

CURRICULUM VITAE

Gabriele Clarissa Hegerl. Date: Oct 2014

ADDRESS

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PERSONAL INFORMATION

Born 0/1/09/1962, Munich, Germany
Citizenship: Germany
Married to Thomas Crowley, widowed
Son Michael A., born August 29, 2000
Son John J., born Feb 27, 2003

EDUCATION

1983: Vordiplom (equ. B.A.) in Mathematics, Ludwig-Maximilians-University, Munich, Germany.
Minor: Physics.

1987: Diploma (equ. M.S.) in Mathematics, Ludwig-Maximilians-University, Munich, Germany.
Minor: Physics.

1992: Ph. D. in Mathematics (Numerical Fluid Dynamics), Ludwig-Maximilians-Universität, Munich, Germany. Title of thesis: "Numerical solution of the compressible two-dimensional Navier-Stokes equations in a time-dependent domain, using energy reducing boundary conditions" (magna cum laude).

RESEARCH INTERESTS

Detecting, attributing and understanding observed climate variability and change, statistical climatology. Focus on variability and change in climatic extremes and precipitation, estimating climate sensitivity, and use of palaeo proxy data to study climate variability and change during the last millennium.

EMPLOYMENT HISTORY

From 8/2009: Professor of Climate System Science, University of Edinburgh
f8/2007-7/2009 Reader, School of GeoSciences, University of Edinburgh; Adjunct Associate Professor, Duke University from 8/2008. Now adjunct professor.
9 /2001 – 7/2007: Associate Research Professor, Nicholas School of the Environment and Earth Sciences, Duke University, Durham, NC.
10/99 to 7/01: Associate Research Scientist, Dept. of Oceanography/Atmospheric Science, Texas A&M University, College Station, TX.

AWARDS

Wolfson Merit award, as of 2013 (paperwork being signed)

Fellow of the Royal Society of Edinburgh, as of 2013.

Award of European Research Council (ERC) Advanced grant 'TITAN' (Transition into the Anthropocene), Dec 2012.

Awarded Feodor - Lynen research fellowship of the Alexander von Humboldt - Stiftung for visiting

the department of Atmospheric Sciences at University of Washington, from 1997 - 1999.

Intergovernmental Panel on Climate Change (IPCC) receives Nobel Peace prize, 2007.

Shared in the 2008 Oceanic and Atmospheric Research Outstanding Scientific Paper Award for the Zhang et al., 2007 publication on changes in precipitation; and the Technical Summary of the IPCC WG1 assessment report.

Listed among Thomson Reuters 2014 list of world's most influential scientific minds and highly cited researchers. Paper and perspective piece listed among Editors Choice 2011 for publications in Environmental Research Letters.

PROFESSIONAL ACTIVITIES

Member of the core writing team for the upcoming *Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment Report (AR5) Synthesis report (co-leading one of four topics of the report)*; Member of the core writing team of the *Summary for Policymakers (SPM)* for the Fourth Assessment Report (AR4), Working Group (WG)1 and draft contributing author of the SPM for AR5; science presentation to approval plenary on climate sensitivity. Lead Author of the IPCC WG1 AR5 chapter 10: Detection and Attribution: from global to regional; Coordinating Lead Author of WG1 AR4 Chapter 9 (Understanding and Attributing Climate Change) and Lead Author of Chapter 12 (Detection of Climate Change and Attribution of Causes) of the *IPCC Third Assessment Report*, WG1. Lead of writing team for IPCC Good Practice Guidance Paper on attribution; Lead Author for the *US Climate Change Assessment report* on changes in climatic extremes (SAP 3.3), and on Attribution and reanalysis (SAP 1.3).

Member of the US National Academies / National Research Council's *Climate Research Committee to 2009*; Chair of the *scientific review group of the UK Met Office Hadley Centre since 2014 (member since ca 2010)*; *past member of the CLISAP centre for excellence in Hamburg, Germany, and the Alfred Wegener Center for Climate and Global Change, Graz, Austria, to 2011*;

Co-leader of the World Climate Research Program (WCRP) Grand Challenge on climate extremes (<http://www.wcrp-climate.org/index.php/gc-extreme-events>); Member of the CLIVAR Joint Expert Team on Climate Change Detection and Indices, since 2006 and Member of the (WCRP) *Working Group on Coupled Modeling*, 1999 to 2004.

Principal Investigator for International Detection and Attribution Group (IDAG), a worldwide collaboration of researchers working on understanding and attributing climate change that is funded by DOE and NOAA, 2005 to 2010 (see grants) and chair of the Science Oversight Committee for the World Weather Attribution project by Climate Central and Oxford University, since 2014.

Local Organizer for 11th International Meeting of Statistical Climatology in Edinburgh, summer 2009 (<http://cccma.seos.uvic.ca/imsc/11imsc.shtml>; ~250 attendants); member of IMSC steering committee; Associate Editor, J Climate.

Testified to the *US House of Representatives subcommittee on Energy, Committee on Commerce*, Washington, USA, 3/2007, on the causes of climate change.

Visiting Scientist at the Hadley Centre for Climate Prediction and Research, Bracknell, UK, September, 2001; July and August 1997; and at Texas A&M University, Climate System Research Program, College Station, TX, September and October 1994.

Member American Geophysical Union (AGU), American Meteorological Society (AMS).

Member of Climate Science Rapid Response team (media initiative of top climate scientists for responding to questions about climate change).

REVIEWED PUBLICATIONS AND PERSPECTIVE PIECES (citations, web of science). H-index 37, Total citations without self-citation 5372 (based on 100 papers available to web of science). (SV) indicates publication led by supervised researcher and '*' a publication listed among top 20

1. Schmidbauer O., Casacuberta F., Castro M. J., Höge H., Hegerl G. C., Sanchez J. A., Zlokarnik I. (1993): *Articulatory Representation and Speech Technology, Language and Speech*, 36 (2,3): 331-351. (5)
2. Cubasch U., Santer B. D., Hellbach A., Hegerl G. C., Höck H., Maier-Reimer E., Mikolajewicz U., Stössel A. and Voss R. (1994): Monte Carlo climate forecasts with a global coupled ocean-atmosphere model, *Climate Dynamics*, 10: 1-9. (86)
3. Cubasch U., Hegerl G. C., Hellbach A., Höck H., Mikolajewicz U., Santer B. D. and Voss R. (1995): A Climate Change simulation starting from 1935, *Climate Dynamics*, 11: 71-84. (38)
4. Cubasch U., Waszkewitz J., Hegerl G. C. and Perlwitz, J. (1995): Regional climate changes as simulated in time-slice experiments. *Climatic Change* 31: 273-304. (94)
5. Cubasch U., Santer B. D. and Hegerl G. C. (1995): Klimamodelle - wo stehen wir? *Physikalische Blätter* 51: 269-276.
6. *Hegerl G.C., v. Storch H., Hasselmann K., Santer B. D., Cubasch U. and Jones P. D. (1996): Detecting greenhouse gas induced Climate Change with an optimal fingerprint method. *J. Climate* 9, 2281-2306. (172)
7. Cubasch U., Hegerl G. C. and Waszkewitz J. (1996): Prediction, detection and regional assessment of anthropogenic climate change, *Geophysica*, 32, 77-96.
8. Kim K.Y., North G.R. and Hegerl G.C. (1996): Comparison of the second-moment statistics of climate models. *J. Climate*, 9, 2204-2221.
9. Hegerl G.C. and v. Storch H. (1996): Applying coupled ocean-atmosphere models for predicting, detecting and specifying Climate Change. *ZAMM (Zeitschrift für angewandte Mathematik und Mechanik)*, special issue ICIAM/GAMM 95, 4: Applied Sciences, especially Mechanics. E. Kreuzer and O. Mahrenholtz (eds.), 482-485.
- 10.*Hegerl G.C. and North G. R. (1997): Comparison of statistically optimal approaches to detecting anthropogenic climate change. *J. Climate*, 10, 1125-1133. (26)
11. von Storch J., Kharim V., Cubasch U., Hegerl G.C., Schriever D., von Storch H. and Zorita E. (1997): A 1260-year control integration with the coupled ECHAM1/LSG general circulation model. *J. Climate*, 10, 1525-1543. (21)
12. Cubasch U., Voss R., Hegerl G.C., Waszkewitz J. and Crowley T. J. (1997): Simulation of the influence of solar radiation variations on the global climate with an ocean-atmosphere general circulation model. *Climate Dynamics*, 13, 757-767. (192)
13. *Hegerl G. C., Hasselmann K., Cubasch U., Mitchell, J. F. B., Roeckner E., Voss, R. and Waszkewitz J. (1997): Multi-fingerprint detection and attribution analysis of greenhouse gas, greenhouse gas-plus-aerosol and solar forced climate change. *Climate Dynamics*, 13, 613-634. (189)

14. Barnett T., Hegerl G. C., Santer B. D. and Taylor K. (1998): The potential effect of GCM uncertainties and internal atmospheric variability on anthropogenic signal detection. *J. Climate*, 11: 659-675. (10)
15. Jones P.D. and Hegerl, G. C. (1998): Comparisons of two methods of removing anthropogenic-related variability from the near-surface observational temperature field. *J. Geophysical. Res.*, 103, 13777-13786. (13)
16. Hegerl G. C. (1998): The past as a guide to the future. Perspective, *Nature* 392, 758-759. (7)
17. Barnett T. P., Hasselmann K., Chelliah M., Delworth, T., Hegerl G. C., Jones P. D., Rasmusson E., Roeckner, E., Ropelewski C., Santer B. D. and Tett, S.F.B. (1999): Detection and Attribution of Recent Climate Change: A Status Report. *Bull. Am. Met. Soc.* 80, 2631-2660. (103)
18. Stouffer R. J., Hegerl G. C. and Tett S. F. B. (2000): A comparison of Surface Air Temperature Variability in Three 1000-Year coupled Ocean-Atmosphere Model Integrations. *J. Climate*, 13, 513-537. (43)
19. Hegerl G. C., Stott P., Allen M., Mitchell J. F. B., Tett S. F. B. and Cubasch U. (2000): Detection and attribution of climate change: Sensitivity of results to climate model differences. *Climate Dynamics*, 16, 737-754. (33)
20. *Thompson D. W. J., Wallace J.M. and Hegerl G. C. (2000): Annular Modes in the Extratropical Circulation. Part II Trends. *J. Climate*, 13, 1018-1036. (614)
21. *Chang P., Saravanan R. Ji L., Hegerl G.C. (2000): The Effect of Local Sea-Surface Temperature on Atmospheric Circulation over the Tropical Atlantic Sector. *J. Climate*, 13, 2195-2216. (126)
22. Gillett, N. P., Hegerl G. C., Allen M. R., Stott P. A. (2000): Implications of changes in the Northern Hemispheric circulation for the detection of anthropogenic climate change. *Geophys. Res. Let.*, 27, 993-996. (38)
23. Barnett T. P., Hegerl G.C., Knutson T. and Tett S.F.B. (2000): Uncertainty Levels in Predicted Patterns of Anthropogenic Climate Change. *J. Geophys. Res.* 105, 15 525-15 542.
24. Hegerl G.C., Jones P.D. and Barnett T.P. (2001): Effect of observational sampling error on the detection of anthropogenic climate change. *J. Climate*, 14, 198-207 (20)
25. Mitchell J. F. B, Karoly D. J., Hegerl G.C., Zwiers F. W., Allen, M. R. and Marengo J. (2001): Detection of Climate Change and Attribution of Causes. In: J. T. Houghton et al. (eds.) *Climate Change 2000. The Third Scientific Assessment*, Intergovernmental Panel on Climate Change (IPCC), 695-738. (164 google scholar)
26. Karoly D.J., J.F.B. Mitchell, M. R. Allen, G. Hegerl, J. Marengo and F. Zwiers (2003): Comment on Soon et al. (2001) ' Modeling climatic effects of anthropogenic carbon dioxide emissions: unknowns and uncertainties. *Climate Research* 24, 91-92.
27. Hegerl G.C. and Allen M. R. (2002): Origins of model-data discrepancies in optimal fingerprinting. *J. Climate*, 15, 1348-1356. (11)
28. Gillett, N.P., Hegerl G.C., Allen M.R., Stott P.A. and Schnur R. (2002): Reconciling two approaches to the detection of anthropogenic influence on climate. *J. Climate*, 15, 326-329 (7)
29. *Hegerl G. C. and Wallace, J. M. (2002): Influence of patterns of climate variability on the difference between satellite and surface temperature trends. *J. Climate*, 15, 2412-2428. (21)
30. Gillett, N. P., Zwiers F. Z., Weaver A. J., Hegerl G. C., Allen M.R. and Stott P. A. (2002): Detecting anthropogenic influence with a multi-model ensemble. *Geophys. Res. Let.*

29.1029/2002GL015836. (51)

31. *Hegerl G. C., T. J. Crowley, S. K. Baum, K.-Y. Kim and W. T. Hyde (2003): Detection of volcanic, solar and greenhouse gas signals in paleo-reconstructions of Northern Hemispheric temperature. *Geophys. Res. Lett* 30(5). 1242. doi: 10.1029/2002GL016635 (71)
32. Crowley, T. C., S. K. Baum, K.-Y. Kim, G. C. Hegerl and W. T. Hyde (2003), Modeling Ocean Heat Content Changes During the Last Millennium. *Geophys. Res. Lett.* 30, 1932, doi:10.1029/2003GL017801. (68)
33. *Hegerl, G. C., F. Zwiers, S. Kharin and Peter Stott (2004): Detectability of anthropogenic changes in temperature and precipitation extremes. *J. Climate*, 17, 3683-3700. (105)
34. Allen M.R., Gillett N. P., Kettleborough J. A., Hegerl G.C., Schnur R., Stott P., Boer G., Covey C., Delworth T., Jones G.S., Mitchell J. F. B. and Barnett T. (2005): Quantifying anthropogenic influence on recent near-surface temperature. *Reviews of Geophysics*, 27, 491-544 (23)
35. The International Ad Hoc Detection Group (T. Barnett, F. Zwiers, G. Hegerl and others) (2005): Detecting and Attributing External Influences on the Climate System: A Review of Recent Advances. *J Climate* 16, 1291-1314. (105)
36. Lee, T. K., Zwiers F., Hegerl, G. Zhang, X and Tsao M. (2005): A Bayesian climate change detection and attribution assessment. *J. Climate*, 18, 2429–2440. (18)
37. Groisman, P., R. Knight, D. R. Easterling, T. R. Karl, G. Hegerl and Vy. N. Razuvaev (2005): Trends in intense precipitation in the climate record. *J. Climate*, 18, 1326-1350. (341)
38. *Zhang, X., G. Hegerl, F. Zwiers and J. Kenyon (2005): Avoiding inhomogeneity in percentile-based indices of temperature change. *J. Climate*, 18, 1641-1651. (79)
39. Christidis, N., P.A. Stott, S. Brown, G. C. Hegerl and J. Caesar (2005): Detection of changes in temperature extremes during the 20th century. *Geophys. Res. Lett.*, 32, L20716, doi:10.1029/2005GL023885 (60)
40. Hegerl, G. C. and N. L. Bindoff (2005): Warming the world's oceans. *Perspective in Science*, 309, 254-255 (20).
41. Hegerl G. C., T. Karl, M. Allen, N. Bindoff, N. Gillett, D. Karoly and F. Zwiers (2006): Climate Change detection and attribution: Beyond mean temperature signals. *J. Climate*, invited contribution through CLIVAR, *J. Climate* 19, 5088-5077. (39)
42. Juckes, M., M. Allen, K. Briffa, J. Esper, G. Hegerl, A. Moberg, T. Osborn, S. Weber and E. Zorita (2006): Millennial Temperature Reconstruction Intercomparison and Evaluation. *Climate of the Past Discussions*, Vol. 2, pp 1001-1049, 26-10-2006. (58)
43. *Hegerl G. C., T. Crowley, W. T. Hyde and D. Frame (2006): Climate sensitivity constrained by temperature reconstructions of the last seven centuries, *Nature*, 440, doi:10.1038/nature04679. (193)
44. Allen, M. R., N. Andronova, B. Booth, S. Dessai, D. Frame, C. Forest, J. Gregory, G. Hegerl, R. Knutti, C. Piani, and D. Stainforth (2006): Observational constraints on climate sensitivity, chapter 29, in: *Avoiding dangerous climate change*, 27:491-544.
- 45.*Hegerl G. C., T. Crowley, M. Allen, W. T. Hyde, H. Pollack, J. Smerdon, E. Zorita (2007): Detection of human influence on a new 1500yr climate reconstruction, *J. Climate*, 20, 650-666. (124)
46. Kharin, V., F. W. Zwiers, X. Zhang and G. C. Hegerl (2007): Changes in temperature and precipitation extremes in the IPCC ensemble of global coupled model simulations. *J. Climate*, 20, 1417-1444, doi 10.1175/JCLI4066.1. (267)

47. *Zhang, X., F. W. Zwiers, G. C. Hegerl, N. Gillett, H. Lambert, S. Solomon, P. Stott and T. Nozawa (2007): Detection of Human Influence on 20th Century Precipitation Trends. *Nature*, 468, 448, 461-466 (339)
48. Hegerl G. C., T. Crowley, W. T. Hyde and D. Frame (2007): Reply to "Uncertainties in Climate sensitivity. *Nature* 446, E2, doi 10.1038/nature05708.
49. Hegerl, G. C., F. W. Zwiers, P. Braconnot, N. P. Gillett, Y. Luo, J. Marengo, N. Nicholls, J. E. Penner and P. A. Stott (2007): Understanding and Attributing Climate Change. In: S. Solomon et al. (ed.) *Climate Change 2007. The Fourth Scientific Assessment*, Intergovernmental Panel on Climate Change (IPCC), Cambridge University Press, Cambridge, 663-745. (457)
50. Solomon, S et al. (incl. Hegerl, GC; 2007) *Technical summary*. In: *Climate Change 2007: The Physical Science Basis*. Contribution of Working Group 1 to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge University Press, New York, pp. 19-91. (473: google scholar)
51. Forster, P., G. Hegerl, R. Knutti, V. Ramaswamy, S. Solomon, T.F. Stocker, P. Stott, and F. Zwiers (2007): Assessing uncertainty in climate simulations. *Nature Reports Climate Change*, 4, 63-64.
52. Knutti, R., M. R. Allen, P. Friedlingstein, J. M. Gregory, G.C. Hegerl, G. A. Meehl, M. Meinshausen, J. M. Murphy, G.-K. Plattner, S. C. B. Raper, T. F. Stocker, P. A. Stott, H. Teng and T. M.; L. Wigley (2008): A review of uncertainties in global temperature projections over the twenty-first century, *Journal of Climate*, 21, 2651-2663. (93)
53. *Kenyon, J and G. C. Hegerl (2008): Influence of modes of variability on global temperature extremes. *J. Climate* 21, 3872-3889 (43)
54. Lavine, M., G. C. Hegerl and S. Lozier (2009): Discussion of Reified Bayesian Modelling and Inference for Physical Systems. *J. Stat. Planning and Inference*. 139.3 (2009): 1243-1245..
55. Zhang, X., Francis Zwiers and G. Hegerl (2008): The Influence of data precision on the calculation of temperature percentile indices. *Int. J of Climatology*. Doi10.1002/joc.1738
56. Portmann R. W., S. Solomon and G.C. Hegerl (2009): Linkages between climate change, extreme temperature and precipitation across the United States. *PNAS*, 106, 7324-7329 (59)
57. Gutowski, W. J; G.C. Hegerl, G. J. Holland, T. R. Knutson, L. O. Mearns, R. J. Stouffer, P. J. Webster, M. F. Wehner and F. W. Zwiers (2008): Causes of Observed Changes in Extremes and Projections of Future Changes. In *Weather and Climate Extremes in a Changing Climate*, US Climate Change Science Program SAP 3.3, T. Karl et al., Eds. pp. 81-116. (22)
58. Gillett, N., D. Stone, P. Stott and G. Hegerl (2008): Attribution of polar warming to human influences. *Nature GeoSciences*, (1), no11, 750-754. (68)
59. *Knutti, R and G. Hegerl (2008): The equilibrium sensitivity of Earth's temperature to radiation changes. *Nature GeoSciences*, (1), no 11, 735-743. (184)
60. Zwiers, F. and G. Hegerl, 2008: Climate change: Attributing cause and effect, News and Views, *Nature* 453, 296-297 (27)
61. Sang, H., A. E. Gelfand, C. Lennard, G. Hegerl and Bruce Hewitson (2008): Interpreting self-organizing maps through space-time models. *Annals of Applied Statistics*, 2, 1194-1216
62. Hegerl, G. C. and S. Solomon (2009): Risks of Climate Engineering. *Perspective in Science*, 325, 955-966, August 2009 (23)
63. Meehl, G.A. L. Goddard, J. Murphy, R.J. Stouffer, G. Boer, G. Danabasoglu, K. Dixon, M.A.

- Giorgetta, A. Greene, E. Hawkins, G. Hegerl, D. Karoly, N. Keenlyside, M. Kimoto, B. Kirtman, A. Navarra, R. Pulwarty, D. Smith, D. Stammer, and T. Stockdale, 2009: Decadal prediction: Can it be skillful? *Bull. Amer. Meteorol. Soc.*, 90, 1467—1485. (161)
64. Hegerl, G.C., O. Hoegh-Guldberg, G. Casassa, M.P. Hoerling, R.S. Kovats, C. Parmesan, D.W. Pierce, P.A. Stott (2009): Good Practice Guidance Paper on Detection and Attribution Related to Anthropogenic Climate Change. In: *Meeting Report of the Intergovernmental Panel on Climate Change Expert Meeting on Detection and Attribution of Anthropogenic Climate Change* [Stocker, T.F., C.B. Field, D. Qin, V. Barros, G.-K. Plattner, M. Tignor, P.M. Midgley, and K.L. Ebi (eds.)]. IPCC Working Group I Technical Support Unit, University of Bern, Bern, Switzerland.
65. Stott, P.A., N. P. Gillett, G.C. Hegerl, D.Karoly, D. Stone, X. Zhang and F. Zwiers (2010): Detection and Attribution of Climate Change: A Regional Perspective. *WIREs: Climate Change*, (1), Jan 2010 (81)
66. Solomon, A., L. Goddard, A. Kumar, J. Carton, C. Deser, I. Fukumori, A. Greene, G. Hegerl, B. Kirtman, Y. Kushnir, M. Newman, D. Smith, D. Vimont, T. Delworth and T. Stockdate (2010): Distinguishing the roles of natural and anthropogenically forced decadal climate variability: Implications for prediction. *Bull. Amer. Meteorol. Soc.*, 92, 141ff (45)
67. Kenyon, J and G. C. Hegerl (2010): Influence of models of climate variability on global precipitation extremes. *J. Climate* 23, 6248-6262. (18) (SV)
68. *Min, S.-K, X. Zhang, F. W. Zwiers and G. C. Hegerl (2011): Human contribution to more intense precipitation extremes. *Nature* 470, 376-379. (234)
69. Stott, P. A., G. Jones, N. Christidis, F. Zwiers, G. Hegerl, and H. Shiogama (2010): Single-step attribution of increasing frequencies of very warm regional temperatures to human influence" *Atmospheric Science Letters* 11: doi 10.1002/asl.315 (12)
70. *Hegerl, G. C, J. Luterbacher, F. Gonzalez-Ruoco, S.F.B. Tett and E. Xoplaki (2011): Influence of human and natural forcing on European seasonal temperatures. *Nature GeoScience*, 4, 99-103 (33)
71. Lackner, B., A. Steiner, G. Hegerl and G. Kirchengast (2011): Atmospheric Climate Change Detection by Radio Occultation Data Using a Fingerprinting Method. *J. Climate*, 24, 5275-5291. (10)
72. Hoegh-Guldberg, O., G. Hegerl, T. Root, F. Zwiers, P. Stott, D/ Pierce and M./ Allen (2011): Difficult but not impossible. *Nature climate change* correspondence, 1, 72-72. (4)
73. Hegerl, G., H. Hanlon, and C Beierkuhnlein (2011): Elusive Extremes. Perspective in *Nature GeoScience*, 4, 142-143. (15)
74. Hegerl, G.C. and F.W. Zwiers (2011): Use of models in detection and attribution of climate change. *WIREs: Climate Change*, 2, 570-591. (27)
75. Morak, S., Hegerl G. Kenyon J (2011): Detectable Regional Changes in the Number of Warm Nights. *Geophys. Res. Let.*, 38, L17703. (21) (SV)
76. Hegerl, G.C., F.W. Zwiers and C. Tebaldi (2011): Patterns of change: Whose fingerprint is seen in global warming. *Env. Res. Let.*, 6, 044025.
77. Hegerl, G.C., 2011: Global warming: it is not only size that matters. Perspective in *Environ. Res. Let.* 6 (2011) 031002.
78. Noake, K., D. Polson, G. C. Hegerl and X. Zhang (2011): Changes in seasonal land precipitation during the twentieth century. *Geophys. Res. Let.* 39, L03706 (11) (SV)
79. Zhang, X, L. Alexander, G.C. Hegerl, P.D. Jones, A. Klein-Tank, T.C. Peterson, B. Trewin and F. Zwiers (2011) Indices for Monitoring Changes in Extremes based on Daily Temperature

- and Precipitation Data. *WIREs Clim Change* 2011. doi: 10.1002/wcc.147 (55)
80. Hegerl, G.C., Stott, P. A., Solomon S. and Zwiers, F.W. (2011) Comment on Climate Science and the Uncertainty Monster by J.A. Curry and P.J. Webster. *Bull. Am. Met. Soc.* 92, 1683-1685.
 81. Hegerl, G.C. and Russon, T. (2011): Using the Past to Predict the Future? Perspective in *Science*, 10.1126/science.1214828 (6)
 82. Morak, S., Hegerl, N. Christidis (2012): Detectable Changes in Temperature Extremes. *J. Climate* 26, 1561-1574, DOI: 10.1175/JCLI-D-11-00678.1 (10) (SV)
 83. Zwiers, FW, GC Hegerl, S-K Min, X Zhang (2012): Historical Context. In Peterson, TC, PA Stott, S Herring, Eds., 2012: Explaining Extreme Events of 2011 from a Climate Perspective. *Bull. Amer. Meteorol. Soc.*, July 2012, 1041-1066
 84. Mahlstein I., Hegerl G.C. and Solomon S. (2012) Emerging local warming signals in observational data. *GRL* 39, L21711, DOI: 10.1029/2012GL053952 (2)
 85. Peterson T.C., P.A. Stott, S. Herring, F.W. Zwiers, G.C. Hegerl et al. (2012): Explaining extreme events of 2011 from a Climate Perspective. *Bull. Am. Met. Soc.* 93, 1041-1067 (44).
 86. Zanchettin D, Timreck C, Bothe O. Lorenz S.J., Hegerl G.C., Graf H.-F., Luterbacher J., Jungklaus J (2013): Delayed Winter Warming: A decadal dynamical response to strong volcanic eruptions. *Geophys. Res. Lett.* 40, 204-209 DOI: 10.1029/2012GL054403 (6)
 87. Zwiers, FW, LV Alexander, GC Hegerl, J Kossin, TR Knutson, P Naveau, N Nicholls, C Schar, SI Seneviratne, X Zhang (2013): Climate Extremes: Challenges in Estimating and Understanding Recent Changes in the Frequency and Intensity of Extreme Climate and Weather Events. G.R. Asrar and J.W. Hurrell (eds.) *Climate Science for Serving Society: Research, Modeling and Prediction Priorities*, DOI 10.1007/978-94-007-6692-1_13.
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