

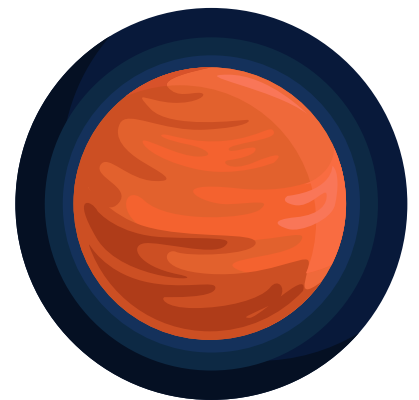


Welcome to Mission: Atmospheric Pressure

Pictures and diagrams that explain the Earth's atmosphere show our planet surrounded by several different layers of atmosphere. However, the part of our atmosphere that sustains life is very thin and is about 5,486 meters (18,000 feet) above Earth. Plus, the part of our atmosphere that we can measure the best is about 40 kilometers (25 miles) above Earth.

The air around you has weight, and it presses against us and everything it touches. This is known as: atmospheric pressure, or barometric pressure, it is the pressure within the atmosphere of Earth. That pressure is the force exerted on a surface by the air above it as gravity pulls it to Earth.

The atmosphere of Mars is about 100 times thinner than Earth's, and it is 95 percent carbon dioxide. Scientists believe that early in Mars's history (about 3.5 billion years ago) Mars had an atmosphere that supported water. Images of the planet show many river plains and maybe even ocean boundaries. Mars rovers have found evidence of surface rocks that had moisture (such as hematite or clay). Scientists are exploring reasons why the Mars atmosphere thinned.



Your Mission

Using the Weather Click, your mission is to report back to the base station the atmospheric pressure on Mars.



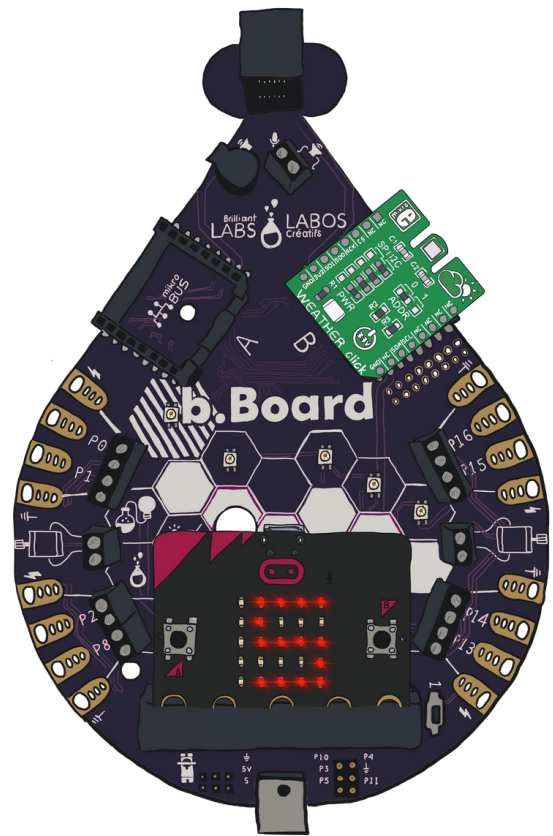


Weather Click

While the micro:bit in your b.Board can detect the temperature of the micro:bit itself, the weather click can give us a much more accurate value, along with the barometric pressure, humidity and a dewpoint calculation. Take some time to familiarize yourself with what those words mean, and how they can help us learn more about the weather.

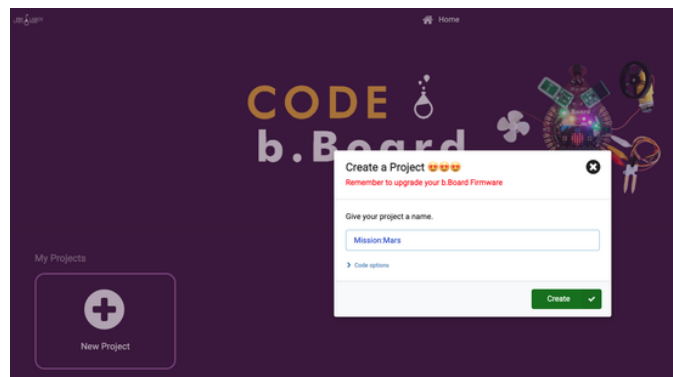
So how can we use the weather click on our rover? Well, let's start by plugging in the weather click to our b.Board slot on the right with the "B" by it.

If you don't know much about the b.Board, or how to power it or plug anything in, take a minute to go through our great Getting Started Guide before you go any further!



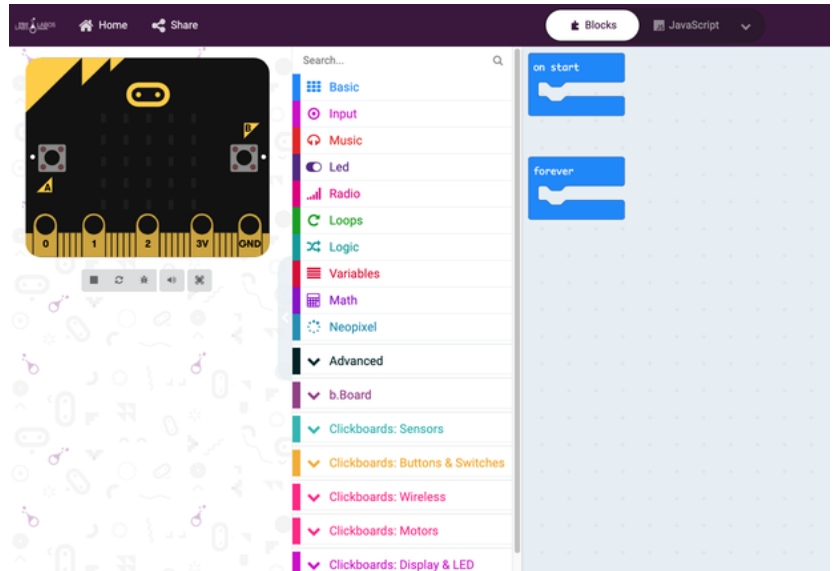
[Getting Started Guide](#)

Now that we have it plugged in, let's go to code.brilliantlabs.ca and start testing it out! Create a new project or open one that you've already created. In my case, I selected the new project + icon and gave it the name Mission:Mars.

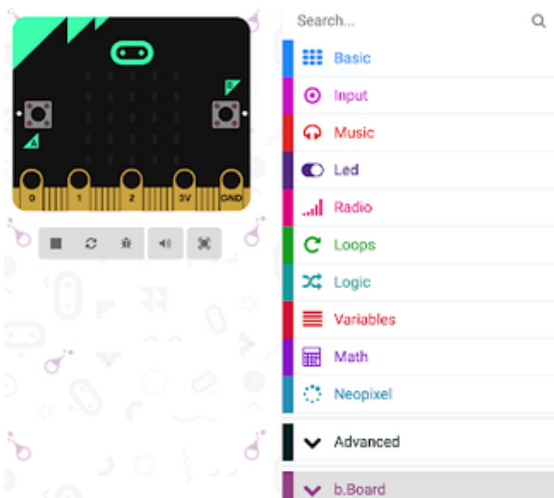


As soon as you select “create”, your new project will open. You should see something like this →

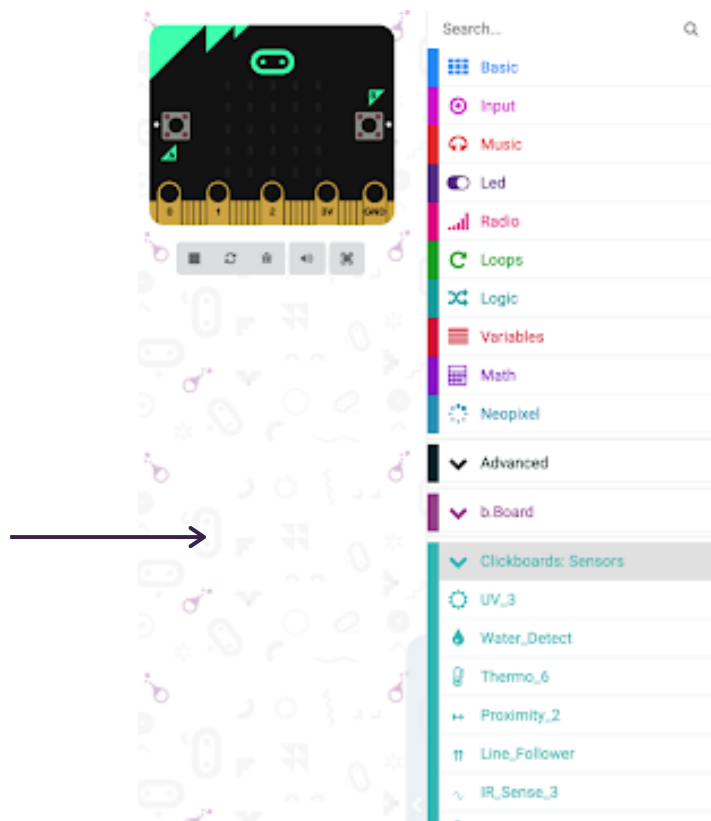
On the left-hand side of the screen, you can see the toolbox. This is where we keep all of the blocks of code you need to control your micro:bit and b.Board.



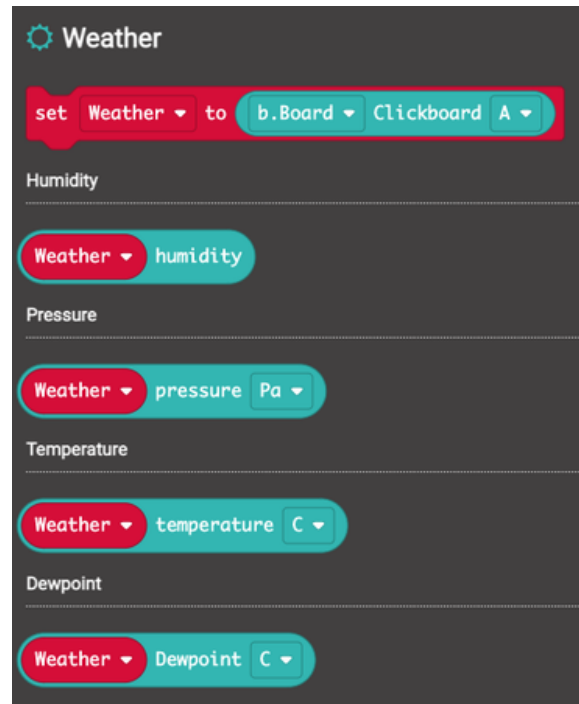
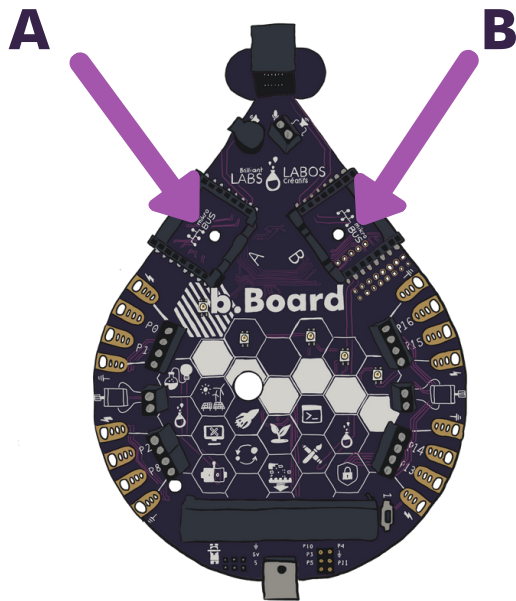
If you’re using a Click Board™ you’ll see there is a section of dropdown toolboxes where you can find the exact Click board™ you’re using. In this case, we are using the Weather click which “senses” weather, so you can find it under the ClickBoards: Sensors toolbox category here:



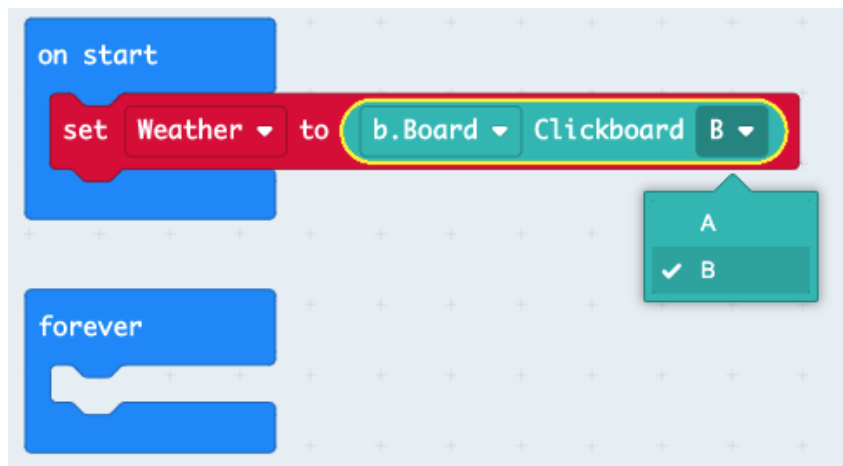
Now that we have it plugged in, let’s go to code.brilliantlabs.ca and start testing it out! Create a new project or open one that you’ve already created. In my case, I selected the new project + icon and gave it the name Mission:Mars.



When you open up the toolbox, you'll see a bunch of blocks to let you control your weather click. The first and most important one is the one on top. You'll find a similar one when you expand any Click board™ toolbox. It tells the b.Board which click slot you plugged your Click board™ into.



Since we only need to tell the b.Board one time where we plugged it in, we are going to drop this block into the "on start" block. The on start block runs all of the blocks you snap into it just one time, when you first power on your b.Board.



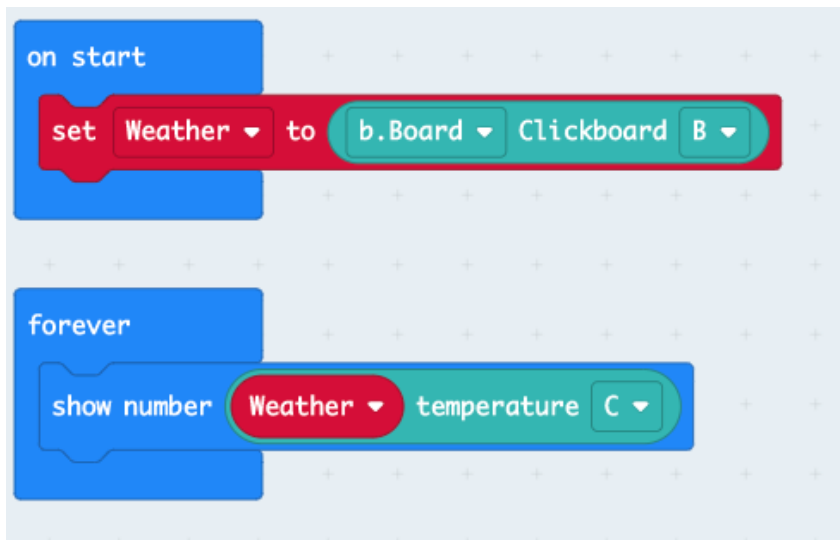
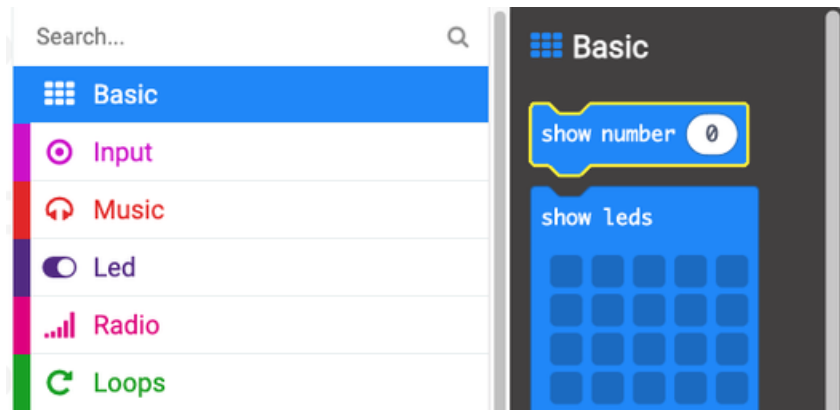
So let's take this block and drop it in our "on start" block and "tell it" that we plugged the Weather click into the Clickboard B slot.

Displaying the Data

The easiest way we can see the weather click data is to display it on the micro:bit LED screen. To do that, grab the “show number” block as shown below.

Now drop it in your forever loop and add in the Weather click temperature:

Program your micro:bit and watch the temperature display on the LED screen over and over.



What next?

Try experimenting with the humidity, pressure and dew point blocks. See what happens when you display each of those. Think about how you can tell your rover to measure each and every one. Once you've got it all sorted out, head on over to our WiFi guide to learn how you can connect your rover to our Brilliant Labs Cloud (cloud.brilliantlabs.ca) and get your rover ready to send the data from “Mars” back to “Earth”. :)

Join the Mission: Mars Challenge!

Are you on track to complete your Mission: Mars Rover by early May? If so, Brilliant Labs welcomes you to visit or mail your rover to 1 of 5 in-person Provincial School Maker Faires or the Atlantic Virtual Mission: Mars Challenge (June 2nd). This is your chance to showcase your work and participate in up to 10 mission challenges. Each challenge, when completed successfully, will earn points and badges. The Mission: Mars student engineers with the most points will win the Mission: Mars Challenge Showcase!

Download, Register & Book Today!

Get the Mission: Mars Challenge Guide to learn more about what to expect and how the points will be awarded. Plus, don't forget to register and book your Mission Challenge(s) at Brilliantlabs.ca/mission-mars (winners will be announced at the June 9th Atlantic Virtual School Maker Faire). Join the challenge and explore Maker Mars!

