

KEI YOSHIMURA

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EDUCATION

- February 2006 University of Tokyo, Tokyo, Japan
Ph.D. Civil Engineering
Thesis: *A Study on Systems of the Global Hydrologic Cycles with Stable Water Isotopic Information.*
Committee: Professors Taikan Oki (chair), Naohiro Yoshida, Toshio Koike, Takeshi Ishihara, Kung Yang, Toshiharu Kishi, and Masaki Sato
- September 2002 M.S. Civil Engineering
March 2000 B.S. Civil Engineering
University of Durham Business School, Durham, UK
- September 2001 to March 2002 Attended all M.A. Management classes as an exchange student

PROFESSIONAL EXPERIENCE

- August 2008 to present Scripps Institution of Oceanography, UCSD, La Jolla, CA
Assistant Project Scientist: research on stable water isotope circulation, global and regional atmospheric modeling, data assimilation, carbon cycle modeling, dynamical downscaling, past and future changes in meso-scale climate and extremes.
(*Visiting Scholar* during June 2006 to May 2008)
- October 2002 to July 2008 Institution of Industrial Science, University of Tokyo, Tokyo, Japan
Assistant Professor: research on stable water isotope circulation, modeling and impact assessment of terrestrial and hydrological processes, flood risk analysis and early warning.
(*Research Associate* during May 2004 to March 2007)
(*Technical Research Fellow* during October 2002 to April 2004)
- October 2006 to present Japan Agency for Marine-Earth Science and Technology, Yokohama, Japan
Invited Researcher: research on relationship between water isotopes and Asian Monsoon, typhoon mechanism, tropical convective precipitation.

TEACHING EXPERIENCE

- May 2004 to July 2008 Institution of Industrial Science, University of Tokyo, Tokyo, Japan
Taught two courses, *Advanced Hydrology* and *Environmental Restoration, Rehabilitation and Mitigation*, for graduate students with other professors; developed seminars and provided lectures for undergraduate students; research mentor for 6 undergraduate and 17 graduate students of diverse international backgrounds.
- August 2008 to present Scripps Institution of Oceanography, UCSD
Co-advising a PhD student (Kyunghee Seol at Yonsei Univ.), Research mentor for several graduate students in SIO and Univ. Tokyo.

SERVICE

- 2008 to present *Associate Editor* for Hydrological Research Letters.
2005 *Session Convener* on Isotope Hydrology, 2005 Asia Oceania Geosciences Society annual meeting, Singapore.

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- 2003-2006 *Open House Coordinator* for Hydrology and Water Resources Lab. in IIS/UT.
Reviewer for *Journal of Geophysical Research*, *Geophysical Research Letters*, *Journal of Climate*, *Climate of the Past*, *Atmospheric Chemistry and Physics*, *Journal of Meteorological Society of Japan*, *Hydrological Processes*, *Global and Climate Change*, *Water Resources Research*, *Advances in Atmospheric Sciences*, *Advances in Geosciences*, *Terrestrial, Atmospheric and Oceanic Sciences*.

INTERNATIONAL COLLABORATIVE RESEARCH ACTIVITIES

- 2008 to present *Co-chair*: The second phase of the Stable Water Isotope Intercomparison Group (SWING2)
2007 to present *Project Planning Committee Member*: Coordinated Energy and Water Cycle Observations Project (CEOP)
2004 to 2007 *Core Member*: Stable Water Isotope Intercomparison Group (SWING)
2004 to 2006 *Core Member*: Isotopes in Project for Intercomparison of Land-surface Parameterization Schemes (iPILPS)

HONORS AND AWARDS

- August 2008 *Thesis Award for Young Scientists* from Japan Society of Hydrology and Water Resources Engineering.
April 2007 Invited for ICSU's 75th anniversary conference "Global Scientific Challenges: Perspectives from Young Scientists" as one of 142 young scientists, from 71 countries.
June 2006 *Postdoctoral Fellowships for Research Abroad* from Japan Society for the Promotion of Science.
March 2004 *Thesis Award for Young Scientists* from Japan Society of Civil Engineering.
September 2002 *Furuichi Award* (upper 10% of master course graduates) from Civil Engineering Department, University of Tokyo Graduate School.
August 2001 *Excellent Poster Presentation Award* from Japan Society of Hydrology and Water Resources.

GRANTS

- Preparation *Principal Investigator*: "Isotope Reanalysis: Data assimilation of vapor isotope (HDO) with isotopic AGCM and ensemble Kalman filter," National Science Foundation, to be submitted.
Pending *Co-PI*: "Is the current drought affecting the Western US unique from earlier droughts of the 20th Century and therefore attributable to anthropogenic climate change?" NOAA/CPO, \$450,000, 2010-2013.
Pending *Co-PI*: "Study of a new method to downscale ensemble average seasonal forecast" NOAA/CPO, \$375,000, 2010-2013.
2006 *Principal Investigator*: "Study on processes of Earth hydrological cycle with stable water isotopes," Japan Society for the Promotion of Science, \$88,000, June 2006 to May 2008.
2005 *Principal Investigator*: "Development of a stable water isotope circulation model with land surface process," Japan Society for the Promotion of Science, \$30,000, April 2005 to May 2006.

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PUBLICATIONS

Published work:

- Frankenberg, C., K. Yoshimura, I. Aben, A. Butz, N. Deutscher, D. Griffith, F. Hase, J. Notholt, M. Schneider, H. Schrijver, T. Warneke, T. Röckmann, 2009: Dynamic processes governing lower-tropospheric HDO/H₂O ratios as observed from space and ground, *Science*, in print.
- Abe, O., S. Agata, M. Morimoto, M. Abe, K. Yoshimura, T. Hiyama, and N. Yoshida, 2009: A 6.5-year continuous record of sea surface salinity and seawater isotopic composition at Harbor of Ishigaki Island, southwest Japan, *Isotopes in Environmental and Health Studies*, in print.
- Yoshimura, K. and M. Kanamitsu, 2009: Specification of external forcing for regional model integrations, *Mon. Wea. Rev.*, **137**, 1409–1421.
- Yoshimura, K. and M. Kanamitsu, 2008: Dynamical global downscaling of global reanalysis, *Mon. Wea. Rev.*, **136**, 8, 2983-2998.
- Yoshimura, K., M. Kanamitsu, D. Noone, and T. Oki, 2008a: Historical isotope simulation using reanalysis atmospheric data, *J. Geophys. Res.*, **113**, doi:10.2989/2008JD010074.
- Uemura, R., Y. Matsui, K. Yoshimura, H. Motoyama, N. Yoshida, 2008: Evidence of deuterium excess in water vapour as an indicator of ocean surface conditions, *J. Geophys. Res.*, **113**, doi:10.2989/2008JD010209.
- Fudeyasu, H., K. Ichiyanagi, A. Sugimoto, K. Yoshimura, A. Ueta, M.D. Yamanaka, K. Ozawa, 2008: Isotope ratios of precipitation and water vapor observed in Typhoon Shanshan, *J. Geophys. Res.*, **113**, D12113, doi:10.1029/2007JD009313.
- Yoshimura, K., T. Sakimura, T. Oki, S. Kanae, and S. Seto, 2008b: Toward flood risk prediction: a statistical approach using a 29-year river discharge simulation over Japan, *Hydrol. Res. Lett.*, **2**, 22-26.
- Islam, M.S., T. Oki, S. Kanae, N. Hanasaki, Y. Agata, K. Yoshimura, 2007: A grid-based assessment of global water scarcity including virtual water trading, *Water Resour. Manag.*, **21**(1), 19-33.
- Yoshimura, K., S. Miyazaki, S. Kanae, and T. Oki, 2006: Iso-MATSIRO, a land surface model that incorporates stable water isotopes, *Glob. Planet. Change*, **51**, 90-107.
- Henderson-Sellers, A., M. Fischer, I. Aleinov, K. McGuffie, W.J. Riley, G. Schmidt, K. Sturm, and K. Yoshimura, 2006: Stable water isotope simulation by current land surface schemes: Results of iPILPS phase 1, *Glob. Planet. Change*, **51**, 34-54.
- Ichiyanagi, K., K. Yoshimura, and M.D. Yamanaka, 2005: Validation of changing water origins over Indochina during the withdrawal of the Asian monsoon using stable isotopes, *Sci. Onl. Let. Atmos.*, **1**, 113-116.
- Shinoda, T., H. Uyeda, and K. Yoshimura, 2005: Structure of moist layer and sources of water over the southern region far from the Meiyu/Baiyu front, *J. Meteor. Soc. Japan*, **83**, 137-152.
- Yoshimura, K., T. Oki, and K. Ichiyanagi, 2004: Evaluation of two-dimensional atmospheric water circulation fields in reanalyses by using precipitation isotopes databases. *J. Geophys. Res.*, **109**(D20), D20109, doi:10.1029/2004JD004764.
- Yoshimura, K., T. Oki, N. Ohte, and S. Kanae, 2004: Colored moisture analysis estimates of variations in 1998 Asian monsoon water sources, *J. Meteor. Soc. Japan*, **82**, 1315-1329.
- Yoshimura, K., T. Oki, N. Ohte, and M. Koike, 2003: Development and verification of a vertical integrated two dimensional water isotope circulation model, *J. Hydrosoci. and Hydraul. Eng.*, **21**, 25-35.
- Yoshimura, K., T. Oki, N. Ohte, and S. Kanae, 2003: A quantitative analysis of short-term ¹⁸O variability with a Rayleigh-type isotope circulation model. *J. Geophys. Res.*, **108**(D20), 4647, doi:10.1029/2003JD003477.

Work in progress:

- Yoshimura, K. and M. Kanamitsu, Regional downscaling for stable water isotopes: A case study of an Atmospheric River event, submitted to *J. Geophys. Res.*
- Kanamitsu, M., K. Yoshimura, Y.-B. Yhang and S.-Y. Hong, Errors of interannual variability and

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multi-decadal trend in dynamical regional climate downscaling and its corrections, submitted to *J. Climate.*, in revision.

Miller, N.L., J. Jin, N. J. Schlegel, M. A. Snyder, T.O'Brien, L. C. Sloan, P.B. Duffy, H. Hidalgo, H. Kanamaru, M. Kanamitsu, K. Yoshimura, D.R. Cayan, An analysis of simulated California climate using multiple dynamical and statistical techniques, submitted to *California Energy Committee*, in revision.

Schneider, M., K. Yoshimura, F. Hase, and T. Blumenstock, Long-term intercomparison of simulated and measured H_2^{16}O and $\text{HDO}/\text{H}_2^{16}\text{O}$ profiles and its potential for water cycle research, submitted to *Atmos. Chem. Phys.*

RECENT CONFERENCE PRESENTATIONS

- 9th RSM workshop, “Progress in numerics: Spectral nudging & incremental interpolation”, Maui, Aug. 3-6, 2009.
- RCM2009, “Incremental interpolation of coarse global forcings for regional model integrations”, Lund, Sweden, May 4-8, 2009.
- Winter 09 TES Science Team Meeting, “Nudged isotope AGCM simulation and its comparison with TES and SCIAMACHY isotope retrievals”, Boulder, 23-25 Feb. 2009.
- 2008 AGU Fall Meeting, “Study on data assimilation of vapor isotope with the ensemble Kalman filter”, San Francisco, Dec. 16-20, 2008.
- SWING2 GNIP-Dynscape meeting, “Isotope-incorporated global and regional spectral models”, the IAEA headquarters, Vienna, Nov. 16-19, 2008.
- International Implementation Planning Meeting for CEOP, “Activity report and planning of Isotope Cross Cut Studies (ICCS)”, Geneva, Sep. 15-17, 2008.
- Isoscapes 2008, “Introduction of Isotope Reanalysis”, Santa Barbara, California, April 7-10, 2008.
- 3rd WCRP International Conference on Reanalysis, “Global dynamical downscaling of reanalysis with bias correction”, Tokyo, Jan 28 - Feb 1, 2008.
- 3rd WCRP International Conference on Reanalysis, “Global simulation of stable water isotope circulation using Iso-GSM and spectrum nudging”, Tokyo, Jan 28 - Feb 1, 2008.
- 2007 AGU Fall Meeting, “Dynamical downscaling technique for global climate model”, San Francisco, Dec 12-16, 2007.
- 2007 AGU Fall Meeting, “Accurate reproduction of daily to interannual variations of stable water isotopes using Iso-GSM and spectral nudging technique”, San Francisco, Dec 12-16, 2007.
- International Symposium on Water Isotopes and Climates, “Introduction of Iso-GSM”, Nagoya, Japan, 1-4 December, 2007.
- 32nd Climate Diagnostics and Prediction Workshop, “Development of a spectral nudging technique for global dynamical downscaling”, Tallahassee, Oct 22-26, 2007.