

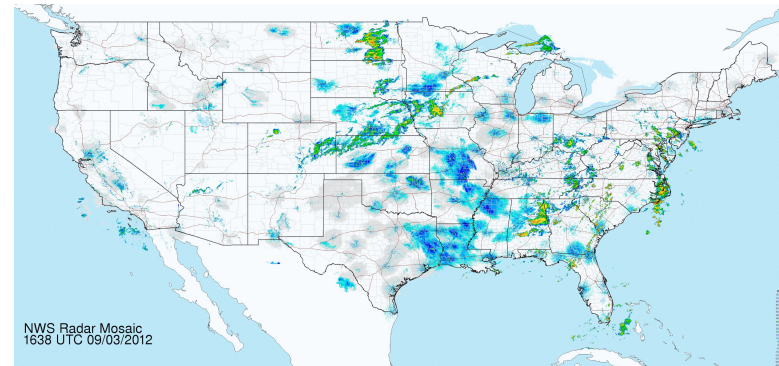
Meteorologist



What Do Meteorologists Do?

A meteorologist is an individual with specialized education who uses scientific principles to explain, understand, observe or forecast the earth's atmospheric phenomena and/or how the atmosphere affects the earth and life on the planet.

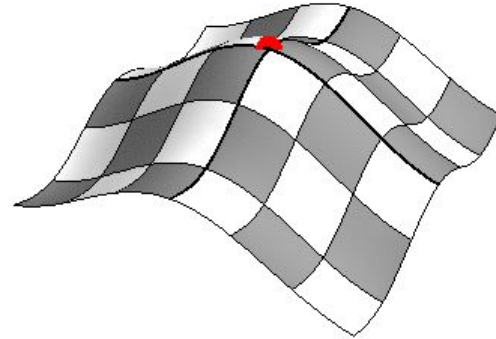
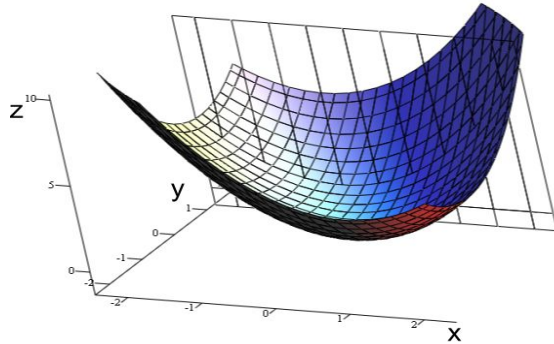
They use computerised and mathematical models to make short and long-range forecasts concerning weather and climate patterns.



How Do They Use Math?

Technologies used in meteorology depend greatly on mathematical principles as well as physics. Examples include weather radar, chart usage and interpretation and numerical weather prediction.

Because meteorology is a three-dimensional science, four if you include time, the mathematics used in meteorology can require extensive use of partial derivatives. What's that? Partial derivatives allow you to look at how something such as wind speed changes when you move in one direction only, say, straight north.



Required Math

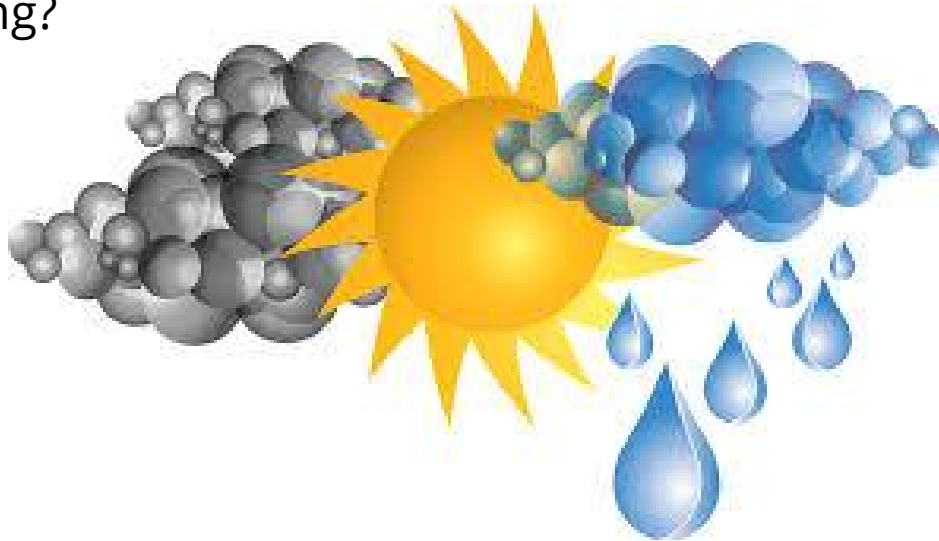
- Basic Algebra
- Linear Algebra
- Trigonometry
- Calculus
- Multivariable Calculus
- Statistics
- Differential Equations

A collage of mathematical symbols and equations. At the top, the number 2 is greater than -3. Below that, the repeating decimal 0.999... is equal to 1. The Greek letter pi is approximately equal to 3.14. A large infinity symbol is prominent in the center. To the right, there are symbols for addition (+), subtraction (-), multiplication (x), and division (÷). Below these are the numbers 5 and 2. At the bottom, the equation $101_2 = 5_{10}$ is shown, along with the expression $5(2 + 2)$ and the arithmetic $(1 - 2) + 3$. A large square root symbol is also visible on the left side of the collage.

$$2 > -3$$
$$0.999\dots = 1$$
$$\pi \approx 3.14$$
$$\infty$$
$$+$$
$$-$$
$$\times$$
$$\div$$
$$5$$
$$2$$
$$5(2 + 2)$$
$$101_2 = 5_{10}$$
$$(1 - 2) + 3$$

Let's Try a Problem!

Alexa is a weather forecaster. She wants to know what the temperature will be at noon. At 9:00am it is 87° and she has already calculated that every 30 minutes the temperature goes up by 2° . How much hotter is at noon than at 9:00 in the morning?



First, let's find how much the temperature is going to increase.

There are 3 hours between 9:00am and 12:00pm. Since the temperature increases every 30 minutes, then we can conclude that the temperature will increase 6 times between 9am-12pm.

Every time it increases, it is by 2° therefore, we can multiply 6 by 2 to get the total degrees the temperature grew.

$$6 \times 2 = 12 \quad \longrightarrow \quad \underline{\text{The temperature increased by } 12^\circ}$$

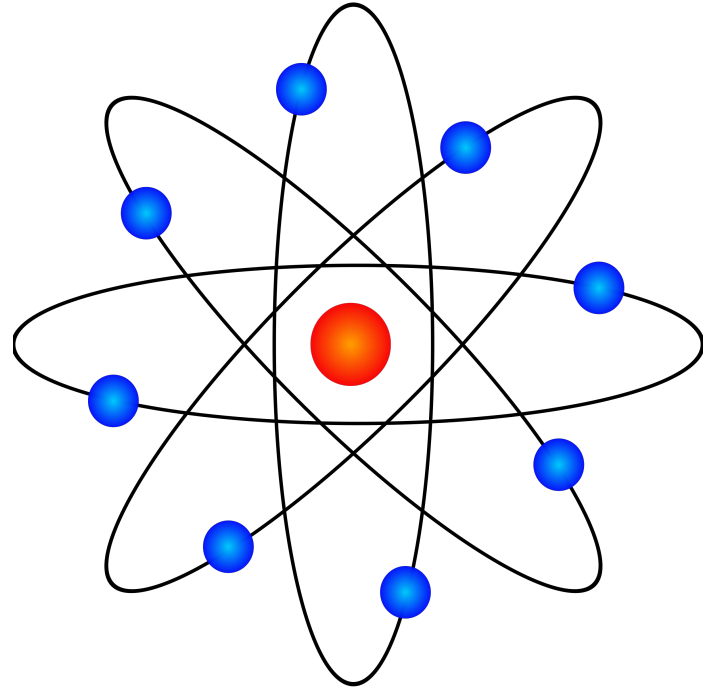
Now that we know by how much the temperature rose, we just add it to the initial temperature.

$$87^\circ + 12^\circ = 99^\circ \quad \longrightarrow \quad \underline{\text{The temperature at noon is } 99^\circ}$$

Education Needed

To become a meteorologist you must have a degree although it doesn't need to be in meteorology. Other acceptable subjects include:

- Computer Science/Software Engineering
- Environmental Sciences
- Mathematics
- Ocean Science
- Physical Geography
- Physics and Physical Sciences



Works Cited

- <http://weather.about.com/od/weatherfaqs/f/meteorologist.htm>
- <http://www.stuffintheair.com/mathematics-used-in-meteorology.html>
- <https://www.prospects.ac.uk/job-profiles/meteorologist>