

## **1. The Weather Machine**

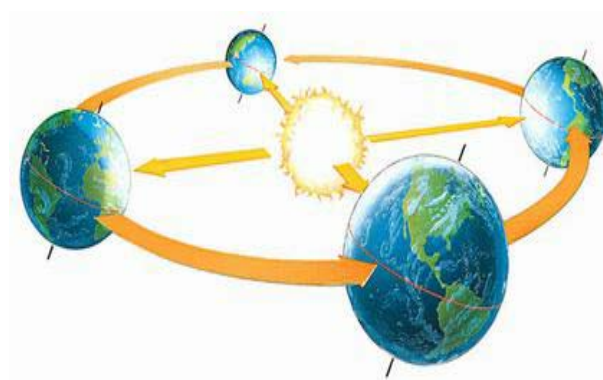
The weather is like a giant machine driven by energy from the Sun. The complex interaction between the Sun, the air and water makes and affects our weather.

### **The Power of the Sun**



The Sun heats and drives the Earth's atmosphere moving air and water around the planet. However, the Sun does not heat the planet evenly because rays from the Sun hit the Earth at different angles in different places. The Earth is heated more intensely at the equator, where the rays hit the surface more directly, compared to the poles. The intensity at the poles is less because the energy is spread out over a much larger area of the Earth's surface.

### **The Seasons**



The tilt of the Earth on its axis and its movement around the Sun causes the seasons. The northern hemisphere experiences its summer during the months of June, July and August when the Sun appears to rise higher in the sky and the heat energy received from the Sun is more intense. The Southern hemisphere experiences its winter during these months because the Sun appears to rise lower in the sky and the heat energy is less intense.

### **Reflecting the Energy of the Sun**



Different parts of the Earth's surface reflect different amounts of the Sun's energy. Areas covered in snow and ice reflect 90%, desert regions reflect 45%, green fields reflect 20%, and roads absorb a lot of the energy and only reflect 5%.

### **Wind Power**



Warm air moves around the Earth as winds and these carry heat energy from hot areas to cold areas. This helps to even out the heat energy over the Earth's surface.

The spin of the Earth causes the direction of the winds moving around the planet to be deflected. This is known as the Coriolis effect.

### **Water Power**

The water in the Earth's atmosphere is constantly being moved around the Earth in an endless cycle called the Water Cycle (see later).