Anmeldung eines Themas für ein/e

Forschungsseminar ☐
Methodenseminar ☐
Masterarbeit ☐ (bitte eines oder mehrere ankreuzen)

Thema Datum	**Analysis and modeling of gravity waves in Julia**
Betreuer (mit Kontaktdaten)	Prof. Christoph Jacobi
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Zweitgutachter	Dr. Ales Kuchar
Kurzbeschreibung:	Julia is an open-source language that combines the advantages of modern scripting languages (e.g. Python) with the speed of compiled languages such as Fortran. Thus it tackles the so-called two-language problem (Perkel, 2019) and allows to easily prototype with less code and similar or even better performance, store and analyze data. The spatial and vertical resolution of general circulation models is usually too coarse to simulate gravity waves (GWs) directly, thus the majority of their spectrum must be parameterized. The thesis will consist of two parts. In the first part the GW parameterization will be prototyped in Julia and benchmarked with the current implementation in Fortran. In the second part, the GW characteristics will be calculated offline based on observational and model variables of winds and temperature. The climatology and trends of GWs will be interpreted with respect to current understanding.
Literatur:	Perkel, J. M. (2019). Julia: come for the syntax, stay for the speed. https://doi.org/10.1038/d41586-019-02310-3

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