

NATIONAL WEATHER SERVICE INSTRUCTION 10-812

OCTOBER 25, 2016

Operations and Services

Aviation Weather Service, NWSPD 10-8

AVIATION WIND AND TEMPERATURE ALOFT FORECASTS

NOTICE: This publication is available at: <http://www.nws.noaa.gov/directives/>.

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SUMMARY OF REVISIONS: This directives supersedes NWS Instruction 10-812, “*Aviation Wind and Temperature Aloft Forecasts*,” dated October 31, 2013. Changes made to reflect the NWS Headquarters reorganization effective April 1, 2015.

Signed

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10/11/2016

Date

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1. Purpose. This instruction provides guidance to NWS offices, outlining preparation and format of wind and temperature aloft forecasts in support of commercial and general aviation.

2. Background. The National Centers for Environmental Prediction (NCEP) produces scheduled wind and temperature aloft forecasts four (4) times daily for specified locations in the Continental United States (CONUS), the Hawaiian Islands, Alaska and coastal waters, and the Pacific Ocean. There is no requirement to issue amendments to the forecasts.

3. Forecast Locations. Forecasts will be issued by NCEP for the locations listed alphabetically by state in Appendix A. Forecasts for intermediate locations may be determined by interpolation.

4. Forecast Levels. Wind and temperature aloft forecasts will be issued for the following levels. All levels are referenced to Mean Sea Level (MSL) and all times are in Coordinated Universal Time which is indicated by Z.

Actual Altitude (feet)

3,000 6,000 9,000 12,000

The following actual altitude levels will be added for the Hawaiian and Pacific Ocean forecast bulletin series sites:

Actual Altitude (feet)

1,000 1,500 2,000 15,000

Pressure Altitude (feet)

18,000(500hPa) 24,000(400hPa) 30,000(300hPa) 34,000(250hPa)
 39,000(200hPa) 45,000(150hPa) # 53,000(100hPa)#

#Available only for selected locations (see Appendix A).

Wind forecasts will not be issued for levels within 1,500 feet of a location's elevation. An exception for this is made for the altitudes listed above as extra levels for the Hawaiian and Pacific locations. Temperature forecasts will not be issued for levels within 2,500 feet of a location's elevation.

Forecasts for intermediate levels may be determined by interpolation.

5. Bulletin Designators. Wind and temperature aloft forecasts are issued in bulletins

identified by the data type designator "FB" in the World Meteorological Organization (WMO) heading as follows:

a. 3,000- to 39,000-foot forecasts

	6-Hour Forecast	12-Hour Forecast	24-Hour Forecast
CONUS	FBUS31 KWNO	FBUS33 KWNO	FBUS35 KWNO
AWIPS ID	FD1US1	FD3US3	FD5US5
ALASKA	FBAK31 KWNO	FBAK33 KWNO	FBAK35 KWNO
AWIPS ID	FD1AK1	FD3AK3	FD5AK5

b. 45,000- and 53,000-foot forecasts

	6-Hour Forecast	12-Hour Forecast	24-Hour Forecast
CONUS	FBUS37 KWNO	FBUS38 KWNO	FBUS39 KWNO
AWIPS ID	FD8US7	FD9US8	FD0US9
ALASKA	FBAK37 KWNO	FBAK38 KWNO	FBAK39 KWNO
AWIPS ID	FD8AK7	FD9AK8	FD0AK9

c. 1,000- to 24,000-foot forecasts

	6- Hour Forecast	12-Hour Forecast	24-Hour Forecast
HAWAII	FBHW31 KWNO	FBHW33 KWNO	FBHW35 KWNO
AWIPS ID	FD1HW1	FD3HW3	FD5HW5
PACIFIC SITES	FBOC31 KWNO	FBOC33 KWNO	FBOC35 KWNO
AWIPS ID	FD1OC1	FD3OC3	FD5OC5

d. 30,000- to 53,000-foot forecasts

	6- Hour Forecast	12-Hour Forecast	24-Hour Forecast
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Hawaii	FBHW37 KWNO	FBHW38 KWNO	FBHW39 KWNO
AWIPS ID	FD8HW7	FD9HW8	FD0HW9
PACIFIC SITES	FBOC37 KWNO	FBOC38 KWNO	FBOC39 KWNO
AWIPS ID	FD8OC7	FD9OC8	FD0OC9

NOTE: The Hawaii/Pacific bulletins are separated at the 24,000 foot level instead of 39,000 feet because of the additional, lower levels noted in section 4.

6. Format. The symbolic form of the forecasts is "DDff±TT" in which "DD" is the wind direction, "ff" the wind speed, and "TT" the temperature.

Wind direction is indicated in tens of degrees (two digits) with reference to true north, and wind speed is given in knots (two digits). Light and variable wind or wind speeds of less than 5 knots are expressed by "9900." Forecast wind speeds of 100 through 199 knots are indicated by subtracting 100 from the speed and adding 50 to the coded direction. For example, a forecast of 250 degrees, 145 knots, is encoded as 7545. Forecast wind speeds of 200 knots or greater are indicated as a forecast speed of 199 knots.

Temperature is indicated in degrees Celsius (two digits) and is preceded by the appropriate algebraic sign for the levels from 6,000 through 24,000 feet. Above 24,000 feet, the sign is omitted since temperatures are negative.

6.1. Format for levels 39,000 feet and below. The bulletin format for levels 39,000 feet and below follows:

FBUS31 KWNO 190440
DATA BASED ON 190000Z DATA

VALID 190600Z FOR USE 0600-1200Z. TEMPS NEG ABV 24000

FT 3000 6000 9000 12000 18000 24000 30000 34000 39000
ABR 1027 1326+01 1428-03 1431-09 1639-21 1749-34 175849 175957 174758
ABI 2849+04 2857-02 2760-07 2670-20 2682-32 760344 760648 259451
ALS (etc.)

NOTE: For Hawaii and Pacific bulletins, the additional levels of 1000, 1500, 2000, and 15000 will be added to this format. This will not require modification for receipt since the data will still be one line per site.

6.2. Format for 45,000- and 53,000-Foot Levels. The bulletin format for the 45,000- and 53,000-foot levels follows:

Forecasts for these levels are available in the Federal Aviation Administration's (FAA's) Weather Message Switching Center Replacement (WMSCR) only for selected locations listed in Appendix A with a number symbol (#).

FBUS37 KWNO 191640
DATA BASED ON 191200Z

VALID 191800Z FOR USE 1800-0000Z. TEMPS NEG ABV 24000

FT 45000 53000
ABR 193557 202257
ABI 258055 255561
ALS (etc.)

7. Delayed Forecasts. If the scheduled FB transmission is delayed, users should continue using the valid FB's based on 6-hour earlier data until NCEP transmits the new forecast.

Appendix A - Forecast Locations

- Indicates locations for which 45,000- and 53,000-foot forecasts are available.

Latitude and Longitude are in degrees and minutes. West longitude and south latitude are indicated as negative (-). Elevation is in feet.

STATE	Identifier	Location	Latitude	Longitude	Elevation
ALABAMA					
	BHM #	Birmingham	33° 33'	-86° 44'	620
	HSV	Huntsville	34° 33'	-86° 46'	629
	MGM	Montgomery	32° 13'	-86° 19'	221
	MOB #	Mobile	30° 41'	-88° 14'	190
ALASKA					
	ADK #	Adak	51° 56'	-176° 25'	13
	ADQ #	Kodiak	57° 46'	-152° 35'	112
	AKN #	King Salmon	58° 44'	-156° 45'	49
	ANC #	Anchorage	61° 14'	-149° 33'	131
	ANN #	Annette Island	55° 03'	-131° 37'	112
	BET #	Bethel	60° 35'	-161° 35'	51
	BRW #	Barrow	71° 17'	-156° 31'	13
	BTI #	Barter Island	70° 10'	-143° 55'	49
	BTT #	Bettles	66° 54'	-151° 30'	673
	CDB #	Cold Bay	55° 11'	-162° 22'	102
	CZF #	Cape Romanzof	61° 47'	-166° 02'	457
	EHM #	Cape Newenham	58° 39'	-162° 04'	541
	FAI #	Fairbanks	64° 43'	-148° 11'	453
	FYU #	Fort Yukon	66° 35'	-145° 05'	431
	GAL #	Galena	64° 44'	-156° 56'	152
	GKN #	Gulkana	62° 09'	-145° 27'	21
	HOM #	Homer	59° 39'	-151° 29'	78
	JNU #	Juneau	58° 26'	-134° 41'	23
	LUR #	Cape Lisburne	68° 53'	-166° 07'	12
	MCG #	McGrath	62° 49'	-155° 24'	338
	MDO #	Middleton Island	59° 30'	-146° 18'	72
	OME #	Nome	64° 37'	-165° 05'	23
	ORT #	Northway	63° 04'	-142° 04'	1,722

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OTZ #	Kotzebue	66° 39'	-162° 54'	16
SNP #	St. Paul	57° 09'	-170° 37'	30
TKA #	Talkeetna	62° 19'	-150° 06'	358
UNK #	Unalakleet	63° 53'	-160° 48'	21
YAK #	Yakutat	59° 37'	-139° 30'	30
IKO #	Nikolski	52° 57'	-168° 51'	73
AFM #	Ambler	67° 06'	-157° 51'	289

GULF OF ALASKA

5AB #		52° 25'	176° 00'	0
5AC #		52° 00'	-135° 00'	0
5AD #		54° 00'	-145° 00'	0
5AE #		55° 00'	-155° 00'	0
5AF #		56° 00'	-137° 00'	0
5AG #		58° 00'	-142° 00'	0

ARKANSAS

FSM	Fort Smith	35° 23'	-94° 16'	468
LIT #	Little Rock	34° 40'	-92° 10'	258

ARIZONA

PHX	Phoenix	33° 25'	-111° 53'	1,132
PRC #	Prescott	34° 42'	-112° 28'	5,042
TUS #	Tucson	32° 07'	-110° 49'	2,630

CALIFORNIA

BIH #	Bishop	37° 22'	-118° 21'	4,120
BLH #	Blythe	33° 35'	-114° 45'	397
FAT #	Fresno	36° 53'	-119° 48'	332
FOT	Fortuna	40° 40'	-124° 14'	390
ONT	Ontario	34° 03'	-117° 36'	952
RBL #	Red Bluff	40° 05'	-122° 14'	354
SAC	Sacramento	38° 26'	-121° 33'	21
SAN #	San Diego	32° 44'	-117° 11'	15
SBA #	Santa Barbara	34° 30'	-119° 46'	10
SFO #	San Francisco	37° 37'	-122° 22'	11
SIY	Montague	41° 47'	-122° 27'	2,648
WJF	Lancaster	34° 44'	-118° 13'	2,347

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COLORADO

ALS #	Alamosa	37° 20'	-105° 48'	7,535
DEN #	Denver	39° 48'	-104° 53'	5,333
GJT #	Grand Junction	39° 03'	-108° 47'	4,858
PUB	Pueblo	38° 17'	-104° 25'	4,726

CONNECTICUT

BDL	Windsor Locks	41° 56'	-72° 41'	174
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FLORIDA

EYW	Key West	24° 35'	-81° 48'	4
JAX #	Jacksonville	30° 26'	-81° 33'	30
MIA #	Miami	25° 57'	-80° 27'	10
MLB	Melbourne	28° 06'	-80° 38'	33
PFN	Panama City	30° 12'	-85° 40'	20
PIE #	St. Petersburg	27° 54'	-82° 41'	11
TLH #	Tallahassee	30° 33'	-84° 22'	81

GEORGIA

ATL #	Atlanta	33° 37'	-84° 26'	1,026
CSG	Columbus	32° 36'	-85° 01'	397
SAV	Savannah	32° 09'	-81° 06'	50

HAWAII

ITO #	Hilo	19° 43'	-155° 03'	38
HNL #	Honolulu	21° 19'	-157° 55'	13
LIH #	Lihue	21° 59'	-159° 20'	153
OGG #	Kahului	20° 54'	-156° 26'	54
LNK #	Lanai	20° 47'	-156° 57'	1,308
KOA #	Kailua-Kona	19° 44'	-156° 03'	47

IDAHO

BOI #	Boise	43° 34'	-116° 14'	2,858
LWS	Lewiston	46° 22'	-116° 52'	1,438
PIH #	Pocatello	42° 52'	-112° 39'	4,448

ILLINOIS

JOT #	Joliet	41° 32'	-88° 19'	582
SPI	Springfield	39° 50'	-89° 40'	597

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INDIANA

EVV	Evansville	38° 02'	-87° 31'	418
FWA	Fort Wayne	40° 58'	-85° 11'	800
IND #	Indianapolis	39° 48'	-86° 22'	797

IOWA

BRL	Burlington	40° 43'	-90° 55'	698
DBQ #	Dubuque	42° 24'	-90° 42'	1,076
DSM #	Des Moines	41° 26'	-93° 38'	957
MCW	Mason City	43° 05'	-93° 19'	1,213

KANSAS

GCK #	Garden City	37° 55'	-100° 43'	2,888
GLD #	Goodland	39° 23'	-101° 41'	3,654
ICT #	Wichita	37° 43'	-97° 27'	1,332
SLN	Salina	38° 52'	-97° 37'	1,272

KENTUCKY

LOU #	Louisville	38° 06'	-85° 34'	546
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LOUISIANA

LCH	Lake Charles	30° 08'	-93° 06'	16
MSY #	New Orleans	30° 01'	-90° 10'	4
SHV #	Shreveport	32° 46'	-93° 48'	258

MAINE

BGR	Bangor	44° 50'	-68° 52'	192
CAR #	Caribou	46° 52'	-68° 01'	623
PWM	Portland	43° 38'	-70° 18'	74

MARYLAND

EMI #	Westminster	39° 29'	-76° 58'	820
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MASSACHUSETTS

ACK	Nantucket	41° 16'	-70° 01'	48
BOS #	Boston	42° 21'	-70° 59'	20

MICHIGAN

ECK #	Peck	43° 15'	-82° 43'	810
MKG	Muskegon	43° 10'	-86° 02'	628
MQT	Marquette	46° 31'	-87° 35'	1,419
SSM #	Sault Ste. Marie	46° 24'	-84° 18'	690

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TVC	Traverse City	44° 40'	-85° 32'	624
MINNESOTA				
AXN	Alexandria	45° 57'	-95° 13'	1,425
DLH	Duluth	46° 48'	-92° 12'	1,428
INL #	International Falls	48° 33'	-93° 24'	1,184
MSP #	Minneapolis-St Paul	45° 08'	-93° 22'	841
MISSOURI				
CGI	Cape Girardeau	37° 13'	-89° 34'	342
COU	Columbia	38° 48'	-92° 13'	889
MKC #	Kansas City	39° 16'	-94° 35'	758
SGF #	Springfield	37° 21'	-93° 20'	1,267
STL #	St. Louis	38° 51'	-90° 28'	589
MISSISSIPPI				
JAN #	Jackson	32° 30'	-90° 10'	346
MONTANA				
BIL #	Billings	45° 48'	-108° 37'	3,605
DLN #	Dillon	45° 14'	-112° 32'	5,238
GPI #	Kalispell	48° 12'	-114° 10'	2,972
GGW #	Glasgow	48° 12'	-106° 37'	2,293
GTF #	Great Falls	47° 27'	-111° 24'	3,674
MLS	Miles City	46° 22'	-105° 57'	2,628
NORTH CAROLINA				
HAT	Cape Hatteras	35° 16'	-75° 33'	11
ILM #	Wilmington	34° 21'	-77° 52'	32
RDU #	Raleigh-Durham	35° 52'	-78° 47'	437
NORTH DAKOTA				
DIK #	Dickinson	46° 51'	-102° 46'	2,589
GFK	Grand Forks	47° 57'	-97° 11'	844
MOT	Minot	48° 15'	-101° 17'	1,715
NEBRASKA				
BFF #	Scottsbluff	41° 53'	-103° 28'	3,965
GRI	Grand Island	40° 59'	-98° 18'	1,846
OMA	Omaha	41° 10'	-95° 44'	983
ONL #	O'Neill	42° 28'	-98° 41'	2,030

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NEW HAMPSHIRE

BML	Berlin	44° 38'	-71° 11'	1,158
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NEW JERSEY

ACY	Atlantic City	39° 27'	-74° 34'	76
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NEW MEXICO

ABQ #	Albuquerque	35° 02'	-106° 48'	5,352
FMN #	Farmington	36° 44'	-108° 05'	5,503
ROW	Roswell	33° 20'	-104° 37'	3,669
TCC	Tucumcari	35° 10'	-103° 35'	4,063
ZUN	Zuni	34° 57'	-109° 09'	6,454

NEVADA

BAM #	Battle Mountain	40° 34'	-116° 55'	4,532
ELY #	Ely	39° 17'	-114° 50'	6,255
LAS #	Las Vegas	36° 04'	-115° 09'	2,174
RNO #	Reno	39° 31'	-119° 39'	4,412

NEW YORK

ALB #	Albany	42° 44'	-73° 48'	285
BUF #	Buffalo	42° 55'	-78° 38'	725
JFK #	New York	40° 37'	-73° 46'	12
PLB #	Plattsburgh	44° 48'	-73° 24'	371
SYR	Syracuse	43° 09'	-76° 12'	421

OHIO

CLE #	Cleveland	41° 21'	-82° 09'	792
CMH	Columbus	39° 59'	-82° 55'	816
CVG	Covington	39° 00'	-84° 42'	891

OKLAHOMA

GAG	Gage	36° 20'	-99° 52'	2,223
OKC #	Oklahoma City	35° 24'	-97° 38'	1,295
TUL	Tulsa	36° 11'	-95° 47'	676

OREGON

AST	Astoria	46° 09'	-123° 52'	11
IMB #	Kimberly	44° 38'	-119° 42'	5,220
LKV #	Lakeview	42° 29'	-120° 30'	4,728

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OTH #	North Bend	43° 24'	-124° 10'	14
PDX #	Portland	45° 44'	-122° 35'	26
RDM	Redmond	44° 15'	-121° 18'	3,077
PENNSYLVANIA				
AGC	Pittsburgh	40° 16'	-80° 02'	1,252
AVP	Wilkes-Barre/ Scranton	41° 16'	-75° 41'	957
PSB #	Phillipsburg	40° 54'	-77° 59'	1,948
SOUTH CAROLINA				
CAE #	Columbia	33° 51'	-81° 03'	236
CHS	Charleston	32° 53'	-80° 02'	45
FLO	Florence	34° 13'	-79° 39'	147
GSP	Greer	34° 53'	-82° 13'	972
SOUTH DAKOTA				
ABR #	Aberdeen	45° 25'	-98° 22'	1,301
FSD	Sioux Falls	43° 38'	-96° 46'	1,429
PIR	Pierre	44° 23'	-100° 09'	1,742
RAP #	Rapid City	43° 58'	-103° 00'	3,182
TENNESSEE				
BNA #	Nashville	36° 07'	-86° 40'	599
MEM #	Memphis	35° 03'	-89° 58'	332
TRI #	Bristol/Johnson	36° 28'	-82° 24'	1,519
TYS	Knoxville	35° 54'	-83° 53'	981
TEXAS				
ABI #	Abilene	32° 28'	-99° 51'	1,790
AMA #	Amarillo	35° 17'	-101° 38'	3,605
BRO #	Brownsville	25° 55'	-97° 22'	22
CLL	College Station	30° 36'	-96° 25'	319
CRP #	Corpus Christi	27° 54'	-97° 26'	44
DAL #	Dallas	32° 50'	-96° 51'	487
DRT #	Del Rio	29° 22'	-100° 55'	999
ELP #	El Paso	31° 48'	-106° 16'	3,956
HOU #	Houston	29° 38'	-95° 16'	47
INK #	Wink	31° 52'	-103° 14'	2,818
LBB	Lubbock	33° 42'	-101° 54'	3,281
LRD #	Laredo	27° 28'	-99° 25'	508

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MRF	Marfa	30° 17'	-103° 37'	4,848
PSX	Palacios	28° 45'	-96° 18'	15
SAT #	San Antonio	28° 38'	-98° 27'	809
SPS	Wichita Falls	33° 59'	-98° 35'	1,015
UTAH				
BCE #	Bryce Canyon	37° 41'	-112° 18'	7,586
SLC #	Salt Lake City	40° 51'	-111° 58'	4,227
VIRGINIA				
ORF	Norfolk	36° 53'	-76° 12'	27
RIC #	Richmond	37° 30'	-77° 19'	168
ROA	Roanoke	37° 20'	-80° 04'	1,175
WASHINGTON				
GEG #	Spokane	47° 33'	-117° 37'	2,372
SEA #	Seattle	47° 26'	-122° 18'	429
YKM	Yakima	46° 34'	-120° 26'	1,095
WISCONSIN				
GRB #	Green Bay	44° 33'	-88° 11'	695
LSE	La Crosse	43° 52'	-91° 15'	653
WEST VIRGINIA				
CRW #	Charleston	38° 20'	-81° 46'	982
EKN	Elkins	38° 54'	-80° 05'	1,987
WYOMING				
CZI #	Crazy Woman	43° 59'	-106° 26'	4,798
LND	Lander	42° 48'	-108° 43'	5,586
MBW	Medicine Bow	41° 50'	-106° 00'	7,000
RKS #	Rock Springs	41°35'	-109° 00'	6,760
ATLANTIC OCEAN				
2XG #	Gauge	30° 20'	-78° 30'	0
GULF OF MEXICO				
T01	West Cameron	28° 30'	-93° 30'	0
T06	Ship Shoal	28° 30'	-91° 00'	0
T07	S Mobile South	28° 30'	-88° 00'	0
4J3	S Apalachicola South	28° 30'	-85° 00'	0

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H51	Bay City	26° 30'	-95° 00'	0
H52	Mid Gulf	26° 00'	-89° 30'	0
H61	W Fort Myers West	26° 30'	-84° 00'	0

PACIFIC OCEAN

JON #	Johnston Island	16° 44'	-169° 32'	7
MAJ #	Majuro	07° 04'	171° 16'	6
KWA #	Kwajalein	08° 43'	167° 44'	16
MDY #	Midway Island	28° 12'	-177° 23'	13
PPG #	Pago Pago	-14° 20'	-170E 43'	30
TTK #	Kosrae	05° 21'	162° 58'	11
AWK #	Wake Island	19° 17'	166° 39'	14
GRO #	Rota	14° 11'	145° 14'	607
GSN #	Saipan	15° 07'	145° 44'	215
TNI #	West Tinian	15° 00'	145° 37'	271
GUM #	Guam	13° 29'	144° 48'	298
TKK #	Chuuk, FSM	07° 28'	151° 51'	10
PNI #	Pohnpei, FSM	06° 59'	158° 13'	8
ROR #	Koror, Palau	07° 22'	134° 33'	176
T11 #	Yap, FSM	09° 30'	138° 05'	91