May 2011

List of publications concerning the SILAM modelling system

Inverse chronological order, abstracts of presentations at scientific conferences are not included

Articles in international scientific journals with referee practise

2. J. Kukkonen, T. Balk, D. M. Schultz, A. Baklanov, T. Klein, A. I. Miranda, A. Monteiro, M. Hirtl, V. Tarvainen, M. Boy, V.-H. Peuch, A. Poupkou, I. Kioutsioukis, S. Finardi, M. Sofiev, R. Sokhi, K. Lehtinen, K. Karatzas, R. San José, M. Astitha, G. Kallos, M. Schaap, E. Reimer, H. Jakobs, and K. Eben (2011) Operational, regional-scale, chemical weather forecasting models in Europe. *Atmos. Chem. Phys. Discuss*., **11**, 5985-6162, 2011
3. S. Tsyro, W. Aas, J. Soares, M. Sofiev, H. Berge, and G. Spindler (2011) Modelling of sea salt pollution over Europe: key uncertainties and comparison with observations *Atmos. Chem. Phys. Discuss*., **11**, 11143-11204
4. Prank, M., Sofiev, M., Denier van der Gon, H.A.C., Kaasik, M., Ruuskanen, T. M., and Kukkonen, J. (2010) A refinement of the emission data for Kola Peninsula based on inverse dispersion modelling, *Atmos. Chem. Phys*., **10**, 10849-10865, doi:10.5194/acp-10-10849-2010.
5. Linkosalo, T., Ranta, H., Oksanen, A., Siljamo, P., Luomajoki, A., Kukkonen, J., Sofiev, M. (2010) A double-threshold temperature sum model for predicting the flowering duration and relative intensity of *Betula Pendula* and *B.Pubescens*. *Agric. and forest meteorol.*, **150**, 12, 1579-1584.
6. Kaasik, M., Sofiev, M., Prank, M., Ruuskanen, T., Kukkonen, J., Hõrrak, U., Kulmala, M., (2010) Geographical origin of aerosol particles observed during the LAPBIAT measurement campaign in spring 2003 in Finnish Lapland, *Boreal Environment Research*, **16**, ISSN 1239-6095 (print), ISSN 1797-2469 (online), http://www.borenv.net/BER/pdfs/preprints/Kaasik.pdf.
7. Huijnen, V., Eskes, H.J., Poupkou, A., Elbern, H., Boersma, K.F., Foret, G., Sofiev, M., Valdebenito, A., Flemming, J., Stein, O., Gross, A., Robertson, L., D'Isidoro, M., Kioutsioukis, I., Friese, E., Amstrup, B., Bergstrom, R., Strunk, A., Vira, J., Zyryanov, D., Maurizi, A., Melas, D., Peuch, V.-H., and Zerefos, C. (2010) Comparison of OMI NO_2 tropospheric columns with an ensemble of global and European regional air quality models. *Atmos. Chem. Phys*., **10**, 3273-3296.
8. Saarnio, K., Aurela, M., Timonen, H., Saarikoski, S., Teinilä, K. Mäkelä, T., Sofiev, M., Koskinen, J., Aalto.P.P., Kulmala, M., Kukkonen, J., Hillamo, R (2010) Chemical composition of fine particles in fresh smoke plumes from boreal wild-land fires in

Europe. *Science of the Total Environment*, **408**, 12, 2527-2542 DOI 10.1016/j.scitotenv.2010.03.010.

9. Veriankaite, L., Siljamo, P., Sofiev, M., Sauliene, I., Kukkonen, J. (2010) Modelling analysis of source regions of long-range transported birch pollen that influences allergenic seasons in Lithuania. *Aerobiologia*, **26**, pp.47-62 DOI 10.1007/s10453-009-9142-6.
10. Sofiev, M., Genikhovich, E., Keronen, P., Vesala, T. (2010) Diagnosing the surface layer parameters for dispersion models within the meteorological-to-dispersion modeling interface, *J. of Appl. Meteorol. and Climatology,* DOI: 10.1175/2009JAMC2210.1.
11. Viniarek, V., Vira, J., Bocquet, M., Sofiev, M., Saunier, O. (2010) Towards the operational estimateion of a radiological plume using data assimilation after a radiological accidental atmspheric release. *Atmosph. Environ.*, **45**, 2944 - 2955.
12. M.Sofiev, V.Sofieva, Elperin, T., Kleeorin, N., Rogachevski, I., Zilitnkevich, S. (2009) Turbulent Diffusion and Turbulent Thermal Diffusion of Aerosols in Stratified Atmospheric Flows, *J. Geophys. Res.*, **114**, D18209, doi:10.1029/2009JD011765.
13. Groisman, P.Ya, Clark, E.A., Kattsov, V.M., Lettenmaier, D.P., Sokolik, I.N., Aizen, V.B., Cartus, O., Chen, J., Conard, S., Katzenberger, J., Krankina, O., Kukkonen, J., Machida, T., Maksyutov, S., Ojima, D., Qi, J., Romanovsky, V.E., Santoro, M., Schmullius, C.C., Shiklomanov, A.I., Shimoyama, K., Shugart, H.H., Shuman, J., Sofiev, M., Sukhinin, A.I., Vörösmarty, C., Walker, D., Wood, E.F. (2009) The Northern Eurasia Earth Science Partnership An Example of Science Applied to Societal Needs, *BAMS*, May 2009, 671-688, doi :10.1175/2008BAMS2556.1
14. Sofiev,M., Vankevich,R., Lotjonen,M., Prank,M., Petukhov,V., Ermakova,T., Koskinen, J. Kukkonen,J. (2009). An operational system for the assimilation of satellite information on wild-land fires for the needs of air quality modelling and forecasting. *Atmos. Chem. Phys.,* **9**, 6833-6847, http://www.atmos-chem-phys.net/9/6833/2009/acp-9-6833-2009.html.
15. Siljamo, P., Sofiev, M., Severova, E., Ranta, H., Kukkonen, J., Polevova, S., Kubin, E. Minin, A. (2008) Sources, impact and exchange of early-spring birch pollen in the Moscow region and Finland. *Aerobiologia*. DOI 10.1007/s10453-008-9100-8.
16. Sofiev, M., Siljamo, P., Ranta, H., Linkosalo, T., Jaeger, S., Jaeger, C., Rassmussen, A., Severova, E., Oksanen, Karppinen, A., Kukkonen, J. (2008) From Russia to Iceland: an evaluation of a large-scale pollen and chemical air pollution episode during April and May, 2006. *Aerobiological Monographs*, Vol. 1, *in press*.
17. Tarasova, O.A., Brenninkmeijer, C.A.M., Assonov, S.S., Elansky, N.F., Röckmann, T., Sofiev, M.A. (2007) Atmospheric CO along the Trans-Siberian Railroad and River Ob: source identification using isotope analysis. *J Atmos Chem* DOI 10.1007/s10874-007-9066-x.
18. Saarikoski, S., Sillanpää, M., Sofiev, M., Timonen, H., Saarnio, K., Teinilä, K., Karppinen, A., Kukkonen, J., Hillamo, R. (2007) Chemical composition of aerosols during a major biomass burning episode over northern Europe in spring 2006: experimental and modelling assessments. *Atmosph. Environ.*, **41**, 3577-3589.
19. Tainio, M., Hujo, M., Sofiev, M., Kukkonen, J., Karppinen, A., Karvosenoja, N., TTuomisto, J. (2006) Evaluation of the seasonal variation of intake fractions (iF) for the

primary fine particle (PM2.5) emissions in Finland for various source sectors. *Epidemiology*, SN 1044-3983, **17**, N.6, SU Suppl. S.

20. Ranta, H., Kubin, E., Siljamo, P., Sofiev, M., Linkosalo, T., Oksanen, A., Bondestam, K. (2006) Long distance pollen transport cause problems for determining the timing of birch pollen season in Fennoscandia by using phenological observations. *Grana*, **45**, 4, 297-304.
21. Sofiev, M., Siljamo, P., Ranta, H., Rantio-Lehtimäki, A. (2006) Towards numerical forecasting of long-range air transport of birch pollen: theoretical considerations and a feasibility study. *Int J. on Biometeorology*, DOI 10 1007/s00484-006-0027-x, **50**, 392-402.
22. Sofiev M., Siljamo, P., Valkama, I., Ilvonen, M., Kukkonen, J. (2006) A dispersion modelling system SILAM and its evaluation against ETEX data. *Atmosph.Environ.* , **40**, 674-685, DOI:10.1016/j.atmosenv.2005.09.069.
23. Sofiev, M. (2002) Extended resistance analogy for construction of the vertical diffusion scheme for dispersion models. *J. of Geophys.Research – Atmosphere*, **107**, D12, doi: 10.1029/2001JD001233.
24. Sofiev, M., Tuovinen, J.-P. (2001) Factors determining the robustness of the ozone exposure measure AOT-x and other indexes. *Atmospheric Environment,* **35**, No 20, pp. 3521-3528.
25. Sofiev, M. (2000) A model for the evaluation of long-term airborne pollution transport at regional and continental scales. *Atmospheric Environment.* **34**, No.15, pp. 2481-2493.
26. Galperin, M., Sofiev, M. (1998) The long-range transport of ammonia and ammonium in the Northern Hemisphere. *Atmospheric Environment*, **32**, No.3, pp.373-380.

Articles in national scientific journals with a referee practise

27. Sofiev, M. (2007) On detection and forecasting of air pollution episodes in Europe and Finland, *Ilmansuojelu*, **3,** 29-33**.**
28. Sofiev, M., Sofieva, V. (2000) Methodology for emission estimation of the atmospheric pollution on the basis of mathematical modelling and measurement data. *J. of Mathematical modelling and Computer Experiment*, Russian Academy of Sciences, **v.12**, N 4, pp. 20-32. Russian edition - Метод оценки выбросов в атмосферу загрязняющих веществ по данным математического моделирования и измерений, **12**, N 4 стр. 20 – 32.

Articles in international compilation works with referee practise

29. Sofiev,M., Bousquet,J., Linkosalo,T., Ranta,H., Rantio-Lehtimaki,A., Siljamo,P., Valovirta,E., Damialis,A. (2009) Pollen, Allergies and Adaptation. *Chapter 5 in the book Biometeorology and Adaptation to Climate Variability and Change*, (eds. Ebi,K., McGregor,G., Burton,I.), ISBN 978-4020-8920-6, Springer Science, pp.75-107.
30. Persson, C., Baklanov, A., Sørensen, J.H., Sofiev, M., Valkama, I., Karlsdottir, S., Bartnicki, J., Saltbones, J., Kolax, M. (2007) Nordic Network of Meteorological Services Engaged in Nuclear Emergency Preparedness NKS-MetNet. *Nordic Nuclear Safety*

Research series, NKS-147, ISBN 978-87-7893-210-5, available at: http://www.nks.org/nordisk/B-delen/resultater.htm, 49pp.

31. Sofiev, M., Jourden, E., Kangas, L., Karvosenoja, N., Karppinen, A., Kukkonen, J. (2006) Numerical modelling of the spatial distribution of fine particulate matter in Europe and Finland. *Report series in aerosol science*, **83**, 348-353.

Articles in international reports and series

32. Sofiev, M. (2010) Aerosol species in the air quality forecasting system of FMI: possibilities for coupling with NWP models. *A.Baklanov, A.Mahura, R.Sokhi* (eds.) *Integrated systems for meso-meteorological and chemical transport models.* ISBN 978-3-642-13979-6, Springer, 159-166.
33. Kaasik, M., Prank, M., Sofiev, M. (2010) Running SILAM model comparatively with ECMWF and HIRLAM Meteorological fields: a case study in Lapland. *A.Baklanov, A.Mahura, R.Sokhi* (eds.) *Integrated systems for meso-meteorological and chemical transport models.* ISBN 978-3-642-13979-6, Springer, 159-166.
34. Sofiev, M., Miranda, A.I., Sokhi, R. (editors) (2009) Review of the capabilities of meteorological and chemistry-transport models for describing and predicting air pollution episodes. *WMO GAW report N.187*. WMO-TD N. 1502, 63pp.
35. Siljamo, P., Sofiev, M., Linkosalo, T., Ranta, H., Kukkonen, J. (2008) Development and application of biogenic emission term as a basis of long-range transport of allergenic pollen. *NATO Science for piece and security Serties C: Environmental Security. Air pollution modelling and its application*, **XIX**, Borrego, C., Miranda, A.I. (eds.), Springer, pp.154-162.
36. Genikhovich, E., Sofiev, M., Schayes, G., Gracheva, I. (2008) Air pollution modelling with perturbational downscaling. *NATO Science for piece and security Serties C: Environmental Security. Air pollution modelling and its application*, **XIX**, Borrego, C., Miranda, A.I. (eds.), Springer, pp. 182-189.
37. Sofiev, M., Siljamo, P., Karppinen, A., Kukkonen, J. (2008) Air quality forecasting during summer 2006: forest fires as one of major pollution sources in Europe. *NATO Science for piece and security Serties C: Environmental Security. Air pollution modelling and its application*, **XIX**, Borrego, C., Miranda, A.I. (eds.), Springer, pp. 305-312.
38. Kaasik, M., Prank, M., Kukkonen, J., Sofiev, M. (2008) Suggested correction to the EMEP database, regarding the location of a major industrical air pollution source in Kola Peninsula. *NATO Science for piece and security Serties C: Environmental Security. Air pollution modelling and its application*, **XIX**, Borrego, C., Miranda, A.I. (eds.), Springer, pp. 331-338.
39. Prank, M., Sofiev, M., Kaasik, M., Ruuskanen, T., Kukkonen, J., Kulmala, M. (2008) The origins and formation mechanisms of aerosol during a measurement campaign in Finnish Lapland, evaluated using regional dispersion model SILAM. *NATO Science for piece and security Serties C: Environmental Security. Air pollution modelling and its application*, **XIX**, Borrego, C., Miranda, A.I. (eds.), Springer, pp. 530-538.
40. Sofiev, M., Galperin, M., Genikhovich, E. (2008) Construction and evaluation of Eulerian dynamic core for the air quality and emergency modeling system SILAM. *NATO Science*

for piece and security Serties C: Environmental Security. Air pollution modelling and its application, **XIX**, Borrego, C., Miranda, A.I. (eds.), Springer, pp. 699-701.

41. Sofiev,M., Jourden,E., Pirjola,L., Kangas,L., Karvosenoja,N., Karppinen,A., and Kukkonen,J. (2006) Dispersion modelling of the concentrations of fine particulate matter in Europe. *Developments in Environmental Science,* **6**. C.Borrego & E.Renner (eds.). DOI: 10.1016/S1474-8177(70)0621-0. *Air Polution Modelling and its Applications XVIII,* 189-199.
42. Siljamo,P., Sofiev,M., Severova,E., Ranta,H. Polevova,S. (2006) On influence of long-range transport of pollen grains onto pollinating seasons. *Developments in Environmental Science,* **6**. C.Borrego & E.Renner (eds.). DOI: 10.1016/S1474-8177(70)06074-3. *Air Polution Modelling and its Applications XVIII,* 708-716.
43. Sofiev M., Valkama I., Fortelius, C., Siljamo P. (2006) Forward and inverse modelling of radioactive pollutants dispersion after Chernobyl accident, *Developments in Environmental Science,* **6**, C.Borrego & E.Renner (eds.). DOI: 10.1016/S1474-8177(70)0633-0. *Air Polution Modelling and its Applications XVIII,* 283-292.
44. Genikhovich, E., Sofiev, M., Gracheva, I. (2007) Interactions of meteorological and dispersion models at different scales. *In Air Polution Modelling and its Applications XVII* (eds. C.Borrego, A.-L.Norman), Springer (2007), ISBN-10: 0-387-28255-6, pp.158-166.
45. Siljamo, P., Sofiev, M., Ranta, H. (2007) An approach to simulation of long-range atmospheric transport of natural allergens: an example of birch pollen. *In Air Polution Modelling and its Applications XVII* (eds. C.Borrego, A.-L.Norman), Springer (2007), ISBN-10: 0-387-28255-6, pp.331-340.
46. Sofiev, M., Atlaskin E. (2004) An example of application of data assimilation technique and adjoint dispersion modelling to an inverse dispersion problem based on the ETEX experiment. *In Air Polution Modelling and its Applications XVII* (eds. C.Borrego, A.-L.Norman), Springer (2007), ISBN-10: 0-387-28255-6, pp.438-449.
47. Genikhovich, E. Sofiev, M., (2004) A methodology for estimation of the atmospheric boundary layer parameters from the basic output variables of numerical weather forecast models. *Proc. of Baltic HIRLAM workshop, St.Petersburg, 17-20 Nov.2003. HIRLAM publications,* SMHI Norrkoping, Sweden, pp. 61-65.
48. Sofiev, M., Siljamo, P. (2004) Some lessons of SILAM model application to European Tracer Experiment. *Proc. of Baltic HIRLAM workshop, St.Petersburg, 17-20 Nov.2003. HIRLAM publications,* SMHI Norrkoping, Sweden, pp. 90-93.
49. Siljamo, P., Sofiev, M. Ranta, H., Kalnina, L., Ekebom, A. (2004) Long-range atmospheric transport of birch pollen. Problem statement and feasibility studies. *Proc. of Baltic HIRLAM workshop, St.Petersburg, 17-20 Nov.2003. HIRLAM publications,* SMHI Norrkoping, Sweden, pp. 100-103.
50. Sofiev, M., Siljamo, P. (2003) Forward and inverse simulations with Finnish emergency model SILAM. *Air Pollution Modelling and its Applications XVI,* eds. C.Borrego, S.Incecik, Kluwer Acad. / Plenum Publ. pp.417-425.
51. Sofiev, M. (2002) Real time solution of forward and inverse air pollution problems with a numerical dispersion model based on short-term weather forecasts. *HIRLAM Newsletter 14 (Proc. of All Stuff Meeting of HIRLAM project, 2002)*, pp.131-138, also available at http://hirlam.knmi.nl/open/publications/NewsLetters/41/sofiev_word2000.pdf .

Conference publications and scientific and technical reports

52. Paatero, J., Sofiev, M., Kerminen, V.M., Petaja, T. (2010) Tulivuorentuhkaa Suomessa. *Positio. Paikkatiedon Erikoislehti*, 3, p.10-12.

53. Sofiev, M., Soares, J., Lappi, S. (2010) Porvoon öljynjalostamolla heinakuussa 2009 tapahtuneiden äkillisten rikkidioksiidipäästöjen leviämismallilaskelmat. Ilmatieteen Laitos, Ilmanlaadun asiantuntipalvelut, 2010, 79 pp.

54. Sofiev, M., Valkama, I., Fortelius, C., Siljamo, P. (2006) Modelling re-analysis of dispersion of radioactive pollutants from Chernobyl accident. *STUK-A217 Ympäristön radioactiivisuus Suomessa - 20 vuotta Tshernobylista. Symposium Helsinkissa 25-26.4.2006.* Säteiluturvakeskus (Radiation and NUclear Safety Authority) series. Ed. by T.K.Ikäheimonen, ISBN 952-478-119-0, pp.199-204.