

The internal ocean in a closure environment

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The inner ocean created in Biosphere 2 was a unique structure, imitating the major components of the surface of the Earth inside of a closed environment. During SCB2 (Space Camp at Biosphere 2) all participants joining the camp evaluated the vertical structure of the internal artificial ocean and its basic physical parameters. We found that the all parameters are quite uniform due to the continuous mixing process in the facility. There were some regions where not enough mixing was found with characteristic local ecosystems cultivated inside of the artificial ocean. In this survey we discuss the ideal form of a space colony on the surface of other terrestrial planets and advantages and disadvantages of creating an “artificial ocean” inside of the structure. A certain atmospheric pressure is needed to maintain water in liquid form on the surface of those structures. On a smaller scale, the hydrological cycle may not be able to maintain certain salinity level in the ocean components, at the same time, freshwater should be used for drinking water and irrigation. The ocean, as the dominant component of the Earth, has a certain difficulty in maintaining in a different environment, and it may have specific characteristics for providing new earth-like environments essential for human life.

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