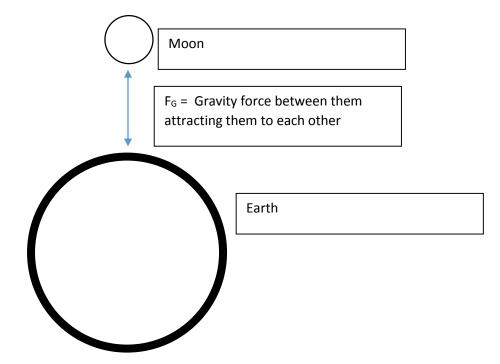
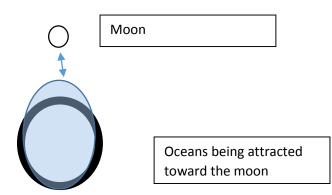
Great question! To answer why the oceans have tides and why smaller bodies of water do not we need to pull information from classical mechanics and astrophysics. The main cause of the tides is the moon. The sun also has an effect but it is small compared to the moon's. We will ignore the sun for now. Also, please note that none of my pictures are drawn to scale. The images are just used to explain the idea. My knowledge and explanation are highly influenced by NOAA's explanation [1].



When studying a physics question, the best thing to do first is draw a picture.

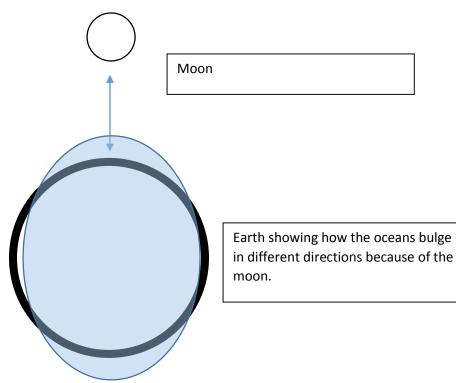
This figure is demonstrating that the earth and moon exert an attractive gravitational force on each other. Note there are other physics phenomena at play that keep the moon in orbit rather than crashing into the earth because of gravity.

The oceans because they are a large fluid with relatively few boundaries are drawn toward the moon because of gravity. There is a pictorial representation below



The second figure is not the whole story. The second aspect of physics taking part with the tides is inertia. Inertia is the tendency of an object to want to stay still or keep moving with the same velocity. The effect of the moon's gravity is weak on the far side of the earth. The ocean water wants to keep moving in a straight line, it pulls away from the earth.

A better picture representing the earth and oceans is below. High tides occur on the sides of the earth where the moon is closest and furthest away.



The moon is flying around the earth in its orbit. The tide travels with the moon.

Getting back to your question. The ocean can show the effect of the tide because it is a huge amount of water with few boundaries. An ocean can span the length of the earth. The difference in gravity from the moon is highly pronounced on different sides of the ocean. A pond is very small compared to the ocean. It is so small, that does not see large change in gravity from the moon. The effect of the moon on one side of the pond is not much different from the other side of the pond. The earth's gravity and land boundaries of the pond prevent inertia from having an appreciable effect as well.

I highly recommend you look into this effect more. A great resource is <u>http://oceanservice.noaa.gov/education/kits/tides/tides05\_lunarday.html</u>. It has much better pictures than mine.

[1] Tides and Water Levels. (2008, March 28). Retrieved September 30, 2014, from http://oceanservice.noaa.gov/education/tutorial\_tides/welcome.html