

The New Zealand Climate Science Coalition

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High Court asked to invalidate NIWA's official NZ temperature record

The High Court has been asked to invalidate the New Zealand official temperature record (NZTR) as promoted by the Crown Research Institute, NIWA. These records are the historical base of NIWA's scientific advice to central and local government on issues relating to climate change. NIWA maintains temperature archives for the past century, and also projects them forward for the next century.

The statement of claim filed on behalf of the New Zealand Climate Science Education Trust (NZCSET) asks the court for three rulings:

A: to set aside NIWA's decisions to rely upon its Seven Station Series (7SS) and Eleven Station Series (11SS), and to find the current NZTR to be invalid

B: to prevent NIWA from using the current NZTR (or information originally derived from it) for the purpose of advice to any governmental authority or to the public

C: to require NIWA to produce a full and accurate NZTR.

"Twentieth-century temperature records are now being challenged all around the world" said Bryan Leyland, spokesman for the NZCSET. "But I think we are the first country where the issues are to be placed squarely before an independent judicial forum."

"Many scientists believe that, although the earth has been in a natural warming phase for the past 150 years, it has not heated as much as Government archives claim. The precise trend figure is extremely important, as it forms the sole basis of the claim that human activities are the dominant cause of the warming.

"The New Zealand Met Service record shows no warming during the last century, but NIWA has adopted a series of invariably downward adjustments in the period prior to World War 2. Because these move the old temperature records downwards, the 7SS NZTR shows a huge bounce-back of over 1°C in the first half of the century" said Mr Leyland. "Although this is out of line with dozens of other records, and has been the subject of sustained questioning by both the New Zealand Climate Science Coalition and the ACT party, NIWA refuses to accept that there are serious problems with the adjustments. In fact, no one has been able to explain exactly how they were arrived at."

The Court proceedings also allege bias and unethical conduct on the part of NIWA's National Climate Centre. These are based partly on NIWA allegedly delegating the NZTR decision to a former employee, James Salinger, knowing that he had a vested interest in an untested theory put forward in his own 1981 thesis. NIWA also knew that the data and calculations for that theory had been lost, and, thus could not be replicated.

Another core criticism is NIWA's constant reliance on an eleven-station series it produced last December. The flaws in this paper have been highlighted many times, including at

<http://www.quadrant.org.au/blogs/doomed-planet/2010/06/nz-climate-crisis-gets-worse>

"We find it hard to believe NIWA management just failed to notice that all the warming in the 'eleven-station' series was caused by the fact that it starts off with only three stations in 1931. From 1945 onwards there are between 9 and 11 stations" said Mr Leyland, "It's astonishing how the increasing number of stations leads to greater warming, more alarm, and increased research grants."

The Court will be asked to rule that NIWA has refused to repudiate the current NZTR in order to avoid political embarrassment, and feared loss of public confidence in the objectivity of its scientists. The proceedings were filed and served this week, and NIWA has up to a month to respond.

Attached are appendices:

- i. A backgrounder
- ii. A summary of the statement of claim
- iii. Graph showing effect of NIWA changes

(contacts overleaf)

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APPENDIX 1 - BACKGROUNDER

The National Institute for Water and Atmospheric Research (NIWA) is a CRI, contracted by the Government to be its sole adviser on scientific issues relating to climate change.

NIWA's National Climate Centre is responsible for maintaining the National Climate database, mainly comprising records compiled by the NZ Met Service during the period 1853-1992. This archive finds its greatest significance in the New Zealand Temperature Record (NZTR), showing mean average surface temperatures throughout the twentieth century.

In 1999, the National Climate Centre adopted a "Seven-station Series" (7SS) as the basis of the NZTR. The stations (Auckland, Masterton, Wellington, Nelson, Hokitika, Lincoln & Dunedin) are geographically spread and considered to represent New Zealand as a whole. The 7SS graph and spreadsheet appear on NIWA's website www.niwa.co.nz/news-and-publications/news/all/2009/nz-temp-record.

The NZTR is the basis of the advice given to legislators and officials in national, regional and local government agencies regarding past New Zealand warming and cooling. It is also used by international agencies such as the UN-sponsored Intergovernmental Panel on Climate Change ("IPCC"), which relied upon it for the Australia and New Zealand chapter of the Working Group 11 volumes of both its Third (2001) and Fourth (2007) Assessment Reports. Frequently, it has been the basis of expert evidence given to the Environment Court and other tribunals.

The major significance of temperature records is their role in the "Detection and Attribution" aspects of climate science, as they form the basis of the theory that most warming in the twentieth century was human-caused, or 'anthropogenic'. This hypothesis is wholly dependent on the warming trend figure being above that which could be expected from natural variations. If the record were to disclose a century-long warming trend of, say, 0.4°C, the anthropogenic forcing signal would be absent.

NIWA's 7SS discloses a warming trend of approximately 1.0°C during the last century. This is a very high figure and almost 50% above the global average for that period.

Because there are very few long term temperature records in the Pacific Ocean, the New Zealand Climate Database bears heavily disproportionate weight in determining multi-decadal trends in global average temperatures.

Shortly after its formation in 2006, the New Zealand Climate Science Coalition queried the basis of the 7SS, noting that it appeared to be seriously at odds with other records. The Coalition unsuccessfully sought access to the data and calculations behind the graph.

In November 2009, the Coalition published a paper – “Are We Feeling Warmer Yet?” – which disclosed that virtually all of the warming shown in the 7SS was derived from in-house “adjustments” made by NIWA. The paper is available at http://nzclimatescience.net/index.php?option=com_content&task=view&id=604&Itemid=32

In response to the paper, NIWA issued a series of press releases contending that some “adjustments” were necessary when a measuring station was relocated, and providing a detailed example as being the difference in altitude between Thorndon and Kelburn, in Wellington.

NIWA also released a new temperature graph, entitled the “Eleven-station Series” (11SS) of stations whose data had not been adjusted, claiming it showed a warming trend of 0.9°C over 77-years. This graph is now shown on the NIWA web page referenced above.

During December, Hon Rodney Hide made a number of attempts in Parliament to obtain the 7SS data and calculations. Both Nick Smith and Wayne Mapp referred to the altitude difference in Wellington, and both Ministers tabled in Parliament multi-page papers discussing altitudes of Thorndon-Kelburn-Rongotai.

On 21 December, the Coalition lodged a formal request under the Official Information Act. In response, NIWA eventually admitted that it held no record of its 1999 decision, but understood the 7SS had been sourced from a student thesis presented in 1981 by James Salinger. They further stated that the data and calculations were the private property of Dr Salinger.

Dr Salinger was employed by NIWA’s National Climate Centre as Principal Scientist, responsible for climate records, until he was summarily dismissed on 23 April 2009. His appeal was determined by the Employment Relations Authority on 21 December 2009.

In December, NIWA stated in written answers to Parliament’s Education and Science Select Committee that the adjustment processes of the 7SS had been peer-reviewed and published in a scientific journal. No such journal has been found.

NIWA added two relevant documents to its website on 9 February 2010. One was described as a ‘Schedule of Adjustments’ but was a bare list of the SSS data adjustments, without supporting data or other justification. The other was a detailed account of the adjustments made to Hokitika.

A series of Questions for Written Answer were set down by John Boscawen MP during February-May, and responses were prepared by NIWA (with assistance from Network PR) for publication in the name of Wayne Mapp. These can be found on the Parliamentary website at www.parliament.nz/en-NZ/PB/Business/QWA/ and show:

For the period 1853-2080, the single source of the 7SS adjustments is an appendix to a VUW student thesis written by Dr Salinger, which has never been peer-reviewed or published, or available outside of the VUW Library. Dr Salinger claims sole copyright.

The data analysis for the thesis was undertaken on the VUW mainframe computer system, but was irretrievably lost when the the system was superseded about two years later. There are no copies and the analysis has never been replicated.

Climate science was in its infancy in 1980, and there were no internationally-accepted techniques for homogenising temperature data from different sites. The substantial body of literature which developed during the 1990-2010 period does not support the thesis.

Neither of the supervisors of the 1981 thesis were climate scientists.

In 1980, a paper by a senior New Zealand meteorologist (JWD Hessel), which was peer-reviewed and published in a reputable science journal, concluded that there was no evidence of New Zealand warming since 1930. The author found that the raw data overstated the extent of warming because thermometers had been affected by shelter, screenage and urbanisation. This directly contradicts the Salinger thesis.

The NIWA 7SS shows a warming trend of 1.0°C from 1900 to 2004, and this is the only time series used by NIWA for determining average New Zealand temperature. The linear trend was 0.71°C from 1945 to 1975, and 0.34°C from 1975 to 2009, indicating that more than two-thirds of the warming (and the only abnormal warming) occurred in the period covered by the Salinger thesis.

The upward slope in the 7SS graph is created by downward adjustments in the pre-1945 period, rather than by upward movements thereafter. Pre-1950, 21 adjustments were downward and only 5 went the other way. In 9 out of 10 of the affected years, the 7SS adjustments were such that they contributed to an upwards trend, whilst only 1 in 10 opposed that trend.

Altitude change was not the basis for the 7SS adjustments made to the Wellington data. Nor was it considered as an adjustment factor for any of the other six stations.

No NIWA employee has ever reviewed or approved the methods, rationale, calculation, or confidence levels of the adjustments in the pre-1980 7SS. There is no documentary or other record of the Salinger thesis or its 7SS adjustments ever being adopted, analysed, or even criticised by any NIWA staff (although NIWA applies ISO9002 standards, which requires full documentation of all decisions).

The update of the 7SS from 2007 to 2008, was undertaken by a NIWA Principal Scientist, peer-reviewed by two other Principal Scientists, and approved by the Chief Scientist.

The 2010-11 vote for Research Science and Technology is to provide for a project to "review" the Salinger thesis. The project is expected to involve 5-6 scientists working for about 6 months and the outcome will be reviewed by NIWA's counterpart, the Australian Bureau of Meteorologists (BOM). The methodology will be published in a scientific journal.

In light of all this information, the Coalition's solicitor wrote formally to the Chairman of NIWA, Chris Mace, requesting that the use of the 7SS be discontinued until a new and respectable NZTR might hopefully emerge from the review project. That request was declined.

In May, a critique of NIWA's NZTR efforts was set out in an article by Barry Brill entitled "New Zealand Climatology in Crisis" in Quadrant Online www.quadrant.org.au/blogs/doomed-planet/2010/05/crisis-in-new-zealand-climatology. Subsequently, a further article dealt with the serious deficiencies of the 11SS www.quadrant.org.au/blogs/doomed-planet/2010/06/nz-climate-crisis-gets-worse.

APPENDIX 2 – SUMMARY OF CLAIM

NIWA has statutory duties to undertake climate research efficiently and effectively for the benefit of NZ, pursuing excellence and observing ethical standards, while maintaining full and accurate records.

The official NZ Temperature Record (NZTR), which is the historical base for most Government policy and judicial decisions relating to climate change, wholly relies upon a "Seven-station series" (7SS), adopted in 1999.

The twentieth-century warming trend of 1.0°C shown in the 7SS is dependent on the use of "Adjustments" taken by NIWA from a 1981 student thesis by J Salinger, a previous NIWA employee.

NIWA's 1999 decision to rely on the Adjustments was a breach of duty as it did not:

- evaluate the thesis methodology or consider whether it needed updating
- discover that the supporting data and calculations had been lost
- undertake any check or peer review; or require consent from the copyright holder
- maintain any record of the decision

NIWA's 1999 decision was based on the mistaken assumptions that the methodology:

- was in accord with current international best practice
- had been peer reviewed and published in a scientific journal
- could be replicated by applying the thesis to publicly available data
- could be supported by production of the Salinger thesis
- reflected an NZTR increase in 1944-60 shown by another Salinger paper
- was required to compensate for changes in the altitude of thermometers

NIWA's 1999 decision failed to take account of the following relevant factors:

- the National Climate Database, compiled by the Met Service, shows no material warming
- meteorologists senior to Salinger did not consider that the data should be adjusted
- the warming trend is wholly reliant on the subjective and untested Salinger thesis
- an implausible 9 out of 10 of the Adjustments favour an upward trend
- NZ was warmer in 1867, and during 1863-1919, than it is now
- the thesis showed inexplicable and unprecedented warming of 1.42°C during 1944-57

the 7SS warming trend is much greater than the global average
the data was lost and the Adjustments could be neither documented or replicated

NIWA's 1999 decision was influenced by the expectation that major NZTR warming would encourage funding for additional climate change research.

NIWA failed to observe ethical standards in delegating the 1999 NZTR decision to Salinger, who was in no position to assess the matter objectively.

Whilst conceding that the 7SS-based NZTR requires review, NIWA has refused in 2010 to suspend it, or stop using it. It relies on an "Eleven-station series" (11SS) of unadjusted data produced in December 2009.

The 2010 refusal involved a breach of ethical standards in:

- delegating to Salinger the authority to select the stations and time periods of the 11SS, when it knew that he was likely to be biased in favour of corroborating the 7SS
- allowing the 1931-55 period to masquerade as part of the 11SS, whilst knowing the requisite data was missing, and the series was unreliable
- falsely claiming that Salinger's "ship's paper" supported the 7SS
- continuing to promote a NZTR that NIWA knew to be seriously flawed

The 2010 decision was unreasonable and illegal, and made without:

- assessing the arguments put forward by critics of the 7SS and the 11SS
- checking or peer reviewing or documenting the statistical methodology of the 11SS
- ensuring that the selection of inputs was free from bias
- weighing the risks and benefits to NZ of continuing to rely upon a flawed NZTR

The 2010 decision ignored the following relevant factors:

- the 11SS disclosed no warming from 11 stations, and the claimed warming arose only when data was unavailable from most of its stations
- the known flaws in the 7SS; and the fact that it had not been followed by other compilers of temperature databases

The 2010 decision was influenced by the following improper considerations:

- repudiation of the NZTR might prove politically embarrassing or reduce confidence in the integrity and objectivity of NIWA scientists
- a planned project to review the NZTR might possibly confirm the 7SS warming trend

Therefore, the NZ Climate Science Trust seeks declarations and orders to:

- A. set aside NIWA's decisions to rely upon the 7SS and 11SS, and finding the current NZTR to be invalid

- B. prevent NIWA from using the current NZTR (or information originally derived from it) for the purpose of advice to any governmental authority or to the public
- C. require NIWA to produce a full and accurate NZTR.