

# ***Science Suggests Human Actions Have and Will Continue to Change the Climate***

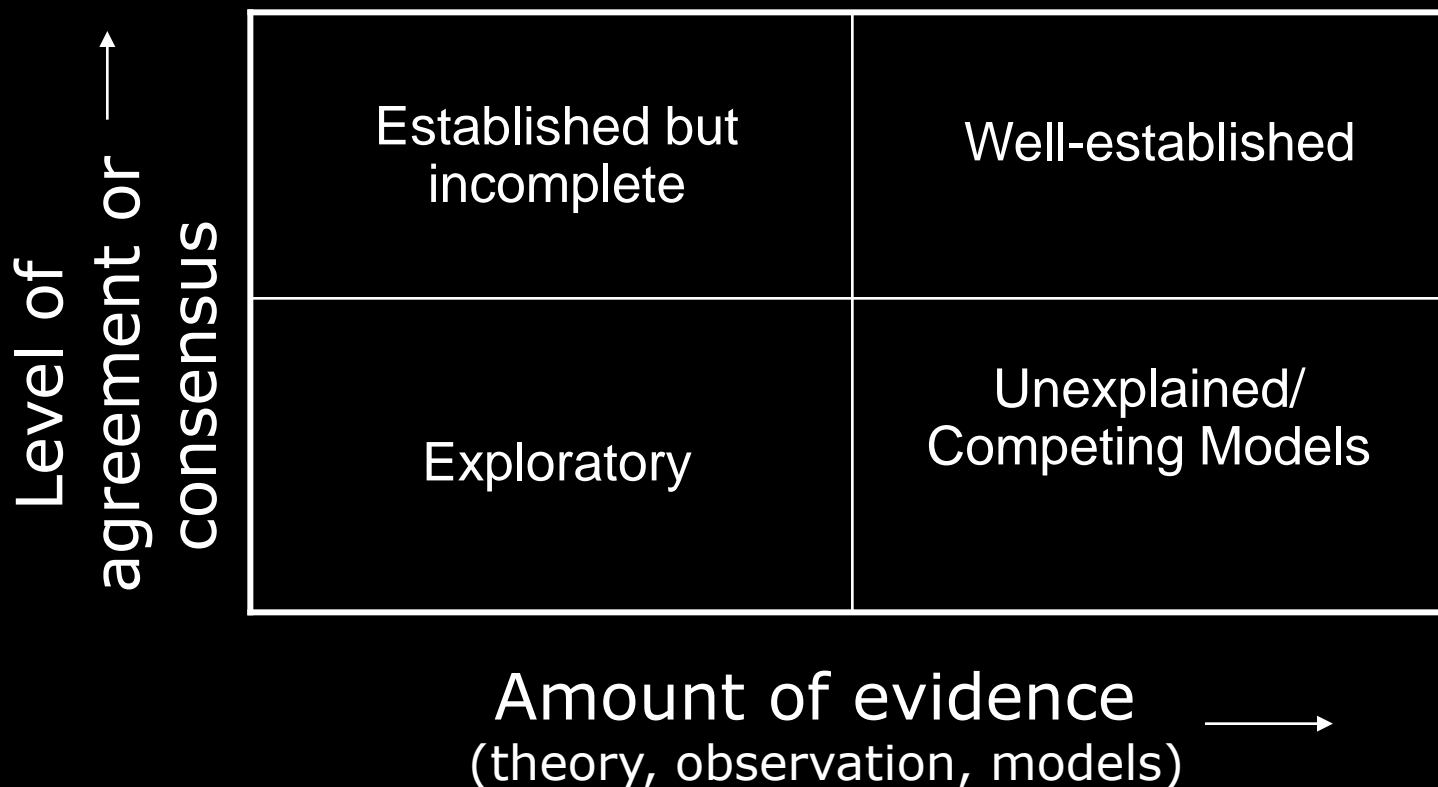
- **Intergovernmental Panel on Climate Change (IPCC) reports:**
  - **“Most of the observed increase in globally averaged temperatures since the mid-20th century is very likely due to observed increases in anthropogenic greenhouse gas concentrations”**
  - **“For the next two decades a warming of about 0.2°C per decade is projected...” no matter how fast emissions fall**
  - **“Continued greenhouse gas emissions at or above current rates would ... induce many changes in the global climate system ... that would very likely be larger than those observed in the 20th century.”**

# ***Scientists Have Estimated Confidence in Key Findings and Projections***

	<b>Likelihood that trend occurred since 1950</b>	<b>Likelihood trend will continue in 21st century</b>
<b>Most observed warming due to human influence</b>	<b>Very likely ( &gt; 90%)</b>	<b>Very likely ( &gt; 90%)</b>
<b>Warmer and more frequent hot days and nights</b>	<b>Very likely ( &gt; 90%)</b>	<b>Virtually certain ( &gt; 99%)</b>
<b>Areas affected by drought increase</b>	<b>Likely ( &gt; 66%)</b>	<b>Likely ( &gt; 66%)</b>

# ***Best Scientific Understanding Can Represent Many Different Types of Knowledge***

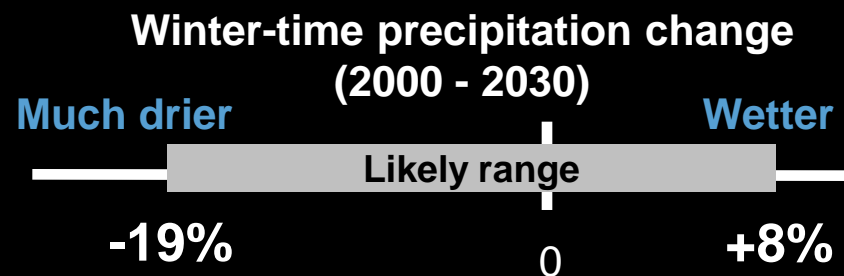
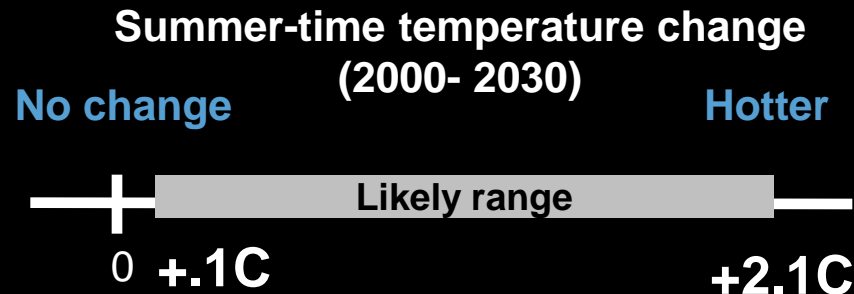
From IPCC Uncertainty Guidance



# Planners in S. California, for Instance, Face a Range of Possible Future Climate Conditions



Southland WX - 2005



*Results based on statistical summary of 21 of the world's best  
Global Climate Models*

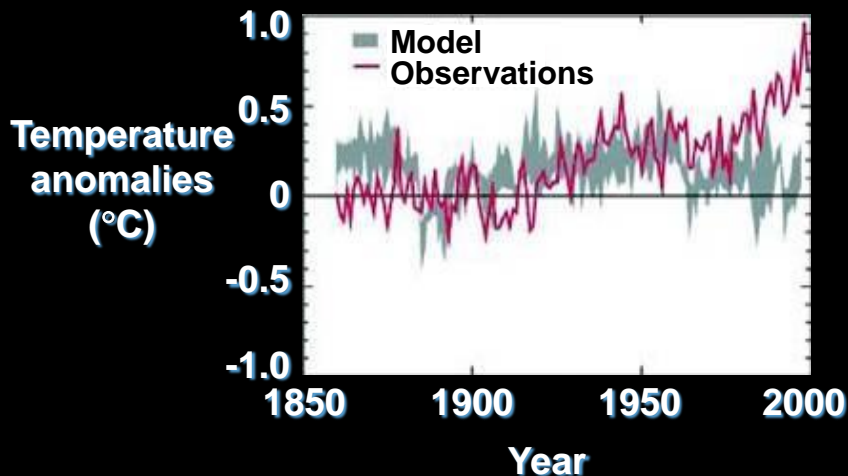
# ***Effective Long-Term Policy Analysis Must Be Based on Multiple Views of Future***

- **Use many scenarios to imagine the future**
  - Not a single forecast
- **Seek robust strategies that do well across many scenarios assessed according to several values**
  - Not optimal strategies
- **Employ strategies that evolve over time in response to changing conditions**
  - Not "fixed" strategies
- **Use analysis as “prosthesis for the imagination”**
  - Not a calculator

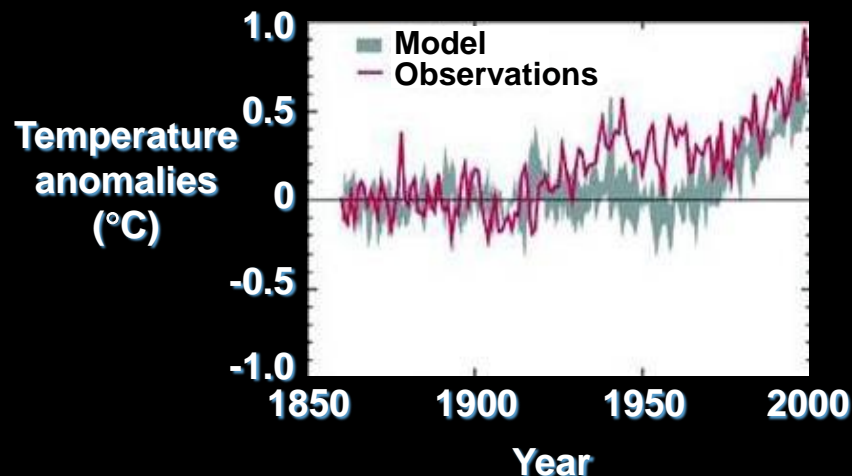
# Human Influence Needed to Explain Trends

## Simulated annual global mean surface temperatures

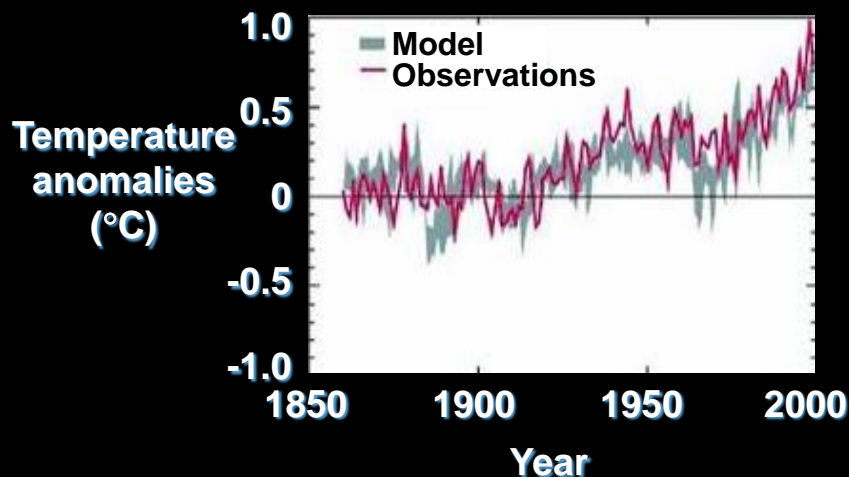
Natural influences (e.g. solar cycles, volcanoes)



Human emissions



Natural influences and human emissions



Source: National  
Academy of Sciences