Peer-reviewed publications by Timo Vihma

Submitted

Persson, P. O. G, .and T. Vihma. Chapter 6: The atmosphere over sea ice. In: Sea Ice, Third Edition. Edited by D. N. Thomas. Wiley-Blackwell:London. Submitted.

Hari, P., T. Petäjä, J. Bäck, V.-M. Kerminen, H. K. Lappalainen, T. Vihma, T. Laurila, Y. Viisanen, T. Vesala, and M. Kulmala. Conceptual design of a measurement network of the global change. Submitted to Atm. Chem. Phys.

2015

116. Vihma, T., J. Screen, M. Tjernström, B. Newton, X. Zhang, V. Popova, C. Deser, M. Holland, and T. Prowse (2015). The atmospheric role in the Arctic water cycle: processes, past and future changes, and their impacts, J. Geophys. Res., accepted.

115. Vihma, T. (2015). Weather extremes linked to interaction of the Arctic and mid-latitudes. Invited contribution to the book *Patterns of Climate Extremes: Trends and Mechanisms*, by S.-Y. Wang, Yoon, J.-H. Yoon, R. Gillies, and C, Funk (Editors), American Geophysical Union, accepted.

114. Pezza, A., K. Sandler, P. Uotila, T. Vihma, M. Mesquita, and P. Reid (2015). Southern Hemisphere polar mesocyclones and explosive cyclones in high-resolution datasets. Clim. Dyn., accepted.

113. Zhang, Z., T. Vihma, A. Stössel, and P. Uotila (2015). The role of wind forcing from operational analyses for the model representation of Antarctic coastal sea ice. Ocean Modelling, http://dx.doi.org/10.1016/j.ocemod.2015.07.019.

112. Uotila, P., T. Vihma, and J. Haapala (2015), Atmospheric and oceanic conditions and the extremely low Bothnian Bay sea ice extent in 2014/2015, Geophys. Res. Lett., 42, doi:10.1002/2015GL064901.

111. Prowse, T., A. Bring, J. M. Karlsson, E. Carmack, M. Holland, A. Instanes, T. Vihma, and F. J. Wrona. Arctic freshwater synthesis: summary of key emerging issues, J. Geophys. Res., 120, doi:10.1002/2015JG003128

110. Uttal, T., S. Starkweather, J. Drummond, T. Vihma, C. J. Cox, E. Dlugokencky, J. Ogren, B. McArthur, L. Schmeisser, V. Walden, T. Laurila, L. Darby, A. P. Makshtas, J. Intrieri, J. Burkhart, T. Haiden, B. Goodison, M. Maturilli, M. Shupe, G. de Boer, R. Stone, A. Saha, A. Grachev, L. Bruhwiler, O. Persson, G. Lesins, S. Crepinsek, C. Long, S. Sharma, A. Massling, D. D. Turner, D. Stanitski, E. Asmi, M. Aurela, H. Skov, K. Eleftheriadis, A. Virkkula, A. Platt, E. Forland, J. Verlinde, I. Yoshihiroo, I. E. Nielsen, M. Bergin, L. Candlish, N. Zimov, S. Zimov, N. O'Neil, P. Fogal, R. Kivi, E. Konopleva, V. Kustov, B.Vasel, Y. Viisanen, and V. Ivakhov. International Arctic Systems for Observing the Atmosphere (IASOA): An International Polar Year Legacy Consortium. Bull. Am. Meteorol. Soc., accepted.

109. Sterk, H. A. M., G. J. Steeneveld, A. A. M. Holtslag, F. Bosveld, B. J. H. van de Wiel, T. Vihma, and P. Anderson. Clear-sky stable boundary layers with low winds over snow-covered surfaces. Part II: Process sensitivity. Q. J. R. Meteorol. Soc., accepted.

108. Pirazzini, R., P. Räisänen, T. Vihma, M. Johansson, and E.-M. Tastula (2015). Measurements and modelling of snow particle size and shortwave infrared albedo over a melting Antarctic ice sheet, The Cryosphere Discuss., 9, 3405-3474, doi:10.5194/tcd-9-3405-2015. Accepted to The Cryosphere.

107. Nygård, T., T. Vihma, G. Birnbaum, J. Hartmann, J. C. King, T. Lachlan-Cope, R. Ladkin, C. Lüpkes, and A. Weiss. Validation of eight atmospheric reanalyses in the Antarctic Peninsula region. Quart. J. Roy. Meteorol. Soc., accepted

106. Stanislawska, K., K. Krawiec, and T. Vihma (2015). Genetic programming for estimation of heat flux between the atmosphere and sea ice in Polar regions. GECCO '15 Proceedings of the 2015 Genetic and Evolutionary Computation Conference, p. 1279-1286, doi: 10.1145/2739480.2754675

105. Gascard, J.-C., T. Vihma, and R. Döscher (2015). General introduction to the DAMOCLES special issue. Atmos. Chem. Phys., 15, 5377–5379, doi:10.5194/acp-15-5377-2015

104. Tuononen, V. A. Sinclair, T. Vihma (2015), A climatology of low-level jets in the mid-latitudes and polar regions of the Northern Hemisphere, Atmospheric Science Letters, 16, 492-499, doi: 10.1002/asl.587.

103. Overland, J., J. Francis, R. Hall, E. Hanna, S.-J. Kim, and T. Vihma (2015). The Melting Arctic and Mid-latitude Weather Patterns: Are They Connected? Journal of Climate, published online at http://journals.ametsoc.org/doi/abs/10.1175/JCLI-D-14-00822.1.

102. Jonassen, M. O., P. Tisler, B. Altstädter, A. Scholtz, T. Vihma, A. Lampert, G. König-Langlo, C. Lüpkes (2015). Application of remotely piloted aircraft systems in observing the atmospheric boundary layer over Antarctic sea ice in winter. Polar Res., accepted.

101. Boisvert, L. N., D. L. Wu, T. Vihma, and J. Susskind (2015). Verification of air / surface humidity differences from AIRS and ERA-Interim in support of turbulent flux estimation in the Arctic. J. Geophys. Res., Atmos., 120, doi:10.1002/2014JD021666.

100. Sterk, H. A. M., G. J. Steeneveld, T. Vihma, P. S. Anderson, F. C. Bosveld, and A. A. M. Holtslag (2015). Modelling stable boundary layers with low winds over snow Part I: A WRF model evaluation. Q. J. R. Meteorol. Soc., published online, DOI: 10.1002/qj.2513.

99. Tastula, E.-M., B. Galperin, J. Dudhia, M. A. LeMone, S. Sukoriansky, and T. Vihma (2015). Systematic assessment of the differences in the physics and performance Methodical comparison of the QNSE and MYJ PBL schemes for stable conditions. Q. J. R. Meteorol. Soc., published online, DOI:10.1002/qj.2503.

98. Mazon, J., S. Niemelä, D. Pino, H. Savijärvi, and T. Vihma (2015). Snow bands over the Gulf of Finland in wintertime. Tellus A 2015, 67, 25102, http://dx.doi.org/10.3402/tellusa.v67.25102.

2014

97. Leppäranta, M., T. Vihma, and H. Wu (2014). Foreward for the special issue "The Rapid Change of Arctic Sea Ice and its Possible Effects on High- and Mid-Latitude Weather and Climate". Adv. Polar Sci. 25, 4.

96. Vihma, T., B. Cheng, P. Uotila, Wei, L., and Qin, T. (2014). Linkages between Arctic sea ice cover, large-scale atmospheric circulation, and weather and ice conditions in the Gulf of Bothnia, Baltic Sea, Adv. Polar Sci. 25, 4,289-299, doi: 10.13679/j.advps.2014.4.00289.

95. Uotila, P., A. Karpechko, and T. Vihma (2014). Links between the Arctic sea ice and climate extremes in China: An alternative view. Adv. Polar Sci., accepted

94. Döscher, R., T. Vihma, and E. Maksimovich (2014). Recent Advances in understanding the Arctic Climate System State and Change from a Sea Ice Perspective: a Review. Atmos. Chem. Phys. Discuss., 14, 10929–10999, doi:10.5194/acpd-14-10929-2014.

93. Suomi, I., S.-E. Gryning, R. Floors, T. Vihma, and C. Fortelius (2014). On the vertical structure of wind gusts. Q. J. R. Meteorol. Soc., published online, Q. J. R. Meteorol. Soc. DOI:10.1002/qj.2468.

92. Tetzlaff, A., C. Lüpkes, G. Birnbaum, J. Hartmann, T. Nygård, and T. Vihma (2014). Brief Communication: Trends in sea ice extent north of Svalbard and its impact on cold air outbreaks as observed in spring 2013. The Cryosphere, 8, 1757–1763, doi:10.5194/tc-8-1757-2014.

91. Vihma, T., R. Pirazzini, I. Fer, I. A. Renfrew, J. Sedlar, M. Tjernström, C. Lüpkes, T. Nygård, D. Notz, J. Weiss, D. Marsan, B. Cheng, G. Birnbaum, S. Gerland, D. Chechin, and J. C. Gascard (2014). Advances in understanding and parameterization of small-scale physical processes in the marine Arctic climate system: a review. Atmos. Chem. Phys., 14, 9403-9450, doi:10.5194/acp-14-9403-2014.

91b. Vihma, T., R. Pirazzini, I. Fer, I. A. Renfrew, J. Sedlar, M. Tjernström, C. Lüpkes, T. Nygård, D. Notz, J. Weiss, D. Marsan, B. Cheng, G. Birnbaum, S. Gerland, D. Chechin, and J. C. Gascard (2014). Corrigendum to "Advances in understanding and parameterization of small-scale physical processes in the marine Arctic climate system: a review", Atmos. Chem. Phys., 14, 9923–9923, 2014, doi:10.5194/acp-14-9923-2014

90. Jacobs, S. J., T. Vihma, and A. B. Pezza (2014). Heat stress during the Black Saturday event in Melbourne, Australia. Int. J. Biometeorol., DOI 10.1007/s00484-014-0889-2.

89. Lappalainen, H. K., T. Petäjä, J. Kujansuu, V-M- Kerminen, A Shvidenko, J. Bäck, T. Vesala, T. Vihma, G. de Leeuw, A Lauri, T. Ruuskanen, V. B. Lapshin, N. Zaitseva, O. Glezer, M. Arshinov, D. V. Spracklen, S. R. Arnold, S. Juhola, H. Lihavainen, Y. Viisanen, N. Chubarova, S. Chalov, N. Filatov, A. Skorokhod, N. Elansky, E. Dyukarev, I. Esau, P. Hari, V. Kotlyakov, N. Kasimov, V. Bondur, G. Matvienko, A. Baklanov, E. Mareev, Y. Troitskaya, A. Ding, H. Guo, S. Zilitinkevich, and M. Kulmala (2014). Pan Eurasian experiment (PEEX) – a research initiative meeting the grand challenges of the changing environment of the northern Pan-Eurasian Arctic-boreal areas. *Geography, Environment, Sustainability*, 7, 13-48.

88. Välisuo, I., T. Vihma, and J.C. King, Surface energy budget on Larsen and Wilkins ice shelves in the Antarctic Peninsula: results based on reanalyses in 1989-2010, The Cryosphere, 8, 1519–1538, 2014, doi:10.5194/tc-8-1519-2014.

87. Uotila, P., P. R. Holland, T. Vihma, S. J. Marsland, and N. Kimura, Is realistic Antarctic sea ice extent in climate models the result of excessive ice drift?, Ocean Modell., 2014, 79, 33-42, http://dx.doi.org/10.1016/j.ocemod.2014.04.004.

86. Cheng, B., T. Vihma, L. Rontu1, A. Kontu, H. K. Pour, C. Duguay, and J. Pulliainen (2014). Evolution of snow and ice temperature, thickness and energy balance in Lake Orajärvi, northern Finland. Tellus A 2014, 66, 21564, http://dx.doi.org/10.3402/tellusa.v66.21564.

85. Vihma, T. (2014). Effects of Arctic sea ice decline on weather and climate: a review. Surv. Geophys., 35, 1175–1214, DOI 10.1007/s10712-014-9284-0

84. Nygård, T., T. Valkonen, and T. Vihma (2014). Characteristics of Arctic low-tropospheric humidity inversions based on radio soundings. Atmos. Chem. Phys., 14, 1959–1971, 2014, doi:10.5194/acp-14-1959-2014

2013

83. Chung, C. E., H. Cha, T. Vihma, P. Räisänen, and D. Decremer (2013). On the possibilities to use atmospheric reanalyses to evaluate the warming structure in the Arctic. Atmos. Chem. Phys., 13, 11209-11219, doi:10.5194/acp-13-11209-2013.

82. Jakobson, L., T. Vihma, E. Jakobson, T. Palo, A. Männik, and J. Jaagus (2013). Low-level jet characteristics over the Arctic Ocean in spring and summer. Atmos. Chem. Phys., 13, 11089-11099, doi:10.5194/acp-13-11089-2013.

81. Boisvert, L., T. Markus, and T. Vihma (2013), Moisture flux changes and trends for the entire Arctic in 2003-2011 derived from EOS Aqua data. J. Geophys. Res., 118, 5829–5843, doi:10.1002/jgrc.20414.

80. Valkonen, T., T. Vihma, M. Johansson, and J. Launiainen (2013). Atmosphere - sea ice interaction in early summer in the Antarctic: evaluation and challenges of a regional atmospheric model. Q. J. R. Meteorol. Soc., published online, doi: 10.1002/qj.2237.

79. Tian, T., F. Boberg, O.B. Christensen, J.H. Christensen, J. She, and T. Vihma (2013). Resolved complex coastlines and landsea contrasts in a high-resolution regional climate model: a comparative study using prescribed and modelled SSTs. Tellus A 2013, 65, 19951, http://dx.doi.org/10.3402/tellusa.v65i0.19951.

78. Jacobs, S., A. B. Pezza, V. Barras, J. Bye, and T. Vihma (2013). An analysis of the meteorological variables leading to apparent temperature in Australia: present climate, trends, and global warming simulations, Global and Planetary Change, 107, 145–156.

77. Uotila, P., T. Vihma, and M. Tsukernik (2013). Close interactions between the Antarctic cyclone budget and large-scale atmospheric circulation. Geophys. Res. Lett., 40, 3237–3241, doi:10.1002/grl.50560.

76. Tastula, E.-M., T. Vihma, E. L. Andreas, and B. Galperin (2013), Validation of the diurnal cycles in atmospheric reanalyses over Antarctic sea ice, J. Geophys. Res. Atmos., 118, 4194–4204, doi:10.1002/jgrd.50336.

75. Wood CR, Järvi L, Kouznetsov R, Nordbo A, Drebs A, Vihma T, Hirsikko A, Suomi I, Fortelius C, O'Connor E, Moiseev D, Haapanala S, Moilanen J, Kangas M, Karppinen A, Joffre S, Vesala T, Kukkonen J. (2013), An overview of the urban boundary layer atmosphere network in Helsinki, Bull. Am. Meteorol. Soc., 10.1175/BAMS-D-12-00146.1.

74. Nygård, T., T. Valkonen, and T. Vihma (2013). Antarctic Low-Tropospheric Humidity Inversions: 10-year Climatology, J. Climate, 26, 5205-5219, doi:10.1175/JCLI-D-12-00446.1.

73. Cheng, B., Mäkynen, M., Similä, M., Rontu L., and Vihma, T. (2013). Modelling snow and ice thickness in the coastal Kara Sea, Russian Arctic, Ann. Glaciol., 54(62), 105-113, doi: 10.3189/2013AoG62A180

72. Suomi, I., T. Vihma, S.-E. Gryning, and C. Fortelius (2013), Wind gust parameterizations at heights relevant for wind energy – a study based on mast observations, Quart. J. Roy. Meteorol. Soc., 138: DOI:10.1002/qj.2039.

71. Tetzlaff, A., Kaleschke, L., Lüpkes, C., Ament, F., and Vihma, T. (2013). The impact of heterogeneous surface temperatures on the 2-m air temperature over the Arctic Ocean under clear skies in spring, The Cryosphere, 7, 153-166, doi:10.5194/tc-7-153-2013.

70. Kouznetsov, R., P. Tisler, T. Palo, and T. Vihma (2013). An evidence of very shallow summertime katabatic flows in Dronning Maud Land, Antarctica. J. Appl. Meteorol. Climatol., 52, 164-168.

69. Tammelin, B., Vihma, T., Atlaskin, E., Badger, J., Fortelius, C., Gregow, H., Horttanainen, M., Hyvönen, R., Kilpinen, J., Latikka, J., Ljungberg, K., Mortensen, N. G., Niemelä, S., Ruosteenoja, K., Salonen, K., Suomi, I., & Venäläinen, A. (2013). Production of the Finnish Wind Atlas. Wind Energy, 16, 19-35doi: 10.1002/we.517

2012

68. Karvonen, J., Cheng, B., Vihma, T., Arkett, M., and Carrieres, T. (2012). A method for sea ice thickness and concentration analysis based on SAR data and a thermodynamic model, The Cryosphere, 6, 1507-1526, doi:10.5194/tc-6-1507-2012.

67. Tastula, E.-M, T. Vihma, and E. L. Andreas (2012), Modeling of the Atmospheric Boundary Layer over Antarctic Sea Ice in Autumn and Winter, Mon. Wea. Rev., 140, 3919–3935. doi: http://dx.doi.org/10.1175/MWR-D-12-00016.1

66. Maksimovich, E., and T. Vihma (2012), The effect of surface heat fluxes on interannual variability in the spring onset of snow melt in the central Arctic Ocean, J. Geophys. Res., 117, C07012, doi:10.1029/2011JC007220.

65. Jakobson, E., T. Vihma, T. Palo, L. Jakobson, H. Keernik, and J. Jaagus (2012). Validation of atmospheric reanalyzes over the central Arctic Ocean, Geophys. Res. Lett. 39, L10802, doi:10.1029/2012GL051591.

64. Boisvert, L. N., T. Markus, C. L. Parkinson, and T. Vihma (2012), Moisture fluxes derived from EOS aqua satellite data for the North Water Polynya over 2003–2009, J. Geophys. Res., 117, D06119, doi:10.1029/2011JD016949.

63. Kilpeläinen, T., T. Vihma, M. Manninen, A. Sjöblom, E. Jakobson, T. Palo and M.Maturilli (2012), Modelling the vertical structure of the atmospheric boundary layer over Arctic fjords in Svalbard, Quart. J. Roy. Meteorol. Soc., DOI:10.1002/qj.1914

62. Vihma, T., P. Tisler, and P. Uotila (2012), Atmospheric forcing on the drift ofArctic sea ice in 1989–2009, Geophys. Res. Lett., 39, L02501, doi:10.1029/2011GL050118.

61. Atlaskin E, Vihma T. (2012). Evaluation of NWP results for wintertime nocturnal boundary-layer temperatures over Europe and Finland. *Q. J. R. Meteorol. Soc.*, 138: 1440–1451, DOI:10.1002/qj.1885

2011

60. Vihma, T., T. Kilpeläinen, M. Manninen, A. Sjöblom, E. Jakobson, T. Palo, J. Jaagus, and M. Maturilli (2011), Characteristics of temperature and humidity inversions and low-level jets over Svalbard fjords in spring, Advances in Meteorology, Volume 2011, Article ID 486807, 14 p., doi:10.1155/2011/486807.

59. Vihma, T., E. Tuovinen, and H. Savijärvi (2011), Interaction of katabatic winds and near-surface temperatures in the Antarctic, J. Geophys. Res., 116, D21119, doi:10.1029/2010JD014917.

58. Stössel, A., Z. Zhang, and T. Vihma (2011), The effect of alternative real-time wind forcing on Southern Ocean sea ice simulations, J. Geophys. Res., 116, C11021, doi:10.1029/2011JC007328.

57. Vihma, T. (2011). Atmosphere-snow/ice interactions. In: V.P. Singh, P. Singh, U.K. Haritashya (Eds.): Encyclopedia of snow, ice and glaciers. Springer, Dortrecht, The Netherlands, p. 66-75.

56. Lüpkes, C., T. Vihma, G. Birnbaum, S. Dierer, T. Garbrecht, V.M. Gryanik, M. Gryschka, J. Hartmann, G. Heinemann, L. Kaleschke, S. Raasch, H. Savijärvi, K.H. Schlünzen, and

U. Wacker (2012), Mesoscale modelling of the Arctic atmospheric boundary layer and its interaction with sea ice, In: Lemke, P. and Jacobi, H.-W (Eds.): Arctic Climate Change - The ACSYS Decade and Beyond, Atmospheric and Oceanographic Sciences Library, vol. 43, DOI: 10.1007/978-94-007-2027-5

55. Mäkiranta, E., T. Vihma, A. Sjöblom, and E.-M. Tastula (2011), Observations and modelling of the atmospheric boundary layer over sea ice in a Svalbard fjord, Boundary-Layer Meteorol., 140, 105–123, doi:10.1007/s10546-011-9609-1

54. Vihma, T., O.-P. Mattila, R. Pirazzini, and M. M. Johansson. (2011). Spatial and temporal variability in summer snow pack in Dronning Maud Land, Antarctica. The Cryosphere., 5, 187–201, doi:10.5194/tc-5-187-2011.

53. Uotila, P., T. Vihma, A. B. Pezza, I. Simmonds, K. Keay, and A. H. Lynch (2011), Relationships between Antarctic cyclones and surface conditions as derived from high-resolution numerical weather prediction data, J. Geophys. Res., 116, D07109, doi:10.1029/2010JD015358.

52. Tastula, E.-M., and T. Vihma (2011). WRF model experiments on the Antarctic atmosphere in winter. Mon. Wea. Rev., 139, 1279-1291, doi:10.1175/2010MWR3478.1

51. Kilpeläinen, T., T. Vihma, and H. Olafsson (2011), Modelling of spatial variability and topographic effects over Arctic fjords in Svalbard, *Tellus*, 63A, 223–237. DOI: 10.1111/j.1600-0870.2010.00481.x

2010

50. Riihelä. A., Laine, V., Manninen, T., Palo, T., and Vihma, T. (2010) Validation of the Climate-SAF surface broadband albedo product: comparisons with in situ observations over Greenland and the ice-covered Arctic Ocean. *Remote Sensing of Environment*, 114, 2779–2790

49. Lüpkes, C., T. Vihma, E. Jakobson, G. König-Langlo, and A. Tetzlaff (2010). Meteorological observations from ship cruises during summer to the central Arctic: A comparison with reanalysis data. Geophys. Res. Lett., 37, L09810, doi:10.1029/2010GL042724

48. Valkonen, T., T. Vihma, S. Kirkwood, and M. M. Johansson (2010). Fine-scale model simulation of gravity waves generated by Basen nunatak in Antarctica. *Tellus*, 62A, 319–332.

47. Vihma, T. (2010). Effects of weather on the performance of marathon runners. *Int. J. Biometeorol*., 54:297–306. DOI 10.1007/s00484-009-0280-x

46. Jakobson, E. and T. Vihma (2010), Atmospheric moisture budget over the Arctic on the basis of the ERA-40 reanalysis. *Int. J. Climatol.*, **30**: 2175–2194, DOI: 10.1002/joc.2039.

2009

45. Vihma, T., J. Launiainen, and R. Pirazzini (2009). 20-years of Finnish research on boundary-layer meteorology and air-ice-sea interaction in the Antarctic, *Geophysica*, 45(1-2), 7-26.

44. Vihma, T., M. M. Johansson, and J. Launiainen (2009). Radiative and turbulent surface heat fluxes over sea ice in the western Weddell Sea in early summer. J. Geophys. Res., 114, C04019, doi:10.1029/2008JC004995.

43. Vihma, T. and J. Haapala (2009), Erratum to "Geophysics of sea ice in the Baltic Sea – a review", *Progress in Oceanography*, 82, 224, doi:10.1016/j.pocean.2009.06.001.

43b. Vihma, T. and J. Haapala (2009), Geophysics of sea ice in the Baltic Sea – a review, *Progress in Oceanography*, 80, 129-148 , doi: 10.1016/j.pocean.2009.02.002

2008

42. Cheng, B., T. Vihma, Z. Zhang, Z. Li, and H. Wu (2008). Snow and sea ice thermodynamics in the Arctic: Model validation and sensitivity study against SHEBA data. *Chinese J. Polar Sci.*, 19, 108-122.

41. Vihma, T., J. Jaagus, E. Jakobson, and T. Palo (2008), Meteorological conditions in the Arctic Ocean in spring and summer 2007 as recorded on the drifting ice station Tara, *Gephys. Res. Lett.*, 35, L18706, doi: 10.1029/2008GL034681.

40. Cheng, B., Z. Zhang, T. Vihma, M. Johansson, L. Bian, Z. Li and H. Wu (2008). Model experiments on snow and ice thermodynamics in the Arctic Ocean with CHINARE2003 data, *J. Geophys. Res.*, 113, C09020, doi:10.1029/2007JC004654.

39. Tietäväinen, H. and T. Vihma (2008), Atmospheric moisture budget over Antarctica and Southern Ocean on the basis of ERA-40 reanalysis. *Int. J. Climatol.*, 28, 1977-1995, doi: 10.1002/joc.1684.

38. Tisler, P., T. Vihma, G. Müller, and B. Brümmer (2008), Modelling of warm-air advection over Arctic sea ice, *Tellus, 60A*, 775–788.

37. Stössel, A., W.-G. Cheon, and T. Vihma (2008), Interactive momentum flux forcing over sea ice in a global ocean GCM, *J. Geophys. Res*, 113, C05010, doi:10.1029/2007JC004173.

36. Valkonen, T., T. Vihma, and M. Doble (2008), Mesoscale modelling of the atmospheric boundary layer over the Antarctic sea ice: a late autumn case study. *Mon. Wea. Rev.*, 136, 1457-1474.

35. Lüpkes, C., T. Vihma, G. Birnbaum, and U. Wacker (2008), Influence of leads in sea ice on the temperature of the atmospheric boundary layer during polar night, *Geophys. Res. Lett.*, 35, L03805, doi:10.1029/2007GL032461.

34. Heino, R., H. Tuomenvirta, V. S. Vuglinsky, B. G. Gustafsson, H. Alexandersson, L. Bärring, A. Briede, J. Cappelen, D. Chen, M. Falarz, E. Førland, J. Haapala, J. Jaagus, L. Kitaev, A. Kont, E. Kuusisto, G. Lindström, H. E. M. Meier, M. Mietus, A. Moberg, K. Myrberg, T. Niedzwiedz, Ø. Nordli, A. Omstedt, K. Orviku, Z. Pruszak, E. Rimkus, V. Russak, C. Schrum, Ü. Suursaar, T. Vihma, R. Weisse, and J. Wibig, Past and current climate change. in: BACC Author Team: *Assessment of Climate Change for the Baltic Sea Basin*, Springer Verlag, Berlin Heidelberg, p. 35-131, 2008.

2007

33. Mäkynen, M., B. Cheng, M. Similä, T. Vihma, and M. Hallikainen, Comparisons between SAR backscattering coefficient and results of a thermodynamic snow/ice model for the Baltic Sea land-fast sea ice, *IEEE Transactions on Geoscience and Remote Sensing*, 45, 1131-1141, 2007.

2006

32. Cheng, B., T. Vihma, R. Pirazzini and M. Granskog, Modeling of superimposed ice formation during spring snow-melt period in the Baltic Sea. *Ann. Glaciol.*, 44, 139-146, 2006.

31. Pirazzini, R., T. Vihma, M. A. Granskog, and B. Cheng, Surface albedo measurements over sea ice in the Baltic Sea during the spring snowmelt period, *Ann. Glaciol.*, 44, 7-14, 2006.

30. Granskog, M, T. Vihma, R. Pirazzini, and B. Cheng, Superimposed ice formation and surface fluxes on sea ice during the spring melt-freeze period in the Baltic Sea, *J. Glaciol.*, 52, 119-127, 2006.

2005

29. Vihma, T., C. Lüpkes, J. Hartmann, and H. Savijärvi, Observations and modelling of cold-air advection over Arctic sea ice in winter, *Bound.-Layer Meteorol.*, 117, 275-300, 2005.

28. Vihma, T., and R. Pirazzini, On the factors controlling the snow surface and 2-m air temperatures over the Arctic sea ice in winter, *Bound.-Layer Meteorol.*, 117, 73-90, 2005.

27. Vihma, T., Preface (for the Special Issues on the atmospheric boundary layer over sea ice), *Boundary-Layer Meteorol.*, 117, 1-4, 2005.

Older

26. Schröder, D., T. Vihma, A. Kerber, and B. Brümmer, On the parameterization of turbulent surface fluxes over heterogeneous sea ice surfaces, *J. Geophys. Res.*, 108, No. C6, doi: 10.1029/2002JC001385, 2003.

25. Vihma, T., J. Hartmann, and C. Lüpkes, A case study of an on-ice air flow over the Arctic marginal sea ice zone, *Bound.-Layer Meteorol.*, 107 (1): 189-217, 2003.

24. Cheng, B., J. Launiainen, and T. Vihma, Modelling of superimposed ice formation and sub-surface melting in the Baltic Sea, *Geophysica*, 39, 31-50, 2003.

23. Cheng, B., and T. Vihma, Idealized study of a 2-D coupled sea-ice/atmosphere model during warm-air advection, *J. Glaciol.*, 48, 425-438, 2002.

22. Brümmer, B., D. Schröder, J. Launiainen, T. Vihma, A.-S. Smedman, and M. Magnusson, Temporal and spatial variability of surface fluxes over the ice edge zone in the northern Baltic Sea, *J. Geophys. Res.*, 107(C8), 3096, doi:10.1029/2001JC000884, 2002.

21. Vihma, T., J. Uotila, B. Cheng, and J. Launiainen, Surface heat budget over the Weddell Sea: buoy results and comparisons with large-scale models, *J. Geophys. Res.*, 107 (C2), 3013, doi: 10.1029/2000JC00037, 2002.

20. Vihma, T. and B. Brümmer, Observations and modelling of on-ice and off-ice flows in the northern Baltic Sea, *Bound.-Layer Meteorol.*, 103, 1-27, 2002.

19. Brümmer, B., A. Kirchgässner, G. Müller, D. Schröder, J. Launiainen, and T. Vihma, The BALTIMOS field campaigns over the Baltic Sea during all four seasons, *Boreal Env. Res.*, 7, 371-378, 2002.

18. Niros, A., T. Vihma and J. Launiainen, Marine meteorological conditions and air-sea exchange processes over the Baltic Sea in 1990s, *Geophysica*, 38, 59-87, 2002.

17. Pirazzini, R., T. Vihma, J. Launiainen, and P. Tisler, Validation of HIRLAM boundary-layer structures over the Baltic Sea *Boreal Env. Res.*, 7, 211-218, 2002.

16. Kaleschke, L., C. Lüpkes, T. Vihma, J. Haarpaintner, A. Bochert, J. Hartmann, and G. Heygster, SSM/I Sea Ice Remote Sensing for Mesoscale Ocean-Atmosphere Interaction Analysis, *Canadian J. Remote Sensing*, 27, 526-536, 2001.

15. Launiainen, J. B. Cheng, J. Uotila, and T. Vihma, Turbulent surface fluxes and air-ice coupling in the Baltic Air-Sea-Ice Study (BASIS), *Ann. Glaciol., 33, 237-242,* 2001.

14. Cheng, B, J. Launiainen, T. Vihma, and J. Uotila, Modelling sea ice thermodynamics in BALTEX-BASIS, *Ann. Glaciol.*, 33, 243-247, 2001.

13. Vihma, T., and C. Kottmeier, A modelling approach for optimizing flight patterns in airborne meteorological measurements, *Bound.-Layer Meteorol.*, 95, 211-230, 2000.

12. Uotila, J., T. Vihma, and J. Launiainen, Response of the Weddell Sea ice pack to wind forcing, *J. Geophys. Res.*, 105, 1135-1151, 2000.

11. Vihma, T., J. Uotila, and J. Launiainen, Air-sea interaction over a thermal marine front in the Denmark Strait, *J. Geophys. Res.*, 103, 27,665-27,678, 1998.

10. Uotila, J., J. Launiainen, and T. Vihma, An Analysis of Buoy Drift in the Northern North Atlantic with Detection of Drogue Loss Events, *Atmosphere-Ocean*, 35, 474-494, 1997.

9. Vihma, T., J. Launiainen, and J. Uotila, Weddell Sea ice drift: kinematics and wind forcing, *J. Geophys. Res.*, 101, 18,279-18,296, 1996.

8. Uotila, J., J. Launiainen, and T. Vihma, Analysis of the surface drift currents in the Bothnian Sea, *Geophysica*, 31, 37-49, 1995.

7. Vihma, T., Atmosphere-surface interactions over polar oceans and heterogeneous surfaces, *Finnish Marine Research*, 264, 41 p. (PhD-Thesis), 1995.

6. Vihma, T., Subgrid parameterization of surface heat and momentum fluxes over polar oceans, *J. Geophys. Res.*, 100, 22,625-22,646, 1995.

5. Launiainen, J., and T. Vihma, On the surface heat fluxes in the Weddell Sea, in: The Polar Oceans and Their Role in Shaping the Global Environment, Nansen Centennial Volume, edited by O.M. Johannessen, R. Muench, and J.E. Overland, *Geophysical Monograph Series,* 85, American Geophysical Union, pp. 399-419, 1994.

4. Vihma, T. and J. Launiainen, Ice drift in the Weddell Sea in 1990-1991 as tracked by a satellite buoy. *J. Geophys. Res.*, 98, 14471-14485, 1993.

3. Vihma, T., J. Launiainen and G. Krause, On the air-sea interaction in areas of thermal marine fronts in the Greenland Sea. *Atmosphere-Ocean,* 29, 596-610, 1991.

2. Vihma, T. and H. Savijärvi, On the effective roughness length for heterogeneous terrain. *Quart. J. Roy. Meteorol. Soc,* 117, 399-407, 1991.

1. Launiainen, J. and T. Vihma, Derivation of turbulent surface fluxes - an iterative flux-profile method allowing arbitrary observing heights. *Environmental Software,* 5, 113-124, 1990.