

Anmeldung eines Themas für eine Bachelorarbeit

Thema Datum	The representativeness of the trade-wind clouds during the EUREC ⁴ A campaign as observed by the GOES-16 satellite 10.12.2020 (supervision in English)
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Kurzbeschreibung:	<p>One of the main goals of the 2020 EUREC⁴A campaign was to characterize the clouds in the trade-wind region, which are known to have an important role in the global climate system. The interaction between the microphysical, macrophysical and radiative properties of these clouds is complex, therefore a reference dataset is needed for better evaluating our understanding of these clouds and how to best represent them in models. During this campaign, the German HALO aircraft typically flew a repetitive circular flight pattern directly east of the island of Barbados. If the flight location had been elsewhere in the trade-wind region, would the same observations have been made? Thus, how representative was the flight domain of the trade-wind region during EUREC⁴A?</p> <p>There are a number of ways to look at this question, but the work here proposes the use of the GOES-16 geostationary satellite, which captured images of the cloud scene in this region each minute throughout the campaign. Using this dataset, the macrophysical properties and organization of the clouds can be determined on a large spatial scale. By comparing the properties from the EUREC⁴A domain to other domains nearby, we can determine if there was any bias in the resulting observations due to the chosen location, or if the HALO observational space was appropriate for characterizing the clouds as planned.</p>

Literatur:	<p>Bony, S., Stevens, B., Ament, F. <i>et al.</i> EUREC⁴A: A Field Campaign to Elucidate the Couplings Between Clouds, Convection and Circulation. <i>Surv Geophys</i> 38, 1529–1568 (2017). https://doi.org/10.1007/s10712-017-9428-0</p> <p>Stevens, B., and Coauthors, 2019: A High-Altitude Long-Range Aircraft Configured as a Cloud Observatory: The NARVAL Expeditions. <i>Bull. Amer. Meteor. Soc.</i>, 100, 1061–1077, https://doi.org/10.1175/BAMS-D-18-0198.1.</p> <p>Medeiros, B. and Nuijens, L.: Barbados and beyond. <i>Proceedings of the National Academy of Sciences</i>, May 2016, 113 (22) E3062-E3070; DOI: 10.1073/pnas.1521494113</p> <p>Stevens, B., and Coauthors, 2016: The Barbados Cloud Observatory: Anchoring Investigations of Clouds and Circulation on the Edge of the ITCZ. <i>Bull. Amer. Meteor. Soc.</i>, 97, 787–801, https://doi.org/10.1175/BAMS-D-14-00247.1.</p>
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