Why do the ocean and the sky look blue?

The Color We See
Our eyes are able to see the color that is reflected or scattered off an object. We cannot usually see the colors that are absorbed by an object. If all light reflects off an object, the object appears white. If all light is absorbed by an object, the object appears black. A red crab appears red because it reflects red light and absorbs all other colors.

The Blue Sky
When sunlight enters the atmosphere, it is absorbed or scattered by molecules and particles. The short wavelengths of visible light; blue, green, and violet, are scattered by air molecules more frequently than the long wavelengths; red, yellow, and orange. The sky looks blue, rather than green or violet, because human eyes are most sensitive to blue light.

The Blue Ocean
When sunlight enters the ocean, it is absorbed or scattered by molecules and particles. The ocean looks blue because the molecules and particles in water absorb red light first and then blue light. The ocean’s color is also dependent upon the color of the sky. On a day when the sky is bright blue the ocean appears blue, but on a cloudy day the ocean appears gray.

Did You Know?
Underwater all things appear blue because blue light penetrates deepest in the ocean.

Hazy Air vs. Clear Air
Clear air becomes hazy when tiny particles are present in the air. The distance visible light is able to travel is dependent upon the clarity of the air. If the air is hazy there are more molecules, so there will be more scattering and the visible light will not travel very far. If the air is clear there are less molecules and there will be less opportunities for the visible light to scatter, allowing it to travel farther.

Cloudy Water vs. Clear Water
Water located in the middle of the ocean is a very clear, deep, dark blue whereas, water located along the coast is much more cloudy and murky in appearance. In the clearest water, 10% of the visible light that passes through the surface of the ocean can travel down 90 meters. In coastal water, however, visible light does not typically travel deeper than a few meters.