

## **An Open Letter by 144 Australian scientists, including climate, environment and medical scientists**

Dear Right Honorable Malcolm Turnbull, MP, Prime Minister of Australia

Please find enclosed an open letter by 144 Australian climate, marine, environment, biology and medical scientists, including a number of leading climate scientists, titled "*There Is No Planet B*", for your and your government's attention

### ***There Is No Planet B***

March 2016 temperatures soared to the warmest in the instrumental record, with mean global temperatures of +1.28°C above the 1951-1980 baseline [1], following a succession of peak annual global land/sea temperatures of +0.42°C [2000] to +0.87°C [2015] [2].

Developments in the atmosphere/ocean system reported by major climate research organizations (including NASA, NOAA, NSIDC, Hadley-Met, Tyndall, Potsdam, the World's academies of science), and in Australia the CSIRO and BOM, include:

- A rise of atmospheric CO<sub>2</sub> level to 404.39 ppm (July, 2016) at a rate of 3.08 ppm per year [4], a rate unprecedented in the geological record since 55 million years ago [5], tracking toward the stability threshold of the Antarctic ice sheet estimated variously at 450±50 ppm CO<sub>2</sub> [6].
- The rise in Greenhouse gas levels in the atmosphere and oceans is leading to an increase in extreme weather events relative to 1950-1960 [7], including tropical storms, such as those in Fiji, Vanuatu and the Philippines, with lives lost and damages estimated in the \$billions [8]. In Australia the frequency of extreme weather events has been rising, where since 2001, the number of extreme heat records has outnumbered extreme cool records by almost 3 to 1 for daytime maximum temperatures, and almost 5 to 1 and more for night-time minimum temperatures [9].
- Impacts on a similar scale are taking place in the ocean, where the CO<sub>2</sub> rise is causing an increase in acidity from pH 8.2 to 8.1 already, predicted to decrease further to 7.8 by 2100, affecting coral reefs and the marine food chain [10].
- Ice sheets melt rates and sea level rise have been increasing [11] and the rate of sea level rise has been accelerating, from ~1.7 mm/year over the last century to ~3.2 mm/year between 1993 and 2010 [12] and to 3.9 mm/year [13], threatening low-lying islands, delta and lower river valleys, where billions of people live, compounded by changes to river flow regimes..

We are concerned global warming, amplified by feedbacks from polar ice melt, methane release from permafrost, and extensive fires, may become irreversible, including a possible collapse of the Atlantic Meridional Overturning Circulation [14]. According to Professor James Hansen, NASA's former chief climate scientist "*Burning all fossil fuels would create a different planet than the one that humanity knows.*" [15] According to Professor Joachim Schellnhuber, Germany's chief climate scientist "*We're simply talking about the very life support system of this planet*" [16].

We note that, in agreement, you have stated (2010) [17]

*"We are as humans conducting a massive science experiment with this planet.*

*It's the only planet we have got .... We know that the consequences of unchecked global warming would be catastrophic .... We as a human species have a deep and abiding obligation to this planet and to the generations that will come after us."*

While the Paris Accord remains unbinding and global warming has received minimal attention in the recent elections, governments world-wide are presiding over a large-scale demise of the planetary ecosystems, which threatens to leave large parts of the Earth uninhabitable [15, 16].

We call on the Australian government to tackle the root causes of an unfolding climate tragedy and do what is required to protect future generations and nature, including meaningful reductions of Australia's peak carbon emissions and coal exports, while there is still time.

***There is no Planet B.***

- [1] <http://climate.nasa.gov/news/2432/2016-had-hottest-march-on-record/>
- [2] <http://data.giss.nasa.gov/gistemp/graphs/> ; <http://www.nasa.gov/feature/goddard/2016/climate-trends-continue-to-break-records>
- [3] <http://www.esrl.noaa.gov/gmd/ccgg/trends/global.html>
- [4] <http://www.esrl.noaa.gov/gmd/ccgg/trends/>
- [5] <http://onlinelibrary.wiley.com/doi/10.1111/gcb.13342/abstract>
- [6] <https://arxiv.org/ftp/arxiv/papers/0804/0804.1126.pdf>
- [7] [http://www.nasa.gov/centers/langley/science/climate\\_assessment\\_2012.html](http://www.nasa.gov/centers/langley/science/climate_assessment_2012.html)
- [8] <http://www.worldbank.org/en/news/press-release/2013/11/18/damages-extreme-weather-mount-climate-warms>; <http://www.ncdc.noaa.gov/billions/time-series>
- [9] <http://www.csiro.au/en/Research/OandA/Areas/Assessing-our-climate/State-of-the-Climates/2014-SoC-Report> <https://theconversation.com/sure-winter-felt-chilly-but-australia-is-setting-new-heat-records-at-12-times-the-rate-of-cold-ones-35607>
- [10] <http://www.gbrmpa.gov.au/managing-the-reef/threats-to-the-reef/climate-change/how-climate-change-can-affect-the-reef/ocean-acidification>
- [11] <http://onlinelibrary.wiley.com/doi/10.1002/2014GL061052/abstract>
- [12] <https://www.environment.gov.au/climate-change/climate-science/climate-change-future/sea-level>
- [13] <http://climate.nasa.gov/vital-signs/sea-level/>
- [14] <http://www.nature.com/nclimate/journal/v5/n5/full/nclimate2554.html>
- [15] <http://www.atmos-chem-phys.net/16/3761/2016/acp-16-3761-2016.html>
- [16] <http://www.reuters.com/article/us-climate-science-idUSTRE58R3UI20090928>
- [17] <http://www.abc.net.au/news/2016-05-18/what-are-our-leaders-really-thinking-about-climate-change/7420112>

The undersigned:

144 scientists: Names, titles, fields of research, affiliations and addresses are listed in the attached document

Dr Christine Adams-Hosking  
A/Prof Stephen Adelstein  
Prof Ross Allford  
Dr Martin Anda  
Dr Marion Anderston  
Prof Michael Archer

Prof Patricia Armati  
Dr Leanne Armand  
Prof Owen Atkin  
Prof Elaine Baker  
Dr Fiona Beck  
Dr Tom Beer  
Prof Andrew Blakers  
Prof Phillip Board  
Prof Justin Borevitz  
Dr Caryl Bosman  
Dr Timothy Broadribb  
Prof David Bowman  
Dr Tim Brown  
Prof Ralf Buckley  
Dr Helen Brown  
Dr Florian Busch  
Dr Jason Byrne  
Dr Martina Calais  
Dr Phill Cassey  
A/Prof Cathy Banwell  
Dr Andrew Barnes  
Prof Carla Catterall  
Dr Juleen Cavanaugh  
Prof Fred Chow  
A/Prof David Cohen  
Prof Jann Conroy  
Dr Lucy Coupland  
Prof Steven Cooper  
Dr Joseph Coventry  
Dr Chris Creagh  
Prof Patricia Dale  
Dr Armanda Davies  
Dr Ian Davies  
Dr Kirsten Davies  
Prof Hans Peter Dietz  
Prof Keith Dear  
A/Prof Mark Douglas  
Dr Jen Drysdale  
Prof Angela Dulhunty  
Prof Bob Douglas  
Prof Robyn Eckersley  
Dr Elin Charles Edwards  
Prof David Eldridge  
Prof David Elsworoth  
A/Prof Jason Evans  
Dr Isabelle Ferru  
Prof Tim Flannery  
Prof Barry Fox

Dr Evan Franklin  
Dr Stephen Garnett  
Dr Diego Garcia-Bellido  
Dr John Gillen  
Dr Andrew Glikson  
Dr Susan Gould  
Prof Colin Groves  
Prof Ove Guldberg  
Dr Huade Guan  
Prof Neil Gunningham  
Dr Nina Hall  
Dr Asish Hagar  
Dr Willow Hallgren  
Dr Elizabeth Hanna  
A/Prof David Harley  
Prof Robert S. Hill  
Prof Geoff Hope  
A/Prof Michael Howes  
Prof Lesley Hughes  
Dr Paul Humphries  
Dr Hugh Jones  
Prof Phillip Jenning  
Prof Darryl Jones  
Dr Jochen Kaempf  
Prof Jeffrey Keelan  
Prof Peter Kershaw  
Dr Carsten Kulheim  
Prof Rakkesh Kumar  
Prof Trevor Lamb  
Dr Lori Lach  
Prof Barry Lacopetta  
Prof Tony Larkum  
Prof Bill Laurence  
Prof Fred Leusch  
Prof Andrew Lowe  
Dr Fabio Luciano  
Prof Justin Marshall  
A/Prof John F McCarthy  
Dr Allison McInnes  
A/Prof Andrew McKenzie  
Prof Andrew Millington  
Prof Angela Moles  
Prof Renee Morriss  
Prof Barbarta Norman  
Prof Nikos Ntoumanis  
Dr Bradley Opdyke  
Dr Barrie Pittock  
Prof Susan Prescott

Prof Richard G. Pearson  
Dr Jason Potas  
Dr Lynda Prior  
Dr Thomas Prowse  
Prof Steve Redman  
Prof Marie Ranson  
A/Prof Tracy Rogers  
Prof Chris Ryan  
Dr Oz Sahnin  
A/Prof Peter Sainsbury  
Prof David Sinclair  
Dr Tom Sobey  
Prof Will Steffen  
A/Prof Christian Stricker  
Prof Peter Steinberg  
A/prof Sue Taylor  
Dr Sebastian Thomas  
A/Prof Ian Tibbetts  
Prof Ian Suthers  
Prof Matthias Tomczak  
Dr Andrew Thomson  
A/Prof Thomas Thorsten  
Mr Shane Toohey  
Dr Gail Trapp  
Prof David Tissue  
Prof Patrick Troy  
Prof David Tscharke  
Prof Tom Trull  
Prof Chris Turney  
Dr Tania Urmee  
Prof René Vaillancourt  
Prof John Veevers  
Prof Charlie Veron  
Prof Phil Waite  
Dr Elaine Walker  
Dr Hayden Washington  
Prof David Watson  
Prof Adrian Werner  
Mr Peter Weiske  
Dr Jonathan Whale  
A/Prof George Wilson  
Dr Phillip Zylstra