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## **Multirate time integration for conservative two-way coupled atmosphere-ocean models**

*Wednesday, 29 January 2020 10:00 (30 minutes)*

Many Earth System Models use libraries like ESMF or OASIS for coupling separate atmosphere and ocean models and others. These libraries provide spatial interpolation methods to support the data exchange at the air-sea interface. The coupling happens at pre-defined coupling time points.

For idealized studies of physical processes at the air-sea interface, it is of advantage to use holistic atmosphere-ocean models, i.e. with one set of governing equations. Different horizontal discretizations are used for the ocean and atmosphere part.

Multirate time integration methods offer the integration with different time steps for the ocean and atmosphere component. The exchange at the air-sea interface is then conducted with the large time step of the slow ocean component, i.e. the coupling takes place at each integration step.

This presentation will show how multirate time integration schemes are applied for an idealized atmosphere-ocean model with a conservative interpolation of flux data at the air-sea interface.

### **Do you need an official invitation letter?**

Yes

**Primary authors:** BAUER, Tobias; KLINGBEIL, Knut (Leibniz Institute for Baltic Sea Research Warnemünde); KNOTH, Oswald (Leibniz Institute for Tropospheric Research)

**Presenter:** BAUER, Tobias

**Track Classification:** COMMODORE conference