Steven C. Chan

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Google S.: https://scholar.google.com/citations?user=FeDs8GAAAAAJ
GitHub: https://github.com/SCChan21

Education:

2008 PhD, Atmospheric & Oceanic Science, University of Maryland at College Park, Washington-Baltimore-Northern Virginia, USA; advisor: Sumant Nigam (nigam@umd.edu; +1-301-405-5381)

2001 MSc, Meteorology, Pennsylvania State University at University Park, State College, USA; advisor: Jenni Evans (jenni.evans@psu.edu; +1-814-867-6075)

1999 BA, Space & Planetary Science, Boston University, Boston, USA; advisor: Theodore Fritz (deceased)

Grants and Fellowship:

2014 – 2019 Co-PI – Project INTENSE – European Research Council

2018 – 2023 Co-PI – Project FUTURE-STORMS – UK Natural Environment Research Council

2019 – 2021 Co-PI – Project FUTURE-DRAINAGE – UK Natural Environment Research Council

Key Professional Experience:

06/2023 – Research Scientist
National Oceanography Centre,
Southampton, United Kingdom

- Ocean surface and air-sea interaction (SST) data product development
- Spatial modelling of satellite and point marine observations, as well as for NWP reanalyses
- Quantifying the uncertainty of marine observations
- Collaborative code development and management
- Supervisor: Elizabeth Kent (eck@noc.ac.uk), Richard Cornes (richard.cornes@noc.ac.uk)

06/2011 – 03/2023 Research Associate (long-term visitor at the Met Office Hadley Centre)
School of Engineering, Newcastle University
Newcastle upon Tyne, United Kingdom

- Conducted and analysed UK Met Office km-scale limited-area Unified Model regional climate simulations
- Contributed to major climate projects and initiatives including UK Climate Projections, Horizon 2020 European Climate Prediction System, CORDEX, Singapore National Climate Change Study, and World Weather Attribution
- Codeveloped of UKWIR and Future-Drainage climate services products, which are the basis for the UK Environmental Agency and Scottish Environment Protection Agency peak (extreme) rainfall guidelines
- Analysed and modelled of large geophysical (climate model) datasets, assessing physical risks related to weather and climate, focusing on extreme precipitation
- Supervisors: Hayley Fowler (hayley.fowler@newcastle.ac.uk; +44(0)1912087113), Elizabeth Kendon (elizabeth.kendon@metoffice.gov.uk; +44(0)1392884760)

10/2008 – 05/2011 Post-Doctoral Scientist
Florida State University, Center for Ocean-Atmospheric Prediction Studies
Tallahassee, USA

- Conducted regional climate model simulations using the NCEP-Scripps Regional Spectral Model, including porting the model to be run for the first time at Florida State University
- Modified and compiled FORTRAN-based climate model source code
- Diagnosed drivers of heavy rainfall events in the United States including tropical cyclones
- Contributed to seasonal forecast and dynamical downscaling studies over the Americas
- Supervisor: Vasu Misra (vmisra@fsu.edu; +1-850-645-8859)

Professional Memberships: American Geophysical Union, American Meteorological Society, Royal Met. Society

Technical Skills: FORTRAN, GIS, IDL, MS Office, netCDF, MATLAB/OCTAVE, Python and R

Language Skills: Cantonese (native), English (fluent, second language), and Japanese (proficient)

Personal Interests: Fine arts, literature, visiting historical and nature sites, financial analysis and investments, gaming

Selected work (Full list on Google Scholar profile):

Chan, S. C., Kendon, E. J., Fowler, H. J., Youngman, B. D., Dale, M., & Short, C. (2023). New extreme rainfall projections for improved climate resilience of urban drainage systems. *Climate Services*, *30*, 100375. https://doi.org/10.1016/j.cliser.2023.100375

Chan, S. C., Kendon, E. J., Fowler, H. J., Kahraman, A., Crook, J., Ban, N., & Prein, A. F. (2023). Large-scale dynamics moderate impact-relevant changes to organised convective storms. *Communications Earth & Environment*, *4*(1), 1–10. https://doi.org/10.1038/s43247-022-00669-2

Lewis, H., Bowyer, J., Broad, A. L., Chamberlain-Clay, A., Jones, C., Chan, S., Kahraman, A., & Morcrette, C. (2022). Using machine learning to find cloud-base height: a didactic challenge. Weather. https://doi.org/10.1002/wea.4163

Müller, S. K., Caillaud, C., Chan, S., de Vries, H., Bastin, S., Berthou, S., Brisson, E., Demory, M.-E., Feldmann, H., Goergen, K., Kartsios, S., Lind, P., Keuler, K., Pichelli, E., Raffa, M., Tölle, M. H., & Warrach-Sagi, K. (2022). Evaluation of Alpine-Mediterranean precipitation events in convection-permitting regional climate models using a set of tracking algorithms. *Climate Dynamics*. https://doi.org/10.1007/s00382-022-06555-z

Ban, N., Caillaud, C., Coppola, E., Pichelli, E., Adinolfi, M., Ahrens, B., Alias, A., Anders, I., Bastin, S., Belušić, D., Berthou, S., Brisson, E., Cardoso, R. M., Chan, S. C., Christensen, O. B., Fernández, J., Fita, L., Frisius, T., Gašparac, G., … Zander, M. J. (2021). The first multi-model ensemble of regional climate simulations at kilometer-scale resolution, part I: evaluation of precipitation. *Climate Dynamics*. https://doi.org/10.1007/s00382-021-05708-w

Chan, S. C., Dale, M., Fowler, H. J., & Kendon, E. J. (2021). Extreme precipitation return level changes at 1, 3, 6, 12, 24 hours for 2050 and 2070, derived from UKCP Local Projections on a 5km grid for the FUTURE-DRAINAGE Project. *NERC EDS Centre for Environmental Data Analysis*. https://doi.org/10.5285/18F83CAF9BDF4CB4803484D8DCE19EEF

Kreienkamp, F., Philip, S., Tradowsky, J., Kew, S., Lorenz, P., Arrighi, J., Belleflamme, A., Bettmann, T., Caluwaerts, S., Chan, S., Ciavarella, A., Cruz, L., Vries, H., Demuth, N., Ferrone, A., Fischer, E., Fowler, H., Goergen, K., Heinrich, D., … Wanders, N. (2021). *Rapid attribution of heavy rainfall events leading to the severe flooding in Western Europe during July 2021*. World Weather Attribution. https://www.worldweatherattribution.org/heavy-rainfall-which-led-to-severe-flooding-in-western-europe-made-more-likely-by-climate-change/

Chan, S. C., Kendon, E. J., Berthou, S., Fosser, G., Lewis, E., & Fowler, H. J. (2020). Europe-wide precipitation projections at convection permitting scale with the Unified Model. *Climate Dynamics*, *55*(3), 409–428. https://doi.org/10.1007/s00382-020-05192-8

Kendon, E. J., Fosser, G., Murphy, J., Chan, S. C., Clark, R., Harris, G., Lock, A. P., Lowe, J. A., Martin, G. M., Pirret, J., Roberts, N., Sanderson, M., & Tucker, S. (2019). *UKCP Convection-permitting model projections: Science report* (p. 153). Met Office Hadley Centre. https://www.metoffice.gov.uk/pub/data/weather/uk/ukcp18/science-reports/UKCP-Convection-permitting-model-projections-report.pdf (Updated 2021)

Chan, S. C., Kahana, R., Kendon, E. J., & Fowler, H. J. (2018). Projected changes in extreme precipitation over Scotland and Northern England using a high-resolution regional climate model. *Climate Dynamics*, *51*(9), 3559–3577. https://doi.org/10.1007/s00382-018-4096-4

Chan, S. C., Kendon, E. J., Roberts, N., Blenkinsop, S., & Fowler, H. J. (2018). Large-Scale Predictors for Extreme Hourly Precipitation Events in Convection-Permitting Climate Simulations. *Journal of Climate*, *31*(6), 2115–2131. https://doi.org/10.1175/JCLI-D-17-0404.1

Chan, S. C., Kendon, E. J., Roberts, N. M., Fowler, H. J., & Blenkinsop, S. (2016). Downturn in scaling of UK extreme rainfall with temperature for future hottest days. *Nature Geosci*, *9*(1), 24–28. https://doi.org/10.1038/ngeo2596

Chan, S., Kendon, E., Fowler, H., Blenkinsop, S., Ferro, C., & Stephenson, D. (2013). Does increasing the spatial resolution of a regional climate model improve the simulated daily precipitation? *Climate Dynamics*, 1–21. https://doi.org/10.1007/s00382-012-1568-9