Publication list Yves Bühler

Peer-reviewed ISI publications:

Ruttner-Jansen, P., Voordendag, A., Hartmann, T., Glaus, J., Wieser, A., and **Bühler, Y.** (2025): Monitoring snow depth variations in an avalanche release area using low cost LiDAR and optical sensors, *Natural Hazards and Earth System Sciences*, 2024, 1-20, 10.5194/egusphere-2024-744 (accepted, NHESS highlight paper).

Sykes, J., Haegeli, P., Atkins, R., Mair, P., and **Bühler, Y.** (2025): Development of operational decision support tools for mechanized ski guiding using avalanche terrain modelling, GPS tracking, and machine learning, *Natural Hazards and Earth System Sciences*, 2024, 1-60, 10.5194/nhess-2024-147 (accepted).

Magnusson, J., **Bühler, Y.**, Quéno, L., Cluzet, B., Mazzotti, G., Webster, C., Mott, R., and Jonas, T. (2025): High-resolution hydrometeorological and snow data for the Dischma catchment in Switzerland, Earth Syst. Sci. Data, 17, 703-717, 10.5194/essd-17-703-2025.

Ortner, G., Michel, A., Spieler, M. B. A., Christen, M., **Bühler, Y.**, Bründl, M., and Bresch, D. N. (2025): A novel approach for bridging the gap between climate change scenarios and avalanche hazard indication mapping, *Cold Regions Science and Technology*, 230, 10.1016/j.coldregions.2024.104355.

Manconi, A., **Bühler, Y.**, Stoffel, A., Gaume, J., Zhang, Q., and Tolpekin, V. (2024): Brief communication: Monitoring impending slope failure with very high-resolution spaceborne synthetic aperture radar, *Natural Hazards and Earth System Sciences*, 24, 3833-3839, 10.5194/nhess-24-3833-2024.

Hafner, E. D., Kontogianni, T., Caye Daudt, R., Oberson, L., Wegner, J. D., Schindler, K., and **Bühler, Y.** (2024): Interactive snow avalanche segmentation from webcam imagery: results, potential, and limitations, *The Cryosphere*, 18, 3807-3823, 10.5194/tc-18-3807-2024.

White, K. S., Hood, E., Wolken, G. J., Peitzsch, E. H., **Buhler, Y.**, Wikstrom Jones, K., and Darimont, C. T. (2024): Snow avalanches are a primary climate-linked driver of mountain ungulate populations, *Nature Communications Biology*, 7, 423, 10.1038/s42003-024-06073-0.

Kyburz, M. L., Sovilla, B., **Bühler, Y.**, and Gaume, J. (2024): Potential and challenges of depth-resolved three-dimensional MPM simulations: a case study of the 2019 'Salezer' snow avalanche in Davos, *Annals of Glaciology*, 1-14, 10.1017/aog.2024.14.

Dash, R. K., Bartelt, P., Zhuang, Y., **Bühler, Y.**, and Kanungo, D. P. (2024): Recent rock avalanche event of July 10, 2024, near Patalganga Langsi Tunnel on the Badrinath Highway of Chamoli district, Uttarakhand, India, *Landslides*, 22, 255-260, 10.1007/s10346-024-02411-9, 2024.

Zhuang, Y., Dawadi, B., Steiner, J., Dash, R. K., **Bühler, Y.**, Munch, J., and Bartelt, P. (2024): An earthquake-triggered avalanche in Nepal in 2015 was exacerbated by climate variability and snowfall anomalies, *Nature Communications Earth & Environment*, 5, 10.1038/s43247-024-01624-z.

Helbig, N., Mott, R., **Bühler, Y.**, Le Toumelin, L., and Lehning, M. (2024): Snowfall deposition in mountainous terrain: A statistical downscaling scheme from high-resolution model data on simulated topographies, *Frontiers in Earth Science*, 11, ARTN 130826910.3389/feart.2023.1308269.

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Hafner, E. D., Techel, F., Daudt, R. C., Wegner, J. D., Schindler, K., and **Bühler, Y.** (2023): Avalanche size estimation and avalanche outline determination by experts: reliability and implications for practice, *Natural Hazards and Earth System Sciences*, 23, 2895-2914, 10.5194/nhess-23-2895-2023.

Bührle, L. J., Marty, M., Eberhard, L. A., Stoffel, A., Hafner, E. D., and **Bühler, Y.** (2023): Spatially continuous snow depth mapping by aeroplane photogrammetry for annual peak of winter from 2017 to 2021 in open areas, *The Cryosphere*, 17, 3383-3408, 10.5194/tc-17-3383-2023.

Ortner, G., Bründl, M., Kropf, C. M., Röösli, T., **Bühler, Y.**, and Bresch, D. N. (2023): Large-scale risk assessment on snow avalanche hazard in alpine regions, *Natural Hazards and Earth System Sciences*, 23, 2089-2110, 10.5194/nhess-23-2089-2023.

Ringenbach, A., Bebi, P., Bartelt, P., Rigling, A., Christen, M., **Bühler, Y.**, Stoffel, A., and Caviezel, A. (2023): Shape still matters: rockfall interactions with trees and deadwood in a mountain forest uncover a new facet of rock shape dependency, *Earth Surface Dynamics*, 11, 779-801, 10.5194/esurf-11-779-2023.

Miller, A. D., Redpath, T. A. N., Sirguey, P., Cox, S. C., Bartelt, P., Bogie, D., Conway, J. P., Cullen, N. J., and **Bühler, Y.** (2023): Unprecedented Winter Rainfall Initiates Large Snow Avalanche and Mass Movement Cycle in New Zealand's Southern Alps/Kā Tiritiri o te Moana, *Geophysical Research Letters*, 50, 10.1029/2022gl102105.

Schmucki, G., Bartelt, P., **Bühler, Y.**, Caviezel, A., Graf, C., Marty, M., Stoffel, A., and Huggel, C. (2023): Towards an automated acquisition and parametrization of debris-flow prone torrent channel properties based on photogrammetric derived UAV data, *Earth Surface Processes and Landforms*, 10.1002/esp.5585.

Toft, H. B., Müller, K., Hendrikx, J., Jaedicke, C., and **Bühler, Y.** (2023): Can big data and random forests improve avalanche runout estimation compared to simple linear regression? *Cold Regions Science and Technology*, 211, 103844.

Daudt, R. C., Wulf, H., Hafner, E. D., **Bühler, Y.**, Schindler, K., and Wegner, J. D. (2023): Snow depth estimation at country-scale with high spatial and temporal resolution, *ISPRS Journal of Photogrammetry and Remote Sensing*, 197, 105-121.

Bühler, Y., Bebi, P., Christen, M., Margreth, S., Stoffel, L., Stoffel, A., Marty, C., Schmucki, G., Caviezel, A., Kühne, R., Wohlwend, S., and Bartelt, P. (2022): Automated avalanche hazard indication mapping on a statewide scale, *Natural Hazards Earth System Sciences*, 22, 1825-1843, 10.5194/nhess-22-1825-2022.

Ringenbach, A., Bebi, P., Bartelt, P., Rigling, A., Christen, M., **Bühler, Y.**, Stoffel, A., and Caviezel, A. (2022): Modeling deadwood for rockfall mitigation assessments in windthrow areas, *Earth Surface Dynamics*, 10, 1303-1319, 10.5194/esurf-10-1303-2022.

Sykes, J., Haegeli, P., and **Bühler, Y**. (2022): Automated snow avalanche release area delineation in data-sparse, remote, and forested regions, *Natural Hazards and Earth System Sciences*, 22, 3247-3270, 10.5194/nhess-22-3247-2022.

Miller, A., Sirguey, P., Morris, S., Bartelt, P., Cullen, N., Redpath, T., Thompson, K., and **Bühler, Y.** (2022): The impact of terrain model source and resolution on snow avalanche modeling, *Natural Hazards and Earth System Sciences*, 22, 2673-2701, 10.5194/nhess-22-2673-2022.

Hafner, E. D., Barton, P., Daudt, R. C., Wegner, J. D., Schindler, K., and **Bühler, Y.** (2022): Automated avalanche mapping from SPOT 6/7 satellite imagery with deep learning: results, evaluation, potential and limitations, *The Cryosphere*, 16, 3517-3530, 10.5194/tc-16-3517-2.

Ringenbach, A., Stihl, E., **Bühler, Y.**, Bebi, P., Bartelt, P., Rigling, A., Christen, M., Lu, G., Stoffel, A., Kistler, M., Degonda, S., Simmler, K., Mader, D., and Caviezel, A. (2022): Full-scale experiments to examine the role of deadwood in rockfall dynamics in forests, *Natural Hazards and Earth System Sciences*, 22, 2433-2443, 10.5194/nhess-22-2433-2022.

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Gain, A. K., **Bühler, Y.**, Haegeli, P., Molinari, D., Parise, M., Peres, D. J., Pinto, J. G., Schröter, K., Trigo, R. M., Llasat, M. C., and Kreibich, H. (2022): Brief communication: Key papers of 20 years in Natural Hazards and Earth System Sciences, *Natural Hazards Earth System Sciences*, 22, 985-993, 10.5194/nhess-22-985-2022.

Ivanova, K., Caviezel, A., **Bühler, Y.**, and Bartelt, P.: Numerical modeling of turbulent geophysical flows using a hyperbolic shear shallow water model (2021): Application to powder snow avalanches, *Computers & Fluids*, 105211, https://doi.org/10.1016/j.compfluid.2021.105211.

Helbig, N., Schirmer, M., Magnusson, J., Mäder, F., van Herwijnen, A., Quéno, L., **Bühler, Y.**, Deems, J. S., and Gascoin, S. (2021): A seasonal algorithm of the snow-covered area fraction for mountainous terrain, *The Cryosphere*, 15, 4607-4624, 10.5194/tc-15-4607-2021.

Caviezel, A., Ringenbach, A., Demmel, S. E., Dinneen, C. E., Krebs, N., **Bühler, Y.**, Christen, M., Meyrat, G., Stoffel, A., Hafner, E., Eberhard, L. A., Rickenbach, D. v., Simmler, K., Mayer, P., Niklaus, P. S., Birchler, T., Aebi, T., Cavigelli, L., Schaffner, M., Rickli, S., Schnetzler, C., Magno, M., Benini, L., and Bartelt, P. (2021): The relevance of rock shape over mass—implications for rockfall hazard assessments, *Nature Communications*, 12, 10.1038/s41467-021-25794-y.

Hafner, E. D., Techel, F., Leinss, S., and **Bühler, Y.** (2021): Mapping avalanches with satellites – evaluation of performance and completeness, *The Cryosphere*, 15, 983-1004, 10.5194/tc-15-983-2021.

Helbig, N., **Bühler, Y.**, Eberhard, L., Deschamps-Berger, C., Gascoin, S., Dumont, M., Revuelto, J., Deems, J. S., and Jonas, T. (2021): Fractional snow-covered area: scale-independent peak of winter parameterization, *The Cryosphere*, 15, 615-632, 10.5194/tc-15-615-2021.

Eberhard, L. A., Sirguey, P., Miller, A., Marty, M., Schindler, K., Stoffel, A., and **Bühler, Y.** (2021): Intercomparison of photogrammetric platforms for spatially continuous snow depth mapping, *The Cryosphere*, 15, 69-94, 10.5194/tc-15-69-2021.

Leinss, S., Wicki, R., Holenstein, S., Baffelli, S., and **Bühler, Y.** (2020): Snow avalanche detection and mapping in multitemporal and multiorbital radar images from TerraSAR-X and Sentinel-1, *Natural Hazards Earth System Sciences*, 20, 1783-1803, 10.5194/nhess-20-1783-2020.

Walter, B., Huwald, H., Gehring, J., **Bühler, Y.**, and Lehning, M. (2020): Radar measurements of blowing snow off a mountain ridge, *The Cryosphere*, 14, 1779-1794, 10.5194/tc-14-1779-2020.

Krasilnikov, S. S., Kuzmin, R. O., **Bühler, Y.**, and Zabalueva, E. V. (2020): Formation of long-distance water ice avalanches on mars, *Planetary and Space Science*, 186, 10.1016/j.pss.2020.104917.

Brožová, N., Fischer, J.-T., **Bühler, Y.**, Bartelt, P., and Bebi, P. (2020): Determining forest parameters for avalanche simulation using remote sensing data, *Cold Regions Science and Technology*, 172, 10.1016/j.coldregions.2019.102976.

Bühler, Y., Hafner, E., Zweifel, B., Zesiger, M. and Heisig, H. (2019): Where are the avalanches? Rapid SPOT6 satellite data acquisition to map an extreme avalanche period over the Swiss Alps, *The Cryosphere*, 13(12), 3225-3238, doi:10.5194/tc-13-3225-2019.

Caviezel, A., Demmel, S. E., Ringenbach, A., **Bühler, Y.**, Lu, G., Christen, M., Dinneen, C. E., Eberhard, L. A., von Rickenbach, D., and Bartelt, P.(2019): Reconstruction of four-dimensional rockfall trajectories using remote sensing and rock-based accelerometers and gyroscopes, *Earth Surface Dynamics*, 7, 199-210, 10.5194/esurf-7-199-2019.

Lu, G., Caviezel, A., Christen, M., Demmel, S. E., Ringenbach, A., **Bühler, Y.**, Dinneen, C. E., Gerber, W., and Bartelt, P.(2019): Modelling rockfall impact with scarring in compactable soils, *Landslides*, 10.1007/s10346-019-01238-z.

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Eker, R., **Bühler, Y.**, Schlögl, S., Stoffel, A., and Aydın, A. (2019): Monitoring of Snow Cover Ablation Using Very High Spatial Resolution Remote Sensing Datasets, *Remote Sensing*, 11, 10.3390/rs11060699.

Bühler, Y., von Rickenbach, D., Stoffel, A., Margreth, S., Stoffel, L., and Christen, M. (2018): Automated snow avalanche release area delineation – validation of existing algorithms and proposition of a new object-based approach for large-scale hazard indication mapping, *Natural Hazards Earth System Sciences*, 18, 3235-3251, 10.5194/nhess-18-3235-2018.

Kääb, A., S. Leinss, A. Gilbert, **Y. Bühler**, S. Gascoin, S. G. Evans, P. Bartelt, E. Berthier, F. Brun, W.-A. Chao, D. Farinotti, F. Gimbert, W. Guo, C. Huggel, J. S. Kargel, G. J. Leonard, L. Tian, D. Treichler and T. Yao (2018): Massive collapse of two glaciers in western Tibet in 2016 after surge-like instability. *Nature Geoscience*, doi: 10.1038/s41561-017-0039-7

Bühler, Y., Adams, M., Stoffel, A. and Boesch R. (2017): Photogrammetric reconstruction of homogenous snow surfaces in alpine terrain applying near infrared UAS imagery, *International Journal of Remote Sensing*, doi:10.1080/01431161.2016.1275060.

Adams, M. S., **Bühler, Y.**, and Fromm, R. (2018): Multitemporal Accuracy and Precision Assessment of Unmanned Aerial System Photogrammetry for Slope-Scale Snow Depth Maps in Alpine Terrain, *Pure and Applied Geophysics*, 175, 3303-3324, 10.1007/s00024-017-1748-y.

Caviezel, A., Schaffner, M., Cavigelli, L., Niklaus, P., **Bühler, Y.**, Bartelt, P., Magno, M., and Benini, L. (2018): Design and Evaluation of a Low-Power Sensor Device for Induced Rockfall Experiments, *IEEE Transactions on Instrumentation and Measurement*, 67, 767-779, 10.1109/TIM.2017.2770799.

Lucas, C., Leinss, S., **Bühler, Y.**, Marino, A., and Hajnsek, I. (2017): Multipath Interferences in Ground-Based Radar Data: A Case Study, *Remote Sensing*, 9, 1260.

Korzeniowska, K., **Y. Bühler**, M. Marty, and O. Korup (2017): Regional snow-avalanche detection using object-based image analysis of near-infrared aerial imagery, *Natural Hazards and Earth System Sciences*, 17(10), 1823-1836, doi:10.5194/nhess-17-1823-2017.

Kenner, R., M. Phillips, C. Hauck, C. Hilbich, C. Mulsow, **Y. Bühler**, A. Stoffel, and M. Buchroithner (2017): New insights on permafrost genesis and conservation in talus slopes based on observations at Flüelapass, Eastern Switzerland, *Geomorphology*, 290, 101-113, doi:10.1016/j.geomorph.2017.04.011.

Semakova, E., and **Y. Bühler** (2017): TerraSAR-X/TanDEM-X data for natural hazards research in mountainous regions of Uzbekistan, *Journal of Applied Remote Sensing*, 11(03), 1, doi:10.1117/1.JRS.11.036024.

Wendeler, C., **Bühler, Y.**, Bartelt, P., Glover, J. and Luis, R. (2017): Application of three-dimensional rockfall modeling to rock-face, *Engineering, Geomechanics and Tunneling*, 10, 74 - 80.

Bühler, Y., Adams, M., Bösch, R., and Stoffel, A. (2016): Mapping snow depth in alpine terrain with unmanned aerial systems (UASs): potential and limitations, *The Cryosphere*, 10, 1075-1088.

Valero, C.V., Wever, N., **Bühler, Y.**, Stoffel, L., Margreth, S., and Bartelt, P., (2016): Modelling wet snow avalanche runout to assess road safety at a high-altitude mine in the central Andes. *Natural Hazards and Earth System Sciences*, 16, 11: 2303-2323.

Phillips, M., Wolter, A., Lüthi, R., Amann, F., Kenner, R. and **Bühler, Y.** (2016): Rock slope failure in a recently deglaciated permafrost rock wall at Piz Kesch (Eastern Swiss Alps), February 2014. *Earth Surface Processes and Landforms*, doi:10.1002/esp.3992.

Frey, H., Huggel, C., **Bühler, Y.**, Buis, D., Dulce Burga, M., Choquevilca, W., Fernandez, F., Garcia Hernandez, J., Giraldez, C., Masias, P., Portocarrero, C., Vicuna, L. & Walser, M. (2016): A robust debris-flow and GLOF risk management strategy for a data-scarce catchment in Santa Teresa, Peru. *Landslides.* doi: 10.1007/s10346-015-0669-z, 2016. 1-15

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Dreier, L., **Bühler, Y.**, Dufour, F., Ginzler, C. & Bartelt, P. (2016): Comparison of simulated powder snow avalanche velocities, volumes and flow widths with photogrammetric measurements. *Annals of Glaciology*, 57, 371 - 381.

Eckerstorfer, M., **Bühler, Y.**, Frauenfelder, R. and Malnes, E. (2016): Remote sensing of snow avalanches: Recent advances, potential, and limitations, *Cold Regions Science and Technology*, 121, 126-140.

Bartelt, P., Buser, O., Valero, C. V. and **Bühler, Y.** (2016): Configurational energy and the formation of mixed flowing/powder snow and ice avalanches, *Annals of Glaciology*, 57(71), 179 – 188.

Bühler, Y., Marty, M., Egli, L., Veitinger, J., Jonas, T., Thee, P. & Ginzler, C. (2015): Spatially continuous mapping of snow depth in high alpine catchments using digital photogrammetry. *The Cryosphere*, 9 (1), 229 – 243.

Bühler, Y., Meier, L., Ginzler, C. (2015): Potential of high spatial resolution near infrared remote sensing instruments for snow surface type mapping in alpine terrain. *IEEE Geoscience and Remote Sensing Letters*, 12 (4), 1 - 5.

Caduff, R., Wiesmann, A., **Bühler, Y.** & Pielmeier, C. (2015): High spatial and temporal resolution continuous monitoring of snowpack displacement with terrestrial radar interferometry. *Geophysical Research Letters*, 42, DOI: 10.1002/2014GL062442.

Bartelt, P., Vera Valero, C., Feistl, T., Christen, M., **Bühler, Y.** & Buser, O. (2015): A Model for Cohesion in Snow Avalanche Flow. *Journal of Glaciology*, 61 (229), 837 – 850.

Vera Valero, C., Wikstroem Jones, K., **Bühler, Y.** & Bartelt, P. (2015): Release Temperature, Snow cover Entrainment and the Thermal Flow Regime of Snow Avalanches. *Journal of Glaciology*, 61 (225), 173 - 184.

Grünewald, T., **Bühler, Y.** & Lehning, M. (2014): Elevation dependency of mountain snow depth. *The Cryosphere*, 8, 2381 - 2394.

Aydin, A., **Bühler, Y.**: Christen, M. & Gürer, I. (2014): Avalanche situation in Turkey and back calculation of selected events. *Natural Hazards and Earth System Sciences*, 14, 1145–1154.

Bartelt, P., Buser, O., **Bühler, Y.,** Dreier, L. & Christen, M. (2014): Numerical simulation of snow avalanches: Modelling dilatative processes with cohesion in rapid granular shear flows. *Numerical Methods in Geotechnical Engineering* – Hicks, Brinkgreve & Rohe (Eds). 2014 Taylor & Francis Group, London, 978-1-138-00146-6.

Feistl, T., **Bühler, Y.**, Christen, M., Bebi, P., Teich, M. Thuro, K., Bartelt, P. (2014): Observations and modeling of the breaking effect of forests on snow avalanche flow. *Journal of Glaciology*, 60 (209), 124 - 138.

Kenner, R., **Bühler, Y.**, Delaloye, R., Ginzler, C. & Phillips, M. (2014): Monitoring of high alpine mass movements combining laser scanning with digital airborne photogrammetry. *Geomorphology*, 206: 492 - 504.

Bühler, Y., Kumar, S., Veitinger, J., Stoffel, A., Christen, M. & Snehmani (2013): Automated Identification of Potential Snow Avalanche Release Zones based on Remote Sensing Data. *Natural Hazards and Earth System Sciences*, 13 (5), 1321 - 1335.

Lato, M., Frauenfelder, R. & **Bühler, Y.** (2012): Automated avalanche deposit detection of fresh snow avalanches: Segmentation and classification of optical remote sensing imagery. *Natural Hazards and Earth System Sciences.* 12, 1 – 14.

Bartelt, P., Feistl, T., **Bühler, Y**. & Buser, O. (2012): Overcoming the stauchwall: Viscoelastic stress redistribution and the start of full-depth gliding snow avalanches. *Geophysical Research Letters.* 39 (16), L16501.

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Bartelt, P., Glover, J., Feistl, T., **Bühler, Y.** & Buser, O. (2012): Formation of levees and en-echelon shear planes during snow avalanche runout. *Journal of Glaciology*, 58 (211), 980 – 992.

Bühler, Y., Marty, M. & Ginzler, Ch. (2012): High resolution DEM generation in high-alpine terrain using airborne remote sensing techniques. *Transactions in GIS*, 16 (5), 635 - 647.

Bartelt, P., **Bühler, Y.**, Buser, O., Christen, M. & Meier, L. (2012): Modeling mass-dependent flow regime transitions to predict the stopping and depositional behavior of snow avalanches, *Journal of Geophysical Research*, 117, F01015, doi:10.1029/2010JF001957.

Sovilla, B., Sonatore, I., **Bühler, Y.** & Margreth, S. (2012): A case-study of wet-snow avalanche interacting with a deflecting dam: Field observations and numerical simulations. *Natural Hazards and Earth System Sciences*, 2, 1407–1423.

Bühler, Y., Christen, M., Kowalski, J. & Bartelt, P. (2011): Sensitivity of snow avalanche simulations to digital elevation model quality and resolution. *Annals of Glaciology*, 52(58), 72–80.

Bühler, Y., Hüni, A., Christen, M., Meister, R. & Kellenberger, T. (2009): Automated detection and mapping of avalanche deposits using airborne optical remote sensing data. *Cold Regions Science and Technology*, 57, 99 – 106.

Forster, D., **Buehler, Y.** & Kellenberger, T. W. (2009): Mapping urban and peri-urban agriculture using high spatial resolution satellite data. *Journal of Applied Remote Sensing, 3*, 1 – 12.

Forster, D., Kellenberger, T. W., **Buehler, Y.** & Lennartz, B. (2008): Mapping diversified peri-urban agriculture – Potential of object-based versus per-field land cover/land use classification. *Geocarto International.*

Itten, K. I., Dell'Endice, F., Hueni, A., Kneubuhler, M., Schlaper, D., Odermatt, D., Seidel, F., Huber, S., Schopfer, J., Kellenberger, T., **Bühler, Y.**, D'Odorico, P., Nieke, J., Alberti, E. & Meuleman, K (2008): APEX - the Hyperspectral ESA Airborne Prism Experiment *Sensors, 8*, 6235-6259.

Buehler, Y. A. and Kellenberger, T. W. (2007): Development Of Processing Chains For Rapid Mapping With Satellite Data, in: *Lec Not Geo Carto*, edited by: Li, J., Zlatanova, S., and Fabbri, A. G., Springer Berlin Heidelberg, Berlin, Heidelberg, 49-60, 10.1007/978-3-540-72108-6_4.

Buehler, Y. A., Kellenberger, T. W., Small, D., Itten, K. I., Martin-Duque, J., Brebbia, C., Emmanouloudis, D., and Mander, U. (2006): Rapid mapping with remote sensing data during flooding 2005 in Switzerland by object-based methods: a case study, in: *Wit Trans Ecol Envir*, 391-400, 10.2495/GEO060391.

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Outreach publications and reports:

Bühler, Y., Stoffel, A., and Liechti, D. (2024): Where to put the weather station? Optimizing the location for automated snow depth measurements based on remote sensing, avalanche modeling and terrain characteristics, *International Snow Science Workshop (ISSW 2024)*, September 23-27.

Glaus, J., Wikstrom Jones, K., Kleinn, J., Stoffel, L., Ruttner-Jansen, P., Gaume, J., and **Bühler, Y.** (2024): Probability-based avalanche run-out mapping for road safety, *International Snow Science Workshop (ISSW 2024)*, September 23-27.

Ruttner-Jansen, P., Voordendag, A., Glaus, J., Wieser, A., and **Bühler, Y.** (2024): Snow depth variability in an avalanche release zone: one season of measurements and topographic relations, *International Snow Science Workshop (ISSW 2024)*, September 23-27.

Hafner, E. D., Techel, F., Heisig, H., Dal, J. F., and **Bühler, Y.** (2024): Remotely sensed avalanche activity during three extreme avalanche periods in Switzerland, *International Snow Science Workshop (ISSW 2024)*, September 23-27.

Fergus Dal, J., Hafner, E. D., Peters, T., Narnhofer, D., Caye Daudt, R., Heisig, H., and **Bühler, Y.** (2024): Automated snow avalanche mapping with deep learning in aerial imagery from the extreme avalanche winter of 1999, *International Snow Science Workshop (ISSW 2024)*, September 23-27.

Stoffel, A., Harvey, S., and **Bühler, Y.** (2024): On the influence of snow depth on surface shape and roughness in the release areas of observed skier-triggered avalanches, *International snow science workshop (ISSW 2024)*, September 23-27.

Harvey, S., Christen, M., **Bühler, Y.**, Hänni, C., Boos, N., and Bernegger, B.: Refined Swiss avalanche terrain mapping CATv2/ ATHv2, *International Snow Science Workshop (ISSW 2024)*, September 23-27.

Bartelt, P., Stoffel, L., Christen, M., and **Bühler, Y.** (2024): Grain flow theory and snow avalanche rheology, *International Snow Science Workshop (ISSW 2024)*, September 23-27.

Klein, J., **Bühler, Y.**, Glaus, J., Aller, D., Berger, C., Rinderer, M., Hählen, N., Peter, A., and Singeisen, C.: (2024) A probability-based modelling approach beyond a few selected return periods for comprehensive and robust hazard and risk assessment, *International Snow Science Workshop (ISSW 2024)*, September 23-2.

White, K. S., Levi, T., Hood, E., Wolken, G. J., Peitzsch, E. H., **Bühler, Y.**, Wikstrom Jones, K., and Darimont, C. T. (2024): An analytical approach for simulating effects of avalanches on mountain goat population dynamics: implications for management and conservation, *International Snow Science Workshop (ISSW 2024)*, September 23-27.

Aasen H., Alselmetti F., Bachmann O., Bouffard D., Buchmann N., **Bühler Y.,** Schaub M. (2024): Geosciences community roadmap 2024. Update of Swiss community needs for research infrastructures 2029–2032. (Swiss Academies reports, Report No.: 19/8). Swiss Academy of Sciences (SCNAT). 36 p. doi:10.5281/zenodo.14264991

Bühler, Y., Stoffel, A., Eberhard, L., and Bührle, L. (2024): Fotogrammetrische Schneehöhenkartierung aus Drohnen-, Flugzeug-- und Satellitenbildern, *Forum für Wissen 2023*. Neue Fernerkundungstechnologien für die Umweltforschung und Praxis., WSL Birmensdorf, doi.org/10.55419/wsl:33072.

Munch, J., **Bühler, Y.**, Zhuang, Y., Manconi, A., and Bartelt, P. (2024): Understanding flow transitions in multi-component avalanches, *Interpraevent 2024*, June 10-13, 2024, 2024.

Glaus, J., Jones, K. W., **Bühler, Y.**, Christen, M., Ruttner-Jansen, P., Gaume, J., and Bartelt, P.(2023): RAMMS::EXTENDED - SENSITIVITY ANALYSIS OF NUMERICAL FLUIDIZED

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POWDER AVALANCHE SIMULATION IN THREE-DIMENSIONAL TERRAIN, *International Snow Science Workshop ISSW*, Bend, Oregon, USA2023.

Ruttner-Jansen, P., Glaus, J., Wieser, A., and **Bühler, Y.** (2023): A MEASUREMENT SYSTEM FOR MAPPING SNOW DISTRIBUTION CHANGES IN AN AVALANCHE RELEASE ZONE, *International Snow Science Workshop ISSW*, Bend, Oregon, USA2023.

Marshall, H. P. and **Bühler, Y.** (2023): AIRBORNE AND SPACEBORNE SNOW REMOTE SENSING WITH OPTICAL AND MICROWAVE SENSORS: A REVIEW OF CURRENT APPROACHES AND FUTURE OUTLOOK FOR AVALANCHE APPLICATIONS, *International Snow Science Workshop ISSW*, Bend, Oregon, USA2023.

Jones, K. W., Wolken, G., McKee, M., Bartelt, P., **Bühler, Y.,** and Christen, M.(2023): USING SNOW REMOTE SENSING AND AVALANCHE SIMULATIONS TO INFORM THE PLACEMENT OF REMOTE AVALANCHE CONTROL SYSTEMS, *International Snow Science Workshop ISSW*, Bend, Oregon, USA2023.

Sykes, J., Haegeli, P., Atkins, R., Mair, P., and **Bühler, Y.** (2023): QUANTITATIVELY CAPTURING DECISION-MAKING PRACTICES OF MECHANIZED SKI GUIDES USING GPS TRACKING, AVALANCHE TERRAIN MODELING AND BAYESIAN NETWORKS, *International Snow Science Workshop ISSW*, Bend, Oregon, USA2023.

Dasser, G., Munch, J., **Bühler, Y.**, Bartelt, P., and Manconi, A. (2023): Applied space-borne remote sensing to identify mass movements and the exemplary modelling of potentially catastrophic failures in the Bhagirathi Area, India, *43. Jahrestagung der DGPF*, München, Germany.

Hafner, E. and **Bühler, Y.** (2023): Verwendung von optischen Satellitenbildern zur grossflächigen Kartierung von Lawinen, *Forum für Wissen 2023*. Neue Fernerkundungstechnologien für die Umweltforschung und Praxis., WSL Birmensdorf, doi.org/10.55419/wsl:33068, 2023.

Bühler, Y., Bebi, P., Christen, C., Margreth, S., Stoffel, A., Stoffel, L., Marty, C., Bartelt, P., and Kühne, R. (2022): Automatisch berechnete Gefahrenhinweiskarten für Lawinen, *Wildbach- und Lawinenverbau*, Naturgefahren im Klimawandel, 86, 88 - 95.

Bühler, Y., Hafner, E. and Techel, F. (2021): Mapping avalanches with Satellites – the vision of more complete avalanche datasets, *IEEE IGARSS* Proceedings.

Bühler, Y., Bührle, L., Eberhard, L., Marty, M. und Stoffel, A. (2021): Grossflächige Schneehöhen-Kartierung mit Flugzeug und Satellit, *Geomatik Schweiz*. 9/2021, 20 – 23.

Bühler, Y., Bebi, P. Christen, M., Margreth, S., Stoffel, L., Stoffel, A., Marty, C., Schmucki, G. und von Rickenbach, D. (2020): Gefahrenhinweiskarte Lawinen Kanton Graubünden, WSL- Institut für Schnee- und Lawinenforschung SLF.

Bühler, Y., Bebi, P. Christen, M., Margreth, S., Stoffel, L., Stoffel, A., Marty, C., Schmucki, G. und von Rickenbach, D. (2020): Gefahrenhinweiskarte Lawinen Liechtenstein, WSL- Institut für Schnee- und Lawinenforschung SLF.

Leiterer, R., Wulf, H., G., M., Sassik, B., **Bühler, Y.**, and Wegner, J. D. (2020): Schneekartierung aus dem All – das Potenzial frei verfügbarer Satellitendaten, *Wasser Energie Luft*, 112, 4.

Ringenbach, A., Caviezel, A., Demmel, S. E., Lu, G., **Bühler, Y.**, Christen, M., Bartelt, P., and Meier, L. (2020): Three-dimensional trajectory reconstruction of induced single block Rockfall experiments, *Rock Mechanics for Natural Resources and Infrastructure Development*- Proceedings of the 14th International Congress on Rock Mechanics and Rock Engineering, ISRM 2019, 2887-2894.

Noetzli, C., **Bühler, Y.**, Lorenzi, D., Stoffel, A., and Rohrer, M. (2019): Schneedecke als Wasserspeicher - Drohnen können helfen, die Abschätzungen der Schneereserven zu verbessern, *Wasser, Energie, Luft*, 111, 2019.

Bühler, Y., Stoffel, A., Eberhard, L., Feuerstein, G.C., Lurati, D. and Guler, A., (2018):

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Drohneneinsatz für die Kartierung der Schneehöhenverteilung. *Bündner Wald*, 71(8).

Mulsow, C., Kenner, R., **Bühler, Y.**, Stoffel, A. and Maas, H.G., (2018) Subaquatic Digital Elevation Models from Uav-Imagery. ISPRS - *International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences*, XLII-2: 739-744.

Bühler, Y., von Rickenbach, D., Christen, M., Margreth, S., Stoffel, L., Stoffel, A. and Kühne, R., (2018): Linking modelled potential release areas with avalanche dynamic simulations: An automated approach for efficient avalanche hazard indication mapping, *International Snow Science Workshop ISSW*, Innsbruck, Austria.

Eberhard, L., Marty, M., Stoffel, A., Kenner, R. and **Bühler, Y.**, (2018): Photogrammetric snow depth mapping: evaluation of different platforms and sensors, *International Snow Science Workshop ISSW*, Innsbruck, Austria.

Eker, R., Aydın, A., **Bühler, Y.** and Stoffel, A., (2018): SfM-based 3D point clouds in determination of snow depth from high-resolution UAS data as alternative methods: Is it possible to use?, *International Snow Science Workshop ISSW*, Innsbruck, Austria.

Harvey, S., Schmudlach, G., **Bühler, Y.**, Dürr, L., Stoffel, A. and Christen, C., (2018): Avalanche terrain maps for backcountry skiing in switzerland, *International Snow Science Workshop ISSW*, Innsbruck, Austria.

Maggioni, M., Bovet, E., Freppaz, M., Segor, V. and **Bühler, Y.**, (2018): Potential of automated avalanche dynamic simulations for large scale hazard indication mapping in italy: a first test appli-cation in aosta valley, *International Snow Science Workshop ISSW*, Innsbruck, Austria.

Monti, F., Alberti, R., Comin, P., Wolynski, A. and **Bühler, Y.**, (2018): Automated identification of forest with protective function against snow avalanches in the Trento Province (Italy), *International Snow Science Workshop ISSW*, Innsbruck, Austria.

Semakova, E., Safronov, V., Mamaraimov, A., Nurtaev, B., Semakov, S. and **Bühler, Y.**, (2018): Applying numerical snow avalanche simulations for hazard assessment in the Kamchik pass area, Uzbekistan, *International Snow Science Workshop ISSW*, Innsbruck, Austria.

Bühler, Y., Christen, M., Margreth, S., Stoffel, L., Schär, M., Stoffel, A., Bebi, P. and Marty, C., (2017): Vorprojekt Gefahrenhinweiskarte Lawinen Kanton Graubünden, WSL- Institut für Schnee- und Lawinenforschung SLF.

Lucas, C., Hajnsek, I., Marino, A., & **Bühler, Y.,** (2016): Investigation of Snow Avalanches with Ground Based Ku-band Radar. In: EUSAR 2016. 11th European Conference on Synthetic Aperture Radar. 06 - 09 June, 2016, Hamburg, Germany. Electronic Proceedings. Berlin, VDE. 519-522.

Adams, M.S., **Bühler, Y.**, Boesch, R., Fromm, R., Stoffel, A. & Ginzler, C. (2016): Investigating the Potential of Low-Cost Remotely Piloted Aerial Systems for Monitoring the Alpine Snow Cover (RPAS4SNOW). Final Project Report, ÖAW – Austrian Academy of Sciences, Innsbruck (Austria), pp. 82.

Boesch, R.; **Bühler, Y**.; Marty, M.; Ginzler, C., (2016): Comparison of digital surface models for snow depth mapping with UAV and aerial cameras. In: Halounova, L.; Å afár, V.; Raju, P.L.N.; Plánka, L.; Ådímal, V.; Srinivasa Kumar, T.; Faruque, F.S.; Kerr, Y.; Ramasamy, S.M.; Comiso, J.; Hussin, Y.A.; Thenkabail, P.S.; Lavender, S.; Skidmore, A.; Yue, P.; Patias, P.; Altan, O.; Weng, Q. (eds.) XXIII ISPRS Congress, Commission VIII. 12-19 July 2016, Prague, Czech Republic. Vol. XLI-B8. 453-458.

Caduff, R.; Wiesmann, A.; **Bühler, Y**.; Bieler, C.; Limpach, P., (2016): Terrestrial radar interferometry for snow glide activity monitoring and its potential as precursor of wet snow avalanches. In: Koboltschnig, G. (ed) 13th Congress Interpraevent 2016. 30 May to 2 June 2016, Lucerne, Switzerland. Conference Proceedings. Living with natural risks. Luzern, International Research Society Interpraevent. 239-248.

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Stoffel, L.; Margreth, S.; Schaer, M.; Christen, M.; **Bühler, Y**.; Bartelt, P., (2016): Powder Snow Avalanche Engineering: New Methods to Calculate Air-Blast Pressures for Hazard Mapping. In: Koboltschnig, G. (ed) 13th Congress Interpraevent 2016. 30 May to 2 June 2016, Lucerne, Switzerland. Conference Proceedings. Living with natural risks. Luzern, International Research Society Interpraevent. 416-425.

Ettlin, L.; Bründl, M.; Christen, M.; **Bühler, Y.**, (2016): RAMMS::RISK: a tool for mapping natural hazard risks. [Abstract] In: Koboltschnig, G. (ed) 13th Congress Interpraevent 2016. 30 May to 2 June 2016, Lucerne, Switzerland. Extended Abstracts. Living with natural risks. Luzern, International Research Society Interpraevent. 200-201.

Veitinger, J.; Sovilla, B.; **Bühler, Y.**, (2016): Assessing the effect of the winter terrain surface on simulations of avalanche scenarios. [Abstract] In: Koboltschnig, G. (ed) 13th Congress Interpraevent 2016. 30 May to 2 June 2016, Lucerne, Switzerland. Extended Abstracts. Living with natural risks. Luzern, International Research Society Interpraevent. 168-169.

Phillips, M.; Kos, A.;, Amann, F.; Bonanomi, Y.; Huwiler, A.; Negrini, M.; Lüthi, R.; Kenner, R.; Wolter, A.; **Bühler, Y.**, (2016): Deep-seated rock slope failures in mountain permafrost: Pizzo Cengalo and Piz Kesch (Canton Grisons, Switzerland). [Abstract] In: Koboltschnig, G. (ed) 13th Congress *Interpraevent* 2016. 30 May to 2 June 2016, Lucerne, Switzerland. Extended Abstracts. Living with natural risks. Luzern, International Research Society Interpraevent. 148-149.

Bühler, Y. Bösch, R., Stoffel, A. & Adams, M. (2015): Geodatenerfassung im hochalpinen Gelände mittels Drohnen. Geomatik Schweiz 9/2015, 366 – 370.

Eckersdorfer, M. & **Bühler, Y.** (2015): Remote Sensing of Snow Avalanches - Potential and Limitation for Operational Use. *The Avalanche Review*, 33(4): 14 - 15.

Bühler, Y., Bieler, C., Pielmeier, C., Frauenfelder, R., Jaedicke, C., Bippus, G., Wiesmann, A., & Caduff, R. (2014): Improved Alpine Avalanche Forecast Service AAF, Final Report. European Space Agency ESA, Integrated Application Program IAP 4000108853/13/NL/NR. 20 pp.

Sovilla, B., McElwaine, J., Steinkogler, W., Veitinger, J., Köhler, A., **Bühler, Y.**, Scharr, M., Hiller, M., Dufour, F., Suriñach, E., Perez Guillen, C., Fischer, J.-T., Thibert, E., Baroudi, D. (2014): Le site expérimental de la vallée de la Sionne dédié à l'étude de la dynamique des avalanches. Neige et avalanches 145, avril: 40.

Honig, J., **Bühler, Y.** & Bartelt, P. (2014): West Twin Avalanche Helicopter involvement - How safe are our pick-up locations? *International Snow Science Workshop ISSW*, Banff, AB, Canada.

Frauenfelder, R., Jónsson, A., Lied, K., Schwerdtfeger, D., Bergum, G., **Bühler, Y.** & Stoffel, L. (2014). Analysis of an artificially triggered avalanche at the Nepheline Syenite Mine on Stjernøya, Alta, Northern Norway. *International Snow Science Workshop ISSW*, Banff, AB, Canada.

Dreier, L., **Bühler, Y.**, Steinkogler, W., Feistl, T., Christen, M. & Bartelt, P. (2014): Modelling small and frequent avalanches. *International Snow Science Workshop ISSW*, Banff, AB, Canada.

Ettlin, L., Bründl, M., Christen, M. & **Bühler, Y.** (2014): Automated risk mapping for buildings endangered by avalanches. *International Snow Science Workshop ISSW*, Banff, AB, Canada.

Maggioni, M., Bovet, E., Dreier, L., **Buehler, Y.**, Godone, D., Bartelt, P., Freppaz M., Chiaia, B., Segor V., (2013): Influence of summer and winter surface topography on numerical avalanche simulations. In: Naaim-Bouvet F., Durand Y., Lambert, R. (eds.) Proceedings *International Snow Science Workshop* "a merging of theory and practice", ISSW 2013, 7-11 October, Grenoble Chamonix Mont-Blanc. 591 - 598.

Chrustek, P., Kolecka, N., **Bühler, Y.**, (2013): Snow avalanches mapping – evaluation of a new approach. In: Naaim-Bouvet F., Durand Y., Lambert, R. (eds.) Proceedings *International Snow Science Workshop* "a merging of theory and practice", ISSW 2013, 7-11 october, Grenoble Chamonix Mont-Blanc. 750 – 755.

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Ginzler, C., Marty, M. & **Bühler, Y.** (2013): Grossflächige hochaufgelöste Schneehöhenkarten aus digitalen Stereoluftbildern. Geomatik Schweiz 111, 9: 508-510.

Ginzler, C., Marty, M. & **Bühler, Y.**, (2013): Cartes de hauteurs de neige à haute résolution de zones étendues produites à partir de stéréophotographies aériennes numériques. Geomatik Schweiz 111, 9: 512-514.

Chrustek, P., Kolecka, N. & **Bühler, Y**. (2013): Using high resolution LiDAR data for snow avalanche hazard mapping. In: Kozak J., Ostapowicz K., Bytnerowicz A., Wyżga B. (Eds.) *Integrating Nature and Society towards Sustainability Integrating Nature and Society towards Sustainability*, Springer, pp. 597 – 613, ISBN 978-3-642-12724-3.

Chrustek, P., Wężyk, P., Kolecka, N., Biskupič, M**., Bühler, Y.** & Christen, M. (2013): Obtaining snow avalanche information by means of terrestrial photogrammetry - evaluation of a new approach. In: Kozak J., Ostapowicz K., Bytnerowicz A., Wyżga B. (Eds.) *Integrating Nature and Society towards Sustainability Integrating Nature and Society towards Sustainability*, Springer, pp. 579 – 595, ISBN 978-3-642-12724-3.

Bühler, Y. (2012): Ein Highway durch die Lawinenhölle. *Geoscience actuel* 4: 16-18.

Bühler, Y. (2012): Remote Sensing Tools for Snow and Avalanche Research. *International Snow Science Workshop ISSW 2012*, Anchorage, Alaska, USA.

Jörg, P., Granig, M., **Bühler, Y.**, Gauer, P. & Schreiber, H. (2012): Vergleich von gemessenen und simulierten Lawinengeschwindigkeiten. *Wildbach- und Lawinenverbau*, 76, 214-225.

Christen, M., Gerber, W., Graf, C., **Bühler, Y.**, Bertelt, P., Glover, J., McArdell, B., Feistl, T. & Steinkogler, W. (2012): Numerische Simulation von gravitativen Naturgefahren mit "RAMMS" (Rapid Mass Movements). *Wildbach- und Lawinenverbau*, 76, 282 – 293.

Christen, M., **Bühler, Y.**, Bartelt, P., Leine, R., Glover, J., Schweizer, A., Graf, C., McArdell, B.W., Gerber, W., Deubelbeiss, Y., Feistl, T. & Volkwein, A. (2012): Integral hazard management using a unified software environment: numerical simulation tool "RAMMS" for gravitational natural hazards. In: Koboltschnig, G., Hübl, J., Braun, J. (eds.) 12th Congress INTERPRAEVENT, 23-26 April 2012 Grenoble - France. Proceedings. Vol. 1. Klagenfurt, International Research Society *INTERPRAEVENT*. 77-86.

Jörg P., Granig M., **Bühler Y**, Schreiber H. (2012): Comparison of measured and simulated snow avalanche velocities. In: Koboltschnig, G., Hübl, J., Braun, J. (eds.) 12th Congress INTERPRAEVENT, 23-26 April 2012 Grenoble - France. Proceedings. Vol. 1. Klagenfurt, International Research Society *INTERPRAEVENT*. 169-178.

Bartelt, P., **Buehler, Y.,** Christen, M., Deubelbeiss, Y., Salz, M., Schumacher, L. (2011): *RAMMS User Manual v1.4: Avalanche*. WSL Institute for Snow and Avalanche Research SLF.

Bartelt, P., **Buehler, Y**., Christen, M., Deubelbeiss, Y., Graf, Ch., McArdell, B. (2011): *RAMMS User Manual v1.01: Debris Flow*. Swiss Federal Institute for Forest, Snow and Landscape Research WSL.

Bühler, Y. (2010): Bericht: Lawinensimulationen im Himalaya. Newsl. Nat.gefahren [published online Dezember 2010] Available from World Wide Web: <http://www.slf.ch/dienstleistungen/newsletter/index_DE> 3/2010: 6-8.

Bühler, Y., Christen, M., Margreth, S., Bartelt, P., (2010): RAMMS: Simulation und Visualisierung von Lawinen im dreidimensionalen alpinen Gelände. *Geomatik Schweiz* 108, 9/2010: 410-413.

Bühler, Y., Seidel, F. & Kellenberger, T. (2006): Schnelle Schadenskartierung mit Satellitendaten während den Überschwemmungen 2005 zur Unterstützung des Katastrophen-Managements, *Geomatik Schweiz* 9/2006: 494 – 497.

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Selected talks and conference proceedings:

Bühler, Y. (2025): Digitalisierung und künstliche Intelligenz am SLF. *FAN Forum*, Olten, Switzerland, Talk 7 March 2025

Bühler, Y. (2025): Collaboration SLF – *Helvetas Kyrgyzstan*. Slf Davos, Switzerland, Talk 6 March 2025.

Bühler, Y. (2025): Future focus of SDC in the Himalaya. *Swiss Development Cooperation Agency*, Switzerland, Talk 17 January 2025

Bühler, Y. Pierhöfer L. & Gaume J. (2025): Monitoring and modelling of the current landslide crisis in Brienz / Brinzauls GR. *DACH Permafrost Conference*, SLF Davos, Switzerland, Talk 9 January 2025

Bühler, Y. Bartelt P., Much, J. Manconi, A. & Borner, J. (2024): Workshop on Modelling Rock-Ice Avalanches, Rockfalls, and Debris Flows. CSRI-CBRI Rorkee, Uttarakhand, India Talk 20 – 22 November 2024

Bühler, Y. (2024): Residency Living Lab 2024 Courmayeur. *Fondazione Montagna Sicura FMS*, Courmayeur, Italy, 3 - 6 November 2024

Bühler, Y. (2024): Schnee und Naturgefahren als Heraus-forderung für Solaranlagen im Gebirge. *Solar & Storage Messe,* Zürich Switzerland, Talk 17 September 2024

Bühler, Y. (2024): Monitoring, Modeling and Mitigation of Mountain Hazards. *Swiss Development Cooperation Agency Head Office*, Bern, Switzerland*,* Talk 20 August 2024

Bühler, Y. (2024): Remote Sensing for the assessment and mitigation of alpine hazards. *D-ERDW Doctoral Retreat ETH Zürich*, Davos, Switzerland*,* Talk 25 May 2024

Bühler, Y. (2024): Fernerkundung und Naturgefahren. *Kinder-Lab Landquart*, Landquart, Switzerland*,* Talk 22 May 2024

Bühler, Y. & Manconi A. (2024): Remote Sensing alpiner Naturgefahren: lokal entwickelt, global eingesetzt. *ETH Domain WEF event*, SLF Davos, Switzerland*,* Talk 17 Januiary 2024

Bühler, Y. (2023): Automatisierte Gefahrenhinweis-Modellierung für Lawinen. *ESRI User Forum*, Zürich, Switzerland, Talk 29 November 2023

Bühler, Y. Bartelt P., Much, J (2023): Workshop on Modelling Rock-Ice Avalanches, Rockfalls, and Debris Flows. CSRI-CBRI Roorkee, Uttarakhand, India. Talk 19 – 20 September 2023

Bühler, Y. (2023): Einsatz von Drohnen für die Früherkennung und Bewältigung von Naturkatastrophen im Gebirge. *Exkursion Fachhochschule Nordwestschweiz FHNW Geomatik*. SLF Davos, Switzerland, Talk 14. September 2023

Bühler, Y. (2023): Drohnen im Einsatz zur Überwachung von Alpinen Naturgefahren. *Tag der offenen Tür SLF*. SLF Davos, Switzerland. Talk 24 Juni 2023

Bühler, Y. (2023): Identification, monitoring and modelling of alpine gravitational hazards. *Uzbekistan Academy of Sciences*, Tashkent, Uzbekistan. Talk 12 June 2023

Bühler, Y. Stoffel, A. & Bührle, L. (2023): Fotogrammetrische Schneehöhen-kartierung aus Drohnen-, Flugzeug- und Satellitenbildern. *Forum für Wissen Fernerkundung*, WSL Birmensdorf, Switzerland. Talk 20 April 2023

Bühler, Y. (2023): Large-Scale Gefahren- und Risikohinweismodellierungen. *Austausch SLF - BAFU, Abteilung Gefahrenprävention*, SLF Davos, Switzerland, Talk 13 April 2023

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Bühler, Y. & Stoffel, A. (2023): Einsatz von Fernerkundung für die Früherkennung und Bewältigung von Naturkatastrophen im Gebirge. TecDay Bündner Kantonsschule, Chur, Switzerland. Talk 24 February 2023

Bühler, Y. (2023): Automated, Large Scale Avalanche Hazard Indication Mapping. *EGREGIS,* SLF Davos, Switzerland, Talk 25 January 2023

Bühler, Y. & Stoffel A. (2022): Drone Workshop for Kyrgizstan. *Hydromet Kyrgizstan*. SLF Davos, Switzerland. 21 – 22 December 2022

Bühler, Y. (2022): Drohen im Einsatz für die WSL. *WSL Vortragsreihe «für alle»*, SLF Davos und Online, Switzerland, Talk 30. 06. 2022

Bühler, Y. (2022): Alpine Environment and Natural Hazards, *GIUZ Drone Workshop*. Department of Geography, University of Zurich, Switzerland, Talk 08. 06. 2022

Bühler, Y. (2022): Remote Sensing and Hazard Indication Mapping of Alpine Hazards @ SLF. Exkursion Fachhochschule Graubünden, Photonics as SLF, SLF Switzerland, Talk 27. 05. 2022

Bühler, Y. (2022): Drones for Alpine hazard assessment. *Dialog WSL ETH Rat*, EMPA, Switzerland, Talk 13. 04. 2022

Bühler, Y. (2021): Remote sensing tools for mountain risk monitoring and mitigation, *Workshop on Climate Change and Mountain Risks in the European Alps - from Recognition to Management*, Saas Fee, Switzerland, Talk 26. 08. 2021

Bühler, Y. (2021): Remote sensing for snow and avalanche research, *IGS seminar online,* , Talk 07. 07. 2021

Bühler, Y. (2020): AUS applications @SLF, Visit of the *Wingtra software development group* at SLF, Talk 11. 09. 2020

Bühler, Y. (2020): Avalanches down under – research exchange in New Zealand, *SLF Kolloquium*, Talk 30. 06. 2020

Bühler, Y. (2020): Automatish generierte Gefahrenhinweiskarte Lawinen Kanton Graubünden *Gefahrenkommision, Amt für Wald und Naturgefahren, Kanton Graubünden*, Chur, Switzerland, Talk 12. 06. 2020

Bühler, Y. (2019): Efficient geodata acquisition in alpine terrain with optical Remote Sensing *Seminar School of Surveying*, University of Otago, Dunedin, New Zealand, Talk 15. 08. 2019

Bühler, Y. (2019): UAS based Snow Depth Mapping-The Wägital Case Study. Climate-Seminar, *MeteoSchweiz*, Zürich Flughafen, Switzerland, Talk 17. 01. 2019

Bühler, Y. (2019): Drohnen für die Forschung im Hochgebirge. *DCL Event*, Galaaxy, Laax, Switzerland, Talk 29. 03. 2019

Bühler, Y. (2018): Efficient geodata acquisition with AUS in alpine terrain. *WSL Applied Remote Sensing Lectures*, SLF Davos, Switzerland, Talk 15. 11. 2018

Bühler, Y. (2018): Drones@SLF: efficient geodata acquisition in challenging terrain with Unmanned Aerial Systems (UASs). *SLF Kolloquium*, SLF Davos, Switzerland, Talk 09. 11. 2018.

Bühler, Y. (2018): Mapping Snow Depth in Complex Terrain – How Good Can We Get? *European Space Agency ESA Eo4Alps Workshop*, Innsbruck, Austria, Talk 27. 06. 2018

Bühler, Y. (2018): Regional Scale Avalanche Hazard Mapping. *Academy of Science Uzbekistan*, Tashkent, Uzbekistan, Talk 12. 04. 2018

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Bühler, Y. (2018): Satellite based rapid mapping of snow avalanche activity. *Swisstopo Kolloquium*, Wabern, Switzerland, Talk 23. 03. 2018.

Bühler, Y. (2018): Pilotprojekt Gefahrenhinweiskarte Kanton Graubünden. *Amt für Wald und Naturgefahren*, Kanton Graubünden, Chur, Talk 30. 01. 2018

Bühler, Y, Stoffel, A. and Jonas T (2018): Swiss experience in snow monitoring: research and operational products. *Workshop on the evolution of Copernicus snow and ice monitoring product*. European Environmental Agency, Kopenhagen DK, Talk 25. 01. 2018

Bühler, Y., Stoffel, A. and Ginzler, C. (2017): UAS applications in high alpine, snow-covered terrain. *AGU*, New Orleans, USA, Talk 13. 12. 2017

Bühler, Y., Stoffel, A. and Eberhard, L. (2017): UAS@SLF: Anwendung von Drohnen im hochalpinen Gebieten. *Einsatzleiterkurs Alpine Rettung Graubünden*, Thusis, Talk 28. 10. 2017.

Bühler, Y., Christen, M., Caviezel, A., Lu, G. and Bartelt, P. (2017): Remote Sensing Tools for Numerical Rockfall Simulations. *GEO-SUMMIT 2017, Geobrugg*, Intercontinental Davos, Talk 17. 10. 2017.

Bühler, Y., Christen, M., Caviezel, A. and Bartelt, P. (2017): Digitale Geländemodelle als Basis für numerische Simulationen von alpinen Naturgefahren. *7. Wildbachworkshop Qualitätssicherung in der Anwendung digitaler Daten und Modellen*. Bregenz AT, 03 – 04. Oktober 2017

Bühler, Y., Christen, M., Margreth, S., Stoffel, L., Schär, M., Stoffel, A., Harvey, S., Schmudlach, G., Bebi, P. and Marty, C. (2017): Regional Scale Avalanche Hazard Mapping, SLF-Kolloquium.

Bühler, Y. and Stoffel, A. (2017): UAS @ SLF – Applications of unmanned aerial systems in high alpine terrain. Faculty of Forestry, Department of Forest Engineering, Düzce University, Turkey.

Bühler, Y. and Stoffel, A. (2017): High spatial resolution mapping of the alpine snow cover. *Faculty of Forestry, Department of Forest Engineering*, Düzce University, Turkey.

Bühler, Y., Adams, M., Stoffel, A. and Bösch, R. (2017): Snow Depth Mapping Applying Unmanned Aerial Systems – Closing the Gap Between Field Measurements and Low Spatial Resolution Satellite Data. *8th EARSeL workshop on Land Ice and Snow*, Special Interest Group of Land Ice and Snow. University of Bern, Bern, Switzerland.

Bühler, Y., Stoffel, A., Marty, M., Bösch, R. and Ginzler, C. (2016): UAS applications on snow in high alpine terrain. *Small UAS for Environmental Research Conference*, University of Worcester, Worcester, UK.

Bühler, Y., Stoffel, A., Adams, M., Bösch, R., and Ginzler, C. (2016): UAS Photogrammetry of Homogenous Snow Cover, *Dreiländertagung der DGPF, der OVG und der SGPF*, Bern, Switzerland, 306 - 316.

Bühler, Y., Stoffel, A., Marty, M., Bösch, R. and Ginzler, C. (2015): High spatial resolution mapping of alpine snow depth variability. *WSL/SLF Applied Remote Sensing Lectures*, SLF Davos Switzerland.

Bühler, Y., Stoffel, A., Bösch, R. and Ginzler, C. (2015): Efficient geo-data acquisition in high alpine terrain using UAS. *Der Alpenraum und seine Herausforderungen im Bereich Orientierung, Navigation und Informationsaustausch AHORN, Wildhaus SG*, Switzerland.

Bühler, Y. and Kenner, R. (2015): Monitoring of mass movements in high alpine areas using LiDAR. *WSL/SLF Applied Remote Sensing Lectures*, WSL Birmensdorf, Switzerland.

Bühler, Y., Bieler, C., Pielmeier, C., Wiesmann, A., Caduff, R., Frauenfelder, R., Jaedicke, C. & Bippus, G. (2014): All-weather avalanche activity monitoring from space? *International Snow*

Science Workshop ISSW, Banff, AB, Canada.

Bühler, Y., Christen, M., Dreier, L., Feistl, T. & Bartelt, P. (2014): Merging of recent developments in avalanche simulation technology into practice. *International Snow Science Workshop ISSW*, Banff, AB, Canada.

Bühler, Y., Glover, J., Christen, M. & Bartelt, P. (2014): Digital elevation models in numerical rockfall simulations. *European Geosciences Union General Assembly*. 2014EGU2014-2109.

Bartelt, P., Buser, O., **Bühler, Y.**, Dreier, L. & Christen, M., (2014): Numerical simulation of snow avalanches: Modelling dilatative processes with cohesion in rapid granular shear flows, Numerical Methods in Geotechnical Engineering - Proceedings of the 8th European Conference on Numerical Methods in Geotechnical Engineering, NUMGE 2014, pp. 327-332.

Bartelt, P., **Bühler, Y.**, Buser, O., Ginzler, C., (2013): Plume Formation in Powder Snow Avalanches. In: Naaim-Bouvet F., Durand Y., Lambert, R. (eds.) Proceedings International Snow Science Workshop "a merging of theory and practice", ISSW 2013, 7-11 october, Grenoble Chamonix Mont-Blanc. 576-582.

Bühler, Y. (2013): Introduction to the program RAMMS, Seminar in snow, slush- and debris flows: Hazard analysis and protection measures. September 2013 UNIS, Longyearbyen, Spitzbergen.

Philipp Weihs, Julian Gröbner, Luca Egli, Gregor Hülsen, **Yves Bühler** (2013): Effective albedo retrieval from spectral UV measurements using 3-D modelling of inhomogeneous topography. DACA-13. July 8-12, 2013, Davos, Switzerland.

Ginzler, C., Marty, M., **Bühler, Y.** (2013): Grossflächige hochaufgelöste Schneehöhenkarten aus digitalen Stereoluftbildern. DGPF Tagungsband 22/2013, 71 – 78.

Bühler, Y., Graf, C., (2013): Sediment transfer mapping in a high-alpine catchment using airborne LiDAR. In: Graf, C. (Red.) *Mattertal - ein Tal in Bewegung. Publikation zur Jahrestagung der Schweizerischen Geomorphologischen Gesellschaft* 29. Juni - 1. Juli 2011, St. Niklaus. Birmensdorf, Eidg. Forschungsanstalt WSL. 113-124.

Graf, C., Deubelbeiss, Y., **Bühler, Y.,** Meier, L., McArdell, B., Christen, M., Bartelt, P., (2013): Gefahrenkartierung Mattertal: Grundlagenbeschaffung und numerische Modellierung von Murgängen. In: Graf, C. (Red.) *Mattertal - ein Tal in Bewegung. Publikation zur Jahrestagung der Schweizerischen Geomorphologischen Gesellschaft* 29. Juni - 1. Juli 2011, St. Niklaus. Birmensdorf, Eidg. Forschungsanstalt WSL. 85-112.

Bühler, Y. (2012): Snow and avalanche Research in the Indian Himalaya. Experiences from my visit at SASE from March to June 2012. SLF-Colloquium, Davos, Switzerland.

Bühler, Y. and Graf, C. (2013): Sediment transfer mapping in a high-alpine catchment using airborne LiDAR In: Graf, C. (ed.) Mattertal - ein Tal in Bewegung. Publikation zur Jahrestagung der Schweizerischen Geomorphologischen Gesellschaft 29. Juni - 1. Juli 2011, St. Niklaus. Birmensdorf, Eidg. Forschungsanstalt WSL.

Bühler, Y., Egli, L. & Ginzler, Ch. (2011): Towards wide area high resolution snow depth mapping using airborne optical scanner data. *6th EARSeL Workshop Cryosphere, Hydrology & Climate interactions*. Berne, Switzerland

Bühler, Y., Willi, Ch., Graf, Ch., Kenner, R. & Glover, J. (2011): Murgang- und Steinschlagforschung im hochalpinen Mattertal. *AHORN 2011* - der Alpenraum und seine Herausforderungen im Bereich Orientierung, Navigation und Informationsaustausch, Imst, Österreich.

Bühler, Y., Marty, M., Raetzo, H., Ginzler, C., 2011: High-resolution digital elevation model (DEM) generation in high alpine terrain using airborn remote sensing techniques. In: Graf, C. (ed) Mattertal - ein Tal in Bewegung. Jahrestagung der Schweizerischen Geomorphologischen Gesellschaft (SGmG) 2011. Abstract-Band. Birmensdorf, Eidg. Forschungsanstalt WSL. 22-23.

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Kenner, R., **Bühler, Y**., Delaloye, R., Jörger, L, Phillips, M., (2011): Determination of volumetric changes and kinematics in permafrost terrain combining terrestrial and airborne laser scanning with aerial photogrammetry and DGPS: Grabengufer, Mattertal. In: Graf, C. (ed) Mattertal - ein Tal in Bewegung. Jahrestagung der Schweizerischen Geomorphologischen Gesellschaft (SGmG) 2011. Abstract-Band. Birmensdorf, Eidg. Forschungsanstalt WSL. 54-55.

Graf, C., Deubelbeiss, Y., **Bühler, Y**., Meier, L., McArdell, B.W., Christen, M., Bartelt, P., (2011): Gefahrenkartierung Mattertal: Grundlagenbeschaffung und numerische Modellierung von Murgängen. In: Graf, C. (ed) Mattertal - ein Tal in Bewegung. Jahrestagung der Schweizerischen Geomorphologischen Gesellschaft (SGmG) 2011. Abstract-Band. Birmensdorf, Eidg. Forschungsanstalt WSL. 32-33.

Bühler, Y., Gilgien, M. & Thee, P. (2010): Einsatz von Satellitennavigation für Forschungsanwendungen im hochalpinen Gelände - Aktuelle Projekte und Herausforderungen. *AHORN 2010* - der Alpenraum und seine Herausforderungen im Bereich Orientierung, Navigation und Informationsaustausch, Bad Tölz, Deutschland.

Bühler, Y. (2010): Remote Sensing tools for snow- and avalanche research. SLF-Colloquium. Davos, Switzerland.

Bühler, Y., Christen, M. & Bartelt, P. (2010): Sensitivity of snow avalanche simulations to digital elevation model quality and resolution. *IGS2010. International Symposium on Snow, Ice and Humanity in a Changing Climate*. Sapporo, Japan.

Bühler, Y. (2010): Remote Sensing for Snow and Avalanche Research. *Avalanche Dynamics & Avalanche Hazard Mapping Workshop*. HQ SASE, Manali, India. 1st - 4th November 2010

Bühler, Y., Hüni, A., Christen, M., Meister, R. & Kellenberger, T. (2009): Automated detection and mapping of rough snow surfaces including avalanche deposits using airborne optical remote sensing. In: Schweizer, J. & van Herwijnen, A. *(Eds.) International Snow Science Workshop ISSW09,* 170 – 174. Davos, Switzerland.

Bühler, Y. (2009): Anwendung von ADS40 Daten in Schneegebieten. Swisstopo Kolloquium. Berne, Switzerland

Bühler, Y., Hüni, A., Kellenberger, T. & Itten, K. I. (2009): Towards an automated detection of avalanche deposits using their directional properties. Imaging Spectroscopy SIG workshop: proceedings , Tel Aviv, Israel, CD-ROM.

Treichler, D., **Bühler,Y.**, Hüni, A. & Itten, K. (2009): Spectral discrimination of avalanche deposits, In: 6th EARSeL Imaging Spectroscopy SIG workshop: proceedings , Tel Aviv, Israel, CD-ROM.

Bühler, Y. & Kellenberger, T. (2008) Avalanche detection using optical remote sensing data *5th EARSeL Workshop: Remote Sensing of Land Ice and Snow, Berne, Switzerland.*

Bühler, Y., Kneubuehler, M., Bovet, S. & Kellenberger, T. (2007): Anwendung von ADS40 Daten im Agrarbereich. *Dreiländertagung SGPBF, DGPF & OVG,* Muttenz, Switzerland.

Seidel, F., Kellenberger, T., **Bühler, Y**. & Perret J.-P. (2006): Satellite response to the August 2005 floods in Switzerland: Charter Call 100, International Disaster Reduction Conference IDRC. Davos, Switzerland.

Bühler, Y. A., Kellenberger, T. W., Small, D. & Itten, K. I. (2006): Rapid mapping with remote sensing data during flooding 2005 in Switzerland by object-based methods - a case study. *Geo Environment & Landscape Evolution,* Rhodos, Greece.

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Thesis:

Bühler, Y. (2009): Automatisierte Erkennung und Kartierung von Lawinenablagerungen mit optischen Fernerkundungsdaten. Dissertation, Mathematisch-naturwissenschaftliche Fakultät, Universität Zürich (PhD Thesis).

Bühler, Y. (2003): Change Detection Nordostschweiz. Diplomarbeit. Geographisches Institut, Universität Zürich (Master Thesis).

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