

# Denis Sergeev

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## Areas of Interest

- Cyclone dynamics
- Mesoscale meteorology
- Atmospheric energetics
- Atmospheric boundary layer
- Extraterrestrial meteorology

## Education

- 2014-Present PhD in Meteorology  
Thesis title: **Dynamics and Predictability of Polar Lows**  
*School of Environmental Sciences*  
*University of East Anglia*  
Supervisor: [Ian A. Renfrew](#)
- 2009-2014 Specialist Diploma in Meteorology  
With Honours  
Thesis title: **Idealised numerical modelling of polar mesocyclone dynamics**  
*Faculty of Geography*  
*Lomonosov Moscow State University*  
Supervisor: [Victor Stepanenko](#)

## Internships

- Oct 2013 *University of Bergen*  
Geophysical Institute  
Bergen, Norway  
Supervisor: [Thomas Spengler](#)
- Jul 2012 *A.M. Obukhov Institute of Atmospheric Physics*  
Laboratory of Climate Theory  
Moscow, Russia  
Supervisor: [Alexey Eliseev](#)

## Publications

### Peer-reviewed

1. Sergeev DE, Renfrew IA, and Spengler T. 2018. Modification of polar low development by orography and sea ice. *about to be submitted*
2. Sergeev DE, Renfrew IA, Spengler T, and Dorling SR. 2017. Structure of a shear-line polar low. *Quarterly Journal of the Royal Meteorological Society*, **143**(702): 12-26
3. 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
4. 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

1. 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
3. 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 and Workshops

### 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 (CEEDA) 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  
In the area of oceanology, atmospheric physics and geography
- 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

## 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 DTP

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

### On-line courses

- MetEd Topics in Polar Low Forecasting
- MetEd Arctic Meteorology and Oceanography
- MetEd Skew-T Mastery
- MetEd Principles of Convection: Buoyancy and CAPE
- MetEd Using Scatterometer Wind and Altimeter Wave Estimates in Marine Forecasting
- MetEd Polar Satellite Products for the Operational Forecaster: Microwave Analysis of Tropical Cyclones
- MetEd How Mesoscale Models Work
- MetEd Jet Streams
- MetEd Downscaling of NWP Data
- MetEd Satellite Feature Identification: Cyclogenesis
- MetEd The Balancing Act of Geostrophic Adjustment
- MetEd Introduction to Statistics in Climatology
- MetEd Monitoring the Climate System with Satellites
- Coursera High Performance Scientific Computing
- INTUIT Parallel Programming Using MPI Technologies

### Safety training

- Feb 2017 Level 1 First Aid for Field Work course
- Dec 2017 Sea Survival course

## Fieldwork Experience

- 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

- Jan-Feb 2011 **Field practice in meteorology**  
*Micrometeorological measurements, ice-breeze modelling*  
 White Sea Biological Station, Karel Republic, Russia
- Jun-Jul 2010 **Field practice in geographical studies**  
*Basic training in meteorology, hydrology, geomorphology, soil science, biogeography, topography*  
 Kaluga region, Russia

## Teaching Experience

- 2015-Present **Teaching assistance**  
 University of East Anglia
- Modelling Environmental Processes  
 Module organiser: Ian Renfrew
  - Meteorology I  
 Module organiser: Ian Refrew
  - Meteorology II  
 Module organiser: Adrian Matthews
  - Numerical Skills for Scientists  
 Module organiser: Claire Reeves
  - Physical and Chemical Processes in Earth's System  
 Module organiser: Parvatha Suntharalingam
- Apr 2017 **Field course teaching assistance**  
 University of East Anglia
- Surface energy fluxes on Slapton Ley  
 Module organiser: Ian Refrew
  - Micrometeorology at Start Point  
 Module organiser: Ian Refrew
  - Dispersion on Slapton Ley  
 Module organiser: Ian Renfrew

## Membership in Professional Associations

- 2014-Present Royal Meteorological Society (RMetS)

## Editorial Service

- Acted as reviewer for Quarterly Journal of the Royal Meteorological Society

## Vocational Experience

- Jan 2018 **Training course "Introduction to Python in Environmental Sciences"**  
*Course instructor*  
 University of East Anglia, UK
- Nov 2016 **Training course "Introduction to Python in Environmental Sciences"**  
*Course leader*  
 University of East Anglia, UK
- 2015-Present **Python group coordinator**  
*Managing an unofficial group of Python language users*  
 University of East Anglia, UK
- Mar 2015 **Rapporteur**  
*Dynamics of Atmosphere-Ice-Ocean Interactions in the High-Latitudes workshop*  
 Rosendal, Norway
- Jun-Jul 2014 **Professional translator**  
*Translation of documentation of meteorological equipment (En-Ru)*  
 Retail and Consumer Merchandise "Meteomaster" (Moscow, Russia)
- Aug-Sep 2013 **Weather Forecaster**  
*Forecast and Briefing Service*  
 Main Aviation Meteorological Centre, Vnukovo Airport (Moscow, Russia)

## Outreach

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

- [Polar Lows: What Fuels Arctic Hurricanes?](#)
- [Disastrous Disaster Movies](#)
- [Worldwide Weird Weather Words](#)

## Computer Skills

|                         |                                       |
|-------------------------|---------------------------------------|
| Operating systems       | <b>Linux</b> , Unix, Windows          |
| Computer Languages      | <b>Python</b> , Fortran               |
| Data visualisation      | <b>Python</b> , 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          |

## References

**Prof. Ian Renfrew**  
[i.renfrew@uea.ac.uk](mailto:i.renfrew@uea.ac.uk)

**Prof. Thomas Spengler**  
[thomas.spengler@uib.no](mailto:thomas.spengler@uib.no)