

OS33A-04 - Global reorganization of deep-sea circulation and carbon storage after the last ice age

Wednesday, 14 December 2022
09:27 - 09:36

• *McCormick Place - S105d (South, Level 1)*

Abstract

Using new and published marine fossil radiocarbon ($^{14}\text{C}/\text{C}$) measurements—a tracer uniquely sensitive to circulation and air-sea gas exchange—we establish several benchmarks for Atlantic, Southern, and Pacific deep-sea circulation and ventilation since the last ice age. We find the most ^{14}C -depleted water in glacial Pacific bottom depths, rather than the mid-depths as they are today, which is best explained by a slowdown in glacial deep-sea overturning in addition to a “flipped” glacial Pacific overturning configuration. These observations cannot be produced by changes in air-sea gas exchange alone, and they underscore the major role for changes in the overturning circulation for glacial deep-sea carbon storage in the vast Pacific abyss, and the concomitant drawdown of atmospheric CO_2 .

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