Pricing Climate Risk: Refocusing the Policy Debate

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The focus

- Pricing climate risks
  - For mitigation (emission reduction)
  - For adaptation (dealing with changes that occur)
- Are we doing enough?
- What more could be done?
  - Measuring costs
  - Implementing pricing mechanisms

The price signal

- US Government set a social cost of carbon
  - $22/ton CO_2 central value
  - other values $5, $35, $65
- The central value translates into 20c/gallon of gasoline.
- Retail gas prices vary normally during the course of the year. $3.30 (January 2012) to $3.86 (September 2012).
- How visible will the price signal be?
- How large a change in emissions will it induce?
- How much adaptation will it induce?

The challenge: reconciling two perspectives

- Global perspective
  - GHGs are a global pollutant: what matters is the global aggregate of emissions. Mitigation is a global challenge
  - The climate changes globally
- Local perspective
  - Climate itself varies spatially; change in climate varies spatially
  - Most of the time, the impacts vary locally.
  - Adaptation is a local challenge
  - With some catastrophic events (thermohaline circulation changing in the Atlantic) the impacts occur on a regional or larger scale

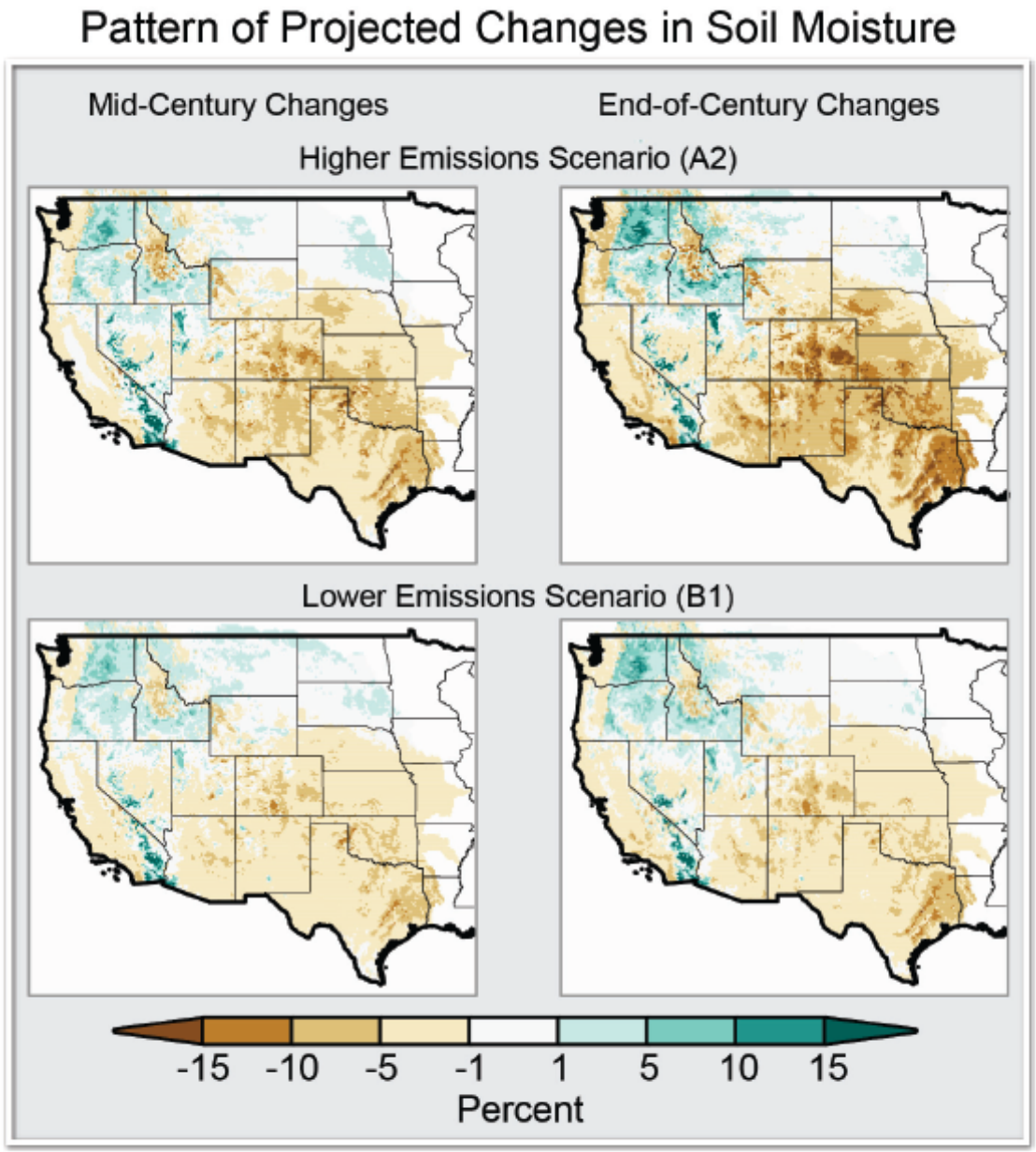

Figure 2.22: Pattern of Projected Changes in Soil Moisture

How uneventful are future impacts?

- Potential catastrophic changes would be catastrophic.
- What about non-catastrophic changes?
  - These have been undervalued so far
    - Invisible with existing spatial/temporal scales of analysis
  - With near-term/moderate warming the economic damage is driven by extreme weather events in local areas
    - Degree days > 34C account for >80% of damage in near term & under low emission scenario, >60% of damage to US agriculture later, under high emission scenario.

Time lags and irreversibility

- Climate change over next 30-40 years is locked in with past emissions
- Emission reduction now has an effect on climate change only after 30-40 years; small effect at first, larger effect as time passes.
- Therefore, one is pricing now so as to affect impacts that occur decades from now. Does the lag make any difference to the price signal that is needed now?
  - This assumes future impacts are determined irreversibly
  - There is a shorter time lag for adaptation (though long lead time for infrastructure adaptation)

Multiple actors

- Conventional analyses assume a single, infinitely-lived global actor.
- The reality is many separate actors and many distinct generations.
- Different actors face different costs of mitigation, different potential impacts, and different opportunities and costs for adaptation.
- Does that affect how one thinks of pricing climate risk?