Sylwester Arabas | Curriculum Vitæ | March 2018

personal

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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

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

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)

coding skills

C++, Python, C#, IDL/GDL, Fortran, SQL, UNIX tools, LaTeX/BibTeX

language skills

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

peer-reviewed papers

Arabas & Shima 2017:
On the CCN (de)activation nonlinearities
(Nonlin. Proc. Geophys. 24, doi: 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)

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)

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)

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)

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)

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)

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)

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)

recent e-print

Arabas & Farhat 2016:
MPDATA Meets Black-Scholes: Derivative Pricing as a Transport Problem
(arXiv: 1607.01751)

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 (contributor, 2009–2014): ∼500 C++ commits
libmpdata++, libcloudph++ (maintainer, 2013–2015): ∼1000 C++ commits
vinecopulib (contributor, 2016–2017): ∼ 100 C++/Python commits
Boost, netCDF, CMake, Debian, GCC. . . : bug reports, community activity

funding record

Foundation for Polish Science (fnp.org.pl):
- 2014: Mentorship programme (mentor: prof. Harm Jonker, TU Delft)
- 2012 & 2013: START stipend (incl. visit at NCAR, Boulder, Colorado)
- 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)

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)

seminars

Complex Systems and Applications Group, Demokritos, Athens, Greece (2018)
Dept. of Mathematics and CS, Jagiellonian University, Cracow, Poland (2018)
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)
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

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)

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)

teaching

as lecturer at the Faculty of Physics, U. Warsaw:
- 2015: Programming in C++ (igf.fuw.edu.pl/~slayoo/teaching)

as a visiting scholar at U. Vigo in Ourense, Spain:
- 2014: A short course on object-oriented numerics (ephyslab.uvigo.es/numeric)

as assistant at the 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