

# Ádám Leelőssy

PhD meteorologist, assistant professor

## Summary

A researcher in air pollution meteorology at ELTE University, Budapest, Hungary.

## Professional skills

Environmental modelling in the fields of atmospheric radioactivity, air pollution and pollen dispersion

Meteorological and environmental data analysis

Science communication and teaching in Hungarian and English languages

## Research experience

2015-                      Researcher and lecturer at the Department of Meteorology, Eötvös Loránd University, Budapest

2017-2020.              Consultant, National Center for Environmental Health, *EFOP-1.8.0: Methodological development of the health care system, pollen forecasting group* (2017-2020.)

### Participation in national research projects (OTKA):

2019-2023.              *Self-assembly and self-organization in chemical systems*

2018-2022.              *Determination of the atmospheric transport, concentration and deposition of radionuclides and particulate matter by in situ measurements and model simulations*

2015-2020.              *Development of the components of an atmospheric dispersion model system*

2016-2017.              *Analyses of the interactions between local air pollution and urban vegetation by in situ measurements and model simulations*

## Teaching experience

Instructor of *Classical Physics, Hydrodynamics, Atmospheric chemistry, Dynamic & synoptic meteorology* and *Computer simulation* courses (2012-)

Thesis supervisor for students in Meteorology, Environmental and Earth Sciences (2013-)

Co-writer of *Atmospheric Chemistry* e-book (2013) and lecture notes in *Synoptic meteorology* (2016)

Presenter in elementary and high school science communication programmes.

## Education

PhD in Earth Sciences “summa cum laude”

Doctoral School of Earth Sciences, Eötvös Loránd University, Budapest, Hungary, 2018

*Thesis title: Development and application of a model system to predict atmospheric concentration of air pollutants*

MSc in Meteorology, BSc in Physics

Eötvös Loránd University, Budapest, Hungary, 2007-2012

## Scholarships

Erasmus+ teaching mobility, Ferenc Rákóczi II. Transcarpathian Hungarian Institute, Beregovo-Beregszász, Ukraine, 2019 (2 weeks)

Advances in Air Quality Analysis and Prediction: The Interaction of Science and Policy, NCAR Advanced Study Program Summer Colloquium, Boulder, Colorado, 2016 (2 weeks)

First Educational Symposium on Radiation and Health by Young Scientists (ESRAH), Hirotsuki University, Japan, 2014 (1 week)

Online Integrated Modelling of Meteorological and Chemical Transport Processes, Young Scientist Summer School, COST Action ES1004, University of Aveiro, Portugal, 2014 (1 week)

European Research Course on Atmospheres (ERCA), Grenoble, France, 2014 (5 weeks)

Kovacs Language Bursary Program, University of Regina, Canada, 2006 (8 weeks)

## Achievements

Zsigmond Róna Award, Hungarian Meteorological Society, 2019

Ministerial Diploma of Merit, Hungarian Ministry of Agriculture, 2019

Scholarship of the New National Excellence Program of the Hungarian Ministry of Human Capacities (2016-2017)

Secretary of the Youth Section of the Hungarian Meteorological Society (2012–2018)

Alfréd Hille Award, Hungarian Meteorological Society, 2012

Hungarian Students' Conference on Environmental Studies, 1<sup>st</sup> Prize, 2012

Scholarship of the Hungarian Republic, 2011-2012

Excellent Student Award of the Faculty of Science, ELTE University, 2011

National Scientific Students' Association Conference, 3<sup>rd</sup> Prize, 2011

Peer-reviewed papers:

1. Varga-Balogh A., Leelőssy Á., Lagzi I., Mészáros R., 2020: Time-Dependent Downscaling of PM<sub>2.5</sub> Predictions from CAMS Air Quality Models to Urban Monitoring Sites in Budapest, *Atmosphere*, 11(6), 669, <https://doi.org/10.3390/atmos11060669>
2. László E., Palcsu L., Leelőssy Á., 2020: Estimation of the solar-induced natural variability of the tritium concentration of precipitation in the Northern and Southern Hemisphere, *Atmospheric Environment*, 233, 117605, <https://doi.org/10.1016/j.atmosenv.2020.117605>
3. Csépe Z., Leelőssy Á., Mányoki G., Kajtor-Apatini D., Udvardy O., Péter B., Gelybó Gy., Szigeti T., Pándics T., Kofol-Seliger A., Simčič A., Leru P.M., Eftimie A-M., Šikoparija B., Radišić P., Stjepanović B., Hrga I., Večenaj A., Vucić A., Peroš-Pucar D., Škorić T., Ščevková J., Bastl M., Berger U., Magyar D., 2019: The application of a neural network-based ragweed pollen forecast by the Ragweed Pollen Alarm System in the Pannonian biogeographical region, *Aerobiologia*, <https://doi.org/10.1007/s10453-019-09615-w>
4. Burki C., Šikoparija B., Thibaudon M., Oliver G., Magyar D., Udvardy O., Leelőssy Á., Charpiloz C., Pauling A., 2019: Artificial neural networks can be used for Ambrosia pollen emission parameterization in COSMO-ART, *Atmospheric Environment*, 218, <https://doi.org/10.1016/j.atmosenv.2019.116969>
5. Kovács A., Leelőssy Á., Mészáros R., Lagzi I., 2019: Online coupled modeling of weather and air quality of Budapest using the WRF-Chem model, *Időjárás*, 123, 203-215.
6. Leelőssy Á., Lagzi I., Kovács A., Mészáros R., 2018: A review of numerical models to predict the atmospheric dispersion of radionuclides, *Journal of Environmental Radioactivity*, 182, 20-33.
7. Leelőssy Á., Lagzi I., Mészáros R., 2017: Spatial and temporal pattern of pollutants dispersed in the atmosphere from the Budapest Chemical Works industrial site, *Időjárás*, 121(2), 101-115.
8. Leelőssy Á., Mészáros R., Kovács A., Lagzi I., Kovács T., 2017: Numerical simulations of atmospheric dispersion of iodine-131 by different models, *PLoS ONE*, 12(2), e0172312, [doi:10.1371/journal.pone.0172312](https://doi.org/10.1371/journal.pone.0172312)
9. Leelőssy Á., Holló G., Suzuno K., Ueyama D., Lagzi I., 2016: Numerical Simulation of Maze Solving Using Chemotactic Particles, *International Journal of Unconventional Computing*, 12(5-6), 439-452.
10. Mészáros R., Leelőssy Á., Kovács T., Lagzi I., 2016: Predictability of the dispersion of Fukushima-derived radionuclides and their homogenization in the atmosphere, *Scientific Reports*, [doi:10.1038/srep19915](https://doi.org/10.1038/srep19915)
11. Leelőssy Á., Molnár F., Izsák F., Havasi Á., Mészáros R., Lagzi I., 2014: Dispersion modelling of air pollutants: a review, *Central European Journal of Geosciences*, 6(3), 257-278.
12. Leelőssy Á., Ludányi E.L., Kohlmann M., Lagzi I., Mészáros R., 2013: Comparison of two Lagrangian dispersion models: a case study for the chemical accident in Rouen, 21-22 January 2013, *Időjárás*, 117(4), 435-450.

13. Mészáros R., Leelőssy Á., Vincze Cs., Szűcs M., Kovács T., Lagzi I., 2012: Estimation of the dispersion of radionuclides and toxic materials based on weather type classification, *Theoretical and Applied Climatology*, 107(3-4): 375-387.
14. Leelőssy Á., Mészáros R., Lagzi I., 2011: Short and long term dispersion patterns of radionuclides in the atmosphere around the Fukushima Nuclear Power Plant, *Journal of Environmental Radioactivity*, 102(12): 1117-1121.

#### Chapters:

1. Holló G., Leelőssy Á., Tóth R., Lagzi I., 2018: Tactic Droplets at the Liquid-Air Interface, *Self-organized Motion: Physicochemical Design based on Nonlinear Dynamics*, Royal Society of Chemistry
2. Leelőssy Á., Mona T., Mészáros R., Lagzi I., Havasi Á., 2016: Eulerian and Lagrangian Approaches for Modelling of Air Quality, *Mathematical Problems in Meteorological Modelling*, Springer International Publishing

#### Conferences:

1. Varga-Balogh A., Leelőssy Á., Lagzi I., Mészáros R., 2020: A data fusion method to improve winter PM10 concentration predictions in Budapest based on CAMS air quality models, *Geophysical Research Abstracts 22*, EGU2020-16133
2. László E., Palcsu L., Leelőssy Á., 2020: Identification of moisture source region based on trajectory model analysis and isotopic composition of the precipitation in Debrecen, Hungary, *Geophysical Research Abstracts 22*, EGU2020-18226
3. László E., Palcsu L., Leelőssy Á., 2019: Estimation of the natural variability of the tritium concentration of precipitation, *17<sup>th</sup> Stable Isotope Network Austria (SINA) Meeting*, Innsbruck, Austria
4. Leelőssy Á., Kovács A., Lagzi I., Balogh A., Mészáros R., 2019: Comparison of air quality model results with urban measurements in Budapest, Hungary, *CAMS 4<sup>th</sup> General Assembly and User Day*, Budapest, Hungary
5. Kovács A., Leelőssy Á., Lagzi I., Mészáros R., 2019: Spatial downscaling of modelled air pollutant concentrations in urban environments using open-access road map database, *Geophysical Research Abstracts 21*, EGU2019-14471, Vienna, Austria
6. Balogh A., Leelőssy Á., Kristóf E., Mészáros R., Lagzi I., 2019: A classification method for air quality prediction in Budapest, Hungary, *Geophysical Research Abstracts 21*, EGU2019-13841, Vienna, Austria
7. Breuer H., Göndöcs J., Kovács A., Leelőssy Á., Mészáros R., 2018: Modeling the urban environment of Budapest with the WRF and WRF-Chem models at the ELTE University, *Conference on Modelling Fluid Flow (CMFF)*, Budapest, Hungary
8. Csapó P., Mészáros R., Leelőssy Á., Kovács A., 2018: Measurements of PM2.5 concentration by bike in the downtown of Budapest, Hungary, *EMS Annual Meeting Abstracts 15*, EMS2018-643, Budapest, Hungary

9. Kovács A., Leelőssy Á., Lagzi I., Mészáros R., 2018: The dependence of ozone concentration on model schemes of WRF-Chem (v3.6), *EMS Annual Meeting Abstracts* 15, EMS2018-637, Budapest, Hungary
10. Csépe Z., Leelőssy Á., Mányoki G., Udvardy O., Péter B., Páldy A., Gelybó Gy., Szigeti T., Pándics T., Kofol-Selinger A., Leru P.M., Eftimie A-M., Šikoparija B., Radisic P., Stjepanović B., Hrga I., Večenaj A., Vucić A., Skoric T., Magyar D., 2018: The application of neural network-based ragweed pollen forecast by the Ragweed Pollen Alarm System in the Pannonian Biogeographical Region, *11<sup>th</sup> International Congress on Aerobiology*, Parma, Italy
11. Magyar D., Mányoki G., Csépe Z., Kajtor-Apatini D., Udvardy O., Leelőssy Á., Fejős Á., Páldy A., Pándics T., Szigeti T., 2017: Meeting new challenges of personalized information for allergenic patients in Hungary – introduction to a nationwide survey, *Palyнологи- Aerobiology-Allergy Symposium*, Vienna, Austria
12. Lagzi I., Leelőssy Á., Mészáros R., Göndöcs J., 2017: Autoregressive temperature and air quality prediction in Budapest in the winter of 2016-2017, *EMS Annual Meeting Abstracts* 14, EMS2017-530, Dublin, Ireland
13. Kovács A., Leelőssy Á., Lagzi I., Mészáros R., 2017: Modeling urban air pollution in Budapest using WRF-Chem model, *Geophysical Research Abstracts* 19, EGU2017-1461, Dublin, Ireland
14. Mészáros R., Leelőssy Á., Csapó P., Boda B., Kovács A., Lagzi I., 2016: Monitoring of atmospheric trace gases in Budapest by mobile measurements, *EMS Annual Meeting Abstracts* 13, EMS2016-501, Trieste, Italy
15. Leelőssy Á., Dezső Zs., Mona T., Zsilinszki A., Merics A., 2016: Project-based learning: interactive weather forecast laboratory at the Eötvös Loránd University, Budapest, *EMS Annual Meeting Abstracts* 13, EMS2016-652, Trieste, Italy
16. Kovács A., Mészáros R., Leelőssy Á., Lagzi I., 2016: Air pollution modeling in urban environment using WRF-Chem model, *17<sup>th</sup> International Conference on Harmonization within Atmospheric Dispersion Modelling for Regulatory Purposes*, Budapest, Hungary
17. Leelőssy Á., Kovács A., Lagzi I., Mészáros R., Kovács T., 2016: Simulation of dispersion of radionuclides in the atmosphere from regional to global scale, *V. Terrestrial radioisotopes in the environment: International Conference on Environment Protection*, Veszprém, Hungary
18. Leelőssy Á., Mona T., Mészáros R., Lagzi I., Havasi Á., 2016: Eulerian and Lagrangian Approaches for Modelling of Air Quality, *Mathematical Problems in Meteorological Modelling workshop*, Budapest, Hungary
19. Hrotkó K., Steiner M., Forrai M., Tóth E.G., Vértesy M., Leelőssy Á., Kardos L., Sütöriné D.M., Magyar L., Mészáros R., 2014: Investigations on environmental benefits of urban trees at Corvinus University of Budapest, *Plants in Urban Areas and Landscape*, Nitra, Slovakia
20. Mészáros R., Leelőssy Á., Lagzi I., Kovács T., 2014: Numerical simulations of atmospheric dispersion of iodine-131 emitted from a point source, *The 9<sup>th</sup> International Symposium on the Natural Radiation Environment (NRE-9)*, Hirosaki, Japan
21. Kovács T., Lagzi I., Leelőssy Á., Mészáros R., 2012: Simulations of Atmospheric Dispersion from Point Sources, *II. Terrestrial radioisotopes in environment: International Conference on Environment Protection*, Veszprém, Hungary

22. Leelőssy Á., Lagzi I., Mészáros R., 2012: Sensitivity study of OpenFOAM model for local scale atmospheric dispersion simulations, *Geophysical Research Abstracts* 14, EGU2012-11925, Vienna, Austria
23. Leelőssy Á., Lagzi I., Mészáros R., 2011: Local scale statistical analysis of the accidental release from Fukushima Nuclear Power Plant, *EMS Annual Meeting Abstracts* 8, EMS2011-735, Berlin, Germany
24. Leelőssy Á., Mészáros R., Lagzi I., Kovács T., 2011: Statistical application of ALOHA local scale air dispersion model for non-radioactive accidental releases at Paks Nuclear Power Plant, *Geophysical Research Abstracts* 13, EGU2011-10578, Vienna, Austria
25. Mészáros R., Lagzi I., Molnár F., Vincze Cs., Leelőssy Á., Kovács T., 2010: Modelling dispersion process of hypothetical nuclear accident release on different scales, *EMS Annual Meeting Abstracts* 7, EMS2010-450, Zürich, Switzerland

Educational materials:

1. Breuer H., Dezső Zs., Leelőssy Á., 2016: Synoptic meteorology lecture notes, Eötvös Loránd University
2. Lagzi I.L., Mészáros R., Gelybó Gy., Leelőssy Á., 2013: Atmospheric Chemistry, e-book, Eötvös Loránd University