

development of the Lyte probe. Partial support comes from the European Research Council (ERC) under the European Union's Horizon 2020 research and innovation program: Starting Grant- SNOWISO (759526).

REFERENCES

- Abe, O. Decker R., Sensoy B., Ikarash T., Ream D., Tremper B.: Snow Profile Observations for Avalanche Forecasts using the New Generation Rammsonde. *Journal of the Japanese Society of Snow and Ice* Volume 61, No. 5 369-375, 1999
- Brown R. L. and Birkeland K.: A Comparison of the Digital Resistograph with the Ram Penetrometer. Proceedings of the International Snow Science Workshop, Bigfork, MT, 9-13 October 1990, pp 19-30, 1990
- Bradley, C.: Instruments and Methods: The Resistograph and the Compressive Strength of Snow. *Journal of Glaciology*, volume 7, issue 51, pp 499-506. doi:10.3189/S0022143000020682, 1968
- Dowd, T., and Brown, R.: A New Instrument for Determining Strength Profiles in Snow Cover. *Journal of Glaciology*, Volume 32, Issue 111, pp 299-301. doi:10.3189/S0022143000015628, 1986.
- Floyer, J. : Layer detection and snowpack stratigraphy characterisation from digital penetrometer signals, Ph.D thesis, University of Calgary, 2008
- Garmin LiDAR Lite V3, https://static.garmin.com/pumac/LiDAR_Lite_v3_Operation_Manual_and_Technical_Specifications.pdf, July 29, 2023, 2016
- Hagenmuller P, van Herwijnen A., Pielmeier C., and Marshall HP: Evaluation of the snow penetrometer Avatech SP2. *Cold Regions Science and Technology*, 149, pp 83-94 1 May 2018, doi:10.1016/j.coldregions.2018.02.006, 2018
- Höller P., Fromm R.: Quantification of the hand hardness test, *Annals of Glaciology*, 51(54), 39-44. doi:10.3189/172756410791386454, 2010
- Johnson M., Taubenheim J., Eldred D., Stevenson R.: Bringing Near Infrared to Practice, Proceedings of the International Snow Science Workshop, Breckenridge, CO, 2-7 October 2016, pp 881-885, 2016
- Kistler Force Sensor 9207, http://www.helmar.com.pl/helmar/plik/9207_nn3857.pdf, 2005, last access 25 August, 2023
- Legacy Archive Forecast, South Columbia, Avalanche Canada, <https://avalanche.ca/forecasts/archive/pre-flexible-regions/2022-02-13>, last access: 6 July 2023
- Mackenzie R. and Payten W.: A Portable, Variable-Speed, Penetrometer for Snow Pit Evaluation, Proceedings of the International Snow Science Workshop, Penticton, B.C, 29 September - 4th October 2002, pp 294- 300, 2002
- Matzl, M., & Schneebeli, M.: Measuring specific surface area of snow by near-infrared photography. *Journal of Glaciology*, volume 52, issue 179, pp 558-564. doi:10.3189/172756506781828412, 2006
- Morrison T., L'Heureux C., Mitchell V., Alexander Q.: Conceptual Design of a Digital Snowpack Probe, Bachelor's thesis. Department of Civil Engineering, University of Calgary, 2008
- Pielmeier, C., and Schneebeli M.: Stratigraphy and changes in hardness of snow measured by hand, ramsonde and snow micro penetrometer: a comparison with planar sections. *Cold Regions Science and Technology* 37.3, 393-405, doi:10.1016/S0165-232X(03)00079-X, 2003
- Schneebeli, M. and Johnson, J.: A constant-speed penetrometer for high-resolution snow stratigraphy. *Annals of Glaciology*, 26, 107-111. doi:10.3189/1998AoG26-1-107-111, 1998
- Solbakken E. and Karlsnes Å.: The SP2 snow penetrometer: Accuracy and usability in terms of its intended use, avalanche forecasting. Bachelor's thesis, Western Norway University of Applied Sciences, 2017
- SnowMicroPen (SMP5 version), <https://www.slf.ch/de/services-und-produkte/forschungsinstrumente/snowmicropen.html>, last access: 4 July, 2023