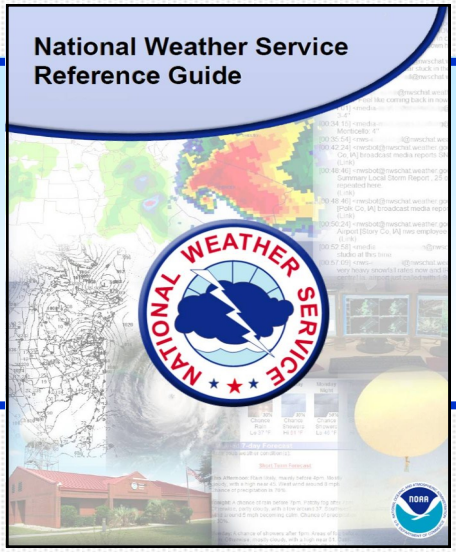


3. Routine Products and Services

Table of Contents

Public Forecasts	2
How We Forecast	4
XML Data	5
Radar Services	6
Hydrologic Services	9
Marine Services	10
Fire Weather Services	12
Aviation Services	13
Climate Services	16

Click on description to go directly to the page.

3. Routine Products and Services

Every NWS office is responsible for providing forecasts for its CWA or AOR. The products issued by the forecast office can be broken down into seven separate groups: public, aviation, fire weather, marine, hydrology, climate and severe. Six of these groups will be described in this section along with routine products issued for each. The 7th group, severe weather, is described in more detail in the non-routine product section.

Public Forecasts

Public forecasts are the most widely known products issued by the NWS offices. These forecasts are for general weather conditions that appeal to a wide range of users. Many of these products are issued twice per day, around 3 or 4 a.m. and 3 or 4 p.m. every day, although some routine products are updated regularly on slightly different schedules.

Routine Public Products Issued By All WFOs	
AFD	Area Forecast Discussion
CCF	Coded Cities Forecast
HWO	Hazardous Weather Outlook
PFM	Point Forecast Matrix
ZFP	Zone Forecast Product
Routine Public Products Issued By Some WFOs or Seasonally	
AFM	Area Forecast Matrix
RWR	Regional Weather Roundup
RWS	Regional Weather Summary
SIM	Satellite Interpretation Message
SFP	State Forecast Product
SFT	Tabular State Forecast

Product Descriptions

Area Forecast Discussion (AFD): A text product that provides the latest reasoning for major decisions made during the forecasting process. It is a technical discussion, issued by the forecaster, explaining the forecast methodology. In certain cases it is simply a uniform discussion, but some offices may break down their discussion into individual sections, such as long term, short term, aviation, marine or climate. The AFD may be updated as frequently as deemed necessary by the forecasters on duty.

Area Forecast Matrix (AFM): A version of the 7-day forecast that is presented in a tabular format and is generated for individual counties, parishes or boroughs. It conveys the critical forecast information such as temperature, dewpoint, relative humidity, winds, clouds and precipitation chances, among other things. The first 48-60 hours are broken down into 3-hour intervals and the extended portion of the forecast is broken down into 6-hour intervals.

Coded Cities Forecast (CCF): A product that takes the forecast information and condenses it into a sequence of numbers for selected cities. It is not easily interpreted visually, but it is a short, compact text product that is easy for certain computer software programs to ingest. It is also used in the National Weather Service forecast verification program.

Hazardous Weather Outlook (HWO): Used to alert users (media, emergency managers, spotters and the public) of potential winter weather, severe weather, fire weather, non-precipitation or flood hazards that may occur within the next seven days. It is designed to act as a "heads up" of impending hazards and often briefly discusses some potential impacts of a particular hazard.

Point Forecast Matrix (PFM): A version of the 7-day forecast that is presented in a tabular format and is generated for individual specific points, usually major cities. It is presented in a similar format to the AFM.

Zone Forecast Product (ZFP): A descriptive 7-day forecast that is grouped by individual counties or by groups of counties. It provides detail on temperature, clouds, winds, precipitation type and precipitation chances. The text descriptions are based on what is created graphically in the Graphical Forecast Editor (GFE). For information on that, see next page.

Regional Weather Roundup (RWR): This product is issued every hour by certain offices. It lists the reported weather conditions at certain locations, mostly within a few hundred miles, and these are usually grouped by certain regions. Occasionally, the RWR will contain some weather conditions for cities far away from the particular WFO.

Regional Weather Summary (RWS): A plain language description of how the weather conditions are expected to evolve over the next several days. It provides some insight as to how certain fronts or low pressure centers will move, how areas of precipitation will evolve, etc.

Satellite Interpretation Message (SIM): An alphanumeric product providing an interpretation of synoptic weather features, significant weather areas, and various cloud and weather phenomena based upon satellite imagery (visual, infrared, water vapor, etc). (Issued WFOs Guam and Honolulu only.)

State Forecast Product (SFP): Like the ZFP, but authored for an entire state. It provides detail on temperature, clouds, winds, precipitation type and precipitation chances for an entire state for the next seven days.

Tabular State Forecast (SFT): A tabular product, providing a 7-day forecast of predominant daytime weather from 6 a.m. to 6 p.m., forecast high and low temperatures and probability of precipitation for selected cities throughout a given state.

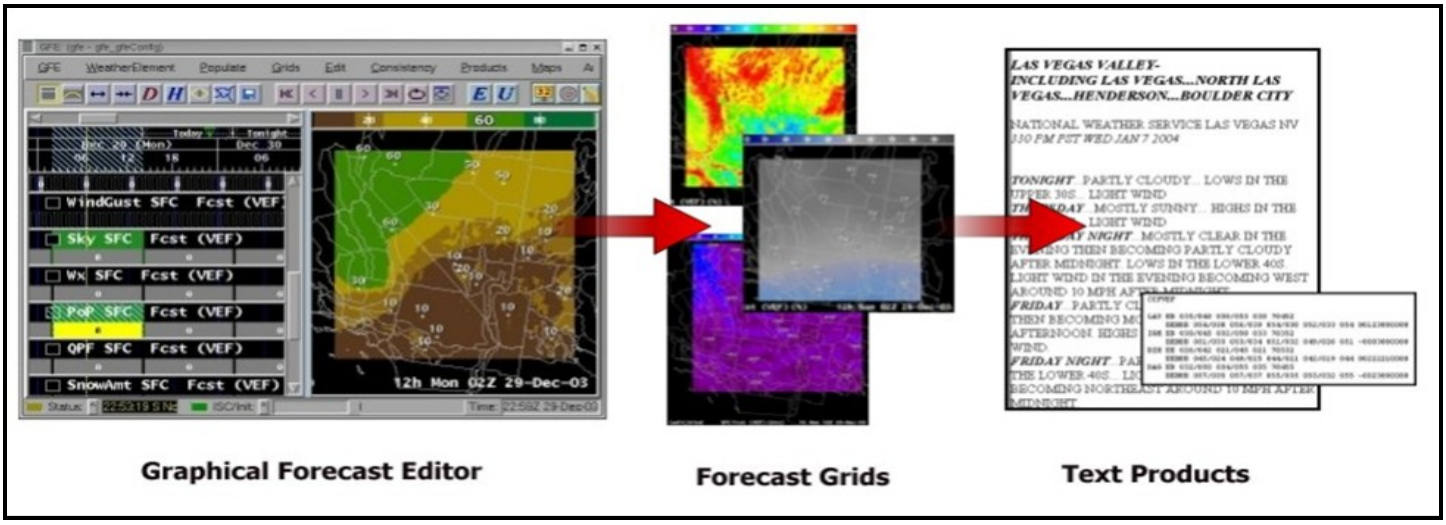
Creating a Digital Database: The Forecast Process

The Interactive Forecast Preparation System (IFPS) first became operational at NWS offices in 2002. It represented a transition from primarily text-based products to increasing digital sources of forecast information for a variety of users. IFPS has a number of advantages. It allows forecasters to quickly generate many useful text products. It also provides forecast information in very useful formats that are easy to understand and interpret.

How exactly do the forecast offices generate these digital forecasts? Meteorologists at each WFO import digital computer model data into a software program called the Graphical Forecast Editor (GFE). This digital data is then either manipulated by hand by the forecaster, or by complex "smart tools" that are coded into the software program. There are hundreds of individual "grids" – digital images that represent a certain weather element at a certain time in the forecast.

The tools used to edit the grids can be extremely sophisticated and account for things like terrain, climatology, surface type and diurnal variations. Once all of the grids are edited by the forecaster, they are interpolated and a complete hour-by-hour forecast emerges. The digital information is then saved and sent to the National Digital Forecast Database (NDFD), where it is available in a number of different formats on the NWS website. Anytime you use the point-and-click forecast feature, the activity planner, or the hourly weather graph, you are looking at the NDFD information.

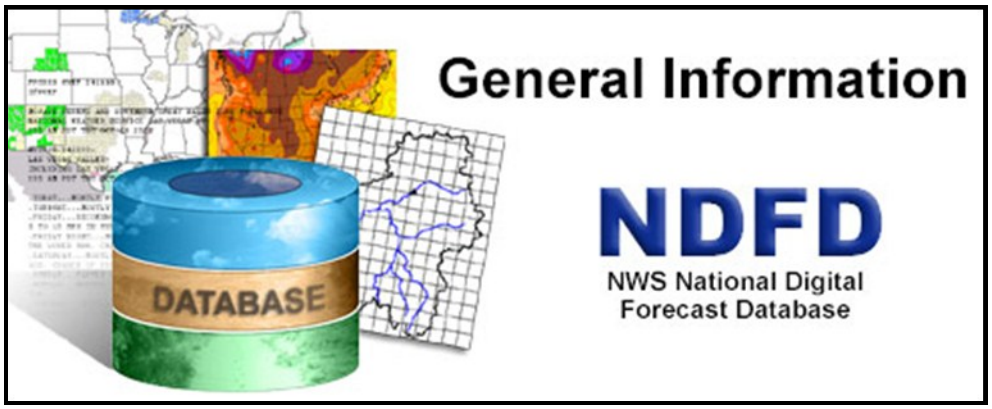
A number of routine text products are generated from the digital forecast information as well. These products include the ZFP, AFM, PFM, SFT, CCF and marine forecasts, among others.



National Weather Service XML Data

http://www.weather.gov/xml/

The National Weather Service is striving to serve society's needs for weather information by evolving its services from a text-based paradigm to one based on making NWS information available quickly, efficiently and in convenient and understandable forms. The National Digital Forecast Database (NDFD) is one example of this transformation. NDFD Extensible Markup Language (XML) takes yet another step towards a digital services era by making NDFD data available for computer to computer transfer and processing. NWS customers and partners can then enhance the value of NDFD data through the creation of value added products. More information on NDFD can be found at:
http://www.weather.gov/ndfd/



NDFD XML is a service providing the public, government agencies, and commercial enterprises with data from the NWS's digital forecast database. This service provides NWS customers and partners the ability to request NDFD data over the internet and receive the information back in an XML format. NDFD XML contains forecasts for any combination of the following meteorological parameters: http://www.weather.gov/ndfd/technical.htm#elements

The request/response process is made possible by the NDFD XML Simple Object Access Protocol (SOAP) server: http://www.w3.org/TR/soap/. To see the details of the NDFD XML SOAP service, go to the following URL and click on the NDFDgen or NDFDgenByDay link: http://www.weather.gov/forecasts/xml/SOAP_server/ndfdXMLserver.php

If the web service description provided by the SOAP server does not meet your needs, similar information is available in the following Web Service Description Language (WSDL) document:
http://www.weather.gov/forecasts/xml/DWMLgen/wsdl/ndfdXML.wsdl

Other XML Services

Experimental XML/CAP 1.1 Feeds and Web Displays of Watches, Warnings and Advisories
http://www.weather.gov/alerts-beta/

XML Feeds of Current Weather Conditions
http://www.weather.gov/xml/current_obs/

XML/RSS Feeds of National Hurricane Center Data
http://www.nhc.noaa.gov/aboutrss.shtml

Experimental Storm Prediction Center Feeds
http://www.spc.noaa.gov/aboutrss.html

Radar Products

How Doppler Radar Works

As the radar antenna turns, it emits extremely short bursts of radio waves, called pulses. The transmitted radio waves move through the atmosphere at about the speed of light.

By recording the direction in which the antenna is pointed, the speed and direction of any given target is known as well. Generally, the better the target is at reflecting radio waves (i.e., more raindrops, larger hailstones, etc.), the more power that will be associated with the reflected radio waves.

This process of transmitting a pulse, and then "listening" for returned power, is repeated up to 1,300 times per second, with most of the time spent listening rather than transmitting. By keeping track of the time it takes the radio waves to leave the antenna, hit the target and return to the antenna, the radar can calculate the distance to the target. The returned power is converted to radar reflectivity. The changes between two returned pulses in rapid succession can be used to calculate the velocity.

Types of Data Available On Our Website

There are six different types of images currently available for the NWS web radar display: Base Reflectivity, Composite Reflectivity, Base Velocity, Storm Relative Motion, One-hour Precipitation and Storm Total Precipitation.

Base Reflectivity

Base Reflectivity is the intensity of returned power (reflectivity) measured in dBZ (decibels of Z, where Z represents the energy reflected back to the radar). Base reflectivity data are available at several different elevation angles (tilts) of the antenna and are used to detect precipitation, evaluate storm structure, locate atmospheric boundaries and determine hail potential.

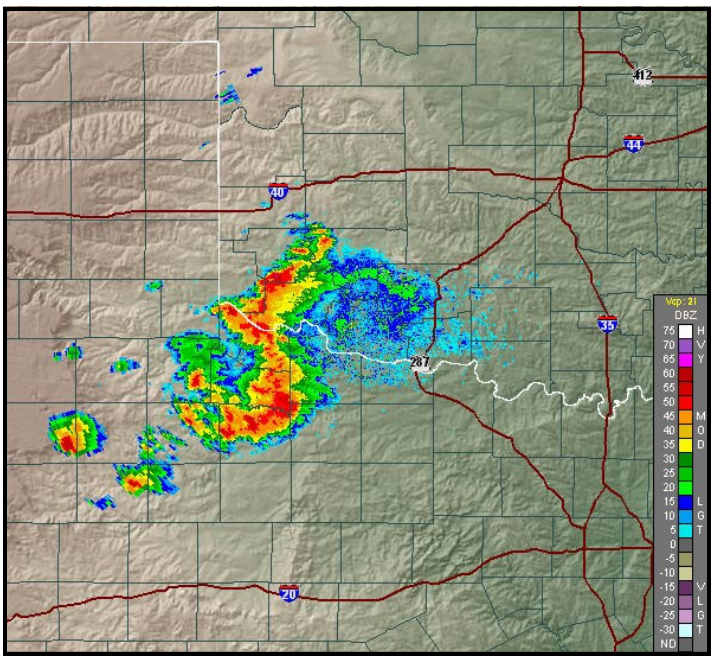
The base reflectivity image on the NWS radar website is from the lowest "tilt" angle (0.5°). This means the radar's antenna is tilted 0.5° above the horizon. This small tilt is used to lessen the interference from ground targets like trees, buildings and even birds or bugs.

Composite Reflectivity

This display is the maximum echo intensity (reflectivity) from any elevation angle at every range from the radar. This product is used to reveal the highest reflectivity in all targets. When compared with base reflectivity, the composite reflectivity can reveal important storm structure features and intensity trends of storms.

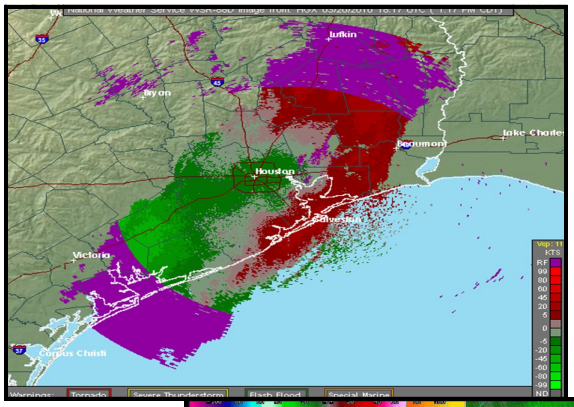
Base Velocity

This product is a display of the radial velocity representing the overall wind field. Green colors indicate wind moving **toward** the radar with red colors indicating wind moving **away** from the radar. The maximum range of this product is 124 nm (about 143 miles) from the radar location.



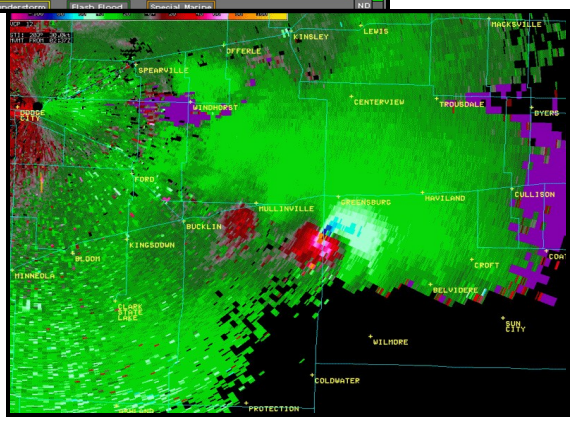
Storm Relative Motion

Radial velocity of the wind relative to the storm motion. The result is a picture of the wind as if the storms were stationary. This often unmasks storms that rotate (supercells), which can be a precursor to the formation of tornadoes. Green colors indicate wind moving toward the radar with red colors indicating wind moving away from the radar. The maximum range of this product is 124 nm (about 143 miles) from the radar location. Two side-by-side, green and red "bulls-eye" centers would signify a "velocity-couplet" that is typically associated with a potentially tornadic circulations.



One-Hour Precipitation

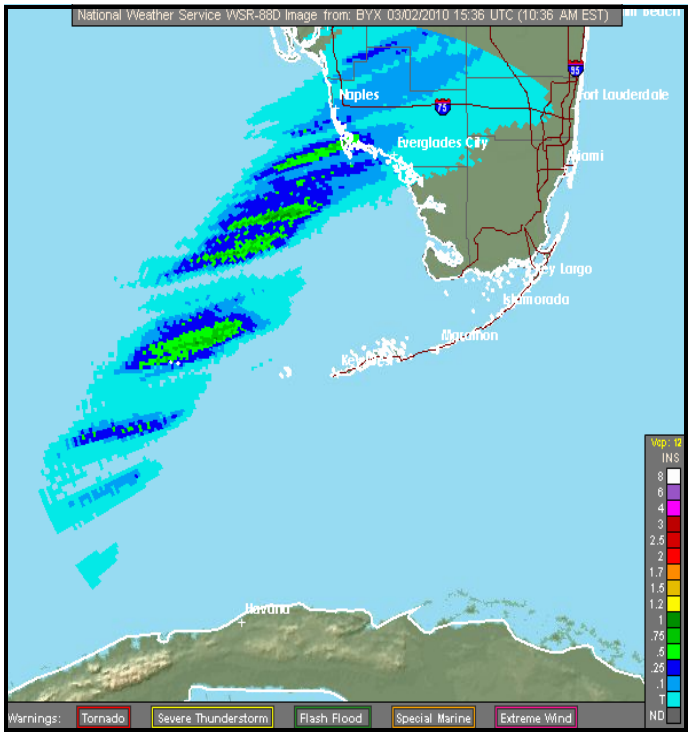
Estimated one-hour precipitation accumulation. This product is used to assess rainfall intensities. The maximum range of this product is 124 nm (about 143 miles) from the radar location. This image will not display accumulated precipitation more distant than 124 nm, even though precipitation may be occurring at greater distances. To determine accumulated precipitation at greater distances you should link to an adjacent radar.



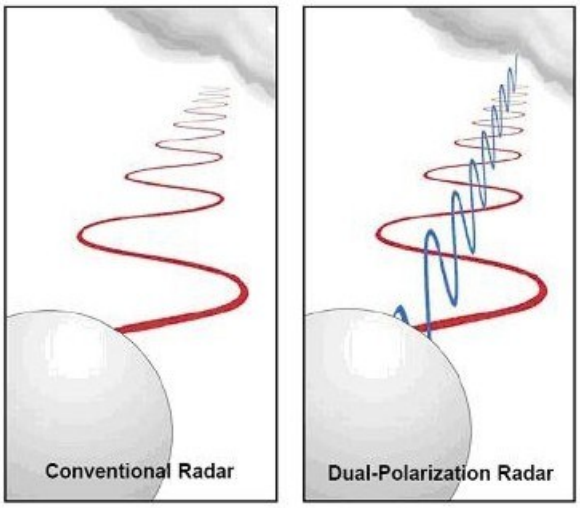
Storm Total Precipitation

Estimated accumulated rainfall, continuously updated, since the last one-hour break in precipitation. This image is used to locate flood potential over urban or rural areas, estimate total basin runoff and provide rainfall accumulations for the duration of the event.

The maximum range of this product is 124 nm (about 143 miles) from the radar location. This product will not display accumulated precipitation more distant than 124 nm, even though precipitation may be occurring at greater distances. To determine accumulated precipitation at greater distances link to an adjacent radar.



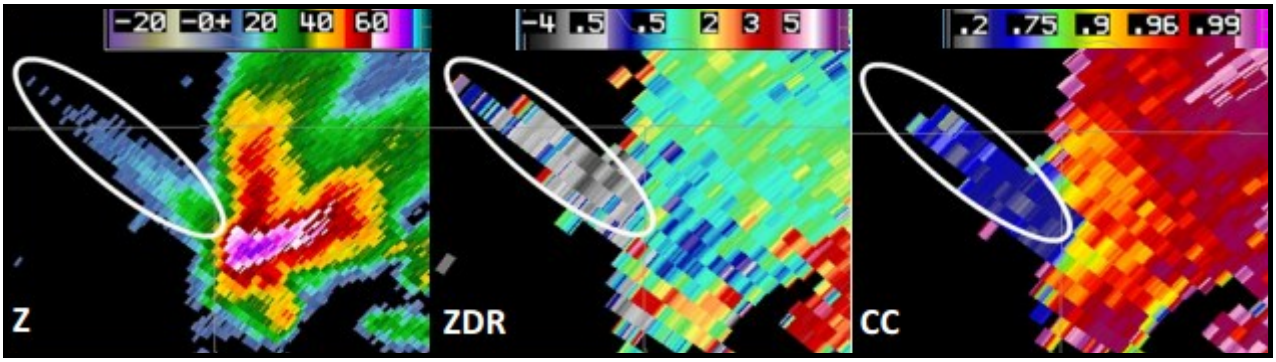
NWS Dual-Polarization Technology



In 2012, the entire fleet of WSR-88Ds (Weather Surveillance Radar - 1998 Doppler) underwent a major software and hardware upgrade. This upgrade, known as dual-polarization technology, will greatly enhance these radars by providing the ability to collect data on the horizontal and vertical properties of weather (e.g., rain, hail) and non -weather (e.g., insect, ground clutter) targets. Dual-pol will improve the overall quality of radar data, vastly improve precipitation estimation, and should aid in the forecast and warning decision making process for severe local and winter storms. New base products include:

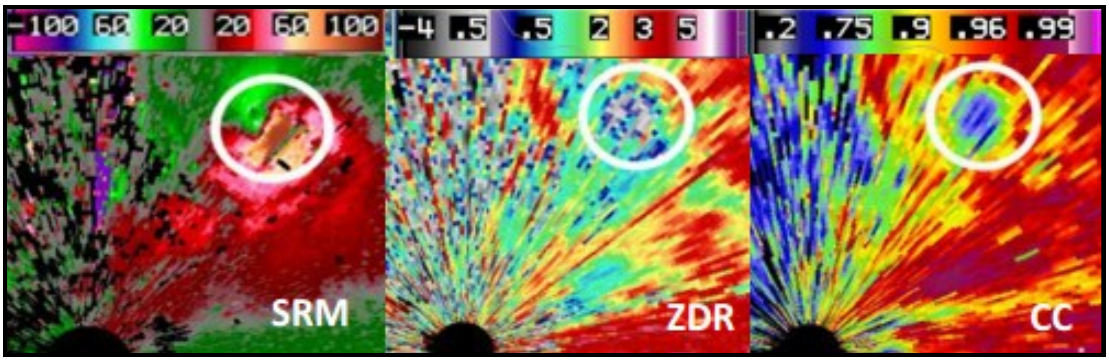
Differential Reflectivity (ZDR)

A ratio of the reflected horizontal and vertical power returns. Positive values indicate oblate hydrometeors (rain drops), while values trending toward indicate spherical or tumbling particles (hail, when combined with strong reflectivity). Typical values range from -2 to +6 dB.



Correlation Coefficient (CC)

A correlation between the backscattered power of the horizontally and vertically polarized echoes. This is used for superior precip/non-precip discrimination, data quality improvements, and uniformity of hydrometeors across a radar sample volume. Values from 0-1.00, and it is unitless.



Specific Differential Phase (KDP)

A range derivative of the dealiased difference in phase between the horizontally and vertically polarized pulses at a given range along the propagation path. This product is immune to the effects of hail and partial beam blockage, and is excellent for precipitation estimation. Typical values are -0.5 to +8 deg/km.

Other new algorithms include: Hydrometeor Classification Algorithm (HCA), Melting Layer Detection Algorithm (MLDA), Quantitative Precipitation Estimation (QPE).

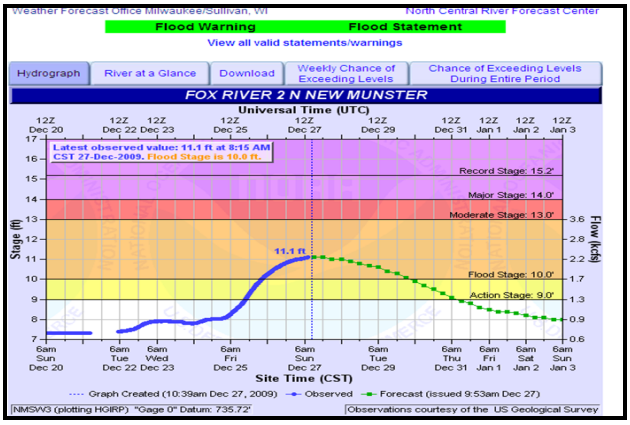
Hydrologic Services

Accurate hydrologic data and guidance is an essential part of the NWS mission. An extensive network of river gauges exists across the country to provide frequent readings of river levels and stream flow. This data is used by the River Forecast Center and local offices to make forecasts of expected river levels over a period ranging from a few hours to days or months. In some cases, forecasts will only be issued if flooding is occurring or expected to occur. The RFCs and WFOs work closely with the U.S. Geological Survey and U.S. Army Corps of Engineers.

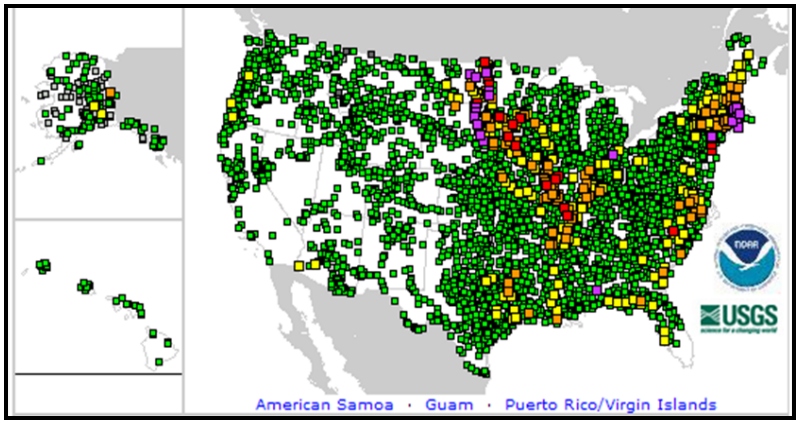
River flooding is categorized into four different levels.

> **Action Stage (i.e. near flood stage):** The river has reached its lowest natural bank and may be outside of this bank; however it is not impacting homes, businesses or most roadways. Once the river begins to have an impact on homes or businesses, it is in Minor Flood Stage. The flood stage is determined by local emergency management in cooperation with the NWS hydrologist.
>
> **Minor Flooding:** Minimal or no property damage but possibly some public threat.
>
> **Moderate Flooding:** Some inundation of structures and roads near stream. Some evacuations of people and/or transfer of property to higher elevations may be needed.
>
> **Major Flooding:** Extensive inundation of structures and roads. Significant evacuations of people and/or transfer of property to higher elevations.

Flash Flooding is most commonly related to excessive rainfall that leads to a rapid rise in water levels in creeks or streams, or street flooding in urban areas. Flash flooding can also occur with the breach of levees or flood retainment walls.



Example of a river flooding chart with river over flood stage. Green dashed line is the forecast.



River gauge sites across the county. Green markers are not in action or flood, yellow is action stage, orange, red and magenta represent minor, moderate and major flooding, respectively.

Routine Hydrology Products Issued By Some WFOs	
RVA	River / Hydrologic Summary

Product Descriptions

River/Hydrologic Summary (RVA): This is a collection of the latest river and lake stages usually issued once per day in the morning hours, although some offices also issue the product in the evening. It consists of the latest stages in a particular county warning area.

See Also: Non-Routine Hydrology Products and RFC

Marine and Coastal Weather Services

The NWS provides forecast and warning information for the U.S. coastal and offshore waters, the Great Lakes and the open oceans. NWS marine weather forecasters issue wind, sea state and precipitation forecasts, as well as warnings and statements essential to conducting safe and efficient maritime operations and the protection of the marine public.

Marine weather observations are vital to accurate weather forecasting, especially over the waters where weather stations can be few and far between. Thousands of vessels worldwide help alleviate the problem as Volunteer Observing Ships (VOS) by submitting observations used by marine forecasters and computer modelers.

NWS marine forecasters also provide services as needed in aiding search and rescue operations, containment and clean-up of oil spills and support for other disasters such as airplane crash recovery operations.

The National Data Buoy Center, designs, develops, operates and maintains a network of data collecting buoys and coastal stations. The data collected from these buoys and stations is integral in assisting marine forecasters.

The Ocean Prediction Center (OPC) and the Tropical Analysis and Forecasting Branch (TAFB) of the NHC, issue marine warnings, forecasts and guidance in text and graphical format for maritime users. The OPC and TAFB also continually monitor and analyze maritime data and provide guidance of marine atmospheric variables for purposes of protection of life and property, safety at sea and enhancement of economic opportunity. OPC and TAFB forecasts cover the North Atlantic Ocean from the west coast of Europe to the U.S. and Canadian east coast, and the North Pacific Ocean from the U.S. and Canadian west coast to the east coast of Asia. TAFB also has responsibility to 20° south in the Pacific Ocean.

Marine Weather Service – www.weather.gov/om/marine/home.htm

Great Lakes Marine Portal – www.weather.gov/greatlakes

Ocean Prediction Center – www.opc.ncep.noaa.gov

Southeast U.S./Gulf of Mexico Marine Portal http://forecast.weather.gov/mwp

Routine Marine Products Issued By Some WFOs, Or Seasonally	
CWF	Coastal Waters Forecast
GLF	Great Lakes Forecast
NSH	Nearshore Marine Forecast
OFF	Offshore Forecast
SRF	Surf Forecast
TID	Tide Report

Product Descriptions

Coastal Waters Forecast (CWF): These are issued by WFOs that are adjacent to the Atlantic Ocean, Pacific Ocean or Gulf of Mexico. The coastal waters forecast consists of zones that extend from shore to varying distances offshore – including 40 nautical miles across the Eastern and Pacific Regions, 60 nautical miles across Southern and Western Regions and 100 nautical miles in Alaska. They provide information on winds, waves and expected weather conditions.

Great Lakes Forecast (GLF): These are issued by certain WFOs in the Great Lakes region. The Great Lakes Forecasts are issued for the open waters of the Great Lakes, or basically any section of the lake beyond five nautical miles from shore. They provide information on winds, waves and expected weather conditions.

Nearshore Marine Forecast (NSH): These are issued by any WFO that is adjacent to one of the Great Lakes. The Nearshore Marine Forecasts are issued for any section of a Great Lake that is within five nautical miles of shore. They provide information on winds, waves and expected weather conditions.

Offshore Forecast (OFF): These are issued by the Hawaii, Anchorage, Alaska and Guam forecast office for open water areas not covered by other marine forecast products. The OOF is also issued by the Ocean Prediction Center or Hurricane Prediction Center for the Atlantic, Pacific and Gulf of Mexico.

Surf Forecast (SRF): An alphanumeric product issued by select WFOs with coastal waters marine responsibility. The product provides information on surf, water, any potential marine hazards such as rip currents and the general weather conditions within the surf zone.

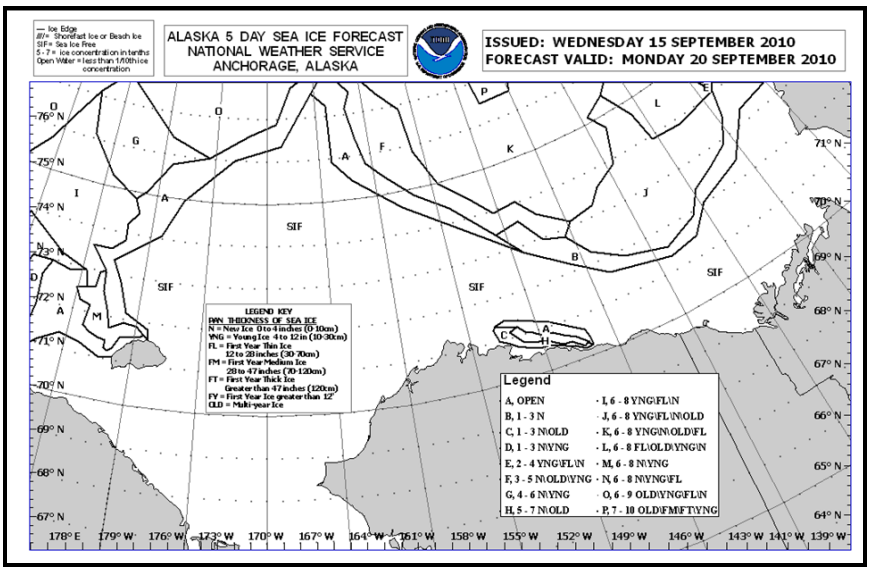
Tide Forecast (TID): This product provides a list of tide level and times issued by select WFOs with coastal waters marine responsibility.

See Also: Non-Routine Marine Products

NWS Ice Desk (WFO Anchorage, AK)

http://pafc.arh.noaa.gov/ice.php

The Anchorage, AK forecast office produces graphical analyses of sea surface temperatures and sea ice as well as five day sea ice forecasts year round. Scheduled sea ice analyses and 5-day sea ice forecasts are produced Monday, Wednesday and Friday. A sea surface temperature chart of Alaskan waters is produced Tuesday and Thursday. Annotated satellite analyses of sea surface temperatures and sea ice are produced when clear skies allow these features to be observed.



NWS Great Lake Ice Forecasts (WFO Cleveland, OH)

http://www.weather.gov/greatlakes/

Great Lakes Ice Outlooks are issued on Mondays, Wednesdays and Fridays during the ice season and cover all of the Great Lakes and their associated waterways (except Lake Ontario and the St. Lawrence Seaway). It contains a 5-day synopsis of weather elements, 36-hour forecast of winds, 5-day temperature outlook and expected ice conditions for the next 5 days. Additional data include temperature normals, accumulated freezing degree days and observed ice thickness.

Fire Weather Services

The NWS forecast offices provide a variety of fire weather forecasts to support fire suppression activities by various land management agencies. These forecasts are issued depending on the length of the forecast office's fire weather season, which varies across the country.

Daily forecasts are produced within the fire weather season for the office. Additionally, fire weather watches and red flag warnings may be issued if conditions warrant. These two products are issued by the NWS office in conjunction with land management personnel.

During the summer months, when wildfire activity usually reaches its peak across the western United States, Incident Meteorologists (IMETs) are dispatched to large wildfires. The IMET is an NWS meteorologist who provides on-site forecasts for land management personnel. These forecasts are used by land management personnel to maximize safety of firefighters and the general public and to optimize resource allocation. IMETs can also be requested to support: prescribed burns that involve critical resources, land management coordination and dispatch centers, hazardous substance release or any special projects or incidents that the NWS is required to provide support.

Some of the agencies that the NWS fire weather program provides forecasts for include: National Interagency Fire Center, National Interagency Coordination Center, United States Department of the Interior Bureau of Land Management, United States Department of the Interior Bureau of Indian Affairs, United States Forest Service, United States Fish & Wildlife Service, National Park Service, National Wildfire Coordinating Group, numerous Geographic Area Coordination Centers and numerous state forestry and natural resources agencies.

National Weather Service Fire Weather Website:

http://www.weather.gov/fire

From here, local NWS fire weather websites can be accessed. In addition, the website provides fire weather observations, forecasts and other fire weather-related information.

Routine Fire Weather Products Issued By Some WFOs, Or Seasonally	
FWF	Fire Weather Planning Forecast
FWM	Fire Weather Point Forecast
FWS	Fire Weather Spot Forecast

Product Descriptions

Fire Weather Planning Forecast (FWF): This is a specialized text product intended to provide useful forecast information tailored towards fire weather planning. It contains detailed forecast information that is designed for emergency managers, fire fighting officials, etc.

Fire Weather Point Forecast (FWM): A point forecast highlighting fire weather conditions. These forecasts are sometimes used to determine staffing.

Fire Weather Spot Forecast (FWS): This is an as-needed forecast for a specific location in the office CWA. The forecast is requested by land management personnel generally to aide in planning and maintenance of a prescribed burn. For more information on requesting a spot forecast see Section 2 of this guide.

See Also: Non-Routine Fire Weather Products

Aviation Weather Services

The National Weather Service (NWS) issues aviation products and services for the National Airspace System (NAS). Every NWS office has an aviation program to provide forecasts for large and small airports across the country. Aviation weather forecasts are used in planning and executing over 100,000 flights in the U.S. every day. The tremendous impact of weather conditions on takeoff and landing operations requires that forecasts always be as specific and timely as possible.

There are several entities within the NWS that support aviation weather services.

1. Aviation Weather Center (AWC)
2. Center Weather Service Unit (CWSU)
3. NWS Weather Forecast Office (WFO)
4. Alaska Aviation Weather Unit (AWWU)
5. Weather Forecast Office Honolulu, HI (HFO)

AWC, AAWU and the WFO in Honolulu, HI are also Meteorological Watch Offices (MWOs). MWOs are designated by the International Civil Aviation Organization to maintain a continuous watch over weather conditions that affect flight operations, and to issue necessary warnings and forecasts for the aviation community.

The **Aviation Weather Center (AWC)** is part of the NCEP program. More information can be found in Section 4 of this guide.

The **Center Weather Service Unit (CWSU)** is an NWS unit located inside each of the Federal Aviation Administration's (FAA) 21 Air Route Traffic Control Centers (ARTCC). CWSU meteorologists provide on-site, real-time weather support to air traffic control operations for airports and airspace within the control center's area of responsibility.

```
ZJX MIS 01 VALID 220130-221100
...FOR ATC PLANNING PURPOSES ONLY...
OVR ATLC WTRS ZJX
SCT TS MOV FM 24025KT. MAX TOPS FL350. TS OFF
FL PEN ECST MOVG OVR INTL WTRS BY 03Z. TS
REDVLPG OFF SC/GA/NRN FL COAST 06-07Z CONTG
THRU 11Z.
.
OVR SC/GA/FL ZJX
MOD TURB BTN FL240-FL400
MOD TURB BLW 080
LGT TO MOD RIME/MXD ICGICIP BTN 040-FL200
```

Example MIS for Jacksonville, FL

Meteorologists distribute information to decision-makers in the ARTCC and other FAA facilities about where, when, and what is expected in the ARTCC's various sectors. Special emphasis is given to weather conditions that could be hazardous to aviation or could impede the flow of air traffic in the National Airspace System. Dissemination is by computer products, incoming phone requests, as well as scheduled and unscheduled briefings. Rerouting of aircraft around hazardous weather is based largely on forecasts provided by the CWSU meteorologist.

CWSU issues two non-routine (weather-dependent) text products. The Center Weather Advisory (CWA) is a localized, short-term aviation weather warning for thunderstorms, icing, turbulence, and low cloud ceilings and visibilities. The Meteorological Impact Statement (MIS) is a 4 to 12-hour forecast for weather conditions which are expected to impact ARTCC operations.

NWS WFOs are responsible for several aviation weather services. The primary duties of the aviation forecaster at each office include:

- Maintaining a continuous weather watch across the County Warning Area
- Issuing regularly scheduled aviation forecasts
- Responding to anticipated changes in meteorological conditions by amending aviation forecasts

Meteorologists at each office regularly issue Terminal Aerodrome Forecasts (TAFs) for selected airport sites. A TAF is a 24-hour (or 30-hour for several larger airports) surface forecast for a five nautical mile radius around an airport. Each forecast includes the expected wind speed and direction, non-convective low level wind shear, visibility, weather and ceiling height in a concise format. In addition, the aviation forecasters continuously monitor the current weather conditions and issue amendments to the TAFs as meteorological conditions warrant and new forecast information becomes available.

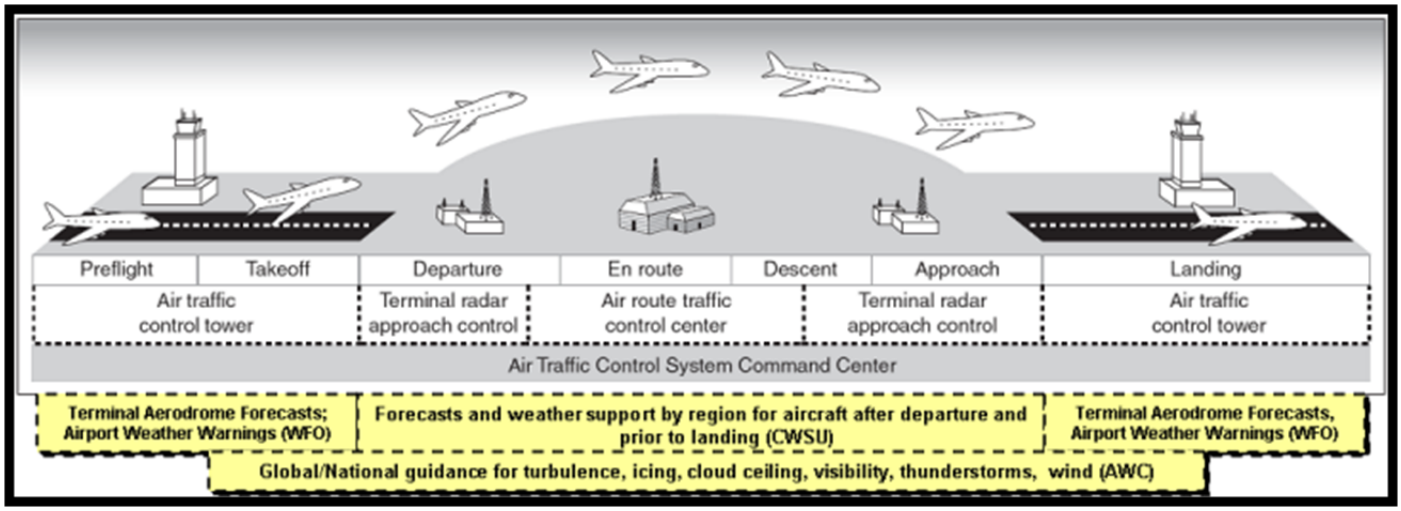
Routine Aviation Products Issued By WFOs	
TAF	Terminal Aerodrome Forecast

Product Descriptions

Terminal Aerodrome Forecast (TAF): A coded forecast describing, in detail, the expected conditions having an impact on aviation interests. The TAF is issued a minimum of 4 times per day with frequent updates during active weather. TAFs are 24 to 30 hours in length depending on the airport.

```
KORD 191720Z 1918/2018 34009KT P6SM BKN050
     FM200000 35008KT P6SM OVC035
     FM200200 36007KT 6SM -RASN OVC025
     FM200400 02009KT 3SM -SN SCT012 OVC020
     FM200800 02009KT P6SM BKN025 OVC060
     FM201500 03011KT P6SM OVC120=
```

Sample TAF for Chicago, IL (O'Hare)



Graphic Source: GAO-08-258, Aviation Weather

Related Links:

Each WFO has a website with a link to their aviation section in the left-hand menu of their homepage.

NWS Homepage: http://www.weather.gov

Aviation Weather Center Homepage: http://aviationweather.gov

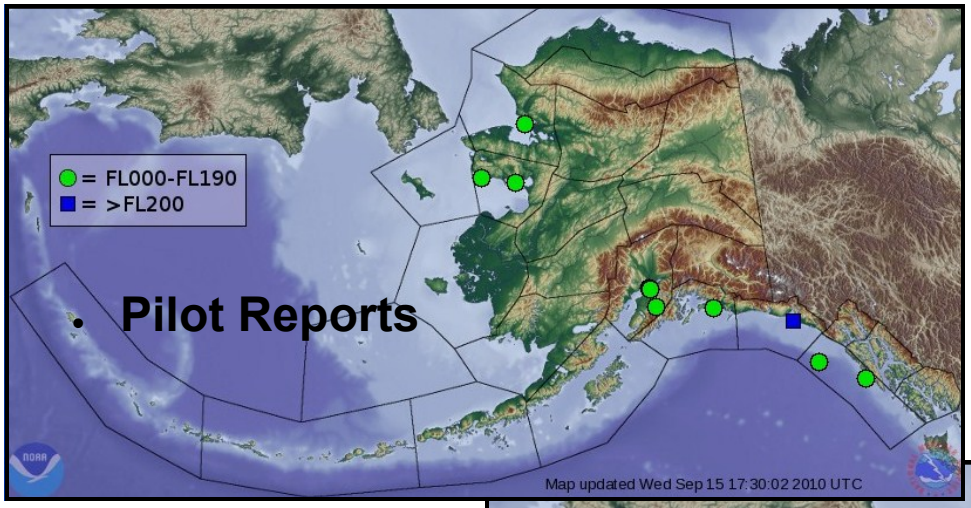
ADDS: http://aviationweather.gov/adds

Tactical Decision Aid: http://www.srh.noaa.gov/zhu/www/TDA.php?sid=MKE

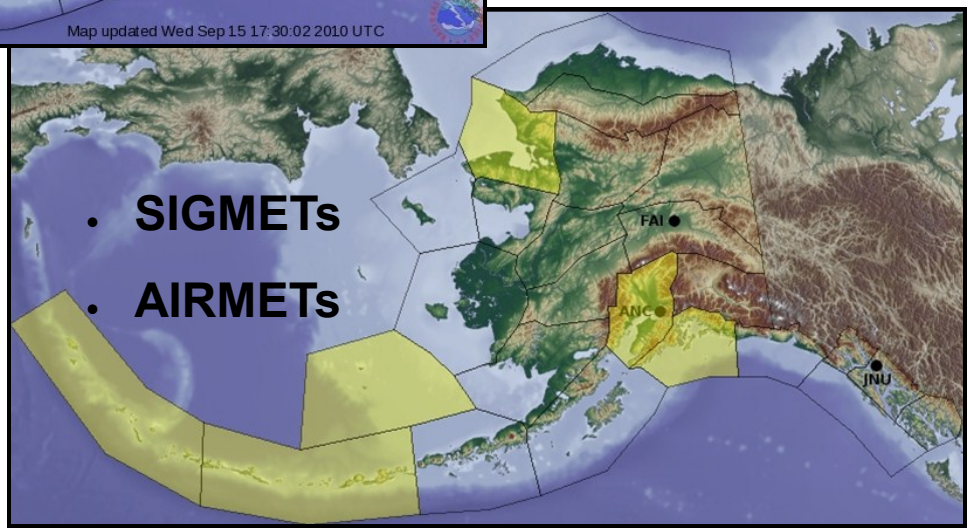
Center Weather Service Unit Location Map: http://www.weather.gov/organization.php?task=cwsu.php#task

Federal Aviation Administration: http://www.faa.gov

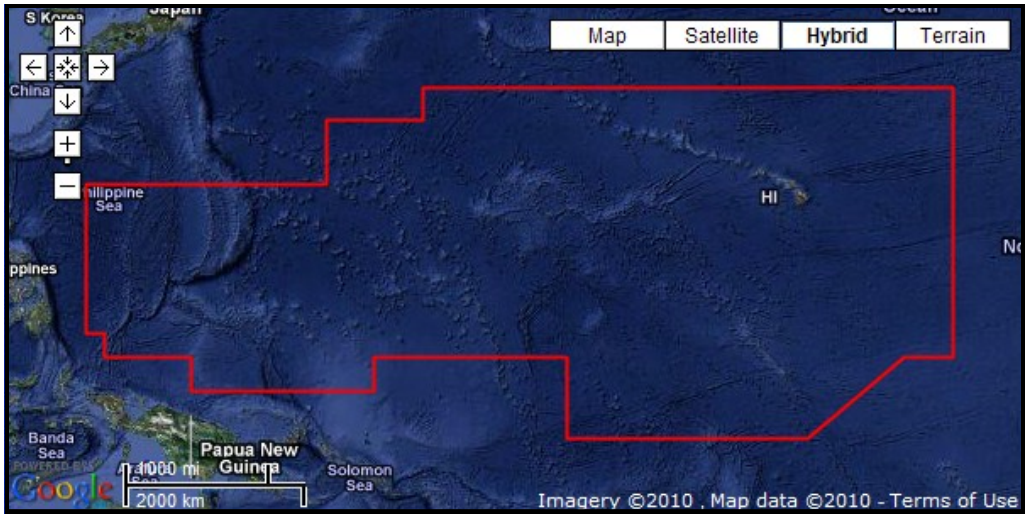
The **Alaska Aviation Weather (AAWU)** is a meteorological watch office (MWO) providing Alaska aviation weather products and services to the flying community. The AAWU is responsible for issuing Area Forecasts (FAs), AIRMETs, and SIGMETs for the Anchorage Flight Information Region (FIR). In addition, the AAWU serves as the Anchorage Volcanic Ash Advisory Center (VAAC). The Anchorage VAAC is one of nine international offices providing forecasts and analyses of volcanic ash plumes for eastern Russia and Alaska. There are over 100 historically active volcanoes along the North Pacific "ring of fire" that are monitored by the Anchorage VAAC.



Although the AAWU provides statewide coverage of Area Forecasts, FA's are organized by geographical divisions The FA for southeast Alaska (Juneau - the panhandle) extends from the Eastern Gulf Coast through the Southeast Panhandle. The FA for the northern half (Fairbanks) of the mainland extends south to the Alaska Range, north to the Coastal Arctic Slope, and west to St. Lawrence Island, including Norton and Kotzebue Sounds. The FA for south central Alaska extends north to the Alaska Range, south to the Central Gulf Coast, west to Adak, east to the Copper River Basin.



The **Weather Forecast Office in Honolulu, HI (HFO)** is also one of the three MWOs in the U.S. and maintains a meteorological watch across more than eight million square miles of the central and western Pacific. This area of responsibility covers the portion of the Oakland Oceanic Flight Information Region south of 30° N and west of 140° W. HFO issues many aviation forecasts for domestic and international travel. For the immediate Hawaii area, products issued include TAFs, area forecasts, upper level wind and temperature forecasts and AIRMETs (AIR pilots METeorological information) for low clouds, turbulence, and icing. In addition, the Honolulu forecast office forecasts an area that covers approximately 8,650,800 square miles.



Climate Services

Each NWS forecast office provides daily climate data for select cities in their CWA. Their climate reports contain information on the high and low temperatures, precipitation and wind. Other information, including records and sunrise and sunset times are also included on the daily report.

These products can be found on WFO websites in the local climate section. This data is not considered official. If certified data is required, the data should be requested from the National Climate Data Center.

National Climatic Data Center
Federal Building
151 Patton Avenue
Asheville NC 28801-5001

Phone Number: (828) 271 – 4800

Fax Number: (828) 271 - 4876

Further Contact Information can be found at http://www.ncdc.noaa.gov/oa/about/ncdccontacts.html

Local offices do not produce official climate forecast products. These forecasts and products are developed at the Climate Prediction Center. More information can be found in Section 4 of this guide..

Routine Hydrology Products Issued By Some WFOs	
CLI	Daily Climate Report
CF6	Preliminary Monthly Climate Data
CLM	Monthly Climate Report
RTP	Regional Temp and Precipitation Table
SCD	Supplementary Climatological Data

Product Descriptions

WFO Monthly/Daily Climate Data (CF6): A product providing climatological information for certain cities for individual months. The data is updated daily to reflect the new climate data. In addition to providing the climate data for each day, it also provides running averages and extremes for that particular month and other climate information.

Daily Climatological Report (CLI): Provides a detailed look at an individual day's climatological data listing what actually occurred, the normal values, and the record values for measurable variables like temperature and precipitation. You could think of the CF6 as a condensed collection of a month's worth of CLI products. There are also other similar but less frequently issued climate reports such as the CLA (annual), CLQ (quarterly) and CLS (seasonal).

Monthly Climatological Report (CLM): Official monthly climate report. Similar to the CLI, but a summary for the entire month.

Regional Max/Min Temp and Precipitation Table (RTP): A listing of the highs, lows and recorded precipitation at a number of selected locations in a county warning area.

Supplementary Climatological Data (SCD): A supplemental, manual observation taken by one of the NWS employees on duty. It is generally taken four times per day, at 06Z, 12Z, 18Z and 00Z. It is disseminated in a coded format.