

# Sun, Heat, and the Global Water Cycle

## Transcription

The first thing we have here is the sun. It's appropriately a nice yellow ball. The role of the sun is to power the planet earth. The thing I want to bring up on this first slide is the picture of the blue planet. It's the blue marble floating in space. Of course this is the satellite image taken from far out in space. What you notice about it is that the earth is mostly blue, mostly blue ocean. We know that the ocean covers over 70% of the earth's surface. The characteristic dark blue color of the ocean means that the sunshine that hits the earth is mostly absorbed in the ocean. In this picture there are some white clouds, and those white clouds are pretty good at reflecting light from the sun back into space, and of course so is snow at high latitudes. But that dark blue ocean is very good at absorbing all of the heat from the sun.

A couple of facts about the ocean, the ocean has much more heat capacity than the atmosphere. The water molecule is about 800 times denser than atmospheric molecule, the weight of the atmosphere. The heat capacity is over 1000 times larger for the bulk of the ocean compared to our thin light atmosphere. That means the ocean has the memory of the climate system. It stores all of that heat from the sun, and parcels it back to the atmosphere to give us the climate we observe.