

## Build a Robot to Study Climate

Weather is the condition of the atmosphere measured in short lengths of time (hours and days). Climate, however, is the average weather over decades and centuries in a specific location. We can look out our window and see how weather changes every day, but we need data that has been tracked over hundreds of years to understand how the climate may be changing.

Design a robot to study climate in a particular biome. You can use a site such as <http://www.blueplanetbiomes.org/climate.htm> to see a map of climate zones around the world. Before you begin your robot design, choose a climate-area and research the conditions your robot will need to endure. Animals have adaptations to deal with various climates and terrains and NASA had to carefully consider the conditions on Mars before sending the Rovers. What will your robot need to do its work?

Take into consideration:

- Terrain
- Temperature
- Precipitation
- Animals that your robot might encounter
- Number of hours of sunlight/night
- How long your robot will be in use (days, weeks, months, years?)
- How your robot will be powered

What would you want to study?

- Long-term temperature trends
- Migrating species
- Plant growth (how early particular plants bloom, produce fruit, for example)

What would sorts of sensors and attachments would your robot need to do this research? You aren't limited by the sensors available from LEGO. Research the types of sensors used by climatologists and/or develop your own ideas for new sensors.

Draw a picture of your robot and/or build a prototype, depending on how involved you want this project to be. Show all attachments and explain how they will be used.

Finally, how will you get the robot to the desired location and how will you access the data it collects?