

EGU22-2980

<https://doi.org/10.5194/egusphere-egu22-2980>

EGU General Assembly 2022

© Author(s) 2022. This work is distributed under the Creative Commons Attribution 4.0 License.



Eddies, Winds, and Carbon in coupled ocean-circulation biogeochemical models: from the Baltic Sea to the Southern Ocean

Heiner Dietze and Ulrike Löptien

Institute for Geosciences, Christian-Albrechts-Universität zu Kiel, Kiel, Germany (heiner.dietze@ifg.uni-kiel.de)

Recent advances in the development of hardware have pushed the explicit resolution of mesoscale (and, using nesting approaches, even sub-mesoscale) processes in global coupled ocean-circulation biogeochemical models within reach. This adds realism to the models in that previously-parameterized processes can now be explicitly resolved. Showcasing examples of our modeling work in the Baltic Sea, the subtropical North Atlantic and the Southern Ocean we will put the relevance of this paradigm to the test. We report on surprisingly small effects of explicitly-resolved mesoscale and even submesoscale features on a variety of domain-averaged entities such as air-sea and carbon fluxes in Boussinesq-approximated general ocean circulation models.