

# Future of our oceans assignment



**ASSIGN  
BUSTER**

The Future of Our Oceans The fact of the matter is that the levels of CO<sub>2</sub> that this planet we call Earth is expelling is incredible. Like 30 billion tons per year incredible. This rate of change drastically effects everything, including the most popular type of surface we have on Earth, our oceans. Although the oceans are delaying the effects of global warming by taking in heaps of carbon dioxide, this does not mean the oceans go unaffected. This is not a small problem either.

As oceans take in more CO<sub>2</sub>, the more this rids the water of carbonate due to the chemical reactions we have studied and drawn up. The problem with taking these very important ions out of the water is that they are one of the two compounds that calcifiers, very small organisms, need to survive.

Calcifiers, which are the base of pretty much every coral reef on the planet, need to make shells which is part of their colonies skeleton. This leaves a decision for calcifiers to make: should I expend more energy capturing the decreasing amount of carbonate ions or just give up.

Studies show that most calcifiers do not have it in them to continue while some special cases are not affected or other decide to work harder. This is not the only problem for the calcifiers though. During summer, they have a special breeding session and another study by Selina Ward shows that the amount of fertilization that occurs when the water is acidified is far less to that of normal. The whole problem about these calcifiers though is that they are the long known, under- proclaimed base to coral reefs.

Coral reefs are part of everyday living for 25% of all sea creatures. 25%!!! Do you know how much this would affect the whole ocean food chain if coral

reefs were all of a sudden gone? According to studies, this is what could happen by 2050. On this rate, calcifiers will become less and less due to the carbon dioxide mixing with the water to make carbonic acid which breaks down into hydrogen gas and bicarbonate ions. The hydrogen gas then reacts with the carbonate ions and form bicarbonate... thus eliminating the carbonate ions, slowly, from the water.

So with less reproduction of the reefs and corals, the normal "eating away" at it will result in self destruction. Destruction of coral reefs would completely change everything in the oceans, but as well on land. We would not eat nearly as much fish, and the spots like the Great Barrier Reef in Australia would be no longer great tourist attractions. This is not just happening in reefs though. Since CO<sub>2</sub> dissolves quicker in cold water, the poles will most likely be where we see lots of evidence of acidification and the loss of use of calcifiers due to this.

Some evidences have already occurred where things called pteropods are being affected by the acidification and are unable to grow their shells as quickly as normal, thus resulting in more vulnerability and loss of life. This affects large whales and some birds in the Arctic which feed ravenously on these. As you can see, the results are stunning. But maybe the greatest proof of the effects of acidification has not even been mentioned. Off the tiny island of Castello Aragonese lies the open waters of the Tyrrhenian Sea.

About 50 yards off the shore, explored by Elizabeth Kolbert, the author, is where large volcanic vents have been spewing out vicious amounts of carbon dioxide into the area are yet to adapt to the changes in acidity levels

in the water, which of course does not set a good example for what we are to expect from all water when, by 2100, the pH levels globally are that of these waters off of Castello Aragonese. The water here is like that of a polluted harbor, very few organisms are able to survive.

Evidence of calcifiers dying are evident in the vivid colour of the grass which is not dulled like it should be be the calcifiers because they are absent. So I like to think of it like this, who wants waters everywhere like that? And how would that affect daily life? There would have to be new methods to clean the water, and fishing would be almost useless which would then in turn disrupt multiple economies and businesses all over the world. I hope I have covered all that needed to be said, and I hope you, as I, can rest assured that God is in control!