

# Curriculum vitae: SM Howden

**Name:** Professor Stuart Mark Howden

**Current Positions:** Director, Climate Change Institute, Australian National University (since 2015)  
Honorary Professor, Faculty of Veterinary and Agricultural Sciences, University of Melbourne

## Work contact details:

Climate Change Institute  
Australian National University  
Canberra, ACT, 2601

**Tel:** +61 2 6125 7266

**Mob:** +61 4 2902 6050

**Email:** [Mark.Howden@anu.edu.au](mailto:Mark.Howden@anu.edu.au)

**Website:** <https://climate.anu.edu.au/about/people/academics/professor-mark-howden>

## Academic credentials:

<i>Degree awarded</i>	<i>Name of institution</i>	<i>Year awarded</i>
PhD	Griffith University	1990
BSc (Honours Class 1)	University of New South Wales	1983

## Employment history

2014 - 2016 Chief Research Scientist, CSIRO Agriculture

2008 – 2014 Theme Leader, Primary Industries, Enterprises and Communities, CSIRO Climate Adaptation Flagship

2006 – 2008 Theme Leader, Australian Agriculture Transformed, CSIRO Agriculture Sustainability Initiative

2000 - 2006 Group Leader, CSIRO Sustainable Ecosystems

1996 - 2000 Head, Land and Water Section, Bureau of Resource Sciences

1990 - 1996 Senior Research Scientist, Bureau of Resource Sciences, Canberra – drought policy, water resource management, climate change issues

1987 - 1990 Pasture Agronomist, Queensland DPI, Gayndah and Brisbane

1981 - 1982 Research Assistant, NSW Soil Conservation Service, Sydney

## Selected Awards:

*Eureka Prize for Sustainable Agriculture* finalist in 2013

*CCRSPI National Award* for excellence in climate research in primary industries (2012)

*Ecological Society of America Sustainability Science Award* (2009) for an outstanding contribution to sustainability science

*Nobel Peace Prize 2007* (for contributing to the Award to the IPCC, shared with Al Gore)

## Intergovernmental Panel on Climate Change roles (selected among over 24 different roles)

- Vice Chair IPCC Working Group 2 for the Sixth Assessment Cycle
- Review Editor on IPCC Special Report on Global Warming of 1.5°C (2018) and the IPCC Synthesis Report (2022)
- Scientific Steering Committee on the IPCC Special report on Climate Change and Land
- Lead Author, AR5 Synthesis Report
- Lead Author on the Food Security chapter of the IPCC Fifth Assessment Report
- Lead Author on the Australia/NZ chapter and the Food, Fibre, Fisheries and Forestry chapter in the IPCC Fourth Assessment Report
- Review Editor of the Australia and New Zealand chapter of the IPCC Third Assessment Report
- Lead Author of the 'Additional Activities' chapter of the IPCC Special Report on Land Use, Land Use Change and Forestry
- Principal Lead Author of the Grasslands and Rangelands and Agriculture chapters of the IPCC Second Assessment Report
- Co-Chair IPCC/OECD Working Group I meeting that established the international methodologies and protocols for greenhouse gas inventories (1992)

## Publications (over past 5 years)

1. Colvin RM, Kemp L, Talberg A, De Castella C, Downie C, Friel S, Grant WJ, **Howden M**, Jotzo F, Markham F, Platow MJ. (2019) Learning from the Climate Change Debate to Avoid Polarisation on Negative Emissions. *Environmental Communication*. 26:1-13.
2. Porter, J.R., Challinor, A.J., Henriksen, C.B., **Howden, S.M.**, Martre, P. and Smith, P., (2019). Invited Review: IPCC, Agriculture and Food—A Case of Shifting Cultivation and History. *Global change biology*: 25, 2518-2529. <https://doi.org/10.1111/gcb.14700>
3. George DA, Clewett JF, Lloyd D, McKellar R, Tan P-L, **Howden M**, Rickards L, Ugalde D, & Barlow S (2019) Research priorities and best practices for managing climate risk and climate change adaptation in Australian agriculture. *Australasian Journal of Environmental Management* 26(1):6-24. doi: 10.1080/14486563.2018.1506948.
4. Vermeulen SJ, Dinesh D, **Howden SM**, Cramer L, Thornton P (2018) Transformation in practice: a review of empirical cases of transformational adaptation in agriculture under climate change. *Frontiers in Sustainable Food Systems*. doi: 10.3389/fsufs.2018.00065
5. Cvitanovic, C., **Howden, M.**, Colvin, R.M., Norström, A., Meadow, A.M. and Addison, P.F.E. 2019. Maximising the benefits of participatory climate adaptation research by understanding and managing the associated challenges and risks. *Environmental Science & Policy*. 94, pp.20-31.
6. Nidumolu U, Lim-Camacho L, Gaillard E, Hayman P, **Howden M** (2018) Linking climate forecasts to rural livelihoods: Mapping decisions, information networks and value chains. *Weather and Climate Extremes*, <https://doi.org/10.1016/j.wace.2018.06.001>
7. Thornton PK, Whitbread A, Baedeker T, Cairns J, Claessens L, Baethgen W, Bunn C, Friedmann M, Giller KE, Herrero M, **Howden M**, Kilcline K, Nangia V, Ramirez-Villegas J, Kumar S, West PC, Keating B (2018) A framework for priority-setting in climate smart agriculture research. *Agricultural systems*, 167: 161-175
8. George DA, Clewett JF, Lloyd D, McKellar R, Tan P, **Howden M**, Rickards L, Ugalde D, Barlow S (2018) Research priorities and best practices for managing climate risk and climate change adaptation in Australian agriculture, *Australasian Journal of Environmental Management*, DOI: 10.1080/14486563.2018.1506948
9. Fazey I, Schöpke N, Caniglia G, Patterson J, Hultman J, van Mierlo B, Säwe F, Wiek A, Wittmayer J, Aldunce P, Al Waer H, Battacharya N, Bradbury H, Carmen E, Colvin J, Cvitanovic C, D'Souza M, Gopel M, Goldstein B, Hämäläinen T, Harper G, Henfry T, Hodgson A, **Howden SM**, Kerr A, Klaes M, Lyon C, Midgley G, Moser S, Mukherjee N, Müller K, O'Brien K, O'Connell DA, Olsson P, Page G, Reed MS, Searle B, Silvestri G, Spaiser V, Strasser T, Tschakert P, Uribe-Calvo N, Waddell S, Rao-Williams J, Wise R, Wolstenholme R, Woods M, Wyborn C. (2018) Ten essentials for action-oriented and second order energy transitions, transformations and climate change research. *Energy Research and Social Science*, 40, 54–70.
10. Crimp, S., Nicholls, N., Kokic, P., Risbey, J. S., Gobbett, D. and **Howden, M.** (2017), Synoptic to large-scale drivers of minimum temperature variability in Australia – long-term changes. *Int. J. Climatology*. doi:10.1002/joc.5365
11. Lacey J, **Howden M**, Cvitanovic C, Colvin RM (2017) Understanding and managing trust at the climate science–policy interface. *Nature Climate Change*, doi:10.1038/s41558-017-0010-z
12. Porter JR, **Howden M**, Smith P (2017). Considering agriculture in IPCC assessments. *Nature Climate Change* 7: 680–683. doi:10.1038/nclimate3404
13. Lim-Camacho, L, Plagányi, EE, Crimp, SJ, Hodgkinson, JH, Hobday, AJ, **Howden, SM**, Barton Loechel, BL (2017) Complex resource supply chains display higher resilience to simulated climate shocks, *Global Environmental Change*, 46: 126-138, <https://doi.org/10.1016/j.gloenvcha.2017.08.011>.
14. Cvitanovic, C, Cunningham, R, Dowd, AM, **Howden, SM**, van Putten, I (2017) Using Social Network Analysis to Monitor and Assess the Effectiveness of Knowledge Brokers at Connecting Scientists and Decision-Makers: An Australian case study. *Environmental Policy and Governance*, 27: 256-269. DOI: 10.1002/eet.1752
15. Amarasingha, R.P.R.K., Suriyagoda, L.D.B., Marambe, B., Rathnayake, W.M.U.K., Gaydon, D.S., Galagedara, L.W., Punyawardana, R., Silva, G.L.L.P., Nidumolu, U., **Howden, M.** (2017) Improving water productivity in moisture-limited rice-based cropping systems through incorporation of maize and mungbean: A modelling approach. *Agricultural Water Management*, 189: 112-122. <https://doi.org/10.1016/j.agwat.2017.05.002>
16. Porter, JR, **Howden, M**, Smith, P, Schiller-Stokholm, M (2017) Recasting economics as if the climate and global ecology really mattered. *Consilience*, 17: 220-229.
17. Rippke U., Ramirez-Villegas J., Jarvis A., Vermeulen S., Parker L., Mer F., Diekkrüger B., Challinor A., **Howden M.** (2016) Timescales of transformational climate change adaptation in Sub-Saharan African agriculture. *Nature Climate Change*, 6:605-609. doi:10.1038/nclimate2947.
18. Fleming, A. **Howden, SM** (2016) Ambiguity: A new way of thinking about responses to climate change, *Science of The Total Environment*, 571, 1271-1274. DOI: 10.1016/j.sdtotenv.2016.07.162
19. Lim-Camacho, L., Ariyawardana, A., Lewis, G.K., Crimp, S.J., Somogyi, S., Ridoutt, B., **Howden, S.M.** (2016) Climate adaptation of food value chains: the implications of varying consumer acceptance. *Regional Environmental Change*, 17: 93-103. doi:10.1007/s10113-016-0976-5
20. Cvitanovic C., Crimp S., Fleming A., Bell J., **Howden M.**, Hobday H., Taylor M., and Cunningham R. (2016) Linking adaptation science to action to build food secure Pacific Island communities. *Climate Risk Management*, 11, 53-62, <http://dx.doi.org/10.1016/j.crm.2016.01.003>
21. Ingram J, Dyball R, **Howden M**, Vermeulen S, Garnett T, Redlingshöfer B, Guilbert S, Porter JR (2016) Food Security, Food Systems, and Environmental Change. *Solutions*, 7: 63-73

22. Lisson S.N., Tarbath M, Corkrey R., Pinkard E.A., Laycock B, **Howden, S.M.**, Botwright-Acuna T., Makin A. (2016) Ambient climate and soil effects on the headspace under clear mulch film. *Agricultural Systems*, 142: 41-50.
23. Crimp, S.J, Zheng, B, Khimashia, N, Gobbett, DL, Chapman, S, **Howden, M**, Nicholls, N (2016) Recent changes in southern Australian frost occurrence: implications for wheat production risk. *Crop and Pasture Science*, 67: 801-811. DOI: 10.1071/CP16056
24. Crimp, S.J., Gobbett, D., Kokic, P., Nidumolu, U, **Howden M** (2016) Recent seasonal and long-term changes in southern Australian frost occurrence. *Climatic Change*, 139: 115-128. doi:10.1007/s10584-016-1763-5
25. Rivera-Ferre, M.G., López-i-Gelats, F., **Howden, M.**, Smith, P., Morton, J., Herrero (2016) Re-framing the climate change debate in the livestock sector: mitigation and adaptation options. *WIREs Climate Change*, 7: 869-892. DOI: 10.1002/wcc.421
26. Aldunce P., Handmer J., Beilin R., **Howden M.** (2016) Is climate change framed as 'business as usual' or as a challenging issue? The practitioners' dilemma. *Environment and Planning C: Government and Policy*, 34: 999-1019, doi:10.1177/0263774X15614734
27. Aldunce P., Beilin R., Handmer J., **Howden M.** (2016) Stakeholder participation in building resilience to disasters in a changing climate. *Environmental Hazards-Human and Policy Dimensions*, 15:58-73. DOI: 10.1080/17477891.2015.1134427
28. Ludemann, C., **Howden, S.M.**, Eckard, R (2016) What is the best use of oil from cotton (*Gossypium* spp.) and canola (*Brassica* spp.) for reducing net greenhouse gas emissions- biodiesel, or as a feed for cattle? *Animal Production Science*: 56, 442–450. DOI: 10.1071/AN15453
29. Jakku, E., Thorburn, P.J., Marshall, N.A., Dowd, A.M., **Howden, S.M.**, Mendham, E., Moon, K., Brandon, C. (2016) Learning the hard way: a case study of an attempt at agricultural transformation in response to climate change. *Climatic Change*, 137: 557-574
30. Amarasingha, R.P.R.K., Suriyagoda, L.D.B., Marambe, B., Gaydon, D.S., Galagedara, L.W., Punyawardena, R., Silva, G.L.L.P., Nidumolu, U., **Howden, M.** (2015) Simulation of crop and water productivity for rice (*Oryza sativa* L.) using APSIM under diverse agro-climatic conditions and water management techniques in Sri Lanka. *Agricultural Water Management* 160: 132-143
31. **Howden, S.M.**, Jacobs, K., (2015) Innovations in assessment and adaptation: building on the US National Climate Assessment. *Climatic Change*, 135: 157-171. DOI: 10.1007/s10584-015-1519-7
32. Lacey, J., **Howden, S.M.**, Cvitanovic, C., Dowd, A.M. (2015) Informed agricultural adaptation: Ethical considerations for adaptation researchers and decision-makers. *Global Environmental Change*, 32: 200-210
33. Ghahramani A, Kokic PN, Moore AD, Zheng B, Chapman SC, **Howden SM**, Crimp SJ (2015) The value of adapting to climate change in Australian wheat farm systems: farm to cross-regional scale. *Agriculture, Ecosystems and Environment* 211: 112–125
34. Dunn, M., Lindsay, J. & **Howden, M.** (2015) Spatial and temporal scales of future climate information for climate change adaptation in viticulture: a case study of user needs in the Australian wine-grape sector. *Australian Journal of Grape and Wine Research*, 221:226-239.
35. Aldunce, P., Beilin, R., **Howden, M.**, and Handmer, J. (2015) Resilience for disaster risk management in a changing climate: Practitioners' frames and practices. *Global Environmental Change* 30, 1-11
36. Fleming, A., Dowd, A., Gaillard, E., Park, S., **Howden, M.** (2015) Climate change is the least of my worries': stress limitations on adaptive capacity. *Rural Society*, 1-18 <http://dx.doi.org/10.1080/10371656.2014.1001481>
37. Amarasingha, R.P.R.K., Galagedara, L.W., Marambe, B., Silva, G.L.L.P., Punyawardena, R., Nidumolu, U., **Howden, M.** and Suriyagoda, L.D.B. (2014) Modelling the impact of changes in rainfall distribution on the irrigation water requirement and yield of short and medium duration rice varieties using APSIM during Maha season in the Dry zone of Sri Lanka. *Tropical Agricultural Research*, 26: 274-284.
38. Porter, J.R., Xie, L., Challinor, A.J., Cochrane, K., **Howden, S.M.**, Iqbal, M.M., Lobell, D.B. Travasso, M.I. (2014) Food security and food production systems. *Climate change*, 485-533
39. Amarasingha, R.P.R.K., Galagedara, L.W., Marambe, B., Silva, G.L.L.P., Punyawardena, R., Nidumolu, U., **Howden, M.** and Suriyagoda, L.D.B. (2014) Aligning sowing dates with onset of rains improve rice yields and water productivity: Modeling *Oryza sativa* L. in Maha season in the dry zone of Sri Lanka. *Tropical Agricultural Research*, 25: 277 – 286
40. Kokic, P., Crimp, S. and **Howden, M.** (2014) A probabilistic analysis of human influence on recent record global mean temperature changes. *Climate Risk Management*, 3: 1-12. DOI: 10.1016/j.crm.2014.03.002
41. Crimp, S., Bakar, K.S., Kokic, P., Jin, W., Nicholls, N. & **Howden, M.** (2014) Bayesian space-time model to analyse frost risk for agriculture in South-East Australia: explaining the frost paradox. *International Journal of Climatology*, DOI: 10.1002/joc.4109
42. Dowd, A.M., Marshall, N., Fleming, A., Jakku, E., Gaillard, E. & **Howden, M.** (2014) The role of networks in transforming Australian agriculture. *Nature Climate Change*, 4: 558–563
43. **Howden, M.**, Schroeter, S., Crimp, S. & Hanigan, I. (2014) The changing roles of science in managing Australian droughts: an agricultural perspective. *Weather and Climate Extremes* 3: 80-89.
44. Aldunce, P., **Howden, M.**, Beilin, R., Handmer, J. (2014) Framing disaster resilience and the implications of the diverse conceptualisations of 'bouncing back'. *Disaster Prevention and Management*, 23(3): 252-270.
45. Curtis, D.J., **Howden, S.M.**, Curtis, F., McColm, I., Scrine, J., Blomfield, T., Reeve, I. & Ryan, T. (2014) Case studies in Australia and Canada that use drama in environmental education to change environmental attitudes and behaviours. *Australian Journal of Environmental Education* 29(2), 182–201.
46. Challinor, A J, Watson, J., Lobell, D, **Howden, M.**, Smith D., Chhetri, N. (2014) A meta-analysis of crop yield under climate change and adaptation. *Nature Climate Change*, 4:287–291, DOI: 10.1038/NCLIMATE2153