

Curriculum Vitae

Personal Information

Name: Dr.-Ing. Patrick Laux
Date of birth: January 08, 1976
Place of birth: Wadern
Citizenship: German

Contact Information

Employer: Karlsruhe Institute of Technology,
Institute of Meteorology and Climate Re-
search (KIT/IMK-IFU)
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Research Interests

- Impacts of climate change and climate variability on agricultural productivity and terrestrial water balance to contribute to better informed adaptation options
- Seasonal climate forecasts and long-term climate projections
- Regional climate modeling (Dynamical and statistical downscaling)
- Bias correction of climate model output
- Uncertainty quantification of modelling chain

Professional Expertise

- since 06/2017: Habilitation process at Augsburg University, Topic: "Local refinement of regionalized meteorological fields for decision support in hydrology", associated lecturer
- since 07/2015: Senior scientist at KIT/IMK-IFU
- Scientific PhD advisor
 - Fund acquisition
 - Scientific collaborator in ongoing research projects (e.g., WASCAL, BIAS-II, SaWaM)
- 2010-2015: PI of "Climate Cluster" within BMBF-funded project LUCCi (<http://www.lucci-vietnam.info/>)
- since 01/2009: PostDoc at KIT/IMK-IFU
- 01/2009: Doctoral degree (Dr.-Ing.), Stuttgart University
- PhD thesis "Statistical modeling of precipitation for agricultural planning in West Africa" within the framework of the BMBF funded project GLOWA Volta (<http://www.glowa-volta.de/>)
 - Score: Magna cum laude
 - Mentor: Prof. Dr. Harald Kunstmann
 - Referees: Prof. Dr. Bárdossy, Prof. Dr. Jacobeit
- 2004–2009: PhD studies at Karlsruhe Institute of Technology, Institute of Meteorology and Climate Research, Garmisch-Partenkirchen
- 2001–2003: Contract for services with Landesamt für Umweltschutz, Saarbrücken
- Development of a hydrogeological database
 - Development of a Digital Elevation Model for the Saarland region using information from digitized maps
- 2002–2003: Contract for services with the Büro für Umweltplanung, Mertesdorf
- Sediment core sampling and analysis (construction trade)
 - Groundwater sampling

Education

- 2004–2009: Doctoral thesis research at KIT/IMK-IFU on “Statistical modeling of precipitation for agricultural planning in West Africa”. Research supervisor: Prof. Kunstmann (KIT/IMK/IFU)
- 2003: Diploma degree, Applied Environmental Sciences (Dipl.-Umweltwiss.), Trier University, Score: 1.9
- Diploma Thesis: “Quantification of Chemical Parameters of Sediment Samples of the Olewiger Bach Using Reflectance Spectral Measurement. Comparison of Methods: Partial Least Squares Regression vs. Artificial Neural Networks”
 - Score: 1.3
 - Supervisors: Prof. Dr. Symader, Prof. Dr. Hill
- 1996–2003: Study at Karl Marx University, Trier
- Applied Environmental Sciences
 - Major subjects: Hydrology, Remote Sensing, Meteorology, Soil Sciences
 - Minor subjects: International, European and German Environmental Law
- 2001: Research collaboration, Department of Meteorology (Prof. Dr. Helbig), Trier University
- Statistical analysis of *Hess & Brezowski – Großwetterlagen* with respect to local meteorological conditions and air pollution
- 2000–2001: Research collaboration, Department of Hydrology (Prof. Dr. Krein), Trier University
- Sampling, preparation, digitization, and statistical analysis of river channel sediments
- 2000: Student traineeship with *Umweltforschungszentrum Leipzig-Halle GmbH*, Department of Lake Research and River Ecology, Magdeburg
- Quantification of seston losses from the surplus water of the river Elbe into the the sediment of a groyne
- 2000: Student traineeship with *Staatliche Lehr- und Versuchsanstalt, Trier*
- Impact of fertilization on water quality in Kordel, Rheinland-Pfalz
 - Analysis and visualization of precision farming yield data at different sites in the Eifel region, Rheinland-Pfalz
- 1995–1996: Civil service in health care, Hochwald-Kliniken Weiskirchen
- 1995: Johannes Kepler-Gymnasium Lebach, A-levels

Teaching and Mentoring Activities

Presently, I am lecturing about *Fundamentals in crop yield modelling* and *Hydrometeorological extreme events* in the regular curriculum at University of Augsburg (4 hours/week), and occasionally (block courses) within the *Research School on Mechanisms and Interactions of Climate Change in Mountain Regions* (MICMoR) at KIT/IMK-IFU.

Also in MICMoR, I elaborated and proposed a PhD topic in 2014 and 2015 jointly with another scientist, which have been both awarded a full scholarship.

I am co-supervising and mentoring several PhD students of the Department Regional Climate Systems, many of them coming from developing countries. Some of them, I could successfully support to get a DAAD scholarship in order to conduct their PhD thesis in our department (e.g. Thinh Dand from Vietnam and Noah Kerandi from Kenya).

I am acting as scientific collaborator and advisor in the *West African Science Service Centre for Climate Change and Adapted Land Use* (WASCAL) project. There, I was supervising a PhD student working on the topic of improved agricultural management strategies in West Africa, which has been awarded for the *Outstanding Student Poster Awards 2014* at the EGU in 2014. Currently, I am co-supervising another two WASCAL PhD students, i.e. Diarra Dieng and Adeyeri Oluwafemi.

Block courses given are listed below:

- Taught a 1-day course about *Dynamical Downscaling of Seasonal Forecasts for Iran using the Limited Area Model WRF* at Khuzestan Water and Power Authority (KWPA), Ahvaz, Iran, December, 12, 2017.
- Involved in conceptual development of the course *Hydro-Climate and Remote Sensing Training Opportunity for West African Students & Early Career Scientists*, at Conference Center of WASCAL Competence Center (WASCAL CoC), Ouagadougou, Burkina Faso, March 14-21, 2017. Taught 1 lecture and 1 practical exercises in Bias Correction approaches.
- Jointly with Prof. Jacobeit and other scientists from Augsburg University, I was involved in the conceptual development of the MICMoR technical short course *Advanced Statistical Methods for Geoscientists with Special Focus on Climatology* and gave a lecture about statistical post-processing bias correction methods at Augsburg University, October 6-9, 2015.
- Lecture about *Scientific tools for decision support in Sustainable Water Management: Examples from recent/ongoing research projects* in the study course *Sustainable Resource Management* at Technical University Munich (TUM), January 21, 2015.
- Conceptual development of the course *Statistics for Geoscientists* held in October, 7-11, 2013 at KIT/IMK-IFU for PhD students and Post Docs together with a team of six other lecturers. Taught two lectures and offered practical exercises in extreme value statistics and geostatistical interpolation methods.
- Taught the 5-day course on *Modeling the onset of the rainy season and potential implications for agriculture in West Africa*, Training courses at Cape Coast University, Cape Coast, Ghana, February 8–12, 2010.
- Taught the 5-day course on *Modeling the onset of the rainy season and potential implications for agriculture in West Africa*, Training courses at the Meteorological Department, Ouagadougou, Burkina Faso, February 15–19, 2010.
- Taught 2 lectures on *Impact of Climate and Land Use Change on Terrestrial Hydrology in the Volta Basin*, International Summer School 'Land Cover and Climate Change in West Africa', Elite Network of Bavaria, Würzburg university, Germany, July 21–26, 2008.
- Co-taught the course with 1 other person on *Model-based water balance estimation*

using WASiM / Estimation of the onset of the rainy season / Regional climate modeling using MM5. Training course in Hydro-Meteorological Decision Support for the Volta Basin at Direction Générale des Ressources en Eau (DGRE) in Ouagadougou, Burkina Faso, January 22–25, 2008.

- Co-taught the course with 1 other person on *Model-based water balance estimation using WASiM / Estimation of the onset of the rainy Season / Regional climate modeling using MM5*, Training course in Hydro-Meteorological Decision Support for the Volta Basin at the United Nations University Institute for Natural Resources (UNU-INRA) in Accra, Ghana, January 14–17, 2008.

Co-supervised Students

Name	Degree	Topic	Period
Adeyeri Oluwafemi	PhD	Modeling the Hydrological Response of the Komadugu-Yobe part of the Lake Chad Basin to Climate Change (WASCAL scholarship)	2017–2019
Diarra Dieng	PhD	Performance analysis and projected changes of agro-climatological indices across West Africa based on a regional climate model (WASCAL scholarship)	2014–2018
Oskar Molina	PhD	Influence of Climate Change on the hydrological cycle in the eastern region of Colombia (MICMoR scholarship)	2016–2019
Cornelius Hald	PhD	Analysis of meso- and microscale hydrometeorological fluxes in TERENO pre-Alpine using WRF-LES (MICMoR scholarship)	2015–2018
Devyani Dodia	M.Tech	Climate change impact assessment and evaluation of adaptation for rice production in the subtropical region of India (6 month DAAD IIT Master Sandwich Programme)	2015/2016
Mohsen Soltani	PhD	Analysis of the spatiotemporal variability of water and energy balance in the TERENO prealpine region (MICMoR scholarship)	2014–2017
Lenin Campozano	PhD	Regional climate modeling for water budget evaluation applied to the Andes (MICMoR scholarship)	2013–2014 (aborted)
Noah Kerandi	PhD	Validation of a coupled atmospheric- hydrological modeling system for the Tana river basin in Kenya (DAAD scholarship)	2013–2016
Dang Thinh	PhD	Coupled hydrological - economic modelling for optimal agricultural cultivation in the VuGia-ThuBon river basin, Central Vietnam (DAAD scholarship)	2013–2016
Jonathan Siegmund	MSc	Statistical evaluation of downscaled CFS seasonal precipitation forecasts for large-scale agricultural droughts in Africa and India	2012–2013
Phuong Nguyen	PhD	Impact of land use/land cover change on climate in Central Vietnam	2012–2015
Tanja Dressel	PhD	Early warning system for thunderstorms in Germany	2011–2013 (aborted)
Mao Ganquan	PhD	Copula-based bias correction for Germany and Vietnam	2010–2015
Moussa Waongo	PhD	Optimization of agricultural management strategies (mainly planting time) in West Africa	2010–2015
Wei Qiu	PhD	Copula-based data assimilation of radar, gauge and microwave link information	2009–2012
Greta Jäckel	Diploma	Impact of planting date adaptation on attainable crop yield in Central Africa	2008–2009

Externally Funded Grants Acquired

Funding agency	Project title	Role	Period
AUC	<i>UPscaling Site-specific Climate-smart Agriculture and Land use practices to Enhance Regional production Systems in West Africa (UPSCALERS)</i>	proposal wr.	2018-2020
BMBF	<i>Saisonales Wasserressourcen-Management in Trockenregionen: Praxistransfer regionalisierter globaler Informationen (SaWaM) in the call Globale Ressource Wasser (GROW)</i>	scient. contr.	2017-2020
BMBF	<i>Saisonales Wasserressourcen-Management in Trockenregionen: Praxistransfer regionalisierter globaler Informationen (SaWaM) in the call Globale Ressource Wasser (GROW)</i>	scient. contr.	2017-2020
AF-Consult AG	Review of a meteorological site evaluation report in Vietnam	PI	2014
BMBF	Technologies for climate change mitigation and adaptation in rice-based irrigated cropping systems in Eastern India (HyRiTech)	proposal wr.	canc. after pos. eval.
BMBF	Food Security in Eastern Africa: Steering Rice Productivity Towards Climate Resilience (RICE-EA, Demonstration Project)	PI	2012
BMBF	Land Use and Climate Change Interactions in Central Vietnam (LUCCi)	PI	2011–2015
BMBF	Decadal Prediction of African Rainfall and Atlantic Hurricane Activity (DEPARTURE)	proposal wr.	2011–2015
BMBF	West African Science Service Centre for Climate Change and Adapted Land Use (WASCAL)	scient. contr. proposal wr.	since 2010
StMUG (Bavaria)	Local Refinement and Bias Correction of Climate Scenarios	proposal wr.	2010–2012

Community Services

- Selected as reviewer for research proposals for *Natural Environment Research Council* (NERC) of the UK in the *Science for Humanitarian Emergencies and Resilience* (SHEAR) programme (2016)
- Selected as reviewer for research proposals by the *Scientific Committee of the Earth Sciences and Environment, under the National Foundation for Science and Technology Development* (NAFOSTED), MOST, Vietnam (since 2015)
- Regular referee activities for international journals, such as *Geophysical Research Letters*, *Water Resources Research*, *Water Resources Management*, *Journal of Hydrology*, *Hydrology and Earth System Sciences*, *Environmental Research Letters*, *Ecological Applications*, *International Journal of Global Energy Issues*, *Monthly Weather Review*, *Agricultural and Forest Meteorology*, *International Association of Hydrological Sciences*, *Journal of Earth System Sciences*, *Biogeosciences*, *International Journal of Climatology*
- Co-convener at EGU (2011, 2012)

Memberships

- American Geophysical Union (AGU)
- International Association of Hydrological Sciences (IAHS)

Patrick Laux

Garmisch-Partenkirchen, 10/06/2018