

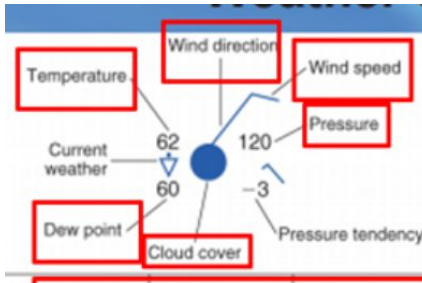
Topic/Objective: Meteorological Observations Weather Station Models	Name: Hannah Daley
	Class/Period: AOSC200
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Essential Question: What is the latest hurricane update? What meteorological measurements are taken and how?
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Questions: What is causing the hurricanes that we experience on the Northern Hemisphere? How will this change with a changing climate?	Notes: <ul style="list-style-type: none"> • Creation of Hurricanes: Warm air blowing off the coast of Africa → Because it is warm the hot air will rise (known as convection). This leads to storms • Destruction of Hurricanes: Wind blows apart the storm → Wind blows apart the warmth that is driving the hurricane and causes it to diminish or be destroyed. • Scientists predict fewer hurricanes overall (due to increased shear) but when they do occur they will be more intense (due to warmer waters)
Pressure	<ul style="list-style-type: none"> • Pressure is measured with a Barometer → LOW PRESSURE is associated with stormy/cloudy conditions → HIGH PRESSURE is associated with clear sky/stagnant air conditions • Station models report pressure to the tenth decimal place <ul style="list-style-type: none"> ○ 988 (station model)=998.8 mbars ○ 015(station model)=1001.5 mbars
Wind speed and direction	<ul style="list-style-type: none"> • Wind is always reported as where it is coming FROM • Example: if an arrow is pointing up that means the wind is coming FROM the northward direct and going southward. Be specific on exams • Speed is measured with an anemometer → The Buefort scale was initially used to general describe the change in wind speed • Direction is measured with a wind vain • Speed is measured in unit knots (1 knot=1.15 mph). This comes from ship sailing.

	<p style="text-align: center;">Wind Barb Description in the northern hemisphere</p> <p>full-barb 10 knots half-barb 5 knots</p> <p>From the west at ~15 knots (~17 mph)</p> <p>Flag 50 knots</p> <p>From the south at ~50 knots (~58 mph)</p> <p>From the southeast at ~75 knots (~86 mph)</p>
Rain	<ul style="list-style-type: none"> • Measured with a rain gauge (but the issue is that you have to empty) • Now we use a tipping rain gauge that tells us the rain gauge rate AND is self-emptying
Automated Surface Observing System (ASOS) measurements	<ul style="list-style-type: none"> • Detailed meteorological observations • Typically taken at airports for aviation safety and often cleared land
Dew Point Temp vs Frost Point Temp	<ul style="list-style-type: none"> • Dew point =How cold the temperature needs to be for water to condense (for dew to form) • Frost Point=How cold the temperature needs to be for water to freeze (for frost to form) <p>→ Measured with a hygrometer</p>
Radiosondes (weather balloons)	<ul style="list-style-type: none"> • Tells us measurements above the surface and gives us an idea of the temperature/moisture/wind profile in the atmosphere.

Measurements and station model interpretation summary



Measurement	Instrument	units	Station model anotation
Pressure	Barometer	millibars(mb) =hectopascals (hPa)	If <500 add a 10 to the front and divide by ten. Example 120=1012.0 mb If >500 add a 9 to the front and divide by 10 Example 980=998.0 mb.
Wind Speed	Anemometer	Knots	Flag= 50 kts Full barb=10 kts Half barb=5 kts
Wind Direction	Vane	Cardinal (N, NE, E,SE,S,SW,W,N W)	Pointed out from the center of the model in the direction the wind is coming FROM
Rain	Rain gauge/ tipping rain gauge	Millimeters in 24 hours	Current weather symbol two dots
Temperature	Thermometer	Kelvin (K)	Top left of model Always > or = to the Dew point
Dew point Temp	Hygrometer or sling psychrometer	Kelvin (K)	Bottom left of station model

Summary

In class, we discussed how measurements are taken and how they are reported on station models. We also addressed the ingredients that create (warm water) and destroy (wind shear) hurricanes. This topic will be discussed before the final. Students should feel very comfortable interpreting a station model. It will almost certainly be on the exam.