

ATMOSPHERIC SCIENCE: WEATHER & CLIMATE

■ With an eye to the climate, geoscientists help ensure a sunny future. They study weather processes, global climate change, atmospheric phenomena, solar radiation, ozone depletion, and pollution. Some even “chase” hurricanes and other storms to study their behavior. Rain or shine, geoscientists keep science in the forecast.

■ Related geoscience careers:

Atmospheric Scientist	Satellite Image Manager
Climatologist	Storm Chaser
Instrument Technician	Weather Forecaster
Meteorologist	

■ To learn more about geoscience careers, turn to the beginning pages of this calendar!

Classroom Activity: Build Your Own Weather Station

Grade Level: 6-12

Atmospheric scientists study weather processes, the global dynamics of climate, solar radiation and its effects, and the role of atmospheric chemistry in ozone depletion, climate change, and pollution. They observe what’s going on in our atmosphere today and compare it to records from years past. To monitor the weather, atmospheric scientists use highly specialized instruments that measure rainfall, wind speed and direction, humidity, and atmospheric pressure. You can measure these at your home or school. Begin creating a weather station by building a psychrometer, also called a hygrometer, to measure the relative humidity.

Materials

- 2 alcohol-filled air thermometers (they must read exactly the same temperature when placed side by side out of direct sunlight)
- Clear packing tape
- Cotton shoelace (the hollow type)
- 1- or 2-liter bottle (label removed)
- 2 liters of water (distilled is best but tap will do)
- Thread
- Awl
- Relative humidity chart

Procedure

1. Have an adult punch a hole in the side of the bottle about an inch from the bottom. Heating the awl will make a perfect hole. The

same thing can be done with a hot nail held with tongs. Use great caution when doing this so you don’t burn yourself or others. When you’ve made the hole, place the hot object in cold water.

2. Cut the tips off the shoestring. Cut about two inches of shoestring and slip it over the bulb of one of the thermometers. Carefully tie it in place with thread.
3. Cut a small piece of packing tape. Position the bulb of the shoestringed thermometer about 1/8 inch over the hole. Be sure the top of the thermometer is aligned with the bottle top. Tape the thermometer to the bottle. Tape the other thermometer parallel to the first one and about 1/4 inch away. Put a strip of tape around the bottle and both thermometers so they don’t fall off.
4. Push the shoelace through the hole. Put room-temperature water



Source: “Build Your Own Weather Station,” *DiscoverySchool.com*, 2005. Adapted with permission.

5. Wait five to 10 minutes, and read both thermometers. There will be a difference in the two. Use the chart below to calculate the relative humidity.
6. Keep a record of the daily humidity for a few weeks. Next to your entries, describe the way you feel on those days.
7. The dry-bulb temperature can also be used to record the air temperature!

Complete your weather station by making a rain gauge, barometer, wind vane, and anemometer from the instructions at <http://school.discovery.com/lessonplans/activities/weatherstation/>.

Air Temp. (Dry Bulb)	Difference between wet- and dry-bulb readings in degrees F														
	1	2	3	4	5	6	7	8	9	10	15	20	25	30	35
20	85	70	55	40	26	12									
25	87	74	62	49	37	25	13	1							
30	89	78	67	56	46	36	26	16	6						
35	91	81	72	63	54	45	36	29	19	10					
40	92	83	75	68	61	52	45	37	29	22					
45	93	86	78	71	64	57	51	44	38	31					
50	93	87	80	74	67	61	55	49	43	38	10				
55	94	88	82	76	70	65	59	54	49	43	19				
60	94	89	84	78	73	68	63	58	53	48	26	5			
65	95	90	85	80	75	70	66	61	56	52	31	12			
70	95	90	86	81	77	72	68	64	59	55	36	19	3		
75	96	91	86	82	78	74	70	66	62	58	40	24	9		
80	96	91	87	83	79	75	72	68	64	61	44	29	15	3	
85	96	92	88	84	80	76	73	69	66	62	46	32	20	8	
90	96	92	89	85	81	78	74	71	68	65	49	36	24	13	3
95	96	93	89	85	82	79	75	72	69	66	51	38	27	17	7
100	96	93	89	86	83	80	77	73	70	68	54	41	30	21	12
105	97	93	90	87	83	80	77	74	71	69	55	43	33	23	15
110	97	93	90	87	84	81	78	75	73	70	57	46	36	26	18
115	97	94	91	88	85	82	79	76	74	71	58	47	37	28	21



SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
			1 <i>Did You Know?</i> Yellowstone Becomes First U.S. National Park, 1872 Ash Wednesday	2	3	4
5	6	7	8	9	10	11
12	13	14 <i>Happy Birthday!</i> Albert Einstein, German-American Physicist, Author of "Theory of Relativity," Born 1879	15	16	17 St. Patrick's Day	18
19	20 Vernal Equinox	21	22	23	24 <i>Happy Birthday!</i> John Wesley Powell, U.S. Geologist and Anthropologist, Grand Canyon Explorer, Born 1834	25
26	27 <i>Did You Know?</i> Great Alaska Earthquake (Magnitude 9.2) Is Second-Largest of 20th Century and Largest Recorded in Northern Hemisphere, 1964	28	29 Sun-Earth Day/Solar Eclipse	30	31	

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- American Geological Institute — www.agiweb.org
- Earth Science Week — www.earthsciweek.org
- Earth Science Careers — www.earthscienceworld.org/careers

