

**NAME:** Jiří Mikšovský  
**BORN:** 16 June 1977, Vsetín, Czechoslovakia  
**CITIZENSHIP:** Czech Republic

**EDUCATION:**

**2000–2004** **Ph.D.** (Meteorology and Climatology), Faculty of Mathematics and Physics, Charles University, Prague  
**1995–2000** **Mgr.** (Physics), Faculty of Mathematics and Physics, Charles University, Prague

**PROFESSIONAL EXPERIENCE:**

**since I/2005** Assistant professor, Faculty of Mathematics and Physics, Charles University, Prague  
**since V/2012** Researcher, Global Change Research Institute, Czech Academy of Sciences, Brno  
**IX/2016–XII/2016** Researcher, Institute of Computer Science, Czech Academy of Sciences, Prague

**RESEARCH INTERESTS:**

Statistical climatology, time series analysis, nonlinear interactions in the climate system

**RESEARCH ACTIVITY OVERVIEW:**

- Principal investigator (2 projects), co-investigator (4 projects) or member of the research team (8 projects) of Czech and international research projects
- 28 papers in impact factor journals; 5 papers in other journals; 2 books (co-author); 2 book chapters; 9 contributions in peer-reviewed proceedings
- 180 citations without self-citations at Web of Science, 328 at Google Scholar
- h-index: 9 (Web of Science), 12 (Google Scholar)
- **ResearcherID:** <http://www.researcherid.com/rid/N-1679-2013>
- **Google Scholar:** <https://scholar.google.com/citations?user=FBOZ6wYAAAAJ>

**PEDAGOGICAL ACTIVITY OVERVIEW:**

- Guarantor and lecturer in a series of courses on statistical analysis in the atmospheric sciences (Faculty of Mathematics and Physics, Charles University)
- Supervisor of students in bachelor, master and doctoral study programs at Faculty of Mathematics and Physics, Charles University (7 theses successfully defended)

**ATTACHMENTS:**

- Participation in research projects page 2
- Pedagogical activity page 4
- Publications page 5
- International collaboration and visits abroad page 9

## PARTICIPATION IN RESEARCH PROJECTS

- CZECH SCIENCE FOUNDATION, 2019-2021, 19-16066S: **Nonlinear interactions and information transfer in complex systems with extreme events**, co-investigator (principal investigator dr. Milan Paluš)
- EUROPEAN UNION, CITY OF PRAGUE, 2018-2020, CZ.07.1.02/0.0/0.0/16\_040/0000383: **URBI PRAGENSI**, team member (principal investigator doc. Tomáš Halenka)
- CZECH SCIENCE FOUNDATION, 2018-2020, 18-15958S: **Development of high-resolution spatial weather generator for use in present and future climate conditions**, team member (principal investigator dr. Martin Dubrovský)
- CZECH SCIENCE FOUNDATION, 2018-2020, 18-01625S: **The influence of greenhouse gases and other drivers on long-term trends in the stratosphere-mesosphere-thermosphere-ionosphere system**, team member (principal investigator dr. Jan Laštovička)
- CZECH SCIENCE FOUNDATION, 2017-2019, 17-10026S: **Drought events in the Czech Republic and their causes**, co-investigator (principal investigator prof. Rudolf Brázdil)
- CZECH SCIENCE FOUNDATION, 2016-2018, 16-01562J: **Middle atmosphere effects of localized gravity wave forcing**, team member (principal investigator doc. P. Pišoft)
- CZECH SCIENCE FOUNDATION, 2011-2015, P209/11/0956: **Global and regional climate model simulations in Central Europe in the 18th-20th centuries in comparison with observed and reconstructed climate**, co-investigator (principal investigator prof. Rudolf Brázdil)
- CZECH SCIENCE FOUNDATION, 2011-2014, P209/11/2405: **Development of very high resolution regional climate model**, team member (principal investigator dr. Radan Huth)
- CZECH SCIENCE FOUNDATION, 2008-2010, 205/08/1619: **Impact focused validation of statistical and dynamical downscaling**, co-investigator (principal investigator dr. Radan Huth)
- MINISTRY OF ENVIRONMENT OF THE CZECH REPUBLIC, 2007-2011, VAV SP/1A6/108/07: **Improvement of current climate change impact estimates in the hydrology, agriculture and forestry sectors and adaptation measures proposals**, team member (principal investigator dr. Jan Pretel)
- EUROPEAN UNION (6TH FRAMEWORK PROGRAMME), 2006-2009, GOCE 037005: **CECILIA (Central and Eastern Europe Climate Change Impact and Vulnerability Assessment)**, project manager & researcher (project coordinator doc. Tomáš Halenka)
- CZECH SCIENCE FOUNDATION, 2006-2008, 205/06/P181: **Application of nonlinear time series analysis for study of spatial relationships between climate variables**, principal investigator
- MINISTRY OF ENVIRONMENT OF THE CZECH REPUBLIC, 2003-2005, VAV/740/2/03: **Climate atlas of the Czech Republic and regionalization of climate model outputs by nonlinear techniques**, team member (principal investigator RNDr. Taťána Míková)

GRANT AGENCY OF CHARLES UNIVERSITY, 2002-2003, 227/2002/B-GEO/MFF: **Forecast of meteorological quantities by nonlinear time series analysis methods**, principal investigator

## **PEDAGOGICAL ACTIVITY**

### **LECTURES, SEMINARS & EXERCISE CLASSES**

#### **(FACULTY OF MATHEMATICS AND PHYSICS, CHARLES UNIVERSITY)**

- **Statistical methods in meteorology and climatology** (lecture & exercise, since 2005)
- **Seminar on projects I,II** (seminar, since 2005)
- **Statistical methods of physical data processing** (lecture & exercise, since 2006)
- **Time series processing methods** (lecture & exercise, since 2006)
- **Statistical methods in meteorology** (lecture & exercise, since 2012)
- **Data processing in R** (lecture & exercise, since 2017)

### **SUPERVISOR OF STUDENT THESES**

#### **(FACULTY OF MATHEMATICS AND PHYSICS, CHARLES UNIVERSITY)**

#### **BACHELOR THESES:**

**Plavcová E.:** Statistical characteristics of the regional climate models outputs (2005-2006, defended 27/6/2006)

**Kodyšová L.:** Relation between NAO and air temperature in the Czech Republic through average mutual information (2005-2008, defended 24/6/2008)

**Mejsnar J.:** Classification of current European climate from regional climate models (2006-2007, defended 18/9/2007)

**Kvasničák J.:** Analysis of selected temperature characteristics simulated by regional climate models (2007-2008, defended 23/6/2008)

#### **MASTER THESES:**

**Mejsnar J.:** Changes in occurrence of climate types in the simulations of future climate (2007-2009, defended 19/5/2009)

**Kvasničák J.:** Analysis of the outputs of high-resolution regional climate models (2008-2010, defended 25/5/2010)

**Došek J.:** Manifestations of the existence of urban heat islands in the series of climatic variables (2009, unfinished)

**Skořepa J.:** Manifestation of chaotic behavior in observed and simulated series of climatic variables (2014, defended 27/5/2014)

#### **DOCTORAL THESES:**

**Skořepa J.:** Manifestations of chaotic behavior in the fields of climatic variables (since 2014)

## PUBLICATIONS

### **PEER-REVIEWED JOURNAL PAPERS - INTERNATIONAL:**

- Mikšovský J.**, Brázdil R., Trnka M., Pišoft P. (2019): Long-term variability of drought indices in the Czech Lands and effects of external forcings and large-scale climate variability modes. *Climate of the Past* 15:827-847 (doi: 10.5194/cp-15-827-2019)
- Holtanová E., Mendlik T., Koláček J., Horová I., **Mikšovský J.** (2019): Similarities within a multi-model ensemble: functional data analysis framework. *Geoscientific Model Development* 12:735–747 (doi: 10.5194/gmd-12-735-2019)
- Brázdil R., **Mikšovský J.**, Štěpánek P., Zahradníček P., Řezníčková L., Dobrovolný P. (2019): Forcings and projections of past and future wind speed over the Czech Republic. *Climate Research* 77:1-21 (doi: 10.3354/cr01540)
- Karlický J., Huszár P., Halenka T., Belda M., Žák M., Pišoft P., **Mikšovský J.** (2018): Multi-model comparison of urban heat island modelling approaches. *Atmospheric Chemistry and Physics* 18:10655-10674 (doi: 10.5194/acp-18-10655-2018)
- Šácha P., **Mikšovský J.**, Pišoft P. (2018): Interannual variability in the gravity wave drag - vertical coupling and possible climate links. *Earth System Dynamics* 9:647-661 (doi: 10.5194/esd-9-647-2018)
- Pišoft P., Šácha P., **Mikšovský J.**, Huszár P., Scherllin-Pirscher B., Foelsche U. (2018): Revisiting internal gravity waves analysis using GPS RO density profiles: comparison with temperature profiles and application for wave field stability study. *Atmospheric Measurement Techniques* 11:515-527 (doi: 10.5194/amt-11-515-2018)
- Kuchar A., Ball W.T., Rozanov E.V., Stenke A., Revell L., **Mikšovský J.**, Pišoft P., Peter T. (2017): On the aliasing of the solar cycle in the lower stratospheric tropical temperature. *Journal of Geophysical Research Atmospheres* 122:9076-9093 (doi: 10.1002/2017JDO26948)
- Chaloupecká H., Jaňour Z., **Mikšovský J.**, Jurčáková K., Kellnerová R. (2017): Evaluation of a new method for puff arrival time as assessed through wind tunnel modelling. *Process Safety and Environmental Protection* 111:194–210 (doi: 10.1016/j.psep.2017.07.006)
- Holtanová E., **Mikšovský J.** (2016): Spread of regional climate model projections: vertical structure and temporal evolution. *International Journal of Climatology* 36(15):4942-4948 (doi: 10.1002/joc.4684)
- Mikšovský J.**, Holtanová E., Pišoft P. (2016): Imprints of climate forcings in global gridded temperature data. *Earth System Dynamics* 7:231-249 (doi: 10.5194/esd-7-231-2016)
- Žák M., **Mikšovský J.**, Pišoft P. (2015): CMSAF Radiation Data: New Possibilities for Climatological Applications in the Czech Republic. *Remote Sensing* 7(11):14445-14457 (doi: 10.3390/rs71114445)
- Kuchař A., Šácha P., **Mikšovský J.**, Pišoft P. (2015): The 11-year solar cycle in current reanalyses: a (non)linear attribution study of the middle atmosphere. *Atmospheric Chemistry and Physics* 15:6879-6895 (doi: 10.5194/acp-15-6879-2015)
- Huth R., **Mikšovský J.**, Štěpánek P., Belda M., Farda A., Chládková Z., Pišoft P. (2015): Comparative validation of statistical and dynamical downscaling mod-

- els on a dense grid in central Europe: temperature. *Theoretical and Applied Climatology* 120:533-553 (doi: 10.1007/s00704-014-1190-3)
- Brázdil R., Trnka M., **Mikšovský J.**, Řezníčková L., Dobrovolný P. (2015): Spring-summer droughts in the Czech Land in 1805–2012 and their forcings. *International Journal of Climatology* 35(7):1405-1421 (doi: 10.1002/joc.4065)
- Bednář H., Raidl A., **Mikšovský J.** (2015): Time evolution of initial errors in Lorenz's 05 chaotic model. *The Scientific World Journal* 2015, Article ID 729080 (doi: 10.1155/2015/729080)
- Huszar P., Halenka T., Belda M., Zak M., Sindelarova K., **Miksovsky J.** (2014): Regional climate model assessment of the urban land-surface forcing over central Europe. *Atmospheric Chemistry and Physics* 14:12393-12413 (doi: 10.5194/acp-14-12393-2014)
- Mikšovský J.**, Brázdil R., Štěpánek P., Zahradníček P., Pišoft P. (2014): Long-term variability of temperature and precipitation in the Czech Lands: an attribution analysis. *Climatic Change* 125(2):253-264 (doi: 10.1007/s10584-014-1147-7)
- Bednář H., Raidl A., **Mikšovský J.** (2014): Initial Error Growth and Predictability of Chaotic Low-dimensional Atmospheric Model. *International Journal of Automation and Computing* 11(3):256-264 (doi: 10.1007/s11633-014-0788-3)
- Holtanova E., Kalvova J., Pišoft P., **Miksovsky J.** (2014): Uncertainty in regional climate model outputs over the Czech Republic: the role of nested and driving models. *International Journal of Climatology* 34(1):27-35 (doi: 10.1002/joc.3663)
- Pišoft P., Holtanova E., Huszar P., Kalvova J., **Miksovsky J.**, Raidl A., Zemankova K., Zak M. (2013): Manifestation of reanalyzed QBO and SSC signals. *Theoretical and Applied Climatology* 112(3-4):637-646 (doi: 10.1007/s00704-012-0752-5)
- Huszar P., **Mikšovský J.**, Pišoft P., Belda M., Halenka T. (2012): Interactive coupling of a regional climate model and a chemical transport model: evaluation and preliminary results on ozone and aerosol feedback. *Climate Research* 50:59–88 (doi: 10.3354/cr01054)
- Holtanova E., **Miksovsky J.**, Kalvova J., Pišoft P., Motl M. (2012): Performance of ENSEMBLES regional climate models over Central Europe using various metrics. *Theoretical and Applied Climatology* 108(3-4):463-470 (doi: 10.1007/s00704-011-0542-5)
- Pišoft P., Holtanová E., Huszar P., **Mikšovský J.**, Žák M. (2012): Imprint of the 11-year solar cycle in reanalyzed and radiosonde datasets: a spatial frequency analysis approach. *Climatic Change* 110:85-99 (doi: 10.1007/s10584-011-0147-0)
- Križan P., **Mikšovský J.**, Kozubek M., Wang G., Bai J. (2011): Long term variability of total ozone yearly minima and maxima in the latitudinal belt from 20°N to 60°N derived from the merged satellite data in the period 1979-2008. *Advances in Space Research* 48:2016-2022 (doi: 10.1016/j.asr.2011.07.010)
- Pišoft P., **Mikšovský J.**, Kalvová J., Raidl A., Žák M. (2011): Areal analysis of oscillations in 500-hPa temperature field: a pseudo-2D wavelet transform approach. *International Journal of Climatology* 31:1545-1553 (doi: 10.1002/joc.2167)
- Holtanová E., Kalvová J., **Mikšovský J.**, Pišoft P., Motl M. (2010): Analysis of uncertainties in regional climate model outputs over the Czech Republic. *Studia Geophysica et Geodaetica* 54:513-528 (doi: 10.1007/s11200-010-0030-x)
- Huszar P., Cariolle D., Paoli R., Halenka T., Belda M., Schlager H., **Mikšovský J.**, Pišoft P. (2010): Modeling the regional impact of ship emissions on NO<sub>x</sub> and

ozone levels over the Eastern Atlantic and Western Europe using ship plume parameterization. *Atmospheric Chemistry and Physics* 10:6645-6660 (doi: 10.5194/acp-10-6645-2010)

Pišoft P., **Mikšovský J.**, Žák M. (2009): An analysis of the spatial distribution of approximate 8 years periodicity in NCEP/NCAR and ERA-40 temperature fields. *European Physical Journal – Special Topics* 174:147-155 (doi: 10.1140/epjst/e2009-01097-3)

**Mikšovský J.**, Raidl A. (2006): Testing for nonlinearity in European climatic time series by the method of surrogate data. *Theoretical and Applied Climatology* 83:21-33 (doi: 10.1007/s00704-005-0130-7)

**Mikšovský J.**, Raidl A. (2005): Testing the performance of three nonlinear methods of time series analysis for prediction and downscaling of European daily temperatures. *Nonlinear Processes in Geophysics* 12:979-991 (doi: 10.5194/npg-12-979-2005)

### **PEER-REVIEWED JOURNAL PAPERS - CZECH:**

Kalvová J., **Mikšovský J.**, Holtanová E. (2010): Klima a jeho simulace. *Československý časopis pro fyziku* 6:331-333

Holtanová E., Kalvová J., Motl M., **Mikšovský J.**, Pišoft P., Raidl A. (2010): Odhady rozsahu změn klimatu ČR pro tři časové horizonty 21. století na základě výstupů AR4 modelů. *Meteorologické zprávy* 67:57-66

Kalvová J., Holtanová E., **Mikšovský J.**, Motl M., Pišoft P., Raidl A., Kliegerová S. Metelka L. (2009): Výběr globálních klimatických modelů pro posouzení neurčitostí odhadů budoucích změn klimatu v České republice. *Meteorologické zprávy* 62:97-106

### **BOOKS AND BOOK CHAPTERS:**

Trnka M., Brázdil R., Vizina A., Dobrovolný P., **Mikšovský J.**, Štěpánek P., Hlavinka P., Řezníčková L., Žalud Z. (2018): Droughts and Drought Management in the Czech Republic in a Changing Climate. In: Wilhite D.A., Pulwarty R.S. (eds.): *Drought and Water Crises: Integrating Science, Management, and Policy (2nd ed.)*, CRC Press, p. 461-480, ISBN 978-1-138-03564-5

Brázdil R., Trnka M., Řezníčková L., Balek J., Bartošová L., Bičík I., Cudlín P., Čermák P., Dobrovolný P., Dubrovský M., Farda A., Hanel M., Hladík J., Hlavinka P., Janský B., Ježík P., Klem K., Kocum J., Kolář T., Kotyza O., Krkoška Lorencová E., Macků J., **Mikšovský J.**, Možný M., Muzikář R., Novotný I., Pártl A., Pařil P., Pokorný R., Rybníček M., Semerádová D., Soukalová E., Stachoň Z., Štěpánek P., Štych P., Tremel P., Urban O., Vačkář D., Valášek H., Vizina A., Vlnas R., Vopravil J., Zahradníček P., Žalud Z. (2015): *Sucho v českých zemích: Minulost, současnost, budoucnost / Drought in the Czech Lands: Past, present and future*. Centrum výzkumu globální změny AV ČR, Brno, 400 pp., ISBN 978-80-87902-11-0 (in Czech with English summary)

Brázdil R., Bělínová M., Dobrovolný P., **Mikšovský J.**, Pišoft P., Řezníčková L., Štěpánek P., Valášek H., Zahradníček P. (2012): *Temperature and Precipitation Fluctuations in the Czech Lands During the Instrumental Period*. Masaryk University, Brno, 236 pp., ISBN 978-80-210-6052-4

Kalvová J., **Mikšovský J.**, Raidl A. (2009): Klima a jeho změny. In: Braniš, M., Hůnová I. (Eds.): *Atmosféra a klima, Aktuální otázky ochrany ovzduší*, Karolinum, Praha, p. 280-324, ISBN 978-80-246-1598-1 (in Czech)

**PEER-REVIEWED CONTRIBUTIONS IN CONFERENCE PROCEEDINGS:**

- Mikšovský J.**, Trnka M., Brázdil R. (2016): Manifestations of climatic teleconnections in Czech drought characteristics. In: Vačkář D., Janouš D. (Eds.): *Global Change & Ecosystems, Vol 2*, Global Change Research Institute, Czech Academy of Sciences, Brno, 15-26, ISBN 978-80-87902-17-2
- Mikšovský J.**, Pišoft P. (2015): Attribution of European temperature variability during 1882-2010: A statistical perspective, In: Urban O., Šprtová M., Klem K. (Eds.): *Global Change: A Complex Challenge*, Global Change Research Centre AS CR, Brno, 10-13, ISBN 978-80-87902-10-3
- Bednar H., Raidl A., **Mikšovský J.** (2013): Initial Errors Growth in Chaotic Low-Dimensional Weather Prediction Model, In: Zelinka I., Chen G., Rössler O. E., Snašel V., Abraham A. (Eds.): *Nostradamus 2013: Prediction, Modeling and Analysis of Complex Systems. Advances in Intelligent Systems and Computing*, 210:333-342 (doi: 10.1007/978-3-319-00542-3\_34)
- Mikšovský J.**, Pišoft P., Raidl A. (2008): Global Patterns of Nonlinearity in Real and GCM-Simulated Atmospheric Data. In: Donner R., Barbosa S. (Eds.): *Non-linear Time Series Analysis in the Geosciences: Applications in Climatology, Geodynamics and Solar-Terrestrial Physics. Lecture Notes in Earth Sciences* 112:17-34 (doi: 10.1007/978-3-540-78938-3\_2)
- Mikšovský J.**, Raidl A. (2002): Inverse approach to nonlinear time series prediction. In: Šafránková J. (Ed.): *Proceedings of WDS 2002*, Matfyzpress, Prague, 518-522, ISBN 80-85863-88-X
- Mikšovský J.**, Raidl A. (2001): Time delays phase space reconstruction, its use and implementation. In: Zelinka I. (Ed.): *Proceedings of Nostradamus 2001*, Tomáš Baťa University, Zlín, 585-590, ISBN 80-7318-030-8
- Mikšovský J.**, Raidl A. (2001): On some nonlinear methods of meteorological time series analysis. In: Šafránková J. (Ed.): *Proceedings of WDS 2001*, Matfyzpress, Prague, 456-461, ISBN 80-85863-73-1
- Mikšovský J.**, Raidl A. (2000): On some methods of phase space reconstruction. In: Zelinka I. (Ed.): *Proceedings of Nostradamus 2000*, VUT Brno, Brno, 120-125, ISBN 80-214-1668-8
- Raidl A., **Mikšovský J.** (2000): Seasonal variation of weather predictability. In: Zelinka I. (Ed.): *Proceedings of Nostradamus 2000*, VUT Brno, Brno, 126-131, ISBN 80-214-1668-8

**DIPLOMA THESIS:**

- Mikšovský J.** (2000): *Nelineární analýza meteorologických časových řad / Non-linear analysis of meteorological time series*. Charles University in Prague, 88 pp., supervisor: dr. Aleš Raidl (in Czech)

**PH.D. THESIS:**

- Mikšovský J.** (2004): *On some meteorological applications of nonlinear time series analysis methods*. Charles University in Prague, 87 pp., supervisor: dr. Aleš Raidl



## **INTERNATIONAL COLLABORATION AND VISITS ABROAD**

- **INSTITUTE FOR GEOPHYSICS, ASTROPHYSICS, AND METEOROLOGY, UNIVERSITY OF GRAZ, AUSTRIA:**  
Research collaboration: Atmospheric internal gravity waves  
Research visit: 4 days, June 2016
- **POTSDAM INSTITUTE FOR CLIMATE IMPACT RESEARCH, GERMANY:**  
Research collaboration: Climate variability modes, information transfer and non-linear interactions in the atmosphere  
Research visit: 5 weeks, September/October 2016
- **INSTITUTE FOR METEOROLOGY, LEIPZIG UNIVERSITY, GERMANY:**  
Research collaboration: Middle atmospheric dynamics and gravity waves  
Recurring short-term research visits: 2016-2017