



Australian Government
Bureau of Meteorology

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In reply please quote:
Exec 12/0036

Mr Malcolm-Ieuan Roberts
180 Haven Road
Pullenvale QLD 4069

Dear Mr Roberts

Thank you for your email and letter of 21 February to Dr Greg Ayers on behalf of Mr Robert Brock, regarding the earth's changing climate. Dr Ayers recently retired due to illness and I am currently acting as Director of Meteorology.

I have given consideration to your complaint and am confident that the Bureau's staff have acted professionally in their response to Mr Brock. After several personal attacks on Bureau climate scientists, we have implemented a policy of not identifying respondents by name. I trust you will accept that this is an appropriate security measure, enacted to protect Bureau staff.

The Bureau is unable to answer all climate change enquiries with detailed personalised responses. To do so would distract our staff from vital operational duties and would not, in my judgement, serve the public interest. In coming to this decision I have taken into account the fact that either (1) the concerns you raise can be readily addressed through reference to the scientific literature, (2) the concerns you raise are of a government policy nature and thus not appropriate for me to comment on, or (3) the concerns you raise involve conjecture about the integrity of third parties, upon which I am unprepared to comment.

To assist you in better understanding climate science matters, I include a list of web links at Attachment A and a list of publications on climate change attribution at Attachment B. I encourage you to review this material and consult with the authors of these papers to answer your questions on humankind's role in global warming.

The fundamental physical and chemical processes leading to climate change are now well understood and very widely accepted. More than three decades of international research have led us to clear conclusions on this issue, in particular that:

- (i) the Earth is warming;
- (ii) warming over the last 60 years is due to increasing atmospheric carbon dioxide concentrations from the burning of fossil fuels; and
- (iii) the Earth will continue to warm into the future as a result of current and future increases in atmospheric carbon dioxide.

The Bureau of Meteorology's own observations have provided compelling evidence that the Earth's atmosphere and oceans are warming and that sea levels are rising. Our findings accord with those published by virtually all of the world's science institutions and learned societies.

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This consensus reflects the findings of decades of research published in the peer reviewed scientific literature. Research conducted at the Bureau of Meteorology has made a significant contribution to that body of work.

I draw your attention to the recently published *State of the Climate 2012* report, prepared jointly by the Bureau of Meteorology and CSIRO. This provides a concise summary of our recent observations and research findings concerning climate change.

You may also be interested in the Bureau's recent release of the *Australian Climate Observations Reference Network – Surface Air Temperature (ACORN-SAT)* dataset that has been developed for monitoring climate variability and change in Australia. The dataset employs the latest analysis techniques and takes advantage of newly digitised observational data to provide a daily temperature record over the last 100 years. Recognising the importance of high quality datasets as the basis for climate change analysis, the Bureau commissioned an independent scientific peer review of the *ACORN-SAT* processes and methodologies in August 2011. The international panel ranked the Bureau's procedures and data analysis as amongst the best in the world. *ACORN-SAT* details, including the Bureau's input to the review and the findings of the review panel, can be found at <http://www.bom.gov.au/climate/change/acorn-sat/>.

In concluding, I would like to emphasise that the Bureau of Meteorology takes great care in the work we do on climate change. We take pride in our scientific integrity and the provision of data, products and services for the public good. We share our observations daily with the world and our research is peer reviewed and published in high quality international journals for everyone to see. We encourage others to publish their work in this format, so that their findings can properly contribute to our understanding of climate change.

I hope this information is of assistance to you, and I wish you well with your own investigations.

Yours sincerely

A handwritten signature in blue ink, appearing to read 'Rob Vertessy'.

Dr Rob Vertessy
Acting Director of Meteorology

3 April, 2012

Attachment A

Suggested web links for further information on Climate Change

See the Bureau's website at <http://www.bom.gov.au/climate/change>

The recent *State of the Climate 2012* report, jointly prepared by the Bureau of Meteorology and CSIRO can be found at <http://www.csiro.au/Outcomes/Climate/Understanding/State-of-the-Climate-2012.aspx>

The Bureau of Meteorology's recent update to the national climate record can be found at <http://www.bom.gov.au/climate/change/acorn-sat/>

Since 1976 the Bureau has been taking greenhouse gas concentration measurements at Cape Grim <http://www.bom.gov.au/inside/cgbaps>

CSIRO has been analysing these measurements and this information is available at <http://www.csiro.au/greenhouse-gases/>

Together with CSIRO the Bureau has been researching how climate will change in Australia in the future. The climate projections are at <http://www.climatechangeinaustralia.gov.au>

The Australian Government's Department of Climate Change and Energy Efficiency (DCCEE) has published answers to a range of frequently asked questions. These can be found at <http://www.climatechange.gov.au/en/climate-change/understanding-climate-change.aspx>

CSIRO has produced an extensive range of materials and published these on their website. Listed below are links for a number of informative websites:

<http://www.csiro.au/resources/Climate-Change-Book>

<http://www.csiro.au/resources/Climate-questions-science-facts.html>

<http://www.csiro.au/science/the-science-of-climate-change.html>

<http://www.csiro.au/resources/pfxh.html>

<http://www.csiro.au/resources/ps3cw.html>

<http://www.csiro.au/resources/psrs.html>

<http://www.csiro.au/news/ps398.html>

<http://www.csiro.au/news/ps38x.html>

<http://www.csiro.au/news/ps38w.html>

Other sites that you may find useful are:

The Intergovernmental Panel on Climate Change <http://www.ipcc.ch>

The Australian Academy of Science <http://www.science.org.au/policy/climatechange.html>

The Royal Society <http://royalsociety.org/Climate-change-controversies-a-simple-guide/>

Real Climate <http://www.realclimate.org/index.php/archives/2007/05/start-here>

Skeptical Science <http://www.skepticalscience.com/>

Attachment B
Pre-eminent Publications on climate change attribution

Hegerl, G.C., et al., 2007: Understanding and Attributing Climate Change. In: Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.

Stott, P. A., Gillett, N. P., Hegerl, G. C., Karoly, D. J., Stone, D. A., Zhang, X. and Zwiers, F., 2010: Detection and attribution of climate change: a regional perspective. *WIREs Clim Change*, 1: 192–211. doi: 10.1002/wcc.34

Stott PA., 2003: Attribution of regional-scale temperature changes to anthropogenic and natural causes. *Geophys Res Lett* ; **30**: 1724. DOI:10.1029/2003GL01732

Gillett NP, Stone DA, Stott PA, Nozawa T, Karpechko AY, *et al.*, 2008: Attribution of polar warming to human influence. *Nat Geosci*; **1**: 750–754.

Hegerl GC, Karl TR, Allen M, Bindoff NL, Gillett N. *et al.*, 2006: Climate change detection and attribution: beyond mean temperature signals. *J Climate*, ; **19**: 5058–5077.

Willett KM, Gillett NP, Jones PD, Thorne PW., 2007: Attribution of observed surface humidity changes to human influence. *Nature*; **449**: 710–713. DOI:10.1038/nature06207.

Barnett TP, Pierce DW, AchutaRao KM, Gleckler PJ, Santer BD, *et al.*, 2005: Penetration of a warming signal in the world's oceans: human impacts. *Science*; **309**: 284–287.