

Update Log 3 Starting August 10, 2022

August 10, 2022

- Chapter 16 updated extreme weather map published by Carbon Brief Daily.
- Chapter 16 added report pertaining to Estimates of Mortality in the British Columbia Wildfires of 2021.
- Chapter 16 added article published by journal; Nature Climate Change titled 'Over half of known human pathogenic diseases can be aggravated by climate change.'

August 22, 2022

- Chapter 16 updated title to 'Observations and Impacts of Recent Climate Change – Attribution Science'.
- Chapter 16 rewrote introduction and changed title to 'Attribution'.
- Chapter 16 updated Section 16.15 on biological diversity to include COP-15 Part 1 and 2 and World Biodiversity Summit.
- Chapter 16 reorganized and updated Section 16.19 on extreme weather.
- Chapter 16 updated Figure 16.1 to reflect CO₂ concentration as of July 2022.
- Updated Table of Contents to reflect change in name of Chapter 16.

August 30, 2022

- Table of Contents updated.
- List of Figures updated.
- Chapter 3 added section on forecasting including stochastic forecasting, real-time forecasting and distributed models.
- Chapter 6 added section on forecasting including stochastic forecasting, real-time forecasting and distributed models.
- Chapter 4 minor editorial.
- Chapter 8 minor editorial.
- Chapter 16 added section on Atlantic Meridional Overturning.
- Chapter 16 added section on USEPA climate change indicators and list of extreme weather in 2022.
- Chapter 16 added section forecasting.
- Chapter 16 added section on social impacts including economic impacts, poverty, migration and war.
- Chapter 17 minor editorial.
- Chapter 18 minor editorial.
- Chapter 19 minor editorial.
- Chapter 20 minor editorial.

September 11, 2022

- **Table of Contents updated.**
- **List of Figures updated.**
- **Chapter 3 further developed section on forecasting to emphasize the difference between climate and weather.**
- **Chapter 3 Introduced how frequency analysis is used to aid in forecasting.**
- **Chapter 6 Introduced the concepts associated with flood plain delineation which will help explain how current climate change might be impacting the significance of flooding events world wide.**
- **Chapter 16 Further clarification of the significance of forecasting. Identification of limitations of climate change modelling for forecasting purposes. Need for determining how forecasts based on interpretation of historical data need to be updated with the information on future climate change to facilitate resilient adaptation.**

September 13, 2022

- **Table of Contents updated.**
- **Chapter 7 includes discussion of double jet streams.**
- **Chapter 16 includes section on double jet streams. Also, reference is made to the seriousness of the drought in the United States.**

September 14, 2022

- **Chapter 2. Recognition of the contribution to computer simulation of global climate change and natural climate variations and award of Nobel Prize in Physics in 2021.**
- **Chapter 4. Highlight the lecture provided by Syukuro Manabe at the time of his Nobel Prize award in 2021 in which he reviewed the global energy balance and how the increase in GHG's impact climate change.**

September 15, 2022

- **Table of Contents updated.**
- **List of Figures updated.**
- **Chapter 16 Updated section discussing Arctic warming, impact of unavoidable Greenland ice melt on sea-level rise, significance of climate change on migration, and climate change impacts of 2022 on European drought, heatwave and wildfires, drought in India and Pakistan, heatwave and drought in the United States and drought in China.**
- **Chapter 16 added section on tipping points which referred to section 18.5.**
- **Chapter 18 updated section 18.5 on tipping points.**

September 16, 2022

- **Chapter 16. Attribution studies on flooding in Pakistan.**
- **Chapter 16. Discussion on internal migration in Zimbabwe and problems associated with migration to South Africa from other parts of Africa.**
- **Chapter 16. Drought affected rivers in Europe.**
- **Chapter 16. Explanation of loss of ice mass from Antarctic ice sheet.**

September 21, 2022

- **Chapter 16. Expanded discussion on impact of heat on human health.**
- **Chapter 18. Review of recent conference on tipping points held at the University of Exeter, September, 2022. Included are discussions on tipping points, interacting tipping points, positive tipping points and how knowledge of tipping points might influence policy.**

September 30, 2022

- **Chapter 15. Added sections on super pollutants and immortal pollutants.**
- **Chapter 16. Added hurricane Fiona impact on Atlantic Canada to extreme events 2022, hurricane Ian impact on Cuba, Florida, South Carolina and Georgia, super typhoon Nanmadol impact on Philippines and Japan and super typhoon Noru impact on Philippines and Viet Nam.**
- **Chapter 16. Edited Section 16.20 U.S. EPA report, Climate Change Indicators.**
- **Edited Table of Contents.**
- **Edited List of Figures.**

October 10, 2022

- **Chapter 1. Added section to identify significant international organizations other than the IPCC.**
- **Chapter 15. Added section on the Global Carbon Project. Added recent perspectives on quantifying GHG emissions provided by the National Academies of Science, Engineering and Medicine.**
- **Chapter 26. Added web sites of significant international organizations.**
- **Edited Table of Contents.**

October 27, 2022

- **Chapter 14. Addition of discussion on NASA project, Earth Surface Mineral Dust Source Investigation, EMIT and the sensor that was mounted on the International Space Station used to collect the data.**
- **Chapter 15. Addition of information on NASA project, Earth Surface Mineral Dust Source Investigation, EMIT and the sensor that was mounted on the International**

Space Station used to collect the data highlighting both the mineral dust detection and detection of methane super-emitters.

- Chapter 16. Near term forecasting efforts from Copernicus in Chapter 16.22. Update to the World Wildlife Fund Living Planet Index for 2022. Reference to web site containing detailed discussion of the European heat wave of 2022 and the Pakistani flooding in 2022.
- Chapter 16. Added reference to Section 16.21.1 on heat related health impacts.
- Chapter 16. Added reference to Section 16.21.2 to include the Lancet 2022 report, Countdown on health and climate change: health at the mercy of fossil fuels.
- Chapter 16. Flooding Nigeria Section 16.19.6.
- Edited the Table of Contents to include 16.5.4 on the WWF Living Planet Index for 2022.

November 2, 2022

- List of Figures Chapter 4.
- Chapter 4. Replaced draft version of chapter 4 with appropriate version which included corrected discussions on global energy budget, greenhouse effect, significance of human activities on global energy budget.
- Chapter 4. Edited Figure 4.5 reference web site.

November 5, 2022

- Table of contents Chapter 20.
- List of Figures Chapter 20.
- Edited Chapters 1, 2, 4, 5, 6, 15, 16, 17, 18 and 20.

November 7, 2022

- Table of contents Chapter 16 and 26.
- Chapter 16 added section on future updates.
- Chapter 18 editorial.
- Chapter 26 added web sites of significant international organizations.

November 18, 2022

- List of Figures Chapter 4.
- Chapter 4 revision of discussion on energy budget details
- Chapter 13 editing.

November 24, 2022

- Presentation, Science of Global Warming and Climate Change – Why it is Important!
- Table of Contents minor editing.

- **Chapter 16 updated West Africa flooding attribution, BirdLife International Report 2022, World Wildlife Fund – Living Planet Report 2022, discussion on future updates, tipping points, domino effects, knock-on effects, runaway global warming and hothouse Earth.**
- **Chapter18 tipping points, domino effects, knock-on effects, runaway global warming and hothouse Earth**