

## Table of Contents

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Foreword .....	i
The Author .....	ii
<b>SECTION 1: TEACHER'S GUIDE</b>	
Introduction and Purpose of Guide .....	1-1
Curriculum Fit .....	1-2
The Philosophical Background .....	1-3
Annotated Definitions .....	1-9
Extended Comments on the Images in the Presentation .....	1-27
Student Exercises .....	1-36
<b>SECTION 2: ANECDOTAL MATERIALS</b>	
Human-Caused Global Warming.....	2-1
On global forces of nature driving the Earth's climate. Are humans involved?	2-40
Questioning the Global Warming Science: An Annotated Bibliography of Recent Peer-Reviewed Papers .....	2-52
CO <sub>2</sub> : The Greatest Scientific Scandal of Our Time .....	2-60
Greenhouse Warming? What Greenhouse Warming? .....	2-75
35 Inconvenient Truths: The Errors in Al Gore's Movie .....	2-88
Nature, Not Human Activity, Rules the Climate .....	2-110
Slower sunspot activity makes the world cooler.....	2-174
Cosmoclimatology: A New Theory Emerges .....	2-175
Approved Judgment .....	2-182

## Foreword

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Climate Change has happened, is happening, and will always happen. Most of the public is unaware of the extent and speed with which it changes and that is part of the problem, as I will explain in this Guide. Many years ago the American financier Bernard Baruch was asked what the stock market was going to do – he famously replied “Fluctuate”. The same is true of global temperature, past present, and future.

Climate became a public issue when it became a political issue in the late 1980s. It was a minor political issue before that when the scientific consensus was that the world was cooling. In the 1970s the CIA coined the word “climatology” to encompass the social instability they expected as the world cooled and harvests failed.

This Manual and accompanying material developed out of awareness that less than half the climate information was in general circulation and that few people knew much about weather, climate or climate change. Despite this many people have very definite views on the subject. In 1897 Mark Twain said, “Everybody talks about the weather but nobody does anything about it.” This should be updated to “Everybody talks about the weather, knows little or nothing about it and think we can do something to change it.” This Guide provides definitions, explanations, and an overview of the basics of climate and climate change. New information is emerging each day as testing of the hypothesis that human CO<sub>2</sub> is causing global warming or climate change continues. Sources are provided to allow you to add to the basics and context presented here.

The teacher should avoid the politics of the issue as much as possible and provide the facts for students. Politics can be part of the social science approach, but should focus on how politics have used a scientific issue for political gain.

Part of the problem is confronted in the fact that global warming is covered almost exclusively in the social science curriculum, but is basically a scientific issue. It requires an understanding of the science for any meaningful discussion to occur. This guide is designed to provide the fundamental science from which a social studies discussion can ensue.

## The Author

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Dr. Ball was born in England and immigrated to Canada on his own as a young man. After two years in the business world he joined the Royal Canadian Air Force as an aircrew member on a short service commission. He flew four years of anti-submarine patrols in Atlantic Canada and five years for Search and Rescue in western and Arctic Canada. At the end of his contracted term he returned to university and completed his work with one of the first doctorates in climatology in the world. He used the weather and climate data in the journals of the Hudson's Bay Company to produce scientific analysis of climate change from 1714 to 1952 for Churchill and York Factory on Hudson Bay.

Prior to completing his PhD he began teaching at the University of Winnipeg. He remained there for 28 years winning the Clifford Robson Award for excellence in Teaching among many other awards. He was also an adjunct professor at the University of Manitoba where he supervised many graduate theses. He has an extensive research and publishing record as well as participation in several Provincial and Federal committees on climate and the environment. His most recent major publication is a co-authored book with Dr. Stuart Houston on the science of the fur trade – *Eighteenth Century Naturalists of Hudson Bay* published by McGill Queens University Press.

He is most proud of his involvement with education at all levels that was an active part throughout his career. He was a long-term executive member of all the Manitoba Social Science Teachers Association culminating in a lifetime membership award in 2003. He was president for two years and edited their journal for over ten years. He gave the keynote address for Agriculture in the Classroom in 1982 and has promoted that agency ever since, most recently on the board of the BC chapter.

Dr. Ball has sat on many curriculum committees and participated in preparation of materials for the classroom. One of these was as major author of a teacher's guide on the fur trade in Canada.

Dr. Ball runs a consultant company in Victoria and provides over 150 public presentations a year. He also speaks in the classroom whenever the opportunity arises, as it does about a dozen times a year. He has written a column called "Weather Talk" in *Country Guide* as an instructive piece for people in agriculture for 15 years.