

CARBON CYCLE



Ocean Water and Ocean Sediments

What am I?

I am all the carbon dissolved in ocean water, and stored in sediments at the bottom of the ocean.

How does carbon get in and out of me?

Carbon dioxide from the atmosphere dissolves in ocean water. That carbon is removed from ocean water by plants and animals such as plankton. Their bodies and waste products sink and make up ocean sediments.

In what form do I hold carbon?

In ocean water, carbon dioxide dissolves and becomes carbonic acid (H_2CO_3) and bicarbonate ion (HCO_3^-). In sediments, I might be found in all sorts of forms including carbonate (CO_3), organic molecules, and clathrates (methane ice).

How much carbon do I store?

39,970 Gigatons of carbon (GtC) are held in ocean water.

150 Gigatons of carbon are held in ocean sediments.

1000s of Gigatons of carbon are held in ocean clathrates.

How much carbon moves in or out of me (flux)?

The surface ocean and atmosphere exchange carbon back and forth, but the ocean gains 2 GtC per yr in the process. Ocean sediments take only 0.2 GtC per yr out of the deep ocean. Carbon release from melting clathrates is not well known.