

Curriculum Vitae

Name	Dr A.F. Lutz
First Name	Arthur
Date of Birth	1 March 1985
Nationalities	Dutch, Austrian
Civil Status	Married
Main Disciplines	Physical Geography, Hydrology, Hydrological Modelling, Cryospheric Sciences, Climate Change
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Key Qualifications

Dr A.F. (Arthur) Lutz is a physical geographer with a solid background in hydrology, hydrological modelling, GIS, remote sensing and cryospheric sciences. His expertises include hydrological modelling at scales ranging from large river basins to small catchments, climate change impacts for future water resources, simulation models, data analysis, hydro-meteorological monitoring in the field, and training. Particular focus of his work is on the modelling of climate change impacts for high-mountain hydrology and its linkages to energy and food security. He is mainly educated at Utrecht University, where he completed his Bachelor and Master degree in physical geography. His education focused on land-surface hydrology, land degradation and catchment modelling, remote sensing, and spatial analysis. Besides, he focused on the cryospheric environment by attending specialization courses in glaciology, permafrost & periglacial environments at the University Centre in Svalbard (UNIS), and did an internship in the cryospheric research group at the University of Zurich. Arthur worked for several years as a consultant and GIS-specialist, before joining FutureWater in 2011. He has international working experience in multiple developing countries in Asia, Latin America and Africa. He is author and co-author of multiple peer-reviewed publications. Between 2012 and 2016 he conducted a combined PhD research at FutureWater and Utrecht University resulting in his PhD thesis titled "Impact of climate change on the hydrology of High Mountain Asia". He currently leads multiple international projects on the cutting edge of climate change and water resources.

Educational background

2012 - 2016	PhD, Department of Physical Geography, Utrecht University, The Netherlands Thesis: Impact of climate change on the hydrology of High Mountain Asia
2009	MSc Physical Geography, Utrecht University, The Netherlands Thesis: Chironomid-inferred reconstruction of Lateglacial climate in western Ireland. Specialization: Natural hazards & earth observation, hydrological modelling, quaternary geology & climate change Extracurricular: Glaciology, permafrost & periglacial environments specialization courses at the University Centre in Svalbard (UNIS) in 2008

2007 BSc Earth Sciences, Utrecht University, The Netherlands
 Thesis: Glacier retreat and thawing of permafrost in the European Alps during the past 100 years.
 Main subjects: Hydrology, geomorphology, soil science, GIS, landdegradation, climate change, remote sensing, fluid mechanics, river- and coastal morphodynamics

Professional Experience

2016 – present Senior Hydrologist & Climate Change Expert / Team Leader, FutureWater, Wageningen, The Netherlands

2011 – present Hydrologist, FutureWater, Wageningen, The Netherlands

2012 – 2016 PhD candidate, Department of Physical Geography, Utrecht University
 Thesis: Impact of climate change on the hydrology of High Mountain Asia

2010 – 2011 Consultant and GIS-specialist in archaeology, Vestigia BV, Amersfoort, The Netherlands

Recent assignments and projects

2018 – present Researcher for Wageningen Environmental Research project “Future dependency on melt water for South Asian food production”

2018 – present Researcher in Pan-Third Pole Environment project, Chinese Academy of Sciences

2018 – present Climate Change Specialist for Asian Development Bank Climate Risk Assessment for Arghandab Integrated Water Resource Development Project (Afghanistan)

2018 – present Hydrological modelling support for World Bank project “Climate Change Risk Analysis for Projects in Kenya and Nepal”

2017 – present Supervisor of Early Stage Researcher in EU Marie-Skłodowska-Curie European Training Networks project System-Risk

2018 Climate Change Specialist for C40 for Climate Projections and Risk Assessment for eThekweni Municipality project

2018 Researcher in EU Horizon2020 project Transforming Weather Water data into value-added Information services for sustainable Growth in Africa (TWIGA)

2017 Climate Change Specialist and Green Climate Fund proposal writer for Asian Development Bank Western Uzbekistan Water Supply Development Project

2017 – 2018 Lead researcher for IDRC project on “Impacts of 1.5 °C global temperature increase for the Indus, Ganges and Brahmaputra river basins”.

2016 – 2017 Consultant for Statkraft and ICIMOD in “Hydrological and Climate Change Assessment for Hydropower Development in the Tamakoshi River Basin, Nepal.

2015 – 2018 Water resources/River modelling expert in World Bank project “Strategic Basin Planning for Ganga River Basin in India”

2015 Consultant for Statkraft and ICIMOD in review study on “The impacts of climate change and hydrological regimes in the Himalayas”

2015	Trainer in SPHY glacio-hydrological modelling training course at ICIMOD, Nepal
2015	Trainer in WEAP water allocation modelling training course at ARA-Norte, Mozambique
2014 – 2018	Work Package Lead Researcher in Himalayan Adaptation, Water and Resilience (HI-AWARE) project, led by ICIMOD, as part of IDRC and DFID's Collaborative Adaptation Research Initiative in Africa and Asia (CARIAS) programme.
2014	Consultant/trainer in development of SPHY-model training course including user interface and training manuals at ICIMOD, Nepal
2013 – 2014	Consultant/researcher in ICIMOD funded project to generate high quality gridded meteorological forcing and future water availability scenarios for the Upper Indus basin.
2013 – 2014	Consultant in Mekong River Commission funded project to generate high quality gridded climatic reference data for the Mekong basin
2013 – 2014	Consultant in Partners for Water funded climate change adaptation project in the Rio Magdalena basin, Colombia
2011 – 2013	Consultant and trainer for ICIMOD funded project to generate future water availability scenarios for the Indus, Ganges and Brahmaputra river basins in the framework of the Himalayan Climate Change Adaptation Programme (HICAP).
2012 – 2013	Consultant in ESA funded project to develop operational hydrological flow forecasting system for two pilot catchments with hydropower facilities in Chile (Intogener).
2012 – 2013	Researcher in the EU FP7 project CEOP-AEGIS: an international cooperation project between Europe and Asia to improve knowledge on hydrology and meteorology of the Tibetan Plateau and its role in climate, monsoon and extreme meteorological events.
2011 – 2012	Consultant and trainer for Asian Development Bank project on Water and Adaptation Interventions in Central and West Asia

Overseas Professional Experience

Resident (internship):

University of Zurich, Switzerland, May-July 2009. Project employee in the PermaNET project. Development of a statistical permafrost distribution model for the European Alps. See www.permanet-alpinespace.eu

Non-resident:

China, Colombia, India, Kyrgyzstan, Mozambique, Nepal, Pakistan, Uzbekistan

Trainer Experience

Trainer at FutureWater:

2016	Hydrological modelling using the SPHY-model (Ganga Strategic Planning, Delhi, India)
2015	Water allocation modelling using WEAP (ARA-Norte, Pemba, Mozambique)
2014 and 2015	Glacio-hydrological modeling using the SPHY-model (ICIMOD, Kathmandu, Nepal)

- 2014 Bias correction and downscaling of climate datasets (PMD, Islamabad, Pakistan)
- 2013 and 2012 Hydrological modelling using PCRaster and WEAP (five days ADB regional training course Issyk Kul, Kyrgyzstan)
- 2013 GCM downscaling (ICIMOD, Kathmandu, Nepal)

Trainer at Utrecht University:

- 2009 Landdegradation and hydrological modelling course
- 2009 Geomorphology course
- 2005 – 2009 System Earth course
- 2006 – 2009 Fieldwork Rhine-Meuse delta

PhD / MSc Supervision

- 2017 – present Sonu Khanal, VU University Amsterdam, PhD supervisor
- 2016 – present René Wijngaard, Utrecht University, PhD supervisor
- 2018 Remo van Tilburg, Wageningen University. MSc Internship “Hydrological and Climate Risk Assessment for the Cimanuk River Basin, Indonesia”
- 2016 Froede Vrolijk, Wageningen University. MSc Internship “Tailoring of climate information for the Indus, Ganges and Brahmaputra basins”.
- 2014 Elyor Alimardonov (Uzbekistan), Europe Research Stay Project “Climate Change Impacts on the Hydrology of Fergana Valley”

Conference contributions

- 2018 Two presentations at Water Science for Impact Conference (Wageningen, The Netherlands)
- 2016 Presentation at American Geophysical Union Fall Meeting (San Francisco, USA)
- 2016 Presentation at “1.5 degrees Conference: Meeting the challenges of the Paris Agreement” (Oxford, UK)
- 2016 Co-convenor and presenter in session “Mountains, glaciers, and hydropower in a changing climate” at World Water Week (Stockholm, Sweden)
- 2016 Presentation at “Cryosphere Workshop – from process understanding to impacts and adaptation” (Riederalp, Switzerland)
- 2016 Invited presentation at “International Conference on Climate and Environment Change Impacts on the Indus Basin Waters” (Kathmandu, Nepal)
- 2014 Presentation at “Second International Conference on Cryosphere of the Hindu Kush Himalaya: State of the Knowledge” (Kathmandu, Nepal)
- 2014 Poster presentation at 7th International Scientific Conference on the Global Water and Energy Cycle (GEWEX), The Hague, Netherlands
- 2013 Presentation at international workshop “Terrestrial Water Cycle Observation and Modeling from Space: Innovation and Reliability of Data Products” (Beijing, China)

2012 Poster presentation at international workshop “Glaciers, snow melt and runoff in the Himalayas” in the framework of the EU funded project HighNoon (Kathmandu, Nepal)

Language Skills

Dutch: mother tongue
German: second mother tongue
English: fluent in writing and speech
French: moderate

Computer Skills

Simulation models: SPHY, WEAP
Programming: Python, IDL, R, PHP, SQL, PCRaster, Matlab, HTML,
GIS: ArcGIS, MapInfo, SAGA GIS, QGIS
Remote Sensing: Erdas Imagine, ENVI, Leica photogrammetry suite
Standard software: MS Office, Adobe Creative Suite (InDesign, Photoshop, Illustrator)
Others: Variety of open source alternatives for standard software

Miscellaneous

Reviewer for scientific journals: Climatic Change, Journal of Hydrology, Science Advances, International Journal of Climatology, Hydrological Processes, Hydrology and Earth System Sciences, Arctic Antarctic and Alpine Research, Journal of Applied Meteorology and Climatology, Hydrological Sciences Journal, Nature-Scientific Reports, Water Resources Research

Publications

Peer-reviewed publications

Lutz, A.F., H.W. ter Maat, R.R. Wijngaard, H. Biemans, A. Syed, A.B. Shrestha, P. Wester, W.W. Immerzeel. 2018. South Asian river basins in a 1.5 °C warmer world. Regional Environmental Change. *In press*

Wijngaard R.R., H. Biemans, **A.F. Lutz**, A.B. Shrestha, P. Wester, W.W. Immerzeel. Climate change vs. socio-economic development: Understanding the future South-Asian water gap. Hydrology and Earth System Sciences, 22, 6297-6321. doi: 10.5194/hess-22-6297-2018

Wijngaard R.R., **A.F. Lutz**, S. Nepal, S. Pradhananga, S. Khanal, A.B. Shrestha, W.W. Immerzeel. 2017. Future Changes in Hydro-Climatological Extremes in the Upper Indus, Ganges, and Brahmaputra River Basins. *PLOS One*. 12 e019022.

Kraaijenbrink P.D.A, M.F.P. Bierkens, **A.F. Lutz**, W.W. Immerzeel. 2017. Impact of a 1.5 °C global temperature rise on Asia’s glaciers. *Nature*, 54, 257–260. doi: 10.1038/nature23878

Lutz, A.F., W.W. Immerzeel, P.D.A. Kraaijenbrink, A.B. Shrestha, M.F.P. Bierkens. 2016. Climate change impacts on the upper Indus hydrology: sources, shifts and extremes. *PLOS One*, 11, e0165630.

- Lutz, A.F.**, H.W. ter Maat, H. Biemans, A.B. Shrestha, P. Wester, W.W. Immerzeel. 2016. Selecting representative climate models for climate change impact studies: an advanced envelope-based selection approach. *International Journal of Climatology*, 36, 3988-4005.
- Immerzeel, W. W., N. Wanders, **A.F. Lutz**, J.M. Shea, M.F.P. Bierkens. 2015. Reconciling high altitude precipitation with glacier mass balances and runoff. *Hydrology and Earth System Sciences*, 19, 4673-4687
- Terink, W., **A.F. Lutz**, G.W.H. Simons, W.W. Immerzeel, P. Droogers. 2015. SPHY v2.0: Spatial Processes in HYdrology. *Geoscientific Model Development*, 8, 2009-2034, doi:10.5194/gmd-8-2009-2015.
- Lutz, A.F.**, W.W. Immerzeel, A.B. Shrestha, M.F.P. Bierkens 2014. Consistent increase in High Asia's runoff due to increasing glacier melt and precipitation, *Nature Climate Change*, 4, 587-592
- Lutz, A.F.**, W. W. Immerzeel, A. Gobiet, F. Pellicciotti, M. F. P. Bierkens 2013. Comparison of climate change signals in CMIP3 and CMIP5 multi-model ensembles and implications for Central Asian glaciers, *Hydrology and Earth System Sciences*, 17(9), 3661–3677
- Asch, N. van, **Lutz, A.F.**, Duijkers, M.C.H., Heiri, O., Brooks, S.J., Hoek, W.Z.. 2011. Rapid climate change during the Weichselian Lateglacial in Ireland: chironomid-inferred summer temperatures from Fiddaun, Co. Galway. *Palaeogeography, Palaeoclimatology, Palaeoecology*. Volumes 315–316, pp. 1-11.
- Technical reports and other publications*
- A.F. Lutz**. 2018 Updated Climate Change Projections for eThekweni Municipality. FutureWater Report 178
- Droogers, P., **A.F. Lutz**, J.E. Hunink. 2017. Climate Risk and Vulnerability Assessment for Western Uzbekistan Water Supply. FutureWater Report 171.
- Lutz, A.F.** 2016. Impact of climate change on the hydrology of High Mountain Asia. PhD thesis.
- Lutz, A.F.**, W.W. Immerzeel. 2015. HI-AWARE Research Component 1. Reference Climate Dataset for the Indus, Ganges and Brahmaputra River Basins. FutureWater Report 146.
- Lutz, A.F.**, W.W. Immerzeel, H. Biemans, H. ter Maat, V. Veldore, A.B. Shrestha. 2015. HI-AWARE Research Component 1. Selection of Climate Models for Downscaling. FutureWater Report 145.
- Lutz, A.F.**, W.W. Immerzeel, P.D.A. Kraaijenbrink. 2014. Gridded meteorological datasets and hydrological modelling in the Upper Indus Basin. Final Report. FutureWater report 130.
- Kraaijenbrink, P.D.A., **A.F. Lutz**, P. Droogers. 2014. Climate adaptation Colombia: Climate data scaling and analysis for the Magdalena basin. FutureWater Report 128.

Lutz, A.F., W. Terink, P. Droogers, W.W. Immerzeel, T. Piman 2014. Development of baseline climate data set and trend analysis in the Mekong Basin. FutureWater report prepared for Mekong River Commission.

Lutz, A.F., Immerzeel, W.W. 2013. Water Availability Analysis for the Upper Indus, Ganges, Brahmaputra, Salween and Mekong River Basins. FutureWater report 127.

Immerzeel, W.W., **Lutz, A.F.** 2012. Regional knowledge sharing on climate change scenario downscaling. FutureWater report 116.

Lutz, A.F., Droogers, P., Immerzeel, W.W. 2012. Climate Change Impact and Adaptation on the Water Resources in the Amu Darya and Syr Darya River Basins. FutureWater report 110.

Immerzeel, W.W., **Lutz, A.F.**, Droogers, P. 2011. Climate change impact on the upstream water resources of the Amu and Syr Darya river basins. FutureWater report 107.

Lutz, A.F. 2009. Chironomid-inferred reconstruction of Lateglacial climate in western Ireland. MSc thesis, Utrecht University

Lutz, A.F. 2009. Developing a statistical permafrost distribution model for the European Alps. Internship report, University of Zurich

Lutz, A.F. 2008. Distribution and properties of pingos in Svalbard. Essay Permafrost and periglacial environments, University Centre in Svalbard

Lutz, A.F. 2007. Glacier retreat and thawing of permafrost in the European Alps during the past 100 years. BSc thesis, Utrecht University