

Tobias Kummerle

Post-doctoral Fellow
 Department of Forest and Wildlife Ecology
 University of Wisconsin-Madison
 1630 Linden Drive
 Madison, WI 53706, USA
kummerle@wisc.edu
 phone: +1 (608) 265-9219

Research interests

The goal of my research is to better understand coupled human-environment systems on the land and ultimately to help identifying sustainable futures for such systems. I am particularly interested in Eastern Europe and the former Soviet Union and the land use changes that happened in this region after the breakdown of socialism. My work aims at monitoring land use change, improving understanding of its underlying causes, and exploring land use effects on ecosystem services and biodiversity. Spatially explicit analyses including remote sensing, GIS, statistical models, and landscape ecology tools are the methodological foundation of my research.

Education

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| 2003 – 2007 | PhD in Land Use Science and Remote Sensing
Geography Department, Geomatics Lab
Humboldt-University Berlin, Germany
<i>Thesis: Cross-border comparison of post-socialist land use change in Eastern Europe; Advisors: Patrick Hostert (Humboldt University Berlin) and Volker Radeloff (University of Wisconsin-Madison)</i> |
| 2005 and 2006 | Visiting scholar at the Department of Forest and Wildlife Ecology,
University of Wisconsin-Madison, USA |
| 1997 – 2003 | Diplom in Applied Environmental Sciences,
Remote Sensing Department, University of Trier, Germany
<i>Thesis: Investigating grazing and its effects on biological diversity using remote sensing and GIS; Advisors: Joachim Hill and Paul Müller</i> |
| 2000 – 2001 | Visiting student at the Departments of Geography and Ecology,
University of Lund, Sweden |

Professional experience

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| From 2008 | Postdoc at the Department of Forest and Wildlife Ecology,
University of Wisconsin-Madison, USA |
| 2007 – 2008 | Postdoc at the Geography Department,
Humboldt-University Berlin, Germany |
| 2003 – 2007 | Research assistant at the Geography Department,
Humboldt-University Berlin, Germany |
| 2001 | Internship at the United Nations Drug Control Programme,
Illicit Crop Monitoring Unit (UNDP/ICMP), Vienna, Austria |
| 2001 | Internship at Adogis BV, Amsterdam, The Netherlands |
| 2000 – 2002 | Freelancer for alta4 Geoinformatik AG, Trier, Germany |
| 1998 – 2000,
2001 – 2003 | Student collaborator at the Remote Sensing Department and the
Department of Geomathematics, University of Trier, Germany |

Peer-reviewed publications

- [1] Kuemmerle, T., Chaskovskyy, O., Knorn, J., Kruhlov, I., Radeloff, V.C., and Hostert, P. (2009): Forest cover change and illegal logging in the Ukrainian Carpathians in the transition period from 1988 to 2007. Submitted to *Remote Sensing of Environment*.
- [2] Knorn, J., Janz, A., Radeloff, V.C., Kuemmerle, T. and Hostert, P. (2009): Land cover mapping of large areas using chain classification of neighboring Landsat satellite images. Submitted to *Remote Sensing of Environment*.
- [3] Dannenberg, P. and Kuemmerle, T. (2009): Farm size and land use pattern as indicators of structural change Poland. Submitted to *Professional Geographer*.
- [4] Kuemmerle, T., Hostert, P., St-Louis, V., and Radeloff, V.C. (2009): Using image texture to map field size in Eastern Europe. *Journal of Land Use Science*, in press.
- [5] Müller, M., Kuemmerle, T., Rusu, M., and Griffiths, P. (2009): Lost in transition. Determinants of cropland abandonment in postsocialist Romania. *Journal of Land Use Science*, in press.
- [6] Kuemmerle, T., Kozak, J., Radeloff, V.C., and Hostert, P. (2009): Differences in forest disturbance rates among land ownership types in Poland during and after socialism. *Journal of Land Use Science*, in press.
- [7] Kuemmerle, T., Müller, M., Rusu, M., and Griffiths, P. (2009): Land use change in southern Romania after the collapse of socialism. *Regional Environmental Change*, in press.
- [8] Kuemmerle, T., Hostert, P., Radeloff, V.C., Perzanowski, K, and Kruhlov, I. (2008): Post-socialist farmland abandonment in the Carpathians. *Ecosystems*, 11, 614-628.
- [9] Kuemmerle, T., Damm, A. and Hostert, P. (2008): A method to detect and correct single-band missing pixels in Landsat TM and ETM+ data. *Computers and Geosciences*, 34, 445-455.
- [10] Kuemmerle, T., Hostert, P., Radeloff, V.C., Perzanowski, K, and Kruhlov, I. (2007): Post-socialist forest disturbance in the Carpathian border region of Poland, Slovakia, and Ukraine, *Ecological Applications*, 15, 1279-1295.
- [11] Röder, A., Kuemmerle, T., Hill, J., Papanastasis, V., and Tsiourlis, G. (2007): Assessing grazing impact in the rangelands of Lagadas County (Greece) using cost surface modelling and remote sensing, *Ecological Modeling*, 204, 387-398.
- [12] Kuemmerle, T., Radeloff, V.C., Perzanowski, K, and Hostert, P. (2006): Cross-border comparison of land cover and landscape pattern in Eastern Europe using a hybrid classification technique. *Remote Sensing of Environment*, 103, 449-464.
- [13] Kuemmerle, T., Röder, and A. Hill, J. (2006): Separating grassland and shrub vegetation by multivariate pixel-adaptive spectral mixture analysis, *International Journal of Remote Sensing*, 27, 3251-3271.
- [14] Röder, A., Kuemmerle, T., and Hill, J. (2005): Extension of retrospective datasets using multiple sensors; an approach to radiometric intercalibration of Landsat TM and -MSS Data. *Remote Sensing of Environment*, 95, 195-210.
- [15] Röder, A., Kuemmerle, T. and Hill, J. (2004): Extending Time-Series of Satellite Images by Radiometric Intercalibration. In: Smits, P., Bruzzone, L. (Eds): *Analysis of multi-temporal remote sensing images. (Series of Remote Sensing, 3)*, World Scientific, 21-30.

Conference proceedings

- [1] Hostert, P., Kuemmerle, T., and Main, M. (2007): Post-socialist forest disturbance in the Polish Carpathians. *Proceedings of the FORESTSAT 2007 Conference*, 5-7 November 2007, Montpellier, France.
- [2] Müller, D., Kuemmerle, T., Rusu, M., and Griffiths, P. (2007): Drivers of post-socialist cropland abandonment in Romania. *Proceedings of the Conference on the Science and Education of Land Use: A transatlantic, multidisciplinary and comparative approach*, 24-26 September 2007, Washington D.C., USA, in press.
- [3] Kuemmerle, T., Hostert, P., Radeloff, V.C., and Perzanowski, K. (2007): Effectiveness of protected areas in the Carpathians differs among countries in post-socialist times. In: Bunce, R.H.G., Jongman, R.G.H., Hojas, L. & Weel, S. (Eds.): *Proceedings of the 7th IALE World Congress*, 8-12 July 2007, Wageningen, The Netherlands, p. 1101-1102.
- [4] Kuemmerle, T., Radeloff, V.C., and Hostert, P. (2006): A transborder assessment of forest cover change in the Carpathians. In: Braun, M. (ed): *Proceedings of the 2nd Workshop of*

the EARSeL SIG Land-Use & Land-Cover, 28-20 September 2006, Bonn, Germany. Available from: http://www.zfl.uni-bonn.de/earsel/ws2006_bn.html [accessed 25 July 2007].

- [5] Kuemmerle, T., Radeloff, V.C., and Hostert, P. (2006): Mapping post-socialist agricultural fragmentation in Eastern Europe using texture measures. In: Braun, M. (ed): Proceedings of the 2nd Workshop of the EARSeL SIG Land-Use & Land-Cover, 28-20 September 2006, Bonn, Germany. Available from: http://www.zfl.uni-bonn.de/earsel/ws2006_bn.html [accessed 25 July 2007].
- [6] Kuemmerle, T., Hostert, P., Damm, A. and Radeloff, V., (2005): Cross-border monitoring of landscape dynamics in Eastern Europe. In: Erasmi, S., Cyffka, B., and Kappas, M. (Eds): 1st Göttingen GIS and Remote Sensing Days. Environmental Studies, Göttingen, 7-8 Oktober. Goltze Verlag, Göttingen, Germany, p.24-30.
- [7] Röder, A., Kuemmerle, T., Hill, J., Del Barrio, G., Tsiourlis, and G., Papanastasis, V. (2005): Assessing rangeland degradation in heterogeneous Mediterranean environments. A case study in the County of Lagadas/Greece. In: Röder, A. and Hill, J. (Eds): Proceedings of the 1st International Conference on Remote Sensing and Geoinformation Processing in the Assessment and Monitoring of Land Degradation and Desertification (RGLDD), Trier, 7-9 September, 2005. CD-Rom publication.

Abstracts (first-authored only)

- [1] Kuemmerle, T., Knorn, J., Chaskovskyy, O., Radeloff, V.C., and Hostert, P. (2008): Forest cover change and illegal logging in the post-socialist transition time in the Ukrainian Carpathians. Presentation at the *93rd ESA Annual Meeting*, Milwaukee, USA, 3-8 August 2008. Oral presentation.
- [2] Kuemmerle, T., Radeloff, V.C., Hostert, P., Kozak, J., and Vogt, P. (2008): Changes in forest fragmentation due to reforestation, abandoned farmlands in Eastern Europe. Presentation at the conference *Landscape Patterns and Ecosystem Processes 2008 US-IALE Symposium*, Madison, USA, 6-10 April 2008. Oral presentation.
- [3] Kuemmerle, T., Müller, D., Kozak, J., Knorn, J., and Hostert, P. (2008): High-resolution earth observation for monitoring post-socialist land use change in the Carpathian Ecoregion. Presentation at the conference *Impact Assessment of Land Use Changes*, Berlin, Germany, 6-9 April 2008. Oral presentation.
- [4] Kuemmerle, T., Knorn, J., Main, M., Müller, D., van der Linden, S., and Hostert, P. (2007): Mapping post-socialist farmland abandonment and forest cover change in the Carpathian ecoregion. Presentation at the conference *2nd EURAC Workshop on Applied Remote Sensing in Mountain Regions*, Bolzano, Italy, 13-14 March 2008. Oral presentation.
- [5] Kuemmerle, T., Hostert, P., Lakes, T., and Müller, M. (2007): Transboundary assessments of post-socialist land use change in the Carpathians. Presentation at the conference *3rd Land system science (LaSyS) Workshop: Handling complex series of natural and socio-economic processes*, Tune, Denmark, 25-26 October 2007. Poster presentation.
- [6] Kuemmerle, T., Radeloff, V. C., and Hostert, P. (2005): Landscape response to post-socialist transformation processes: a cross-border study in the Carpathians. Presentation at the 6th Open Meeting of the Human Dimension of Global Environmental Change Research Community, Bonn, Germany, 9-13 October 2005. *Oral presentation.*
- [7] Kuemmerle, T. (2005): A Cross-border monitoring and simulation of land use change in Eastern Europe. A geomatics approach. Presentation at the 1st Workshop of Spatial Statistical Analysis for Environmental Issues, Berlin, Germany, 20-22 January 2005. *Oral presentation.*
- [8] Kuemmerle, T., Röder, A., and Hill, J. (2004): Optimized green vegetation derivation for the quantification of grazing impact. Presentation at the 1st conference 24th EARSeL Symposium - New Strategies for European Remote Sensing, Dubrovnik, 25-27 May 2004. *Oral presentation.*

Other publications

- [1] Hostert, P., Kuemmerle, T., Radeloff, V.C., and Müller, D. (2008): Post-socialist land-use and land-cover change in the Carpathian Mountains. . In: Rechkemmer, A., Litre, G., and Drexler, C. (Eds). International Human Dimensions Programme on Global Environmental Change (IHDP) Update, NO. 2, Bonn, Germany.

- [2] Hostert, P., Kuemmerle, T., Müller, D., and Lakes, T. (2008): Post-socialist land-use and land-cover change in the Carpathians. In: Reenberg, A., Langanke, T., and Jorgensen, L. (Eds). Newsletter of the Global Land Project International Project Office, GLP News NO. 3, Copenhagen, Denmark.
- [3] Buddenbaum, H. and Kuemmerle, T. (2001): Spatial Patterns in Opium Poppy Growing and Non-Growing Villages in Laos, In: ICMP Annual Opium Poppy Survey for Lao PDR, United Nations Drug Control Programme (UNDCP), Vienna, Austria.

Awards & Fellowships

07/2008 – 06/2009	Feodor Lynen Fellowship, Alexander von Humboldt Foundation, Grant for post-doctoral studies at the University of Wisconsin-Madison
2007	German Research Foundation, Travel grant
2006	International Office of Humboldt-Universität zu Berlin, Travel grant for a research visit at the University of Wisconsin-Madison
07-08/2005	DAAD Fellowship, Research visit at the University of Wisconsin-Madison
07/2001 – present	e-fellows.net scholarship
07/2000 – 06/2001	ERASMUS/Sokrates Scholarship for undergraduate studies at the University of Lund, Sweden

Professional Functions

Reviewer for	<i>Advances in Engineering Software, Computers & Geosciences, EARSeL eProceedings, Ecological Economics, Environmental Modeling & Software, International Journal of Remote Sensing, Journal of Applied Geography, Journal of Environmental Management, Journal of Irrigation & Drainage Engineering, Mountain Research and Development, Remote Sensing of Environment</i>
08/2006 - 2008	Member of the institutional board of the Institute of Geography, Humboldt-Universität zu Berlin
05/2000 - present	Co-Founder and active member of CubicWorld.org e.V. (non-profit society for the advancement of young scientists in Remote Sensing and GIS)

Project experience

Post-Socialist Land use change in the Carpathians	<i>In this project, I have been responsible for planning and conducting research, managing field campaigns, and project budgeting. I have also established collaborations with researchers in Eastern and Western Europe and North America, and international research networks (e.g., IGBP/IHDP Global Land Project, NEESPI).</i> Principal Investigator: Patrick Hostert (Humboldt-Universität zu Berlin) Funding: different funding organizations, 2004-2011
Postsocialist Land Relations	<i>I was responsible for a work package on mapping post-socialist land use change in southern Romania.</i> Principal Investigator: Thomas Sikor (Humboldt-Universität zu Berlin) Funding: German Science Foundation, Emmy Noether-Programme, 2003-2008
Post-Socialist land use change in Eastern Europe	<i>I have been collaborating intensively with this project, resulting in joint publications and follow-up proposals.</i> Principal Investigator: Volker Radeloff (University of Wisconsin-Madison) Funding: National Aeronautics and Space Administration (NASA), 2004-2007
Northern Eurasia Land Dynamics Analysis	<i>I have been collaborating with this project by integrating the Carpathian study region of my PhD project into the NELDA network.</i>

- (NELDA) Principal Investigator: Olga Krankina (Oregon State University)
Funding: National Aeronautics and Space Administration (NASA), 2006-2008
- DeSurvey: A Surveillance System for Assessing and Monitoring of Desertification *I have been collaborating in a work package on land use change monitoring hosted at Humboldt University Berlin, Geomatics Lab.*
Principal Investigator: Juan Puigdefabregas (Estacion Experimental de Zonas Aridas)
Funding: European Commission, 2004-2009
- Geomatics in the Assessment and Sustainable Management of Mediterranean Rangelands *In this project, I collaborated during the course of my diploma thesis, resulting in several joint publications.*
Principal Investigator: Joachim Hill (University of Trier)
Funding: European Commission, 2001-2004

Research grants

Active

- Land use effects on habitat suitability and metapopulation dynamics of the European bison Role: Principal Investigator
Main partners: University of Wisconsin-Madison, Polish Academy of Sciences, Ukrainian Academy of Sciences, Russian Academy of Sciences, WWF Russia
Funding: Alexander von Humboldt Foundation, 40,000 EUR, 2008-2009
- Post-socialist land use change in the Carpathians Role: Co-Investigator
Principal Investigator: Patrick Hostert (HU Berlin)
Main partners: Polish Academy of Sciences, Jagiellonian University Krakow, Ivan Franko University Lviv, Ukrainian National Forestry University, University of Warsaw, University of Wisconsin-Madison, Swedish Agricultural University
Funding: different funding organizations, 445,000 EUR, 2004-2011
- Land use change, protected areas and biodiversity in European Russia Role: Co-Investigator
Principal investigator: Patrick Hostert (HU Berlin)
Main partners: Russian Academy of Sciences, WWF Russia, University of Wisconsin-Madison
Funding: German Research Foundation, 310,000 EUR, 2009-2012

Pending

- Socio-ecological dynamics in Armenia: linkages among forest use, biodiversity and rural livelihoods Role: Co-Investigator
Principal investigator: Daniel Müller (IAMO Halle)
Main partners: Yerevan State University, Armenian State Agrarian University, HU Berlin, Wageningen University, Ohio State University
Funding: Volkswagen Foundation, 400,000 EUR, 2009-2013
- Land use change, protected areas, and biodiversity in the Caucasus and Ural Mountains Role: Co-Investigator
Principal investigator: Volker C. Radeloff (Univ. of Wisconsin-Madison)
Main partners: Russian Academy of Sciences, HU Berlin, IAMO Halle
Funding: National Aeronautics and Space Administration, 120,000 US\$, 2009-2012

Professional Affiliations

- Association of Geographers at German Universities (VGDH)
Ecological Society of America (ESA)
Ecological Society of Germany, Austria and Switzerland (GfÖ)
International Association of Landscape Ecology (IALE)

Teaching

2008	Lecture on Global Environmental Change and Land Use (~20h within the Module Land use Change)* [MSc level]
2006, 2007	Monitoring Land Use Change* [MSc level]
2005	Assessing Land Degradation Using Remote Sensing and GIS* [MSc level]
2005, 2006, 2007	Introduction to Geography (2h Introduction to Geomatics) [BSc level]
2004, 2005, 2006	Spatial Problem Solving with GIS* [MSc level]
2004, 2005	Distributed Geoinformation Services and Webmapping* [MSc level]
2003, 2004, 2005, 2006	Statistics for Geographers (Basic Statistics, Geostatistics)* [BSc level]

* course organizer; all courses taught at Humboldt-Universität zu Berlin

Non-scientific

Languages	English (fluent), Swedish (fluent), French (basic knowledge), Spanish (basic knowledge)
Hobbies and interests	Reading, Collecting vinyl records, Sports (Basketball, Football, Snowboard, Cross-country Skiing), Cooking, Traveling (e.g., longer trips to Bolivia, Chile, Egypt, Island, Mexico)
Memberships	Amnesty International