



personal

work address: Lojasiewicza 6, 30-348 Cracow, Poland
e-mail: sylwester.arabas@uj.edu.pl, phone: +48502254779
homepage: ww2.ii.uj.edu.pl/~arabas
LinkedIn: [linkedin.com/in/sylwester-arabas](https://www.linkedin.com/in/sylwester-arabas)

highlights

- background: experimental data analysis and numerical modelling in geophysics
- international experience in gov, academic, corporate and startup realms
- physics of the Earth's atmosphere, aerosol-cloud-precipitation interactions
- research software engineering focused on reproducibility & maintainability
- free and open-source software maintenance, dissemination and advocacy
- scientific data visualisation, vector graphics and typesetting
- public presentations, teaching sciences, organisation of meetings
- building teams, keeping things simple, done and documented

employment

2018.10 – ...: **Dept Math & CS, Jagiellonian University, Cracow, Poland**
computational research on aerosol and clouds
2017.10 – 2018.09: **AETHON Engineering Consultants, Athens, Greece**
urban transport modelling (EU's H2020 "Innovation Associate" programme)
2015.11 – 2017.09: **Chatham Financial, Cracow, Poland**
financial models software development
2013.12 – 2015.10: **Faculty of Physics, University of Warsaw, Poland**
postdoc researcher in the physics of aerosol-cloud interactions,
lead programmer for open-source CFD-related projects
lecturer (C++ for first-year undergraduate students)
2002.10 – 2005.12: **Mazovian Governor Office, Warsaw, Poland**
public officer, web/db developer
2000 – 2009: **ITStudio.pl, Warsaw, Poland**
web/db developer

**university
education**

2008 – 2013: **Faculty of Physics, University of Warsaw** – PhD in Physics
thesis: Elements of modern cloud modelling (in English)
supervisor: Hanna Pawłowska, degree obtained on 2013-12-16
referees: Graham Feingold (NOAA, USA), Lech Łobocki (Warsaw Tech.)
2002 – 2008: **Faculty of Physics, University of Warsaw** – MSc, 350 ECTS
thesis: Microphysical properties of shallow convective clouds (in Polish)
supervisor: Hanna Pawłowska; degree obtained on 2008-06-25
referee: Krzysztof Haman

study visits

2015: (4 weeks) University of Hyogo (Kobe, Japan)
2012: (4 weeks) National Center for Atmospheric Research (Boulder, Colorado)
2010: (4 weeks) JAMSTEC/The Earth Simulator Center (Yokohama, Japan)

field campaigns

2011: (3 weeks) CARRIBA helicopter measurements campaign (Barbados)
2008: (3 weeks) EUCAARI aircraft measurements campaign (Rotterdam)
2008: (2 weeks) SEASALT aircraft measurements campaign (Austrian Alps)
2006: (3 weeks) AMMA aircraft measurements campaign (Burkina Faso)

coding skills

C++, Python, C#, IDL/GDL, Fortran, SQL, UNIX tools, L^AT_EX/B_IB_TE_X

language skills

fluent: **Polish, English**
conversational: Russian, French
basics: Japanese, Spanish

- workshops,
schools,
courses**
- 2018: Innovation Management (A.T. Kearney, Dusseldorf/Berlin/Munich)
 - 2017: Pedestrian Dynamics: Modelling, Validation and Calibr. (Brown Univ.)
 - 2017: Robust Mathematical Finance (ETH)
 - 2017: Quantitative Finance (U. Milano-Bicocca)
 - 2016: Numerical methods for Hamilton-Jacobi equations (RICAM, Linz)
 - 2014: IP, Licensing and Commercialisation (U. Oxford)
 - 2014: Global Cloud Resolving Modelling (RIKEN, Kobe)
 - 2014: Experim. Methodology in Comp. Sci. Research (U. St. Andrews)
 - 2011: Atmospheric Water Vapour in the Climate System (Venice Int. Univ.)
 - 2008: Aerosols and Climate Change (U. L'Aquila)
 - 2008: Physics and chem. of air pollution and their effects (U. Helsinki)
 - 2007: Boundary-Layer Research with Airborne Instruments (EUFAR, Iasi)
 - 2007: Formation and growth of atmospheric aerosols (U. Helsinki)
 - 2006: Multi-spectral environmental satellites (IMiGW/U. Wisconsin, Cracow)
- funding record**
- Foundation for Polish Science (fnp.org.pl):
 - 2018: Reintegration grant (PI, ca. \$200 000)
 - 2014: Mentorship programme (mentor: prof. Harm Jonker, TU Delft)
 - 2013: START fellowship
 - 2012: START fellowship (incl. visit at NCAR, Boulder, CO)
 - 2011: Conference award (SIAM GS11, Long Beach, California)
 - Poland's National Science Centre (ncn.gov.pl):
 - 2013-2015: co-author/participant in a HARMONIA project (ca. \$250 000)
 - 2011-2013: PI in a PRELUDIUM project (ca. \$15 000)
 - European Facility for Airborne Research (eufar.net):
 - 2008: PI in SEASALT student project (seasalt.igf.fuw.edu.pl) (ca. \$25 000)
- seminars**
- Physics Seminar, Michigan Tech, Houghton, Michigan (2018)
 - Complex Systems and Applications Group, Demokritos, Athens, Greece (2018)
 - Dept. of Mathematics and CS, Jagiellonian University, Cracow, Poland (2018,'19)
 - Chemical Engineering Department, University of Patras, Greece (2018)
 - Graduate School for Simulation Studies, University of Hyogo, Japan (2015)
 - Dept. of Atmospheric Sciences, University of Wyoming, Laramie, USA (2015,'18)
 - Faculty of Civil Engineering and Geosciences, TU Delft, The Netherlands (2015)
 - National Atmospheric and Oceanic Administration, Boulder, Colorado (2012)
 - National Center for Atmospheric Research, Boulder, Colorado (2010,'12,'14)
 - Meteorological Research Institute, Tsukuba, Japan, (2010)
 - Japan Agency for Marine-Earth Science and Technology, Yokohama, (2010)
- conference presentations**
- AMS Cloud Physics Conference:
 - 2018 (Vancouver, poster)
 - Numerical Analysis and Scientific Computation with Applications:
 - 2018 (Kalamata, talk)
 - Transportation Research Arena (Vienna):
 - 2018 (poster)
 - C++Now by Boost & Software Freedom Conservancy (Aspen, Colorado):
 - 2015 (talk: youtube.com/watch?v=bnbZQexvh00)
 - UCAR Software Engineering Assembly Conference (Boulder, Colorado):
 - 2013 (talk)
 - Metström: Multiple Scales in Fluid Mechanics and Meteorology (Berlin):
 - 2011 (talk)
 - SIAM Conference on Mathematical and Computational Issues in Geosciences:
 - 2011 (Long Beach, talk), '13 (Padua, talk)

American Geophysical Union Fall Meetings (San Francisco):
2010 (poster), '12 (poster)
FOSDEM (Free & Open Source Software Devs Euro Meeting, Brussels):
2010, '11 (talk), '12, '13 (session convener), '14, '15, '16, '17, '18 (volunteer)
International Conference on Clouds and Precipitation:
2008 (Cancún, talk), '12 (Leipzig, talk)
European Geosciences Union General Assemblies (Vienna):
2007 (poster), '09 (poster), '10 (poster)

papers

Arabas & Papacharalampous (e-print):
A State-Space Model for Assimilating Passenger and Vehicle Flow Data
with User Feedback in a Transit Network
([arXiv: 1809.10429](https://arxiv.org/abs/1809.10429))
Arabas & Farhat (e-print):
Derivative Pricing as a Transport Problem:
MPDATA solutions to Black-Scholes-type equations
([arXiv: 1607.01751](https://arxiv.org/abs/1607.01751))
Arabas & Shima 2017:
On the CCN (de)activation nonlinearities
(Nonlin. Proc. Geophys. 24, [doi: 10.5194/npg-24-535-2017](https://doi.org/10.5194/npg-24-535-2017))
Arabas, Jaruga, Pawlowska & Grabowski, 2015:
libcloudph++ 1.0: a single-moment bulk, double-moment bulk, and
particle-based warm-rain microphysics library in C++
(Geosci. Model. Dev. 8, [doi: 10.5194/gmd-8-1677-2015](https://doi.org/10.5194/gmd-8-1677-2015))
Jaruga, Arabas, Jarecka, Pawlowska, Smolarkiewicz & Waruszewski, 2015:
libmpdata++ 1.0: a library of parallel MPDATA solvers
for systems of generalised transport equations
(Geosci. Model Dev. 8, [doi: 10.5194/gmd-8-1005-2015](https://doi.org/10.5194/gmd-8-1005-2015))
Arabas, Jarecka, Jaruga & Fijałkowski, 2014:
Formula Translation in Blitz++, NumPy and Modern Fortran:
A Case Study of the Language Choice Tradeoffs
(Sci. Prog. 22, [doi: 10.3233/SPR-140379](https://doi.org/10.3233/SPR-140379))
Arabas & Shima, 2013:
Large-Eddy Simulations of Trade Wind Cumuli
Using Particle-Based Microphysics with Monte Carlo Coalescence
(J. Atmos. Sci., [doi: 10.1175/JAS-D-12-0295.1](https://doi.org/10.1175/JAS-D-12-0295.1))
Kulmala, Asmi, Lappalainen et al., 2011:
General overview: European Integrated project on Aerosol Cloud Climate
and Air Quality interactions (EUCAARI) –
integrating aerosol research from nano to global scales
(Atmos. Chem. Phys., [doi: 10.5194/acp-11-13061-2011](https://doi.org/10.5194/acp-11-13061-2011))
Arabas & Pawlowska, 2011:
Adaptive method of lines for multi-component aerosol
condensational growth and CCN activation
(Geosci. Model Dev., [doi: 10.5194/gmd-4-15-2011](https://doi.org/10.5194/gmd-4-15-2011))
Cairo, Pommereau, Law et al., 2010:
An introduction to the SCOUT-AMMA stratospheric aircraft, balloons
and sondes campaign in West Africa, August 2006: rationale and roadmap
(Atmos. Chem. Phys., [doi: 10.5194/acp-10-2237-2010](https://doi.org/10.5194/acp-10-2237-2010))
Arabas, Pawlowska & Grabowski, 2009:
Effective radius and droplet spectral width
from in-situ aircraft observations in trade-wind cumuli during RICO
(Geosci. Res. Lett., [doi: 10.1029/2009GL038257](https://doi.org/10.1029/2009GL038257))

paper reviews Atmospheric Chemistry and Physics (2014, 2018)
 Geoscientific Model Development (2014, 2016)
 J. Advances in Modelling Earth Systems (2015)
 Proc. Eastern Asia Society for Transportation Studies (2017)

open-source software [GNU Data Language](#) (2009–2014, 2018–...): ~500 C++ commits
[libmpdata++](#), [libcloudph++](#) (2013–2015): ~1000 C++ commits
[vinecopulib](#) (2016–2017): ~ 100 C++/Python commits
 Blitz++, Boost, netCDF, CMake, Debian, GCC...: community activity

teaching Dept. Math. and CS, Jagiellonian University:
 2018: Abstract programming
 2018: Design patterns
 Faculty of Physics, U. Warsaw:
 2015: Programming in C++ (igf.fuw.edu.pl/~slayoo/teaching)
 U. Vigo in Ourense, Spain:
 2014: A short course on object-oriented numerics (ephyslab.uvigo.es/numeric)
 Institute of Geophysics, U. Warsaw:
 2011, '14: Numerical modelling in atmospheric physics
 2010: Physics of the atmospheric boundary layer
 2009, '10: Atmospheric thermodynamics and cloud physics
 2008, '09: Hands-on data processing in meteorology

organisation of meetings “Eulerian/Lagrangian methods for cloud microphysics” (Warsaw, 2015)
<http://goo.gl/1fj5H8>
 “Eulerian/Lagrangian methods for cloud microphysics” (Cracow, 2019)
http://www.igf.fuw.edu.pl/~slayoo/workshop_2019/
 “FOSS for scientists” (Brussels, 2013, day-long conference session)
http://archive.fosdem.org/2013/schedule/track/foss_for_scientists/