Austin IWT Workshop: NWS Glossary and Acronyms

Hydrology-Related National Weather Service Products

(Note that the associated 3 letter acronyms, also called product identifiers, are the acronyms often referred to in Area Forecast Discussions and other informal means of communication)

- **Civil Emergency Message (CEM) -** A message issued by the National Weather Service in coordination with Federal, state or local government to warn the general public of a non-weather related time-critical emergency which threatens life or property, e.g. nuclear accident, toxic chemical spill, etc.
    - This will not trigger any kind of IPAWS notification
- **Excessive Rainfall Outlook (ERO) -** This Weather Prediction Center (WPC) product is designed to provide an indication of areas of the country where excessive rainfall is possible, quantified by the following risk categories: Marginal (MRGL) at 5-10%, Slight (SLGT) at 10-20%, Moderate (MDT) at 20-50%, and High (HIGH) at >50%. This product can be viewed at https://www.wpc.ncep.noaa.gov/qpf/excess_rain.shtml
- **Flood Potential Outlook (ESF) -** An NWS outlook that is issued to alert the public of potentially heavy rainfall that could send area rivers and streams into flood or aggravate an existing flood. These may be issued as a seasonal variety (e.g., for the spring wet season) or for special heads-up for an extraordinary flood threat.
- **Ensemble Hydrologic Forecasting -** A process whereby a continuous hydrologic model is successively executed several times for the same forecast period by use of varied data input scenarios, or a perturbation of a key variable state for each model run. A common method employed to obtain a varied data input scenario is to use the historical meteorological record, with the assumption that several years of observed data covering the time period beginning on the current date and extending through the forecast period comprises a reasonable estimate of the possible range of future conditions. This guidance is provided by the West Gulf River Forecast Center for Central TX. There are caveats to this approach, in that data is limited on the flood of record, especially in smaller basins and headwater points.
- **Flood Warning (FLW) -** A release by the NWS to inform the public of flooding along larger streams in which there is a serious threat to life or property. A flood warning will usually contain river stage (level) forecasts, and is issued based on a river level that is either currently or expected to be above minor flood stage.
- **Flood Watch (FLA) -** Issued to inform the public and cooperating agencies that current and developing hydrometeorological conditions are such that there is a threat of flooding or flash flooding, but the occurrence is neither certain nor imminent.
- **Flash Flood Guidance (FFG) -** Forecast guidance produced by the River Forecast Centers, often model output, specific to the potential for flash flooding (e.g., how much rainfall over a given area will be required to produce flash flooding).
- **Hazardous Weather Outlook (HWO) -** A narrative statement produced by the National Weather Service, frequently issued on a routine basis, to provide information regarding the potential of significant weather expected during the next 1 to 7 days.
- **Public Information Statement (PNS) -** A narrative statement issued by the National Weather Service that can be used for:
    - A current or expected non-hazardous event of general interest to the public that can usually be covered with a single message (e.g., summaries of received rainfall reports, and stories about a long-term dry/cold/wet/warm spell).
    - Public educational information and activities, such as storm safety rules, awareness activities, storm drills, etc.
    - Information regarding service changes, service limitations, interruptions due to reduced or lost power or equipment outages, or special information clarifying interpretation of NWS data. For example, this product may be used to inform users of radar equipment outages or special information clarifying interpretation of radar data originating from an unusual source which may be mistaken for precipitation (such as chaff drops, smoke plumes, etc., that produces echoes on the radar display.

Miscellaneous Hydrology Terms

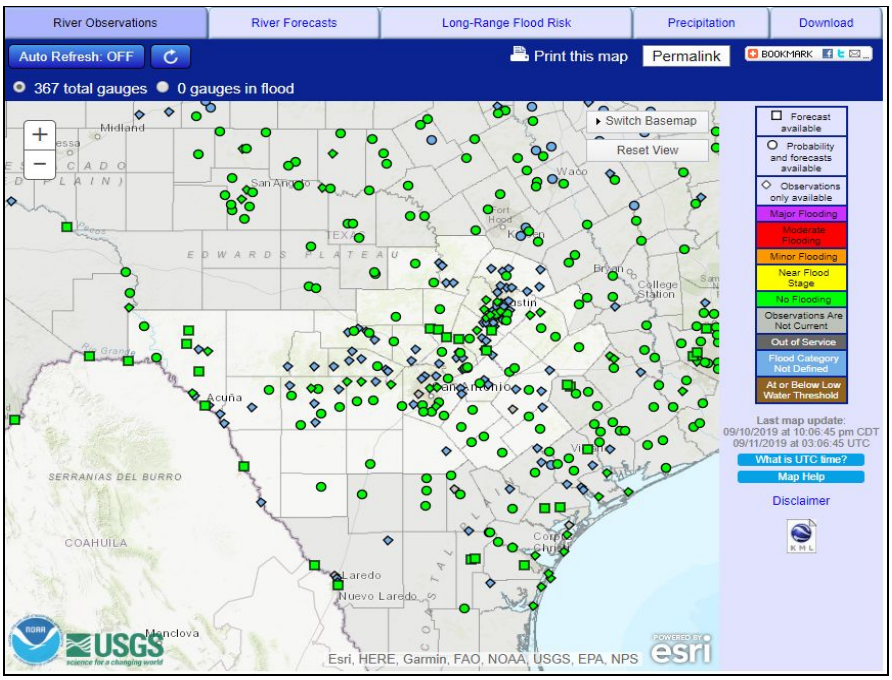
- **Backflow -** The backing up of water through a conduit or channel in the direction opposite to normal flow.
- **Backwater Effect -** The effect which a dam or other obstruction has in raising the surface of the water upstream from it.
- **Backwater Flooding -** Upstream flooding caused by downstream conditions such as channel restriction and/or high flow in a downstream confluence stream.
- **Bankfull -** The water level, or stage, at which a stream, river or lake is at the top of its banks and any further rise would result in water moving into the floodplain. In most cases, bankfull is considered interchangeable with action stage.
- **Baseflow -** Streamflow which results from precipitation that infiltrates into the soil and eventually moves through the soil to the stream channel. This is also referred to as ground water flow, or dry-weather flow.

- **Cubic Feet per Second (CFS)** - A unit expressing rates of discharge. One cubic foot per second is equal to the discharge through a rectangular cross section, 1 foot wide by 1 foot deep, flowing at an average velocity of 1 foot per second. It is also approximately 7.48 gallons per second.
- **Conservation Storage** - Storage of water for later release for usual purposes such as municipal water supply, power, or irrigation in contrast with storage capacity used for flood control.
- **Dam Failure -** A catastrophic event characterized by the sudden, rapid, and uncontrolled release of impounded water.
- **Data Collection Platform (DCP) -** An electronic device that connects to a river or rainfall gage that records data from the gage and at pre-determined times transmits that data through a satellite to a remote computer.
- **Discharge -** The rate at which water passes a given point. Discharge is expressed in a volume per time with units of L^3/T. Discharge is often used interchangeably with streamflow.
- **Discharge Curve -** A curve that expresses the relation between the discharge of a stream or open conduit at a given location and the stage or elevation of the liquid surface at or near that location. Also called **Rating Curve** and Discharge Rating Curve.
- **Drainage Basin -** A part of the surface of the earth that is occupied by a drainage system, which consists of a surface stream or a body of impounded surface water together with all tributary surface streams and bodies of impounded surface water.
- **Forecast Point -** A location along a river or stream for which hydrologic forecast and warning services are provided by a WFO. The observed/forecast stage or discharge for a given forecast point can be assumed to represent conditions in a given segment of a river, creek, or stream.
- **Gage Datum -** A horizontal surface used as a zero point for measurement of stage or gage height. This surface usually is located slightly below the lowest point of the stream bottom such that the gage height is usually slightly greater than the maximum depth of water. Because the gage datum is not an actual physical object, the datum is usually defined by specifying the elevations of permanent reference marks such as bridge abutments and survey monuments, and the gage is set to agree with the reference marks. Gage datum is a local datum that is maintained independently of any national geodetic datum. However, if the elevation of the gage datum relative to the national datum (North American Vertical Datum of 1988 or National Geodetic Vertical Datum of 1929) has been determined, then the gage readings can be converted to elevations above the national datum by adding the elevation of the gage datum to the gage reading.
- **Headwaters -** Streams at the source of a river.
- **HSA (Hydrologic Service Area) -** A geographical area assigned to Weather Forecast Offices that embraces one or more rivers.
- **Hydrograph -** A graph showing the water level (stage), discharge, or other property of a river volume with respect to time.
- **Precipitable Water -** Measure of the depth of liquid water at the surface that would result after precipitating all of the water vapor in a vertical column over a given location, usually extending from the surface to roughly 30,000 feet above the ground.
- **Service Hydrologist -** The designated expert of the hydrology program at a Weather Forecast Office.
- **Storm Total Precipitation -** This radar image is an estimate of accumulated rainfall since the last time there was a one-hour, or more, break in precipitation. It 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 and is available only for the short range (out to 124 nautical miles). To determine accumulated precipitation at greater distances you should link to an adjacent radar.

AHPS (Advanced Hydrologic Prediction Services) and River Flooding Levels

AHPS is a web-based suite of forecast products with displays of magnitudes and uncertainties of flood occurrence, from hours to days in advance. Information and data available on these pages include:

1. **Types of data available on each gauge (based on icon shape)**
2. **Flood stage categories (see below)**
3. **Flood stage impacts**
4. **Inundation mapping (for most gauge sites)**
5. **Historic crest info.**



FLOOD STAGE CATEGORIES:

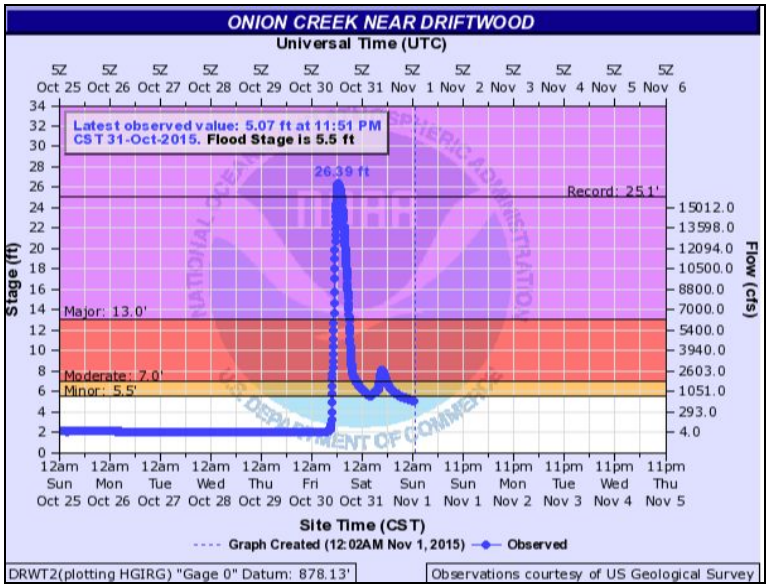
Flood Crest - Maximum height of a flood wave as it passes a certain location.

Flood of Record - In hydrologic terms, the highest observed river stage or discharge at a given location during the period of record keeping. (Not necessarily the highest known stage).

Major Flooding - A general term including extensive inundation and property damage. (Usually characterized by the evacuation of people and livestock and the closure of both primary and secondary roads.)

Moderate Flooding - The inundation of secondary roads; transfer to higher elevation necessary to save property -- some evacuation may be required.

Minor Flooding - A general term indicating minimal or no property damage but possibly some public inconvenience.



- **Action Stage -** The stage which, when reached by a rising stream, represents the level where the NWS or a partner/user needs to take some type of mitigation action in preparation for possible significant hydrologic activity. The appropriate action is usually defined in a weather forecast office (WFO) hydrologic services manual. Action stage may also be referred to as Bankfull Stage, but Bankfull Stage may not always be defined as Action Stage due to a lack of impacts, and/or the shape of the stream channel.
- **Flood Stage -** An established gage height for a given location above which a rise in water surface level begins to create a hazard to lives, property, or commerce. The issuance of flood (or in some cases flash flood) warnings is linked to flood stage. In AHPS, flood stage always correlates to Minor Flood Stage.