

## SUMMARY POINTS ON THE CAUSE OF CLIMATE CHANGE



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1. Global climate change is occurring and has occurred previously.
2. The well quantified global changes are a marked increase in atmospheric CO<sub>2</sub> and an increase in ambient temperature. Stream flows have almost definitely reduced.
3. The current climatic changes are within the range of past events, hence there need be no need to invoke anthropogenic causes for the changes.
4. While the observed climate change can occur without human intervention it can also be induced by human activities. Humans have dramatically modified climates previously through desertification over thousands of years. This has been regional rather than global.
5. Vegetation is integral to climate. Vegetation responds to climate but it also affects it. The occurrence of desertification through agriculture has been well established.
6. The conclusions of the international committee investigating global warming were there is a significant issue, that warming is correlated with increased levels of atmospheric CO<sub>2</sub>, and a mechanism can be identified whereby an increase in atmospheric CO<sub>2</sub> could possibly produce global warming. The covenant is that they could not identify any other possible cause, as embodied in the comment that, while it is not certain that global warming is caused by increased atmospheric CO<sub>2</sub>, it is prudent to take remedial action assuming that it is.
7. CO<sub>2</sub> has been targeted as the cause of global warming as it is plausible. Also, it suites climate modelers as it is highly amenable to modeling. As one journalist noted, models have become the weapon of choice in the battle for supremacy in addressing global warming. However, most models re simply descriptive and all are highly limited by the uncertainties associated with known and unknown assumptions. All lack the essential scientific ingredient of reliable testing.
8. The loss of carbon from agricultural soils is commensurate with the increase in atmospheric CO<sub>2</sub>. There is no need to invoke the burning of fossil fuels as a cause of global warming, noting however, that with multiple sources and sinks for atmospheric CO<sub>2</sub> direct equivalences are not to be expected.
9. Logically global warming is most likely due to desertification by agriculture. The scale of desertification is now such that the separate regional effects have combined to affect the global climate. The increase in atmospheric CO<sub>2</sub> is therefore an effect that arises mainly from the loss of soil organic matter. Increased ambient temperatures and reduced rainfall are core characteristics of desertification.
10. The most critical difference between the alternate causes relates to feedbacks. There is little positive feedback on climate change with the CO<sub>2</sub> mechanism so that more CO<sub>2</sub> must be added to the atmosphere to increase global warming. The positive feedbacks with desertification are strong such that a critical point is reached where the climate change continues without any additional input. The greater than expected rate of development of the effects of climate change is indicative of a strong positive feedback.
11. Although not failsafe, the ability to reverse an effect is the best means of identifying cause in complex systems. Reversal of climate change has not been achieved through reducing the levels of atmospheric CO<sub>2</sub>. Reversal of climate degradation associated with desertification has been by reestablishing vegetation.