

The Climate Futures Framework

Introduction

Climate change defines the 21st century in ways we are only beginning to understand.

How can we plan for the future without understanding climate change impacts on human and ecosystem health, food systems, energy production, the economy, geopolitics, and the future of storms, floods, droughts, wildfires and other extreme events?

Climate Change

Climate and its building block, weather, extend from the uppermost reaches of Earth's atmosphere into the oceans, lakes, streams, soils, fields, forests, rocks and into our homes. Climate and weather have been molding the Earth's surface through long-term variations and catastrophic changes ever since Earth gained an atmosphere. Climate and weather have been feared and revered ever since humans emerged and plants, animals and humans migrated, thrived, adapted, and ceased to exist in some cases in response to climate change. Climate change influences where we live, our health, our economy, our art and music, and our overall quality of life.

Over the last two decades, science has clearly demonstrated the realities of a changing climate and the highly significant role of human activity in these changes. With this realization, the White House, the Pentagon, and governments around the world understand that climate change is amongst the most serious and ever-present issues on the planet.

Climate change is a security issue



Health (human and ecosystem)

Warming (heat stress, vector borne diseases)
Pollutants (respiratory, neurological, cancer)
Extreme events (drought, flooding, storms, heat stress)

Economy

   Energy (consumption, renewable energy)
   Technological advances
   Redistribution of supply sources and mechanisms
   Innovation opportunities
Globalization and regionalization



Catastrophes

Extreme events (drought, flooding, heat stress)
Food supply (physical and chemical impacts)
Climate change refugees
Response capability



Geopolitics

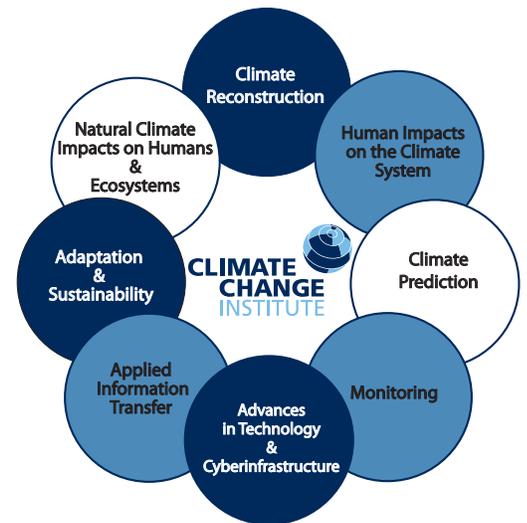
Ice free Arctic Ocean
Climate refugees from drought and storms
Water tower politics
Developed-developing country blame
Shifting agricultural resources

The Climate Change Institute (CCI)

The Climate Change Institute has a legacy of major contributions to the understanding of the physical, chemical, biological and social complexity of climate change and the application of these findings at local to international scales. People are increasingly recognizing how a changing climate is impacting their lives and they are working to adapt to these changes. Understanding the complexities of climate change and our decisions about how to respond becomes more critical each year.

CCI has eight major themes that together describe the breadth of CCI's contributions and abilities.

CCI's unique perspective combines first-hand understanding of robust archives of past climate and environment (e.g., ice cores, lake sediments, and human artifacts calibrated with instrumentally recorded data); a diverse array of environmental monitoring systems (eg., weather, sea level rise, glacier dynamics, lake chemistry, coastal erosion); and in-house generated understanding of weather- to climate-scale descriptions of past, current and future conditions. This climate understanding coupled with local- to global-scale understanding of climate change impacts, vulnerabilities, assets and potential opportunities for innovative solutions, significantly enhances the likelihood of climate change driven planning outcomes including guidance in climate adaptation, mitigation, sustainability, and resilience planning.



Climate Futures

A transparent framework is needed for assessing impacts and addressing vulnerability in a changing climate where intended goals are: mitigation, adaptation, sustainability, resilience, opportunity, and entrepreneurship.



Thinking Outside the Box

Climate prediction models are an essential element in planning for the impacts of climate change. However, existing climate models based on classic IPCC (Intergovernmental Panel on Climate Change) while essential stepping blocks, do not capture the full local- to regional-scale climate change known to exist in the past; nor do they capture the realities of non-linearities in the past and currently emerging climate system [e.g., Arctic sea ice loss, the Antarctic ozone hole, regional-scale drought]; or the full health consequences of changes in the chemistry of the atmosphere, and as a consequence the full range of plausible scenarios for future climate.

The Climate Futures Framework

A mechanism and emerging platform for assessing and quantifying climate change, vulnerability, impacts, and opportunities based on classic IPCC and past climate analog change predictions presented in the form of locale-specific plausible scenarios that go beyond standard linear climate predictions.

