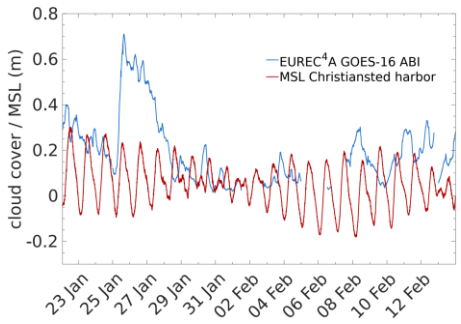
Announcement of a topic for:

Seminar Research	**X**	
Seminar Methods	**X**	
Master Theses	**X**	(please mark one or more)

Topic	How do surface properties affect cloud movement and evolution?
Release Date	15 July 2024
Supervisor (contact)	Matthias Tesche Institut für Meteorologie, Universität Leipzig Stephanstrasse 3, 04103 Leipzig Tel: 0341/97-36660 matthias.tesche@uni-leipzig.de
Additional Contact	Torsten Seelig, torsten.seelig@uni-leipzig.de
Second Reviewer	Johannes Quaas, j.quaas@rz.uni-leipzig.de
Description:	Previous studies have identified a diurnal cycle of large-scale vertical motion that is strongly connected to the diurnal cycle in the development of marine trade-wind cumulus clouds (Vial et al., 2019).  However, the question what mechanism drive or what factors can possibly have an influence on the diurnal variation in marine trade-wind cumulus cloud cover is still open. Preliminary analysis (figure) suggests the potential influence of tidal currents on the marine tropical atmospheric boundary layer. The gravitational forces of the Earth, the Moon, and the Sun manifest themselves in the tidal movements of the sea. The currents related to high and low tides are proposed to act as a driver for an intermittently unstable boundary layer (Ghasemi et al., 2018). Further investigation is required to test whether or not this mechanism is dominant.
Literature:	Vial, J., Vogel, R., Bony, S., Stevens, B., Winker, D. M., Cai, X., Hohenegger, C., Naumann, A. K., and Brogniez, H.: A new look at the daily cycle of trade wind cumuli, J. Adv. Model. Earth Syst., 11, 3148-3166, https://doi.org/10.1029/2019MS001746, 2019. Ghasemi, A., Klein, M., Will, A., and Harlander, U.: Mean flow generation by an intermittently unstable boundary layer over a sloping wall, J. Fluid Mech., 853, 111-149, https://doi.org/10.1017/jfm.2018.552, 2018.