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The Honourable Amy Adams
Minister for the Environment
Environment House
PO Box 10362
Wellington 6143
New Zealand

The Honourable Steven Joyce
Minister for Science and Innovation
Parliament Office
Private Bag 18888
Parliament Buildings
Wellington 6160
New Zealand

Re: Disestablishment of measurement scientist positions at NIWA Lauder

Dear Ministers:

I am writing as co-Chair of the Scientific Steering Group of the SPARC (Stratospheric Processes And their Role in Climate) core project of the World Climate Research Programme (WCRP). Recently SPARC has learned of the decision by NIWA to disestablish its measurement scientist positions at NIWA's atmospheric research station at Lauder. Of course I appreciate that the current economic situation is necessitating difficult choices in all countries, but in this letter I would like to emphasize to you the key and unique value of the NIWA Lauder measurements within the international context.

Ozone is an important greenhouse gas — indeed the third most important greenhouse gas in terms of its radiative forcing of climate change, after carbon dioxide and methane — and is also critical to life on Earth and human health through its role in filtering ultraviolet (UV) radiation. The cornerstone of our scientific understanding of any environmental issue is the observed record of past changes, which is why developing and maintaining this record through the Global Climate Observing System is a treaty obligation of all signatories to the United Nations Framework Convention on Climate Change. SPARC coordinates international research efforts to understand the role of the stratosphere in the climate system, and the observed record of changes in ozone and related species is central to this effort.

The 2010 World Meteorological Organization/United Nations Environment Programme (WMO/UNEP) Ozone Assessment included, for the first time, a chapter devoted to assessing the impacts of stratospheric change on surface climate. Since these effects are felt acutely over southern mid-latitudes, understanding the role that changes in the stratosphere will play in affecting New Zealand surface climate (e.g. precipitation), should be of interest to NIWA. The utility of the atmosphere-ocean global climate models used e.g. by the Inter-governmental Panel on Climate Change (IPCC) to project future changes in climate over New Zealand can only be assured if those models resolve the stratosphere (which most now do after appreciating the key role that the stratosphere plays), and if the necessary measurements of essential climate variables in the stratosphere are available for validating the processes represented in those models. Many of the long-term measurement programmes

at Lauder have played, and are expected to continue to play, a key role in achieving that validation.

It is not only through its measurement programmes that the Lauder site contributes to stratospheric research. Research scientists based at Lauder have made significant contributions to understanding the role of the stratosphere in climate. This expertise has been recognized with Lauder scientists acting as coordinating lead authors, lead authors, co-authors and contributing authors to WMO/UNEP ozone assessments and to IPCC assessments of climate science. The next General Assembly of SPARC will be held in Queenstown from 12-17 January 2014 and will bring to New Zealand around 350 international experts on stratospheric processes and their role in climate. This will provide a further opportunity for NIWA scientists to develop international collaborations and ensure that their efforts are well integrated into the global context.

Although satellites play a unique role in the Global Climate Observing System through their near-global coverage of the planet, they are anchored by ground-based networks (including balloon launch sites) which provide essential calibration standards — critical for the issue of long-term changes — as well as providing more detailed and typically more accurate information than can be provided by satellites. In the case of ozone, satellite measurements provide only very limited information on tropospheric ozone, while the satellite-derived stratospheric ozone profiles currently come from research rather than operational instruments so their future provision is highly uncertain. For all these reasons, the ground-based ozone network is critical, as is confirmed by the continual use of these data in scientific research and in international scientific assessments of ozone and climate change. In addition, future chemical reanalyses will rely on 'anchoring' data from ozonesondes, just as present meteorological reanalyses rely on 'anchoring' data from radiosondes in order to correct for drifts in operational satellite temperature measurements. The ground-based measurements at Lauder are especially valuable in this respect as they are made in a data-sparse region of the globe. Indeed, the Lauder measurements are widely recognized as a 'gold standard' in the field.

The value in long-term measurements lies in the continuity and stability of the record. Once there is a gap, it can never be filled. So I am extremely concerned, from an international perspective, about the implications of NIWA's decision to disestablish its measurement science positions at Lauder. This will inevitably lead to the degradation or elimination of many of the cornerstone long-term measurement programmes that have been underway at Lauder for decades. SPARC's hope is that NIWA can find a way to continue to support this critical component of the Global Climate Observing System.

Yours faithfully,

Theodore G. Shepherd, FRSC
Grantham Professor in Climate Science, University of Reading, UK
Co-Chair, SPARC Scientific Steering Group, World Climate Research Programme

cc. Dr. Peter Lennox; Dr. Prue Williams; Dr. Penny Lace; Mr. Adrian Macey; Mr. John Morgan; Dr. Rob Murdoch; Dr. David Wratt; Dr. Murray Poulter; Dr. Charles Pearson; Dr. Jochen Schmidt