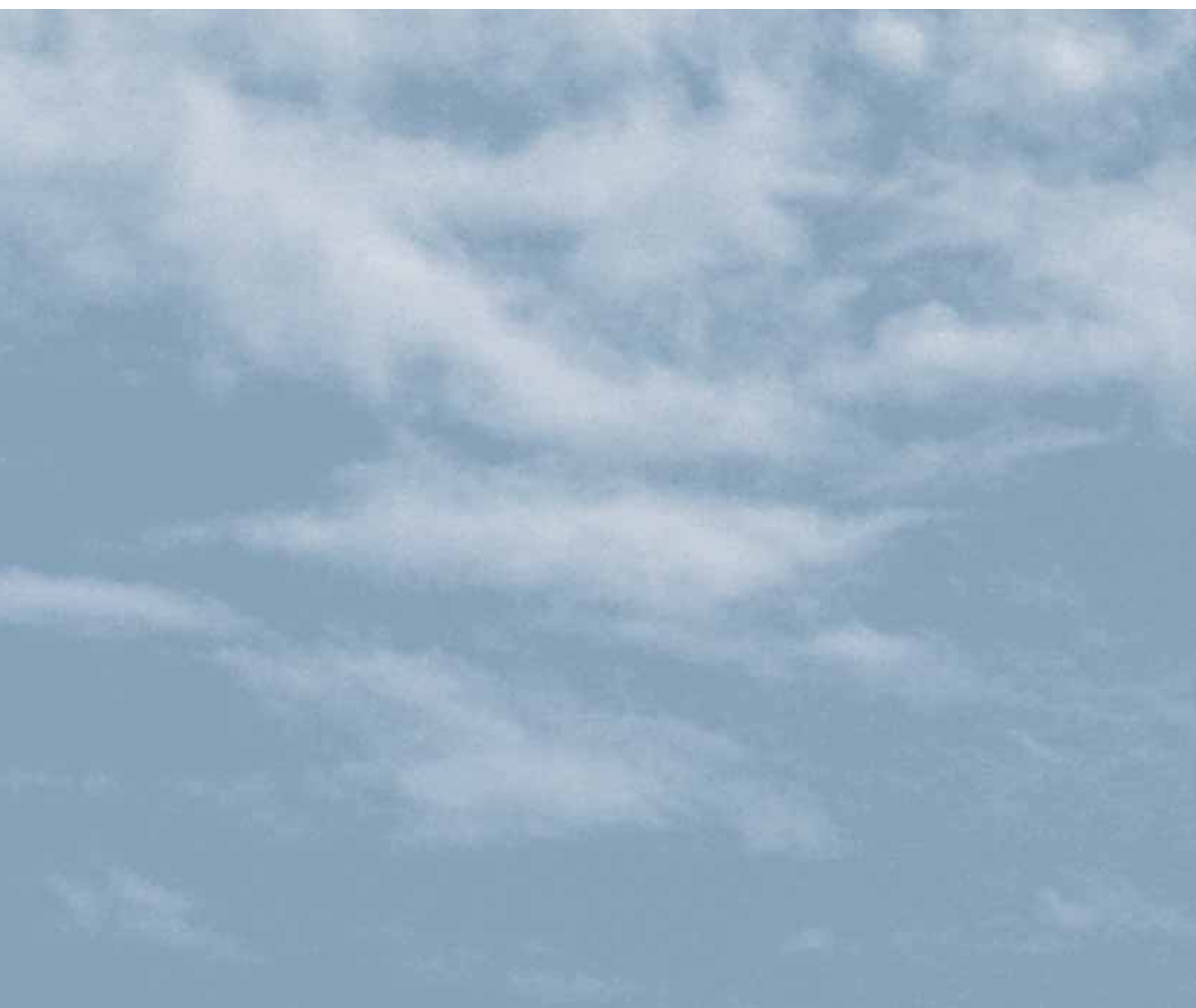




Australian Government
Bureau of Meteorology

ACORN-SAT guidance document

Report 1 for the Independent Peer Review of the ACORN-SAT data-set



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1. Review background

The Bureau of Meteorology maintains an extensive network of environmental monitoring systems across Australia that is used to detect changes in Australia's climate system.

These include surface and upper-air measurements of temperature and humidity, ocean temperatures, atmospheric pressures, cloud cover and sea levels.

An important subset of this network is our surface air temperature record, constituted of 112 stations located across Australia with long records and minimal site disturbances. This data-set undergoes continuous improvement and we are in the process of evaluating a recent significant update that is founded on revised analysis methods and a larger number of data points.

We refer to this data-set as the Australian Climate Observations Reference Network – Surface Air Temperature (or ACORN-SAT) data-set. Our intent is to publish this new analysis in the scientific peer-review literature and to make all of the new data-sets and details of the related measurement, curation and analysis methods freely available to the public (as they presently are for the existing climate reference data-set).

Recognising the community interest in the integrity of the ACORN-SAT data-set, the Bureau Executive, in November 2010, directed that an Independent Peer Review of the data-set and related measurement, curation and analysis methods be undertaken.

The Review will take place over the period 8-12 August 2011 and the Review findings should be provided to the Bureau by 9 September 2011.

The Review will be chaired by Mr Ken Matthews AO. Mr Matthews is an eminent Australian, having served as Chairman and Chief Executive of the National Water Commission, Secretary of the Department of Agriculture, Forestry and Fisheries, and Secretary of the Department of Transport and Regional Services.

Three eminent climate scientists with specialised knowledge of climate data collection, management and analysis will provide technical expertise for the Review. Each is internationally recognised for his/her work and is widely published in the field.

The technical members of the Review Panel are:

- **Dr Thomas Peterson**, Chief Scientist, National Climatic Data Center, National Oceanic and Atmospheric Administration, United States
- **Dr David Wratt**, Chief Scientist (Climate), National Institute of Water and Atmospheric Research, New Zealand
- **Dr Xiaolan Wang**, Research Scientist, Climate Research Division, Environment Canada.

Dr Thomas Peterson is an expert in data fidelity, international data exchange, global climate change analysis as well as the impacts of climate change. He was a lead author on the IPCC Fourth Assessment Report and served as co-chair and co-Editor-in-Chief of the 2009 report *Global Climate Change Impacts in the United States*. In addition to serving as the Chief Scientist at the U.S. National Climatic Data Center, Tom is currently President of the World Meteorological Organization's Commission for Climatology.

Dr David Wratt is Chief Scientist, Climate, at New Zealand's National Institute of Water & Atmospheric Research. David has a PhD in Atmospheric Physics and has worked in the USA, Australia and New Zealand on climate and meteorology. He is a Companion of the Royal Society of New Zealand, and a member of the Bureau of the Intergovernmental Panel on Climate Change.

Dr Xiaolan Wang is a Senior Research Scientist at Climate Research Division of Environment Canada. She has considerable expertise in the analysis of climate trends, extremes and variability. She is at the leading edge of development of methods for climate data homogenisation to enable more realistic assessment of climate trends. Dr Wang is a member of a Global Climate Observing System/World Climate Research Programme working group on surface pressure and a member of the U. S. National Oceanic and Atmospheric Administration's Climate Change Detection and Data Program Panel, 2009.

2. Review terms of reference

1. Review and provide comments on:
 - (a) The observation practices employed by the Bureau of Meteorology for surface air temperature measurements;
 - (b) The methodology used to select stations for the ACORN-SAT data-set;
 - (c) The approach and methodologies applied to these data to ensure the homogeneity of the data-set, with particular emphasis on:
 - i the relocation of sites;
 - ii changes in observation practices;
 - iii changes in instrumentation; and
 - iv urban heat island effects.
 - (d) The methodologies applied in the analysis of trends in the ACORN-SAT data-set; and
 - (e) The overall level of confidence that can be placed in the climate trends that have been inferred from the ACORN-SAT data-set.
2. Provide the Bureau with any additional guidance or comments on the compilation and analysis of climate data time series for use in climate change detection; and
3. Provide a written report on the above actions, by no later than 9 September 2011.

3. Review evaluation criteria

The Review Panel should apply one of the following evaluative scores to Terms of Reference 1a-e:

Term of Reference	Evaluative score
1a. The observation practices employed by the Bureau of Meteorology for surface air temperature measurements	1. Amongst international best practice 2. Above average standard 3. Average standard 4. Below average standard 5. Well below average standard
1b. The methodology used to select stations for the ACORN-SAT data-set	1. Appropriate 2. Would be appropriate with minor adjustment 3. Inappropriate and requires major adjustment
1c. The approach and methodologies applied to these data to ensure the homogeneity of the data-set	1. Amongst international best practice 2. Above average standard 3. Average standard 4. Below average standard 5. Well below average standard
1d. The methodologies applied in the analysis of trends in the ACORN-SAT data-set	1. Appropriate 2. Would be appropriate with minor adjustment 3. Inappropriate and requires major adjustment
1e. The overall level of confidence that can be placed in the climate trends that have been inferred from the ACORN-SAT data-set	1. Very high confidence 2. High confidence 3. Moderate confidence 4. Low confidence 5. No confidence

4. Review disclosure and communication arrangements

The Review will produce a variety of documentation and communication artefacts. It is planned that all of these will be made available to members of the public upon request, unless they are explicitly identified as deliberative (not final) in nature.

The following protocols have been agreed to within the Bureau and it is recommended that the Review Panel members abide by these also.

1. Assume that ALL documentation and communication associated with the Review will be open to public view.
2. Mark all email correspondence associated with the Review with 'ACORN-SAT' in the subject line.
3. cc all emails associated with the Review to 'acorn-sat@bom.gov.au'.
4. Keep all incoming and outgoing emails associated with the Review in a folder called 'ACORN-SAT' for ready future access should that be requested.
5. Any confidential or sensitive documents should be clearly marked, e.g. through a watermark, with the words: 'SENSITIVE UNTIL REVIEWED BY FOI OFFICER'.

The Bureau regards this Review as a 'Business as Usual' activity and is therefore not promoting the process. Nevertheless, because climate change is an emotive topic in Australia we expect that media interest in the process may arise. Should the Bureau be approached by the media, we will provide information on the scope of the Review and details concerning the Review Panel members.

Once the Review Panel findings are submitted, the Bureau will prepare a written response to them. Both the findings and response documents will be made publicly available, and by no later than 30 November 2011.

The Bureau will nominate one of its staff as the public spokesperson for the ACORN-SAT data-set and methods.

The Chair of the Review Panel, Mr Ken Matthews, will act as the public spokesperson for the ACORN-SAT Review process and findings.

5. Review schedule

Below is the schedule for the week of the Independent Peer Review at the Bureau of Meteorology, Melbourne, 7-12 August 2011.

Day	Time	Activity
Sunday 7 August		
		Review Panel members arrive in Melbourne
	1900	Dinner with Review Sponsor, Rob Vertessy
Monday 8 August		
	0900	Welcome and introductions
	1000	Briefing by Rob Vertessy
	1100	Panel deliberation
	1230	Lunch
	1400	Session 1 (Presentation and discussion)
	1600	Panel deliberation
	1730	Close
	1900	Dinner with Bureau climate scientists
		<i>Note: Staff will be available for questions on Monday from 1600-1700</i>
Tuesday 9 August		
	0900	Session 2 (Presentation and discussion)
	1100	Panel deliberation
	1230	Lunch
	1400	Session 3 (Presentation and discussion)
	1600	Panel deliberation
	1730	Close
	1900	Dinner (Panel only)
		<i>Note: Staff will be available for questions on Tuesday from 1600-1700</i>
Wednesday 10 August		
	0900	Panel deliberation
	1100	Session 4 (General questions and clarification)
	1230	Lunch
	1400	Panel report writing
	1730	Close
	1900	Dinner (Panel only)
		<i>Note: Staff will be available for questions on Wednesday from 1600-1700</i>
Thursday 11 August		
	0900	Panel report writing
	1230	Lunch
	1400	Panel report writing
	1730	Close
	1900	Dinner with the Bureau Executive
		<i>Note: Staff will be available for questions on Thursday from 1600-1700</i>
Friday 12 August		
	0900	Panel report writing
	1230	Lunch
	1400	Panel briefs Rob Vertessy on review findings
	1600	Review ends

6. Bureau focal points for the review

Name	Role
Rob Vertessy	Deputy Director (Climate and Water)
Neil Plummer	Assistant Director (Climate Information Services)
David Jones	Section Head (Climate Monitoring and Prediction Services)
Karl Braganza	Supervising Climate Scientist
Blair Trewin	Senior Climate Scientist
Robert Fawcett	Senior Climate Scientist
Bruce Forgan	Section Head (Data Quality and Improvement)
Karl Monnik	Supervising (Technical Support and Networks)
Atliana Safich	Communication and Adoption Project Coordinator
Clare Mullen	Industry Liaison and Communication Manager



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