Curriculum vitae: Andrey A. Grachev

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Educational Background:

- M.Sci., Oceanography and Atmospheric Physics, Moscow Institute of Physics and Technology, 1980
- Ph.D. Geophysics and Atmospheric Physics, Moscow Institute of Physics and Technology / A.M. Obukhov Institute of Atmospheric Physics, Russian Academy of Sciences, 1984

Employment History:

- 1983 - 1997, A.M. Obukhov Institute of Atmospheric Physics, Russian Academy of Sciences, Moscow, Russia (1983-85, Junior Scientist; 1985-90, Scientist; 1990-97, Senior Scientist)
- 1997 - 1999, Arizona State University, Department of Mechanical and Aerospace Engineering, Environmental Fluid Dynamic Program, Tempe AZ (Research Professor)
- 1999 - Now, NOAA Earth System Research Laboratory / Cooperative Institute for Research in Environmental Sciences (CIRES), University of Colorado, Boulder CO (Research Associate)

Research Interests:

- Atmospheric boundary layers and turbulence in stratified fluids over sea/land/ice
- Air-sea interaction: flux measurements and parameterization
- Arctic research
- Heat/mass transfer in near-wall flows
- Theoretical and laboratory modeling of the free convection

Synergistic Activities:

- Editorial Board Member of the *Boundary-Layer Meteorology* Journal
- Member: American Meteorological Society, American Geophysical Union
- Reviewer: Journal of the Atmospheric Sciences, Journal of Physical Oceanography, Journal of Applied Meteorology, Journal of Atmospheric and Oceanic Technology, Bulletin of the American Meteorological Society, Journal of Geophysical Research, Geophysical Research Letters, Boundary-Layer Meteorology, Journal of Fluid Mechanics, Polar Research, Quarterly Journal of the Royal Meteorological Society, Ocean Dynamics, Ocean Modelling.
- University of Colorado CIRES supervisor
- Participation in 9 ocean expeditions aboard Russian, German, and US research vessels.

Collaborators:

- Christopher W. Fairall, NOAA Earth System Research Laboratory, Boulder, CO, USA
- Harindra J. S. Fernando, College of Eng., University of Notre Dame, Notre Dame, IN, USA
- Sergej S. Zilitinkevich, University of Helsinki, Helsinki, Finland
- George S. Golitsyn, A.M. Obukhov Institute of Atmospheric Physics, Moscow, Russia
- P. Ola G. Persson, CIRES, University of Colorado, Boulder, CO, USA
- Edgar L Andreas, U.S. Army NorthWest Research Associates, Inc., Lebanon, NH, USA

• Zbigniew Sorbjan, Department of Physics, Marquette University, Milwaukee, WI, USA
• William Neff, NOAA Earth System Research Laboratory, Boulder, CO, USA
• Taneil Uttal, NOAA Earth System Research Laboratory, Boulder, CO, USA
• Peter S. Guest, Naval Postgraduate School, Monterey, CA, USA
• Eric R. Pardyjak, Depart. Mech. Eng., University of Utah, Salt Lake City, UT, USA
• Detlev Helmig, Inst. Arctic and Alpine Research, University of Colorado, Boulder, CO, USA
• Jeffrey E. Hare, University of Hawaii at Manoa, JIMAR, Honolulu, HI, USA
• James B. Edson, University of Connecticut, Department of Marine Sciences, Groton, CT, USA
• Igor N. Esau, Nansen Environmental and Remote Sensing Center, Bergen, Norway

Selected Publications:

Grachev A.A., Leo L.S., Di Sabatino S., Fernando H.J.S., Pardyjak E.R., Fairall C.W. (2015) Structure of turbulence in katabatic flows below and above the wind-speed maximum. *Boundary-Layer Meteorol.*, DOI: 10.1007/s10546-015-0034-8 (http://arxiv.org/abs/1501.02297)

Grachev A.A., Andreas E.L, Fairall C.W., Guest P.S., Persson P.O.G. (2015) Similarity theory based on the Dougherty-Ozmidov length scale. *Quart. J. Roy. Met. Soc.*, DOI: 10.1002/qj.2488 (http://arxiv.org/abs/1404.1397)

Grachev A.A., Andreas E.L, Fairall C.W., Guest P.S., Persson P.O.G. (2013) The critical Richardson number and limits of applicability of local similarity theory in the stable boundary layer. *Boundary-Layer Meteorol.* **147**(1), 51–82. DOI: 10.1007/s10546-012-9771-0 (http://arxiv.org/abs/1202.5066)

Grachev A.A., Andreas E.L, Fairall C.W., Guest P.S., Persson P.O.G. (2012) Outlier problem in evaluating similarity functions in the stable atmospheric boundary layer. *Boundary-Layer Meteorol.* **144**(2), 137-155, DOI: 10.1007/s10546-012-9714-9

Grachev, A.A., L. Bariteau, C.W. Fairall, J.E. Hare, D. Helmig, J. Hueber, and E. K. Lang (2011), Turbulent fluxes and transfer of trace gases from ship-based measurements during TexAQS 2006, *J. Geophys. Res.*, **116**, D13110.

Sorbjan, Z., Grachev A.A. (2010) An evaluation of the flux-gradient relationship in the stable boundary layer. *Boundary-Layer Meteorol.* **135**(3), 385–405. DOI 10.1007/s10546-010-9482-3

Andreas E.L, Horst T.W., Grachev A.A., Persson, P.O.G., Fairall C.W., Guest P.S., Jordan R.E. (2010) Parametrizing turbulent exchange over summer sea ice and the marginal ice zone. *Q. J. R. Meteorol. Soc.* **136**(649B), 927–943. DOI: 10.1002/qj.618

Andreas E.L, Persson P.O.G., Jordan R.E., Horst T.W., Guest P.S., Grachev A.A., Fairall C.W. (2010) Parameterizing turbulent exchange over sea ice in winter. *J. Hydrometeorol*. **11**(1), 87–104. DOI: 10.1175/2009JHM1102.1

Helmig D., Cohen L.D., Bocquet F., Oltmans S., Grachev A., Neff W. (2009) Spring and summertime diurnal surface ozone fluxes over the polar snow at Summit, Greenland, *Geophys. Res. Lett.*, **36**, L08809, DOI:10.1029/2008GL036549.

Neff W., Helmig D., Grachev A., Davis D. (2008) A study of boundary layer behavior associated with high NO concentrations at the South Pole using a minisodar, tethered balloon, and sonic anemometer, *Atmospheric Environment*, **42**(12), 2762-2779.

Grachev A.A., Andreas E.L, Fairall C.W., Guest P.S., Persson P.O.G. (2008) Turbulent measurements in the stable atmospheric boundary layer during SHEBA: ten years after. *Acta Geophysica*. **56**(1), 142–166. DOI: 10.2478/s11600-007-0048-9

Grachev A.A., Andreas E.L, Fairall C.W., Guest P.S., Persson P.O.G. (2007) SHEBA flux-profile relationships in the stable atmospheric boundary layer. *Boundary-Layer Meteorol.* **124**(3), 315–333. DOI 10.1007/s10546-007-9177-6

Grachev A.A., Andreas E.L, Fairall C.W., Guest P.S., Persson P.O.G. (2007) On the turbulent Prandtl number in the stable atmospheric boundary layer. *Boundary-Layer Meteorol.* **125**(2), 329–341. DOI 10.1007/s10546-007-9192-7

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Andreas E.L, Claffey K.J., Jordan R.E., Fairall C.W., Guest P.S., Persson P.O.G., Grachev A.A. (2006) Evaluations of the von Kármán constant in the atmospheric surface layer. *J. Fluid Mech.* **559**, 117–149. DOI: 10.1017/S0022112006000164

Fairall C.W., Bradley E.F., Hare J.E., Grachev A.A., Edson J.B. (2003), Bulk parameterization of air-sea fluxes: updates and verification for the COARE algorithm, *Journal of Climate*, **16**(4), 571–591.

Grachev A.A., Fairall C.W., Hare J.E., Edson J.B., Miller S.D. (2003) Wind stress vector over ocean waves. *Journal of Physical Oceanography*, **33**(11), 2408–2429.

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Grachev A.A., Fairall C.W. (1997) Dependence of the Monin-Obukhov stability parameter on the bulk Richardson number over the ocean. *Journal of Applied Meteorology*, **36**(4), 406–414.

Kitaigorodskii S.A., Volkov Yu.A., Grachev A.A. (1995) A note on the analogy between momentum transfer across a rough solid surface and the air-sea interface. *Boundary-Layer Meteorol.* **76**(1-2), 181–197. DOI: 10.1007/BF00710896

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