

Denis L. Volkov - Scientist

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Education

- Ph. D., Physical Oceanography, Utrecht University (The Netherlands), 2004.
- M.Sc., Hydrometeorology, Saint-Petersburg State University (Russia), 1999.
- B.Sc., Hydrometeorology, Saint-Petersburg State University (Russia), 1997.

Professional Experience

- 2021 – present: Scientist - CIMAS / University of Miami, NOAA-AOML affiliate;
- 2013 – 2021: Associate Scientist - CIMAS / University of Miami, NOAA-AOML affiliate;
- 2009 – 2013: Assistant Researcher – Joint Institute for Regional Earth System Science and Engineering / University of California Los Angeles; Jet Propulsion Laboratory affiliate.
- 2006 – 2009: Postdoctoral Scholar – California Institute of Technology; Jet Propulsion Laboratory affiliate.
- 2005 – 2006: Postdoctoral Researcher – C.L.S. Space Oceanography Division (Toulouse, France)
- 2000 – 2004: Ph.D. student – Royal Netherlands Institute for Sea Research, Utrecht University (Netherlands)
- 1998 – 1999: Technician/Engineer – Arctic and Antarctic Research Institute (Saint-Petersburg, Russia)

Publications

- Volkov, D.L.**, S. Dong, M. Lankhorst, M. Kersalé, A. Sanchez-Franks, C. Schmid, J. Herrford, R. C. Perez, B. I. Moat, P. Brandt, C. S. Meinen, M. O. Baringer, E. Frajka-Williams, and D. A. Smeed (2021). Meridional overturning circulation and heat transport in the Atlantic Ocean, [in “State of the Climate in 2020”]. *Bull. Amer. Meteor. Soc.*, 102 (8), S176–S179, <https://doi.org/10.1175/BAMS-D-21-0083.1>.
- Dmitrenko, I., **D. Volkov**, T. Stadnyk, A. Tefs, D. Babb, S. Kirillov, A. Crawford, K. Sydor, and D. Barber (2021). Atmospherically-forced sea-level variability in western Hudson Bay, Canada, *Ocean Sci.*, 17, 1367–1384, <https://doi.org/10.5194/os-17-1367-2021>.
- Larkin, A.A., C.A. Garcia, M. Brock, J.A. Lee, N. Garcia, L.J. Ustick, L. Barbero, B.R. Carter, R.E. Sonnerup, L. Talley, G.A. Tarran, **D.L. Volkov**, & A. Martini (2021). High special resolution global ocean metagenomes from Bio-GO-SHIP repeat hydrography transects, 8:107, <https://doi.org/10.1038/s41597-021-00889-9>.
- International Altimetry Team (2021). Altimetry for the future: Building on 25 years of progress, *Advances in Space Research*, Vol. 68, 2, 319-363, ISSN 0273-1177, <https://doi.org/10.1016/j.asr.2021.01.022>.
- Kersale M., C.S. Meinen, R. Perez, A. Piola, S. Spiech, E. Campos, S. Garzoli, I. Ansonge, **D.L. Volkov**, M. Le Henaff, S. Dong, T. Lamont, O. Sato, M. van den Berg (2021). Multi-Year Estimates of Daily Heat Transport by the Atlantic Meridional Overturning Circulation at 34.5S, *J. Geophys. Res. Oceans*, 126, e2020JC016947, <https://doi.org/10.1029/2020JC016947>.
- Belonenko, T.V., V.S. Travkin, A.V. Koldunov, **D.L. Volkov** (2021). Topographic experiments over dynamical processes in the Norwegian Sea, *Russian Journal of Earth Sciences*, Vol. 21, ES1006, doi:10.2205/2020ES000747.
- Volkov D.L.**, R. Domingues, C.S. Meinen, R. Garcia, M.O. Baringer, G. Goni, & R.H. Smith (2020). Inferring Florida Current volume transport from satellite altimetry, *J. Geophys. Res. Oceans*, 125, e2020JC016763, <https://doi.org/10.1029/2020JC016763>.
- Volkov D.L.**, S.-K. Lee, A.L. Gordon, & M. Rudko (2020). Unprecedented reduction and quick recovery of the South Indian Ocean heat content and sea level in 2014-2018, *Science Advances*, Vol. 6, no. 36, eabc1151, doi:10.1126/sciadv.abc1151.
- Volkov D.L.**, C.S. Meinen, C. Schmid, B. Moat, M. Lankhorst, S. Dong, F. Li, W. Johns, S. Lozier, R. Perez, G. Goni, M. Kersale, E. Frajka-Williams, M. Baringer, D. Smeed, D. Rayner, A. Sanchez-Franks, & U. Send

- (2020). Atlantic meridional overturning circulation and associated heat transport, [In: State of the Climate 2019], *Bull. Am. Met. Soc.*, 101 (8), S159-S163, doi:10.1175/BAMS-D-20-0105.1.
10. Dmitrenko, I.A., P.G. Meyers, S.A. Kirillov, D.G. Babb, **D.L. Volkov**, J.V. Lukovich, R.Tao, J.K. Ehn, K. Sydor, & D. Barber (2020). Atmospheric vorticity sets the basin-scale circulation in the Hudson Bay, *Elementa*, Elem Sci Anth, 8(1), doi:10.1525/elementa.049.
 11. Kersalé, M., Meinen, C. S., Perez, R. C., Le Hénaff, M., Valla, D., Lamont, T., Sato, O. T., Dong, S., Terre, T., van Caspel, M., Chidichimo, M. P., van den Berg, M., Speich, S., Piola, A. R., Campos, E. J. D., Ansong, I., **Volkov, D. L.**, Lumpkin, R., & Garzoli, S. (2020). Highly Variable Upper and Abyssal Overturning Cells in the South Atlantic, *Science Advances*, Vol. 6, no. 32, eaba7573, doi: 10.1126/sciadv.aba7573.
 12. Moat, B. I., Smeed, D. A., Frajka-Williams, E., Desbruyères, D. G., Beaulieu, C., Johns, W. E., Rayner, D., Sanchez-Franks, A., Baringer, M. O., **Volkov, D.**, Jackson, L. C., & Bryden, H. L. (2020). Pending recovery in the strength of the meridional overturning circulation at 26° N, *Ocean Sciences*, 16, 863–874, <https://doi.org/10.5194/os-16-863-2020>.
 13. **Volkov D.L.**, S.-K. Lee, R. Domingues, H. Zhang, & M. Goes (2019). Interannual sea level variability along the southeastern seaboard of the United States in relation to the gyre-scale heat divergence in the North Atlantic, *Geophys. Res. Lett.*, doi:10.1029/2019GL083596.
 14. **Volkov D.L.**, S. Dong, G. Foltz, G. Goni, & R. Lumpkin (2019). Observations of near-surface salinity and temperature structure with dual-sensor Lagrangian drifters during SPURS-2, *Oceanography*, 32(2):66–75, doi:10.5670/oceanog.2019.214.
 15. **Volkov D.L.**, M. Baringer, D. Smeed, W. Johns, & F. Landerer (2019). Teleconnection between the Atlantic Meridional Overturning Circulation and sea level in the Mediterranean Sea, *Journal of Climate*, 32, 935-955, doi:10.1175/JCLI-D-18-0474.1.
 16. Lee, C.M., S. Starkweather, H. Eicken, M-L. Timmermans, J. Wilkinson, S. Sandven, D. Dukhovskoy, S. Gerland, J.M. Grebmeier, J. Intrieri, S.-H. Kang, M. McCammon, I. Polyakov, B. Rabe, S. Seeyave, **D. Volkov**, A. Beszczynska-Moller, M. Dzieciuch, G.J. Goni, A. King, A.A. Olsen, T. Rosaby, H. Sagen, O. Skagseth, H. Soiland, and K. Sorensen (2019). A framework for the development, design, and implementation of a sustained Arctic Ocean Observing System, *Front. Mar. Sci.*, doi:10.3389/fmars.2019.00451.
 17. Frajka-Williams, E., I.J. Ansong, J. Baehr, H.L. Bryden, [...], **D. Volkov**, C. Wilson (2019). Atlantic Meridional Overturning Circulation: Observed transports and variability, *Front. Mar. Sci.*, doi:10.3389/fmars.2019.00260.
 18. Todd, R.E., F.P. Chavez, S. Clayton, S.E. Cravatte, M.P. Goes, [...], **D. Volkov**, J. Wilkin, D. Zhang, and L. Zhang (2019). Global perspectives on observing ocean boundary current systems, *Front. Mar. Sci.*, doi:10.3389/fmars.2019.00423.
 19. Goni, G.J., J. Sprintall, F. Bringas, L. Cheng, M. Cirano, S. Dong, R. Domingues, [...], & **D. Volkov** (2019). More than 50 years of successful continuous temperature section measurements by the Global Expendable Bathythermograph Network, its integrability, social benefits, and future, *Front. Mar. Sci.*, doi:10.3389/fmars.2019.00452.
 20. Domingues, R., G. Goni, M. Baringer, & **D.L. Volkov** (2018). What caused the accelerated sea level changes along the United States East Coast during 2010-2015?, *Geophys. Res. Lett.*, 45, 13367-13376, doi:10.1029/2018GL081183.
 21. **Volkov D.L.** (2018): Ocean warming. AccessScience, *McGraw-Hill Education*, doi:10.1036/1097-8542.463850.
 22. Bashmachnikov I., T.V. Belonenko, P. Kuibin, **D.L. Volkov**, & V. Foux (2018). Pattern of vertical velocity in the Lofoten vortex (the Norwegian Sea). *Ocean Dynamics*, doi:10.1007/s10236-018-1213-1.
 23. Belonenko, T.V., **D.L. Volkov**, & A.V. Koldunov (2018). Shelf waves in the Beaufort Sea in a high-resolution ocean model, *Oceanology*, Vol. 58, No. 6, pp. 778-785, doi:10.1134/S0001437018060024.
 24. Lindstrom, E.J., A.Y. Shcherbina, L. Rainville, J.T. Farrar, L.R. Centurioni, S. Dong, E.A. D'Asaro, C. Eriksen, D.M. Fratantoni, B.A. Hodges, V. Hormann, W.S. Kessler, C.M. Lee, S.C. Riser, L. St. Laurent, & **D.L. Volkov** (2017). Autonomous multi-platform observations during the Salinity Processes in the Upper-Ocean Regional Studies, *Oceanography*, 30(2): 38-48, doi:10.5670/oceanog.2017.218.
 25. Bashmachnikov I., M.A. Sokolovskiy, T.V. Belonenko, **D.L. Volkov**, P.E. Isachsen, & X. Carton (2017). On the vertical structure and stability of the Lofoten vortex in the Norwegian Sea. *Deep Sea Res. Part I*, doi:10.1016/j.dsr.2017.08.001.
 26. Dong, S., **D.L. Volkov**, G. Goni, R. Lumpkin, & G. Foltz (2017). Near-surface salinity and temperature structure observed from dual-sensor drifters in the subtropical South Pacific. *J. Geophys. Res. Oceans*, 122, doi:10.1002/2017JC012894.

27. Kubryakov, A.A., S.V. Stanichny, & **D.L. Volkov** (2017). Quantifying the impact of basin dynamics on the regional sea level rise in the Black Sea. *Ocean Sciences*, 13,443-452, doi:10.5194/os-13-443-2017.
28. Peralta-Ferriz, C., F.W. Landerer, D.P. Chambers, **D.L. Volkov**, and W. Llovel (2017). Remote sensing of bottom pressure from GRACE satellites, *US Clivar Variations* Spring 2017, Vol. 15, No. 2, 22-28.
29. Lee, S.-K., **D.L. Volkov**, H. Lopez, W.G. Cheon, A.L. Gordon, Y. Liu, & R. Wanninkhof (2017). Wind-driven ocean dynamics impact on the contrasting sea-ice trends around West Antarctica. *J. Geophys. Res. Oceans*, 122, doi:10.1002/2016JC012416.
30. **Volkov D.L.**, S.-K. Lee, F.W. Landerer, & R. Lumpkin (2017). Decade-long deep-ocean warming detected in the subtropical South Pacific. *Geophys. Res. Lett.*, 44, doi:10.1002/2016GL071661.
31. Baringer, M.O., M. Lankhorst, **D. Volkov**, S. Garzoli, S. Dong, U. Send, C. Meinen (2016). Meridional overturning circulation observations in the Atlantic Ocean, [In: State of the Climate 2015], *Bull. Am. Met. Soc.*, 97(8), S84-87.
32. Dmitrenko I., S. Kirillov, A. Forest, Y. Gratton, **D. Volkov**, W. Williams, J. Lukovich, C. Belnager, & D. Barber (2016). Shelfbreak current over the Canadian Beaufort Sea continental slope: wind-driven events in January 2005. *J. Geophys. Res. Oceans*, 121, 2447-2468, doi:10.1002/2015JC011514.
33. **Volkov D.L.**, W.E. Johns, & T.V. Belonenko (2016). Dynamic response of the Black Sea elevation to intraseasonal fluctuations of the Mediterranean sea level. *Geophys. Res. Lett.*, 42, 283-290, doi:10.1002/2015GL066876.
34. **Volkov D.L.**, A.A. Kubryakov, & R. Lumpkin (2015). Formation and variability of the Lofoten Basin vortex in a high-resolution ocean model, *Deep-Sea Res. Part I.*, 105, pp. 142-157, doi:10.1016/j.dsr.2015.09.001.
35. **Volkov D.L.**, & F.W. Landerer (2015). Internal and external forcing of sea level variability in the Black Sea, *Clim. Dyn.*, doi:10.1007/s00382-015-2498-0.
36. Baringer M.O., W.E. Johns, S. Garzoli, S. Dong, **D. Volkov**, & W.R. Hobbs (2014). Meridional heat transport in the Atlantic Ocean, *Bull. Am. Met. Soc.*, 95 (7), S69-71.
37. **Volkov D.L.** (2014). Do the North Atlantic winds drive the nonseasonal variability of the Arctic Ocean sea level?, *Geophys. Res. Lett.*, 41, doi:10.1002/2013GL059065.
38. **Volkov D.L.**, & F.W. Landerer (2013). Nonseasonal fluctuations of the Arctic Ocean mass observed by the GRACE satellites, *J. Geophys. Res.*, 118, doi:10.1002/JC009341.
39. **Volkov D.L.**, F.W. Landerer, & S.A. Kirillov (2013). The genesis of sea level variability in the Barents Sea, *Continental Shelf Research*, 66, doi:10.1016/j.csr.2013.07.007, 92-104.
40. **Volkov D.L.**, T.V. Belonenko, & V.R. Foux (2013). Puzzling over the dynamics of the Lofoten Basin – a sub-Arctic hot spot of ocean variability, *Geophys. Res. Lett.*, 40, doi:10.1002/grl.50126.
41. Landerer F.W., & **D.L. Volkov** (2013). The anatomy of recent large sea level fluctuations in the Mediterranean Sea, *Geophys. Res. Lett.*, doi:10.1002/grl.50140.
42. **Volkov D.L.**, & V. Zlotnicki (2012). Antarctic Circumpolar Current fronts observed by GOCE and GRACE missions, *Ocean. Dyn.*, 62, N6, 893-905, doi:10.1007/s10236-012-0541-9.
43. **Volkov D.L.**, & M.-I. Pujol (2012). Quality assessment of a satellite altimetry data product in the Nordic, Barents, and Kara seas, *J. Geophys. Res.*, 117, C03025, doi:10.1029/2011JC007557.
44. **Volkov D.L.**, & L.L.Fu (2011). Interannual variability of the Azores Current strength and eddy energy in relation to atmospheric forcing, *J. Geophys. Res.*, 116, C11011, doi:10.1029/2011JC007271.
45. **Volkov D.L.**, & L.L.Fu (2010). On the reasons for the existence and the variability of the Azores Current, *J. Phys. Oceanogr.*, 40, doi:10.1175/2010JPO4326.1, 2197-2220.
46. **Volkov D.L.**, L.L. Fu, & T. Lee (2010). Mechanisms of the meridional heat transport in the Southern Ocean, *Ocean Dynamics*, 60, doi:10.1007/s10236-010-0288-0, 791-801.
47. **Volkov D.L.**, T. Lee, & L.L. Fu (2008). Eddy-induced meridional heat transport in the ocean, *Geophys. Res. Lett.*, 35, LXXXXX, doi:10.1029/2008GL035490.
48. **Volkov D.L.**, & L.L. Fu (2008). The role of vorticity fluxes in the dynamics of the Zapiola Anticyclone, *J. Geophys. Res.*, 113, C11015, doi:10.1029/2008JC004841.
49. **Volkov D.L.**, G. Larnicol, & J. Dorandeu (2007). Improving the quality of satellite altimetry data over continental shelves, *J. Geophys. Res.*, 112, doi:10.1029/2006JC003765.
50. **Volkov D.L.**, & H.M. van Aken (2005). Climate-related change of sea level in the extratropical North Atlantic and North Pacific in 1993-2003, *Geophys. Res. Lett.*, 32, doi:10.1020/2005GL023097.
51. **Volkov D.L.** (2005). The inter-annual variability of the altimetry-derived eddy field and associated surface circulation in the North Atlantic Ocean in 1993-2001, *J. Phys. Oceanogr.*, V35, 405-426.
52. **Volkov D.L.** (2004). Propagating features in the eddy field of the North Atlantic Current, *Geophys. Res. Lett.*, 31, doi:10.1029/2004GL021401.

53. **Volkov D.L.** (2004). Monitoring the sea level and surface circulation with satellite altimetry, *Ph.D. thesis*, ISBN: 90-393-3862-0, 152 pp..
54. **Volkov D.L.**, & H.M. van Aken (2004). Low frequency change of sea level in the North Atlantic Ocean as observed with satellite altimetry, in *Satellite Altimetry for Geodesy*, Geophysics and Oceanography Series: International association of geodesy symposia, Vol. 126, Hwang, Cheinway; Shum, C.; Li, Jiancheng (Eds.), 280 p., Springer-Verlag.
55. **Volkov D.L.**, & H.M. van Aken (2003). Annual and inter-annual variability of sea level in the northern North Atlantic Ocean, *J. Geophys. Res.*, 108, C6, 3204.
56. Dmitrenko, I.A., V.A. Gribanov, **D.L. Volkov**, S.L. Berezovskaya, & H. Kassens (2000). Role of river discharge in the inter-annual variability of the sea land fast ice distribution in the Russian Arctic, *Meteorologia i Hydrologia*, 2 (in Russian).
57. Dmitrenko I.A., V.A. Gribanov, **D.L. Volkov**, H. Kassens, & H. Eicken (1999). Impact of river discharge on the sea land fast ice extension in the Russian Arctic shelf area, *POAC 99*, Proceedings, vol. 1, Espoo, Finland.

Articles in media

- Norwegian Sea's ups and downs, http://www.esa.int/esaEO/SEMRZZ81M9H_index_0.html, European Space Agency (ESA) news, 2012.
- Up North, <https://www.aviso.altimetry.fr/en/news/idm/2012/feb-2012-up-north.html>, AVISO Images of the month, 2011.

Projects

- Western Boundary Time Series. Role: Co-Principal Investigator. NOAA.
- The interplay between sea level and Atlantic Meridional Overturning Circulation: Cause and effect relationships, predictability, and coastal implications. Role: *Principal Investigator*. NOAA's Climate Variability and Predictability Program. Period of work: 2020-2023. Budget: ~\$550K.
- Upper-ocean salinity variability in the northwestern tropical Atlantic and its interactions with SST and winds. Role: *Co-Principal Investigator*. NOAA's Climate Variability and Predictability Program. Period of work: 2019 – 2022. Budget: ~\$551K.
- Regional heat convergence and deep-ocean warming in the subtropical South Pacific and Indian Oceans. Role: *Principal Investigator*. Proposal selected for the NASA's Ocean Surface Topography Science Team 2016 call. Period of work: 2017-2020. Budget ~\$750K.
- Investigating the processes contributing to the salinity differences between Aquarius and in situ measurements. Role: *Principal Investigator*. Proposal selected for the NASA's Ocean Salinity Science Team 2013 call. Period of work: 2014 – 2019. Budget ~\$552K.
- The Mediterranean and Black seas: analysis of large sea level anomalies. Role: *Principal Investigator*. Proposal selected for the NASA's Ocean Surface Topography Science Team 2011 call. Period of work: 2013-2018. Budget ~ \$650K.
- Investigating the variability of sea level in the sub-Arctic and Arctic seas. Role: *Principal Investigator*. Funding agency: NASA. Proposal # 10-PO10015, Solicitation NNN10ZDA001N-PO. Period of work: 2011 – 2014. Budget ~ \$365K.
- Determination of Antarctic Intermediate Water formation using ECCO2 model and space-borne observations. Role: *Co-Principal Investigator from UCLA* (PI from Jet Propulsion Laboratory: V. Zlotnicki). Funding agency: NASA. Period of work: 2011 – 2012. Budget ~ \$180K.

Research Cruises

- Apr 2021: R/V “Walton Smith” (USA), Florida Current cruise at 27N. Role: Chief Scientist.
- Dec 2020: R/V “Walton Smith” (USA), Florida Current cruise at 27N. Role: Chief Scientist.
- Dec 2019: NOAA Ship “Ronald H. Brown” (USA), Western Boundary Time Series cruise (Florida Straits and western subtropical Atlantic). Role: Chief Scientist.
- Apr-Jun 2018: NOAA Ship “Ronald H. Brown” (USA), I07N GO-SHIP cruise (Indian Ocean). Role: Chief Scientist.
- Aug-Sep 2016: R/V “Roger Revelle” (USA), SPURS-2 cruise. Duties: deployment of dual-salinity sensor drifters and underway CTD survey.
- Aug 2013: NOAA Ship “Ronald H. Brown” (USA), A16N GO-SHIP cruise (North Atlantic). Role: Co-Chief Scientist.

- Sep 2005: Icebreaker “Kapitan Dranitsyn” (Russia), NABOS-2005 Arctic expedition led by the International Arctic Research Center (USA). Duties: ADCP team, analysis of velocity measurements.
- Sep – Oct 2000: R/V “Pelagia” (Netherlands), AR7E CLIVAR cruise in (North Atlantic). Role: determination of the concentrations of dissolved oxygen in seawater samples.
- Jul – Aug 1998: R/V “Polarstern” (Germany), Transdrift-5 expedition in the Laptev Sea. Duty: CTD, analysis of T-S fields.
- Jul – Aug 1997: R/V “Dalniye Zelentcy” (Russia), Hydrographic cruise in the Barents Sea. Duty: determination of the concentrations of nutrients.
- Jul – Aug 1996: R/V “Nikolay Matusevich” (Russia), Hydrographic cruise in the Baltic Sea. Duty: CTD, determination of nutrients and oxygen, analysis of T-S fields.

Advisor

Postdocs: Michael Rudko (2018-2020), Cyril Germaineaud (2021), Marion Kersale (2021)

PhD students: Leah Chomiak, RSMAS University of Miami (2019-present)

Synergetic Activities

- Editor of Journal of Atmospheric and Oceanic Technology (American Meteorological Society, 2016 – 2020).
- NASA Ocean Surface Topography Science Team (2013 – present)
- NASA Ocean Salinity Science Team (2014 – 2018)
- NASA proposal review panels (2012, 2015, 2017, 2018)
- Reviewer for National Science Foundation (2013, 2014, 2015, 2016), NASA Post-Doctoral Program (2016), Journal of Geophysical Research, Geophysical Research Letters, Journal of Physical Oceanography, Journal of Climate, Ocean Sciences, Journal of Sea Research, Advances in Space Research, Chinese Journal of Oceanology, Journal of Oceanic and Atmospheric Technology, Theoretical and Applied Climatology, Oceanologia (Elsevier), Pure and Applied Geophysics, Remote Sensing of Environment, Marine Geodesy, Oceanography, Nature Climate Change, Nature Communications Earth & Environment.