

List of Publications

A: Peer-reviewed Articles

Under Review

Kulie, M. S., C. Pettersen, A. J. Merrelli, T. J. Wagner, N. B. Wood, M. Dutter, D. Beachler, T. Kluber, R. Turner, M. Mateling, J. Lenters, P. Blanken, M. Maahn, C. Spence, **S. Kneifel**, P. A. Kucera, A. Tokay, L. F. Bliven, D. B. Wolff, and W. A. Petersen: Snowfall in the Northern Great Lakes: Lessons Learned from a Multi-Sensor Observatory, submitted to *Bull. Amer. Meteor. Soc.*

Mroz, K., A. Battaglia, **S. Kneifel**, L. von Terzi, M. Karrer, and D. Ori: Linking rain into ice microphysics across the melting layer in stratiform rain: a closure study., *Atmos. Meas. Tech. Discuss.*, <https://doi.org/10.5194/amt-2020-272>, in review.

Gong, J., X. Zeng, D. Wu, S. J. Munchak, X. Li, **S. Kneifel**, D. Ori, L. Liao, and D. Barahona: Linkage among Ice Crystal Microphysics, Mesoscale Dynamics and Cloud and Precipitation Structures Revealed by Collocated Microwave Radiometer and Multi-frequency Radar Observations, *Atmos. Chem. Phys. Discuss.*, <https://doi.org/10.5194/acp-2020-256>, in review.

2020

1. Myagkov, A., **S. Kneifel**, and T. Rose: Evaluation of the reflectivity calibration of W-band radars based on observations in rain. *Atmos. Meas. Tech.*, <https://doi.org/10.5194/amt-2020-133>, accepted.
2. **Kneifel, S.**, and D. Moisseev, 2020: Long-term statistics of riming in non-convective clouds derived from ground-based Doppler cloud radar observations, *J. Atmos. Sci.*, accepted.
3. Tridon, F., A. Battaglia, and **S. Kneifel**, 2020: How to estimate total differential attenuation due to hydrometeors with ground-based multi-frequency radars?, *Atmos. Meas. Tech.*, <https://doi.org/10.5194/amt-2020-159>, accepted.
4. Ori, D., V. Schemann, M. Karrer, J. Dias Neto, L. von Terzi, A. Seifert, and **S. Kneifel**, 2020: Evaluation of ice particle growth in ICON using statistics of multi-frequency Doppler cloud radar observations, *Q. J. Roy. Meteor. Soc.*, doi:10.1002/qj.3875, accepted.
5. Mech, M., M. Maahn, **S. Kneifel**, D. Ori, E. Orlandi, P. Kollias, V. Schemann, and S. Crewell, 2020: PAMTRA 1.0: A Passive and Active Microwave radiative TRANSfer tool for simulating radiometer and radar measurements of the cloudy atmosphere, *Geosci. Model Dev.*, <https://doi.org/10.5194/gmd-2019-356>, accepted.
6. Karrer, M., A. Seifert, C. Siewert, D. Ori, A. von Lerber, and **S. Kneifel**, 2020: Ice Particle Properties Inferred from Aggregation Modelling, *Journal of Advances in Modeling Earth System*, 12, e2020MS002066. <https://doi.org/10.1029/2020MS002066>.

7. Mroz, K., A. Battaglia, **S. Kneifel**, L. P. D’Adderio, and J. Dias Neto, 2020: Triple-frequency Doppler retrieval of characteristic raindrop size, *Earth and Space Science*, 7, e2019EA000789. <https://doi.org/10.1029/2019EA000789>.
8. Gierens, R., **S. Kneifel**, M. D. Shupe, K. Ebell, M. Maturilli, and U. Löhnert, 2020: Low-level mixed-phase clouds in a complex Arctic environment, *Atmos. Chem. Phys.*, 20, 3459–3481, <https://doi.org/10.5194/acp-20-3459-2020>.
9. Lubin, D., D. Zhang, I. Silber, R.C. Scott, P. Kalogeras, A. Battaglia, D.H. Bromwich, M. Cadetdu, E. Eloranta, A. Fridlind, A. Frossard, K.M. Hines, **S. Kneifel**, W.R. Leitch, W. Lin, J. Nicolas, H. Powers, P.K. Quinn, P. Rowe, L.M. Russell, S. Sharma, J. Verlinde, and A.M. Vogelmann, 2020: AWARE: The Atmospheric Radiation Measurement (ARM) West Antarctic Radiation Experiment, *Bull. Amer. Meteor. Soc.*, doi:10.1175/BAMS-D-18-0278.1, accepted.

2019

10. Mason, S. L., R. J. Hogan, C. D. Westbrook, **S. Kneifel**, D. Moisseev, and L. von Terzi, 2019: The importance of particle size distribution and internal structure for triple-frequency radar retrievals of the morphology of snow, *Atmos. Meas. Tech.*, 12, 4993–5018, <https://doi.org/10.5194/amt-12-4993-2019>.
11. Dexheimer, D., M. Airey, E. Roesler, C. Longbottom, K. Nicoll, **S. Kneifel**, F. Mei, G. R. Harrison, G. Marlton, and P. Williams, 2019: Evaluation of ARM Tethered Balloon System instrumentation for supercooled liquid water and distributed temperature sensing in mixed-phase Arctic clouds, *Atmos. Meas. Tech.*, 12, 6845–6864, <https://doi.org/10.5194/amt-12-6845-2019>.
12. Tridon, F., A. Battaglia, R. J. Chase, F. J. Turk, J. Leinonen, **S. Kneifel**, K. Mroz, J. Finlon, A. Bansemer, S. Tanelli, A. J. Heymsfield, S. W. Nesbitt, 2019: The microphysics of stratiform precipitation during OLYMPEX: compatibility between 3-frequency radar and airborne in situ observations, *J. Geophys. Res.*, 124, 8764–8792. <https://doi.org/10.1029/2018JD029858>.
13. Seifert, A., J. Leinonen, C. Siewert, and **S. Kneifel**, 2019: The geometry of rimed aggregate snowflakes: A modeling study, *Journal of Advances in Modeling Earth Systems*, 11, 712–31, doi.org/10.1029/2018MS001519
14. Dias Neto, J., **S. Kneifel**, D. Ori, S. Trömel, J. Handwerker, B. Bohn, K. Mühlbauer, M. Lenefer, and C. Simmer, 2019: The TRIPLE-frequency and Polarimetric radar Experiment for improving process observation of winter precipitation, *Earth Syst. Sci. Data*, 11, 845–863, doi.org/10.5194/essd-11-845-2019.

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15. Mason, S., C. Chiu, R. J. Hogan, D. Moisseev, and **S. Kneifel**, 2018: Retrievals of riming and snow particle density from vertically-pointing Doppler radars, *J. Geophys. Res.*, 123, 13, 807-13834, doi: 10.1029/2018JD028603.
16. K uchler, N., **S. Kneifel**, P. Kollias, and U. L ohnert, 2018: Revisiting liquid water content retrievals in warm stratified clouds: The modified Frisch, *Geophys. Res. Lett.*, 45, 9323-9330, doi: 10.1029/2018GL079845
17. Ori, D., and **S. Kneifel**, 2018: Assessing the uncertainties of the Discrete Dipole Approximation in case of melting ice particles, *J. Quant. Spectrosc. Radiat. Transfer*, 217, 396-406, doi: 10.1016/j.jqsrt.2018.06.017.
18. **Kneifel, S.**, J. Dias Neto, D. Ori, D. Moisseev, J. Tyynel , I. S. Adams, K-S. Kuo, R. Bennartz, A. Berne, E. E. Clothiaux, P. Eriksson, A. J. Geer, R. Honeyager, J. Leinonen, and C. D. Westbrook, 2018: The First International Summer Snowfall Workshop: Scattering properties of realistic frozen hydrometeors from simulations and observations, as well as defining a new standard for scattering databases, *Bull. Amer. Meteor. Soc.*, 99, ES55–ES58, doi: 10.1175/BAMS-D-17-0208.1.
19. Leinonen, J., **S. Kneifel**, and R. J. Hogan, 2018: Evaluation of the Rayleigh–Gans approximation for microwave scattering by rimed snowflakes, *Q. J. Roy. Meteor. Soc.*, 144, 77-88, doi:10.1002/qj.3093.

2017

20. K uchler, N., **S. Kneifel**, U. L ohnert, P. Kollias, H. Czekala, and T. Rose, 2017: A W-band radar-radiometer system for accurate and continuous monitoring of clouds and precipitation, *J. Atmos. Oceanic Tech.*, 34, 2375-2392, doi: 10.1175/JTECH-D-17-0019.1.
21. Souverijns, N., A. Gossart, S. Lhermitte, I. V. Gorodetskaya, **S. Kneifel**, M. Maahn, F. L. Bliven, and N. P. M. Van Lipzig, 2017: Estimating radar reflectivity - snowfall rate relationships and their uncertainties over Antarctica by combining disdrometer and radar observations. *Atmospheric Research*, 196, 211-223, doi:10.1016/j.atmosres.2017.06.001.
22. Heinze, R., A. Dipankar, C.C. Henken, C. Moseley, O. Sourdeval, S. Tromel, X. Xie, P. Adamidis, F. Ament, H. Baars, C. Barthlott, A. Behrendt, U. Blahak, S. Bley, S. Brdar, M. Brueck, S. Crewell, H. Deneke, P. Di Girolamo, R. Evaristo, J. Fischer, C. Frank, P. Friederichs, T. Gocke, K. Gorges, L. Hande, M. Hanke, A. Hansen, H-C. Hege, C. Hoose, T. Jahns, N. Kalthoff, D. Klocke, **S. Kneifel**, P. Knippertz, A. Kuhn, T. van Laar, A. Macke, V. Maurer, B. Mayer, C. I. Meyer, S. K. Muppa, R. A. J. Neggers, E. Orlandi, F. Pantillon, B. Pospichal, N. Rober, L. Scheck, A. Seifert, P. Seifert, F. Senf, P. Siligam, C. Simmer, S. Steinke, B. Stevens, K. Wapler, M. Weniger, V. Wulfmeyer, G. Z angl, D. Zhang, and J. Quaas, 2017: Large-eddy simulations over Germany using ICON: A comprehensive evaluation, *Q. J. Roy. Meteor. Soc.*, 143, 69-100. doi:10.1002/qj.2947.

23. Trömel, S., A. V. Ryzhkov, M. Diederich, K. Mühlbauer, C. Simmer, **S. Kneifel**, and J. Snyder, 2017: Multisensor Characterization of Mammatus Clouds, *Mon. Wea. Rev.*, 145, 235-251, doi:10.1175/MWR-D-16-0187.1.
24. Hogan, R. J., R. Honeyager, J. Tyynelä and **S. Kneifel**, 2017: Calculating the millimetre-wave scattering phase function of snowflakes using the Self-Similar Rayleigh-Gans Approximation, *Q. J. R. Meteorol. Soc.*, 143, 834-844, doi:10.1002/qj.2968.
25. Acquistapace, C., **S. Kneifel**, U. Löhnert, P. Kollias, M. Maahn, and M. Bauer-Pfundstein, 2017: Optimizing observations of drizzle onset with millimeter-wavelength radars, *Atmos. Meas. Tech.*, 10, 1783-1802, doi:10.5194/amt-10-1783-2017.

2016

26. De Angelis, F., D. Cimini, J. Hocking, P. Martinet, and **S. Kneifel**, 2016: RTTOV-gb - Adapting the fast radiative transfer model RTTOV for the assimilation of ground-based microwave radiometer observations, *Geosci. Model Dev.*, 9, 2721-2739, doi:10.5194/gmd-9-2721-2016.
27. **Kneifel S.**, P. Kollias, A. Battaglia, J. Leinonen, M. Maahn, H. Kalesse, and F. Tridon, 2016: First Observations of Triple Frequency Radar Doppler Spectra in Snowfall, 2016: Interpretation and Applications, *Geophys. Res. Lett.*, 43, 2225–2233, doi: 10.1002/2015GL067618.
28. Kalesse, H., W. Szyrmer, **S. Kneifel**, P. Kollias, and E. Luke, 2016: Fingerprints of a riming event on cloud radar Doppler spectra: observations and modeling, *Atmos. Chem. Phys.*, 16, 2997-3012, doi:10.5194/acp-16-2997-2016.
29. Turner, D. D., **S. Kneifel**, and M. P. Cadetdu, 2016: An Improved Liquid Water Absorption Model in the Microwave for Supercooled Liquid Water Clouds, *J. Atmos. Oceanic Tech.*, 33, 33-44, doi: 10.1175/JTECH-D-15-0074.1.

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30. **Kneifel S.**, A. von Lerber, J. Tiira, D. Moisseev, P. Kollias, and J. Leinonen, 2015: Observed Relations between Snowfall Microphysics and Triple-frequency Radar Measurements, *J. Geophys. Res.*, 120, 6034-6055, doi: 10.1002/2015JD023156.
31. Gorodetskaya, I. V., **S. Kneifel**, M. Maahn, K. Van Tricht, W. Thiery, J. H. Schween, A. Mangold, S. Crewell, and N. P. M. Van Lipzig, 2015: Cloud and precipitation properties from ground-based remote-sensing instruments in East Antarctica, *The Cryosphere*, 9, 285-304, doi:10.5194/tc-9-285-2015.
32. Bollmeyer, C., J. Keller, C. Ohlwein, S. Bentzien, S. Crewell, P. Friedrichs, A. Hense, J. Keune, **S. Kneifel**, I. Pscheidt, S. Redl, and S. Steinke, 2015: Towards a high-resolution

regional reanalysis for the European CORDEX domain, *Q. J. R. Meteorol. Soc.*, 141, 1–15, doi:10.1002/qj.2486.

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33. Maahn M., C. Burgard, S. Crewell, I. V. Gorodetskaya, **S. Kneifel**, S. Lhermitte, K. Van Tricht, and N. P. M. Van Lipzig, 2014: How does the space-borne radar blind-zone affect derived surface snowfall statistics in polar regions?, *J. Geophys. Res.*, 119, 13604–13620, doi:10.1002/2014JD022079
34. **Kneifel, S.**, S. Redl, E. Orlandi, U. Löhnert, M. P. Cadetdu, D. D. Turner, and M-T. Chen, 2014: Absorption Properties of Supercooled Liquid Water between 31 and 225 GHz: Evaluation of Absorption Models Using Ground-based Observations, *J. Appl. Meteor. Climatol.*, 53, 1028-1045, doi:10.1175/JAMC-D-13-0214.1
35. Battaglia, A., C. D. Westbrook, **S. Kneifel**, P. Kollias, N. Humpage, U. Löhnert,, J. Tyynelä, and G. W. Petty, 2014: G-band atmospheric radars: new frontiers in cloud physics, *Atmos. Meas. Tech.*, 7, 1527-1546, doi:10.5194/amt-7-1527-2014.
36. Kulie, M. S., M. J. Hiley, R. Bennartz, **S. Kneifel**, and S. Tanelli, 2014: Triple frequency radar reflectivity signatures of snow: Observations and comparisons to theoretical ice particle scattering models, *J. Appl. Meteor. Climatol.*, 53, 1080–1098, doi:10.1175/JAMC-D-13-066.1.

2012

37. Leinonen, J., **S. Kneifel** , D. Moiseev , J. Tyynelä , S. Tanelli, and T. Nousiainen, 2012: Evidence of nonspheroidal behavior in millimeter-wavelength radar observations of snowfall, *J. Geophys. Res.*, 117, D18205, doi:10.1029/2012JD017680.
38. Xie, X., U. Löhnert, **S. Kneifel**, and S. Crewell, 2012: Snow particle orientation observed by ground-based microwave radiometry, *J. Geophys. Res.*, 117, D02206, doi:10.1029/2011JD016369.

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39. **Kneifel, S.**, M. Maahn, G. Peters and C. Simmer, 2011: Observation of snowfall with a low-power FM-CW K-band radar (Micro Rain Radar), *Meteorol. Atmos. Phys.*, 113, 75-87. doi:10.1007/s00703-011-0142-z.
40. **Kneifel, S.**, M. S. Kulie, and R. Bennartz, 2011: A triple-frequency approach to retrieve microphysical snowfall parameters, *J. Geophys. Res.*, 116, D11203, doi:10.1029/2010JD015430.

41. Löhnert, U., **S. Kneifel**, A. Battaglia, M. Hagen, L. Hirsch, and S. Crewell, 2011: A multi-sensor approach towards a better understanding of snowfall microphysics: The TOSCA project, *Bull. Amer. Meteor. Soc.*, 92, 613–628, doi: 10.1175/2010BAMS2909.1.

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42. **Kneifel, S.**, U. Löhnert, A. Battaglia, S. Crewell, and D. Siebler, 2010: Snow scattering signals in ground-based passive microwave measurements. *J. Geophys. Res.*, 115, D16214, doi:10.1029/2010JD013856.

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43. **Kneifel, S.**, S. Crewell, U. Löhnert and J. Schween, 2009: Investigating water vapor variability by groundbased microwave radiometry: Evaluation using airborne observations, *IEEE Geoscience and Remote Sensing Letters*, 6, 157-161, doi:10.1109/LGRS.2008.2007659.

B: Contributions to Books

Kneifel, S., J. Leinonen, J. Tyynelä, D. Ori, and A. Battaglia, 2020: Scattering of Hydrometeors. In V. Levizzani, C. Kidd, D. B. Kirschbaum, C. D. Kummerow, K. Nakamura, and F. J. Turk (Ed.), *Satellite Precipitation Measurement (Vol. 1)*, New York: Springer, ISBN: 978-3-030-24568-9.

Battaglia, A., S. Tanelli, F. Tridon, **S. Kneifel**, J. Leinonen, and P. Kollias, 2020: Triple-Frequency Radar Retrievals. . In V. Levizzani, C. Kidd, D. B. Kirschbaum, C. D. Kummerow, K. Nakamura, and F. J. Turk (Ed.), *Satellite Precipitation Measurement (Vol. 1)*, New York: Springer, ISBN: 978-3-030-24568-9.

C: Conference Proceedings, Extended Abstracts, Technical Reports

Conference Proceedings (peer-reviewed)

Kneifel, S., S. Crewell, S. Redl, S. Steinke, C. Ohlwein, J. Keller, P. Friederichs, A. Hense, C. Wosnitza, and I. Pscheidt, 2012: Retrospective analysis of regional climate: The German reanalysis project - potential of remote sensing observations, *Proceedings of the International Geoscience and Remote Sensing Symposium*, July 22-27, 2012, Munich, Germany, 3689-3692, doi: 10.1109/IGARSS.2012.6350615.

Extended Abstracts

Maahn, M., P. Kollias, **S. Kneifel**, I. Gorodetskaya, G. Peters and C. Simmer: Measuring snow with a low-power K-band radar (Micro Rain Radar) at high latitudes. *European Radar Conference (ERAD)*, 25-29 June 2012, Toulouse, France, 5 pp.

Kneifel, S., U. Löhnert, L. Hirsch, A. Battaglia, S. Crewell, and D. Siebler: Ground-based remote sensing of snowfall through active and passive sensor synergy, *8th International Symposium on Tropospheric Profiling: Needs and Technologies (ISTP)*, 18-23 October, 2009, Delft, The Netherlands, 3 pp.

Technical Reports

Gorodetskaya, I., N. P. M. van Lipzig., M. R. van den Broeke, W. Boot, C. Reijmer, A. Mangold, **S. Kneifel**, S. Crewell, and J. Schween: Ground-based observations of cloud properties, precipitation and meteorological conditions at Princess Elisabeth station in Dronning Maud Land, Antarctica, *BPRC Technical Report 2010-01, 5th Antarctic Meteorological Observation, Modeling, and Forecasting Workshop*, The Ohio State University, Columbus, Ohio, USA, 12-14 July 2010.

Kneifel, S.: Comparison of humidity data from the ATOVS and SEVIRI system with ground-based radiosonde, microwave radiometer and GPS measurements. Final Report for the Satellite Application Facility on Climate Monitoring (CM SAF), Meteorological Institute, University of Munich, Germany, 25 November 2005.

D: Invited Talks

Ice microphysical processes inferred from single and multi-frequency radars, *University of Granada, Andalusian Institute for Earth System Research*, Granada, Spain, Oct. 2019.

How can ground-based active and passive multi-frequency microwave sensors help to improve retrievals of precipitating cold clouds?, *Jet Propulsion Laboratory (JPL), Earth Science Collaboration Center Colloquium*, Pasadena, USA, Dec. 2016.

Investigating snowfall and other cold hydrometeor properties with ground-based microwave remote sensors, *Pennsylvania State University, Meteorology Colloquium*, USA, Sept. 2015.

Snowfall microphysics observed with triple-frequency radars, *University of Reading, Meteorology Seminar*, Reading, UK, Mar. 2015.

How well do we understand mid- and low level cold clouds? New approaches using microwave remote sensors, *University of Reading, Lunchtime Seminar*, Reading, UK, Jan. 2014.

Verification of reanalysis data using a modular forward operator for active and passive microwave instruments, *Climate Monitoring – Satellite Application Facility (CM-SAF/DWD) Seminar*, Offenbach, Apr. 2013.

Snowfall observed by active and passive microwave remote sensors, *University of Reading, Radar Seminar*, Reading, UK, May 2012.

E: Outreach

Pospichal, B., U. Löhnert, and **S. Kneifel**, 2018: Langzeitmessungen des Wolkenflüssigwassers mittels Mikrowellenradiometrie an der UFS. Umweltforschungsstation Schneefernerhaus - Wissenschaftliche Resultate 2017/2018, (accessible at www.schneefernerhaus.de).

Kneifel, S., U. Löhnert, B. Pospichal und S. Crewell, 2017: Unterkühltes Flüssigwasser - Langzeitliche Messungen an der UFS liefern die Basis für verbesserte globale Messmethoden. Umweltforschungsstation Schneefernerhaus - Wissenschaftliche Resultate 2015/2016 (accessible at www.schneefernerhaus.de).

Kneifel, S. and M. Barrera-Verdejo, 2016: How does a cloud form? Outreach video project in the framework of the EU-funded Marie Curie Initial Training Network "ITaRS - Initial Training for atmospheric Remote Sensing", available on Youtube: <https://youtu.be/gcdeuluWWEQ>

Kneifel, S. X. Xie, U. Löhnert, M. Hagen und S. Crewell, 2013: Untersuchung der mikrophysikalischen Eigenschaften von Schneefall am Schneefernerhaus mit Hilfe von Mikrowellenradiometern. Umweltforschungsstation Schneefernerhaus - Wissenschaftliche Resultate 2010/2011, (accessible at www.schneefernerhaus.de).

U. Löhnert, **S. Kneifel**, A. Battaglia, M. Hagen, L. Hirsch und S. Crewell, 2011: Ein Multi-Sensor Ansatz zum verbesserten Verständnis der Schneemikrophysik: Das TOSCA-Projekt. Umweltforschungsstation Schneefernerhaus - Wissenschaftliche Resultate 2009/2010, (accessible at www.schneefernerhaus.de).