

# *AMS Climate Studies Investigations*

- 1A CLIMATE SCIENCE FOR TODAY’S WORLD**  
Defines “climate”, introduces Earth’s climate system and investigates the AMS Climate paradigm
- 1B FOLLOW THE ENERGY! EARTH’S DYNAMIC CLIMATE SYSTEM**  
Presents a simplified model of Earth’s energy system to receive and emit radiation
- 2A CLIMATE SCIENCE FROM AN EMPIRICAL PERSPECTIVE**  
Examines traditional sources of climatological data
- 2B CLIMATE VARIABILITY AND CHANGE**  
Investigates a unique case of one possible climate change cause
- 3A SOLAR ENERGY AND EARTH’S CLIMATE SYSTEM**  
Contrasts the global distribution of incoming solar energy at various latitudes
- 3B DAILY RECEIPT OF SOLAR RADIATION AT A MID-LATITUDE LOCATION**  
Provides a detailed examination of solar energy receipt at a midlatitude station
- 4A WATER, HEAT, AND HEAT TRANSFER**  
Compares the heat storage of water to other common substances
- 4B WATER AND HEAT STORAGE AT THE EARTH’S SURFACE**  
Contrasts the heat storage in water and soil locations with its implications for Earth’s climate system
- 5A GLOBAL WATER CYCLE**  
Investigates remote sensing of Earth’s global water cycle
- 5B WATER VAPOR FLUX AND TOPOGRAPHICAL RELIEF**  
Examines the effect of Earth’s topography on precipitation patterns
- 6A GLOBAL ATMOSPHERIC CIRCULATION**  
Compares the general circulation of Earth’s atmosphere from theory to practice
- 6B GLOBAL ATMOSPHERIC CIRCULATION – ROSSBY WAVES**  
Investigates midlatitude tropospheric motions of Rossby waves

- 7A** **SYNOPTIC-SCALE ATMOSPHERIC CIRCULATION  
– HIGH AND LOW PRESSURE SYSTEMS**  
Describes synoptic scale weather systems
- 7B** **SYNOPTIC-SCALE ATMOSPHERIC CIRCULATION  
– WAVE CYCLONES AND STORM TRACKS**  
Investigates development and movement of synoptic scale weather systems
- 8A** **CLIMATE AND AIR/SEA INTERACTIONS  
– INTER-ANNUAL TO DECADEAL CLIMATE VARIABILITY**  
Considers variability in climate from evolving air-sea interactions
- 8B** **COASTAL UPWELLING AND COASTAL CLIMATES**  
Examines coastal climates that result from oceanic upwelling
- 9A** **PETM: A POSSIBLE ANALOG TO MODERN CLIMATE CHANGE**  
Investigates an historic analog climate state to rapid change mechanisms
- 9B** **METHANE HYDRATES: MAJOR IMPLICATIONS FOR CLIMATE**  
Demonstrates one climate system component that may trigger rapid system change
- 10A** **CLIMATE AND CLIMATE VARIABILITY FROM THE INSTRUMENTAL  
RECORD**  
Explores climate variability evidenced in the empirical record
- 10B** **RICE GROWING AND CLIMATE CHANGE**  
Displays an example of climate variability or change and its possible impact on agriculture
- 11A** **VOLCANISM AND CLIMATE VARIABILITY**  
Explores one natural forcing mechanism determined from the paleoclimate record
- 11B** **SNOW AND ICE ALBEDO FEEDBACK IN EARTH'S CLIMATE SYSTEM**  
Examines an important feedback mechanism in the climate system and its evidence
- 12A** **CLIMATE CHANGE AND RADIATIVE FORCING**  
Compares radiative forcings of the climate system by various natural and human mechanisms
- 12B** **THE OCEAN IN EARTH'S CLIMATE SYSTEM**  
Examines evidence of climate change in Earth's largest energy reservoir – the ocean

- 13A VISUALIZING CLIMATE**  
Examines traditional displays of empirical climate data and related classification schemes
- 13B CLIMATE VARIABILITY AND SHORT-TERM FORECASTING**  
Looks at short-term climate predictions based on climate variability
- 14A CLIMATE MITIGATION AND ADAPTATION STRATEGIES**  
Examines climate mitigation and adaptation strategies for the future
- 14B GEOENGINEERING THE CLIMATE**  
Considers global geoengineering strategies and feasibility
- 15A CLIMATE MITIGATION THROUGH CAP-AND-TRADE**  
Investigates the Cap-and-Trade Process for mitigation of climate change
- 15B CARBON DIOXIDE EMISSIONS, CARBON FOOTPRINTS, AND PUBLIC POLICY**  
Explores the lifetime of atmospheric carbon dioxide and carbon “footprints”