

# Dr. Sujan Koirala

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## Current position

2014- *Researcher*, Max Planck Institute for Biogeochemistry, Jena

- Investigate the relationship between carbon and water cycles at the global scale
- Diagnostic modeling of carbon and water cycles

## Interests

Data-driven analysis • Model-data fusion • Machine Learning • Carbon-water cycle coupling • Global land surface modeling • Flood, drought & water resources • Groundwater resources • Ecosystem services

## Technical Skills

Python • FORTRAN • MATLAB • UNIX shell scripting and system administration • d3 visualizations (Javascript) • Web development (wiki, wordpress, weebly, and wix) • GIS (Q and GDAL) • LaTeX • Version control with git

## Languages

English (Native) • German (Basic) • Japanese (Intermediate) • Nepalese (Native) • Hindi (Native)

## Experiences

2011-2014 Postdoctoral Researcher, The University of Tokyo, Japan  
2010-2011 Postdoctoral Researcher, Tokyo Institute of Technology, Japan  
2006-2007 Water Resources Engineer, Pioneer Consulting Engineers, Nepal  
2006 Field Researcher, The University of Tokyo, Tokyo, Japan

## Academic Degrees

- 2010 PhD in Civil Engineering, The University of Tokyo, Japan  
2006 MSc in Water Resources, Institute of Engineering, Nepal  
2003 BACHELORS in Civil Engineering, Institute of Engineering, Nepal

## Academic Honors & Awards

- 2011 Nepal Bidhya Bhusan 'Ka/A', Government of Nepal  
2011 Nepal Bidhya Bhusan 'Kha/B', Government of Nepal  
2009 The Chancellor Gold Medal, Tribhuvan University, Nepal  
2009 The Ram Prasad Manandhar Medal, Tribhuvan University, Nepal  
2007 MEXT Scholarship for Ph.D., Government of Japan  
2006 The Water Resources Excellence Award, Institute of Engineering, Nepal.

## Selected Publications

Full list of publications is [here](#).

### FIRST-AUTHORED

- 2017 **Koirala, S.**, M. Jung, et al., Global distribution of groundwater-vegetation spatial covariation, *Geophys. Res. Lett.*, 44, doi:10.1002/2017GL072885.  
2014 **Koirala, S.**, Y. Hirabayashi, M. Roobavannan, and S. Kanae, Global assessment of agreement among streamflow projections using CMIP5 model outputs, *Environmental Research Letters*, 9(6), 064017, 2014.  
2014 **Koirala, S.**, P. J.-F. Yeh, Y. Hirabayashi, S. Kanae, and T. Oki, Global-scale land surface hydrologic modeling with the representation of water table dynamics, *Journal of Geophysical Research Atmosphere*, 119, doi:10.1002/2013JD020398, 2014.  
2012 **Koirala, S.**, H. Yamada, P. J.-F. Yeh, T. Oki, Y. Hirabayashi, and S. Kanae, Global simulation of groundwater recharge, water table depth, and low flow using a land surface model with groundwater representation, *Annual Journal of Hydraulic Engineering*, 56, 2012.  
2010 **Koirala, S.**, P. J.-F. Yeh, T. Oki, and S. Kanae, Fully dynamic groundwater representation in the MATSIRO land surface model, *Annual Journal of Hydraulic Engineering*, 54, 2010.

### CO-AUTHORED

- 2018 Lim, W. H., D. Yamazaki, **S. Koirala**, Y. Hirabayashi, S. Kanae, S. J. Dadson, J. Hall, and F. Sun, Long-term changes in global socioeconomic benefits of flood defenses and residual risk based on CMIP5 climate models, *Earth's Future*, <https://doi.org/10.1002/2017ef000671>  
2017 Trautmann, T., **S. Koirala**, N. Carvalhais, A. Eicker, M. Fink, C. Niemann, and M. Jung, Understanding terrestrial water storage variations in northern latitudes across scales, *Hydrology and Earth System Sciences Discussions*, 1-34, doi:10.5194/hess-2017-690.  
2015 Ikeuchi, H., Y. Hirabayashi, D. Yamazaki, M. Kiguchi, **S. Koirala.**, T. Nagano, A. Kotera, and S. Kanae, Modeling complex flow dynamics of fluvial floods exacerbated by sea level rise in the Ganges- Brahmaputra-Meghna Delta, *Environmental Research Letters*, 10(12): 124011, 2015.  
2015 Pokhrel, Y., **S. Koirala.**, P. J.-F. Yeh, N. Hanasaki, L. Longuevergne, S. Kanae, and T. Oki, Incorporation of Groundwater Pumping in a Land Surface Model with the Representation of Human Impacts, *Water Resources Research*, 51(1), 78-96, 2015.

- 2014 Yoshikawa S., A. Yanagawa, Y. Iwasaki, P. Sui, **S. Koirala.**, K. Hirano, A. Khajuria, R. Mahendran, Y. Hirabayashi, C. Yoshimura, and S. Kanae, Illustrating a new global-scale approach to estimating potential reduction in fish species richness due to flow alteration, *Hydrol. Earth Syst. Sci.*, 18, 621-630, 2014.
- 2013 Hirabayashi, Y., R. Mahendran, **S. Koirala.**, L. Konoshima, D. Yamazaki, S. Watanabe, H. Kim and S. Kanae, Global flood risk under climate change, *Nature Climate Change*, 3(9), 816-821, 2013.
- 2013 van Huijgevoort M., P. Hazenberg, H. van Lanen, R. Teuling, D. Clark, S. Folwell, S. Gosling, N. Hanasaki, J. Heinke, **S. Koirala.**, T. Stacke, F. Voss, J. Sheffield, R. Uijlenhoet, Global multi-model analysis of drought in runoff for the second half of the 20<sup>th</sup> century, *J. Hydrometeorol.*, 14, 1535-1552, 2013.
- 2013 Hirabayashi Y., Y. Zhang, S. Watanabe, **S. Koirala.** and S. Kanae, Projection of glacier mass changes under a high-emission climate scenario using the global glacier model HYOGA2, *Hydrological Research Letters*, 6-11, 2013.
- 2012 Gudmundsson, L., L. M. Tallaksen, K. Stahl, E. Dumont, D.B. Clark, S. Hageman, N. Bertrand, D. Gerten, N. Hanasaki, J. Heinke, F. Voss, **S. Koirala.**, Comparing large-scale hydrological model simulations to observed runoff percentiles in Europe, *Journal of Hydrometeorology*, 13, 604-620, 2012.
- 2012 Pokhrel, Y., N. Hanasaki, **S. Koirala.**, J. Cho, P. J.-F. Yeh, H. Kim, S. Kanae, and T. Oki, Incorporating anthropogenic water regulation modules into a land surface model, *Journal of Hydrometeorology*, 13, 255-269, 2012.
- 2011 Ingjerd, H., **S. Koirala.**, and Co-authors, Multi-model estimate of the global water balance: Setup and first results, *Journal of Hydrometeorology*, Vol. 12, 869-884, October, 2011.

#### USER'S MANUAL AND TECHNICAL GUIDE

- 2011- **S. Koirala**, and J. Nelson, Python in Earth Science,  
<http://hydro.iis.u-tokyo.ac.jp/~sujan/docs/PythonInEarthScience.pdf>.
- 2012 **S. Koirala**, A beginner's guide to UNIX,  
[http://hydro.iis.u-tokyo.ac.jp/~sujan/docs/unixbeginnermanual\\_v-1-1.pdf](http://hydro.iis.u-tokyo.ac.jp/~sujan/docs/unixbeginnermanual_v-1-1.pdf).