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Pilot's tip of the week

Featuring [Scott Dennstaedt](#)

Subscriber question: "What does the code UP mean when it appears in a METAR?" - Jeffrey K.



“During the cold season, it is not unusual to see the abbreviation UP appear in an automated surface observation or METAR. UP is an abbreviation for unknown precipitation type.

KCAO 021355Z **AUTO** 01027G33KT 10SM **UP** BKN022 BKN027 OVC032 M01/M06 A3058 RMK AO2

Unknown precipitation is usually only found in automated surface reports such as the one shown here. The Automated Surface Observing System or ASOS employs a precipitation identification sensor also known as a Light Emitting Diode Weather Identifier (LEDWI). This sensor attempts to differentiate between rain and snow and determines the intensity of the precipitation. In most circumstances, it does quite well. However, there are times where the sensor can be fooled.

The shadow varies depending on the size and speed of descent of the particle as it falls across the receiver. So when it's just rain or just snow falling, the sensor will accurately depict the precipitation type and intensity. However, when there's a mixture of rain and snow, for example, this causes a “smearing” of the spectral power which is usually reported as unknown precipitation or UP. In this case, a human observer would be needed to augment the observation to report a mixture of rain and snow in the METAR.

Ice pellets (PL) can also have a similar size and fall velocity as rain. Therefore, ice pellets will usually be reported as rain, but depending on the intensity, can be reported as unknown precipitation especially if they are mixed with snow and/or rain. Lastly, when the precipitation is very light, as in very light snow or drizzle, the automated sensor may also report this situation as unknown precipitation. Once again, a human observer would be needed to make a proper determination.”

