Denis Sergeev

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School of Environmental Sciences | University of East Anglia | Norwich | United Kingdom | NR47TJ

My interests include atmospheric dynamics and energetics, boundary-layer processes, as well as air-sea interaction. Most of my current research focuses on mesoscale meterology and cyclone dynamics in polar regions. I hope to contribute to our understanding of the geophysical instabilities that drives weather and climate on Earth.

EDUCATION

2014–Present **PhD in Meteorology** | *University of East Anglia* | Norwich, United Kingdom
Supervisors: Prof. Ian A. Renfrew • Prof. Thomas Spengler • Prof. Stephen Dorling
Thesis title: **Dynamics and Predictability of Polar Lows**

- Analysis of high-resolution model simulations
- Model skill verification against aircraft and satellite observations
- Sensitivity to orography and sea ice distribution
- Statistical analysis of cyclone climatology

2009–2014 **Specialist Diploma in Meteorology** | With Honours | *Lomonosov Moscow State University* | Moscow, Russia
Supervisor: Dr. Victor Stepanenko
Thesis title: **Idealised numerical modelling of polar mesocyclone dynamics**

- Idealised baroclinic channel simulations
- Testing different parameterizations and experiment set-ups
- Energy and vorticity budgets

INTERNSHIPS

Oct 2013 **Visiting student** | Geophysical Institute | *University of Bergen* | Bergen, Norway
Supervisor: Prof. Thomas Spengler

Jul 2012 **Junior Researcher** | Laboratory of Climate Theory | *A.M. Obukhov Institute of Atmospheric Physics* | Moscow, Russia
Supervisor: Dr. Alexey Eliseev

PUBLICATIONS

Peer-reviewed

5. **Sergeev DE**, Renfrew IA, and Spengler T. 2018. Modification of polar low development by orography and sea ice. *Monthly Weather Review*: under review

4. Shestakova AA, Toropov PA, Stepanenko VM, **Sergeev DE**, and Repina IA. 2018. Observations and modelling of downslope windstorm in Novorossiysk. *Boundary-Layer Meteorology*: under review

3. **Sergeev DE**, Renfrew IA, Spengler T, and Dorling SR. 2017. Structure of a shear-line polar low. *Quaterly Journal of the Royal Meteorological Society*, 143(702): 12–26

2. Spengler T, Renfrew IA, Terpstra A, Tjernström M, Screen J, Brooks I, Carleton A, Chechin D, Chen L, Doyle J, Esau I, Hezel P, Jung T, Kohyama T, Lüpkes C, McCusker K, Nygård T, **Sergeev DE**, Shupe M, Sodemann H, and Vihma T. 2016. High Latitude Dynamics of Atmosphere-Ice-Ocean Interactions. *Bulletin of American Meteorological Society*, 97(9): ES179–ES182

1. Eliseev AV, **Sergeev DE**. 2014. Impact of Subgrid Scale Vegetation Heterogeneity on the Simulation of Carbon Cycle Characteristics. *Izvestiya, Atmospheric and Oceanic Physics*, 50(3): 259–270

Proceedings

3. **Sergeev DE**, Stepanenko VM. 2013. Numerical modelling of polar mesocyclones generation mechanisms. *International Conference "Turbulence, atmosphere and climate dynamics" dedicated to A.M. Obukhov*, Selected papers: 168–170

2. **Sergeev DE**, Zamyatina MY, Stepanenko VM. 2013. Thermal regime features of Kronotsky lake (in Russian). *Kronotsky State Natural Biosphere Reserve Proceedings*, 3: 29–41

1. **Sergeev DE**, Stepanenko VM. 2012. Parameterization of mesoscale sensible heat and methane fluxes in the region of Western Siberia. *International Conference and Early Career Scientists School on Environmental Observations, modelling and Information Systems (ENVIROMIS-2012)*, Selected papers: 67–69

CONFERENCES

Oral presentations

Oct 2017 **The influence of Svalbard orography and sea ice on polar low development** | 18th Cyclone Workshop | Sainte-Adèle, Canada

Apr 2017 **Polar lows and how background environment can influence their development** | Cambridge Earth Systems Science EnvEast Doctoral Alliance Symposium | Cambridge, UK

Apr 2016 **Structure of the shear-line polar low south of Svalbard** | 13th European Polar Lows Working Group (EPLWG) Workshop | Paris, France

May 2016 **Structure of the shear-line polar low south of Svalbard** | NORPAN kick-off meeting | Tokyo, Japan

Poster presentations

Jul 2015 **Structure and dynamics of a shear-line polar low during a cold-air outbreak over the Norwegian Sea** | Royal Meteorological Society Student Conference | Birmingham, UK

Mar 2015 **Structure and dynamics of a shear-line polar low during a cold-air outbreak over the Norwegian Sea** | Dynamics of Atmosphere-Ice-Ocean Interactions in the High Latitudes workshop | Rosendal, Norway

May 2014 **Numerical modelling of polar mesocyclones dynamics diagnosed by the energy budget** | European Geosciences Union (EGU) General Assembly | Vienna, Austria

Apr 2013 **Impact of subgrid-scale vegetation heterogeneity on results of climate model simulation of carbon cycle** | European Geosciences Union (EGU) General Assembly | Vienna, Austria

Apr 2013 **Numerical modelling of polar mesocyclones generation mechanisms** | European Geosciences Union (EGU) General Assembly | Vienna, Austria

AWARDS AND SCHOLARSHIPS

2017 **Best Presentation Award** | Cambridge Earth Systems Science EnvEast Doctoral Alliance (CEEDA) Symposium

2016 **Travel Bursary** | WWRP/WCRP/Bolin Center Polar Prediction School

2015 **Travel Award** | Dynamics of Atmosphere-Ice-Ocean Interactions in the High Latitudes workshop

2014–2018 **Lord Zuckerman scholarship** | School of Environmental Sciences, University of East Anglia

2014 **Young Scientist's Travel Award (YSTA)** | European Geosciences Union (EGU) General Assembly

2014 **Russian Academy of Sciences Young Scientist Medal**

2009 **3rd place in the All-Russian Geography Olympiad**

2009 **1st place in the Lomonosov Geography Olympiad**

GRANTS

2014–2016 **Characteristics of the mesoscale atmospheric circulations in the Arctic and their influence on the atmosphere-ocean energy exchange** | Russian Foundation for Basic Research (RFBR) Grant

2013–2015 **Multiscale modelling of turbulent atmospheric flow above sea surface with inhomogeneous ice cover** | Russian Foundation for Basic Research (RFBR) Grant

2013–2015 **Developing and verification of the mesoscale sensible heat and tracers fluxes over hydrologically inhomogeneous surface** | Grant of the President of Russian Federation

COMPUTER SKILLS

Operating systems: *Linux* • Unix • Windows
Computer Languages: *Python* • Fortran
Data visualisation: *Python* • MATLAB • NCL • Paraview
Parallel programming: MPI • OpenMP
Version control systems: Git • Subversion
Document preparation: LaTeX • Markdown
Web development: HTML • CSS

LANGUAGES

Russian: Native speaker
English: Fluent
French: Basic

VOCATIONAL TRAINING

Apr 2016 **WWRP/WCRP/Bolin Center Polar Prediction School**

Dec 2014 **UK Met Office Unified Model Training**
Sep–Dec 2011 **Global Climate Change course**

EnvEast Doctoral Training Partnership (DTP)

Jun 2017 **Weather presenting course**
Jan 2017 **Raspberry Pi course**

Safety training

Feb 2017 **Level 1 First Aid for Field Work course**
Dec 2017 **Sea Survival course**
Jan 2018 **Helicopter Underwater Escape Training Course (CA-EBS)**

FIELDWORK EXPERIENCE

Feb–Mar 2018 **The Iceland-Greenland Seas Project (IGP) field campaign** | Characterising the atmospheric forcing and the ocean response of coupled atmosphere-ocean processes; in particular cold-air outbreaks in the vicinity of the marginal ice zone and their triggering of oceanic heat loss and the generation of dense water masses | Akureyri, Iceland

Aug 2012 **Field practice in meteorology** | Study of prevailing mesoscale processes via wind characteristic measurements and lake hydrothermodynamical modelling | Kronotsky National Reservation, Kamchatka pen., Russia

Jan–Feb 2012 **Field practice in meteorology** | Measurements of the convective boundary layer over the polynya | White Sea Biological Station, Karel Republic, Russia

Jun–Jul 2011 **Field practice in meteorology** | Basic field techniques in atmospheric sciences (atmosphere vertical structure, turbulence and radiative measurements) | Khibiny mountains, Murmansk region, Russia

TEACHING EXPERIENCE

Jan 2018 **Training course "Introduction to Python in Environmental Sciences"** | Course leader | University of East Anglia | Norwich, UK

2015–2017 **Teaching assistance** | Modelling Environmental Processes, Meteorology, Numerical Skills for Scientists, Physical and Chemical Processes in Earth's System | University of East Anglia | Norwich, UK

Apr 2017 **Field course teaching assistance** | University of East Anglia | Slapton, UK

Nov 2016 **Python training course** | Course leader | University of East Anglia | Norwich, UK

MEMBERSHIP IN PROFESSIONAL ASSOCIATIONS

2014–Present **Royal Meteorological Society (RMetS)**

EDITORIAL SERVICE

Acted as reviewer for Quarterly Journal of the Royal Meteorological Society (x3)

OUTREACH

2015–Present **Contributor to SciSnack blogging platform**

- Polar Lows: What Fuels Arctic Hurricanes?
- Disastrous Disaster Movies
- Worldwide Weird Weather Words

VOCATIONAL EXPERIENCE

Apr–Jun 2018 **Data technician** | Processing of meteorological data collected in the IGP field campaign | University of East Anglia

2015–Present **Python group leader** | Founder and leader of the Python programming language users group | University of East Anglia

Mar 2015 **Rapporteur** | Dynamics of Atmosphere-Ice-Ocean Interactions in the High-Latitudes workshop | Rosendal, Norway

Aug–Sep 2013 **Weather Forecaster** | Forecast and Briefing Service | Main Aviation Meteorological Centre, Vnukovo Airport

REFERENCES

Prof. Ian Renfrew
Primary supervisor
University of East Anglia
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Prof. Thomas Spengler
Co-supervisor
University of Bergen
thomas.spengler@uib.no

Prof. Adrian Matthews
Professor of Meteorology
University of East Anglia
a.j.matthews@uea.ac.uk