


## Anmeldung eines Themas für ein/e

**Forschungsseminar**  **X**  
**Methodenseminar**  **X**  
**Masterarbeit**  **X** (bitte eines oder mehrere ankreuzen)

Thema Datum	Quantifying cloud cover with a do-it-yourself astronomer all-sky camera 31.8.2023
Betreuer (mit Kontaktdaten)	Dr. Maximilian Maahn Institut für Meteorologie, Room 101 Stephanstr. 3, 04103 Leipzig 0341 97 32853, maximilian.maahn@uni-leipzig.de
ggf. weitere Kontaktperson	
Gutachter	JProf. Dr. Heike Kalesse-Los
Kurzbeschreibung:	<p>All-sky cameras are frequently used to observe the spatial distribution of clouds and to determine the type of clouds (Heinle et al. 2010). This data is used for model evaluation (Macke et al. 2017) and short term forecasts of solar radiation (Kuhn et al. 2018). Here, we will explore the potential of using do-it-yourself all sky cameras used by the amateur astronomy community (<a href="https://github.com/aaronwmorris/indi-allsky">https://github.com/aaronwmorris/indi-allsky</a>) for cloud tracking. The instrument will be built by the candidate together with the institute's technician and deployed in Leipzig collocated to a commercial all sky camera and the software will be adapted to cloud observations. Cloud cover will be estimated from the ratio between red and blue pixel values. The performance of the self-made and commercial instrument will be compared.</p>  <p><i>Self-made all sky camera (source indilig.org)</i></p>

Literatur:	<p>Heinle, A., A. Macke, and A. Srivastav, 2010: Automatic cloud classification of whole sky images. <i>Atmospheric Measurement Techniques</i>, <b>3</b>, 557–567, <a href="https://doi.org/10.5194/amt-3-557-2010">https://doi.org/10.5194/amt-3-557-2010</a>.</p> <p>Kuhn, P., and Coauthors, 2018: Validation of an all-sky imager–based nowcasting system for industrial PV plants. <i>Progress in Photovoltaics: Research and Applications</i>, <b>26</b>, 608–621, <a href="https://doi.org/10.1002/pip.2968">https://doi.org/10.1002/pip.2968</a>.</p> <p>Macke, A., and Coauthors, 2017: The HD(CP)2 Observational Prototype Experiment (HOPE) – an overview. <i>Atmos. Chem. Phys.</i>, <b>17</b>, 4887–4914, <a href="https://doi.org/10.5194/acp-17-4887-2017">https://doi.org/10.5194/acp-17-4887-2017</a>.</p>
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