Marcin Lukasz Witek

Curriculum Vitae

Home address: *1530 Valencia Ave, Pasadena, CA 91104*
Work address: *Jet Propulsion Laboratory, 4800 Oak Grove Drive, Pasadena, CA 91109*
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Education:

2008 – Ph.D., Physics (atmospheric science) (with honors), University of Warsaw
Thesis: "Sea salt aerosol in global transport models – results, validations and model improvements". Advisors – dr Piotr Flatau, Scripps Institution of Oceanography, UCSD, and prof. Szymon Malinowski, Institute of Geophysics, University of Warsaw.

2003 – Master of Science in Physics (atmospheric science), University of Warsaw
"Fast atmospheric radiative transfer code" (in Polish).
Advisors – prof. Szymon Malinowski, Institute of Geophysics, University of Warsaw, and dr Piotr Flatau, Scripps Institution of Oceanography, UCSD.

Professional Experience:

Research Scientist, Aerosol and Cloud Science Group, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA (2011–present)

Research Scholar (postdoc), California Institute of Technology, Pasadena, CA (2008–2011)

Field of Research:

- Boundary layer and cloud parameterization/modeling
- Boundary layer meteorology
- Atmospheric aerosol modeling
- Sea salt aerosol emission parameterization
- Climate changes and aerosol influence on climate

Research Grants/Fellowships:

- Office of Naval Research Global. Visiting Scientist Program (VSP). Support for visit to Naval Research Laboratory, Marine Meteorology Division, Monterey, California, USA, summer of 2002.

- Research Assistantship Program, NATO Undersea Research Centre, La Spezia, Italy, August–October 2006.

Research Activities:

- Cooperation with the Naval Research Laboratory, Monterey, CA on NAAPS modeling and reanalysis – visits in: summer 2002 (ONRIFO project), April 2003, February 2004, winter 2004/2005 and spring 2006.
- Cooperation with the Colorado State University in Fort Collins – visits in February 2005 (two weeks) and spring 2006 (one month).
- Cooperation with the NATO Undersea Research Centre, La Spezia, Italy, August–October 2006.

Major Field Projects:

- UAE^2, United Arab Emirates, June 2004.
- ADAM, Monterey, CA, April 2003.

Classes (Laboratories):

- Introduction to Radiative Processes in the Atmosphere – Atmospheric Physics Department, UW.
- Introduction to Atmospheric Boundary Layer – Atmospheric Physics Department, UW.

Other Activities:

- Pier reviewer: Journal of Climate, Journal of Geophysical Research, Journal of Atmospheric Sciences, Atmospheric Chemistry and Physics, Quarterly Journal of the Royal Meteorological Society, Acta Geophysica, Oceanologia, Aerosol Science and Technology, Meteorology and Atmospheric Physics, Atmospheric Environment

Publications:

1. **M. L. Witek**, D. J. Diner, and M. J. Garay (2016): Satelite assessment of sea spray aerosol productivity: Southern Ocean case study. *J. Geophys. Res. Atmos.*, **121**, doi:10.1002/2015JD023726.
2. J. Han, **M. L. Witek**, J. Teixeira, R. Sun, H.-L. Pan, J. K. Fletcher, C. S. Bretherton (2015), Implementation in the NCEP GFS of a hybrid eddy-diffusivity mass-flux (EDMF) boundary layer parameterization with dissipative heating and modified stable boundary layer mixing, *Weather and Forecasting*, doi:10.1175/WAF-D-15-0053.1.

3. **M. L. Witek**, M. J. Garay, D. J. Diner, and A. Smirnov (2013): Aerosol optical depths over oceans: A view from MISR retrievals and collocated MAN and AERONET in situ observations. *J. Geophys. Res. Atmos.*, **118**, 1–14, doi:10.1002/2013JD020393.

4. Markowicz, K. M. and **M. L. Witek** (2011): Sensitivity study of the global contrails radiative forcing due to particle shape. *J. Geophys. Res. Atmos.*, **116**, D23203, doi:10.1029/2011JD016345.

5. **Witek, M. L.**, J. Teixeira, and G. Matheou (2011): An eddy-diffusivity/mass-flux approach to the vertical transport of turbulent kinetic energy in convective boundary layers. *Journal of Atmospheric Sciences*, **68** (10), 2385–2394, doi:10.1175/JAS-D-11-06.1.

6. Markowicz, K. M. and **M. L. Witek** (2011): Simulations of contrails optical properties and radiative forcing for various crystal shapes. *Journal of Applied Meteorology and Climatology*, **50**, 1740–1755, doi:10.1175/2011JAMC2618.1.

7. **Witek, M. L.**, J. Teixeira, and G. Matheou (2011): An integrated TKE based eddy-diffusivity/mass-flux boundary layer scheme for the dry convective boundary layer. *Journal of Atmospheric Sciences*, **68**, 1526–1540, doi:10.1175/2011JAS3548.1.

8. **Witek, M. L.**, P. J. Flatau, J. Teixeira, and K. M. Markowicz (2011): Numerical investigation of sea salt aerosol size bin partitioning in global transport models: Implications for mass budget and optical depth. *Aerosols Science and Technology*, **45**, 401–414, doi:10.1080/02786826.2010.541957.

9. Maciszewska A. E., K. M. Markowicz, and **M. L. Witek** (2010): A multiyear analysis of aerosol optical thickness over Europe and Central Poland using NAAPS model simulations. *Acta Geophysica*, **58** (6), 1147–1163, doi:10.2478/s11600-010-0034-5.

10. **Witek, M. L.**, J. Teixeira, and P. J. Flatau (2008): On stable and explicit numerical methods for the advection-diffusion equation. *Math. Comp. Simul.*, **79** (3), 561–570, doi:10.1016/j.matcom.2008.03.001.

11. Markowicz, K. M., P. J. Flatau, J. Remiszewska, **M. L. Witek**, E. A. Reid, J. S. Reid, A. Bucholtz, and B. Holben (2008): Observations and modeling of the surface aerosol radiative forcing during the UAE2 experiment. *Journal of Atmospheric Sciences*, **65** (9), 2877–2891, doi:10.1175/2007JAS2555.1.

12. **Witek, M. L.**, P. J. Flatau, J. Teixeira, and D. L. Westphal (2007): Coupling an ocean wave model with a global aerosol transport model: a sea salt aerosol parameterization perspective. *Geophys. Res. Lett.*, **34**, L14806, doi:10.1029/2007GL030106.

13. **Witek, M. L.**, P. J. Flatau, P. K. Quinn, and D. L. Westphal (2007): Global sea-salt modeling: Results and validation against multicampaign shipboard measurements. *J. Geophys. Res.*, **112**, D08215, doi:10.1029/2006JD007779.

14. Remiszewska, J., P. J. Flatau, K. M. Markowicz, E. A. Reid, J. S. Reid, and **M. L. Witek** (2007): Modulation of the aerosol absorption and single-scattering albedo due to synoptic scale and sea breeze circulations – United Arab Emirates experiment perspective. *J. Geophys. Res. Atmos.*, **112**, D05204, doi:10.1029/2006JD007139.

15. Wells, K. C, **M. L. Witek**, P. J. Flatau, S. M. Kreidenweis, and D. L. Westphal (2007): An analysis of seasonal surface dust aerosol concentrations in the western US (2001–2004): Observations and model predictions. *Atmos. Environ.*, **41**, 6585–6597, doi:10.1016/j.atmosenv.2007.04.034.