

EKATERINA KOCHETKOVA

University of Pennsylvania, Department of Earth & Environmental Sciences
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EDUCATION

University of Plymouth, UK and University of Cadiz, Spain	Water and Coastal Management	MSc 2009
Russian State Hydrometeorological University, Saint-Petersburg, Russia	Physical Oceanography	MSc 2007
Russian State Hydrometeorological University, Saint-Petersburg, Russia	Hydrometeorology	BSc 2005

APPOINTMENTS

University of Pennsylvania (UPenn), Dept of Earth and Environmental Science
Research scholar, Ocean and Climate research Group, Mentor: Prof. Irina Marinov
Philadelphia, PA
June 2019 – present

Russian State Hydrometeorological University (RSHU)
Researcher, Remote Sensing and Biological dynamics (~20 hours/week), Mentor and chair: Prof. Tatjana Eremina
St-Petersburg, Russia
May 2018 – June 2019
Dec 2016 – May 2017
Bachelor and Master thesis consultations (~5 hours/week)
Lecturer and TA: Oceanography, Geoinformation Systems (GIS), Remote Sensing (~15 hours/week)

Research in education for Sustainable Development and administration support of the UNESCO-IOC Remote Sensing and Modeling in Oceanography Dept. including fieldwork (~20 hours/week) Mentor and chair: Prof. Vladimir Kudryavtsev
Sep 2014 – Nov 2016
Bachelor and Master thesis consultations (~5 hours/week)
Teaching and Laboratory assistant: Oceanography, GIS, Marine Chemistry, Remote Sensing (~15 hours/week)
Reports for UNITWIN/UNESCO Chairs Programme on Education for sustainable development, 2014, 2015, 2016.

Educator, course design eMaris TEMPUS: Educator, course design and teaching (~10 hours/week)
April – Sept 2014
Textbook. Remote Sensing for Oceanographic Applications, **Kochetkova E.**, Kozlov I., Dailidiene I., Smirnov K. [Google Scholar](#)

Junior Research Scientist, Fisheries and Environmental protection Dept.
Oct 2009 – Sept 2014
Mentors: Prof. Tatjana Eremina and Prof. Lev Karlin
Fundamental research in Baltic Sea Oceanography, including fieldwork (~20 hours/week)
TA, thesis consultations (~10 hours/week)
Technical support and Report specialist (references and forms for project submissions) (~10 hours/week)

PAPERS in Preparation

Kochetkova E., Kostadinov T., Marinov I., Roy S., Comparison of satellite backscattering and absorption-based algorithms for Particle size distribution assessment

Kochetkova E., Marinov I., Kostadinov T., Roy S., Linking ocean ecology and biogeochemistry across Southern Ocean fronts in satellite products

Marinov I., **Kochetkova E.**, Kostadinov T., Roy S., Satellite observations of POC and phytoplankton and the metabolic theory of ecology.

PUBLICATIONS

Kostadinov, T.S., Robertson Lain, L., Kong, C.E., Zhang, X., Maritorea, S., Bernard, S., Loisel, H., Jorge, D.S., **Kochetkova, E.**, Roy, S. and Jonsson, B. (2022). Ocean Color Algorithm for the Retrieval of the Particle Size Distribution and Carbon-Based Phytoplankton Size Classes Using a Two-Component Coated-Spheres Backscattering Model. EGU sphere, pp.1-38. ([preprint](#))

Eremina T, Ershova A., ... **Kochetkova E.** (2018) HELCOM indicators of eutrophication: are the "environmental objectives" achievable for the Gulf of Finland? *2018 IEEE/OES Baltic International Symposium (BALTIC)*, doi:10.1109/BALTIC.2018.8634854, [Google Scholar](#)

Vasilev D., Babkov O., **Kochetkova E.**, Semyonov V. (2017) Wavelet and cross-wavelet analysis of the precipitation and near-surface temperature over the European part of Russia. *Izvestiya RAN (Akad. Nauk SSSR). Seriya Geograficheskaya*. 6. C. 63-77. doi:10.7868/S0373244417060068 [Google Scholar](#)

Last update: December 2021

Kochetkova E., Isaev A., Eremina T. (2017) Correlation between the total precipitation and the mean and maximum runoff during the snowmelt flood in the Belaya River basin. *Russian Meteorology and Hydrology*. 38(5), 351-358. doi:10.3103/S1068373913050087.

[Google Scholar](#)

Vasilev D., Gavra N., **Kochetkova E.**, Ferapontov Y. (2013) Validation of a regional algorithm for the chlorophyll a concentration determination in the eastern part of the Gulf of Finland with satellite measurements. *Proceedings of the Russian State Hydrometeorological University*, 47, 43-48. URL: <https://elibrary.ru/item.asp?id=30058477> [Google Scholar](#)

Vasilev D.Y., Gareev A.M., **Kochetkova E.S.** (2015) Multi-Scale analysis of data of NASA satellite probing of near-surface air temperature. *Bashkir University Bulletin*. 20(2), 472-477. URL: <http://bulletin-bsu.com/en/archive/2015/2/17/>

SYNERGISTIC ACTIVITIES

Audited classes at UPenn during 2019-2021: Global Climate Change (Prof. Irina Marinov), Elemental Cycling in Global Earth Systems (Prof. Alain F. Plante)

MIT Applied Data Science Program: 12 weeks (~300 hours), Fall 2022

Online Summer school: Virtual Workshop on the New Global Ocean Biogeochemistry (GO-BGC) Array, June 28-30, 2021 ([Link](#))

Mentored undergraduate student researchers at Penn: Ethan Lior, Jacob Stranger, Jonathan Tran May 2021 to present.

Mentored Students at RSHU: Ivanova A. (BSc and MSc thesis dissertation 2016, 2018); Vainer B. (BSc thesis dissertation 2017); Spiridonova A. (BSc and MSc thesis dissertation 2014, 2016); Karpova A. (MSc thesis dissertation 2014)

Cruises. *Scientist, Baltic Sea summer cruises* (on average, 3 weeks late July – August) in: 2006, 2007, 2012, 2013, 2014, 2015, 2016 *Scientist, Arctic summer cruise:* July-August 2011

Individual grant *Project “Interannual variability of chlorophyll a concentrations for 2004-2013 in the Gulf of Finland with the remote sensing and in-situ data”.* By the Municipality of Saint-Petersburg, Russia. Covered funding for research May-December 2014

CONFERENCES

Conference Talks

Kochetkova E., Marinov I., Kostadinov T., Shovonlal R., Phytoplankton and POC Biomass Seasonality in the Atlantic Ocean Derived from Backscattering and Absorption Based Satellite Algorithms. Ocean Carbon from Space Workshop, 2022, February 14th-18th (online)

Kochetkova E., Phytoplankton biomass seasonality in the Atlantic Ocean derived from backscattering and absorption-based satellite algorithms. 2021 NASA Virtual Ocean Color Research Team Meeting, October 27th-28th (online)

Kochetkova E., Eremina T. HELCOM indicators: remote sensing assessment of eutrophication in the eastern part of the Gulf of Finland. *2-nd All-Russia conference “Hydrometeorology and ecology. Achievements and perspectives.”* (Saint-Petersburg, Russia, 19-20 December 2018)

Eremina T., Voloshchuk E., Khaimina O., Vladimirova O., **Kochetkova E.** Assessment of biogeochemical changes in the sediments of the Eastern Gulf of Finland, *Gulf Of Finland Trilateral Scientific Forum*, (Helsinki, Finland, 30th November–1st December 2016)

Vankevich, R., Eremina T., Isaev A., Ershova A., **Kochekova E.**, Remote sensing data assimilation in to the 3D numerical model of the Baltic Sea, *Baltic Oceanographic Operational Systems Annual meeting, Sweden* (Norrköping, Sweden, 12-13 June, 2015)

Eremina T., Ershova A., Khaimina O., Lange E., **Kochetkova E.**, Current state of the Eastern part of the Gulf of Finland. *Trilateral Scientific Forum*, (Tallinn, Estonia, 30 November – 1 December 2013).

Conference Posters

Marinov I., **Kochetkova E.**, Kostadinov T., Roy S., Stanger J. Phytoplankton biomass and POC from satellite remote sensing: linking biological size with ecosystem processes and ocean physics *Ocean Sciences Meeting* (Honolulu, Hawaii, USA, 27 February – 4 March 2022)

Kochetkova E., Marinov I., Kostadinov T., Lu S., Roy S. Seasonality of Phytoplankton in two satellite products and novel CMIP6 climate models, AGU Fall Meeting 2020, (Norfolk, VA, USA, 1-17 December 2020)

Vasil'ev, D., Gavra N., Yelizariyev, A., **Kochetkova, E.** and Chibilev, A., 2021, December. Variability characteristics of the surface air temperature and atmospheric precipitation in Bashkiria in 1939-2019. In 27th International Symposium on Atmospheric and Ocean Optics, Atmospheric Physics (Vol. 11916, pp. 1036-1040). SPIE.

Vasilev, D., Semenov, V., Vodopyanov, V., **Kochetkova, E.**, Velikanov, N. and Yelizariyev, A., 2020, November. Atmospheric circulation internal variability contribution and global climate change. In 26th International Symposium on Atmospheric and Ocean Optics, Atmospheric Physics (Vol. 11560, pp. 1301-1305). SPIE.

Bernard S., **Kochetkova K.**, Kostadinov T., Robertson L., Zhang X. Retrieval of the Particle Size Distribution Using Coated Spheres Modeling *Ocean Sciences Meeting* (San Diego, CA, USA, 16-21 February 2020)

Kochetkova E., Kostadinov T., Roy S., Marinov I. Comparison of an Absorption-based and a Backscattering-based Algorithm for the Retrieval of the Particle Size Distribution. *Ocean Sciences Meeting* (San Diego, CA, USA, 16-21 Feb 2020)

Marinov I., Bernadello R., Cabre A., Leung S., **Kochetkova K.** Ocean ecology and oxygen: responses to 21st century climate change across the IPCC-AR5 climate models. *The UN Climate Change Conference COP 2*, (Madrid, Spain, 2 – 13 December 2019)

Kochetkova E., Kostadinov T., Marinov I. Sensitivity of particulate backscattering coefficient spectral slope and PSD retrievals to the choice of pure seawater spectral backscattering *2019 MODIS/VIRS Science Team Meeting* (College Park, MD, USA, Nov. 18-21, 2019)

Kochetkova E. Ocean Color Data for Operational Model for Monitoring and Forecasting of the Marine Environment of the Russian Part of the Gulf of Finland, *Color and light in the ocean from Earth. Observation workshop, ESA*, (Italy, Frascati, 6-8 Sep 2016)

Kochetkova E., Isaev A., Eremina T., Application of the Remote Sensing and In-Situ Data for Chlorophyll a Variability simulation in The Eastern part of the Gulf of Finland, *Finland Trilateral Scientific Forum* (Helsinki, Finland, 30 Nov–1 Dec 2016)

Vasyulya S., Kopelevich O., **Kochetkova E.**, ..., Regional Algorithms of quantitative estimations of ciano-bacterial blooms in the Eastern part of the Gulf of Finland with the ocean color satellite scanners. *14-th All-Russia Open Conference "Modern problems of Remote Sensing of the Earth from Space"*, (Moscow, Russia, 12-14 Nov 2016)

SKILLS:

Languages: Python, Matlab, SQL, and shell scripting (Unix, Linux).

Machine Learning: linear regression, trends, logistic regression, optimization statistics, clustering, classification, decision trees, kNN.

Statistical Skills: vector (time-series) and array(spatial) data analysis, empirical orthogonal function analysis, Monte Carlo simulations, Correlation analysis, Chaos theory, Factor analysis, Wavelet analysis, Decision trees

Geospatial/Other Tools: ArcGIS, QGIS, SeaDASS, ODV, Golden Software Surfer, LaTeX, Microsoft Office

Languages: English and Russian – fluent; Spanish – beginner.

DETAILS ON SEA-GOING EXPERIENCES:

Sample responsibilities:

– Glass and flow analyzer: Winkler method and sensor dissolved oxygen; Phosphorus and Nitrogen forms, Alkalinity, pH, Biochemical Oxygen Demand, Chlorophyll concentration;

– CTD casts and maintenance; Fluorescence with a WetLab sampler; CDOM samples; Oil in water

– Reagent and equipment preparation and maintenance.

Date	Research vessel	Location	Duration
July 2003	R.V. catamaran Centaurus-II	Kaliningrad-St. Petersburg, Russia	10 days
July 2006	R.V. Prof. Shtokman	Baltic Sea proper, Gulf of Finland	21 days
July 2007	R.V. Prof. Shtokman	Baltic Sea proper, Gulf of Finland	23 days
July 2011	R.V. Prof. Molchanov	White and Barents Seas	41 days
July 2012	R.V. catamaran Centaurus-II	Baltic Sea, Gulf of Finland	20 days
July 2013	R.V. catamaran Centaurus-II	Baltic Sea, Gulf of Finland	22 days
July 2014	R.V. catamaran Centaurus-II	Baltic Sea, Gulf of Finland	12 days
Sep 2014	R.V. catamaran Centaurus-II	Baltic Sea, Gulf of Finland	6 days
July 2015	R.V. catamaran Centaurus-II	Baltic Sea, Gulf of Finland	20 days
July 2016	R.V. catamaran Centaurus-II	Baltic Sea, Gulf of Finland	19 days

EXTRA-CURRICULAR ACTIVITIES: Overlanding Americas: car trip from Alaska, USA to Ushuaia, Argentina. 69 500 km. April 2017-May 2018; Member, Liberty Sailing Club, Philadelphia 2019-2020.

PROFESSIONAL MEMBERSHIP: American Geophysical Union