

Curriculum Vitae (short & extended) for Alexander Mahura

→ SHORT CV:

Alexander Mahura; PhD (Phys&Math., Atm.Sci.), MSc (Env.Mod., Atm.Sci.), BSc. (Atm.Sci.); more than 25 years of research experience; fields of research are modelling of atmospheric processes and transport of pollutants (including radionuclides) on local-meso-regional-hemispheric scales, on-line integrated meteorology-chemistry-aerosols modelling at regional-urban scales, impact of urban areas on meteorology and atmospheric composition, atmospheric chemistry, atmospheric boundary layer processes, environmental impact and risk assessment, fine-scale road weather forecasting, birch pollen modelling, numerical weather prediction, statistics; consulting/co-advising students BSc/MSc/PhD on relevant research projects/theses; co-author of over 300 sci.-tech. publications, incl. 5 books and about 60 peer-reviewed papers; worked in Russia (Russian State Hydrometeorological University; Kola Science Center of Russian Academy of Sciences), USA (University of Alaska Fairbanks /UAF, University of Washington /UW), Austria (International Institute for Applied Systems Analysis), France (Ecole Centrale de Nantes), Denmark (Danish Meteorological Institute), and Finland (University of Helsinki); since 2000 has been involved in many international projects such as AR-NARP, FARECS, INTAS, FP5 FUMAPEX, FP6 Enviro-RISKS, FP7 (MEGAPOLI, TRANSPHORM, MACC, MarcoPolo), Horizon-2020 (ESCAPE, INTAROS, iCUPE), Nordic (NordRISK, CEEH, RSF, NetFAM, fsRSF, MUSCATEN, CarboNord, CRAICC-PEEX, CRUCIAL, TRAKT-2018), TEMPUS QualiMet & CombatMeteo, EU COST Actions (-728, -EUPOL, -ENCWF, -EuMetChem), AoF (ClimEco), HIRLAM, HARMONIE, EnviroChemistry/ EnviroAerosols/ Enviro-PEEX on ECMWF HPC, Pan-Eurasian Experiment (PEEX) programme, and other projects.

→ EXTENDED CV:

Personal data:

Birthdate: 19 May 1967

Web-sites: <https://tuhat.helsinki.fi/portal/en/person/mahura>
https://www.researchgate.net/profile/Alexander_Mahura

Research employment, experience and positions

- **May 2017-pres** : university researcher/ senior scientist at Institute for Atmospheric and Earth System Research (INAR) / Physics, Faculty of Science, University of Helsinki (UHel, Helsinki, Finland) (*research: participating with multi- and interdisciplinary tasks in PEEEX Programme, EU Horizon-2020, NordForsk, and other projects*); more details at <https://tuhat.helsinki.fi/portal/en/person/mahura>
- **2005-2017** : researcher/ senior scientist at Research and Development Department, Danish Meteorological Institute (DMI, Copenhagen, Denmark) (*research: participating with multi- and interdisciplinary tasks in HIRLAM, EU FPs & Horizon-2020, NordForsk, COST Actions, and other projects*)
- **2003-2004** : postdoctoral fellow at Lab. of fluid mechanics, Ecole Centrale de Nantes (Nantes, France) (*research: realization of the FP5 EU FUMAPEX project with urbanization of meso-meteorological models - SUBMESO and HIRLAM - for tasks of the numerical weather prediction*)
- **2001-2002** : research fellow at International Institute for Applied System Analysis (Laxenburg, Austria) (*research: realization of the FARECS-I & FARECS-II projects as the part of the "Radiation Safety of the Biosphere" with tasks of atmospheric trajectory and dispersion modelling for probabilistic studies, statistical data analysis, etc.*)
- **2000-2003** : research fellow at DMI (Copenhagen, Denmark) with NorFA scholarships (*research: realization of the Arctic-Risk NARP project with tasks of atmospheric trajectory and dispersion modelling for probabilistic studies, stat.data analysis, GIS, risk assessment, etc.*)
- **1998-2000** : res.assistant at Atmos. Sciences Department, University of Washington (Seattle, WA, USA) (*research: atmospheric transport of chemical species in the Arctic and North Pacific regions; isentropic trajectory modeling; statistical analysis of data*)
- **1995-1998** : res.assistant at Geophysical Institute, University Alaska Fairbanks (Fairbanks, AK, USA) (*research: atmospheric transport of radionuclides and chemical species in the Arctic and North Pacific regions; isentropic trajectory modeling; parametric and non-parametric stat., cluster, trend, two component, factor analyses*)

- **1991-1995** : post-graduate researcher/ young scientist at Lab. of ecoinformatics and mathematical modelling, Institute of Northern Environmental Problems, Kola Science Center, Russian Academy of Sciences (Apatity, Murmansk region, Russia) (*research: meso-scale modeling, transport of pollutants in complex terrain, radioactivity, meteorology, ecology, computer science, fieldwork in Sum 1992-1994 with EarthWatch; measurement of pollutants & meteorological observations*)
- **1988-1991** : undergraduate student part-time employment at Russian State Hydrometeorological University (RSHU, St. Petersburg, Russia) (*research: atmospheric mesoscale processes and air pollution modelling, numerical weather prediction, experimental measurements*)

Education and grades:

- 2002 – Ph.D Atm.Sci., Phys&Math at Russian State Hydrometeorological University (Russia)
- 1998 – M.Sc. Environmental Modelling at Univ of Alaska Fairbanks with awards (USA)
- 1991 – B.Sc. Meteorology at Russian State Hydrometeorological University (Russia)
- 1984 – School diploma with honors (Russia)

Research profile and skills:

Research interests:

modelling of atmospheric processes and transport of pollutants (including radionuclides) on local-meso-regional-hemispheric scales, environmental impact and risk assessment, on-line integrated meteorology-chemistry-aerosols modelling at regional-urban scales, impact of urban areas on meteorology and atmospheric composition, atmospheric chemistry, numerical weather prediction, atmospheric boundary layer processes, fine-scale road weather forecasting, birch pollen modelling, statistics for data analysis and post-processing models output; actively involved in developing of multi-scale online integrated/ seamless modelling of meteorology-chemistry-aerosols processes with interactions and feedbacks considering the atmosphere as one interacting system; experience in using and contributing to development of numerical weather prediction and pollution models at different scales.

Skills in:

- Writing/ contributing proposals: for EU FPs, Horizon-2020, NordForsk, AoF, national & others funding agencies;
- Work individually and/or as team member; leading team/ workpackage/ task, project management;
- Self-education approach, open-minded, hard-working, optimistic;
- Programming languages: Fortran, Python, Perl, C, Pascal;
- Operating systems: CRAYs (XT5, XC30, XC40), UNIX/ SGI, NEC, DEC, VAX, DOS/Windows PCs;
- Using supercomputing facilities: Arctic Research Supercomputing Center, USA (1995-2000); NCAR, USA (1995-2003); DMI, Denmark (2002-2017); ECMWF, UK (2012-pres); Center for Science Computing, Finland (2017-pres)
- Advanced qualification courses for CRAY / UNIX (1995, 1996, 1998, 2008, 2012, 2014, 2016);
- Models: Enviro-HIRLAM, HIRLAM, HARMONIE, SURFEX models (previously SUBMESO, HYSPLIT, DERMA, MM5, ITM, and others);
- Advanced qualification courses for HARMONIE (2014), SURFEX (2013)
- Software: SPSS, MATLAB, IDL, SAS, S-PLUS, PHOENIX, GMT, NCAR Graphics, AVS, QUATTRO PRO, SYSSTAT, SPYGLASS, etc. – for statistical analysis, modeling, data visualization, etc.

Awards/ honors/ scholarships/ memberships:

- European Geosciences Union, EGU (2008-) & Finnish Association for Aerosol Research, FAAR (2018-)
- Danish Meteorological Society (2014-2017)
- AGU (1996-2000) & American Association for the Advancement of Science (1999-2000) memberships
- NorFA (Nordisk Forskerutdanningsakademi) scholarships (six; 2001-2003)
- Fellowship programme grant of the Research Council of Norway (2003)
- IIASA/ FORMAS grants for “Radiation Safety of the Biosphere” project (two; 2001-2002)
- Young Scientist Summer Program Honorable Mention, IIASA (2002)
- Award Phi Kappa Phi (1997)
- Award Sigma Xi - The Scientific Research Society (1998)
- Young scientist / Graduate student travel awards/ grants (nine; Russia – 1992-1994 & EU – 1995, 1997, 2002, 2003 & USA – 1997, 1998)

Research projects involvement during last years:

- AoF ClimEco (2018-2020) – WP leader, task leader & team member
 - Enviro-PEEX on ECMWF (2018-2020) – PI & member
 - NordForsk TRAKT-2018 (2018) – task leader & team member
 - Horizon-2020 iCUPE (2018-2021) – task leader & team member
 - Horizon-2020 INTAROS (2016-2020) – team member
 - NordForsk CRUCIAL (2016-2018) – team leader & member
 - Horizon-2020 ESCAPE (2015-2018) – team member
 - EnviroAerosols on ECMWF (2015-2017) – co-PI, team leader & member
 - FP7 MarcoPolo (2014-2016) – WP leader & team leader & member
 - NordForsk CarboNord (2014-2016) – team leader & member
 - NordForsk CRAICC-PEEX (2014-2015) – team leader & member
 - EnviroChemistry on ECMWF (2012-2014) – team member
 - FP7 TRANSPHORM (2010-2014) – team member
 - FP7 MEGAPOLI (2008-2011) – project manager & team member
 - FP7 MACC (2009-2011) – team member
 - FP6 Enviro-RISKS (2005-2008) – team member
 - FP5 FUMAPEX (2002-2005) – team member
 - NordForsk networking projects: NetFAM (2005-2009), MUSCATEN (2010-2012)
 - COST: EuMetChem (2011-2015), ENCWF (2007-2011), -728 (2004-2009), -EUPOL (2007-2011)
 - TEMPUS: Combat-Meteo (2007-2010), QualiMET (2010-2013)
 - FARECS-I, -II (2001-2002), ArcticRisk NARP (2000-2003); NordRisk-I, -II (2005-2008)
 - HIRLAM, -A, -B, -C (High Resolution Limited Area Model research and development) (2000-2015)
 - DK National: CEEH (Danish Centre for Energy, Environment and Health; 2005-2010), RSF (Road Segments Forecasting; 2006-2008), fsRSF (Fines-Scale Road Stretch Forecasting; 2009-2011), and others
- All 60+ projects are listed at: http://www.mv.helsinki.fi/home/mahura/AM_projects_1.pdf

Organization of international meetings during last years:

- Co-organizer of Young Scientists Summer Schools (YSSS) on integrated modeling (Sum of 2008, 2011, 2014)
- Co-organizer of Enviro-HIRLAM Research Training Weeks (Spr & Fal months of 2008, 2009, 2010, 2011, Sum 2015&2017, Dec 2017, Mar 2018) within Nordic networks NetFAM, MUSCATEN, & CRAICC-PEEX/ CRUCIAL
- Co-organizer of FP7 EU MEGAPOLI project annual workshops/ meeting (Fal of 2009, 2010, 2011)
- Co-organizer of Horizon-2020 ESCAPE YSSS on Energy-efficient Scalable Algorithms for Weather Prediction at Exascale (Aug 2017)
- Co-organizer of NordForsk CRAICC-PEEX (Aug 2015) and Horizon-2020 ESCAPE (Oct 2016) workshops on dissemination and training
- Co-organizer of several meetings within the FP6 Enviro-RISKS, COST Actions, etc.

Science education of new generation of researchers:

- Co-organizing Young Scientists Summer Schools, YSSS (2008 – with Nordic NetFAM - <http://netfam.fmi.fi/YSSS08>, 2011 – with Nordic MUSCATEN - <http://www.ysss.osenu.org.ua>, 2014 – with COST Action EuMetChem - <http://aveirosummerschool2014.web.ua.pt>) on online integrated modelling for numerical weather prediction and atmospheric chemical transport modelling, teaching lectures and practical exercises (small-scale research projects) with the Enviro-HIRLAM (Environment – High Resolution Limited Area Model) for environmental applications.
- Co-organizing the Enviro-HIRLAM Research Training Weeks and Introductory Courses (in 2008, 2009, 2010, 2011, 2015, 2017, 2018 – in Denmark, Russia, and Finland) with teaching lectures and practical exercises.

□ Sci. supervision/ co-advising/ consulting – PhD, MSc, BSc students (> 20, as part of research thesis) on topics of atmospheric sciences, trajectory and dispersion modelling and data analysis, statistics, air pollution, numerical weather prediction and atmospheric chemical transport modelling, etc.

All students and science education activities are listed at: http://www.mv.helsinki.fi/home/mahura/AM_students_1.pdf

Reviewing manuscripts and editorial work:

□ Reviewing papers (depending on requests from editors) for: *Adv. Sci. Res., Atm. Env., Env. Mod. & Ass., J. Env. Monitor., Atm. Pol. Res., J. Air & Waste Manag., Atm. Chem. Phys., Clean Soil Air Water, Meteo. & Atmos. Phys., Natural Hazards, Urb. Climate*

□ Editorial work for Springer published books "Urbanization of Meteorological and Air Quality Models" & "Integrated Systems of Meso-Meteorological and Chemical Transport"; for FP7 EU MEGAPOLI project NewsLetters http://megapoli.dmi.dk/nlet/MEGAPOLI_NewsLetters_Volume.pdf; for EGU Journal for PEEEX Special Issue "Arctic-Boreal Atmospheric System"; Advisory Editor for the Environmental Modelling and Assessment journal

Selected peer-reviewed publications during last years:

Details at: http://www.mv.helsinki.fi/home/mahura/AM_articles_chapters_books_1.pdf

- Mahura A., A. Baklanov, S.R. Arnold, R. Makkonen, M. Boy, T. Petäjä, V-M. Kerminen, H.K. Lappalainen, M. Jochum, R. Nuterman, A. Schvidenko, I. Esau, E. Gordov, A. Titov, I. Okladnikov, V. Penenko, A. Penenko, M. Sofiev, A. Stohl, T. Aalto, J. Bai, C. Chen, Y. Cheng, M. Cherepova, O. Drofa, M. Huang, L. Järvi, H. Kokkola, R. Kouznetsov, T. Li, K.S. Madsen, P. Malguzzi, K. Moiseenko, S. Monks, S. Myslenkov, G. Nerobelov, S.B. Nielsen, S.M. Noe, Y. Palamarchuk, E. Pyanova, T.S. Rasmussen, J. She, A. Skorohod, S. Smyshlyaev, J.H. Sørensen, D. Spracklen, H. Su, J. Tonttila, E. Tsvetova, S. Wang, J. Wang, T. Wolf-Grosse, Y. Yu, Q. Zhang, W. Zhang, W. Zhang, X. Zheng, P. Zhou, S. Zilitinkevich, M. Kulmala (2018): PEEEX Modelling Platform for Seamless Environmental Prediction. *Atm Chem & Phys Discussion*, acp-2018-541
- Mahura A., Gonzalez-Aparicio I., Nuterman R., Baklanov A. (2018): Seasonal impact analysis on population due to continuous sulphur emissions from Severonikel smelters of the Kola Peninsula. *Geography, Environment, Sustainability*; 2018, 11(1): 130-144, DOI:10.24057/2071-9388-2018-11-1-130-144
- Nerobelov G., Sedeeva M., Mahura A., Nuterman R., Mostamandi S., Smyshlyaev S. (2018): Online integrated modeling on regional scale in North-West Russia: evaluation of aerosols influence on meteorological parameters. *Geography, Environment, Sustainability*; 2018, 11(2): 73-83, <https://doi.org/10.24057/2071-9388-2018-11-2-73-83>
- Baklanov, A., Smith Korsholm, U., Nuterman, R., Mahura, A., Nielsen, K. P., Sass, B. H., Rasmussen, A., Zakey, A., Kaas, E., Kurganskiy, A., Sørensen, B., and González-Aparicio, I. (2017): Enviro-HIRLAM online integrated meteorology–chemistry modelling system: strategy, methodology, developments and applications (v7.2), *Geosci. Model Dev.*, 10, 2971-2999, <https://doi.org/10.5194/gmd-10-2971-2017>, 2017.
- Penenko A., Penenko V., Nuterman R., Baklanov A., Mahura A. (2015): Direct variational assimilation algorithm for atmospheric chemistry data with transport and transformation model. *SPIE Vol 9680, Atmospheric and Ocean Optics: Atmospheric Physics*, 968076, Nov 2015, 12p., doi: 10.1117/12.2206008
- Baklanov, A., K.H. Schlünzen, P. Suppan, J. Baldasano, D. Brunner, S. Aksoyoglu, G. Carmichael, J. Douros, J. Flemming, R. Forkel, S. Galmarini, M. Gauss, G. Grell, M. Hirtl, S. Joffre, O. Jorba, E. Kaas, M. Kaasik, G. Kallos, X. Kong, U. Korsholm, A. Kurganskiy, J. Kushta, U. Lohmann, A. Mahura, A. Manders-Groot, A. Maurizi, N. Moussiopoulos, S.T. Rao, R.S. Sokhi, N. Savage, C. Seigneur, S. Solomos, B. Sørensen, G. Tsegas, E. Vignati, B. Vogel, Y. Zhang (2014): Online Coupled Regional Meteorology-Chemistry Models in Europe. *Atmos. Chem. Phys.* 14, 317-398; doi:10.5194/acp-14-317-2014
- Mahura A., R. Nuterman, I. Petrova, B. Amstrup (2013): Atmospheric Trajectory and Chemical Transport Modelling for Elevated Ozone Events in Denmark. *Atmospheric and Climate Sciences, Vol. 3 No. 1, 2013, pp. 87-99. doi: 10.4236/acs.2013.31011.*
- Gonzalez-Aparicio I., J. Hidalgo, A. Baklanov, U. Korsholm, R. Nuterman, A. Mahura, O. Santa-Coloma (2013): Urban Boundary Layer Analysis in the Complex Coastal Terrain of Bilbao using Enviro-HIRLAM. *Theoretical and Applied Climatology, Vol13, Iss 3-4, pp. 511-527; DOI: 10.1007/s00704-012-0808-6*
- Pankratov F. F., A. V. Konoplev, A. Mahura, O. V. Kats (2013): Analysis of the data of long-term monitoring of atmospheric mercury content and meteorological parameters at Amderma polar station. *Russian Meteorology and Hydrology, Vol 38, Iss 6, pp. 405-413; DOI: 10.3103/S1068373913060058*
- Penenko V., Baklanov A., Tsvetova E., Mahura A. (2012): Direct and Inverse Problems in a Variational Concept of Environmental Modelling. *Pure and Applied Geophysics, Special Issue on "Data Assimilation and its Applications", 169:447-465, 2012; doi 10.1007/s00024-011-0380-5*
- Baklanov A., Penenko V., Mahura A., Vinogradova A., Elansky N., Tsvetova E., Rigina O., Maksimenkov L., Nuterman R., Pogarskii F., Zakey A. (2012): Aspects of Atmospheric Pollution in Siberia, pp. 303-346; In "Regional Environmental Changes in Siberia and Their Global Consequences", P.Ya. Groisman, G. Gutman (Eds), Springer, doi: 10.1007/978-94-007-4569-8, 360 p.

- Baklanov, A., Aloyan, A., Mahura, A., Arutyunyan, V., Luzan, P., (2011): Evaluation of source-receptor relationship for atmospheric pollutants using approaches of trajectory modelling, cluster, probability fields analyses and adjoint equations. *Atmospheric Pollution Research*, Vol. 2 (4), pp. 400-529; doi:10.5094/APR.2011.045;
- Baklanov A., A. Mahura, R. Sokhi (Eds). (2010): Integrated Systems of Meso-Meteorological and Chemical Transport. *Springer*, 242 p., ISBN 978-3-642-13979-6, DOI 10.1007/978-3-642-13980-2
- Baklanov A, M. Lawrence, S. Pandis, A. Mahura, S. Finardi, et al. (2010): MEGAPOLI: concept of multi-scale modelling of megacity impact on air quality and climate. *Advances in Science and Research*, Vol 4, pp. 115-120; doi:10.5194/asr-4-115-2010.
- Mahura A., Baklanov A, J.H. Sørensen, (2009): Estimation of Potential Impact on Copenhagen, Denmark, due to Accidental Releases at Nuclear Risk Sites. *International Journal of Environment and Pollution*, Vol 39 (1-2), Jul 2009, pp. 159-167, DOI: 10.1504/IJEP.2009.027149
- Baklanov A., S. Grimmond, A. Mahura, M. Athanassiadou (Eds) (2009): Urbanization of Meteorological and Air Quality Models. *Springer Publishers*, 169 p., ISBN 978-3-642-00297-7; DOI 10.1007/978-3-642-00298-4.
- Mahura A., Baklanov A., Korsholm U. (2009): Parameterization of the Birch Pollen Diurnal Cycle. *Aerobiologia*, Vol. 25 (4), Dec 2009, pp. 203-208, DOI 10.1007/s10453-009-9125-7.
- Baklanov A., Sorensen J.H., Mahura A. (2008): Methodology for Probabilistic Atmospheric Studies using Long-Term Dispersion Modelling. *Environmental Modelling & Assessment*, 13(4), 541-552, DOI: 10.1007/s10666-007-9124-4
- Baklanov A., Korsholm U.S., Mahura A., Petersen C., Gross A., (2008): ENVIRO-HIRLAM: on-line coupled modelling of urban meteorology and air pollution. *Advances in Science and Research*, 2, 41-46, <http://www.adv-sci-res.net/2/41/2008/asr-2-41-2008.pdf>

➤ & co-authoring more than 210 referenced abstracts/ proceedings from presentations at conferences:
http://www.mv.helsinki.fi/home/mahura/AM_abstracts_proceedings_1.pdf

➤ about 100 scientific/ technical reports & contributions to reports:
http://www.mv.helsinki.fi/home/mahura/AM_reports_1.pdf

➤ more than 120 other presentations (at workshops/ meetings/ seminars/...) & publications (in journals/ newsletters/...)
http://www.mv.helsinki.fi/home/mahura/AM_other_pres_publs_1.pdf