

Announcement of a topic for:

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

Topic	Do surface properties affect the movement and development of clouds?
Release Date	15. July 2024
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Description:	<p>Clouds are strongly connected to the energy budget in the planetary boundary layer, which is in turn determined by the properties of the underlying surface. One might therefore assume a connection between the surface and cloud development (Teuling et al., 2019). However, such a connection has not yet been investigated using the actual movement and along-track development of individual clouds over surfaces with varying properties.</p> <p>Geostationary satellite observations enable the characterization of cloud movement and development from tracking individual clouds (Seelig et al., 2021). The aim of this work is to track clouds over Europe in the CLAAS-2 (Benas et al., 2017) data set and to investigate whether or not those clouds reveal different movement, life time, or development when occurring over surfaces with different properties such as moisture (Zhang et al., 2023) or plant cover (Harper et al., 2023) as well as gradients in surface properties.</p>
Literature:	<p>Benas et al.: The MSG-SEVIRI-based cloud property data record CLAAS-2, Earth Syst. Sci. Data, 9, https://doi.org/10.5194/essd-9-415-2017, 2017.</p> <p>Harper et al.: A 29-year time series of annual 300 m resolution plant-functional-type maps for climate models, Earth Syst. Sci. Data, 15, https://doi.org/10.5194/essd-15-1465-2023, 2023.</p> <p>Seelig et al.: Life cycle of shallow marine cumulus clouds from geostationary satellite observations, J. Geophys. Res., 126, https://doi.org/10.1029/2021JD035577, 2021.</p> <p>Teuling et al: Observational evidence for cloud cover enhancement over western European forests, Nat. Commun., 8, https://doi.org/10.1038/ncomms14065, 2017.</p> <p>Zhang et al.: Generation of global 1 km daily soil moisture product from 2000 to 2020 using ensemble learning, Earth Syst. Sci. Data, 15, https://doi.org/10.5194/essd-15-2055-2023, 2023.</p>