SCUBA Diving

For us, surface animals, going underwater is a huge challenge.
We breath with lungs, our body temperature needs to be around 37ºC, our eyes don't seen well without air spaces like goggles or masks, and our bodies are adapted for being on land.

Scuba diving, with all its tools and technology, is the way to discover this amazing underwater world.

How does the pressure affect you when diving?
Pressure can affect divers in different ways, and it depends on how deep they go. Just as you may experience your ears popping on an elevator, divers need to clear the air spaces in their ears as they descend. Sometimes it can even affect sinuses, or teeth! If divers are careful, it doesn't tend to be a big problem. The biggest effect divers notice, is that when they go deeper, they will breathe more air faster because the air is under pressure, meaning that it is being condensed into a smaller volume. Imagine that some paper represents air. Now imagine you put some crumpled sheets of paper in a large box. This is like the air in our tank and lungs at the surface of the water. Now imagine that you take that paper and squish it into tight balls so that it fits into a smaller box. There is the same amount of paper but it is now in a smaller space. This is what happens to the air in the tanks and lungs of divers when they go deeper. In order to fill up the rest of the space in our lungs (big box) we need to fill it with more air.

How long can divers stay under water?
It depends on how deep divers go and with what kind of equipment. The deeper they go, the more air they use. Generally, most recreational divers are underwater for about 45 minutes. If they stay shallower they can stay longer. If they go deeper their dive often becomes shorter unless they are experienced and are able to use different kinds of technology (like a rebreather), or mixtures of gases and air (such as nitrogen mixtures). It's difficult to bring air under water. Have you ever tried to push down a ball in a swimming pool? How about enough air to breathe from for 45 minutes? All that air is squeezed the into a small pressurized diving tank. That means compressing a LOT of air to fit onto the back of a diver.

Why is the water green?
The water is green because all of the nutrients that are present in the marine waters that surround British Columbia. The nutrients provide food for tiny, microscopic plants that live in the water called phytoplankton. The phytoplankton gives the water the green colour that B.C. is well known for.

What are the small particles (not the bubbles) that are floating around the diver?
The small particles could be a variety of things. They could be zooplankton (tiny, microscopic animals), debris, sand, etc.

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How deep can divers go before they lose light?

It depends on where they are diving. Losing light at shallow depths can often occur during the summer in B.C. when there are algae blooms. When algae or phytoplankton grow in very large numbers they can create a layer in the water that blocks the light from reaching deeper depths so it can be dark at 10m (which is about the length/depth of a school bus). When algae and phytoplankton are not growing in large numbers, light can reach deeper depths - 30, 40, 50m or more. In tropical waters, light can reach even deeper depths as there are fewer nutrients and less phytoplankton in the water to block the light. Light can reach 100m in tropical areas (which is a little more than the statue of liberty is tall).

How cold is the water?

Around 8°C or (46.4F), which is a little warmer than your refrigerator. Divers usually wear specific kind of suits called “dry suits” with many layers underneath to stay warm and dry in colder waters of about this temperature.

Do fish have to adapt to pressure underwater like we do?

Yes! Luckily, fish and other marine species have adapted to live at those pressures underwater, so they’re just as comfortable underwater as we are on land. What has surprised researchers is how deep fish have been found - further than anyone thought possible! Fish have been found hundreds of metres down, where pressure would be roughly equal to the weight of an elephant on your thumb nail! These fish are able to withstand those high pressures due to the fact that the pressure inside their bodies is the same as the pressure outside of their bodies.