Jr. Earth Science Series:
Weather and Meteorology

What's the weather today? Students will learn about the atmosphere and its relationship to weather conditions, weather patterns, and phenomena such as fronts, storm systems, cloud formation, and more. The class will learn about global weather systems and how the oceans and currents drive weather patterns. Students will be introduced to the technologies and instruments used in monitoring, forecasting, and mapping weather. Each class begins with a brief discussion, demonstrations, and includes one or more hands-on activities and experiments.

Week 1: The Atmosphere - Pressure

- Understand the layers and composition of the atmosphere
- Introduction to air pressure, the effect on weather and how it is measured
- We review the water cycle, including condensation, precipitation and cloud formation

Week 2: The Atmosphere - Heat

- We learn about heat energy and how the transfer of heat affects our weather
- We focus on: Radiation, convection and conduction
- We are introduced to the balance of energy

Week 3: Oceans and the Weather

- We learn how the oceans and the weather are inter-related
- We are introduced to the oceans currents
- We are introduced to wind, wind speed and wind direction, including the Beaufort wind scale

Week 4: Global Weather

- We are introduced to global circulations and how the Earth's rotation impact how air and storm systems travel over the Earth's surface
- We learn about jet streams
- We gain an understanding of the different climates on Earth
- We learn about the heat index and the relationship between humidity and temperature
- We learn about wind chill and the relationship between temperature and wind

Week 5: Synoptic Meteorology – Clouds

- We are introduced to Zulu time and the different time zones
- We learn about clouds, cloud formation and precipitation
- We revisit wind, now focusing on the relationship of air pressure, wind and how the Coriolis force affects wind direction

Week 6: Synoptic Meterology - Fronts

- We learn about air masses and fronts
- We are introduced to the Norwegian Cyclone Model
- We delve deeper into precipitation

Week 7: Weather Maps

- We learn how to read weather maps
- We analyze temperature, pressure and dewpoint to determine the location of cold and warm fronts