The Weird and Wonderful Properties of Water

1. **It is a liquid over a fairly wide range of pressure and temperature.** Thus it can serve as the most important building block of living creatures. In the liquid state it allows creatures to be flexible and mobile and by flowing serves to distribute nutrients and oxygen to all parts of a living organism.

2. **It has a huge and highly unusual capacity for storing internal energy (heat) with relatively little change in temperature.** Thus its presence prevents huge daily and annual temperature fluctuations such as occur on the moon and Mars.

3. **It expands when it freezes**, a very rare property among substances. Thus lakes and oceans, due to the floating of ice, freeze from the top down rather than the bottom up. This, coupled with property #2 above, prevents even relatively shallow bodies of water from freezing solid in the winter. This also makes water a very important agent in erosion as its expansion, when water is present in cavities in a solid, can fracture materials which otherwise would remain solid.

4. **Except near its freezing point, it expands when warmed.** This behavior, coupled with the effects of gravity, make water (and air) circulate in small, medium-sized and global convective loops, transporting warmth from the tropics to high latitudes and returning colder fluids from high latitudes to the tropics.

   Without water the earth would not be habitable and life, as we know it, could not exist.