

Dr. Michael P. Byrne

- CONTACT INFORMATION University of St Andrews *e-mail:* mpb20@st-andrews.ac.uk
Irvine Building *www:* <https://sites.google.com/tcd.ie/michaelbyrne/home>
St Andrews, Fife, KY16 9AL
- RESEARCH INTERESTS Climate & atmospheric dynamics, land-climate interactions, past & future climate change, monsoons, climate modelling, water cycle
- EMPLOYMENT **University of St Andrews, UK**
Lecturer in Earth & Environmental Sciences Nov. 2018 –
- University of Oxford, UK**
Marie Skłodowska-Curie Fellow Nov. 2018 – Oct. 2022
- Imperial College London, UK**
Imperial College Research Fellow Sep. 2017 – Sep. 2018
- ETH Zürich, Switzerland**
Postdoctoral researcher in Climate Dynamics Nov. 2014 – Aug. 2017
- Advisor: Prof. Tapio Schneider (now at the California Institute of Technology)
- EDUCATION **Massachusetts Institute of Technology, Cambridge, USA**
Ph.D. Climate Physics and Chemistry Sep. 2009 – Oct. 2014
- Advisor: Prof. Paul O’Gorman
- University of Oxford, Oxford, UK**
M.Sc. Mathematical Modelling & Scientific Computing Sep. 2008 – Aug. 2009
- Trinity College Dublin, Dublin, Ireland**
B.A. Computational Physics (1st class honours, Gold Medal) Sep. 2004 – Jun. 2008
- MANUSCRIPTS UNDER REVIEW **Byrne, M. P.**, Thomas, R. & Czaja, A. “Dynamics of ITCZ width: Ekman processes, non-Ekman processes and links to sea-surface temperature”, submitted to *Journal of the Atmospheric Sciences*.
- Donohoe, A., Atwood, A. R. & **Byrne, M. P.** “Controls on the width of tropical precipitation and its contraction under global warming”, submitted.
- PUBLICATIONS **Byrne, M. P.**, Pendergrass, A. G., Rapp, A. D. & Wodzicki, K. R. “Response of the intertropical convergence zone to climate change: location, width and strength”, *Current Climate Change Reports*, 4, 355-370 (**invited review article**).
- Byrne, M. P.** & O’Gorman, P. A. (2018), “Trends in continental temperature and humidity directly linked to ocean warming”, *Proceedings of the National Academy of Sciences*, 115, 4863-4868. **Imperial College news feature*.
- Ibarra, Oster, Winnick, Caves, **Byrne** & Chamberlain (2018), “Warm and cold wet states in western United States during the Pliocene–Pleistocene”, *Geology*, 46, 355-358. **Geological Society of America news feature*.
- Byrne, M. P.** & Schneider, T. (2018), “Atmospheric dynamics feedback: concept, simulations and climate implications”, *Journal of Climate*, 31, 3249-3264.

Byrne, M. P. & Schneider, T. (2016), “Narrowing of the ITCZ in a warming climate: physical mechanisms”, *Geophysical Research Letters*, 43, 11350-11357.

Byrne, M. P. & O’Gorman, P. A. (2016), “Understanding decreases in land relative humidity with global warming: conceptual model and GCM simulations”, *Journal of Climate*, 29, 9045-9061.

Wills, R. C., **Byrne, M. P.** & Schneider, T. (2016), “Thermodynamic and dynamic controls on the amplitude of the zonally anomalous hydrological cycle”, *Geophysical Research Letters*, 43, 4640-4649. **Featured as a Research Spotlight in EOS Magazine.*

Byrne, M. P. & Schneider, T. (2016), “Energetic constraints on the width of the intertropical convergence zone”, *Journal of Climate*, 29, 4709-4721.

Byrne, M. P. & O’Gorman, P. A. (2015), “The response of precipitation minus evapotranspiration to climate warming: Why the “wet-get-wetter, dry-get-drier” scaling does not hold over land”, *Journal of Climate*, 28, 8078-8092.

Byrne, M. P. & O’Gorman, P. A. (2013), “Link between land-ocean warming contrast and surface relative humidities in simulations with coupled climate models”, *Geophysical Research Letters* 40, 5223-5227. **Featured on Prof. Isaac Held’s blog.*

Byrne, M. P. & O’Gorman, P. A. (2013), “Land-ocean warming contrast over a wide range of climates: convective quasi-equilibrium theory and idealized simulations”, *Journal of Climate* 26, 4000-4016.

O’Gorman, P. A., Allan, R. P., **Byrne, M. P.** & Previdi, M. (2012), “Energetic constraints on precipitation under climate change”, *Surveys in Geophysics* 33, 585-608.

INVITED
SEMINARS

- University of Exeter, UK 2019
- University of Bristol, UK 2018
- University of Reading, UK 2017
- Cornell University, USA 2017
- Georgia Institute of Technology, USA 2017
- University of Cambridge, UK 2017
- Stanford University, USA 2017
- Max-Planck-Institut für Meteorologie, Germany 2017
- Lamont-Doherty Earth Observatory of Columbia University, USA 2015
- ETH Zürich, Switzerland 2014
- Geophysical Fluid Dynamics Laboratory, USA 2013

INVITED
CONFERENCE
TALKS

- Workshop on “Water and Climate Change: Connecting the Paleoclimate Record to Future Changes”, USA 2018
- American Geophysical Union Fall Meeting, USA 2016
- GEWEX Hydro-Climate Sensitivity Workshop, UK 2016
- International Conference on Water and Energy Cycles in the Tropics, France 2016

SELECTED CONFERENCE PRESENTATIONS	CFMIP Clouds, Precipitation, Circulation & Climate Sensitivity Meeting, Tokyo: “Atmospheric dynamics feedback: concept and simulations”. Oral presentation , Sep. 2017.	
	AMS Atmospheric and Oceanic Fluid Dynamics conference, Portland, USA: “Atmospheric dynamics feedback: concept and simulations”. Oral presentation , Jun. 2017.	
	American Geophysical Union Fall Meeting, San Francisco, USA: “Narrowing of the ITCZ under global warming: Physical mechanisms”. Invited oral presentation , Dec. 2016.	
	WCRP Model Hierarchies Workshop, Princeton, USA: “ITCZ width and its sensitivity to changes in climate: theory and a hierarchy of simulations”. Oral presentation , Nov. 2016.	
TEACHING EXPERIENCE	<i>Lecturer</i>	
	School of Earth and Environmental Sciences, University of St Andrews, UK	
	<ul style="list-style-type: none"> • Data Analysis in Earth Sciences (undergrad) 2019 • Global Climate Change II (undergrad) 2019 • Global Climate Change I (undergrad) 2018 	
	<i>Lecturer</i>	
	Department of Physics, Imperial College London, UK	
	<ul style="list-style-type: none"> • Intro. to atmosphere & ocean dynamics for new PhD students (postgrad) 2017 • Intro. to climate change for new PhD students (postgrad) 2017 	
	<i>Guest lecturer & teaching assistant</i>	
	Department of Earth Sciences, ETH Zürich, Switzerland	
	<ul style="list-style-type: none"> • Climate and the Global Circulation of the Atmosphere (postgrad) 2015 	
	<i>Teaching assistant</i>	
	Department of Earth, Atmospheric and Planetary Sciences, Massachusetts Institute of Technology, USA	
	<ul style="list-style-type: none"> • Intro. to Atmosphere, Ocean, and Climate Dynamics (undergrad) 2013 • Weather and Climate Laboratory (undergrad) 2012 • Intro. to Weather Forecasting (undergrad) 2012 & 2013 • Understand and run your own climate model (undergrad) 2011 	
RESEARCH SUPERVISION	Rhidian Thomas & Max Moynan (BSc project, Imperial College)	2018
	Rhidian Thomas (UROP summer student, Imperial College)	2018
HONOURS AND AWARDS	Marie Sklodowska-Curie Individual Fellowship	2018
	Imperial College Research Fellowship	2017
	Research featured on Prof. Isaac Held’s blog	2015
	Thomas Frank Science Fellowship, MIT	2013
	Presidential Fellowship, MIT	2009
	KAUST Scholarship, University of Oxford	2008
	Gold Medal in Physics, Trinity College Dublin	2008
	Foundation Scholar, Trinity College Dublin	2006
	President’s Award, Trinity College Dublin	2004
	Palles Medal for Mathematics, Clongowes Wood College	2004
RESEARCH FUNDING	Marie Sklodowska-Curie Individual Fellowship (£175k)	2018
	Imperial College Research Fellowship (£200k)	2017

Contributing author for three chapters in IPCC AR6 Report [Working Group 1, Chapters 2, 4 and 8].

Co-organiser of the *World Climate Research Programme* Grand Challenge Meeting on Monsoons & ITCZ (2018).

Invited review article on tropical atmospheric circulations for *Current Climate Change Reports* (2018).

Manuscript reviewer for *Nature*, *Nature Geoscience*, *Nature Climate Change*, *Nature Communications*, *Proceedings of the National Academy of Sciences*, *Journal of the Atmospheric Sciences*, *Journal of Climate*, *Geophysical Research Letters*, *Current Climate Change Reports*, *Journal of Geophysical Research: Atmospheres*, *Journal of Advances in Modeling Earth Systems*, *Climate Dynamics*, *Geoscientific Model Development*, *Earth's Future*, *Earth System Dynamics*, and the *International Journal of Climatology*.

Grant reviewer for *National Science Foundation* (USA), *Department of Energy* (USA) and *Natural Environment Research Council* (UK).

Review panel member for US Department of Energy's climate modelling programme.

Peer Review College member for UK Research and Innovation Future Leaders Fellowships programme.

Session founder & convener for EGU General Assembly
"Dynamics of the atmospheric circulation in past, present and future climates" 2019

Session founder & convener for EGU General Assembly
"Understanding past and future changes in the hydrological cycle" 2015, 2016 & 2018

Session founder & convener for AGU Fall Meeting
"Tropical circulations and their sensitivities to changes in climate" 2016

Session chair at the GEWEX Hydro-Climate Sensitivity Workshop 2016

Session chair at the AMS Atmospheric and Oceanic Fluid Dynamics conference 2015

Session chair at the 7th Graduate Climate Conference 2013

Committee member, 5th & 7th Graduate Climate Conferences 2011 & 2013

Television

- 9 News Australia (UN COP24 climate conference) 2018
- BBC World News (UK heatwave) 2018
- CNN Hala Gorani Tonight (UK Heatwave) 2018

Print

- Newsweek magazine (UK heatwave) 2018
- 9 News Australia (UK Heatwave) 2018
- Imperial College news article (UK Heatwave) 2018