

**GLOSSARY****Aerosols**

tiny particles suspended in the air

**Adjusted**

refers to time series data that have been “homogenized” to remove time dependent biases; owing to uncertainties inherent in data bias removal, the term “adjusted” is often used instead of “corrected”

**Albedo**

the fraction of incident light that is reflected from a surface

**Anthropogenic**

human-induced

**Black carbon**

soot particles primarily from fossil fuel burning

**Climate sensitivity**

the equilibrium change in global-average surface air temperature following a change in radiative forcing; in current usage, this term generally refers to the warming that would result if atmospheric carbon dioxide concentrations were to double from their pre-industrial levels

**Contrails**

condensation trails from aircraft

**Convection**

motions in a fluid or the air that are predominantly vertical and driven by buoyancy forces; a principal means of vertical energy transfer

**Diurnal**

occurring daily; varying within the course of a day

**Dewpoint**

temperature at which water vapor condenses into liquid water temperature when cooled at constant pressure

**Error**

the difference between an estimated or observed value and the true value

**Forcing**

a natural or human-induced factor that influences climate

**Greenhouse gases**

gases including water vapor, carbon dioxide, methane, nitrous oxide, and halocarbons that trap infrared heat, warming the air near the surface and in the lower levels of the atmosphere

**Homogenization**

Removing changes in time series data that might have arisen for non-climatic reasons

**Internal variability**

natural cycles and variations in climate

**Temperature inversion**

a condition in which the air temperature increases with height, in contrast to the more common situation in which temperature decreases with altitude

**Isothermal**

constant temperature; often refers to a temperature profile meaning constant temperature with height

**Lapse rate**

the rate at which temperature decreases with increasing elevation

**Latent heat**

the heat required to change the phase of a substance, *e.g.*, solid to vapor (sublimation), liquid to vapor (vaporization), or solid to liquid (melting); the temperature does not change during these processes. Heat is released for the reverse processes, *e.g.*, vapor to solid (frost), liquid to solid (freezing), or vapor to liquid (condensation)

**Metadata**

supplemental records used to interpret measurements, such as how and where measurements were collected and processed

**Parameterization**

a mathematical representation of a process that cannot be explicitly resolved in a climate model

**Radiosonde**

a balloon carrying a thermometer or other sensing device that takes measurements in the atmosphere and transmits them by radio to a data recorder on the surface

**Reanalysis**

a mathematically blended record that incorporates a variety of observational data sets (with adjustments) in an assimilation model

**Reference networks**

a small subset of sites consisting of multiple instruments that independently measure the same variable which if well coordinated could provide full characterization of instrument errors and biases, significantly reducing uncertainty in observed climate change

**Relative humidity**

the percentage of water vapor in the air relative to what is required for saturation to occur at a given temperature

**Sensible heat**

heat that can be measured by a thermometer

**Specific humidity**

the amount of water vapor in the air in units of kilograms of water vapor per kilogram of air

**Trend**

a systematic change over time

**Uncertainty**

a term used to describe the range of possible values around a best estimate, sometimes expressed in terms of probability or likelihood (see Preface Figure 1 and discussion in Appendix A)

**ACRONYMS**

<b>20CEN</b>	climate model simulation of the 20th century
<b>AGCM</b>	Atmospheric General Circulation Model
<b>AIRS</b>	Atmospheric InfraRed Sounder
<b>AMIP</b>	Atmospheric Model Intercomparison Project
<b>AMSU</b>	Advanced Microwave Sounding Unit
<b>AOGCM</b>	Atmosphere-Ocean General Circulation Model
<b>AR4</b>	IPCC Fourth Assessment Report
<b>ARL</b>	Air Resources Laboratory
<b>ATMS</b>	Advanced Technology Microwave Sounder
<b>ATSR</b>	Along-Track Scanning Radiometer
<b>AVHRR</b>	Advanced Very High Resolution Radiometer
<b>CCSM</b>	Community Climate System Model
<b>CCSP</b>	Climate Change Science Program
<b>CDR</b>	Climate Data Record
<b>CFCs</b>	chlorofluorocarbons
<b>CGCM</b>	Coupled Atmosphere-Ocean General Circulation Model
<b>CH<sub>4</sub></b>	Methane
<b>C.I.</b>	Confidence Interval
<b>CLIVAR</b>	Climate Variability and Prediction
<b>CMIP</b>	Coupled Model Intercomparison Project
<b>CMIS</b>	Conical scanning Microwave Imager/Sounder
<b>CO<sub>2</sub></b>	Carbon Dioxide
<b>COADS</b>	Comprehensive Ocean-Atmosphere Data Set
<b>COWL</b>	Cold Ocean Warm Land
<b>CrIS</b>	Cross-track Infrared Sounder
<b>CRN</b>	Climate Reference Network
<b>CRU</b>	Climate Research Unit
<b>DOE</b>	Department of Energy
<b>EBM</b>	Energy Balance Model
<b>ECMWF</b>	European Centre for Medium-range Weather Forecasts
<b>EMIC</b>	Earth System Models of Intermediate Complexity
<b>ENSO</b>	El Niño-Southern Oscillation
<b>EOF</b>	Empirical Orthogonal Function
<b>ERA</b>	ECMWF Re-Analysis
<b>ERSST</b>	Extended Reconstruction Sea Surface Temperature
<b>GAW</b>	Global Atmospheric Watch
<b>GCM</b>	General Circulation Model
<b>GCOS</b>	Global Climate Observing System
<b>GCSM</b>	Global Climate System Model
<b>GEOS</b>	Global Earth Observation System of Systems

<b>GFDL</b>	Geophysical Fluid Dynamics Laboratory	<b>NPOESS</b>	National Polar-orbiting Operational Environmental Satellite System
<b>GHCN</b>	Global Historical Climatology Network	<b>NRC</b>	National Research Council
<b>GHG</b>	Greenhouse Gas	<b>NSF</b>	National Science Foundation
<b>GHRSSST-PP</b>	GODAE High-Resolution SST Pilot Project	<b>NWP</b>	Numerical Weather Prediction
<b>GISS</b>	Goddard Institute for Space Studies	<b>O<sub>3</sub></b>	Ozone
<b>GODAE</b>	Global Ocean Data Assimilation Experiment	<b>OGCM</b>	Ocean General Circulation Model
<b>GPS</b>	Global Positioning System	<b>PCM</b>	Parallel Climate Model
<b>GSN</b>	GCOS Surface Network	<b>PDO</b>	Pacific Decadal Oscillation
<b>GUAN</b>	GCOS Upper Air Network	<b>QBO</b>	Quasi-Biennial Oscillation
<b>HadCM</b>	Hadley Centre Climate Model	<b>RATPAC</b>	Radiosonde Atmospheric Temperature Products for Assessing Climate
<b>HadRT</b>	Hadley Centre Radiosonde Temperatures	<b>RSS</b>	Remote Sensing Systems
<b>hPa</b>	hectoPascals, a measure of pressure	<b>SAM</b>	Southern Hemisphere Annual Mode
<b>HIRS</b>	High-resolution Infrared Radiation Sounder	<b>SCAMS</b>	SCanning Microwave Spectrometer
<b>IASI</b>	Infrared Atmospheric Sounding Interferometer	<b>SH</b>	Southern Hemisphere
<b>ICOADS</b>	International Comprehensive Ocean-Atmosphere Data Set	<b>SO<sub>4</sub></b>	Sulfate
<b>IGRA</b>	Integrated Global Radiosonde Archive	<b>SSM/I</b>	Special Sensor Microwave/Imager
<b>IPCC</b>	Intergovernmental Panel on Climate Change	<b>SSMIS</b>	Special Sensor Microwave Imager/Sounder
<b>IR</b>	Infrared Radiation	<b>SST</b>	Sea Surface Temperature
<b>ITCZ</b>	Inter Tropical Convergence Zone	<b>SSU</b>	Stratospheric Sounding Unit
<b>LBNL</b>	Lawrence Berkeley National Laboratory	<b>TAO</b>	Tropical Atmosphere Ocean
<b>LECT</b>	Local Equator Crossing Time	<b>TEAP</b>	Technology and Economic Assessment Panel
<b>LKS</b>	Lanzante, Klein, Seidel	<b>TIROS</b>	Television InfraRed Observation Satellite
<b>LLNL</b>	Lawrence Livermore National Laboratory	<b>TLT</b>	Temperature of the Lower Troposphere
<b>LOSU</b>	Level of Scientific Understanding	<b>TOGA</b>	Tropical Ocean Global Atmosphere
<b>LULC</b>	Land Use/Land Cover	<b>TOVS</b>	TIROS Operational Vertical Sounder
<b>MAT</b>	Marine Air Temperatures	<b>TRMM</b>	Tropical Rainfall Measuring Mission
<b>MIT</b>	Massachusetts Institute of Technology	<b>UAH</b>	University of Alabama in Huntsville
<b>MSU</b>	Microwave Sounding Unit	<b>UMd</b>	University of Maryland
<b>NAM</b>	Northern Hemisphere Annual Mode	<b>USHCN</b>	United States Historical Climatology Network
<b>NAO</b>	North Atlantic Oscillation	<b>UTC</b>	Coordinated Universal Time
<b>NASA</b>	National Aeronautics and Space Administration	<b>UW</b>	University of Washington - Seattle
<b>NCAR</b>	National Center for Atmospheric Research	<b>WMO</b>	World Meteorological Organization
<b>NCDC</b>	National Climatic Data Center		
<b>NCEP</b>	National Centers for Environmental Prediction		
<b>NEMS</b>	Nimbus E Microwave Spectrometer		
<b>NESDIS</b>	National Environmental Satellite, Data, and Information Service		
<b>NH</b>	Northern Hemisphere		
<b>NMAT</b>	Night Marine Air Temperatures		
<b>N<sub>2</sub>O</b>	Nitrous Oxide		
<b>NOAA</b>	National Oceanic and Atmospheric Administration		

## CHAPTER I REFERENCES

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## Contact Information

Global Change Research Information Office  
c/o Climate Change Science Program Office  
1717 Pennsylvania Avenue, NW  
Suite 250  
Washington, DC 20006  
202-223-6262 (voice)  
202-223-3065 (fax)

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U.S. Climate Change Science Program  
1717 Pennsylvania Avenue, NW • Suite 250 • Washington, D.C. 20006 USA  
1-202-223-6262 (voice) • 1-202-223-3065 (fax)  
<http://www.climatechange.gov>

