



# Guide to the Science of Climate Change in the 21<sup>st</sup> Century

## Chapter 22 Comments

David H. Manz  
PhD., P. Eng., AOE, FCAE  
2020

## Chapter 22.0 Comments

We are in the era of climate change management not out of choice but out of necessity. It is important that we learn how to do it and then follow through with action. Our community is the whole world and everything in it. The study of the science of climate change demonstrates that everything we do locally has a global impact. Think globally, act locally, was the mantra of the early environmental movement and it is just as relevant today. Globalization is a description of the evolution of human awareness of the world we live in. By definition the world is global. We as individuals will be impacted by the actions of billions of individuals around the world.

The science of climate change is so complex there will be opportunities for generations of young scientists (and old scientists too) to make meaningful contributions – given the chance. The youth are very concerned. It is important to inform them, empower them and harness their ingenuity and energy.

The subject areas included in the study of the science of climate change are rapidly expanding as illustrated by the introduction of shared socio-economic pathways. The dialogue between the physical sciences and social sciences is rapidly evolving to jointly develop climate change modelling and mitigation strategies.

The climate change modelling initiatives reminded me of a famous piece of science fiction written by Isaac Asimov titled the Foundation Series written in the late 1940's and early 1950's. Maybe there is no attempt to model the universe (leave this project to astrophysicists) but we are attempting to model the world, including human behaviour. The opportunity for young gamers to get into this action is tremendous – just need to learn a bit of physics and work as a team. Speaking as a former computer modeller I envy the next generation and the tasks that lie ahead.

As I wrote this Guide it became apparent that most of our global community is not engaged in any form of discussion on the immediacy of the climate change threat. This must not continue. The role of the social scientists in developing and implementing strategies, is to reach out and inform individuals in all communities about the climate change crisis, its mitigation and the role they might play. Rather than only top-down management, participatory approaches need to be used to achieve understanding and buy-in. Climate change must be as important a topic as the Covid-19 virus that is ravaging our planet.

It must be emphasized that this Guide is just that; a guide. It is intended to carefully introduce the subject areas that are part of the science of climate change and explain why they are included. The Guide is intended to be understood by both the physical and social science community. Sufficient direction is provided for ongoing independent study.

The physical sciences can identify the problems and show where our present path is taking us. They can propose courses of action to address these issues. However, it falls to the social scientists – academics working with civil servants and the private sector – to identify how

December 12, 2020 – Fifth Anniversary of the Paris Agreement

August 9, 2021 – Publication of IPCC AR6 WG1, Climate Change, The Physical Science Basis  
Guide to the Science of Climate Change in the 21<sup>st</sup> Century, August 14, 2021

appropriate policies can be implemented, convince elected officials of the imperatives, and build public support for what must be done. Knowledge is power, and the more interdisciplinary our approach the better its prospects.

The internet is a very rich source of high quality and up-to-date information. It can also lead to the vast world of peer reviewed and published research. If one happens upon a web site or other source of information that seems 'questionable' it is possible to check it out and see if sources, known to be reputable, corroborate.

This Guide is a 'Living Document'. Readers are invited to make comments and to the extent possible their feedback will be considered and used.

It is hoped that this Guide will help motivated individuals and organizations to develop and expand their own approach to community outreach. The more the better.

A book written by Peter Brannen titled *The Ends of the World* (copyright 2017) is a must read for those who need motivation to become involved in the mitigation of the climate change crisis. Peter Brannen provides a gripping, scientifically informed description of how life on Earth evolved and the circumstances that resulted in its extinction and redevelopment - five times since life on Earth first began. He ties this history, including the science, to the relationship humankind is presently having with the planet and the need to avoid the potentially catastrophic outcomes. He is optimistic. The book is available from HarperCollins Publishers, 195 Broadway, New York, NY, USA, 10007.

The publication of the reports of the IPCC Sixth Assessment Report took almost eight years to prepare. The message is very clear. The World does not have eight more years to react. Mitigation measures must be implemented now to limit the impacts of global warming and climate change on the life on Earth.