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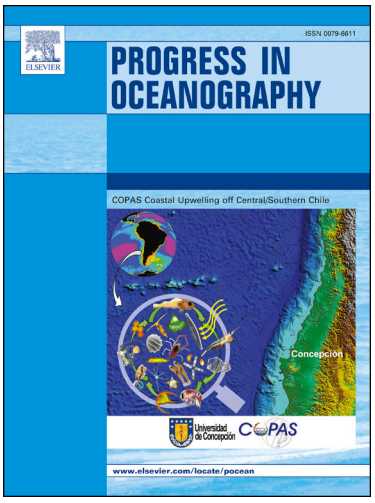

Variability in oceanographic barriers to coral larval dispersal: do currents shape biodiversity?

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Variability in oceanographic barriers to coral larval dispersal: do currents shape biodiversity?

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Running page head: Variability in coral larval dispersal

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Key words: coral reefs; larval dispersal; connectivity; high-resolution modeling; Coral Triangle

Highlights:

- Reefs in the Coral Triangle are highly self-seeded
- Reef connectivity in the Coral Triangle is highly variable from year to year
- Dispersal simulations must be >20 years long to capture connectivity variability
- Connectivity subpopulations illustrate physical oceanographic barriers to dispersal
- Oceanographic barriers play an important role in shaping patterns of biodiversity

Abstract

The global center of marine biodiversity is located in the western tropical Pacific in a region known as the "Coral Triangle" (CT). This region is also considered the most threatened of all coral reef regions, because of multiple impacts, including rising temperatures and coral bleaching that have already caused high mortality of reef corals over large portions of the CT. Larval dispersal and recruitment play a critical role in reef recovery after such disturbances, but our understanding of reproductive connectivity between reefs is limited by a paucity of observations. Oceanographic modeling can provide an economical and efficient way to augment our understanding of reef