

State Forecast Product Specifications Document

1. General Specifications

1.1 Combining Periods. The first period of the SFP must stand alone. All other forecast periods may be combined by the formatter when weather elements are similar (as regionally defined).

1.2 One forecast segment and multiple segments. For SFPs that contain only one geographic forecast segment, the UGC will be on the line immediately after the AWIPS ID (SFPxxx) line. For multiple geographic forecast segments, the UGC placement will follow that of a segmented text product. See the SFP Product Format specifications document for these format specifics.

1.3 Content. The formatter should produce text that reflects the most significant hydrometeorological conditions expected to affect major parts or all of the state area(s)

1.4 Forecast Database Sampling. Data used to construct the SFP are sampled using a variety of statistical techniques. Unless otherwise noted, all fields are sampled using two sub periods with a duration of 6 hours starting at either 6 a.m. or 6 p.m. local time.. This may not be the case within the first period of the forecast only.

1.5 Formatted Elements within the SFP. The following elements and how they are defined within the SFP by the formatters are as follows.

1.5.1 Precipitation and Probability of Precipitation (PoP). Formatter output will describe the occurrence, and expected probability, of measurable precipitation (0.01 inch) across each zone for all periods through Day 5. For stratiform weather situations, the POP range (to the nearest whole 10 percent) should extend from 20 to 100 percent. In convective weather situations, 10 percent may be used to describe isolated precipitation. For example, isolated, high-based thunderstorms may (by virtue of their areal coverage or sub-cloud evaporation) result in any given area having only a slight chance (i.e., 10%) of measurable rainfall.

- a. Precipitation Events. Precipitation forecast text will specify the type and, as appropriate, qualify the intensity.
- b. Precipitation Intensity. During the first 72 hours of the forecast, intensity of precipitation should be identified as light, moderate (*characterized by the absence of a modifying term to describe the intensity*), or heavy. Beyond 72 hours of the forecast, no intensity designator is applied to the grids. By default, this indicates a mid-range, moderate intensity forecast and reflects forecaster uncertainty.
- c. Qualifying Terms. When POPs are separated from the precipitation element, the formatter may use qualifying terms to aid in understanding. Qualifying terms used by the formatter will conform to the definitions found in Table 1 below. Formatters will not combine qualifying and areal terms.

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| POP | Qualifying Term | Equivalent Areal Term (convective only) |
|-----------|-----------------------|--|
| 10 | SLIGHT CHANCE or none | ISOLATED or none |
| 20 | SLIGHT CHANCE | ISOLATED |
| 30 40 50 | CHANCE | SCATTERED |
| 60 70 | LIKELY | NUMEROUS |
| 80 90 100 | NONE | NONE |

Table 1: Qualifying and Equivalent Areal Terms .

- d. Precipitation types formatted in the SFP will conform to standard terminology found in FMH #1 with the following exceptions:
 - (1) “Snow” will be the term used to indicate snow, snow pellets, and snow grains.
 - (2) “Sleet” will be used instead of “ice pellets.”

- e. Mixed and Multiple Precipitation Types. The formatter should generate clear text to indicate the probability of measurable precipitation -- not the chance of changing from one type of precipitation to another (See Figure 18). Formatted text will not generate confusing wording implying the likelihood of changing to snow, e.g., “70 PERCENT CHANCE OF RAIN CHANGING TO SNOW.”

- f. Cases Where No POP Value is Required. Formatters are not required to include a POP when:
 - (1) Zone forecasts include the optional in-line point forecasts for specific cities
 - (2) Precipitation is occurring
 - (3) Terrain is topographically complex.
 - (4) The POP value is less than or equal to 20 percent
 - (5) For trace precipitation events (drizzle, snow flurries). Instead, qualifying terms should be used to indicate the likelihood of precipitation not expected to produce measurable quantities. Terms such as dry thunderstorms, sprinkles, drizzle, flurries, etc., may be used to imply very light precipitation resulting in trace events. During events of prolonged drizzle or flurries that can produce measurable precipitation, include a POP.

Precipitation and POP are:

- Sampled using standard deviation maximum average technique (1.0 standard deviation range around sample mean)
 - Used to determine if Weather or Sky cover phrasing will be included
- Sampled using BinnedPercent technique for duration of forecast period
 - Used to find a PoP value which corresponds to sampled Weather

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- Maximum rounded value from appropriate category used (matching PoP and Weather probabilities/coverages can be found in Table 1).
- Reported when rounded PoP value is equal to or greater than threshold for that period
 - 20% for first period (could be extended through the fifth period at local WFO discretion)
 - 30% for all periods after period chosen to end above threshold
- Value from 20-100% using:
 - RAIN for all liquid precipitation
 - SNOW for all frozen precipitation
 - PRECIPITATION if neither case above applies
- Generally reported separately, but could be combined with Sky and Weather when conditions do not vary significantly through the entire forecast period

1.5.2 Temperature. The SFP will include the expected high and low temperatures in all periods through Day 5. Non-diurnal or temperature trends may also be reported. For 24-hour combined periods, the formatter will list the minimum temperature first, followed by the maximum temperature.

- Sampled hourly to determine minimum, average and maximum values
 - Used to report non-diurnal trends
- Maximum and minimum temperatures sampled using standard deviation average technique (1.0 standard deviation range around sample mean)
- Reported as a single category (around XX, lower XXs, mid XXs, upper XXs) when all sample values are between 20 and 99 degrees
 - LOWER used for temperatures that end with a 1, 2 or 3
 - MID used for temperatures that end with a 4, 5 or 6
 - UPPER used for temperatures that end with 7, 8 or 9
 - AROUND used for temperatures that end with 0, or
 - when the sample min and max values are from different decades
 - round (to the nearest 10) to the same number
 - the difference between the min and max values 4 degrees F or less
- For temperatures less than 20 or equal to or greater than 100 degrees
 - Reported as AROUND a single number during the first 5 periods
 - Reported using a rounded 5 degree range thereafter
 - Formatter should spell out the words “ABOVE,” “BELOW,” and “MINUS” as needed.
- Temperatures 10 degrees F or less will include either the word “ABOVE” or “BELOW” to describe the relationship to zero degrees F.
- Non-diurnal temperature trends reported when the trend is constant during the second half of the forecast period and the final hourly temperature differs from with the maximum (daytime) or minimum (nighttime) temperature by a locally specified amount
- Maximum heat index reported when local criteria are met
- Minimum wind chill reported when local criteria are met

1.5.3 Sky Cover. The predominant sky cover will be included in each 12-hour forecast period. For combined periods, the formatter can omit the sky cover if it can be inferred from a forecast of precipitation.

- Sampled using average value technique
- Is optional if PoP is 60% or greater for majority of period
- Qualifying terms used by the formatter will conform to the definitions found in Table 3 below.

1.5.4 Wind. Wind direction and speed will be included in the SFP in the 12-hour periods when significant (generally sustained 25 mph or greater - *regional guidance may alter wind forecast requirements for areas having complex terrain*).

Other aspects for wind:

- Sampled using 6 hour sub periods through the fifth period
 - Used for explicit wind forecast
- Vector standard deviation average technique (1.00 standard deviation range around sample mean)
- Reported wind speeds rounded to the nearest 5 MPH
- Reported wind directions will use only the 8-point compass. Changes in direction within a forecast period should be included by the formatter. Wind direction terminology that is well-known to local users is also acceptable. For example, in tropical regions, the formatter may refer to wind direction as “TRADES.” Additionally, terms such as “SEA BREEZE,” “LAKE BREEZE,” “ONSHORE WINDS,” and “DOWNSLOPE WINDS” are permitted within the formatters.
 - NORTH, NORTHEAST, EAST, SOUTHEAST, SOUTH, SOUTHWEST, WEST or NORTHWEST
 - Wind shifts of 60 degrees or more considered significant enough to report when sample max wind speed less than 10 MPH
 - Wind shifts of 45 degrees or more considered significant enough to report when sample max wind speed 10 MPH or more
- Winds reported using at most a 10 MPH range for sample max speed 25 to 39 MPH
- Winds reported using at most a 20 MPH range for sample max speed 40 MPH or more

1.5.5 Other Elements. The 12-hour periods of the SFP will include other elements, if considered significant, e.g., wind chill, heat and humidity, frost, freeze conditions, fog, other obstructions to visibility (when 1/4 mile or less), etc. Formatters should include elements like fog or frost if it is expected to affect a large part of the forecast area. These elements may also be entered into any of the 24-hour periods at regional discretion.

1.6 References to Locations. If significant conditions are expected in only part of the forecast area, this should be clearly specified. If the weather distribution is caused by topography, then accepted topographic divisions, such as mountains, valleys, coast, shore,

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Plains, etc., should be used. In other cases, commonly understood subdivision terms, such as "panhandle," or general phrases, such as "northwest Iowa" or "southeast Texas," may be used. Long and/or confusing combinations should be avoided.