

PARMESHWAR DIGAMBER UDMALE, Ph.D.

Affiliated Faculty & Research Fellow

Disaster Preparedness, Mitigation and Management &
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1. ACADEMIC QUALIFICATIONS

- **2012 - 2015 Doctor of Philosophy in Integrated River Basin Management**,
University of Yamanashi, Japan (CGPA 3.50/4)
Supervisor: Prof. Hiroshi ISHIDAIRA
- **2009 - 2012 Master of Engineering in Water Engineering and Management**
Asian Institute of Technology, Thailand (CGPA 3.52/4)
Supervisor: Prof. Sangam SHRESTHA
- **2010 Research Assistant** (under an exchange semester during Master of Engineering)
Technische Universität Braunschweig, Germany
- **2005 - 2009 Bachelor of Technology in Agricultural Engineering**
Marathwada Agricultural University, India (CGPA 8.64/10)

2. RESEARCH INTEREST

Water (Droughts), Agriculture, and Society; Disaster Risk Research (Floods and Droughts); Drought Monitoring and Impact Assessment; Water and Rural Livelihoods; Sustainable Development Goals (SDGs).

3. RESEARCH EXPERIENCE

(6) Oct 2020 - present

Affiliated Faculty

Disaster Preparedness, Mitigation and Management &
Department of Development and Sustainability, Asian Institute of Technology, Thailand.

(5) Feb 2020 - present

Research Fellow

UKRI GCRF Living Deltas Hub

Department of Development and Sustainability, Asian Institute of Technology, Thailand.

Responsibilities (multiple): Conceptualizing and quantifying the risks to society from hydro-meteorological hazards; Generating Index-based tools to assess risks and resilience of communities vulnerable to multiple hazards (cascading impacts of hazards); Analyzing options for risk governance mechanisms to enhance delta community resilience in the face of natural and human-caused disasters, and re-formulate integrated risk drivers; Assisting the delta partners in designing the primary survey data collection efforts; Leading the design and delivery of knowledge products, including research papers, Contributing to the development of a guiding document with and for communities to monitor SDG1 progress in deltas; Contributing to the analysis of SDG interactions, etc.

(4) Aug 2019 - Feb 2020 (6 months)

Senior Research Associate

Water Engineering and Management, Asian Institute of Technology, Thailand.

Responsibilities (multiple): Preparing a draft of IWRM textbook; Assisting the implementation of research project activities; Networking and liaison with research or project partners; Preparing research proposals and other (e.g., workshop, training courses, etc.) reports; Assisting in the organization of workshops, training courses, and similar activities; Assisting preparation of scientific articles for publication and supervise MS and PhD students for their research design and implementation.

(3) Nov 2016 - July 2019 (2 years and 8 months)

Project-Specific Researcher (8 months)

Department of Civil and Earth Resources Engineering,
Graduate School of Engineering, Kyoto University, Japan.

Project: Flood Hazard Mapping in Japan and Global-Scale Drought Risk Assessment (Research support to Secretary, UNESCO IHP Regional Committee for Asia and the Pacific).

Supervisor: Prof. Yasuto TACHIKAWA

and

Nov 2016 - Nov 2018 (2 years)

JSPS Postdoctoral Research Fellow

Department of Civil and Earth Resources Engineering,
Graduate School of Engineering, Kyoto University, Japan.

Project: Modeling implications of drought impacts to the regional and global food security in a changing climate.

A central role in project proposal development for SATRESP(Japan-India) collaborative project in India - Managing the Water-Energy-Food Nexus in India under Climate Change: Smart Technological and Institutional Innovations for Improving the Livelihood of Vulnerable Farmers in Semi-Arid Areas of Maharashtra State (Budget 4.5 million USD/five years).

Supervisor: Assoc. Prof. Yutaka ICHIKAWA

and

Visiting Researcher (Mar 2018)

Indian Institute of Technology, Bombay, Mumbai, India
Defining national-scale drought in India

Visiting Researcher (Feb-Mar 2017)

Technische Universiteit Delft, Netherlands

Agent-Based Modeling (ABM): Problem formulation & actor identification; System identification & decomposition for ABM.

(2) Jun 2016 - Nov 2016 (6 months)

Project Researcher

Research Institute for Humanity and Nature (RIHN), Kyoto, Japan.

Project: Human-Environmental Security in Asia-Pacific Ring of Fire: Water-Energy-Food Nexus (WEFN) Project. As a part of Group 5 (the interdisciplinary team) of the WEFN project. He was responsible for developing qualitative and quantitative methods including integrated indices of WEFN to evaluate human environmental security. He was working in close collaboration with stakeholder groups at sites in Japan, the Philippines, Indonesia, USA, and Canada.

Supervisor: Prof. Makoto TANIGUCHI

(1) Oct 2015 - Jun 2016 (8 months)

Postdoctoral Researcher

Interdisciplinary Research Centre for River Basin Environment, University of Yamanashi, Kofu, Japan.

Project: A team member of SATREPS (JST/JICA) project in Nepal: Hydro-microbiological Approach for Water Security in Kathmandu Valley, Nepal.

Supervisor: Assoc. Prof. Hiroshi ISHIDAIRA

4. PROFESSIONAL TRAININGS

- 1) **TERRA School:** Transdisciplinarity for Early caReer Researchers in Asia School organized by Regional Center for Future Earth in Asia, RIHN, Kyoto, Japan (Dec 9-13, 2019).
- 2) **Training Course** on “Agent-Based Modelling with GAMA (<http://gama-platform.org/>)” at TU Delft, The Netherlands (Mar 6 - 8, 2017)
- 3) **Training Course** by International Precipitation Working Group “New and emerging remote-sensing technologies for precipitation data sets, their applications, and validation” at Tsukuba, Japan (Nov 17-19, 2014)
- 4) **An internship** titled “Drought Monitoring and Management: India versus Australia Context” at School of Environmental and Life Sciences, University of Newcastle, Australia (Mar 9-29, 2014)
- 5) **International Summer School** in Environmental Modelling held at TU Braunschweig, Germany, supported by DAAD (Aug 23 - Sept 2, 2010)

5. AWARDS AND RECOGNITIONS

- 1) Japan Society for the Promotion of Science (JSPS) Postdoctoral Fellowship 2016-2018.
- 2) Japanese Government (MEXT) Scholarship (2012-2015) for doctoral studies at University of Yamanashi, Kofu, Japan.
- 3) World Meteorological Organization (WMO) as a young professional research support to attend The World Weather Open Science Conference, Montreal, Canada (Aug 16-21, 2014).
- 4) Government of Maharashtra (India) Scholarship for Master of Engineering (Aug 2009 - Jan 2012).
- 5) Asian Institute of Technology (Thailand) Fellowship for Master of Engineering (Aug 2009 - Jan 2012).
- 6) DAAD (German Academic Exchange Program) Scholarship for an exchange semester at TU Braunschweig, Germany during Master of Engineering (Jun - Sept 2010).
- 7) University Merit List First Rank for the discipline Bachelor of Technology in Agricultural Engineering at Marathwada Agricultural University, Parbhani, India (2009).
- 8) Qualified Graduate Aptitude Test in Engineering (GATE-2009) - Eligibility test for getting admission for master’s degree in Indian Institute of Technologies in 2009.

6. MEMBERSHIP

- 1) International Association of Hydrological Sciences (IAHS)
- 2) Japan Society of Civil Engineers (JSCE)

7. LIST OF RESEARCH GRANTS

- 1) Project Title: Risk perception and implication on risk governance for dual disasters Cyclone Amphan and COVID-19 in Kolkata Metropolitan Area (KMA)
Research Category: Rapid Response Fund, Living Deltas Hub, UKRI GCRF
Project Period: 2020-10-01 – 2021-09-30.
Budget Amount: GBP 6,505
- 2) Research Seminar Title: Managing the Water-Energy-Food Nexus in Semi-arid Areas of India under Climate Change (Member)
Research Category: JSPS (Japan) - DST (India) Joint Research Seminar
Project Period: 2020-06-17 – 2021-03-31.
Budget Amount: JPY 1,500,000
- 3) Research Seminar Title: Knowledge sharing workshop on adopting Water-Energy-Food Nexus Approach (Co-PI)
Research Category: JSPS (Japan) - DST (India) Joint Research Seminar
Project Period: 2017-09-05 – 2017-09-9.

Budget Amount: JPY 1,400,000

- 4) Project Title: Modeling implications of drought impacts to the regional and global food security in a changing climate (PI)
Research Category: Grant-in-Aid for JSPS Fellows
Project Period: 2016-11-07 – 2019-03-31.
Budget Amount: JPY 2,200,000.

8. LIST OF PUBLICATIONS

Google Scholar (Citations = 390+; h-index = 8)
Scopus (Citations = 224; h-index = 7) dated October 17, 2020.
<https://www.scopus.com/authid/detail.uri?authorId=56401194100>

8.1 Published peer-reviewed journal articles (Journal impact factor (IF) 2019 are given in []):

- 1) Jhong, B.C., Tachikawa, Y., Tanaka, T., **Udmale, P.**, and Tung, C.P. (2020). A Generalized Framework for Assessing Flood Risk and Suitable Strategies under Various Vulnerability and Adaptation Scenarios: A Case Study for Residents of Kyoto City in Japan. *Water* 12(9), 2508. **[IF: 2.544]**
- 2) **Udmale P.**, Ichikawa, Y., Shaowei, N., Shrestha, S., and Pal, I. (2020). A statistical approach towards defining national-scale meteorological droughts in India using crop data, *Environmental Research Letters*, 15, 094090. **[IF:6.096]**
- 3) **Udmale P.**, Pal I., Szabo S., Pramanik M., and Large A. (2020). Global food security in the context of COVID-19: A scenario-based exploratory analysis. *Global Food Security. Progress in Disaster Science*, 100120, [Elsevier/SCOPUS listed, IF:NA]
- 4) Pramanik M., **Udmale P.**, Bhist P., Chowdhury K, Szabo S., and Pal I. (2020). Climatic factors influence the spread of COVID-19 in Russia *International Journal of Environmental Health Research*
<https://doi.org/10.1080/09603123.2020.1793921> **[IF: 1.916]**
- 5) Shanmugam M., **Udmale, P.**, Shrestha S., Baghel, T.; Doshi S., Narasimhan, B. and Kumar S. (2020). A new trend function-based regression kriging for spatial modeling of groundwater hydraulic heads under the sparse distribution of measurement sites. *Acta Geophysica*, 68: 751-772. **[IF: 1.395]**
- 6) Jiang S., Ning S., Cao X., Jin J., Song F., Yuan X. Zhang L., Xu X, and **Udmale P.D.** (2019). Optimal Water Resources Regulation for the Pond Irrigation System Based on Simulation - A Case Study in Jiang-Huai Hilly Regions, China. *International Journal of Environmental Research and Public Health* 16 (15), 2717. **[IF: 2.468]**
- 7) Thapa B.R, Ishidaira H., Gusyev M., Pandey, V.P., **Udmale P.D.**, Hayashi M., and Shakya N.M. (2019). Implications of the melamchi water supply project for the Kathmandu valley groundwater system. *Water Policy*, 21 (S1): 120–137 **[IF: 1.093]**
- 8) Plangoen P. and **Udmale P. D.** (2017). Impacts of Climate Change on Rainfall Erosivity in the Huai Luang Watershed, Thailand. *Atmosphere* 2017, 8, 143. **[IF:2.046]**
- 9) Ning S., Song, F., **Udmale P.D.**, Thapa, B.R. and Ishidaira, H. (2017). Error Analysis and Evaluation of the Latest GSDMap and IMERG Precipitation Products over Eastern China. *Advances in Meteorology*, Vol. 2017, Article ID 1803492, 16 pages. **[IF: 1.491]**
- 10) Deb P., Tran D. and **Udmale P. D.** (2016). Assessment of the impacts of climate change and brackish irrigation water on rice productivity and evaluation of adaptation measures in Ca Mau province, Vietnam. *Theoretical and Applied Climatology* 125, 641. **[IF: 2.882]**
- 11) Bui T. H., Ishidaira, H. and **Udmale P. D.** (2016). Evaluation of Appropriate Precipitation Data for Streamflow Simulation in Data Sparse Catchments. *Global Environment Research* 24, 13-20. **[IF:NA]**
- 12) **Udmale P. D.**, Ichikawa Y., Nakamura T., Shaowei N., Ishidaira H. and Kazama, F. (2016). Rural drinking water issues in India's drought-prone area: A case of Maharashtra State. *Environmental Research Letters* 11 (7), 074013. **[IF:6.096]**
- 13) **Udmale P.D.**, Ishidaira H., Thapa B.R., and Shakya N.M. (2016). The status of domestic water demand

- supply deficit in Kathmandu Valley, Nepal. *Water* 8(5), 196. [IF: 2.544]
- 14) Shaowei N., Ishidaira H., **Udmale P. D.**, and Ichikawa Y. (2015). Remote sensing-based analysis of recent variations in water resources and vegetation of a semi-arid region. *Water* 7(11):6039-6055. [IF: 2.544]
 - 15) **Udmale P. D.**, Ichikawa Y., Manandhar S., Ishidaira H., Kiem, A., Shaowei, N. and Panda, S. N. (2015). How did the 2012 drought affect rural livelihoods in vulnerable areas? Empirical evidence from India. *International Journal of Disaster Risk Reduction*, vol. 13, pp. 454-469 13:454-469. [IF: 2.896]
 - 16) **Udmale P. D.**, Ichikawa Y., Manandhar S., Ishidaira H., & Kiem A. S. (2014). Farmers' perception of drought impacts, local adaptation and administrative mitigation measures in Maharashtra State, India. *International Journal of Disaster Risk Reduction* 10:250-269. [IF: 2.896]
 - 17) **Udmale P. D.**, Shrestha S., Ichikawa Y. & Manandhar S. (2014) Assessing groundwater resources and it's sustainability in drought prone area of India. *Journal of Japan Society of Civil Engineers, Ser. B1 (Hydraulic Engineering)*, 58, 235-240. [IF:NA]
 - 18) **Udmale P. D.**, Ichikawa Y., Kiem A. and Panda S. N. (IF:2014). Drought impacts and adaptation strategies for agriculture and rural livelihood in the Maharashtra State of India. *The Open Agriculture Journal* 8, 41-47. [IF:NA]

8.2 Published reports/Chapters

- 1) Lawford R., Endo A., Pahl-Wostl C., **Udmale P.** (2016). Proceedings of the 3rd Future Earth Water-Energy-Food Nexus Workshop "Governance transformation and integrated information for the W-E-F Nexus", 4-6 April 2016, Kyoto, Japan.
- 2) **Udmale P.**, Tachikawa Y., Kobayashi, K. and Sayama T. (2019). Flood Hazard Mapping in Japan (a chapter for UNESCO IHP Report – in publication).

8.3 List of conference presentations

- 1) Udmale P.D. and Ichikawa Y. Analysis of national-scale drought impacts on crop production and its propagation through a country's food balance. Kyoto University International Symposium on "Food & Sustainability". Oct. 29-30, 2018, Kyoto, Japan [Poster].
- 2) Udmale P.D. and Ichikawa Y. Developing a new methodology to define national droughts. The 8th International Water Resources Management Conference of International Association of Hydrological Sciences, Jun. 13-15, 2018, Beijing, China [Oral presentation].
- 3) Udmale, P. D., Ichikawa, Y. Assessing Impacts of National Scale Droughts on Cereal Production. American Geophysical Union 2017, Dec. 11-15, 2017, New Orleans, USA [Poster].
- 4) Udmale, P. D., Ichikawa, Y. and Ishidaira, H.: How does drought affect the rural economy of India? Empirical findings highlighting the severity of drought impacts. International Conference on DROUGHT: Research and Science-Policy Interfacing, Mar. 10-14, 2015. Valencia, Spain. [Poster]
- 5) Udmale, P. D., Ichikawa, Y. and Ishidaira, H.: Assessment of drought impacts, adaptations and mitigation measures in Maharashtra State, India. The World Weather Open Science Conference, Aug. 16-21, 2014. Montreal, Canada. [Oral presentation]
- 6) Udmale, P. D., Shrestha, S., Ichikawa, Y. and Manandhar, S.: Assessing groundwater resource and it's sustainability in drought prone area of India. The 58th Conference on Hydraulic Engineering, Mar. 4-6, 2014. Kobe, Japan. [Oral presentation]
- 7) Udmale, P. D. and Ichikawa, Y.: Farmers' perception of drought impacts and adaptation practices: Perspectives from Maharashtra State, India. The 1st International Forum on Asian Water Environment Technology. Dec. 18 - 20, 2013. Delhi, India. [Oral presentation].