

**CV-Robert Bergström** ([Robert.Bergstrom@smhi.se](mailto:Robert.Bergstrom@smhi.se)) (20160901 short version; full CV can be sent on request)

**Profession:** Researcher

**Year of Birth:** 1968

**Nationality:** Swedish

**Key qualifications:** Robert is a physicist and chemist (Ph. D. in Natural Science – specialization Chemistry, and Ph. Lic. in Quantum Chemistry) with 18 years of experience at the Swedish Meteorological and Hydrological Institute (SMHI), mainly within air pollution research, model development and air quality assessments (e.g., for the Swedish Environmental Protection Agency). His current research is mainly focused on modelling of particulate matter from different sources, including biomass combustion, anthropogenic and biogenic VOCs. He is also contributing to the development of the EMEP MSC-W model (one of the key tools within European air pollution policy assessments; used for calculations in support of the Convention of Long Range Transboundary Air Pollution, CLRTAP; see <http://www.emep.int/>) in collaboration with met.no and the University of Gothenburg.

**University Education:**

- Physics and Chemistry, Uppsala University (including courses at Vrije Universiteit Amsterdam and Stockholm University) 1988-1992.
- Licentiate Degree, Quantum Chemistry, Uppsala University, 2005.
- Ph. D., Natural Science, specialization in Chemistry, University of Gothenburg, 2015.

**Scientific reviewer for:**

- FWF - Fonds zur Förderung der wissenschaftlichen Forschung (Austrian Science Fund)
- Atmospheric Chemistry and Physics
- Atmospheric Environment
- Atmospheric Research
- Comptes Rendus de l'Académie des Sciences (Geoscience)
- Environmental Science and Technology
- International Journal of Quantum Chemistry
- Water Air and Soil Pollution

**Publication statistics** (Researcher-ID: D-6249-2014, ORCID ID: [orcid.org/0000-0003-2910-747X](http://orcid.org/0000-0003-2910-747X)):

- Total number of peer-reviewed international journal articles: 27
- Total number of citations (Web of Science): 1482
  - without self-citations: 1415
- h-index (Web of Science): 20

**Publications in peer-reviewed scientific journals:**

*Simulating secondary organic aerosol from missing diesel-related intermediate-volatility organic compound emissions during the Clean Air for London (ClearfLo) campaign;* Ots, R., Young, D. E., Vieno, M., Xu, L., Dunmore, R. E., Allan, J. D., Coe, H., Williams, L. R., Herndon, S. C., Ng, N. L., Hamilton, J. F., Bergström, R., Di Marco, C., Nemitz, E., Mackenzie, I. A., Kuenen, J. J. P., Green, D. C., Reis, S., and Heal, M. R. (2016), *Atmos. Chem. Phys.*, **16**, 6453-6473, doi:10.5194/acp-16-6453-2016.

*A regional air quality forecasting system over Europe: the MACC-II daily ensemble production;* Marécal, V., Peuch, V.-H., Andersson, C., Andersson, S., Arteta, J., Beekmann, M., Benedictow, A., Bergström, R., Bessagnet, B., Cansado, A., Chéroux, F., Colette, A., Coman, A., Curier, R. L., Denier van der Gon, H. A. C., Drouin, A., Elbern, H., Emili, E., Engelen, R. J., Eskes, H. J., Foret, G., Friese, E., Gauss, M., Giannaros, C., Guth, J., Joly, M., Jaumouillé, E., Josse, B., Kadyrov, N., Kaiser, J. W., Krajsek, K., Kuenen, J., Kumar, U., Liora, N., Lopez, E., Malherbe, L., Martinez, I., Melas, D., Meleux, F., Menut, L., Moinat, P., Morales, T., Parmentier, J., Piacentini, A., Plu, M., Poupkou, A., Queguiner, S., Robertson, L., Rouil, L., Schaap, M., Segers, A., Sofiev, M., Tarasson, L., Thomas, M., Timmermans, R., Valdebenito, Á., van Velthoven, P., van Versendaal, R., Vira, J., and Ung, A. (2015), *Geosci. Model Dev.*, **8**, 2777-2813, doi:10.5194/gmd-8-2777-2015.

*Particulate emissions from residential wood combustion in Europe – revised estimates and an evaluation;* Denier van der Gon, H. A. C., Bergström, R., Fountoukis, C., Johansson, C., Pandis, S. N., Simpson, D., and Visschedijk, A. J. H. (2015), *Atmos. Chem. Phys.*, **15**, 6503-6519, doi:10.5194/acp-15-6503-2015.

*MATCH-SALSA – Multi-scale Atmospheric Transport and CHEMISTRY model coupled to the SALSA aerosol microphysics model – Part 1: Model description and evaluation;* Andersson, C., Bergström, R., Bennet, C., Robertson, L., Thomas, M., Korhonen, H., Lehtinen, K. E. J., and Kokkola, H. (2015), *Geosci. Model Dev.*, **8**, 171-189, doi:10.5194/gmd-8-171-2015.

- Biotic stress: a significant contributor to organic aerosol in Europe?*; Bergström, R., Hallquist, M., Simpson, D., Wildt, J., and Mentel, T. F. (2014), *Atmos. Chem. Phys.*, **14**, 13643-13660, doi:10.5194/acp-14-13643-2014.
- Light-absorbing carbon in Europe – measurement and modelling, with a focus on residential wood combustion emissions*; Genberg, J., Denier van der Gon, H. A. C., Simpson, D., Swietlicki, E., Areskou, H., Beddows, D., Ceburnis, D., Fiebig, M., Hansson, H. C., Harrison, R. M., Jennings, S. G., Saarikoski, S., Spindler, G., Visschedijk, A. J. H., Wiedensohler, A., Yttri, K. E., and Bergström, R. (2013), *Atmos. Chem. Phys.*, **13**, 8719-8738, doi:10.5194/acp-13-8719-2013.
- Modelling of organic aerosols over Europe (2002–2007) using a volatility basis set (VBS) framework: application of different assumptions regarding the formation of secondary organic aerosol*; Bergström, R., Denier van der Gon, H.A.C., Prévôt, A.S.H., Yttri, K.E., Simpson, D. (2012), *Atmos. Chem. Phys.*, **12**, 8499-8527.
- Lessons learnt from the first EMEP intensive measurement periods*; Aas, W., Tsyro, S., Bieber, E., Bergström, R., Ceburnis, D., Ellermann, T., Fagerli, H., Frölich, M., Gehrig, R., Makkonen, U., Nemitz, E., Otjes, R., Perez, N., Perrino, C., Prévôt, A. S. H., Putaud, J.-P., Simpson, D., Spindler, G., Vana, M., and Yttri, K. E. (2012), *Atmos. Chem. Phys.*, **12**, 8073-8094.
- The EMEP MSC-W chemical transport model – technical description*; D. Simpson, A. Benedictow, H. Berge, R. Bergström, L. D. Emberson, H. Fagerli, C. R. Flechard, G. D. Hayman, M. Gauss, J. E. Jonson, M. E. Jenkin, A. Nyíri, C. Richter, V. S. Semeena, S. Tsyro, J.-P. Tuovinen, Á. Valdebenito, and P. Wind (2012), *Atmos. Chem. Phys.*, **12**, 7825-7865.
- Source apportionment of carbonaceous aerosol in southern Sweden*; Genberg, J., Hyder, M., Stenström, K., Bergström, R., Simpson, D., Fors, E., Jönsson, J. A. och Swietlicki, E. (2011), *Atmos. Chem. Phys.*, **11**, 11387-11400, doi:10.5194/acp-11-11387-2011.
- General overview: European Integrated project on Aerosol Cloud Climate and Air Quality interactions (EUCAARI) integrating aerosol research from nano to global scales*; Kulmala, M., Asmi, A., Lappalainen, H. K., Baltensperger, U., Brenguier, J.-L., Facchini, M. C., Hansson, H. C., Hov, Ø., O'Dowd, C. D., Pöschl, U., Wiedensohler, A., Boers, R., Boucher, O., de Leeuw, G., Denier van den Gon, H., Feichter, J., Krejci, R., Laj, P., Lihavainen, H., Lohmann, U., McFiggans, G., Mentel, T., Pilinis, C., Riipinen, I., Schulz, M., Stohl, A., Swietlicki, E., Vignati, E., Alves, C., Amann, M., Ammann, M., Arabas, S., Artaxo, P., Baars, H., Beddows, D. C. S., Bergström, R., Beukes, J. P., Bilde, M., Burkhardt, J. F., Canonaco, F., Clegg, S., Coe, H., Crumeyrolle, S., D'Anna, B., Decesari, S., Gilardoni, S., Fischer, M., Fjæraa, A. M., Fountoukis, C., George, C., Gomes, L., Halloran, P., Hamburger, T., Harrison, R. M., Herrmann, H., Hoffmann, T., Hoose, C., Hu, M., Hörrak, U., Iinuma, Y., Iversen, T., Josipovic, M., Kanakidou, M., Kiendler-Scharr, A., Kirkevåg, A., Kiss, G., Klimont, Z., Kolmonen, P., Komppula, M., Kristjánsson, J.-E., Laakso, L., Laaksonen, A., Labonnote, L., Lanz, V. A., Lehtinen, K. E. J., Rizzo, L. V., Makkonen, R., Manninen, H. E., McMeeking, G., Merikanto, J., Minikin, A., Mirme, S., Morgan, W. T., Nemitz, E., O'Donnell, D., Panwar, T. S., Pawlowska, H., Petzold, A., Pienaar, J. J., Pio, C., Plass-Duelmer, C., Prévôt, A. S. H., Pryor, S., Reddington, C. L., Roberts, G., Rosenfeld, D., Schwarz, J., Seland, Ø., Sellegri, K., Shen, X. J., Shiraiwa, M., Siebert, H., Sierau, B., Simpson, D., Sun, J. Y., Topping, D., Tunved, P., Vaattovaara, P., Vakkari, V., Veefkind, J. P., Visschedijk, A., Vuollekoski, H., Vuolo, R., Wehner, B., Wildt, J., Woodward, S., Worsnop, D. R., van Zadelhoff, G.-J., Zardini, A. A., Zhang, K., van Zyl, P. G., Kerminen, V.-M., Carslaw, K. S., and Pandis, S. N. (2011), *Atmos. Chem. Phys.*, **11**, 13 061–13 143, doi:10.5194/acp-11-13061-2011.
- Comparison of OMI NO<sub>2</sub> tropospheric columns with an ensemble of global and European regional air quality models*; Huijnen, V., H. J. Eskes, A. Poupkou, H. Elbern, K. F. Boersma, G. Foret, M. Sofiev, A. Valdebenito, J. Flemming, O. Stein, A. Gross, L. Robertson, M. D'Isidoro, I. Kioutsioukis, E. Friese, B. Amstrup, R. Bergström, A. Strunk, J. Vira, D. Zyryanov, A. Maurizi, D. Melas, V.-H. Peuch, and C. Zerefos (2010), *Atmos. Chem. Phys.*, **10**, 3273–3296.
- Climate and Emission Changes Contributing to Changes in Near-surface Ozone in Europe over the Coming Decades: Results from Model Studies*; Engardt, M., Bergström, R. and Andersson, C. (2009), *Ambio* **38**, 452-458.
- Population exposure and mortality due to regional background PM in Europe – Long-term simulations of source region and shipping contributions*; Andersson, C., Bergström, R. and Johansson, C. (2009), *Atmos. Env.* **43**, 3614-3620.
- Skill and uncertainty of a regional air quality model ensemble*; R. Vautard, M. Schaap, R. Bergström, B. Bessagnet, J. Brandt, P.J.H. Builtjes, J. H. Christensen, K. Cuvelier, V. Foltescu, A. Graff, A. Kerschbaumer, M. Krol, P. Roberts, L. Rouil, R. Stern, L. Tarrasón, P. Thunis, E. Vignati, P. Wind (2009), *Atmos. Env.* **43**, 4822-4832.
- Evaluation of long-term ozone simulations from seven regional air quality models and their ensemble average*; M. van Loon, R. Vautard, M. Schaap, R. Bergström, B. Bessagnet, J. Brandt, P.J.H. Builtjes, J. H. Christensen, K. Cuvelier, A. Graf, J.E. Jonson, M. Krol, J. Langner, P. Roberts, L. Rouil, R. Stern, L. Tarrasón, P. Thunis, E. Vignati, L. White, P. Wind (2007), *Atmos. Env.* **41**, 2083-2097.

- Inter-annual variation and trends in air pollution over Europe due to climate variability during 1958-2001 simulated with a regional CTM coupled to the ERA40 reanalysis*; Andersson, C., Langner, J., and Bergström, R. (2007), *Tellus B* **59**, 77-98. doi: 10.1111/j.1600-0889.2006.00196.x.
- Is regional air quality model diversity representative of uncertainty for ozone simulation?*; R. Vautard, M. van Loon, M. Schaap, R. Bergström, B. Bessagnet, J. Brandt, P.J.H. Builtjes, J.H. Christensen, C. Cuvelier, A. Graff, J.E. Jonson, M. Krol, J. Langner, P. Roberts, L. Rouil, R. Stern, L. Tarrasón, P. Thunis, E. Vignati, L. White, P. Wind (2006), *Geophysical Research Letters* **33**, L24818, doi:10.1029/2006GL027610
- Impact of climate change on surface ozone and deposition of sulphur and nitrogen in Europe*; Langner, J., Bergström, R., and Foltescu, V. (2005), *Atmos. Env.* **39**, 1129-1141.
- Changes in Nordic surface ozone episodes due to European emission reductions in the 1990s*; Solberg, S., Bergström, R., Langner, J., Laurila, T., and Lindskog, A. (2005), *Atmos. Env.* **39**, 179-192.
- Comparison of Five Eulerian Air Pollution Forecasting Systems for the Summer of 1999 Using the German Ozone Monitoring Data*; Tilmes, S., Brandt, J., Flatøy, F., Bergström, R., Flemming, J., Langner, J., Christensen, J.H., Frohn, L.M., Hov, Ø., Jacobsen, I., Reimer, E., Stern, R., and Zimmermann, J. (2002), *J. Atmos. Chem.* **42**, 91-121.
- Quantum-chemical studies of metal oxides for photoelectrochemical applications*; Persson, P., R. Bergström, L. Ojamäe, and S. Lunell (2002), *Advances in Quantum Chemistry* **41**, 203-263.
- Quantum Chemical Study of Charge-Transfer Excitations in Dye-Sensitized TiO<sub>2</sub> Nanoparticles*; Persson, P., Bergström, R., and Lunell, S. (2000), *J. Phys. Chem. B*, **104**, 10348 - 10351
- Periodic INDO calculations of organic adsorbates on a TiO<sub>2</sub> surface*; Persson, P., Stashans, A., Bergström, R., and Lunell, S. (1998), *Int. J. Quantum Chem.*, **70**, 1055
- Comparative Study of DFT Methods Applied to Small Titanium/Oxygen Compounds*; Bergström, R., Lunell, S., and Eriksson, L.A. (1996), *Int. J. Quantum Chem.*, **59**, 427 - 443
- Theoretical study of lithium intercalation in rutile and anatase*; Stashans, A., Lunell, S., Bergström, R., Hagfeldt, A., and Lindquist, S.-E. (1996), *Phys. Rev. B*, **53**, 159 - 170
- Structure and Stability of Small Titanium/Oxygen Clusters Studied by ab Initio Quantum Chemical Calculations*; Hagfeldt, A., Bergström, R., Siegbahn, H.O.G., and Lunell, S. (1993), *J. Phys. Chem.*, **97**, 12725 - 12730

#### **Ph. D. Thesis:**

*Carbonaceous Aerosol in Europe – Out of the Woods and into the Blue?*; Bergström, J. R. (2015), ISBN 978-91-628-9505-1(PDF), ISBN 978-91-628-9506-8 (Print); Department of Chemistry and Molecular Biology, University of Gothenburg, SE-412 96 Göteborg, Sweden; summary available online at: <http://hdl.handle.net/2077/40004>.

#### **Licentiate Thesis:**

*Titanium Oxide Clusters and Surfaces – Modelling for Photoelectrochemical Applications*; Bergström, R. (2005), Department of Quantum Chemistry, Uppsala university, Sweden.

#### **Other publications:**

Co-author of more than 40 other scientific publications (non-peer reviewed technical and scientific reports, book chapters, etc.). Most of the publications cover work within the field of air pollution modelling. A complete list can be sent on request.