

NATIONAL WEATHER SERVICE INSTRUCTION 10-812

October 19, 2007

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: Supersedes NWS Instruction 10-812, Aviation Wind and Temperature Aloft Forecasts, dated September 14, 2004. Changes include minor grammar and format corrections, OPR update, and update of location identifiers for the winds aloft bulletins.

//SIGNED//

October 5, 2007

Dr. James E. Hoke

Date

Acting Director, Office of Climate, Water, and Weather Services

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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
Hawaii	FBHW37 KWNO	FBHW38 KWNO	FBHW39 KWNO

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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:

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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	33E 33'	-86E 44'	620
	HSV	Huntsville	34E 33'	-86E 46'	629
	MGM	Montgomery	32E 13'	-86E 19'	221
	MOB #	Mobile	30E 41'	-88E 14'	190
ALASKA					
	ADK #	Adak	51E 56'	-176E 25'	13
	ADQ #	Kodiak	57E 46'	-152E 35'	112
	AKN #	King Salmon	58E 44'	-156E 45'	49
	ANC #	Anchorage	61E 14'	-149E 33'	131
	ANN #	Annette Island	55E 03'	-131E 37'	112
	BET #	Bethel	60E 35'	-161E 35'	51
	BRW #	Barrow	71E 17'	-156E 31'	13
	BTI #	Barter Island	70E 10'	-143E 55'	49
	BTT #	Bettles	66E 54'	-151E 30'	673
	CDB #	Cold Bay	55E 11'	-162E 22'	102
	CZF #	Cape Romanzof	61E 47'	-166E 02'	457
	EHM #	Cape Newenham	58E 39'	-162E 04'	541
	FAI #	Fairbanks	64E 43'	-148E 11'	453
	FYU #	Fort Yukon	66E 35'	-145E 05'	431
	GAL #	Galena	64E 44'	-156E 56'	152
	GKN #	Gulkana	62E 09'	-145E 27'	21
	HOM #	Homer	59E 39'	-151E 29'	78
	JNU #	Juneau	58E 26'	-134E 41'	23
	LUR #	Cape Lisburne	68E 53'	-166E 07'	12
	MCG #	McGrath	62E 49'	-155E 24'	338
	MDO #	Middleton Island	59E 30'	-146E 18'	72
	OME #	Nome	64E 37'	-165E 05'	23
	ORT #	Northway	63E 04'	-142E 04'	1,722
	OTZ #	Kotzebue	66E 39'	-162E 54'	16

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

GULF OF ALASKA

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

ARKANSAS

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

ARIZONA

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

CALIFORNIA

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

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COLORADO

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

CONNECTICUT

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

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

GEORGIA

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

HAWAII

ITO #	Hilo	19E 43'	-155E 03'	38
HNL #	Honolulu	21E 19'	-157E 55'	13
LIH #	Lihue	21E 59'	-159E 20'	153
OGG #	Kahului	20E 54'	-156E 26'	54
LNK #	Lanai	20E47'	-156E 57'	1,308
KOA #	Kailua-Kona	19E44'	-156E 03'	47

IDAHO

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

ILLINOIS

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

INDIANA

EVV	Evansville	38E 02'	-87E 31'	418
FWA	Fort Wayne	40E 58'	-85E 11'	800

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IND #	Indianapolis	39E 48'	-86E 22'	797
IOWA				
BRL	Burlington	40E 43'	-90E 55'	698
DBQ #	Dubuque	42E 24'	-90E 42'	1,076
DSM #	Des Moines	41E 26'	-93E 38'	957
MCW	Mason City	43E 05'	-93E 19'	1,213
KANSAS				
GCK #	Garden City	37E 55'	-100E 43'	2,888
GLD #	Goodland	39E 23'	-101E 41'	3,654
ICT #	Wichita	37E 43'	-97E 27'	1,332
SLN	Salina	38E 52'	-97E 37'	1,272
KENTUCKY				
LOU #	Louisville	38E 06'	-85E 34'	546
LOUISIANA				
LCH	Lake Charles	30E 08'	-93E 06'	16
MSY #	New Orleans	30E 01'	-90E 10'	4
SHV #	Shreveport	32E 46'	-93E 48'	258
MAINE				
BGR	Bangor	44E 50'	-68E 52'	192
CAR #	Caribou	46E 52'	-68E 01'	623
PWM	Portland	43E 38'	-70E 18'	74
MARYLAND				
EMI #	Westminster	39E 29'	-76E 58'	820
MASSACHUSETTS				
ACK	Nantucket	41E 16'	-70E 01'	48
BOS #	Boston	42E 21'	-70E 59'	20
MICHIGAN				
ECK #	Peck	43E 15'	-82E 43'	810
MKG	Muskegon	43E 10'	-86E 02'	628
MQT	Marquette	46E 31'	-87E 35'	1,419
SSM #	Sault Ste. Marie	46E 24'	-84E 18'	690
TVC	Traverse City	44E 40'	-85E 32'	624
MINNESOTA				
AXN	Alexandria	45E 57'	-95E 13'	1,425
DLH	Duluth	46E 48'	-92E 12'	1,428

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INL #	International Falls	48E 33'	-93E 24'	1,184
MSP #	Minneapolis-St Paul	45E 08'	-93E 22'	841
MISSOURI				
CGI	Cape Girardeau	37E 13'	-89E 34'	342
COU	Columbia	38E 48'	-92E 13'	889
MKC #	Kansas City	39E 16'	-94E 35'	758
SGF #	Springfield	37E 21'	-93E 20'	1,267
STL #	St. Louis	38E 51'	-90E 28'	589
MISSISSIPPI				
JAN #	Jackson	32E 30'	-90E 10'	346
MONTANA				
BIL #	Billings	45E 48'	-108E 37'	3,605
DLN #	Dillon	45E 14'	-112E 32'	5,238
GPI #	Kalispell	48E 12'	-114E 10'	2,972
GGW #	Glasgow	48E 12'	-106E 37'	2,293
GTF #	Great Falls	47E 27'	-111E 24'	3,674
MLS	Miles City	46E 22'	-105E 57'	2,628
NORTH CAROLINA				
HAT	Cape Hatteras	35E 16'	-75E 33'	11
ILM #	Wilmington	34E 21'	-77E 52'	32
RDU #	Raleigh-Durham	35E 52'	-78E 47'	437
NORTH DAKOTA				
DIK #	Dickinson	46E 51'	-102E 46'	2,589
GFK	Grand Forks	47E 57'	-97E 11'	844
MOT	Minot	48E 15'	-101E 17'	1,715
NEBRASKA				
BFF #	Scottsbluff	41E 53'	-103E 28'	3,965
GRI	Grand Island	40E 59'	-98E 18'	1,846
OMA	Omaha	41E 10'	-95E 44'	983
ONL #	O'Neill	42E 28'	-98E 41'	2,030
NEW HAMPSHIRE				
BML	Berlin	44E 38'	-71E 11'	1,158
NEW JERSEY				
ACY	Atlantic City	39E 27'	-74E 34'	76
NEW MEXICO				
ABQ #	Albuquerque	35E 02'	-106E 48'	5,352

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

NEVADA

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

NEW YORK

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

OHIO

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

OKLAHOMA

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

OREGON

AST	Astoria	46E 09'	-123E 52'	11
IMB #	Kimberly	44E 38'	-119E 42'	5,220
LKV #	Lakeview	42E 29'	-120E 30'	4,728
OTH #	North Bend	43E 24'	-124E 10'	14
PDX #	Portland	45E 44'	-122E 35'	26
RDM	Redmond	44E 15'	-121E 18'	3,077

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PENNSYLVANIA

AGC	Pittsburgh	40E 16'	-80E 02'	1,252
AVP	Wilkes-Barre/ Scranton	41E 16'	-75E 41'	957
PSB #	Phillipsburg	40E 54'	-77E 59'	1,948

SOUTH CAROLINA

CAE #	Columbia	33E 51'	-81E 03'	236
CHS	Charleston	32E 53'	-80E 02'	45
FLO	Florence	34E 13'	-79E 39'	147
GSP	Greer	34E 53'	-82E 13'	972

SOUTH DAKOTA

ABR #	Aberdeen	45E 25'	-98E 22'	1,301
FSD	Sioux Falls	43E 38'	-96E 46'	1,429
PIR	Pierre	44E 23'	-100E 09'	1,742
RAP #	Rapid City	43E 58'	-103E 00'	3,182

TENNESSEE

BNA #	Nashville	36E 07'	-86E 40'	599
MEM #	Memphis	35E 03'	-89E 58'	332
TRI #	Bristol/Johnson	36E 28'	-82E 24'	1,519
TYS	Knoxville	35E 54'	-83E 53'	981

TEXAS

ABI #	Abilene	32E 28'	-99E 51'	1,790
AMA #	Amarillo	35E 17'	-101E 38'	3,605
BRO #	Brownsville	25E 55'	-97E 22'	22
CLL	College Station	30E 36'	-96E 25'	319
CRP #	Corpus Christi	27E 54'	-97E 26'	44
DAL #	Dallas	32E 50'	-96E 51'	487
DRT #	Del Rio	29E 22'	-100E 55'	999
ELP #	El Paso	31E 48'	-106E 16'	3,956
HOU #	Houston	29E 38'	-95E 16'	47
INK #	Wink	31E 52'	-103E 14'	2,818
LBB	Lubbock	33E 42'	-101E 54'	3,281
LRD #	Laredo	27E 28'	-99E 25'	508
MRF	Marfa	30E 17'	-103E 37'	4,848
PSX	Palacios	28E 45'	-96E 18'	15
SAT #	San Antonio	28E 38'	-98E 27'	809
SPS	Wichita Falls	33E 59'	-98E 35'	1,015

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UTAH

BCE #	Bryce Canyon	37E 41'	-112E 18'	7,586
SLC #	Salt Lake City	40E 51'	-111E 58'	4,227

VIRGINIA

ORF	Norfolk	36E 53'	-76E 12'	27
RIC #	Richmond	37E 30'	-77E 19'	168
ROA	Roanoke	37E 20'	-80E 04'	1,175

WASHINGTON

GEG #	Spokane	47E 33'	-117E 37'	2,372
SEA #	Seattle	47E 26'	-122E 18'	429
YKM	Yakima	46E 34'	-120E 26'	1,095

WISCONSIN

GRB #	Green Bay	44E 33'	-88E 11'	695
LSE	La Crosse	43E 52'	-91E 15'	653

WEST VIRGINIA

CRW #	Charleston	38E 20'	-81E 46'	982
EKN	Elkins	38E 54'	-80E 05'	1,987

WYOMING

CZI #	Crazy Woman	43E 59'	-106E 26'	4,798
LND	Lander	42E 48'	-108E 43'	5,586
MBW	Medicine Bow	41E 50'	-106E 00'	7,000
RKS #	Rock Springs	41E 35'	-109E 00'	6,760

ATLANTIC OCEAN

2XG #	Gauge	30E 20'	-78E 30'	0
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GULF OF MEXICO

T01	West Cameron	28E 30'	-93E 30'	0
T06	Ship Shoal	28E 30'	-91E 00'	0
T07	S Mobile South	28E 30'	-88E 00'	0
4J3	S Apalachicola South	28E 30'	-85E 00'	0
H51	Bay City	26E 30'	-95E 00'	0
H52	Mid Gulf	26E 00'	-89E 30'	0
H61	W Fort Myers West	26E 30'	-84E 00'	0

PACIFIC OCEAN

JON #	Johnston Island	16E 44'	-169E 32'	7
MAJ #	Majuro	07E 04'	171E 16'	6
KWA #	Kwajalein	08E 43'	167E 44'	16

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