

Update Log

January 9, 2021

Ch 16 Observations

- Tree line
- Starfish
- 2020 tied for hottest year
- CO2 emissions 2020
- Pine bark beetle

January 13, 2021

Ch 8 Ocean circulation

- Gulf stream

Ch 16 Observations

- Insect loss
- Fish warm water migration
- Temperature oceans
- Jelly fish
- Seabirds

Ch 19 Adaptation

- Fish regulatory
- Sahel. One Planet Summit

January 16, 2021

Ch 20

- Grammar
- Paris Agreement

Ch 19

- Paris Agreement
- Adaptation Gap Report 2020

January 18, 2021

Ch 15

- Added section on carbon footprint and audit

Ch 20

- **Comment on need for carbon footprint and audit**

Ch 22

- **Minor editing**

January 19, 2021

Ch 16

- **Minor editing**
- **Added URLs for animal species listed under Section 16.15 Habitat change**

January 27, 2021

Ch 16

- **Minor editing**
- **Added section on extreme weather.**

Ch 15

- **Added section on definition and use of carbon intensity**

January 29, 2021

Ch 16

- **Added videos on decline of Arctic sea ice**
- **Added section on desertification**

February 1, 2021

Ch 16

- **Update on iceberg A-68, article and video**

February 3, 2021

Ch 15

- **Added section on other carbon description terms**

February 5, 2021

Ch 4

- **Added reference on GHGs.**

Ch 15

- **Added Table 15.1.**
- **Added discussion on carbon allowances, caps, and purchase of allowances and off sets.**

Ch 16

- **Discussion on polar amplification.**

Ch 18

- **Discussion on polar amplification.**

February 6, 2021

Ch 5

- **Added Section 5.8 Weathering and Figure 5.5**

February 7, 2021

Ch 6

- **Added information on formation of glacial lakes and their danger.**
- **Added description of calving process.**

Ch 16

- **Added recent observations of glacial lakes, danger and outburst.**

Ch 19

- **Added web pages regarding Prince Charles Terra Carta initiative**
- **Added comments by WHO and Mark Carney on expected mortality due to climate change.**

February 13, 2021

Front matter: updated for Ch 15 additions

Ch 5

- **Editing**

Ch 15

- **Added section 15.3 carbon dioxide emissions by fuel type**
- **Added section 15.4 carbon dioxide emissions from cement production**

- Added section 15.5 methane emissions
- Added section 15.12 carbon neutral, decarbonizing, net zero, carbon efficiency
- Added section 15.13 carbon management which includes cap-and-trade, carbon tax, carbon dividend, carbon leakage, carbon tariff and carbon pricing.

February 21, 2021

Front matter: updated for Chapters 23 and 24

- Ch 23 Glossary
- Ch 24 Added Selected Web Sites

February 24, 2021

- Ch. 24 Selected Web Sites. Added newsletters.

February 28, 2021

Front matter: updated for Chapters 15 and 16

- Ch 1 updated to properly consider Chapters 23 and 24
- Ch 15 added terminology for GHG emission management
- Ch 16 wildfire reference NASA

March 3, 2021

- Ch 8 updated to include recent information on the Atlantic Meridional Ocean Circulation
- Ch 11 updated to include recent information on the Atlantic Meridional Ocean Circulation

March 7, 2021

- Ch 13 updated to include reference to book, *The Ends of the World* and improved reference to book, *Paleoclimatology from Snowball Earth to the Anthropocene*.
- Ch 16 updated to include reference to the books, *The Ends of the World* and *Paleoclimatology from Snowball Earth to the Anthropocene* and discussion of habitat fragmentation.
- Ch 22 updated to include reference to book, *The Ends of the World*.

March 12, 2021

- Ch 15 updated Water Resource Institute for GHG assessments

March 31, 2021

- Ch 24 addition of education resources for public schools

April 5, 2021

- Ch 5 add reference NASA air-sea carbon dioxide exchange.
- Ch 13 Leaf wax proxy.
- Ch 12 additional reference on proxy data.
- Ch 14 Instrumental Period – added NASA reference.

April 11,2021

- Ch 14 add consideration of impact of fisheries using trawling and loss of peatland habitat.
- Ch 15 add consideration of impact of fisheries using trawling and loss of peatland habitat.

April 12, 2021

- Ch 16 add consideration of impact of global warming on endemic species and impact of global warming on Antarctic ice shelves

April 16, 2021

- Ch 11 recent studies on how El Nino is affected by global warming.
- Ch17 discussion on regional climate models to include convection permitting models or CPM's

April 24, 2021

- Ch 14 and Ch 16 use of the Grace satellites to estimate ice mass loss from Greenland and Antarctica

April 30, 2021

- Ch 14 and Ch 16 use of Terra satellite to monitor glacier loss world wide.