

## Anmeldung eines Themas für eine Bachelorarbeit

Thema Datum	Stratospheric smoke layers in the northern and southern hemisphere: Impact of pyrocumulonimbus convection and self-lifting effects
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Kurzbeschreibung:	<p>Intensive pyrocumulonimbus (pyroCb) convection has the potential to send enormous amounts of biomass-burning smoke into the stratosphere. Once the smoke particles reached the stratosphere, the aerosols can prevail for several months up to more than a year and spread over an entire hemisphere.</p> <p>In recent years the intensity of pyroCb convection increased rapidly (Canada 2017, Siberia 2019, Australia 2019-2020) which underlines the importance of this relatively new research field.</p> <p>In this thesis, processes should be described how biomass-burning smoke can reach the stratosphere through pyroCb convection and radiative self-lifting effects as well as a detailed description of the smoke characteristics during its decay phase of upper tropospheric and lower stratospheric smoke layers by using lidar measurements.</p>
Literatur:	<p>Baars, H., Ansmann, A., Ohneiser, K., Haarig, M., Engelmann, R., Althausen, D., Hanssen, I., Gausa, M., Pietruczuk, A., Szkop, A., Stachlewska, I. S., Wang, D., Reichardt, J., Skupin, A., Mattis, I., Trickl, T., Vogelmann, H., Navas-Guzmán, F., Haeffele, A., Acheson, K., Ruth, A. A., Tatarov, B., Müller, D., Hu, Q., Podvin, T., Goloub, P., Veselovskii, I., Pietras, C., Haeffelin, M., Fréville, P., Sicard, M., Comerón, A., Fernández García, A. J., Molero Menéndez, F., Córdoba-Jabonero, C., Guerrero-Rascado, J. L., Alados-Arboledas, L., Bortoli, D., Costa, M. J., Dionisi, D., Liberti, G. L., Wang, X., Sannino, A., Papagiannopoulos, N., Boselli, A., Mona, L., D'Amico, G., Romano, S., Perrone, M. R., Belegante, L., Nicolae, D., Grigorov, I., Gialitaki, A., Amiridis, V., Soupiona, O., Papayannis, A., Mamouri, R.-E., Nisantzi, A., Heese, B., Hofer, J., Schechner, Y. Y., Wandinger, U., and Pappalardo, G.: The unprecedented 2017–2018 stratospheric smoke event: decay phase and aerosol properties observed with the EARLINET, <i>Atmos. Chem. Phys.</i>, 19, 15183–15198, <a href="https://doi.org/10.5194/acp-19-15183-2019">https://doi.org/10.5194/acp-19-15183-2019</a>, 2019.</p> <p>Engelmann, R., Ansmann, A., Ohneiser, K., Griesche, H., Radenz, M., Hofer, J., Althausen, D., Dahlke, S., Maturilli, M., Veselovskii, I., Jimenez, C., Wiesen, R., Baars, H., Bühl, J., Gebauer, H., Haarig, M., Seifert, P., Wandinger, U., and Macke, A.: UTLS wildfire smoke over the North Pole region, Arctic haze, and aerosol-cloud interaction during MOSAiC 2019/20: An introductory, <i>Atmos. Chem. Phys. Discuss.</i> [preprint], <a href="https://doi.org/10.5194/acp-2020-1271">https://doi.org/10.5194/acp-2020-1271</a>, in review, 2020.</p> <p>Ohneiser, K., Ansmann, A., Baars, H., Seifert, P., Barja, B., Jimenez, C., Radenz, M., Teisseire, A., Floutsi, A., Haarig, M., Foth, A., Chudnovsky, A., Engelmann, R., Zamorano, F., Bühl, J., and Wandinger, U.: Smoke of extreme Australian bushfires observed in the stratosphere over Punta Arenas, Chile, in January 2020: optical thickness, lidar ratios, and depolarization ratios at 355 and 532 nm, <i>Atmos. Chem. Phys.</i>, 20, 8003–8015, <a href="https://doi.org/10.5194/acp-20-8003-2020">https://doi.org/10.5194/acp-20-8003-2020</a>, 2020</p>