The Process of Photosynthesis within a Carbon Cycle

There are many different processes that happen within the carbon cycle. Photosynthesis is one of these processes that happens everywhere on Earth. The reaction occurring during photosynthesis, with the addition of solar energy, $CO_2 + H_2O = C_6H_{12}O_6 + O_2$, so , with water and energy, some organisms can carbon in the form of carbon dioxide from the air or water and produce sugar and oxygen. Photosynthesis occurs in terrestrial and marine plants and other autotrophic biota.

The amount of time that carbon stays within a particular area depends upon the organisms that are doing the process. For example, in marine environments, phytoplankton, which are the primary autotrophic organisms, take in carbon dioxide from the air and water and produce oxygen, however, the organisms do not live long and the carbon that they absorbed is quickly transferred to other organisms that prey on them or settle on the seafloor as sediments. The time that carbon stays in terrestrial environments is far longer. Across the continents, forests are the largest conductors of photosynthesis and the carbon absorbed as trees during the process can stay there for hundreds of years, depending on the lifespan of the trees.

Forests become carbon reservoirs and hold in carbon until the trees are decomposed or there is a fire. Within forests and other terrestrial environments, smaller plants also do photosynthesis and hold carbon for a much shorter period, however the carbon in these plant is often reabsorbed by surrounding plants. So, in general, within terrestrial environments, carbon absorbed through photosynthesis is often stored there for a long time as compared to marine environments. The carbon form marine environments is usually more readily available for other parts of the carbon cycle that that of terrestrial environments.