each flight category visibility threshold occurring during the 15-minute period:

VPVL - probability of VLIFR (< 1/2 mi) VPL - probability of LIFR (< 1 mi) VPI - probability of IFR (< 3 mi) VPM - probability of MVFR (<= 5 mi) VPVFR - probability of VFR (> 5 mi) (= 100 - probability of MVFR)

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2. New extended bulletin - hourly projections through 38 hours

K4A9	IS	SBEI	LL H	TEI	D Z	ARPI	2	G	FS	LAN	1P 1	1630	נט (C	2/	/10/	/202	25																				
UTC	17	18	19	20	21	22	23	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	00	01	02	03	04	05	06
FLT	5	5	5	5	5	5	5	5	5	5	5	5	5	4	4	4	4	4	3	3	3	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
VFR													/																									
MVF													+					/																				
IFR																		-	+			/																
LIF																						-	+															
VLI																																						
CIG	7	7	7	7	7	7	7	7	6	7	6	6	6	5	5	4	4	4	3	3	3	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
VIS	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	5	4	4	3	4	3	3	3	3	3	3	4	4	3	3	3	3	3
CIGH	95	95	95	85	85	85	73	58	58	73	58	45	27	27	22	22	18	13	11	9	7	6	5	4	3	2	2	2	3	3	3	3	2	2	2	2	2	2
CPVL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	2	1	1	1	1	1	1	1	2	3	3
CPL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	4	7	11	18	23	27	33	33	32	31	24	26	27	30	35	34	32	36	38	38
CPI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	4	9	16	24	32	38	46	54	65	76	77	80	79	71	74	76	74	76	76	72	77	79	78
CP2K	0	0	0	0	0	0	0	2	2	3	3	6	12	16	24	30	35	41	46	51	56	64	70	81	85	88	91	93	90	92	93	90	92	93	88	88	90	93
CPM	3	1	0	0	0	0	5	13	11	5	11	20	31	35	44	52	56	60	62	63	68	76	80	86	88	90	92	94	94	94	95	94	94	94	91	90	92	94
VPVL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	2	1	0	0	1	1	1	1	1
VPL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	3	3	2	3	3	3	4	5	4	2	4	5	7	7	6	6
VPI	0	0	0	0	0	0	0	1	1	0	1	0	0	0	0	0	0	0	2	5	14	22	24	25	22	24	28	31	34	36	31	22	23	25	25	26	26	24
VPM	0	0	0	0	0	0	0	1	2	2	2	1	0	0	0	3	6	8	14	20	34	46	49	51	48	48	56	62	69	71	66	58	57	56	53	57	59	57

- Derived from hourly LAMP/GLMP guidance
- Updates every hour at nominal HH:30 UTC LAMP cycle times
- 1818 stations including Honolulu, HI but excluding San Mateo Bridge

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2. New extended bulletin - hourly projections through 38 hours

K4A9	IS	SBEI	LF	TEI	DA	RPI	2	(GFS	LAI	MP 1	1630	ט ט	ГC	2	/10/	/202	25]
UTC	17	18	19	20	21	22	23	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	00	01	02	03	04	05	06	
FLT	5	5	5	5	5	5	5	5	5	5	5	5	5	4	4	4	4	4	3	3	3	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
VFR													/																				г						
MVF													-	+				/																Т. P	тс			ыd	hou
IFR																		-	+			/												U	I C	- 1	va	nu	1100
LIF																							+												in	1.17	ГС	tin	00
VLI																																				U		un	IC
CIG	7	7	7	7	7	7	7	7	6	7	6	6	6	5	5	4	4	4	3	3	3	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
VIS	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	5	4	4	3	4	3	3	3	3	3	3	4	4	3	3	3	3	3	
CIGH	95	95	95	85	85	85	73	58	58	73	58	45	27	27	22	22	18	13	11	9	7	6	5	4	3	2	2	2	3	3	3	3	2	2	2	2	2	2	
CPVL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	2	1	1	1	1	1	1	1	2	3	3	
CPL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	4	7	11	18	23	27	33	33	32	31	24	26	27	30	35	34	32	36	38	38	
CPI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	4	9	16	24	32	38	46	54	65	76	77	80	79	71	74	76	74	76	76	72	77	79	78	
CP2K	0	0	0	0	0	0	0	2	2	3	3	6	12	16	24	30	35	41	46	51	56	64	70	81	85	88	91	93	90	92	93	90	92	93	88	88	90	93	
CPM	3	1	0	0	0	0	5	13	11	5	11	20	31	35	44	52	56	60	62	63	68	76	80	86	88	90	92	94	94	94	95	94	94	94	91	90	92	94	
VPVL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	2	1	0	0	1	1	1	1	1	
VPL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	3	3	2	3	3	3	4	5	4	2	4	5	7	7	6	6	
VPI	0	0	0	0	0	0	0	1	1	0	1	0	0	0	0	0	0	0	2	5	14	22	24	25	22	24	28	31	34	36	31	22	23	25	25	26	26	24	
VPM	0	0	0	0	0	0	0	1	2	2	2	1	0	0	0	3	6	8	14	20	34	46	49	51	48	48	56	62	69	71	66	58	57	56	53	57	59	57	

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2. New extended bulletin - hourly projections through 38 hours

UTC 17 18 19 20 21 22 23 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 00 01 02 03 04 0 FLT 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 4 4 4 4 4 3 3 3 3	5 06 2 2
FLT 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 4 4 4 4 4 3 3 3 3	2 2
Vrk/	
MVF +/	
IFR +/ ELT - Forec	ast flight
LIF +	ast night
	the hour
cig 7 7 7 7 7 7 6 6 6 5 5 4 4 3 3 3 2	Ine nour
VIS 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	=M\/FR
CIGH 95 95 95 85 85 73 58 58 73 58 45 27 27 22 22 18 13 11 9 7 6 5 4 3 2 2 2 3 3 3	-101 0 1 1 X,
CPVL 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	I IFR
CPL 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 2 4 7 11 18 23 27 33 33 32 31 24 26 27	,
CPI 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 4 9 16 24 32 38 46 54 65 76 77 80 79 71 74 76 VI = VI	FR)
CP2K 0 0 0 0 0 0 0 2 2 3 3 6 12 16 24 30 35 41 46 51 56 64 70 81 85 88 91 93 90 92 93	
CPM 3 1 0 0 0 0 5 13 11 5 11 20 31 35 44 52 56 60 62 63 68 76 80 86 88 90 92 94 94 94 95 5 5 5 5 5 5 5 5 5 5 5 5 5 5	
VPVL 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1 1
VPL 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	6 6
VPI 0 0 0 0 0 0 0 1 1 0 1 0 0 0 0 0 0 2 5 14 22 24 25 22 24 28 31 34 36 31 22 23 25 25 26 2	6 24
VPM 0 0 0 0 0 0 0 1 2 2 2 1 0 0 0 3 6 8 14 20 34 46 49 51 48 48 56 62 69 71 66 58 57 56 53 57 5	9 57

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2. New extended bulletin - hourly projections through 38 hours

K4A9	IS	SBEI	LE	TEI	D 7	ARPI	C	(FS	LAN	AP 1	1630) U	ГC	2,	/10,	/202	25																					
UTC	17	18	19	20	21	22	23	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	00	01	02	03	04	05	06	
FLT	5	5	5	5	5	5	5	5	5	5	5	5	5	4	4	4	4	4	3	3	3	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
VFR													/																										
MVF													-	+				/																					
IFR																		-	+			/																	
LIF																							+																
VLI																																							
CIG	7	7	7	7	7	7	7	7	6	7	6	6	6	5	5	4	4	4	3	3	3	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
VIS	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	5	4	4	3	4	3	3	3	3	3	3	4	Л	2	2	2	2	2	
CIGH	95	95	95	85	85	85	73	58	58	73	58	45	27	27	22	22	18	13	11	9	7	6	5	4	3	2	2	2	3	3	3		Sta	art	(+)	n	rev	aili	na (-
CPVL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	2	1	1	1				(\cdot)	, P		am	
CPL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	4	7	11	18	23	27	33	33	32	31	24	26	27	3)	a	nd	en	d (/) ti	mes
CPI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	4	9	16	24	32	38	46	54	65	76	77	80	79	71	74	76	7		, a	i i G	011		, , u	moo
CP2K	0	0	0	0	0	0	0	2	2	3	3	6	12	16	24	30	35	41	46	51	56	64	70	81	85	88	91	93	90	92	93	9		0	fe	ac	h fli	iah	t
CPM	3	1	0	0	0	0	5	13	11	5	11	20	31	35	44	52	56	60	62	63	68	76	80	86	88	90	92	94	94	94	95	9		Ŭ		au		9	•
VPVL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	2	1				Cá	ate	dor	v	
VPL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	3	3	2	3	3	3	4	5	4						301	3	
VPI	0	0	0	0	0	0	0	1	1	0	1	0	0	0	0	0	0	0	2	5	14	22	24	25	22	24	28	31	34	36	31	22	23	25	25	26	26	24	
VPM	0	0	0	0	0	0	0	1	2	2	2	1	0	0	0	3	6	8	14	20	34	46	49	51	48	48	56	62	69	71	66	58	57	56	53	57	59	57	
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NATIONAL WEATHER SERVICE

2. New extended bulletin - hourly projections through 38 hours

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K4A9	IS	SBEI	LLI	FIEI	LD Z	ARPI	C	0	GFS	LAI	AP 1	1630) UI	C	2,	/10/	202	25																							
UTC	17	18	19	20	21	22	23	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	00	01	02	03	04	05	06			
FLT	5	5	5	5	5	5	5	5	5	5	5	5	5	4	4	4	4	4	3	3	3	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2			
VFR													/																												
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IFR																		-	+			/										Γ				<u> </u>	1				٦
LIF																						-	+											(- ċ	L	AIV	P		
VLI																																_									
CIG	7	7	7	7	7	7	7	7	6	7	6	6	6	5	5	4	4	4	3	3	3	3	2	2	2	2	2	2	2	2	2	2	C	a	ego	ori	ca	CE	elli	ng	
VIS	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	5	4	4	3	4	3	3	3	3	3	3	4	fe	ro	~~	ot i	at .	the	h	our	
CIGH	95	95	95	85	85	85	73	58	58	73	58	45	27	27	22	22	18	13	11	9	.7	6	5	4	3	2	2	2	3	3	3	3	IC	ле	Ca	51 0	สเ	line		JUI	
CPVL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	10	22	1	1			~ 4			1										
CPL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1 6	-4	22	20	18	23	27	33	33	32	31	24	26	21	1 1	< 2	200	feet						
CPI	0	0	0	0	0	0	0	2	2	2	2	6	12	16	24	20	25	11	24	3Z 51	50	40	70	ະ 01	/10	00	01	02	00	02	02										
CPZK	2	1	0	0	0	0	5	12	11	5	11	20	21	25 25	24 44	52	56	41	62	53	20	76	20	01	00	00	97	93	90	92	93	4	2 20	- 00	400	tee	t				
VDVT.	0	Ô	0	0	0	ő	0	13		0		20	01	35		52	0	00	02	03	00	0	00	00	00	1	1		31	2	1	1 3	3 50	0 - 0	900	fee	t				
VPT.	ő	ŏ	ŏ	ŏ	ő	ő	ŏ	ő	ŏ	ő	ŏ	õ	ň	ŏ	ő	ŏ	ő	ŏ	ŏ	ő	ŏ	2	ž	3	2	â	â	ž	4	5	4			_		_					
VPI	õ	ŏ	õ	ŏ	õ	õ	õ	1	1	õ	1	õ	ŏ	ŏ	ŏ	õ	õ	ŏ	2	5	14	22	24	25	22	24	28	31	34	36	31	4	10	00 -	190	0 fe	et				
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2. New extended bulletin - hourly projections through 38 hours

K4A9	IS	SBEI	L B	FIEI	D Z	ARPT		G	FS	LAN	(P 1	630) UI	C.	2/	/10/	/202	25																					
UTC	17	18	19	20	21	22	23	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	00	01	02	03	04	05 06	5	
FLT	5	5	5	5	5	5	5	5	5	5	5	5	5	4	4	4	4	4	3	3	3	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2 2	2	
VFR ·													/																										
MVF													-					/																					
IFR																			+			/										Г				<u>,</u>			-
LIF																						-	+											(JIC	j - j	LAN	P	
VLI																																							na i
CIG	7	7	7	7	7	7	7	7	6	7	6	6	6	5	5	4	4	4	3	3	3	3	2	2	2	2	2	2	2	2	2	2	Ca	ate	goi	rica	al VI	SIDI	iity
VIS	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	5	4	4	3	4	3	3	3	3	3	3	4	fo			+ ~	+ + h	- h	2115
CIGH	95	95	95	85	85	85	73	58	58	73	58	45	27	27	22	22	18	13	11	9	7	6	5	4	3	2	2	2	3	3	3	3	10	e	Jas	อเ อ	L LI IE		Jui
CPVL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	2	1	1	1	1							
CPL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	4	.7	11	18	23	27	33	33	32	31	24	26	27	30	35	- 1	-1-1		<u></u>		
CPI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	4	.9	16	24	32	38	46	54	65	76	77	80	79	71	74	76	74	76	1	<	< 1/.	2 mil	es	
CP2K	0	0	0	0	0	0	0	12	2	3	3	- 6	12	10	24	30	35	41	46	51	56	64	/0	81	85	88	91	93	90	92	93	90	92	2		1/2	- 4		_
CPM	3	1	0	0	0	0	5	13	11	5	11	20	31	30	44	52	26	60	62	63	68	/6	80	86	88	90	92	94	94	94	95	94	94	2		1/2	- < 11	mile	5
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2	2	2	2	1	2	1	2	4	2		1 /	·	ilaa	
VPL	0	0	0	0	0	0	0	1	1	0	1	0	0	0	0	0	0	0	2	5	14	22	24	25	22	24	20	21	24	26	21	22	22	3		- <	- Z III	nes	
VPI	0	0	0	0	0	0	0	1	2	2	2	1	0	0	0	2	6	0	14	20	24	46	40	2J 51	40	40	56	62	60	30 71	51	50	23	л		`	< 2 m	viloc	
VEM	0	0	0	0	0	0	0	-	2	2	2	-	0	0	0	5	0	0	11	20	31	10	15	JI	10	10	50	02	05	11	00	50	57	4	4	Z - `	< 5 II	mes	
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2. New extended bulletin - hourly projections through 38 hours

K4A9	IS	BEL	LE	TEI	LD 2	ARPI		0	FS	LAN	1P 1	630	UI	C.	2/	10,	/202	25																					
UTC	17	18	19	20	21	22	23	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	00	01	02	03	04	05	06	
FLT	5	5	5	5	5	5	5	5	5	5	5	5	5	4	4	4	4	4	3	3	3	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
VFR ·													-/																										
MVF													+					/																					
IFR																		-	+			/																	
LIF																							+																
VLI	-	-	7	7	7	7	7	7	~	7	~	~	~	-	F			4	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	_	
UTC	2	2	2	2	2	2	2	2	5	2	5	5	ю 7	27	27	4	4 7	4 7	3	3	5	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
CICH	ر ۵5	ر ۵5	45	85	85	85	73	58	58	73	58	45	27	27	22	22	18	13	11	0	7	6	- 1	4	7	2	2	2	3	3	3	2	2	2	2	2	2	2	
CPVL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	0	0	0	Ó	0	0	1	1	1	1	2	1	1	1	1	1	1	1	2	3	3	
CPL	0	ō	0	ō	0	ō	0	0	0	0	ō	0	0	0	0	0	0	2	4	7	11	18	23	27	33	33	_	-		-	-	-	-						
CPI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	4	9	16	24	32	38	46	54	65	76	77	C	IGI	- -	the	e to	rec	as	tec	l Ce	eilir	ng h	າຍເວ	jht at
CP2K	0	0	0	0	0	0	0	2	2	3	3	6	12	16	24	30	35	41	46	51	56	64	70	81	85	88	th	~ h		r (1	00	,	_f f		F	nlin	mit	- d	_
CPM	3	1	0	0	0	0	5	13	11	5	11	20	31	35	44	52	56	60	62	63	68	76	80	86	88	90	u	eı	iou	1 (1	00	50		ee	ι, u	1 11 11	mu	eu -	
VPVL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	8	3),	obt	ain	ed	by	in	ter	ool	atio	on f	fron	n the
VPL	0	0	0	0	0	0	0	1	1	0	1	0	0	0	0	0	0	0	2	5	14	22	24	25	22	24	1.	<i>.</i>				1				- F.			
VPM	õ	ő	0	ő	0	ő	0	1	2	2	2	1	0	0	0	3	6	8	14	20	34	46	49	51	48	48	n	bur	iy e	ושכ	VIP	ce	IIIn	gg	gria	is [i	ποι	e -	wnen
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2. New extended bulletin - hourly projections through 38 hours

K4A9	IS	SBEI	LL F	FIEI	LD 2	ARP:	Г	(GFS	LAN	4P 1	.630	UI	'C	2/	/10/	/202	25																					
UTC	17	18	19	20	21	22	23	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	00	01	02	03	04	05	06	
FLT	5	5	5	5	5	5	5	5	5	5	5	5	5	4	4	4	4	4	3	3	3	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
VFR													-/																										
MVF													+					/																					
IFR																		-	+			/																	
LIF																						-	+																
VLI	-	_	_	_	_	_	_	-	~	_	_	~	~	-	-				~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	_	~	
CIG		4	4	4	4	4	4	4	6	4	6	6	6	5	5	4	4	4	3	3	ے 1	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
V15	05	05	05	05	05	05	72	50	50	72	/ ۵	/	27	27	22	22	10	12	11	6	27	4	4	3	4	3	3	3	3	3	3	4	4	3	3	3	3	3	
CIGH CPVL	95	95	95	00	00	00	/3	20	20	/3	28	45	27	27	22	22	10	13	11	9	0	0	0	1	1	1	C	um	nula	ativ	e p	rol	bab	oilit	ies	fo	r ea	ach	flight
CPL	õ	ŏ	ŏ	ŏ	ŏ	ő	ŏ	õ	ŏ	ŏ	ŏ	ŏ	ŏ	ŏ	Ő	ŏ	ŏ	2	4	7	11	18	23	27	33	33		-+-			il		th.		ha	اما ،	-+ +		
CPI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	4	9	16	24	32	38	46	54	65	76	77	C	ale	goi	y c	en	ing	un	les		IU a	สเ เ	le	iour.
CP2K	0	0	0	0	0	0	0	2	2	3	3	6	12	16	24	30	35	41	46	51	56	64	70	81	85	88													
CPM	3	1	0	0	0	0	5	13	11	5	11	20	31	35	44	52	56	60	62	63	68	76	80	86	88	90	C	۶PV	′L -	pr	oba	abi	lity	of	VL	IFI	R (∙	< 20	00 ft)
VPVL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1					hak	. : 1:4		£ī		. /			Ξ 4)
VPL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	3	3	2	3		PL	- F		par	אוונ	y o	IL		۲ (۹	< 2	001	l)
VPI	0	0	0	0	0	0	0	1	2	2	2	1	0	0	0	3	6	8	14	20	34	22 46	24 49	25 51	22 48	24 48	C	PI	- p	rob	bab	ilit∖	/ of	^I F	R ((< '	100	0 fi	t)
	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-																	_	` :::		~	, , ,
																												P2	K -	pr	OD	adi	lity	OT	ce	IIIn	g <	= 2	000 π
																											C	PN	/ - /	prc	ba	bili	ty o	of N	٨V	FR	(<	= 3	000 ft)
																											C	۶PV	/FF	2 - 1	pro	ba	bili	ty d	of \	/FF	२ (>	> 3(000 ft)
																														(=	10() -	pro	ba	bili	ty	of N	٨VF	-R)
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2. New extended bulletin - hourly projections through 38 hours

K4A9	IS	SBEI	LL E	FIEI	LD A	ARPT		G	FS	LAN	1P 1	.630) UI	C	2,	/10,	/20	25																					
UTC	17	18	19	20	21	22	23	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	00	01	02	03	04	05	06	
FLT	5	5	5	5	5	5	5	5	5	5	5	5	5	4	4	4	4	4	3	3	3	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
VFR													-/																										
MVF													-					/																					
IFR																			+			/																	
LIF																							+																
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CIG	7	7	7	7	7	7	7	7	6	7	6	6	6	5	5	4	4	4	3	3	3	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
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3. New Simplified Bulletins

KIAD WASH-DULLES	GFS LAMP 1330 UTC	3/27/2023
VFR 27/1345 - 27/1845 MVF 27/1900 - IFR LIF		

- Displays start and end date/time in UTC for each flight category
- Created every 15 minutes covering the first six hours
- Created hourly for the period 1-38 hours

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- The sub-hourly flight category bulletin out to six hours will <u>replace</u> the existing 15-minute bulletins that provide guidance out to 6 hours and which contain only the LAMP C&V categories. Thus, the format of the existing LAMP sub-hourly bulletins will be changing to <u>add</u> the flight category and probabilistic information shown on the previous slides.
 - The new flight category text bulletins will be made available on NCEP Web Services / NOMADS when LAMP v2.7 is implemented in Summer 2025.
 - No plans to disseminate the new bulletins over the Satellite Broadcast Network (SBN) at this time.
- If proposed changes are approved, details on data location and file names will be announced in a Service Change Notice at least 30 days prior to implementation.

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LAMP/GLMP v2.7 Upgrades: Updated Hourly Visibility Guidance at Stations



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Updated Hourly Visibility Guidance

- Presently, national thresholds are used for each LAMP visibility category which do not vary by station. This has led to over-forecasting of the lower visibility categories in some parts of the country, particularly over the Eastern U.S.
- In an effort to address the over-forecast bias, stations were grouped based on deciles of forecast bias for each visibility category, and then thresholds were re-derived for each decile group that apply to all stations in the group.

Updated Hourly Visibility Guidance

Meld LAMP Bias: VIS < 1 mi, 0000 UTC cycle, proj 12h: **SEPTEMBER**



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Updated Hourly Visibility Guidance

Meld LAMP Bias: VIS < 1 mi, 0000 UTC cycle, proj 12h: **SEPTEMBER**



High biases for VIS < 1 mile at several stations in West Virginia

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Updated Hourly Visibility Guidance

New thresholds were derived by grouping stations based on the deciles of Meld LAMP visibility bias using data from 2017-2022

Meld LAMP Bias Deciles: VIS < 1 mi, 00z, proj 12h: WARM SEASON



Updated Hourly Visibility Guidance - Bias Warm Season



Biases across all categories, LAMP cycles, and projections through 6 hours are similar or improved at majority of LAMP stations for WARM season

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Updated Hourly Visibility Guidance - Bias Cool Season



Biases across all categories, LAMP cycles, and projections through 6 hours are similar or improved at majority of LAMP stations for **COOL** season

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Updated Hourly Visibility Guidance - Threat Score Warm Season



Threat scores across all categories, LAMP cycles, and projections through 6 hours are similar or improved at majority of LAMP stations for **WARM** season

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Updated Hourly Visibility Guidance - Threat Score Cool Season



Threat scores across all categories, LAMP cycles, and projections through 6 hours are similar or improved at majority of LAMP stations for **COOL** season

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Updated Hourly Visibility Guidance

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KEKN: Both operational and new LAMP lowered visibility too early (at 03z), however new LAMP was better with the timing of the increase in visibility at 13z.

<u>VIS</u>	Categories
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

Visibility on 20230930 at KEKN



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Updated Hourly Visibility Guidance

- Forecast biases and threat scores for visibility are nearly equal or improved at a majority of LAMP stations using the redeveloped thresholds.
- Biases were most improved at stations where the Meld bias was very high, particularly in WV where fog dissipation issues were noted.
- If this change is approved, the updated categorical visibility guidance will be reflected in the hourly "LAV" and "LEV" text bulletins and BUFR message when LAMP v2.7 is implemented in Summer 2025.

LAMP/GLMP v2.7 Upgrades: Other Changes

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LAMP/GLMP v2.7: Additional Stations

- Addition of ceiling height and visibility guidance for 335 stations in the "LAV" and "LEV" text bulletins and BUFR message:
 - These stations were originally added to the LAMP system in 2023 for temperature, dewpoint, and wind elements (see <u>SCN 23-50</u>).
 - A list of the 335 stations that will now have ceiling and visibility guidance can be viewed here: <u>https://vlab.noaa.gov/web/mdl/lamp-stns-add-2023</u>
 - The additional stations will be incorporated into the GLMP ceiling and visibility forecast analyses in a future upgrade.

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LAMP/GLMP v2.7: GLMP Bug Fix

A bug fix to correct a misrepresentation of unlimited ceiling height in the Alaska GLMP ceiling grids. Presently, the GLMP deterministic ceiling grids for Alaska can contain values > 12,000 feet, which is unintended. This has been corrected to set ceilings > 12,000 feet to a value of "-100" in the disseminated GRIB2 output for consistency with the CONUS products.

LAMP/GLMP v2.7 Upgrades: Upgrade Benefits



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LAMP/GLMP v2.7 Upgrade Benefits

- 1. The addition of sub-hourly and hourly text bulletins for flight categories will provide forecasted start and end times for impactful ceiling and visibility conditions as well as probabilistic information to aviation users.
- 2. The updated visibility thresholds based on bias deciles will result in generally improved forecast biases and threat scores for visibility at majority of LAMP stations.
- 3. The addition of ceiling and visibility guidance for 335 stations will expand the availability of LAMP guidance elements for these stations.
- 4. Correcting the issue with misrepresentation of unlimited ceilings in the Alaska GLMP ceiling guidance will improve the quality of the gridded guidance for users.

LAMP/GLMP V2.7 Upgrades: Real-time Experimental Products

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LMP/GLMP v2.7 Upgrades: Real-time Experimental Products

• LAMP Experimental Webpage:

https://vlab.noaa.gov/web/mdl/experimental-lamp

- Contains links to experimental data:
 - New flight category text bulletins (sub-hourly, extended, and simplified)
 - New LAV and LEV bulletins that reflect the updated visibility thresholds and include the 335 new stations added for C&V
 - Links to sample GRIB2 output for Alaska GLMP ceiling that reflect the bug fix
 - Experimental data expected to be available on or around April 14, 2024
 - Note that these experimental pages will be available through the user evaluation for feedback purposes only, with no guarantee of availability thereafter.

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LAMP/GLMP v2.7 Upgrades: Feedback and Schedule

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LAMP/GLMP v2.7 – Feedback & Schedule

- User Evaluation: April 30 May 30, 2025
- Public Information Statement:

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- https://www.weather.gov/media/notification/pdf_2025/pns25-28_lamp_glmp_v2.7.pdf
- Please provide comments by May 30, 2025 via this google form: <u>https://forms.gle/kFedyJmoDDgxDzMu5</u>
- Alternatively you may send feedback via email to: <u>Phil.Shafer@noaa.gov</u>, <u>Geoffrey.Manikin@noaa.gov</u>
- NCEP Science Briefing: On or about June 6, 2025
- Code handoff: On or about June 6, 2025
- Planned Implementation: September 2025

https://vlab.noaa.gov/web/mdl/lamp