Tim Appelhans

Curriculum Vitae

November 2015

Address: Environmental Informatics, Department of Geography, Philipps University of Marburg, Deutschhausstr. 12, 35032 Marburg, Germany
Phone: +49 (0) 6421 28-25957
Email: tim.appelhans@staff.uni-marburg.de
WWW: http://umweltinformatik-marburg.de/mitarbeiterinnen-und-mitarbeiter/tim-appelhans/

Education and Qualifications

since 08/2012	**Lecturer (Akad. Rat)**	Philipps University Marburg
2011 - 2012	**Post-Doctoral Fellow**	Philipps University Marburg
2010 - 2011	**Post-Doctoral Fellow**	University Bayreuth
2010	**Ph.D. Geography**	University of Canterbury
2008	**Lecturer**	University of Otago
2005	**Dipl. Geography**	Friedrich-Alexander University Erlangen-Nürnberg

Awards

2010 **Best Doctoral Thesis in Geography**. Presidents award, New Zealand Geographical Society.
2006 **Best oral student presentation**. Resource Management Under Stormy Skies Conference, Christchurch, New Zealand, 20 - 23 November 2006.

Research

My principle research interests lie in the fields of geography and atmospheric sciences across a wide range of spatial and temporal scales. In particular I am interested in boundary layer climatology and its interaction with other aspects of the earth-atmosphere system, especially in complex terrain (primarily montane and urban environments). My research is application-oriented and, being a geographer, I approach it in an inter-disciplinary manner. Among other research tools, I primarily use computational statistics (R), remote sensing and general spatial analysis approaches and, to a lesser extent, numerical modelling (WRF, TAPM) for my scientific investigations.
To date, I have authored 17 papers, technical reports and conference contributions on various topics in the broad areas of (applied) climatology and general geography. A list of these appears on pages 5–6.

Grants

2013 - 2016 *Ecological Climatology and Remote Sensing* **€145,600**

Together with Prof. Dr. Thomas Nauss from Philipps University Marburg I am leading this subproject which is part of the DFG research group FOR 1246 *Kilimanjaro ecosystems under global change: Linking biodiversity, biotic interactions and biogeochemical ecosystem processes.*

Teaching

Lectures

- Climatology, GEOG 286/392, Otago (S1 2008)
- Environmental hazards management, GEOG 305, Canterbury (S1 2009, S1 2010)
- Environmental Processes: Research Practice, GEOG 211, Canterbury (S1 2010)
- Research Methods in Geography, 309, Canterbury (S2 2010)
- Recourses and Sustainability, 108, Canterbury (S2 2010)

Seminars

- Analyse und Visualisierung von Umweltdatensätzen für den Einsatz in Beruf und Schule, Marburg (SS 2013) (Analysis and visualisation of enviromental data sets for professional use)
- Erfassung, Analyse und Visualsierung ausgewählter Umweltdatensätze, Marburg (WS 2012) (Collection, analysis and visualisation of selected environmental data sets)
- Aufbereitung, Analyse und Visualisierung von klima-ökologischen Datensätzen, Marburg (WS 2011) (Handling, analysis and visualisation of eco-climatological data sets)
- Projektarbeit Physische Geographie, Marburg (WS 2011) (Project work physical Geography)

Laboratory courses

- Climatology, GEOG 286/392, Otago (S1 2008)

Excursions/Practicals

- Field research methods (Science), GEOG380, Otago (S1 2008)
- 4-tägige Exkursion Berchtesgaden, Bayreuth (SS 2011)

Grad student supervision

Ph.D.	ongoing	I. Otte	Development of a new approach for cost-effective, ground-based fog remote sensing techniques at Mt. Kilimanjaro
	ongoing	F. Detsch	Quantification of evapo-transpiration in tropical ecosystems: an integrative approach using field observations and remote sensing techniques
	ongoing	E. Mwangomo	Classical spatial statistics vs. modern machine learning approaches for the generation of high-resolution climatological surfaces in complex terrain (Mt. Kilimanjaro)
M.Sc. (Dipl./ZA)	2013	M. Kordilla	Evaluireung von Methoden zur Regionalisierung von Lufttemperaturmessungen am Mt. Kilimandscharo (Evaluating different methods for the regionalisation of temperature observations at Mt. Kilimanjaro)
B.Sc.	2012	R. Niederheiser	Reanalysegestützte Klassifikation von Wetterlagen Ostafrikas (Reananlysis-supported weather type classification East Africa)
	2012	M. Schnelle	Der Einfluss der Meeresoberflächentemperatur auf die Niederschlagsdynamik Ostafrikas (SST influences on East African rainfall dynamics)
	2012	L. Wette	Räumliche Repräsentativität von Biodiversitätsuntersuchungsflächen - eine fernerkundungsgestützte Variogrammanalyse in der Kilimandscharo Region (Spatial representativity of biodiversity investigation plots - remote sensing based variogram analysis at Mt. Kilimanjaro)
	2011	A. Brucker	Observed temporal trends of the EVI in the equatorial East African Region

Tertiary education training

Fortbildungszentrum Hochschullehre	Planung einer Lehrveranstaltung (structured course palnning) (12 AE)
Hochschuldidaktisches Netzwerk Mittelhessen	Fachliche und überfachliche Kompetenzen stärken durch reflektierte Projektarbeit in gemeinnützigen Kontexten: das Service Learning Konzept (project work and service learning) (16 AE)

Skills

Advanced knowledge	of statistical and data mining applications (incl. R, Statistica, SPSS)
Proficient knowledge	of Geographical Information Systems (IDRISI, R, QGIS, SAGA GIS, ESRI, GDAL, TNTmips) and other spatial/atmospheric analysis tools (incl. Surfer, IDV, Vapor)
Basic knowledge	of meso-scale numerical modelling (The Air Pollution Model - TAPM, WRF)
Basic knowledge	of UNIX/LINUX shell environment

Software

Since 2011 I have authored and contributed to the open source software programs/packages *julendat*, *Reot* and *metvurst*. Details below.

julendat	JULENDAT Utilities for Environmental Data `https://github.com/environmentalinformatics-marburg/julendat`
remote	Empirical Orthogonal Teleconnections in R `https://cran.r-project.org/web/packages/remote/index.html`
satellite	Various Functions for Handling and Manipulating Remote Sensing Data `https://cran.r-project.org/web/packages/satellite/index.html`
mapview	GIS-like viewing of spatial objects in R `https://github.com/environmentalinformatics-marburg/mapview`

Administrative experience

since 2015	Member of the Marburg Research Academy board of directors
2010	Administration of all laboratory courses at 100 level in Geography, Department of Geography, University of Canterbury.
2007 - 2008	PhD representative. Department of Geography, University of Canterbury, Christchurch, New Zealand.

References

Prof. Andrew Sturman	Department of Geography, University of Canterbury, Private Bag 4800, Christchurch, New Zealand. email: andrew.sturman@canterbury.ac.nz phone: +64 3 364 2502
Prof. Dr. Thomas Nauss	Environmental Informatics, Department of Geography, Philipps University Marburg, Deutschhausstr. 12, 35032 Marburg, Germany. email: thomas.nauss@staff.uni-marburg.de phone: +49 6421 28 25980
Dr. Nicolas Cullen	Department of Geography, University of Otago, PO Box 56, Dunedin, New Zealand. email: njc@geography.otago.ac.nz phone: +64 3 479 3069

Publications

Refereed research papers

1. **Appelhans, Tim**, A. Sturman, and P. Zawar-Reza (2010). Modelling emission trends from non-constant time series of PM_{10} concentrations in Christchurch, New Zealand. *International Journal of Environment and Pollution* **43**(4), 354–363.
2. **Appelhans, Tim** and P. Zawar-Reza (2010). A modelling study of particulate matter dispersion under dominant surface wind regime modes in Christchurch, New Zealand. *Air Quality and Climate Change* **44**(1), 24–29.
3. Zawar-Reza, P., **T. Appelhans**, M. Gharaylou, and A. Shamsipour (2010). Mesoscale controls on particulate matter pollution for a mega city in a semi-arid mountainous environment: Tehran, Iran. *International Journal of Environment and Pollution* **41**(1), 166–183.
4. **Appelhans, Tim**, A. Sturman, and P. Zawar-Reza (2012). Synoptic and climatological controls of particulate matter pollution in a Southern Hemisphere coastal city. *International Journal of Climatology* **33**(2), 463–479.
5. Kuehnlein, M., **T. Appelhans**, B. Thies, A. A. Kokhanovsky, and T. Nauss (2013). An evaluation of a semi-analytical cloud property retrieval using MSG SEVIRI, MODIS and CloudSat. *Atmospheric Research* **122**, 111–135.
6. Kuehnlein, M., **Tim Appelhans**, B. Thies, and T. Nauss (2014). Improving the accuracy of rainfall rates from optical satellite sensors with machine learning fffdfffdfffd A random forests-based approach applied to {MSG} {SEVIRI}. *Remote Sensing of Environment* **141**, 129–143.
7. Kühnlein, M., **Appelhans, Tim**, B. Thies, and T. Nauss (2014). Precipitation Estimates from MSG SEVIRI Daytime, Nighttime, and Twilight Data with Random Forests. *Journal of Applied Meteorology and Climatology* **53**(11), 2457–2480.
8. **Appelhans, Tim**, F. Detsch, and T. Nauss (2015). remote: Empirical Orthogonal Teleconnections in R. *Journal of Statistical Software* **65**(10), 1–19.
9. **Appelhans, Tim**, E. Mwangomo, I. Otte, F. Detsch, T. Nauss, and A. Hemp (2015). Eco-meteorological characteristics of the southern slopes of Mt. Kilimanjaro, Tanzania. *International Journal of Climatology*.
10. **Tim Appelhans**, E. Mwangomo, D. R. Hardy, A. Hemp, and T. Nauss (2015). Evaluating machine learning approaches for the interpolation of monthly air temperature at Mt. Kilimanjaro, Tanzania. *Spatial Statistics*, pages.

Papers in conference proceedings

1. **Tim Appelhans**, P. Zawar-Reza, M. Gharaylou, and A. Shamsipour (2008). Mesoscale controls on particulate pollution for a megacity in a semi-arid mountainous environment: Tehran, Iran. In: *13th Conference on Mountain Meteorology.11 - 15 August 2008, Whistler, BC, Canada*.
2. **Tim Appelhans** (2009). An air pollution climatology for Christchurch, New Zealand. In: *7th International Conference on Urban Climate. 29 June - 3 July 2009, Yokohama, Japan*.
3. **Tim Appelhans** (2011). Climate dynamics of the Kilimanjaro region: A field measurement campaign to investigate climatological drivers of a tropical montane ecosystem. In: *31st International Conference on Alpine Meteorology. 23 fffdfffdfffd 27 May 2011, Aviemore, Scotland*.
4. **Tim Appelhans** and T. Nauss (2013). East African rainfall and vegetation dynamics in response to a changing El Nino. In: *EGU General Assembly Conference Abstracts*. Vol. 15. EGU General Assembly Conference Abstracts, pp.12062.

Unpublished working papers

1. Sturman, A. and **Appelhans, T.** (2006). *Estimation of hourly solar radiation from 2nd July to 18th August 2003 in the area between Rangataik and Matea townships, east of Lake Taupo in the central North Island*. Tech. rep. unpublished. Ruakura Research Centre; Bisley Road; Private Bag 3115; Hamilton 3240; New Zealand: AgResearch, p. 14.
2. **Appelhans, T.**, J. Bluett, K. Dey, G. Fisher, A. Sturman, and E. Wilton (2007). *Using air quality data to track progress toward PM_{10} standards: Case study - Christchurch 1999 - 2006*. Tech. rep. CHC2007-135. 10 Kyle Street; PO Box 8602; Christchurch; New Zealand: National Institute of Water & Atmospheric Research Ltd, p. 77.
3. Wilton, E., **Appelhans, T.**, M. Baynes, and P. Zawar-Reza (2009). *Assessing long-term trends in PM_{10} concentrations in Invercargill*. Tech. rep. ESRC223. 11 Lachie Griffin Rise RD1; Lyttelton; Christchurch 8971: Environet Limited, p. 24.