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Curriculum Vitae

Masashi NIWANO

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Physical Meteorology Research Department

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Guest Researcher, National Research Institute for Earth Science and Disaster Resilience

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Research topics

Dr. Niwano's current main research interest is to understand the snow-atmosphere interaction in the cryosphere. For this purpose, he performs in-situ meteorological and snow/ice measurements in Japan (e.g., Sapporo, Hokkaido) and the Greenland Ice Sheet (GrIS). He is also well versed in numerical modeling of the snow/ice-atmosphere interaction: The Snow Metamorphism and Albedo Process (SMAP) model, which is a detailed physical snowpack model, was developed by him and his colleagues (the SMAP model is the main outcome of his Doctor Thesis). Recently, he is interested in the GrIS climate system, and has stayed on the ice sheet for more than 100 days since 2012 to conduct field measurements on the atmosphere/snow/ice physical conditions. In 2018, he succeeded in coupling the SMAP model with the Japanese Meteorological Agency's operational regional non-hydrostatic atmospheric model JMA-NHM and constructed the regional climate model NHM-SMAP. Using these original models by him, he has contributed to several international model inter-comparison projects including ESM-SnowMIP and GrSMBMIP.

Education

2016: Doctor of Science (The Graduate School of Environmental Studies, Nagoya University, Japan)

Thesis title:

Development of the physical snowpack model SMAP:

Application to seasonal snowpack in Japan and the Greenland ice sheet

Adviros:

Prof. Kouichi Nishimura, Prof. Teruo Aoki, Dr. Koji Fujita, and Prof. Tetsuya Hiyama

Link to the thesis:

http://hdl.handle.net/2237/24629

2004: B.Sc. (Meteorological College, Japan)

Professional career and affiliations

2018–Present: Senior Researcher, Meteorological Research Institute, Japan Meteorological Agency

2020 July-Present: Guest Associate Professor, National Institute of Polar Research

2019 September–Present: Guest Researcher, National Research Institute for Earth Science and Disaster Resilience

2018–2022: Visiting scientist, Geological Survey of Denmark and Greenland (GEUS)

2008–2018: Researcher, Meteorological Research Institute, Japan Meteorological Agency

2004–2008: Government official, Japan Meteorological Agency

Service

- 2024–Present: Advisor for observation in Antarctica, National Institute of Polar Research
- 2023–Present: IPERC (International Polar and Earth Environmental Research Center) special collaboration project committee member, National Institute of Polar Research
- 2020–Present: Editor of the journal The Cryosphere (European Geosciences Union; EGU)
- 2020–Present: Editor of the journal SOLA (Scientific Online Letters on the Atmosphere) (The Meteorological Society of Japan)
- 2011–Present: Committee member of information provision of the Japanese Society of Snow and Ice
- 2021–2023: Member of the steering committee of the 6th period Japan Consortium for Arctic Environmental Research (JCAR)
- 2019–2023: Board member of the western branch of the Japanese Society of Snow and Ice
- 2023: Main-convener of “R4: Ice Sheets, Glaciers and Ice Cores” in ISAR-7 (Seventh International Symposium on Arctic Research)
- 2022: Program organizing committee member of annual meeting of the Japanese society of snow and ice at Sapporo
- 2019–2021: Member of the steering committee of the 5th period Japan Consortium for Arctic Environmental Research (JCAR)
- 2021: Executive committee of annual meeting of the Japanese society of snow and ice at Chiba
- 2021: Program organizing committee member of annual meeting of the Japanese society of snow and ice at Chiba

- 2008–2020: Editor of bulletin of the Meteorological Society of Japan “TENKI”
- 2019–2020: Main-convener of “Science in the Arctic Region (A-CG57)” in JpGU-AGU Joint Meeting 2020
- 2018–2020: The Sixth International Symposium for Arctic Research (ISAR-6) Symposium Organizing Committee
- 2020: Program organizing committee member of annual meeting of the Japanese society of snow and ice (online)
- 2018–2019: Co-convener of “Science in the Arctic Region (A-CG37)” in JpGU Meeting 2019
- 2017–2019: Member of the steering committee of the 4th period Japan Consortium for Arctic Environmental Research (JCAR)
- 2017–2019: Editor of Bulletin of Glaciological Research (BGR) published by the Japanese Society of Snow and Ice
- 2012: Executive committee of annual spring meeting of the Meteorological Society of Japan at Tsukuba

Awards

- 2023: The Japan Meteorological Agency Director-General's Awad
- 2022: Meteorological Research Institute Director-General Award
- 2019: Outstanding paper award of the Japanese Society of Snow and Ice (coauthor; Kurosaki et al.)
- 2017: Hirata Award by the Japanese Society of Snow and Ice
- 2015: Outstanding paper award of the Japanese Society of Snow and Ice

Grants

- CI of the Japan Society for the Promotion of Science (JSPS), Grant-in-Aid for Scientific Research (A), number JP22H00033 (PI: Prof. Koji Fujita, Nagoya Univ.) “Geographical distribution of thermal regime of high mountain Asian glaciers and its impact on future glacier fluctuation”
  https://kaken.nii.ac.jp/en/grant/KAKENHI-PROJECT-22H00033/
- PI of the Japan Society for the Promotion of Science (JSPS), Grant-in-Aid for Scientific Research (B), number JP21H03582 “Quantifying the effects of polar amplification on the Greenland ice sheet mass balance”
  https://kaken.nii.ac.jp/en/grant/KAKENHI-PROJECT-21H03582/
- CI of the Japan Society for the Promotion of Science (JSPS), Grant-in-Aid for Scientific Research (B), number JP21H01873 (PI: Dr. Hideaki Ohtake, National Institute of Advanced Industrial Science and Technology （AIST）) “Clarifying snow physical conditions on solar

panels and its prediction”
https://kaken.nii.ac.jp/en/grant/KAKENHI-PROJECT-21H01873/

- PI of the Japan Society for the Promotion of Science (JSPS), Grant-in-Aid for Scientific Research on Innovative Areas (Research in a proposed research area), number JP 20H04982 “High-precision estimation of the Antarctic ice sheet surface mass balance in the past four decades”
https://kaken.nii.ac.jp/en/grant/KAKENHI-PUBLICLY-20H04982/
- PI of the Japan Society for the Promotion of Science (JSPS), Grant-in-Aid for Scientific Research on Innovative Areas (Research in a proposed research area), number JP18H05054 “Improving accuracy of the Antarctic ice sheet surface mass balance estimate”
https://kaken.nii.ac.jp/en/grant/KAKENHI-PUBLICLY-18H05054/
- PI of the Japan Society for the Promotion of Science (JSPS), Fund for the Promotion of Joint International Research (Fostering Joint International Research), number JP17KK0017 “Pioneering the state of the art in the Greenland ice sheet climate system study”
https://kaken.nii.ac.jp/en/grant/KAKENHI-PROJECT-17KK0017/
- PI of the Japan Society for the Promotion of Science (JSPS), Grant-in-Aid for Young Scientists (B), number JP17K12817 “Investigation of surface mass loss mechanism in the Greenland ice sheet through development of a next generation polar regional climate model and multi-point in-situ measurements”
https://kaken.nii.ac.jp/en/grant/KAKENHI-PROJECT-17K12817/
- CI of the Japan Society for the Promotion of Science (JSPS), Grant-in-Aid for Scientific Research (B), number JP 18H03363 (PI: Dr. Naga Oshima, Meteorological Research Institute, Japan Meteorological Agency) “Evaluation of climate effects of black carbon over the Arctic with an advanced earth system model”
https://kaken.nii.ac.jp/en/grant/KAKENHI-PROJECT-18H03363/
- CI of the Japan Society for the Promotion of Science (JSPS), Grant-in-Aid for Scientific Research (A), number JP16H01772 (SIGMA project, 2016–2019) (PI: Prof. Teruo Aoki, National Institute of Polar Research) “Recent surface darkening and abrupt melting of Greenland ice sheet (SIGMA2)”
https://kaken.nii.ac.jp/en/grant/KAKENHI-PROJECT-16H01772/
- CI of the Japan Society for the Promotion of Science (JSPS), Grant-in-Aid for Scientific Research (A), number JP15H01733 (SACURA project, 2015–2019) (PI: Dr. Satoru Yamaguchi, Snow and Ice Research Center, National Research Institute for Earth Science and Disaster Resilience) “Study of advanced cryosphere monitoring using reflectance properties of snow based on application of new measurement technologies and snow physical models (SACURA project)”

https://kaken.nii.ac.jp/en/grant/KAKENHI-PROJECT-15H01733/

Peer-reviewed publications

62. Niwano, M., Nishimura, M., Shimada, R., Yamasaki, T., Ohkawara, N., Sunako, S., Aoki, T., Hashimoto, A., Tanikawa, T., Matoba, S., and Yamaguchi, S., 2024: Field activities at the SIGMA-A site, northwestern Greenland ice sheet, 2023, *Bull. Glaciol. Res.*, 42, 61–68, https://doi.org/10.5331/bgr.24R03.
61. Aoki, T., Hachikubo, A., Nishimura, M., Hori, M., Niwano, M., Tanikawa, T., Sugiura, K., Inoue, R., Yamaguchi, S., Matoba, S., Shimada, R., Ishimoto, H., and Gallet, J.-C., 2023: Development of a handheld integrating sphere snow grain sizer (HISSGraS), *Ann. Glaciol.*, https://doi.org/10.1017/aog.2023.72.
60. Nishimura, M., Aoki, T., Niwano, M., Matoba, S., Tanikawa, T., Yamasaki, T., Yamaguchi, S., and Fujita, K., 2023: Quality-controlled meteorological datasets from SIGMA automatic weather stations in northwest Greenland, 2012–2020, *Earth Syst. Sci. Data*, 15, 5207–5226, https://doi.org/10.5194/essd-15-5207-2023.
59. Onuma, Y., Fujita, K., Takeuchi, N., Niwano, M., and Aoki, T., 2023: Modelling the development and decay of cryoconite holes in northwestern Greenland, *The Cryosphere*, 17, 3309–3328, https://doi.org/10.5194/tc-17-3309-2023.
58. Box, J. E., Nielsen, K. P., Yang, X., Niwano, M., Wehrlé, A., van As, D., Fettweis, X., Køltzow, Morten A. Ø., Palmason, B., Fausto, R. S., van den Broeke, M. R., Huai, B., Ahlstrøm, A. P., Langley, K., Dachauer, A., and Noël, B., 2023: Greenland ice sheet rainfall climatology, extremes and atmospheric river rapids, *Meteorol. Appl.*, 30(4), e2134, https://doi.org/10.1002/met.2134.
57. Oyabu, I., Kawamura, K., Fujita, S., Inoue, R., Motoyama, H., Fukui, K., Hirabayashi, M., Hoshina, Y., Kurita, N., Nakazawa, F., Ohno, H., Sugiura, K., Suzuki, T., Tsutaki, S., Abe-Ouchi, A., Niwano, M., Parrenin, F., Saito, F., and Yoshimori, M., 2023: Temporal variations of surface mass balance over the last 5000 years around Dome Fuji, Dronning Maud Land, East Antarctica, *Clim. Past*, 19, 293–321, https://doi.org/10.5194/cp-19-293-2023.
56. Orr, A., Deb, P., Clem, K. R., Gilbert, E., Bromwich, D. H., Boberg, F., Colwell, S., Hansen, N., Lazzara, M. A., Mooney, P. A., Mottram, R., Niwano, M., Phillips, T., Pishniak, D., Reijmer, C. H., van de Berg, W. J., Webster, S., and Zou, X., 2023: Characteristics of surface "melt potential" over Antarctic ice shelves based on regional atmospheric model simulations of summer air temperature extremes from 1979/80 to 2018/19, *J. Clim.*, 1-61, https://doi.org/10.1175/JCLI-D-22-0386.1.
55. Onuma, Y., Takeuchi, N., Uetake, J., Niwano, M., Tanaka, S., Nagatsuka, N., and Aoki, T., 2022: Modeling seasonal growth of phototrophs on bare ice on the Qaanaaq Ice Cap,

northwestern Greenland, *J. Glaciol.*, 69, 487-499, https://doi.org/10.1017/jog.2022.76.

54. Niwano, M., Suya, M., Nagaya, K., Yamaguchi, S., Matoba, S., Harada, I., and Ohkawara, N., 2022: Estimation of seasonal snow mass balance all over Japan using a high-resolution atmosphere-snow model chain, *SOLA*, 18, 193-198, https://doi.org/10.2151/sola.2022-031.
53. Vandecrux, B., Box, J. E., Wehrlé, A., Kokhanovsky, A. A., Picard, G., Niwano, M., Hörhold, M., Faber, A.-K., and Steen-Larsen, H. C., 2022: The determination of the snow optical grain diameter and snowmelt area on the Greenland ice sheet using spaceborne optical observations, *Remote Sens.*, 14, 932, https://doi.org/10.3390/rs14040932.
52. Iizuka, Y., Matoba, S., Minowa, M., Yamasaki, T., Kawakami, K., Kakugo, A., Miyahara, M., Hashimoto, A., Niwano, M., Tanikawa, T., Fujita, K., Aoki, T., 2021: Ice core drilling and the related observations at SE-Dome site, southeastern Greenland ice sheet, Bull. Glaciol. Res., 39, 1-12, https://doi.org/10.5331/bgr.21R01.
51. **Niwano, M.**, Kajino, M., Kajikawa, T., Aoki, T., Kodama, Y., Tanikawa, T., and Matoba, S., 2021: Quantifying relative contributions of light-absorbing particles from domestic and foreign sources on snow melt at Sapporo, Japan during the 2011-2012 winter, *Geophys. Res. Lett.*, 48, e2021GL093940. https://doi.org/10.1029/2021GL093940
50. Tanikawa, T., Masuda, K., Ishimoto, H., Aoki, T., Hori, M., **Niwano, M.**, Hachikubo, A., Matoba, S., Sugiura, K., Toyota, T., Ohkawara, N., and Stamnes, K., 2021: Spectral degree of linear polarization and neutral points of polarization in snow and ice surfaces, *J. Quant. Spectrosc. Radiat. Transf.*, 273, 107845. https://doi.org/10.1016/j.jqsrt.2021.107845.
49. **Niwano, M.**, Box, J. E., Wehrlé, A., Vandecrux, B., Colgan, W. T., and Cappelen, J., 2021: Rainfall on the Greenland ice sheet: present-day climatology from a high-resolution non-hydrostatic polar regional climate model, *Geophys. Res. Lett.*, 48, e2021GL092942. https://doi.org/10.1029/2021GL092942
48. Hirose, S., Aoki, T., **Niwano, M.**, Matoba, S., Tanikawa, T., Yamaguchi, S., Yamasaki, T., 2021: Surface energy balance observed at the SIGMA-A site on the northwest Greenland ice sheet, *Seppyo*, 83, 143-154 (in Japanese with English abstract).
47. Sugiyama, S., Kanna, N., Sakakibara, D., Ando, T., Asaji, I., Kondo, K., Wang, Y., Fujishi, Y., Fukumoto, S., Podolskiy, E., Fukamachi, Y., Takahashi, M., Matoba, S., Iizuka, Y., Greve, R., Furuya, M., Tateyama, K., Watanabe, T., Yamasaki, S., Yamaguchi, A., Nishizawa, B., Matsuno, K., Nomura, D., Sakuragi, Y., Matsumura, Y., Ohashi, Y., Aoki, T., **Niwano, M.**, Hayashi, N., Minowa, M., Jouvet, G., van Dongen, E., Bauder, A., Funk, M., Bjørk, A. A., Oshima, T., 2021: Rapidly changing glaciers, ocean and coastal environments, and their impact on human society in the Qaanaaq region, northwestern Greenland, *Polar Science*, 27, 100632, https://doi.org/10.1016/j.polar.2020.100632.
46. **Niwano, M.** and Aoki. T., 2021: Snow modeling studies in Meteorological Research Institute,

Japan Meteorological Agency, *Archives of Atmospheric Chemistry Research*, 44, 044A03 (in Japanese).

45. Aoki, T., Matoba, S., **Niwano, M.**, Kuchiki, K., Tanikawa, T., Takeuchi, N., Yamaguchi, S., Motoyama, H., Fujita, K., Yamasaki, T., Iizuka, Y., Hori, M., Shimada, R., Uetake, J., Nagatsuka, N., Onuma, Y., Hashimoto, A., Ishimoto, H., Tanaka, T. Y., Oshima, N., Kajino, M., Adachi, K., Kurosaki, Y., Sugiyama, S., Tsutaki, S., Goto-Azuma, K., Hachikubo, A., Kawakami, K., and Kinase, T., 2021: Studies on Atmosphere, Snow/Ice, and Glacial Microbes on Greenland Ice Sheet by SIGMA and relevant projects − A linkage to the ArCS II Project −, *Seppyo*, 83, 169-191 (in Japanese with English abstract).
44. Wehrlé, A., Box, J. E., **Niwano, M.**, Anesio, A. M., and Fausto, R. S., 2021: Greenland bare ice albedo from PROMICE automatic weather station measurements and Sentinel-3 satellite observations, GEUS Bulletin, 47, 5284. https://doi.org/10.34194/geusb.v47.5284
43. **Niwano, M.**, Aoki, T., Hashimoto, A., Oshima, N., Kajino, M., Onuma, Y, Fujita, K., Yamaguchi, S., Shimada, R., Takeuchi, N., Tsutaki, S., Motoyama, H., Ishii, M., Sugiyama, S., Hirasawa, N., and Abe-Ouchi, A., 2021: Review of the current polar ice sheet surface mass balance and its modelling: the 2020 summer edition, *Seppyo*, 83, 27-50 (in Japanese), https://doi.org/10.5331/seppyo.83.1_27.
42. **Niwano, M.**, Yamaguchi, S., Yamasaki, T., and Aoki. T., 2020: Near-surface snow physics data from a dog-sledge traverse expedition in the northwest Greenland ice sheet during 2018 spring. *Polar Data Journal*, 4, 133-144, http://doi.org/10.20575/00000019.
41. Vandecrux, B., Mottram, R., Langen, P. L., Fausto, R. S., Olesen, M., Stevens, C. M., Verjans, V., Leeson, A., Ligtenberg, S., Kuipers Munneke, P., Marchenko, S., van Pelt, W., Meyer, C. R., Simonsen, S. B., Heilig, A., Samimi, S., Marshall, S., Machguth, H., MacFerrin, M., **Niwano, M.**, Miller, O., Voss, C. I., and Box, J. E., 2020: The firn meltwater Retention Model Intercomparison Project (RetMIP): evaluation of nine firn models at four weather station sites on the Greenland ice sheet, *The Cryosphere*, 14, 3785–3810, https://doi.org/10.5194/tc-14-3785-2020.
40. Fettweis, X., Hofer, S., Krebs-Kanzow, U., Amory, C., Aoki, T., Berends, C. J., Born, A., Box, J. E., Delhasse, A., Fujita, K., Gierz, P., Goelzer, H., Hanna, E., Hashimoto, A., Huybrechts, P., Kapsch, M.-L., King, M. D., Kittel, C., Lang, C., Langen, P. L., Lenaerts, J. T. M., Liston, G. E., Lohmann, G., Mernild, S. H., Mikolajewicz, U., Modali, K., Mottram, R. H., **Niwano, M.**, Noël, B., Ryan, J. C., Smith, A., Streffing, J., Tedesco, M., van de Berg, W. J., van den Broeke, M., van de Wal, R. S. W., van Kampenhout, L., Wilton, D., Wouters, B., Ziemen, F., and Zolles, T., 2020: GrSMBMIP: intercomparison of the modelled 1980–2012 surface mass balance over the Greenland Ice Sheet, *The Cryosphere*, 14, 3935–3958, https://doi.org/10.5194/tc-14-3935-2020.

39. Menard, C. B., Essery, R., Krinner, G., Arduini, G., Bartlett, P., Boone, A., Brutel-Vuilmetm, C., Burke, E., Cuntz, M., Dai, Y., Decharmem, B., Dutra, E., Fang, X., Fierz, C., Gusev, Y., Hagemann, S., Haverd, V., Kim, H., Lafaysse, M., Marke, T., Nasonova, O., Nitta, T., **Niwano, M.**, Pomeroy, J., Schädler, G., Semenov, V., Smirnova, T., Strasser, U., Swenson, S., Turkov, D., Wever, N., and Yuan, H., 2021: Scientific and human errors in a snow model intercomparison. *Bull. Amer. Meteor. Soc.*, 102, E61-E79, https://doi.org/10.1175/BAMS-D-19-0329.1.

38. Kurosaki, Y., Matoba, S., Iizuka, Y., **Niwano, M.**, Tanikawa, T., Ando, T., Hori, H., Miyamoto, A., Fujita, S., and Aoki, T., 2020: Reconstruction of sea ice concentration in northern Baffin Bay using deuterium excess in a coastal ice core from the northwestern Greenland Ice Sheet. *J. Geophys. Res. Atmos.*, **125**, e2019JD031668, https://doi.org/10.1029/2019JD031668.

37. Tanikawa, T., Kuchiki, K., Aoki, T., Ishimoto, H., Hachikubo, A., **Niwano, M.**, Hosaka, M., Matoba, S., Kodama, Y., Iwata, Y., and Stamnes, K., 2020: Effects of snow grain shape and mixing state of snow impurity on retrieval of snow physical parameters from ground‐based optical instrument, *J. Geophys. Res. Atmos.*, **125**, e2019JD031858, https://doi.org/10.1029/2019JD031858.

36. Onuma, Y., Takeuchi, N., Tanaka, S., Nagatsuka, N., **Niwano, M.**, and Aoki, T., 2020: Physically based model of the contribution of red snow algal cells to temporal changes in albedo in northwest Greenland, *The Cryosphere*, **14**, 2087–2101, https://doi.org/10.5194/tc-14-2087-2020.

35. Vandecrux, B., Fausto, R. S., van As, D., Colgan, W., Langen, P. L., Haubner, K., Ingeman-Nielsen, T., Heilig, A., Stevens, C. M., MacFerrin, M., **Niwano, M.**, Steffen, K., and Box, J. E., 2020: Firn cold content evolution at nine sites on the Greenland ice sheet between 1998 and 2017, *J. Glaciol.*, **66**, 591–602, https://doi.org/10.1017/jog.2020.30.

34. Toyoda, T., Aoki, T., **Niwano, M.**, Tanikawa, T., Urakawa, L. S., Tsujino, H., Nakano, H., Sakamoto, K., Hirose, N., Yamanaka, G., 2020: Impact of observation-based snow albedo parameterization on global ocean simulation results, *Polar Science*, 100521, https://doi.org/10.1016/j.polar.2020.100521.

33. Kokhanovsky, A., Lamare, M., Danne, O., Brockmann, C., Dumont, M., Picard, G., Arnaud, L., Favier, V., Jourdain, B., Le Meur, E., Di Mauro, B., Aoki, T., **Niwano, M.**, Rozanov, V., Korkin, S., Kipfstuhl, S., Freitag, J., Hoerhold, M., Zuhr, A., Vladimirova, D., Faber, A.-K., Steen-Larsen, H.C., Wahl, S., Andersen, J.K., Vandecrux, B., van As, D., Mankoff, K.D., Kern, M., Zege, E., Box, J.E., 2019: Retrieval of snow properties from the Sentinel-3 Ocean and Land Colour Instrument, *Remote Sens.*, 11, 2280, https://doi.org/10.3390/rs11192280.

32. **Niwano, M.**, Hashimoto, A., and Aoki, T., 2019: Cloud-driven modulations of Greenland ice sheet surface melt, *Sci. Rep.*, 9, 10380, https://doi.org/10.1038/s41598-019-46152-5.

31. Ménard, C. B., Essery, R., Barr, A., Bartlett, P., Derry, J., Dumont, M., Fierz, C., Kim, H., Kontu, A., Lejeune, Y., Marks, D., **Niwano, M.**, Raleigh, M., Wang, L., and Wever, N., 2019: Meteorological and evaluation datasets for snow modelling at ten reference sites: description of in situ and bias-corrected reanalysis data, *Earth Syst. Sci. Data*, 11, 865-880, https://doi.org/10.5194/essd-11-865-2019.

30. **Niwano, M**. 2019: Recent rapid snow/ice mass loss in the Greenland ice sheet –an attempt to understand the governing mechanism through field measurements and numerical modelling-, *TENKI*, 66(3), 225-230, https://doi.org/10.24761/tenki.66.3_225, (in Japanese).

29. Krinner, G., C. Derksen, R. Essery, M. Flanner, S. Hagemann, M. Clark, A. Hall, H. Rott, C. Brutel-Vuilmet, H. Kim, C. B. Ménard, L. Mudryk, C. Thackeray, L. Wang, G. Arduini, G. Balsamo, P. Bartlett, J. Boike, A. Boone, F. Chéruy, J. Colin, M. Cuntz, Y. Dai, B. Decharme, J. Derry, A. Ducharne, E. Dutra, X. Fang, C. Fierz, J. Ghattas, Y. Gusev, V. Haverd, A. Kontu, M. Lafaysse, R. Law, D. Lawrence, W. Li, T. Marke, D. Marks, M. Ménégoz, O. Nasonova, T. Nitta, **M. Niwano**, J. Pomeroy, M. S. Raleigh, G. Schaedler, V. Semenov, T. G. Smirnova, T. Stacke, U. Strasser, S. Svenson, D. Turkov, T. Wang, N. Wever, H. Yuan, W. Zhou, and D. Zhu, 2018: ESM-SnowMIP: assessing snow models and quantifying snow-related climate feedbacks, *Geosci. Model Dev.*, 11, 5027-5049, https://doi.org/10.5194/gmd-11-5027-2018.

28. Kurosaki, Y., S. Matoba, Y. Iizuka, **M. Niwano**, T. Tanikawa, and T. Aoki, 2018: Influence of environmental conditions near Baffin Bay on deuterium excess and chemical substances in falling snow in northwest Greenland, *Seppyo*, 80(6), 515-529 (in Japanese with English abstract).

27. Takeuchi, N., R. Sakaki, J. Uetake, N. Nagatsuka, R. Shimada, **M. Niwano**, T. Aoki, 2018: Temporal variations of cryoconite holes and cryoconite coverage on the ablation ice surface of Qaanaaq Glacier in northwest Greenland, *Ann. Glaciol.*, **59**, 21-30, https://doi.org/10.1017/aog.2018.19.

26. Onuma, Y., N. Takeuchi, S. Tanaka, N. Nagatsuka, **M. Niwano**, and T. Aoki, 2018: Observations and modelling of algal growth on a snowpack in north-western Greenland, *The Cryosphere*, **12**, 2147-2158, https://doi.org/10.5194/tc-12-2147-2018.

25. Matoba, S., **M. Niwano**, T. Tanikawa, Y. Iizuka, T. Yamasaki, Y. Kurosaki, T. Aoki, A. Hashimoto, M. Hosaka, and S. Sugiyama, 2018: Field activities at the SIGMA-A site, northwestern Greenland Ice Sheet, 2017, *Bull. Glaciol. Res.*, **36**, 15-22, https://doi.org/10.5331/bgr.18R01.

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11. Hori, M., T. Aoki, T. Tanikawa, K. Kuchiki, **M. Niwano**, S. Yamaguchi, and S. Matoba, 2014: Dependence of thermal infrared emissive behaviors of snow cover on the surface snow type, *Bull. Glaciol. Res.*, 32, 33-45, https://doi.org/10.5331/bgr.32.33.
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07. Yamaguchi, S., S. Matoba, T. Yamazaki, A. Tsushima, **M. Niwano**, T. Tanikawa, and T. Aoki, 2014: Glaciological observations in 2012 and 2013 at SIGMA-A site, Northwest Greenland, *Bull. Glaciol. Res.*, 32, 95-105, https://doi.org/10.5331/bgr.32.95.
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02. Kuchiki, K., T. Aoki, **M. Niwano**, H. Motoyoshi, and H. Iwabuchi, 2011: Effect of sastrugi on snow bidirectional reflectance and its application to MODIS data, *J. Geophys. Res.*, 116, D18110, https://doi.org/10.1029/2011JD016070.
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Open data

Niwano, M., Yamaguchi, S., Yamasaki, T., and Aoki, T. (2020): Near-surface snow physics data from SIGMA-Traverse 2018, 1.10, Arctic Data archive System (ADS). http://doi.org/10.17592/001.2020091101

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06. Yamaguchi, S., S. Matoba, **M. Niwano**, T. Aoki, and K. Kosugi (2018): Database of long-term meteorological and snow-pit observations in Japan, International Snow Science Workshop Proceedings 2018, 582-585, Montana State University Library, https://arc.lib.montana.edu/snow-science/item.php?id=2603.
05. Hashimoto, A., **M. Niwano**, S. Yamaguchi, T. Yamasaki, and T. Aoki (2018): Numerical simulation of lee-side downslope winds near Siorapaluk in northwest Greenland, *CAS/JSC WGNE Research Activities in Atmospheric and Oceanic Modelling*, 48, 5.05-5.06.
04. Bellaire, S., M. Proksch, M. Schneebeli, M. Niwano, and K. Steffen (2017): Measured and Modeled Snow Cover Properties across the Greenland Ice Sheet, The Cryosphere Discuss., https://doi.org/10.5194/tc-2017-55.

03. Hashimoto, A., **M. Niwano**, T. Aoki, S. H. Motoyoshi, S. Yamaguchi and S. Nakai, 2017: Numerical weather prediction experiment in collaboration with research activities in glaciology and snow disaster prevention, *CAS/JSC WGNE Research Activities in Atmospheric and Oceanic Modelling*, 47, 5.11-5.12.

02. Hashimoto, A., K. Yamada, N. Hirasawa, **M. Niwano**, and T. Aoki, 2017: Antarctic numerical weather prediction for supporting JARE by using JMA-NHM, *CAS/JSC WGNE Research Activities in Atmospheric and Oceanic Modelling*, 47, 5.09-5.10.

01. Aoki, T., **M. Niwano**, and S. Matoba, 2016: Snow observations and development of physically based process, *Low Temperature Science*, 74, 163-174 (in Japanese with English abstract).

Selected presentations in international conferences/workshops

Niwano, M. (2023): Recent updates of the polar regional climate model NHM-SMAP, Polar CORDEX Workshop 2023, Utrecht, 4 October 2023.

Niwano, M., M. Suya, K. Nagaya, S. Yamaguchi, S. Matoba, I. Harada, and N. Ohkawara (2023): Estimation of seasonal snow mass balance in Japan with a high-resolution snow cover simulation system by Japan Meteorological Agency, IUGG2023, Berlin (12 July 2023).

Niwano, M. (2022): Rainfall on the Greenland ice sheet: Present-day states estimated from a high-resolution non-hydrostatic polar regional climate model, IASC NAG online meeting (25 January 2022).

Niwano, M. (2021): Challenges to model complex snow-atmosphere interaction processes in the Greenland ice sheet, 8 September 2021, IMAU (Utrecht University) online seminar (8 September 2020).

Niwano, M. (2020): Application of the polar regional climate model NHM-SMAP in the Antarctic ice sheet, Polar CORDEX Workshop, virtual (7 October 2020).

Niwano, M. and J. E. Box (2019): Utilization of satelite-derived surface snow physical properties to improve the performance of the SMAP physical snowpack model, IASC Workshop on the dynamics and mass budget of Arctic glaciers & proglacial marine ecosystems, Bardola Hotel, Geilo, Norway. (January 23, 2019, oral)

Niwano, M., T. Aoki, A. Hashimoto, S. Matoba, S. Yamaguchi, T. Tanikawa, K. Fujita, A. Tsushima, Y. Iizuka, R. Shimada, and M. Hori (2018): High resolution polar regional climate model NHM-SMAP for the Greenland Ice Sheet, 2018 AGU Fall Meeting, C43E-1834, Washignton DC. (December 13, 2018, poster)

Niwano, M., T. Aoki, A. Hashimoto, S. Matoba, S. Yamaguchi, T. Tanikawa, K. Fujita, A. Tsushima, Y. Iizuka, R. Shimada, and M. Hori (2018): Evaluation of the Greenland Ice Sheet surface mass balance estimated by the NHM-SMAP regional climate model, Fifth International Symposium on the Arctic Research (ISAR-5), 16-18 January 2018, Tokyo, Japan. (January 18, 2018, oral)

Niwano, M., T. Aoki, A. Hashimoto, T. Tanikawa, R. Shimada, and M. Hori (2017): Inter-comparison of a regional climate model-simulated surface optically equivalent snow grain size in the Greenland ice sheet with satellite-derived data, Workshop on Modeling Meltwater in Snow and Firn: Processes, Validation, Intercomparison and Model Uses of Optical Remotely Sensed Data, September 20 - 22 2017, Geological Survey of Denmark and Greenland (GEUS), Copenhagen, Denmark. (September 22, 2017, oral)

Niwano, M., T. Aoki, A. Hashimoto, T. Tanikawa, M. Hosaka, R. Shimada, and M. Hori (2016): Development of the NHM-SMAP regional climate model, Workshop on the Greenland Surface Mass Balance: Understanding the fundamental processes controlling the surface mass balance of the Greenland ice sheet and improving estimates, 7 – 9 September 2016, New York, USA. (September 8, 2016, poster)

Niwano, M., T. Aoki, K. Kuchiki, S. Matoba, Y. Kodama, and T. Tanikawa (2016): Evaluation of the SMAP model-simulated snow internal physical properties at Sapporo, Japan from 2005 to 2015, EGU General Assembly 2016, 17-22 April 2016, Vienna, Austria. (April 21, 2016, poster)

Niwano, M., T. Aoki, S. Matoba, S. Yamaguchi, T. Tanikawa, K. Kuchiki, and H. Motoyama (2015): Evaluation of the SMAP model calculated snow albedo at the SIGMA-A site, northwest Greenland, during the 2012 record surface melt event, AGU Fall Meeting, C41B-0696, 14-18 December 2015, San Francisco, USA. (December 17, 2015, poster)

Niwano, N., T. Aoki, S. Matoba, S. Yamaguchi, T. Tanikawa, K. Kuchiki, and H. Motoyama, (2015): Surface energy balance at the site SIGMA-A, northwest Greenland during the record surface melt event in the summer of 2012. Fourth International Symposium on the Arctic Research (ISAR-4), 23-26 April 2015, Toyama, Japan. (April 29, 2015, oral)

Niwano, M., T. Aoki, S. Matoba, S. Yamaguchi, T. Tanikawa, H. Motoyama, and K. Kuchiki, (2013): Evaluation of a 1-D snowpack model SMAP applied in the Greenland ice sheet, EGU General Assembly 2013, 8-12 April 2013, Vienna, Austria. (April 9, 2013, poster)

Niwano, M., T. Aoki, S. Matoba, S. Yamaguchi, T. Tanikawa, H. Motoyama, K. Kuchiki, M. Hosaka, and Y. Kodama, (2013): Accuracy of simulated snow grain size and shortwave albedo by a 1-D physical snowpack model SMAP: Model validation at Sapporo, Japan and Greenland, Snow Grain Size Workshop - Measurements and Applications, 2-5 April 2013, Grenoble, France. (April 2, 2013, poster)

Niwano. M., T. Aoki, K. Kuchiki, M. Hosaka, and K. Kodama, (2011): A numerical model to simulate physical states of snowpack for climate studies, C51A-0633, AGU Fall Meeting, 5-8 December 2011, San Francisco, USA. (December 9, 2011, poster)

Fieldwork

At present, Dr. Niwano has stayed on the Greenland ice sheet for total 108 days to perform

field measurements since 2012.

2023: Northwestern Greenland ice sheet (L.: Dr. Niwano), **7 days on the ice sheet**

2022: Qaanaaq ice cap in the northwestern Greenland (L.: Dr. Niwano)

2022: Nakasatsunai, Hokkaido, Japan (L.: Prof. Teruo Aoki)

2021: Nakasatsunai, Hokkaido, Japan (L.: Prof. Teruo Aoki)

2020: Nakasatsunai, Hokkaido, Japan (L.: Prof. Teruo Aoki)

2019: Q19 summer south Greenland expedition (L.: Prof. Jason Box), **1 days on the ice sheet**

2019: Q19 spring south Greenland expedition (L.: Prof. Jason Box), **11 days on the ice sheet**

2019: Nakasatsunai, Hokkaido, Japan (L.: Prof. Teruo Aoki)

2018: EGRIP camp, Greenland ice sheet (L.: Dr. Sumito Matoba), **22 days on the ice sheet**

2018: SIGMA-Traverse, a traverse expeditiong in the northwestern Greenland ice sheet using a traditional Greenlandic style dog-sledge (L.: Dr. Niwano), **13 days on the ice sheet**

2018: Nakasatsunai, Hokkaido, Japan (L.: Prof. Teruo Aoki)

2017: Northwestern Greenland ice sheet (L.: Dr. Sumito Matoba), **16 days on the ice sheet**

2017: Nakasatsunai, Hokkaido, Japan (L.: Prof. Teruo Aoki)

2016: Nakasatsunai, Hokkaido, Japan (L.: Prof. Teruo Aoki)

2015: Qaanaaq ice cap in the northwestern Greenland (L.: Prof. Teruo Aoki)

2015: Nakasatsunai, Hokkaido, Japan (L.: Prof. Teruo Aoki)

2014: Northwestern Greenland ice sheet (L.: Prof. Teruo Aoki), **10 days on the ice sheet**

2014: Nakasatsunai, Hokkaido, Japan (L.: Prof. Teruo Aoki)

2013: Northwestern Greenland ice sheet (L.: Prof. Teruo Aoki), **7 days on the ice sheet**

2013: Kitami, Hokkaido, Japan (L.: Prof. Teruo Aoki)

2012: Northwestern Greenland ice sheet (L.: Prof. Teruo Aoki), **21 days on the ice sheet**

2011: Nakasatsunai, Hokkaido, Japan (L.: Prof. Teruo Aoki)

2010: Kitami, Hokkaido, Japan (L.: Prof. Teruo Aoki)

2009: Nakasatsunai, Hokkaido, Japan (L.: Prof. Teruo Aoki)

In addition to the above-mentioned fieldwork, Dr. Niwano greatly contributes to maintain automated weather stations installed in Sapporo, Hokkaido, Japan and the Greenland ice sheet.

Professional societies

- European Geosciences Union (EGU): 2011–Present (Lifetime member)
- Japan Geoscience Union (JpGU): 2009–Present
- American Geophysical Union (AGU): 2008–Present (Lifetime member)
- Japanese Society of Snow and Ice: 2008–Present
- Meteorological Society of Japan: 2003–Present

・ International Glaciological Society (IGS): 2010–2022

Review experiences of grant proposals

・Natural Environment Research Council (NERC), The United Kingdom
・The Fund for Scientific Research-FNRS (F.R.S.-FNRS), Belgium
・The Grants-in-Aid for Scientific Research KAKENHI, The Japan Society for the Promotion of Science (JSPS)
・The National Research Funding Competition FONDECYT, Chile
・The Netherlands e-Science Center (NLeSC) and The Netherlands Organisation for Scientific Research (NWO, the Dutch Research Council)
・The Netherlands Space Office (NSO)
・JSPS KAKENHI
・National Institute of Polar Research, International Polar and Earth Environmental Research Center (IPERC), Special Collaboration Project

Review experiences of scientific papers

・Atmospheric Chemistry and Physics
・Bulletin of Glaciological Research
・Cold Regions Science and Technology
・Deep Sea Research II
・Earth System Science Data
・Environmental Research Lettre
・Frontiers in Earth Science
・Geophysical Research Letters
・Journal of Disaster Research
・Journal of Geophysical Research: Atmospheres
・Journal of Geophysical Research: Earth Surface
・Nature Communications
・Polar Data Journal
・Polar Science
・Remote Sensing
・Scientific Data
・Soil Science and Plant Nutrition
・SOLA
・The Cryosphere
・Seppyo (in Japanese)

March 19, 2025

IT skills

Fortran, Unix, shell scripting, html, python, GrADS, GMT, LaTeX, Windows batch programming

Languages

Japanese (mother tongue), English