

## Description of a Bachelor's Thesis topic

Topic	Characterization of the vertical cloud structure using radiosonde data in Punta Arenas, Chile
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Short description:	<p>Radiosoundings are performed in many places around the globe on a daily or even more frequent basis and thus offer a temporally high-resolved databasis for the investigation of the atmospheric state. From the profiles of temperature and humidity, information about cloud structure can be derived (e.g. Treffeisen et al., 2007; Reddy et al., 2018).</p> <p>The area at Punta Arenas (Chile) in the mid-latitudes of the southern hemisphere, is dominated by westerly winds from the Pacific and thus characterized by marine conditions, low in aerosol particle concentrations (Foth et al., 2018). Since the end of 2018, TROPOS and LIM have been employing ground-based measurements there, performing remote sensing of the atmosphere. In order to estimate the expected vertical cloud structure (height of cloud bottom and -top, stratification of cloud layers, supersaturation with respect to liquid water vs. ice) in the yearly cycle, radiosoundings from Punta Arenas are to be analyzed statistically in the scope of this Bachelor's thesis.</p>
Resources:	<p>Foth, A., Kanitz, T., Engelmann, R., Baars, H., Radenz, M., Seifert, P., Barja, B., Kalesse, H., and Ansmann, A.: Vertical aerosol distribution in the Southern hemispheric Midlatitudes as observed with lidar at Punta Arenas, Chile (53.2° S and 70.9° W) during ALPACA, Atmos. Chem. Phys. Discuss., <a href="https://doi.org/10.5194/acp-2018-1124">https://doi.org/10.5194/acp-2018-1124</a>, in review, 2018.</p> <p>Narendra Reddy, N., Venkat Ratnam, M., Basha, G., and Ravikiran, V.: Cloud vertical structure over a tropical station obtained using long-term high-resolution radiosonde measurements, Atmos. Chem. Phys., 18, 11709-11727, <a href="https://doi.org/10.5194/acp-18-11709-2018">https://doi.org/10.5194/acp-18-11709-2018</a>, 2018.</p> <p>Treffeisen, R., Krejci, R., Ström, J., Engvall, A. C., Herber, A., and Thomason, L.: Humidity observations in the Arctic troposphere over Ny-Ålesund, Svalbard based on 15 years of radiosonde data, Atmos. Chem. Phys., 7, 2721-2732, <a href="https://doi.org/10.5194/acp-7-2721-2007">https://doi.org/10.5194/acp-7-2721-2007</a>, 2007.</p> <p>DACAPO-PESO webpage (measurement information and updates): <a href="https://dacapo.tropos.de/">https://dacapo.tropos.de/</a> Intros to radiosoundings: <a href="#">ETH Zurich</a>, <a href="#">University of British Columbia</a>, <a href="#">Script Dynamics &amp; Synoptics Uni Leipzig</a> (student-wendisch)</p>