

Session on the New Scenario Process and Implications for CMIP6

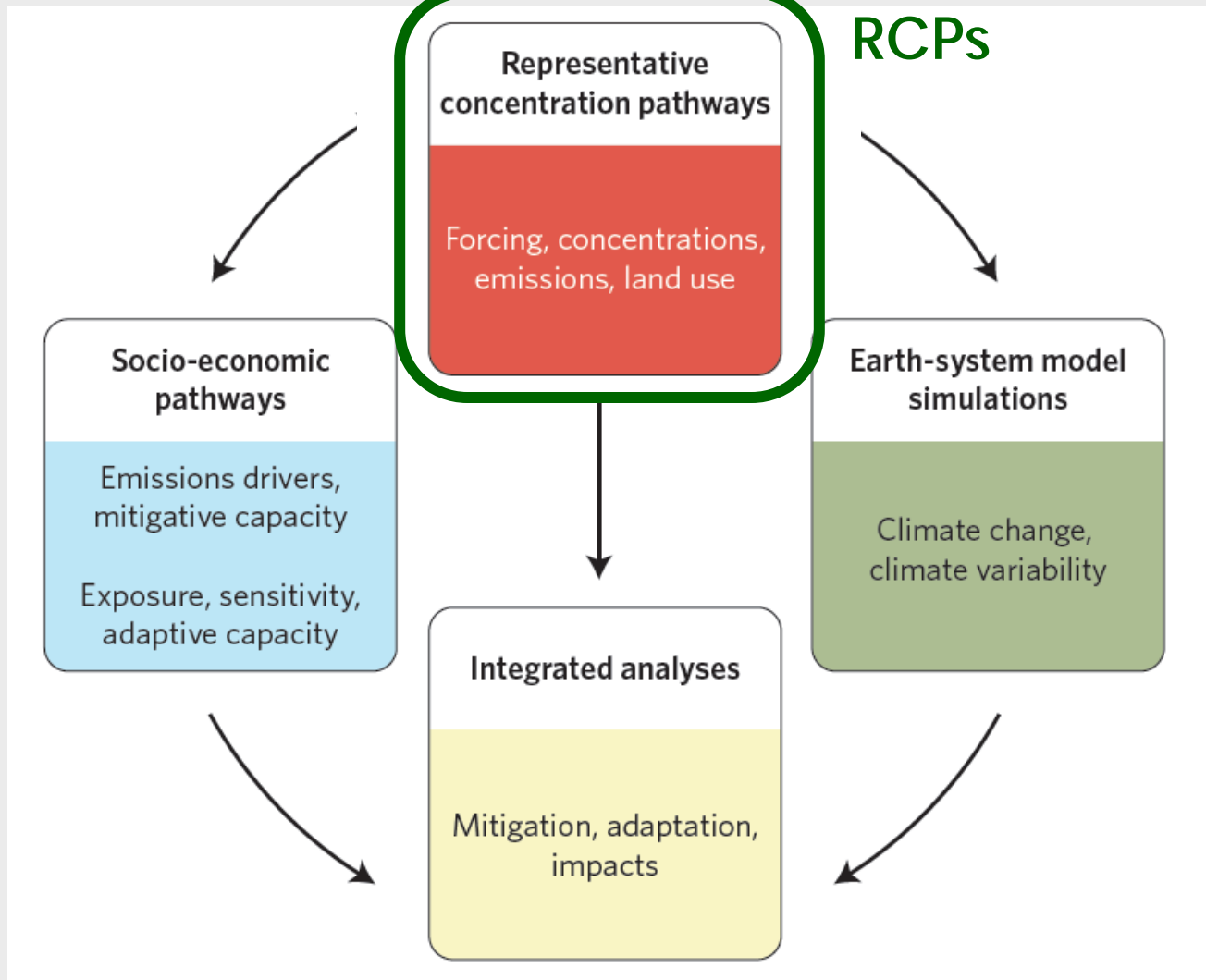
- B. O'Neill The new scenario process and the Shared Socio-economic Pathways (SSPs)
- K. Calvin Integrated Assessment Model scenarios based on SSPs
- J. Meehl Planning for CMIP6
- Discussion (with J.F. Lamarque and W. Collins)
- Goals: (1) Understand better the scenario process
 (2) Generate ideas on priorities for CMIP6

The New Scenario Process and the Shared Socio-economic Pathways (SSPs)

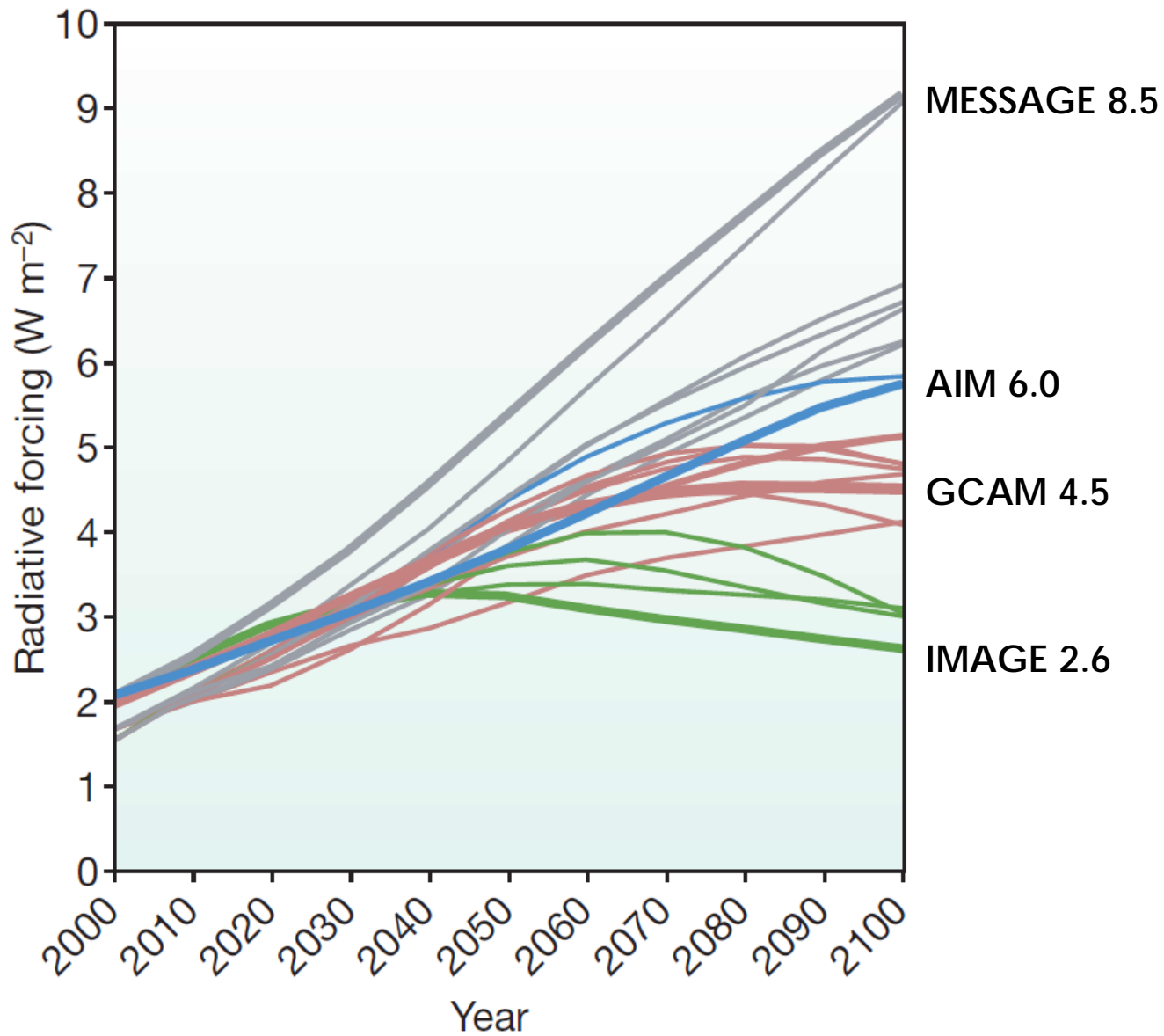
Brian O'Neill

National Center for Atmospheric Research
CESM Societal Dimensions Working Group Meeting
June 20, 2013

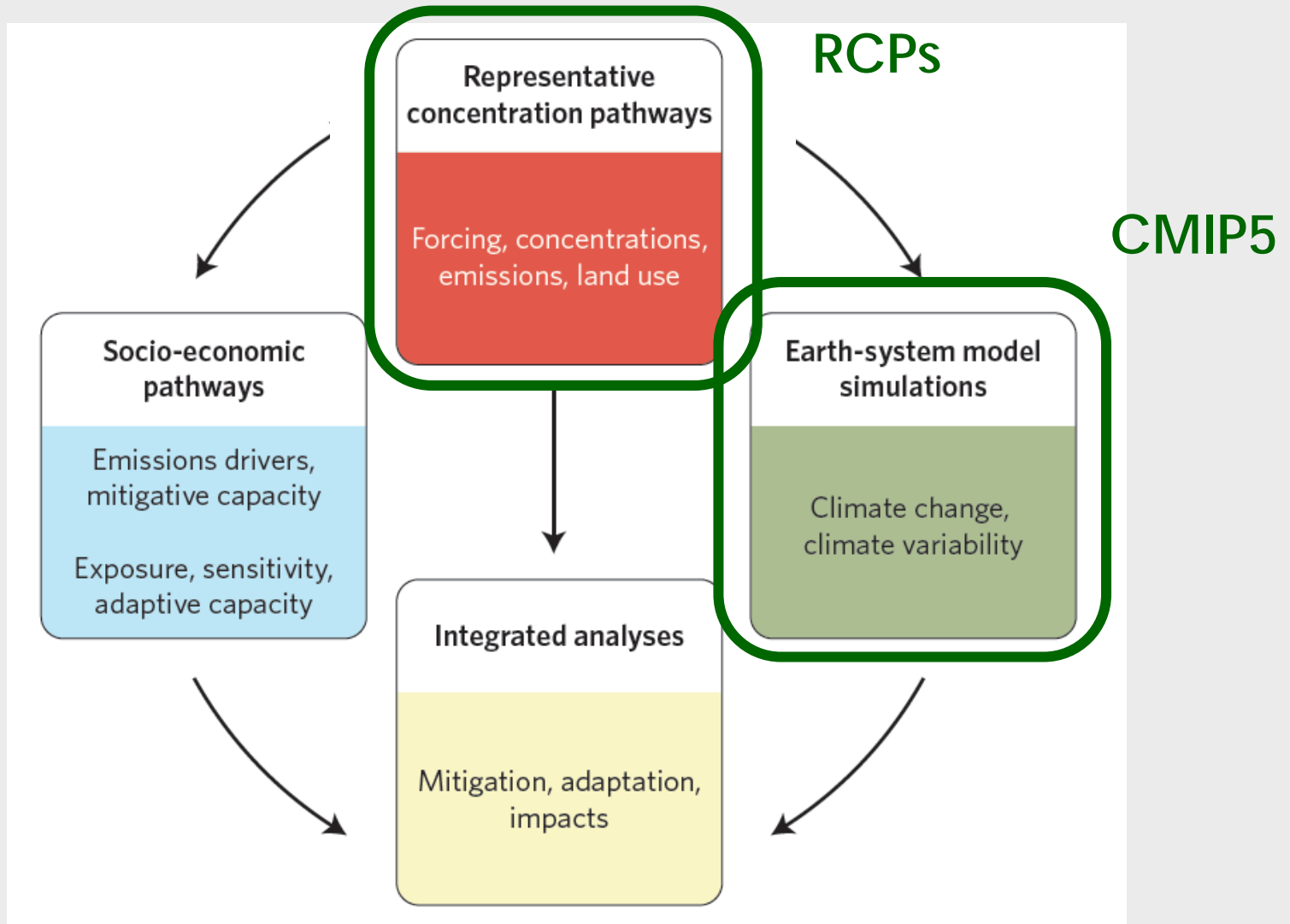
The Parallel Process



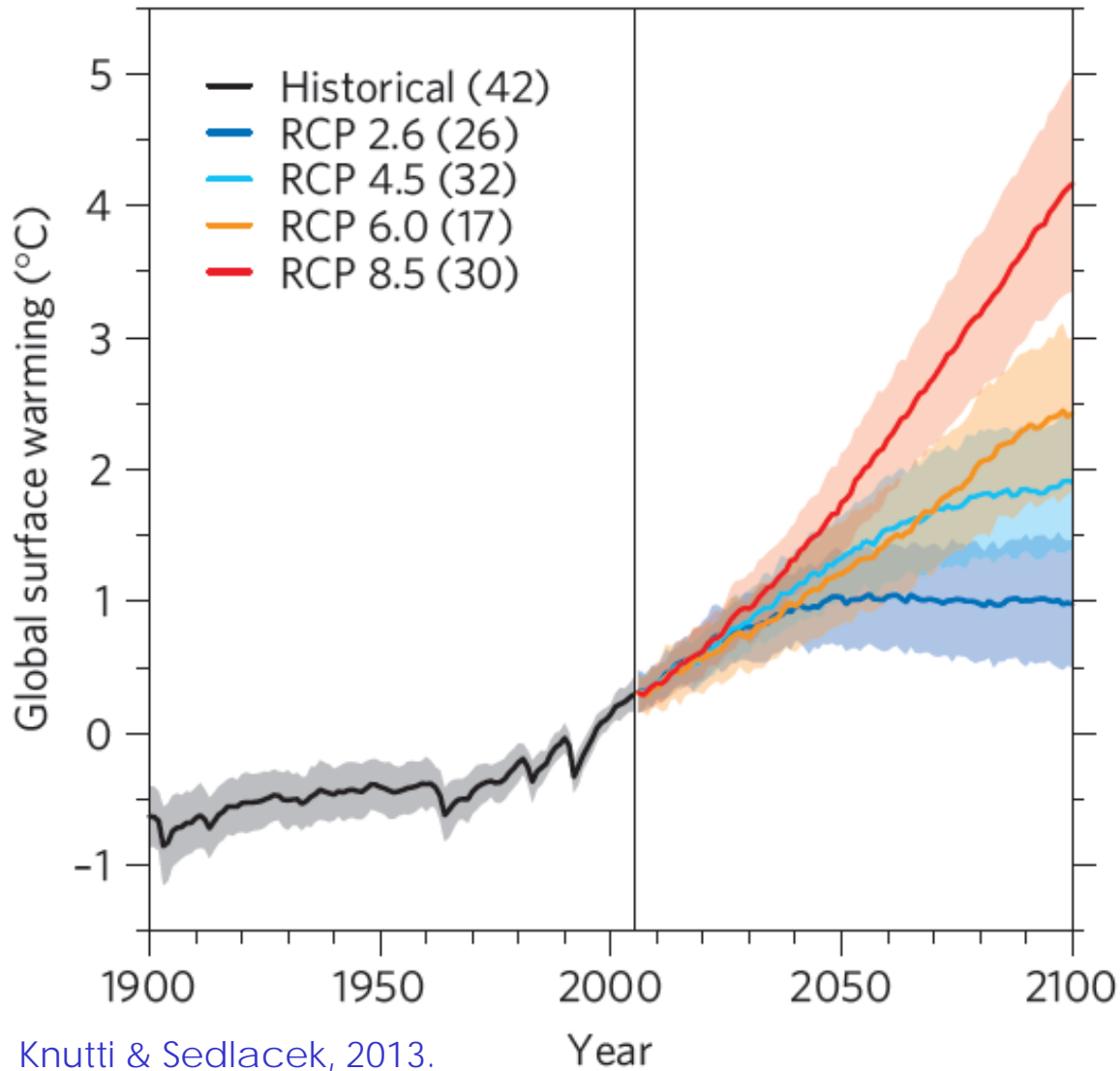
The RCPs



The Parallel Process



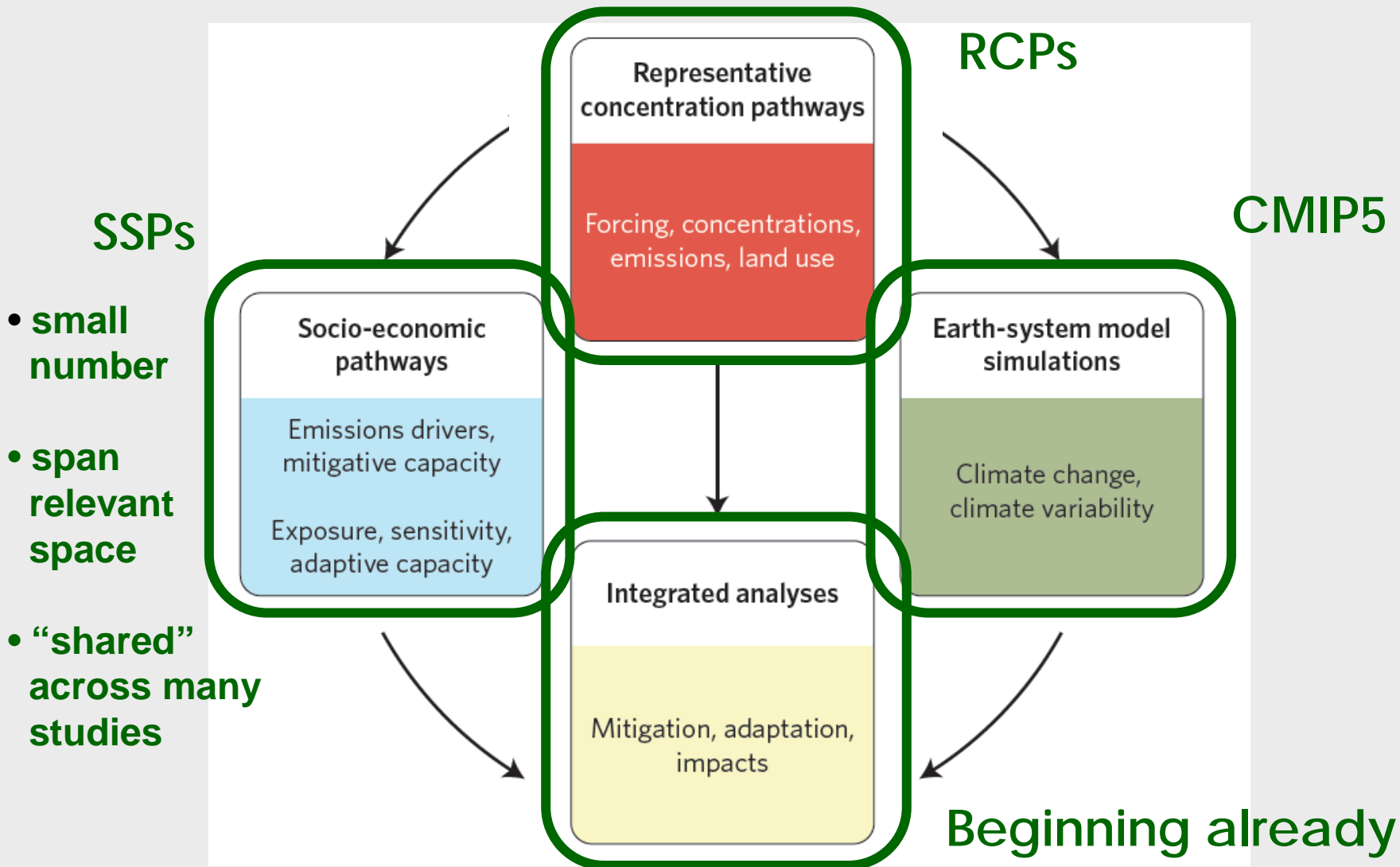
CMIP5 models, RCP scenarios



Knutti & Sedlacek, 2013.

CMIP5

The Parallel Process

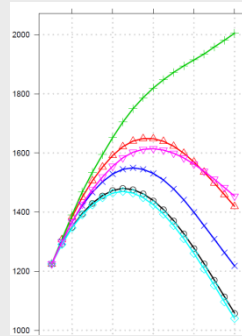


What's in an SSP



Narrative

Qualitative description
of broad patterns of
development
Logic relating elements
of narrative to each
other



Quantitative elements

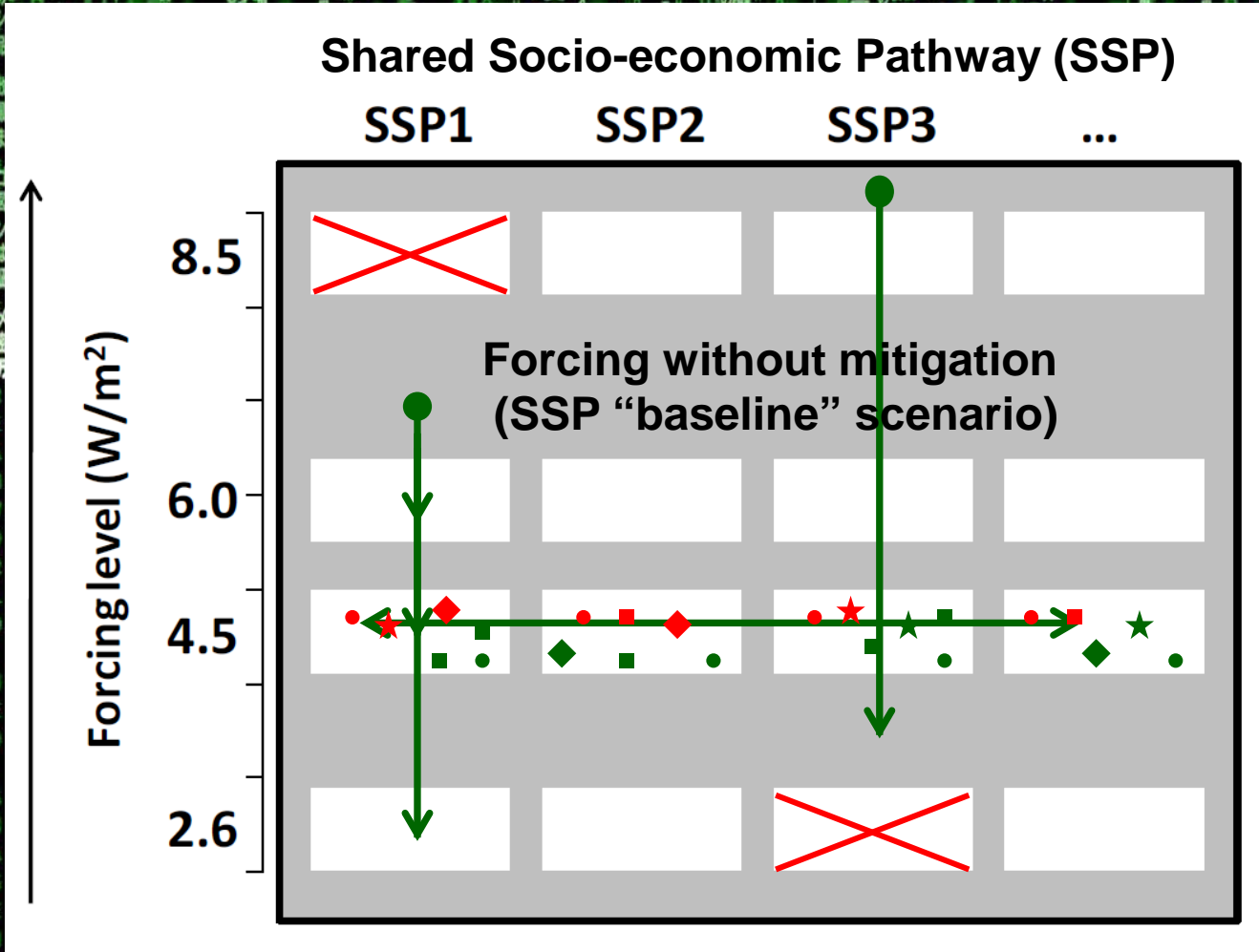
Population
Urbanization
Rates of technological change
Income
Human Development Index
Income distribution
Etc.

Does not include:

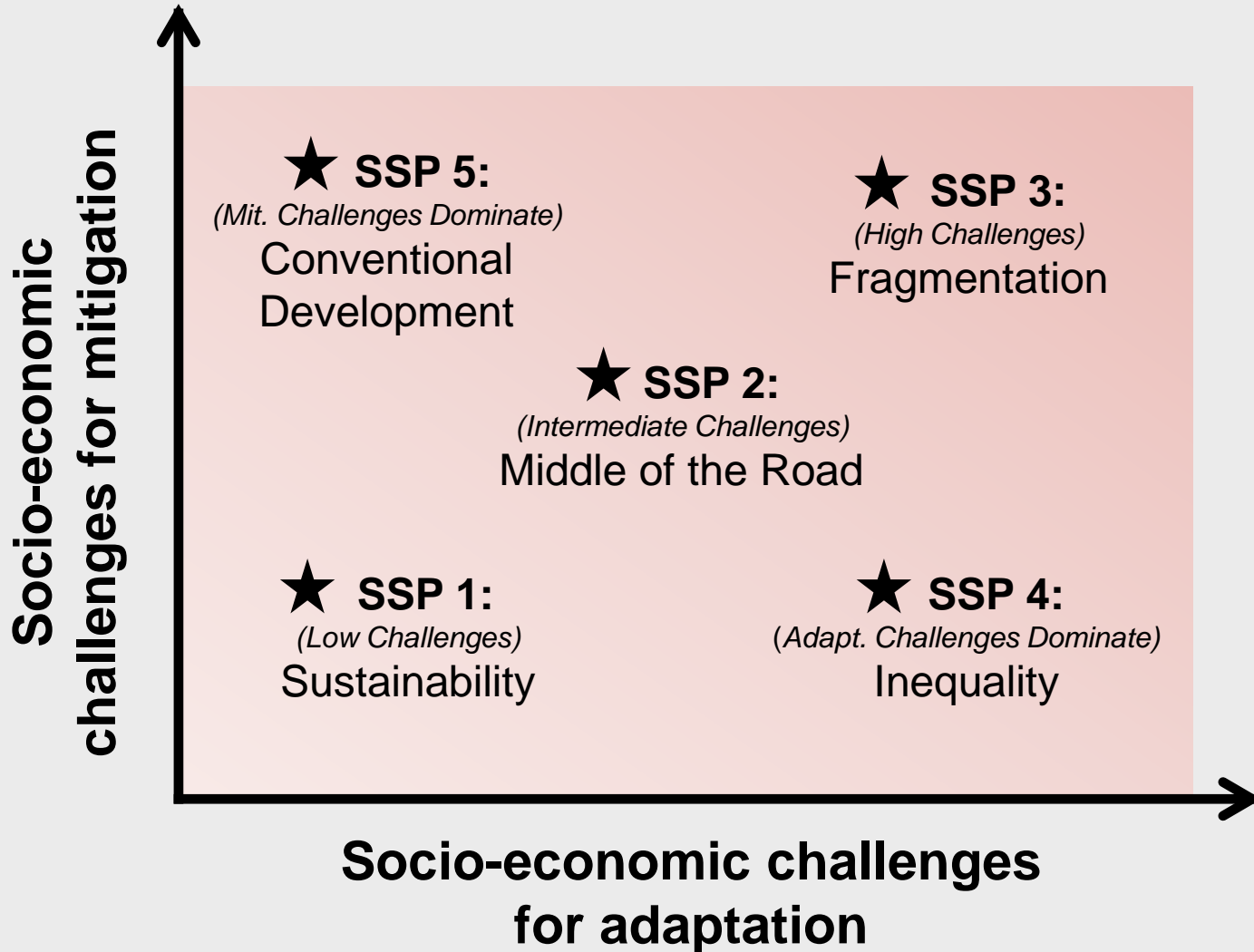
- typical model output such as emissions, land use
- climate policy (mitigation or adaptation)
- not influenced by climate change

The Matrix

The Scenario Matrix Architecture



SSP Logic



Narratives Nearly Complete



SSP3: Fragmentation

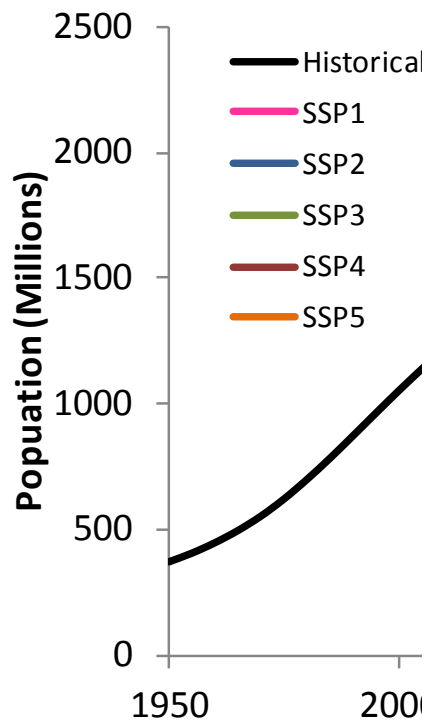
Growing **interest in regional identity** and **concerns about competitiveness and security** push countries to increasingly focus on domestic or, at most, regional issues. This trend is reinforced by the **limited number of comparatively weak global institutions**, with uneven coordination and cooperation for addressing environmental concerns. Policies are oriented towards security, including **barriers to trade**, particularly in the energy resource and agricultural markets. Countries focus on achieving **energy and food security goals** within their own region, **at the expense of broader-based development**. A low international priority for addressing environmental concerns leads to strong environmental degradation in some regions. The combination of impeded development and limited environmental concern results in **poor progress towards sustainability. ... etc.**

Quantitative Elements Complete (e.g., India)

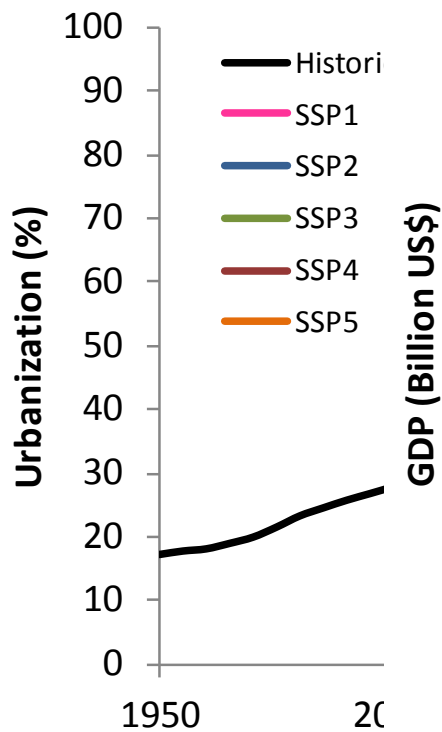
**Population,
Education**

Urbanization

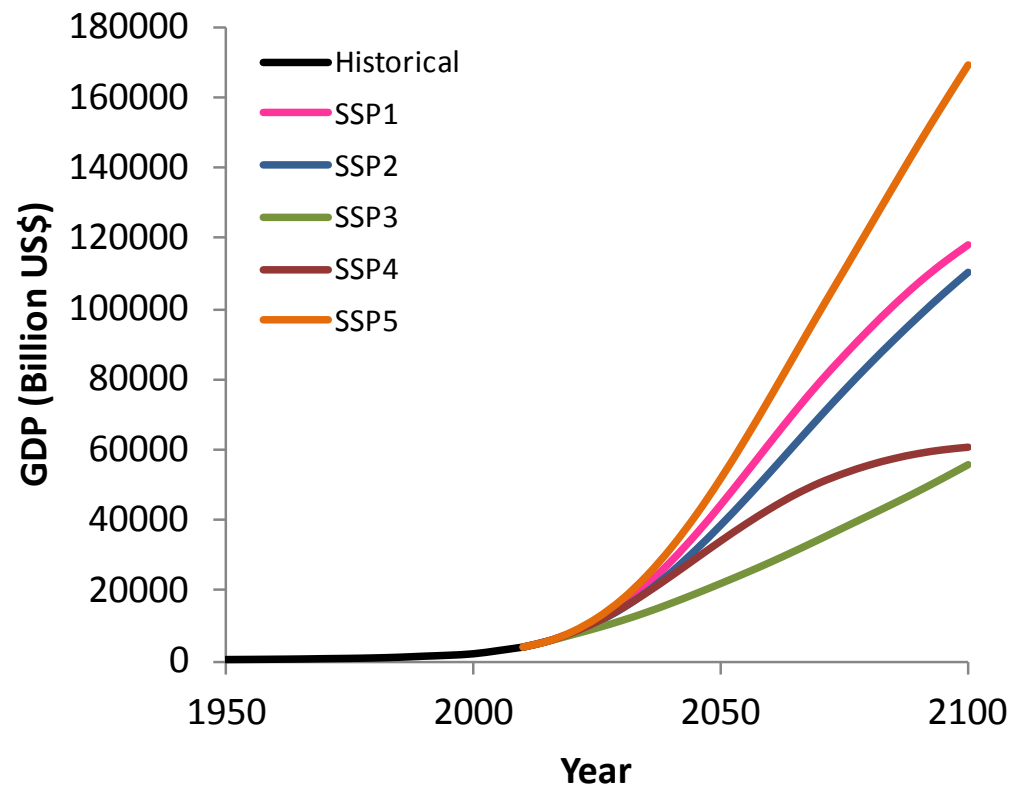
GDP



(IIASA)



(NCAR)



(OECD, IIASA, PIK)

Summary of SSP Status

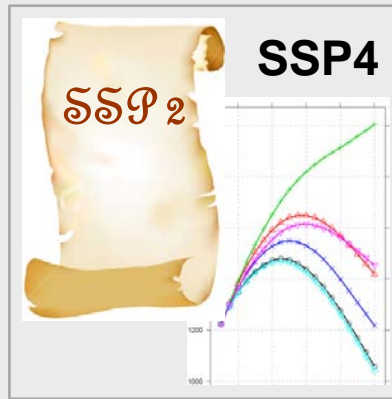
- Conceptual framework and nature of basic SSPs established
 - Special issue of *Climatic Change* in review (Lempert, Nakicenovic, Janetos, eds.)
- Draft narratives and quantification of key drivers completed
 - Papers being prepared for special issue of *Global Environmental Change*
- IAM scenarios and IAV analyses based on SSPs under way
 - Some IAV analyses based on early versions of SSPs submitted to journals
- International scientific committee (ICONICS) established to foster continued progress

Ongoing and Future Work

- Additional quantitative indicators for IAV analysis to be developed
 - Spatial population, income distributions, other information?
- Continue to develop IAM, IAV analyses based on SSPs
- Linking global scenarios to regional or local analyses
- Continue to re-evaluate current SSPs, possibly develop new versions (or variants of existing ones)
- Integration with climate simulations based on RCPs

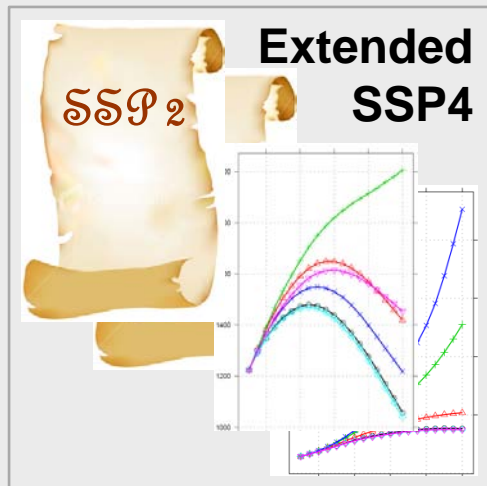
Basic vs Extended SSPs

Basic

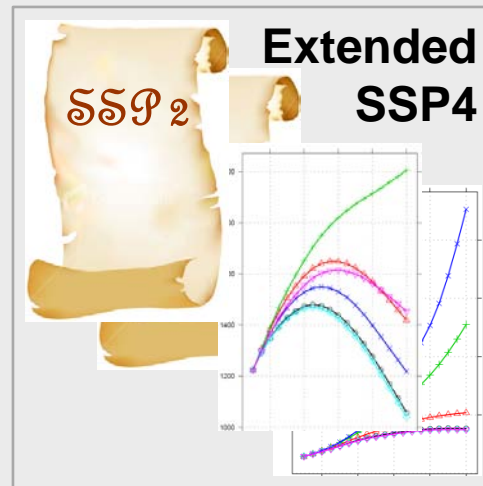


Information sufficient
to locate SSP in Domain 4
of the challenges space

Regional Extension



Sectoral Extension



Global Extension

