Climate change in the southern and western Cape. A critical assessment

W.J.R. Alexander Pr Eng

Professor Emeritus, Department of Civil and Biosystems Engineering, University of Pretoria
Honorary Fellow, South African Institution of Civil Engineering
Member, United Nations Scientific and Technical Committee on Natural Disasters, 1994 - 2000
Email: alexwjr@iafrica.com

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This report is my independent contribution to the current climate change debate. The purpose is to provide linkages between climatic processes and hydrometeorological responses. This is required for the reconciliation of climate change theory with observational deductions derived from extensive studies of a comprehensive South African database.

I have neither requested nor received any financial or material support from any source in connection with these studies.

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Acronyms

DEAT Department of Environment Affairs and Tourism
DWAF Department of Water Affairs and Forestry
GCM Global Climate Model
IPCC International Panel on Climate Change
NBI National Biodiversity Institute
SAWS South African Weather Service
**Introduction**

This report is in response to an approach by a group of landowners and others who are striving to develop a living landscape consisting of regions where people live in harmony with the environment. They expressed concern that the alarmist publications of a small group of scientists and the reaction of the provincial authorities would have the opposite effect to that intended. Many people have already expressed the view that this is a hopeless cause. They say that most species are about to become extinct as a result of climate change, so why bother.

There is also a growing concern among other researchers in the natural and engineering sciences whose studies directly contradict those of the climate change lobbyists. Their concern is heightened by the deliberate policy of excluding all those who hold different views from participating in policy-making conferences. I am not the only one to have experienced this discrimination.

This response is based on my long professional experience and recent detailed studies.

**Unique richness**

There are few regions in the world that have a greater diversity of climate and corresponding diversity of flora and fauna than the southern and western regions of South Africa. While there is an obvious need to preserve this unique richness for posterity, there is an equally important need to sustain agricultural and other activities required in a healthy society. Only then will we be in a position to eliminate poverty, malnutrition and disease among our growing population. A balance has therefore to be found between conservation and development.

Solutions have to be sought in the first instance by impartial, multidisciplinary, scientific studies. The results have to be reduced and summarised in a form that is readily understandable by the public as well as the political decision makers. There is a fundamental difference between theoretical papers published in scientific journals and a report addressed to decision makers and the public. In the latter case the scientists are expected to present both the benefits as well as the consequences of climate change in an impartial manner.

Researchers are also required to develop practical adaptation and amelioration strategies. These require not only sound scientific knowledge, but also an advanced knowledge of the sociological and economic aspects. These have to be in sufficient detail to allow decision makers to make informed decisions.

It is most unfortunate that the recent, comprehensive report by fifteen authors from seven different institutions: *A status quo, vulnerability and adaptation assessment of the physical and socio-economic effects of climate change in the Western Cape,* (Midgley et al 2005), does not meet these basic requirements.

**Essentials of the global warming issue**

The following is a terse summary of the global warming issue.

Water, not temperature determines the habitability of our planet. Human habitation will be found all the way from the heat of equatorial Africa to the sub-zero
temperatures of continental areas of Canada and Russia. No humans can survive in waterless deserts – whether hot or cold.

The essence of the concerns related to global warming is that undesirable emissions of so-called greenhouse gases, principally carbon dioxide (CO$_2$), from power stations, coal-consuming industries, aircraft and motor vehicles, creates a blanket effect in the atmosphere that raises global air temperatures. Observable consequences of increases in global temperatures are the melting of the Arctic and Antarctic ice sheets and terrestrial glaciers.

The principal postulated (i.e. as yet unproven) consequences of global warming are changes in rainfall (e.g. droughts), river flow (e.g. floods), and air temperature. These in turn may pose threats to agriculture, water supplies and the natural environment. Beneficial consequences are largely ignored in the South African literature.

The postulated remedy is to reduce dependence on carbon fuels, which in turn will increase the cost of electricity and transport. These will result in a decrease in national and individual prosperity. The consequences will be an increase in poverty with accompanying increase in malnutrition and disease. There will be consequent threats to economic and political stability.

Note: The effectiveness of the proposed control measures remains unproven. It is very difficult to visualise how the reduction of greenhouse gas emissions in South Africa can prevent the postulated environmental consequences. This aspect is not addressed in the publications referenced below.

The essence of an independent analysis is the quantification of the threats in numerical terms. Simple non-numerical statements such as the infamous ‘precautionary principle’ are not sufficient in an issue of this magnitude and national importance.

This immediately identifies a major shortcoming in the whole climate change issue. The principal postulated consequences of global warming relate to rainfall, river flow and temperature. These are readily measureable and quantifiable. The absence of arguments based on data from the official SAWS and DWAF databanks, would, in my opinion, not survive the rigorous examination of an independent commission of enquiry.

Here is a simple question. The seriousness of the consequences of global warming is at the very heart of the climate change issue. We are repeatedly told that the past decade was the warmest for the past thousand years or more. Why then is there no evidence of the consequences of this global warming in South African published data? Why do the climate change lobbyists have to rely on abstract theory instead of being able to produce solid and incontestable evidence that these undesirable consequences are already taking place? The answer is very simple. There are no observable changes for the simple reason that they do not exist.

The whole global warming theory is no more than an untested and unproven hypothesis. This is not just my view but is that of all internationally recognised experts in the field of water resources with whom I have consulted.

I am in the fortunate position where I spent my early years in the field building dams and water resource development projects in the Karoo, Cape Midlands, Free State and southern Cape. During the past 35 years I have studied and numerically quantified the principal hydrological and meteorological processes that are vulnerable to the effects
of global warming. The driving reason for my concern was, and still is, the knowledge that the water resources of South Africa in particular, and many other countries of the African continent are rapidly approaching the limits of exploitation. This will have severe economic and social consequences on the African nations and their peoples.

To add to my responsibilities is the knowledge that while many investigations have been made into the numerical characterisation of individual rainfall and river flow processes, I am the only person who has assembled and studied as large and comprehensive a hydrometeorological database as a whole with emphasis on the search for properties that are concurrent in time within and between the processes. This is an essential requirement when attempting to determine the consequences of climate change on the prosperity of the peoples and nations on the African continent.

The following are my principal conclusions. For more details and references see the extended summary of my technical report *An assessment of the likely consequences of global warming on the climate of South Africa* (Alexander 2005). It has 90 pages, with 14 tables, 16 illustrations and 50 references. This is the source of much of the material below.

**Global warming will not result in a loss of habitat and species**

In less than 100 years, the research indicates that thousands of plant species may well be extinct starting with a massive reduction in the distribution of fynbos and succulent Karoo biomes. *(DEAT 5 May 2005.)*

As the issue relates to global warming, it is natural to consider temperature as the dominant variable of interest. This in itself is a problem because temperature is a measure, not a process. Nor does it have upper or lower limits. Temperature has to be associated with something. In this report it is assumed that temperature refers to air temperature close to ground level unless defined otherwise. It should also be noted that:

- The changes in temperature postulated in the IPCC documentation are very small when considered against the high, natural, hour-to-hour, day-to-day, year-to-year and multiyear variability over most of South Africa.
- It is rainfall, not temperature that determines the habitability of our planet, including animal and plant species. Those species that thrive in hot, dry regions have adapted to the harsh and highly variable temperature and rainfall conditions.
- In the arid regions, local heat energy is primarily derived directly from solar radiation, not ambient air temperature. Ambient air temperature acts as a coolant, not a heating mechanism.
- The role of increase in CO$_2$ concentrations in the atmosphere is also of interest as CO$_2$ is beneficial to plant growth.

Therefore, it is essential that concurrent changes in all four driving processes, temperature, rainfall, direct solar radiation and CO$_2$ be included in the prediction models. This is by no means a simple exercise or experiment. The complex interrelationships between the driving variables and the responses are themselves highly variable. The authors below made no attempt to develop simulation models that incorporated these variables and processes. Their sole criterion was a postulated increase in average annual air temperature.
The second aspect that is not sufficiently accommodated in these studies is the highly variable nature of temperature on all time scales from minutes through to decades. Indigenous species have adapted to this variability, so temperature changes of the order postulated in climate change scenarios are very small in relation to the daily ranges of temperature in vulnerable regions.

The third aspect is the stated or implied ‘delicate balance of nature’ when the very opposite is true. Nature is inherently robust, not delicate, and is never in a state of equilibrium. The harsher the climate, the more robust the species that inhabit it.

The fourth aspect relates to shortcomings in analytical methodology based on abstract process theory.

It needs no more than a glance at the daily weather forecast on TV to note that the predicted (IPCC 2001) increase in global temperature of between 1.4 and 5.8°C during the next 100 years is only a fraction of the difference between the daily maximum and minimum temperatures at any specific place in South Africa. The postulated temperature increase is also of the same order as the difference in climate between Johannesburg and Pretoria North. It is very difficult to accept that this small increase in the average annual temperature could result in the wholesale destruction of habitat and species.

The following are comments on two papers by National Botanical Institute scientists and co-authors, in which it is concluded that global warming could endanger the survival of the Cape fynbos and succulent Karoo species. These two consequences of global warming have been used to justify the view that global warming could cause irreparable damage to these biomes and habitats, and that large public expenditures to counter global warming are thereby justified. These issues must therefore be considered very seriously.

**Threat to fynbos biomes**

There are several disturbing features in the Hannah et al (2005) paper *The view from the Cape: extinction risk, protected areas, and climate change* in which the threats to the fynbos species are described. The first is that the phrase ‘climate change’ is repeated many times and is the main theme of the paper, but nowhere is ‘climate’ defined. The only climatic property referred to is air temperature but nowhere are the changes in temperature quantified. There is no reference at all to sustained increases in rainfall described in this report, although its role must surely be at least equal to, if not greater than changes in air temperature. There are no maps to identify the location of the threatened areas, or maps of mean annual temperatures or rainfall. These omissions can only create doubts in the minds of concerned readers.

The second is that the projected changes are derived from down-scaled global climate model (GCM) outputs. The GCMs are not even capable of producing reliable results of the rainfall for the southern and western Cape as a whole let alone for small areas. It has been predicted that rainfall in this region will decrease whereas there were substantial increases in the past and these increases will continue as long as global temperatures keep increasing. This is discussed in more detail below.

These omissions must raise doubts in the minds of impartial observers.

The title of the paper and references to climate change should have referred to temperature changes, not climate changes. The two are not synonymous.
**Threat to Karoo biomes**

Similarly, Musil et al (2005) in their paper: *Lethal effects of experimental warming approximating a future climate scenario on southern African quartz-field succulents: a pilot study*, describe a limited experiment where the air temperature in the immediate vicinity of the plants was forced to rise by enclosing them in 18 transparent hexagonal open-top chamber arrays.

There is no reference to the effect of rainfall other than a single sentence:

> Change predicted future warming and aridity trends sufficient to cause large reductions in species richness in Mediterranean climate Fynbos and Succulent Karoo biomes... *(My emphasis.)*

But rainfall has increased over most of the area and will continue to increase in future, so the reference to aridity trends is incorrect and unsubstantiated. This obviously casts doubts on the validity of the conclusions.

Nor is there any mention of the fact that these chambers prevented the movement of air in the immediate vicinity of the plants. This is essential for the transpiration and consequently the movement of fluid through the plants. The enclosure of the plants must inevitably have an adverse effect by suppressing this essential process. This was not mentioned in the paper.

The next unreported issue is that the ambient temperature in the Karoo is directly related to solar energy input and not the influx of air from elsewhere. Visualise an experiment where two spanners (say) are placed next to one another. One in the shade of a shrub and the other in the sun next to it. If the temperatures of the two spanners are measured, they will be very different from one another. This is because the temperature of the one in the shade is controlled by the ambient air temperature and the one in the sun by solar radiation.

Another personal experience is that all our houses on construction projects in the Karoo had corrugated iron roofs. The sheets would expand when the sun shone and contract when a cloud passed in front of the sun. It was quite noisy, and we used to say that the roofs were ‘talking’ to us. Clearly the heat from solar radiation was considerably more than the ambient air temperature. All proof that was needed was to move in and out of the shade on a sunny day.

In hot, dry, arid regions movement of the ambient air *acts as a coolant* and is unrelated to the effects of global warming. The plants in the enclosures died because they were cut off from the cooling effect of surrounding air movement, not because of the increase in temperature. What then is the effect of the postulated increase in temperature arising from global warming when most of the heat energy in arid regions is directly from solar radiation and the ambient air acts as a coolant and not a heating mechanism?

In addition to the above, it must surely be obvious to anybody who has lived in the Karoo or observed the environmental processes, that it is the temperature extremes that determine the survival of plant life, not the annual averages.

The authors stress that this was a pilot project. It was based on 18 small chambers that excluded all movement of cooling air, at a particular site, and specific plant species. But that is not how it was interpreted by the South African authorities. *This is very important as the public and the decision-making authorities, in my opinion, are being seriously misled by these grossly unscientific experiments.*
Changes in rainfall in the southern and western Cape

How important is the omission of references to changes in rainfall resulting from global warming in the above studies? Fig. 13 is an analysis of the annual rainfall for District 5 in the centre of the south-western Cape region. (See Fig. 14 below.)

A very clear increase in rainfall is evident in both the histogram and the cusp shape of the accumulated departure plot. There is also a statistically significant 20-year periodicity. There is an indication of an accelerated increase after 1972. None of this very important climatological information was provided in the studies discussed above.

During January 2005 the SAWS kindly provided me with the recently revised district rainfall data for the period 1940 to 2004. This is shorter than the previous record from 1923 to 2000. Other than Districts 14 (no data for the 1950s) and 58 (Lesotho) the analyses are complete.

I carried out a few calculations using the data supplied by the SAWS. It only took about four hours. I analysed the data for districts 1 to 20 in the western and southern Cape, which include the fynbos and the succulent Karoo regions. (See Fig. 14 below.) I divided the data for each district into three equal 21-year periods. These were from 1940 to 1960, 1961 to 1981, and 1982 to 2002 (inclusive). The use of 21-year periods
neutralises the effect of the statistically significant 21-year periodicity in the data, which in turn is directly related to corresponding changes in solar activity.

Two years 2003 and 2004 were omitted in the first round of analyses. I then selected the lowest of these two remaining years and compared them with the ranked data. For example, the rainfall in District 1 for 2003 was the 5\textsuperscript{th} lowest during the 65 years of record. The results are shown in Table 13. The rainfalls are in millimetres.

Fig. 14 below shows the location of the South African rainfall districts. Fig. 15 shows the percentage increases in rainfall in the 20 districts within the south-western Cape. Table 13 shows the progressive increase in rainfall during the period of record. This information completely negates the view that future conditions in the southern and western Cape will be drier than at present.
Figure 14. Rainfall districts in the western and southern Cape.

Figure 15. Percentage increase in district rainfall in the SW Cape, 1950-1992. (Negative values indicate decreases.)

The letters ‘s’ an ‘f ’ indicate districts where succulent Karoo and fynbos biomes occur in the above figure and Table 13. Note the substantial percentage increases in the annual rainfall in all but four districts in Figure 15 and Table 13..

Note the wide range of rainfall conditions where these species thrive. Authors of the alarmist reports failed to provide this information or the equivalent annual temperatures.
Table 13. Mean annual district rainfalls (mm) in the western and southern Cape

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Interpretation of the facts

The midpoints of the 21-year sequences are 1950, 1971 and 1992. The details in the table demonstrate the following:

- There was a 17% (57 mm) increase in regional rainfall during the 42-year period 1950 to 1992, and a greater increase during the whole period of record.
- Only four districts showed a decrease in rainfall during the period of record.
- The other 15 districts with complete records all showed increases within the range of +2% to +68%.
- The regional rainfall showed a consistent increase from the first to the second to the third periods.
- In not a single district was either the 2003 or 2004 rainfall the driest on record. For the region as a whole, the average of the worst of these two years was only the 16th lowest on record.

This very simple analysis showed that except for the three districts (1, 2 and 3) along the west coast, and the single district (12) on the south coast, all other districts in the western and southern Cape, including those in which the fynbos and large areas of the succulent Karoo are located, exhibited consistent increases in rainfall during the period of record.
The SAWS weather station at Cape Agulhas at the southernmost tip of the African continent also recorded an increase in temperature during this period. Furthermore, it is reasonable to assume that CO$_2$ has also increased. If all three of these principal elements that affect plant growth have increased for the past 65 years, what is the basis for the NBI authors’ alarmist predictions? Furthermore, if the rainfall analysis shows that there has been a sustained increase in rainfall during the past 65 years, and that this increase will continue as long as global warming continues, what weight should be placed on the allegation that:

In less than 100 years, the research indicates that thousands of plant species may well be extinct starting with a massive reduction in the distribution of fynbos and succulent Karoo biomes. (DEAT 5 May 2005.)

The information above clearly illustrates that these alarmist predictions have no substance.

Finally, why did the NBI scientists not carry out the simple analyses described here using the district rainfall data that has been available since the 1970s? The analyses would have taken less than a day to perform, and do not require any numerical expertise other than simple arithmetic. This would have demonstrated the unreliability of global climate models and consequent invalid conclusions in their papers.

**Climate change in the Western Cape**

With the above in mind, consider the detailed, 155-page report *A status quo, vulnerability and adaptation assessment of the physical and socio-economic effects of climate change in the Western Cape* prepared by 15 authors from seven institutions in June 2005, (Midgley et al 2005). Under normal circumstances this report should carry heavy weight. Unfortunately a single fundamental issue on which the report is based is demonstrably false and completely undermines the scientific integrity of the report and all the conclusions drawn from it.

The very foundation of the report is that global warming will reduce rainfall over the entire region. This assumption is based entirely on global climate model outputs, whereas a simple analysis of the long records of the many rainfall stations in the region shows that there has been a general increase in rainfall. This was demonstrated above where some districts show substantial increases of up to 68% during the period of record. As global warming is reported to have increased steadily during the past century, it follows that rainfall will continue to increase as long as global temperatures continue to rise.

The following are brief extracts from the introductory section of the report. The emphases are mine. References to a drier future climate are patently false, as future climate in this region will be wetter, not drier.

In this study we have carried out a broad reassessment of the vulnerability of the Western Cape to climate change impacts using a wider range of climate scenarios from more sophisticated climate models …

The future climate of the Western Cape is likely to be one that is warmer and drier than at present according to a number of current model predictions.

A future that is warmer and possibly drier, will encompass a range of consequences that will affect the economy, the livelihoods of the people and the ecological integrity of the Western Cape region.
Projections for the Western Cape are for a **drying trend from west to east**...[My analyses demonstrate the opposite. See Fig. 15 above.]

In a **warmer and drier future**, the competition for fresh water will increase steeply.

The vulnerability of estuaries to **warming and drying** is particularly acute ...

The impact of climate change manifested by a **warmer and drier climate** is likely to be a progressive impoverishment in species richness ...

A **drier environment** would restrict the spread of alien invasive species ...

The combination of increasing **water scarcity**, and rising temperatures will also regularly affect sectors of the economy that are particularly dependent on ecosystem goods and services, for example agriculture, forestry and fishing.

All that the authors should have done was to spend an afternoon plotting the rainfall data on graph paper and they would have noticed the very clear **increase** in rainfall in the region. Claims of future water scarcity as a result of global warming have no foundation.

Economic sectors such as insurance, banks (through the underlying secured assets), transport and communication infrastructure and construction may all be affected to some degree by climate change.

Regrettably, this all-inclusive statement illustrates a complete ignorance of how modern society functions.

**Linkage with solar activity**

Climate variability has been linked to **variation in solar activity**, i.e. the sunspot cycle, (Houghton et al (2001). However, recent analyses by Foukal et al (2005) have called this hypothesis into question, citing the small variation of solar output (0.8%) that can be attributed to the sunspot cycle and the relatively poor ability of instruments to measure accurately these variations.

In 1889, more than 100 years ago, the Knysna forester D E Hutchins reported as follows in his book *Cycles of drought and good seasons in South Africa.*

This confirmation comes from the Cape Town Observatory. The returns for thirty years from the Cape Town Observatory show a close correspondence between sun-spots and temperatures the maximum of temperature lagging a year behind the minimum of sun-spots. (p17).

At Cape Town, the correspondence between the mean rainfall and mean sunspot frequency has long been an established fact. (p25).

For these reasons we ought to consider the Cape Town Observatory rainfall figures as of great importance to ourselves, an importance enhanced by the fact that they go back to the year 1842. For the three cycles comprised in the period 1842 to 1875 the mean annual rainfall at the Royal Observatory, Cape Town, was: –

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<td>During Minimum Sunspot years</td>
<td>21.05 inches.</td>
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<td>“ Intermediate “</td>
<td>23.59 “</td>
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<td>“ Maximum “</td>
<td>27.95 “</td>
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Given all this information, based on records extending back as far as 1842, why did these **fifteen** scientists choose to quote an overseas author’s claim that no linkage
existed when the linkage was demonstrated by a Knysna forester more than 100 years ago? All that was needed was for one of these authors to study the rainfall and temperature records and possible linkages with sunspot activity. Instead they chose to rely on an overseas author who was obviously ignorant of the well-documented, synchronous linkages that have been reported in South Africa and internationally for more than a century.

What does all this tell us about the reliability of publications by these authors and other climate change lobbyists who hold similar views? It was on this thoroughly unscientific basis that the DEAT minister was persuaded to take drastic action that will inevitably have an adverse effect on the welfare of the people of this country. It also explains why I and others who hold similar views, were deliberately excluded from addressing the Midrand conference, and more recently the function at Kirstenbosch.

The deliberate exclusion of those with different views at public meetings on a topic of national importance is reprehensible. Claiming that this was a decision of the organisers is no excuse. No responsible scientist or organisation should agree to participate in a national conference attended by cabinet ministers and senior government officials where scientists who hold different views are deliberately excluded from participating in these presentations.

The organisations listed in the above publication should also take note of the damage that this publication and exclusion policy will do to their scientific integrity. They are: South African Biodiversity Institute; CSIR Environmentek, Stellenbosch and Pretoria; Climate Systems Analysis Group, Department of Environment and Geographical Sciences, University of Cape Town; de Wit Sustainable Options CC (Pty) (Ltd); and Energy Research Centre, University of Cape Town.

**Final proof**

As I write these notes the rivers are running, dams are filling and the countryside is greener than it has been for decades. This completely negates the unfounded and pessimistic views of the climate change lobbyists. Nevertheless, droughts follow floods as night follows day – a fact that has been known since biblical times.

South Africa will indeed face a crisis in the years ahead as we exhaust our water resources. Conflicts between the need for water to sustain the quality of human life and to sustain the environment will pose serious challenges. Solutions will have to be sought. The policy followed by climate change lobbyists of excluding all those who hold different views on the solution of the problem is not the way to go.

**Conclusions**

It would be a tragedy if the 149-page report: *A status quo, vulnerability and adaptation assessment of the physical and socio-economic effects of climate change in the Western Cape* is accepted without question by the national and provincial authorities. There is a very real possibility of a backlash once it becomes obvious that the basis of the report and the proposed costly and intrusive recommendations have no foundation in science or reality, and are unsupported by large sections of the scientific community.
References

Principal reference

Other references and further reading


(Abtract only.)


Department of Water Affairs and Forestry 1986. Management of the water resources of the Republic of South Africa.


Paoli G (Ed) 1994. *Climate change, uncertainty and decision making.* Institute for Risk Research, Waterloo, Canada


