Dr. Andrey Krasovskiy

Senior Research Scholar
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About A. Krasovskiy

Dr. Krasovskiy is a versatile mathematical modeler with expertise in simulations, control problems, and optimization, applied across ecosystems, economics, technology, and social sciences. His research covers land-use and forest modeling, with a specific focus on wildland fires across Europe, Eurasia (including Russia), Asia (including Indonesia), the Boreal zone, and globally.

He is the primary developer of FLAM, a mechanistic fire model integrated into the IIASA biophysical model cluster, supporting the assessment and projection of burned areas and fire adaptation strategies under climate change. His research interests also include dynamic optimization in economic growth and investment models, REDD-based offsets and benefit-sharing mechanisms, wildlife population modeling, permanence modeling, and optimization of election policies in age-structured societies.

Professional Experience

Senior Research Scholar, IIASA, Laxenburg, Austria 01/2024 – present

Research Scholar, IIASA, Laxenburg, Austria 12/2011 – 12/2023

Associate Lecturer, Vienna University of Economics and Business (WU Wien) 03/2013 – 03/2014

Junior Researcher, Vienna Institute of Demography (VID), Austrian Academy of Sciences 02/2009 – 05/2010

Research Scholar, Institute of Mathematics and Mechanics, Ural Branch of RAS, Russia 10/2008 – 12/2011

Research Assistant (Mikhalevich Award), IIASA 07/2007 – 10/2007

Research Interests

Mathematical modeling and simulations; control and optimization; data analysis; applications in economics, ecosystems, and technology; software and modeling tool design.

Education

Ph.D. in Mathematical Modeling 05/2008
Ural State University, Ekaterinburg, Russia

Young Scientists Summer Program (YSSP) 06/2006 – 08/2006
International Institute for Applied Systems Analysis (IIASA)

Master's Degree in Applied Mathematics and Physics 06/1999 – 06/2005
Ural State Technical University, Ekaterinburg, Russia

Technical Skills

- Operating systems: Windows, Ubuntu, macOS
- Programming: Pascal, Delphi, C, Python, Java, PHP, VBA
- Modeling and statistics: Matlab, Maple, Mathematica, R, SPSS, Dynare, Vensim
- GIS: QGIS, GRASS GIS, SAGA GIS
- Text and graphics: LaTeX, MS Office, LibreOffice, HTML/CSS, Adobe Suite
- Databases and CMS: MySQL, Joomla, WordPress

Language Skills

English: fluent; German: ÖSD Zertifikat Deutsch Österreich B1, ÖIF Integrationsprüfung: Sprachkompetenz (Niveau: B1), Werte- und Orientierungswissen; Russian: native language.

Teaching

June 13–16, 2022: Lecturer at the FireLinks Summer School: "Bridging the gap between fire behaviour and fire ecology", Universitat Politècnica de Catalunya, Barcelona, Spain.

2013–2014: Associate Lecturer at Vienna University of Economics and Business (WU Wien)

- Winter term 2013/2014: Course #1880 – Applied Microeconomics
- Summer term 2013: Course #5939 – Applied Microeconomics

Language: English; Class size: 40 students.

2005–2008: Assistant Lecturer at the Ural State Technical University, Ekaterinburg, Russia. Courses on probability theory and statistics, control, mathematical modeling.

Supervision of PhD and Master Students

IIASA Young Scientists Summer Program (YSSP)

- 2025: Rasheed Akinleye Hammed (University of Manchester) - Modeling the influence of Grazing on Regional Wildfire Dynamics in Europe
- 2024: Youngjin Ko (Korea University) - Development of the Harvested wood product model to support the new Bauhaus concept in South Korea
- 2023: Laura Montoya-Perez (UNAM, Mexico) — Data-driven modeling of fires in a megadiverse country
- 2023: Adrian Dwiputra (NUS, Singapore) — Initial fire points in equatorial Southeast Asia
- 2023: Nadine-Cyra Freistetter (FMI, Finland) — Bark beetle forest damage database
- 2022: Hyun-Woo Jo (Korea University) — Optimization of FLAM for South Korea
- 2021: Eunbeen Park (Korea University) — Afforestation options in North Korea

- 2021: Kevin van Sundert (University of Antwerp) — Soil nutrient availability in forest models
- 2021: Stephen Bell (ICTA-UAB, Spain) — Soil carbon sequestration after land abandonment
- 2019: Xikun Hu (KTH, Sweden) — Deep learning-based burned area modeling
- 2018: Camila Thiemy Dias Numazawa (University of São Paulo) — Advanced forest management in the Amazon
- 2017: Hadi (Aalto University) — Forest cover change detection in Indonesia

Intern and Master Students

- 2025: Htoo Htoo Lwin (University of Eastern Finland), Master thesis "Parameterizing Ignition Probability as a Function of Low-Voltage Powerline and Population Densities for Large-Scale Global Wildfire Modeling" defended at the University of Lleida (UdL), Spain
- 2025: Ayaulym Matisheva (Central European University), Master thesis "Wildfires in Kazakhstan: Investingating Wildfires in Kazakhstan between 2001 and 2022" defended at the Central European Universtiy, Vienna, Austria
- 2025: Anna Kiszely (Central European University) - Fire dynamics in the Mediterranean Basin, 2000-2022
- 2024: Rasheed Akinleye Hammed (University of Eastern Finland), Master thesis "Modeling areas burned in forest fires over 2000-2015 in Catalonia (Northeast Spain)" defended at the University of Lleida (UdL), Spain.
- 2023: Rasheed Akinleye Hammed; Gbenga Lawrence Alawode (University of Eastern Finland) — Drivers of wildland fires in Spain
- 2023: Camila Maciel Viana (Universidad de Valladolid, Spain) — FLAM application to Boreal forests
- 2022: Zhong Haoming; Arnaldo M. C. da Silva (University of Eastern Finland) — Tree species suitability maps
- 2021: Jinshuang Niu (UEF / University of Lleida) — Forest fire dynamics in Finland and Sweden
- 2021: Shelby Corning (UEF) — Disturbance interactions and remote sensing in Colorado, USA
- 2020–2021: Jinshuang Niu; Reinis Cimdiņš (UEF) — Burned area interaction analysis in Finland and Sweden
- 2019: Camila Maciel Viana (UNESP, Brazil) — Plantation modeling in the Amazon

Editorial Duties

2025–present time: Editor of the Special Issue "Remote Sensing Data for Modeling and Managing Natural Disasters", *Remote Sensing* (MDPI).

2023–2025: Editor of the Special Issue "Patterns, Drivers, and Multiscale Impacts of Wildland Fires", *Fire* (MDPI).

2021–present: Review Editor on the Editorial Board of *Fire and Forests* (specialty section of *Frontiers in Forests and Global Change*).

2020–present: Review Board Member, *Forests* (MDPI).

2019–present: Review Editor on the Editorial Board of *Negative Emission Technologies*, part of the journal *Frontiers in Climate*.

2019–present: Editorial Council Member, *Bulletin of Liberal Arts University*.

2021–2023: Editor of the Special Issue "Latest Advances in Remote Sensing-Based Environmental Dynamic Models", *Remote Sensing* (MDPI).

Society Fellows

2008–present: Member, Technical Committee 2.4 on Optimal Control, International Federation of Automatic Control (IFAC).

2020–2023: MC Member, COST Action CA18135 – *Fire in the Earth System: Science & Society.*

2019–2022: Member, Taskforce "FIRE$: Economic Drivers of Global Wildland Fire Activity", International Union of Forest Research Organizations (IUFRO).

Selected Workshops & Presentations

- Wildfire - Climate Impact Management Workshop, Environmental Defence Fund (EDF), January 22-23, 2025, Stanford University, USA.
- International Workshop on Wildfire Modelling and Artificial Intelligence, The Intercademy Partnership (IAP), March 17-18, 2025, Royal Spanish Academy of Sciences, Madrid, Spain.
- Krasovskiy, A., *Parameterizing ignition probability as a function of low-voltage powerline and population densities for large-scale global wildfire modeling.* 1st Wildfire Ignition Causes International Conference, November 18–22, 2025, Porto, Portugal.
- Krasovskiy, A., *Afforestation Strategies under Climate Risk: Implications for Wood Supply and Long-Term Carbon Permanence.* Overshoot Conference, September 30–October 2, 2025, Laxenburg, Austria.
- Krasovskiy, A., *Forestry and Wildland Fire Modelling at Multiple Scales and Resolutions.* Invited speaker at the Thematic Session on Latest Advances in Remote Sensing-based Environmental Dynamic Models, XX Brazilian Symposium on Remote Sensing (SBSR 2023), April 2–5, 2023, Florianópolis, SC, Brazil.
- Krasovskiy, A., *Forest modeling under climate change and management scenarios.* IIASA 50th Anniversary Conference, "Systems Analysis as a Global Approach: Science and Sustainability in the Mid-Latitude Region", October 12, 2022, Seoul, Republic of Korea.
- Krasovskii, A., *Modeling wildfire dynamics: the FLAM approach.* Side event on forest fires at the French Pavilion, organized by the French Ministry of Agriculture and Food, UN Climate Change Conference 2018 (COP24), 8 December 2018, Katowice, Poland.

Publications

Full list available at pure.iiasa.ac.at.
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