Shunji Kotsuki, Ph. D. (小槻 峻司)

Research Scientist
Data Assimilation Research Team
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Professional Experience

2019/04–Present **Research Scientist**
Prediction Science Laboratory, RIKEN Cluster for Pioneering Research, Kobe, Japan

2018/05–Present **Affiliate Associate Professor**
Graduate School of Science, Kyoto University, Japan

2018/04–Present **Research Scientist**
Data Assimilation Research Team, RIKEN Center for Computational Science (R-CCS), Kobe, Japan

2018/04–Present **Research Scientist**
Data Assimilation Research Team, RIKEN interdisciplinary Theoretical and Mathematical Sciences Program (iTHEMS), Kobe, Japan

2017/10–Present **Excellent Young Researcher**
Initiative for Excellent Young Researchers, Ministry of Education, Culture, Sports, Science and Technology, Japan

2017/04–Present **Part-time Lecturer**
Graduate School of Science, Kyoto University, Japan

2017/10–2018/03 **Research Scientist**
Data Assimilation Research Team, RIKEN Advanced Institute for Computational Science (AICS), Kobe, Japan

2014/01–2017/10 **Postdoctoral Researcher**
Data Assimilation Research Team, RIKEN Advanced Institute for Computational Science (AICS), Kobe, Japan

2013/12–2013/12 **Postdoctoral Researcher**
Japan Society for the Promotion of Science, Japan

2012/04–2013/11 **Research Fellow**
Japan Society for the Promotion of Science, Japan

2011/04–2012/03 **Research Assistant**
Disaster Prevention Research Institute, Kyoto University, Japan

Education

2013/11 Ph.D. **Engineering (Urban Management Engineering)**
Graduate School of Engineering, Kyoto University, Japan

2011/03 M.S. **Engineering (Urban Management Engineering)**
Graduate School of Engineering, Kyoto University, Japan

2009/03 B.S. **Engineering (Civil Engineering)**
Faculty of Engineering, Kyoto University, Japan

Honors and Awards

2019/03 **RIKEN Ohbu Award**
RIKEN Incentive Research Award, Japan

2013/09 **Thesis Award for Young Scientists**
Japan Society of Hydrology and Water Resources

2013/08 **Outstanding Presentation Award**
6th Conference of the Asia Pacific Association of Hydrology and Water Resources

2013/05 **Best Presentation Award**
Remote Sensing Society of Japan

2013/02 **Best Presentation Award**
Annual Conference, Disaster Prevention Research Institute, Kyoto University, Japan

2013/02 **HUME Prize (Top three master dissertation of the department)**
Department of Urban Management, Graduate School of Engineering, Kyoto University, Japan

Funded Projects as the lead PI

2018/04–2020/03 **Grants-in-Aid for Scientific Research Foundation (B), JSPS, Japan**
Land-Atmosphere-Coupled Data Assimilation: Improving Atmospheric and Hydrological Predictions by Hydrological Big Data Assimilation (17,420K JPY)

2017/10–2019/03 **Initiative for Excellent Young Researchers, MEXT, Japan**
Advancing Real-Time Weather and Hydrological Predictions with Data Assimilation and Artificial Intelligence (22,000K JPY)

2015/04–2018/03 **Grant-in-Aid for Young Scientists (B), JSPS, Japan**
Process-based Crop Yield Prediction Using Satellite Observations (4,160K JPY)

2011/04–2013/12 **Grant-in-Aid for Fellows, JSPS, Japan**
Estimating Global Crop Yield Potential Using a Global Agricultural Water Resources Model (1,800K JPY)

Certifications

2015 **Certified and Accredited Meteorologists of Japan (ID: 9466)**

2009 **First-class National Government Employee with specialty in Engineering, National Personnel Authority, the Government of Japan**

Outreach

2018/11–Present **JAXA Real-time Weather Watch (contributing as a developer)**
https://www.eorc.jaxa.jp/theme/NEXRA/index_e.htm

2017/05–Present **Weather Forecaster, RIKEN Weather Forecast**
https://weather.riken.jp/index.html

Teaching Experiences

Spring 2019 Data Assimilation A, a graduate- and undergraduate-level introductory data assimilation course, Faculty of Science, Kyoto University

Spring 2018 Data Assimilation A, a graduate- and undergraduate-level introductory data assimilation course, Faculty of Science, Kyoto University

Fall 2017 Data Assimilation B, a graduate- and undergraduate-level advanced data assimilation course, Faculty of Science, Kyoto University

Spring 2017 Data Assimilation A, a graduate- and undergraduate-level introductory data assimilation course, Faculty of Science, Kyoto University

Spring 2016 Special Lecture on Mathematical Science: Data Assimilation, a graduate- and undergraduate-level introductory data assimilation course, Faculty of Science, Kyoto University

September 2016 iTHES School on Data Assimilation, RIKEN iTHES
http://www.data-assimilation.riken.jp/jp/events/ithes_da_2016fall/

Scientific Organizing Committee

The RIKEN International School on Data Assimilation (RISDA 2018), Jan. 22-26, 2018.

Local Conference Organization (Co-Chair)

The 7th International Symposium on Data Assimilation (ISDA2019), Jan. 21-24, 2019. (co-chair)

The RIKEN International School on Data Assimilation (RISDA 2018), Jan. 22-26, 2018. (co-chair)

Proposal Review

2018 RIKEN Incentive Research Projects

Referee of Scientific Journals

Atmosphere (01; by MDPI)

Earth, Planets and Space (01; by Springer)

Earth and Space Sciences (01; by AGU)

Hydrology and Earth System Sciences (01; by EGU)

Hydrological Research Letters (03; by JSHWR)

Journal of Agricultural Meteorology (01; by SAMJ)

Journal of Geophysical Research – Atmospheres (01; by AGU)

Journal of Hydrology (01; by Elsevier)

Journal of Meteorological Society of Japan (04; by MSJ)

Meteorology and Atmospheric Physics (01; by Springer)

Monthly Weather Review (01; by AMS)

Nonlinear Processes in Geophysics (04 by EGU)

Scientific Online Letters on the Atmosphere (02; by MSJ)

土木学会・水工学論文集 (03)

水文水資源学会誌 (03)

Publications: Peer-reviewed Articles

[22]. Okazaki A., Honda, T. **Kotsuki S.**, Yamaji M., Kubota T., Oki R., Iguchi T., and Miyoshi T. (2019): Simulating precipitation radar observations from a geostationary satellite. *Atmospheric Measurement Techniques*, 12, 3985-3996. doi: 10.5194/amt-2018-278

[21]. **Kotsuki S.**, Kurosawa K., Otsuka S., Terasaki K. and Miyoshi T. (2019): Global Precipitation Forecasts by Merging Extrapolation-based Nowcast and Numerical Weather Prediction with Locally-optimized Weights. *Weather and Forecasting*, 34, 701-714. doi: 10.1175/WAF-D-18-0164.1

[20]. **Kotsuki S.**, Kurosawa K., and Miyoshi T. (2019): On the Properties of Ensemble Forecast Sensitivity to Observations. *Quarterly Journal of the Royal Meteorological Society*, 145, 1897-1914. doi: 10.1002/qj.3534

[19]. Terasaki K., **Kotsuki S.**, Miyoshi T. (2019): Multi-year analysis using the NICAM-LETKF data assimilation system. *Scientific Online Letters on the Atmosphere*. 15, 41-46. doi: 10.2151/sola.2019-009

[18]. **Kotsuki S.**, Terasaki K., Kanemaru K., Satoh M., Kubota T. and Miyoshi T. (2018): Predictability of Record-Breaking Rainfall in Japan in July 2018: Ensemble Forecast Experiments with the Near-real-time Global Atmospheric Data Assimilation System NEXRA. *Scientific Online Letters on the Atmosphere*. 15A, 1-7. doi: 10.2151/sola.15A-001

[17]. **Kotsuki S.**, Terasaki K., Yashiro H., Tomita H., Satoh M. and Miyoshi T. (2018): Online Model Parameter Estimation with Ensemble Data Assimilation in the Real Global Atmosphere: A Case with the Nonhydrostatic Icosahedral Atmospheric Model (NICAM) and the Global Satellite Mapping of Precipitation Data. *Journal of Geophysical Research: Atmospheres*. 123, 7375-7392. doi: 10.1029/2017JD028092

[16]. **Kotsuki S.**, Greybush S., and Miyoshi T. (2017): Can we optimize the assimilation order in the serial ensemble Kalman filter? A study with the Lorenz-96 model. *Monthly Weather Review*, 145, 4977-4995. doi: 10.1175/MWR-D-17-0094.1

[15]. Honda T., **Kotsuki S.**, Lien G.-Y., Okamoto K. and Miyoshi T. (2018): Every-10-minute Refresh of Precipitation and Flood Risk Predictions by Assimilating Himawari-8 All-Sky Satellite Radiances. *Journal of Geophysical Research: Atmospheres*, 122, 1-12. doi:10.1002/2017JD027096

[14]. Arakida H., Miyoshi T., Ise T., Shima S.-I., and **Kotsuki S.** (2017): Non-Gaussian data assimilation of satellite-based Leaf Area Index observations with an individual-based dynamic global vegetation model. *Nonlinear Processes in Geophysics*, 24, 553-567. doi:10.5194/npg-24-553-2017

[13]. Grippa, M., Kergoat L., Boone A., Peugeot C., Demarty J., Cappelaere B., Gal L., Hiernaux P., Mougin E., Ducharne A., Dutra E., Anderson M., Hain C., and. **ALMIP2 Working Group** (2017): Modelling surface runoff and water fluxes over contrasted soils in pastoral Sahel: evaluation of the ALMIP2 land surface models over the Gourma region in Mali. *Journal of Hydrometeorology*, 18, 1847-1866. doi:10.1175/JHM-D-16-0170.1

[12]. Getirana, A., Boone A., Peugeot C., and. **ALMIP2 Working Group** (2017): Streamflows over a West African basin from the ALMIP-2 model ensemble. *Journal of Hydrometeorology*, 18, 1831-1845. doi:10.1175/JHM-D-16-0233.1

[11]. **Kotsuki S.**, Ota Y., and Miyoshi T. (2017): Adaptive covariance relaxation methods for ensemble data assimilation: Experiments in the real atmosphere. *Quarterly Journal of the Royal Meteorological Society*, 143, 2001-2015. doi: 10.1002/qj.3060

[10]. **Kotsuki S.**, Miyoshi T., Terasaki K., Lien G.Y. and Kalnay E. (2017): Assimilating the Global Satellite Mapping of Precipitation Data with the Nonhydrostatic Icosahedral Atmospheric Model NICAM. *Journal of Geophysical Research: Atmospheres*, 122, 1-20. doi:10.1002/2016JD025355

[9]. Otsuka S., **Kotsuki S.**, Miyoshi T. (2016): Nowcasting with data assimilation: a case of Global Satellite Mapping of Precipitation. *Weather and Forecasting*, 31, 1409-1416. doi:10.1175/WAF-D-16-0039.1

[8]. **Kotsuki S.** and Tanaka K. (2015): SACRA - a method for the estimation of global high-resolution crop calendars from a satellite-sensed NDVI. *Hydrology and Earth System Sciences*, 19, 4441-4461. doi: 10.5194/hess-19-4441-2015

[7]. **Kotsuki S.**, Takenaka H., Tanaka K., Higuchi A. and Miyoshi T. (2015): 1-km-resolution land surface analysis over Japan: Impact of satellite-derived solar radiation. *Hydrological Research Letters*, 9(1), 14-19. doi: 10.3178/hrl.9.14

[6]. **Kotsuki S.**, Terasaki K., and Miyoshi T. (2014): GPM/DPR Precipitation Compared with a 3.5-km-resolution NICAM Simulation. *Scientific Online Letters on the Atmosphere*, 10, 204-209. doi:10.2151/sola.2014-043

[5]. **Kotsuki S.**, Tanaka K. and Watanabe S. (2014): Projected hydrological changes and their consistency under future climate in the Chao Phraya River Basin using multi-model and multi-scenario of CMIP5 dataset. *Hydrological Research Letters*, 8(1), 27-32. doi:10.3178/hrl.8.27

[4]. Watanabe S, Hirabayashi Y, **Kotsuki S.**, Hanasaki N, Tanaka K, Mateo CM, Kiguchi M, Ikoma E, Kanae S, Oki T. (2014): Application of performance metrics for climate models to project future river discharge in Chao Phraya River Basin. *Hydrological Research Letters*, 8(1), 33-38. doi:10.3178/hrl.8.33

[3]. **Kotsuki S.** and Tanaka K. (2013): Uncertainties of precipitation products and their impacts on runoff estimates through hydrological land surface simulation in Southeast Asia. *Hydrological Research Letters*, 7(4), 79-84. doi: 10.3178/hrl.7.79

[2]. **Kotsuki S.** and Tanaka K. (2013): Impacts of Mid-Rainy Season Rainfall on Runoff into the Chao Phraya River, Thailand. *Journal of Disaster Research*, 8(3), 397-405. doi:10.20965/jdr.2013.p039

[1]. **Kotsuki S.** and Tanaka K. (2013): Estimation of Climate Change Impact on Japanese Rice Yield and Water Resources. *Proceedings of 2013 IAHR World Congress*, A10344.

Publications: Non Peer-reviewed Articles

[1]. **Kotsuki S.** and Tanaka K. (2013): Long-term Water Balance Analysis Using Different Precipitation Products in Upper Chao Phraya River, Thailand. Proceedings of 6th APHW conference.

Publications: Peer-reviewed Articles in Japanese

[10]. 阿部紫織, 渡部哲史, 山田真史, **小槻峻司**, 綿貫翔 (2019): 大規模気候予測情報に基づく浸水リスク推計の特性について. 水工学論文集, 64, xxx-xxx. doi:10.2208/jscejhe.xx (in press)

[9]. 田中智大, 渡部哲史, **小槻峻司**, 林義晃, 丸谷靖幸, 峠嘉哉, 山崎大, 木村匡臣, 田上雅浩, 江草智弘, 橋本雅和, 仲吉信人 (2018): 最前線の水文・水資源学 ～WACCA 世代の挑戦～, 水文・水資源学会誌, 31(6), 509-540. doi: 10.3178/jjshwr.31.509

[8]. **小槻峻司**, 田中賢治 (2014): 衛星観測植生指標を活用した全球農事暦プロダクトの高精度化. 土木学会論文集 B1, 70(4), 259-264. doi: 10.2208/jscejhe.70.I_259

[7]. **小槻峻司**, 田中賢治, 小尻利治 (2013): 気候変動が日本の水資源に与える影響推計 (Ⅱ) -水需給・米生産変化とその適応策-. 水文・水資源学会誌, 26, 143-152. doi: 10.3178/jjshwr.26.143

[6]. **小槻峻司**, 田中賢治, 小尻利治 (2013): 気候変動が日本の水資源に与える影響推計 (I) -日本全域水資源モデルの開発-. 水文・水資源学会誌, 26, 133-142. doi: 10.3178/jjshwr.26.133

[5]. **小槻峻司**, 田中賢治, 小尻利治 (2013): 多様な作物分布を考慮した全球農業水需要量推定. 環境科学会誌, 26(2), 158-166. doi: 10.11353/sesj.26.158

[4]. **小槻峻司**, 田中賢治 (2013): 陸面過程モデルと大気水収支法による灌漑農地からの水蒸気供給量推定. 土木学会論文集 B1, 69, 1801-1806. doi: 10.2208/jscejhe.69.I_1801

[3]. **小槻峻司**, 田中賢治, 小尻利治, 浜口俊雄 (2012): 衛星データから作成した農事暦を活用した全球陸域水循環解析. 水文・水資源学会誌, 25, 373-388. doi: 10.3178/jjshwr.25.373

[2]. **小槻峻司**, 田中賢治, 小尻利治, 浜口俊雄 (2012): 群知能最適化手法を用いた分布型流出モデルのパラメーター同定. 土木学会論文集 B1, 68, 523-528. doi: 10.2208/jscejhe.68.I_523

[1]. **小槻峻司**, 田中賢治, 小尻利治, 浜口俊雄 (2011): 灌漑を考慮した陸域水循環モデルの構築. 水工学論文集, 55, 553-558. doi:10.2208/jscejhe.67.I_553

Publications: Non Peer-reviewed Articles in Japanese

[4]. **小槻峻司**, 田中賢治 (2014): 西アフリカ乾燥域における AMSR-E 土壌水分プロダクトと陸面過程モデル解析値の比較. 2013 年土壌水分ワークショップ論文集, 33-36.

[3]. **小槻峻司**, 峠嘉哉, 萬和明, 相馬一義, 甲山治, 田中賢治 (2013): SiBUC Mannual 利用編 ver1.0 ―Part1: モデル入力データの作成と陸面過程解析の方法―. 京都大学防災研究所年報, 第 56 号 B, 567-584.

[2]. 浜口俊雄, 田中拓馬, **小槻峻司**, 田中賢治, 峠嘉哉, 安倍雅宏 (2012): 分布型流出モデルに沿ったマクロスケールでの土砂生産・輸送モデリングの基礎的研究. 京都大学防災研究所年報, 第 55 号 B, 501-509.

[1]. **小槻峻司**, 田中賢治, 小尻利治, 浜口俊雄 (2011): 衛星データによる農事暦を活用した灌漑必要水量の推定. 京都大学防災研究所年報, 第 54 号 B, 645-653.

Publications: Reports in Japanese

[7]. **小槻峻司**, 寺崎康児, 新保明彦, 坂本雅巳, 藤田匡, 津口裕茂, 北畠尚子, 竹見哲也, 高薮縁, 金丸佳矢, 鼎信次郎, 中村尚, 富田浩文, 三好建正 (2019): 「平成 30 年 7 月豪雨に関する緊急対応研究会」の報告. 天気, 66(3), 253-259.

[6] 川畑拓矢, 上野玄太, 中野慎也, 藤井陽介, 三好建正, 小守信正, 増田周平, 茂木耕作, **小槻峻司**, 澤田洋平, Peter Jan van Leeuwen, 長尾大道 (2019): 第 9 回データ同化ワークショップの報告. 天気, 66(2), 51-54.

[5] 川畑拓矢, 上野玄太, 中野慎也, 藤井陽介, 三好建正, 小守信正, 増田周平, 茂木耕作, 中村和幸, 杉本憲彦, 前島康光, Le Duc, **小槻峻司**, 須藤明人, 杉浦望実, 釜堀弘隆 (2018): 第 8 回データ同化ワークショップの報告. 天気, 65(5), 22-25.

[4] 田中智大，**小槻峻司**，中下慎也，田上雅浩，渡部哲史，丸谷靖幸，綿貫翔，柿沼太貴(2018): WACCA meeting 07　会議報告「研究手法に着目した水関連研究の新たな発展可能性」. 水文・水資源学会誌，31(1), 33-41. doi: 10.3178/jjshwr.31.33

[3]. 田中智大，渡部哲史，**小槻峻司**，萬和明 (2017): 水文・水資源学会有志による学会意識アンケートの結果を通した若手・中堅世代の学会に対する認識について. 水文・水資源学会誌，30(4), 245-259. doi: 10.3178/jjshwr.30.245

[2]. 渡部哲史，山崎大，渡辺恵，**小槻峻司**，五十嵐康記，仲吉信人，田上雅浩，木下陽平，池内寛明，木島梨沙子，田中智大，吉田奈津妃，佐谷茜 (2015): 水文若手会 水関連分野次世代研究探索ワークショップ(WACCA meeting 02)会議報告 -水関連分野における分野融合の可能性と意義-. 水文・水資源学会誌，28(6), 304-312. doi: 10.3178/jjshwr.28.304

[1]. 渡部哲史，瀧本浩史，仲吉信人，大泉伝，**小槻峻司**，峠嘉哉 (2011): 水文・水資源学会　水文若手会　活動報告書 2011. 水文・水資源学会誌，24(5), 300-306.

Invited Presentations

[3]. **Kotsuki S.**, and Miyoshi T.: Diagnosing Observation Impacts and Error Covariance with NICAM-LETKF. LMU Data Assimilation Seminar, Jun. 18, 2019. (Jun. 18, Munich Univ., Munich)

[2]. **Kotsuki S.**, and Miyoshi T.: Diagnosing Observation Impacts and Error Covariance with NICAM-LETKF. DWD NWP Seminar, Jun. 13, 2019. (Jun. 13, Deutscher Wetterdienst, Offenbach)

[1]. **Kotsuki S.**, Sato Y., Terasaki K., Yashiro H., Tomita H., Satoh M. and Miyoshi T.: Model Parameter Estimation with Data Assimilation using NICAM-LETKF. JpGU Meeting 2019, May 26-30, 2019. (May 29, Makuhari Messe, Chiba)

Invited Presentations (in Japanese)

[6]. **小槻峻司**, 三好建正: 全球大気データ同化システムによる天気予報研究の最前線. 第 14 回名工大・核融合研合同セミナー , 07/18, 2019. (Jul. 18, 名工大 2 号館)

[5]. **小槻峻司**: 天気予報研究の最前線 -研究者は何に魅せられているか- . 阪神高速道路株式会社・堺建設部勉強会, 11/08, 2018. (Nov. 08, 阪神高速道路株式会社・堺建設部)

[4]. **小槻峻司**, 黒澤賢太, 三好建正: EFSO の現状と惑星気象研究への発展の可能性. 第 19 回惑星圏研究会, 02/27-03/01, 2018. (Feb 27, 東北大学・青葉サイエンスホール)

[3]. **小槻峻司**, 黒澤賢太, 三好建正: 全球大気データ同化システム NICAM-LETKF を使った EFSO 観測インパクト推定. 第８回データ同化ワークショップ, 01/19, 2018. (Jan 19, 明治大学中野キャンパス)

[2]. **小槻峻司**, 三好建正: 全球大気アンサンブルデータ同化システム NICAM-LETKF による衛星降水観測データ同化. 地震研特定共同研究(B)「データ同化」勉強会, 2017. (Jul 14, , 東大地震研究所)

[1]. **小槻峻司**, 三好建正: 予測モデルのためのデータ同化. PSTEP 研究集会「太陽地球圏環境予測のためのモデル研究の展望」, 01/26-27, 2017. (Jan 27, 名古屋大学, 名古屋)

Editorship

2017/01–2018/12 Columns by Senior Researchers, Japan Society of Hydrology and Water Resources

2015/01–2016/12 Columns by Young Researchers, Japan Society of Hydrology and Water Resources

Student Interns Supervised

—2018—

[5]. Aulia Febianda Anwar Tinumbang, Kyoto University (RIKEN CCS internship program)

[4]. Andrew Pensoneault, University of Iowa (RIKEN CCS internship program)

—2017—

[3]. Takuya Kurihana, University of Tsukuba (RIKEN AICS internship program)

[2]. Taiga Shibata, University of the Ryukyus (RIKEN AICS internship program)

—2015—

[1]. Yaping Chang, University of Chinese Academy of Sciences (RIKEN International Program Associate)