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EDUCATION

- 2012 PhD in Mathematical Modeling, Numerical Methods and Program Systems. Institute of Computational Mathematics and Mathematical Geophysics of the Siberian Branch of the Russian Academy of Sciences (SB RAS), Novosibirsk, Russia
- 2007 Diploma in Mathematics, Department of Mechanics and Mathematics, Specialty of Mathematical Statistics and Theory of Probability, Tomsk State University, Tomsk, Russia

PROFESSIONAL EXPERIENCE

- 07/2019 – Present Assistant Project Scientist, Step II OS, Climate, Atmospheric Science and Physical Oceanography (CASPO) Division, Scripps Institution of Oceanography, University of California, San Diego
- 10/2015 – 06/2019 Postdoctoral Scholar, Center for Western Weather and Water Extremes (CW3E), CASPO Division, Scripps Institution of Oceanography, University of California San Diego
- 01/2015 – 10/2015 Fulbright Visiting Scholar, CASPO Division, Scripps Institution of Oceanography, University of California San Diego
- 10/2014 – 01/2015 Fulbright Visiting Scholar, NOAA/NESDIS National Climatic Data Center (NCDC), Asheville, North Carolina
- 01/2014 – 10/2016 Researcher, Institute of Monitoring of Climatic and Ecological Systems SB RAS, Tomsk, Russia
- 01/2011 – 12/2013 Junior researcher, Institute of Monitoring of Climatic and Ecological Systems SB RAS, Tomsk, Russia
- 06/2008 – 08/2008 Guest scientist, International Institute of Applied Systems Analysis, Laxenburg, Austria
- 10/2007 – 09/2010 Ph.D. student and part-time engineer, Institute of Monitoring of Climatic and Ecological Systems SB RAS, Tomsk, Russia
- 09/2002 – 06/2007 Student, Department of Mechanics and Mathematics, Tomsk State University, Tomsk, Russia

AWARDS

- 2015 Fulbright Scholarship Program award administrated by the J. William Fulbright Foreign Scholarship Board and the Bureau of Educational and Cultural Affairs of the United States Department of State
- 2015 Stipend of President of Russian Federation for young scientists and Ph.D. students, realizing advanced scientific investigations and developments in priority areas of Russian economy modernization during 2015-2017
- 2014 Best poster award at Monsoon Asia Integrated Regional Study (MAIRS) Open Science Conference 2014: Future Earth in Asia. April 7-10 2014, Beijing, China

2012 Stipend of President of Russian Federation for young scientists and Ph.D. students, realizing advanced scientific investigations and developments in priority areas of Russian economy modernization during 2012-2014

GRANTS

2014 – 2015 Fulbright grant for eight months Fulbright Program administrated by the Bureau of Educational and Cultural Affairs, United States Department of State with the cooperation of the Council for International Exchange of Scholar, CA, USA; Host Institutions: NOAA/NESDIS National Climatic Data Center in Ashville, NC, and Scripps Institution of Oceanography, University California San Diego in La Jolla, CA

2014 APN/MAIRS financial support for participation at MAIRS Open Science Conference 2014: Future Earth in Asia, April 7-10 2014, Beijing, China

2012 Russian Foundation for Basic Research (RFBR) financial support for participation at International Conference European Geosciences Union (EGU) General Assembly, 2012, Vienna, Austria

2010 RFBR financial support for participation at 2nd International Conference on Data Analysis and Modelling in Earth Sciences (DAMES), 2010, Lisbon, Portugal

2009 RFBR financial support for participation at EGU General Assembly, 2009, Vienna, Austria

2008 RFBR financial support for participation at 1st International Conference on Data Analysis and Modelling in Earth Sciences, RFBR financial support for 2008, Potsdam, Germany

2008 Grant for participation in the Young Scientists Summer Program 2008 (YSSP 2008), International Institute of Applied System Analysis, Laxenburg, Austria

RESEARCH INTERESTS

Current research interests include developing the methodology and the tools for atmospheric river (AR) identification on regional scales, studying long-term climatology and seasonal predictability of AR activity and related extreme precipitation events impacting western North America. A great interest is intercomparison of AR catalogs in terms of their climatological characteristics to understand and quantify uncertainties in atmospheric river science based on choice of AR detection methodology. The results are presented in the papers [1-5] of the peer-reviewed publication list.

Previously, my work focused on the ongoing climatic changes in Siberia, Russia, which combined analysis of spatio-temporal changes in average and extreme temperature and precipitation characteristics, as well as investigating the influence of these changes on the environment and society in the region. For this research I had compared long-term meteorological time series with regular and irregular spatial resolution using mathematical statistics and computational techniques to ensure relevant and detailed analysis of climate changes on the regional scale. These results are presented in the papers [6, 9, 11, 13-15, 17] of the peer-reviewed publication list.

My Ph.D research was related to the development of a computational kernel of web-GIS information-computational platform Climate (<http://climate.scert.ru/>), which is used in Russia to support collaborative multidisciplinary investigations of regional climate changes and their impacts. The computational kernel includes dedicated modules to process and analyze large georeferenced datasets using mathematical statistics. The relevant results are presented in the papers [6-12, 16, 18] of the peer-reviewed publication list.

LIST OF PUBLICATIONS (20 published, 1 accepted for publication)

1. Rutz J.J., C.A. Shields, J.M. Lora, A.E. Payne, B. Guan, P. Ullrich, T. O'Brien, L.R. Leung, F.M. Ralph, M. Wehner, S. Brands, A. Collow, N. Goldenson, I. Gorodetskaya, H. Griffith, K. Kashinath, B. Kawzenuk, H. Krishnan, V. Kurlin, D. Lavers, G. Magnusdottir, K. Mahoney, E. McClenny, G. Muszynski, P.D. Nguyen, Mr. Prabhat, Y. Qian, A.M. Ramos, C. Sarangi, S. Sellars, T. Shulgina⁹, R. Tome, D. Waliser, D. Walton, G. Wick, A.M. Wilson, M. Viale, 2019: The Atmospheric River Tracking Method Intercomparison Project (ARTMIP): Quantifying Uncertainties in Atmospheric River Climatology, *Journal of Geophysical Research: Atmospheres*, accepted.
2. Gershunov A., T. Shulgina, R.E.S. Clemesha, K. Guirguis, D. Pierce, M. Dettinger, D. Lavers, D. Cayan, S. Polade, J. Kalansky and F.M. Ralph, 2019: Precipitation regime change in Western North America: The role of Atmospheric Rivers, *Scientific Reports*, **9**, 11 pp. <https://doi.org/10.1038/s41598-019-46169-w>
3. Guirguis K., A. Gershunov, R. E. S. Clemesha, T. Shulgina, A. C. Subramanian and F. M. Ralph, 2018: Circulation drivers of Atmospheric Rivers at the North American West Coast, *Geophysical Research Letters*, **45**, 12,576-12,584.
4. Ralph, F.M., A.M. Wilson, T. Shulgina, B. Kawzenuk, S. Sellars, J.J. Rutz, M.A. Lamjiri, E.A. Barnes, A. Gershunov, B. Guan, K. Nardi, T. Osborne, and G.A. Wick, 2018: Comparison of atmospheric river detection tools: How many atmospheric rivers hit northern California's Russian River Watershed. *Climate Dynamics*, 22 pp. <https://doi.org/10.1007/s00382-018-4427-5>.
5. Guirguis, K., A. Gershunov, T. Shulgina, R.E.S. Clemesha, F.M. Ralph, 2018: Atmospheric Rivers impacting Northern California and their modulation by a variable climate. *Climate Dynamics*, 15 pp. <https://doi.org/10.1007/s00382-018-4532-5>.
6. Gershunov A., T.M. Shulgina, F.M. Ralph, D. Lavers and J.J. Rutz, 2017: Assessing climate-scale variability of Atmospheric Rivers affecting western North America. *Geophysical Research Letters*, **44**, doi:10.1002/2017GL074175.
7. Okladnikov I.G., E.P. Gordov, A.G. Titov and T.M. Shulgina, 2015: Information-computational system for online analysis of georeferenced climatological data. *Proc. of the XVII Int. Conf. on Data Analytics and Management in Data Intensive Domains (October 13–16, 2015, Obninsk, Russia)*. L. Kalinichenko and S. Starkov (eds.), 76-80.
8. Volodin E.M., N.M. Arzhanova, A.V., Borzenkova, P.N. Vargin, A.K. Monzikova, Yu.V. Martynova, E.I. Moraru, A.P. Morozova, I.G. Okladnikov, A.V. Penenko, K.V. Ushakov, Yu.A. Shtabkin, T.M. Shulgina: Chapter 13: Workbook on climate change modeling // Models and Methods in the problem of interaction between Atmosphere and Hydrosphere: textbook, Dymnikov V.P., V.N. Lykosov, E.P. Gordov (eds.): 2014, Tomsk: Publishing house of TSU, 490-515.
9. Gordova Yu.E., Yu.V. Martynova, T.M. Shulgina, 2014: Use of the computational-informational Web-GIS system for the development of climatology students' skills in modelling and monitoring of climate change. *The bulletin of ISU. Series: Earth Sciences*, **9**, 55-68.
10. Gordov E.P., V.N. Lykosov, V.N. Krupchatnikov, I.G. Okladnikov, A.G. Titov, T.M. Shulgina: Calculation-informational technologies for monitoring and modeling of climatic changes and their consequences. E.P. Gordov and V.N. Lykosov (eds.), 2013, Novosibirsk: Nauka. 199 p.
11. Shulgina T.M., E.P. Gordov, I.G. Okladnikov, A.G. Titov, E.Yu. Genina, V.P. Gorbatenko, I.V. Kuzhevskaya, A.S. Akhmetshina, 2013: Computational module for regional climate change analysis. *Vestnik NSU. Series: Information Technology*, **11**, No. 1, 124-131.
12. Okladnikov I.G., A.G. Titov, T.M. Shulgina, E.P. Gordov, V.Yu. Bogomolov, Yu.V. Martynova, S.P. Syschenko, A.V. Skvortsov, 2013: A software complex for the analysis and visualization of monitoring and forecast of data on climate changes. *Numerical methods and programming. Advanced computing*, **14**, 123-131.
13. Gordov, E.P., K. Bryant, O.N. Bulygina, I. Csiszar, J. Eberle, S. Fritz, I. Gerasimov, R. Gerlach, S. Hese, F. Kraxner, R.B. Lammers, G. Leptoukh, T. Loboda, I. McCallum, M.I. Obersteiner, I. Okladnikov, J. Pan, A.A. Prusevich, V.N. Razuvaev, P. Romanov, H. Rui, D. Schepaschenko, C. Schmullius, S. Shen, A.I. Shiklomanov, T. Shulgina, A.Z. Shvidenko, and A. Titov 2013: Development of Information-Computational Infrastructure for Environmental research in Siberia as a baseline component of the Northern Eurasia Earth Science Partnership Initiative (NEESPI) Studies. In: P.Ya. Groisman and G. Gutman (eds.) *Regional Environmental Changes in Siberia and Their Global Consequences*. Springer Series on Environmental Science and Engineering, **XII**, 19-55.
14. Gordova Yu.E., E.Yu. Genina, V.P. Gorbatenko, E.P. Gordov, I.V. Kuzhevskaya, Yu.V. Martynova, I.G. Okladnikov, A.G. Titov, T.M. Shulgina and N.K. Barashkova, 2013: Educational process support

in the field of modern climatology based on Web-GIS platform "Climate". *Open and distance education*. No. 1. 14-19.

15. Gordov E.P., I.G. Okladnikov, A.G. Titov, V.Yu. Bogomolov, T.M. Shulgina, E.Yu. Genina, 2012: Geo-information system for investigation of regional climatic changes and first results obtained. *Atmospheric and Oceanic Optics*, **25**, No.2. 137-143.
16. Shulgina T.M., I.G. Okladnikov, A.G. Titov and E.P. Gordov, 2012: Web-based software application and research center for monitoring and forecasting of regional climate change. *Electronic Journal of Physics and Technology*, **7**, 42-52.
17. Shulgina T.M., E.Yu. Genina, E.P. Gordov, 2011: Dynamics of climatic characteristics influencing vegetation in Siberia. *Environ. Res. Lett.*, **7** pp. DOI: 10.1088/1748-9326/6/4/045210.
18. Gordov E.P., V.Yu. Bogomolov, E. Yu. Genina, T.M. Shulgina, 2011: Analysis of regional climate processes in Siberia: method, data and some results. *Vestnik NGU. Series: Information technologies*, **9**. No. 1. 56–66.
19. Gordov E.P., E.Yu. Genina, T.M. Shulgina, 2011: Climate change induced dynamics of bioclimatic indices for Siberian territory. *Boreal forests in a Changing World: Challenges and Needs for Actions: Proceedings of the International Conference*. Krasnoyarsk: Sukachev Institute of Forest SV RAS 2011. 216–219.
20. Titov A., E. Gordov, I. Okladnikov, T. Shulgina, 2009: Web-system for processing and visualization of meteorological data for Siberian environment research. *International Journal of Digital Earth*, **2**, Issue S1. 105–119. DOI: 10.1080/17538940902866187.
21. Shulgina T.M., V.Yu. Bogomolov, E.Yu. Genina, E.P. Gordov, 2009: Studying the behavior of temperature dynamics over Siberia from observations and reanalysis data. *Mining informational and analytic bulletin (Sci. and Technol. J.)*. **2**. 275–279.
22. Okladnikov I.G., A.G. Titov, V.N. Melnikova, T.M. Shulgina, 2008: Web-system for processing and visualization of meteorological and climatic data. *Computational Technologies*, **13**. Spec. issue 3. 64 – 69.