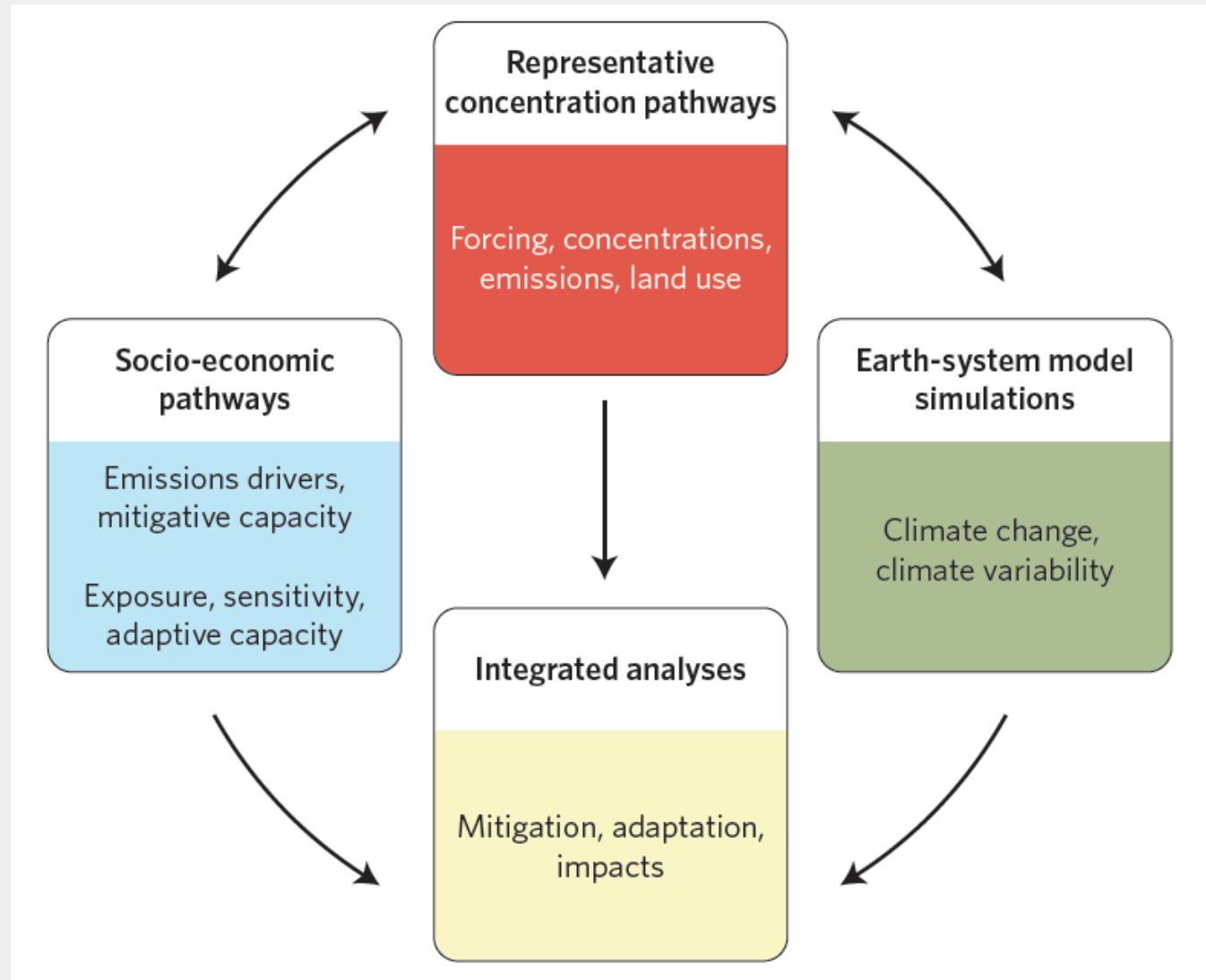


Update on the “New Scenario Process”

Brian O’Neill
NCAR

WCRP/CLIVAR Working Group on Coupled Modeling
NCAR
October 20, 2011

The Parallel Process



RCP Special Issue in *Climatic Change* (now available online)

List of Papers:

- Overview paper (Van Vuuren et al.)
- RCP 8.5, MESSAGE paper (Riahi et al.)
- RCP 6.0, AIM paper (Masui et al.)
- RCP 4.5, GCAM paper (Thompson et al.)
- RCP 2.6, IMAGE paper (Van Vuuren et al.)
- Land use paper (Hurtt et al.)
- The Emission inventory paper (Granier et al.)
- Atmospheric chemistry paper (Lamarque et al.)
- GHG concentrations and extensions to 2300, the ECPs (Meinshausen et al.)

RCP Database (available on IIASA website)

RCP Database
Version 2.0.5

About

Compare

Spatial

Download

Select region(s), scenario(s), and variable to define your query

(1.) Regions:

- World
- 5 Regions
 - OECD90
 - REF
 - ASIA
 - MAF
 - LAM

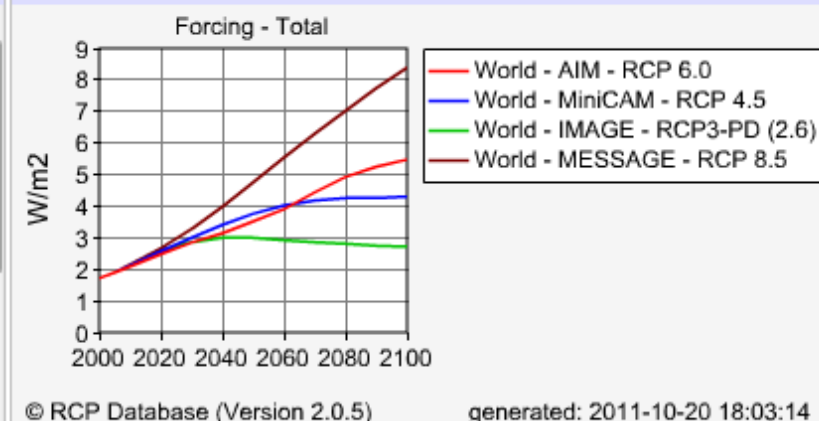
(2.) Scenarios:

- IMAGE
 - RCP3-PD (2.6)
- MiniCAM
 - RCP 4.5
- AIM
 - RCP 6.0
- MESSAGE
 - RCP 8.5
- Historical data
 - Inventory (1970-2000)
 - Historic (from 2000)

(3.) Variables:

- Climate indicators
 - Concentration
 - Radiative forcing
- Emissions
 - CO2 emissions
 - CH4 emissions
 - N2O emissions
 - HFC emissions
 - PFC emissions
 - SF6 emissions
 - ODS emissions
 - Sulfur emissions

Query Results - Chart Preview:



Query Results:

Region	Scenario	Variable	Unit	2000	2005	2010	2020	2030	2040	2050	2060	2070	2080	2090	2100
World	AIM - RCP 6.0	Forcing - Total	W/m2	1.723	1.901	2.089	2.480	2.854	3.146	3.521	3.905	4.443	4.932	5.255	5.481
World	MiniCAM - RCP 4.5	Forcing - Total	W/m2	1.723	1.905	2.126	2.579	3.005	3.411	3.766	4.021	4.188	4.256	4.265	4.309
World	IMAGE - RCP3-PD (2.6)	Forcing - Total	W/m2	1.723	1.904	2.129	2.584	2.862	2.999	2.998	2.918	2.854	2.808	2.759	2.714
World	MESSAGE - RCP 8.5	Forcing - Total	W/m2	1.723	1.906	2.154	2.665	3.276	3.993	4.762	5.539	6.299	7.020	7.742	8.388

© RCP Database (Version 2.0.5)

Output Options:

Data Download - Registration

Please note:

Notes:

Total radiative forcing excludes mineral dust and the effect of land albedo.

Combining RCPs with socioeconomic scenarios

RCP Replications

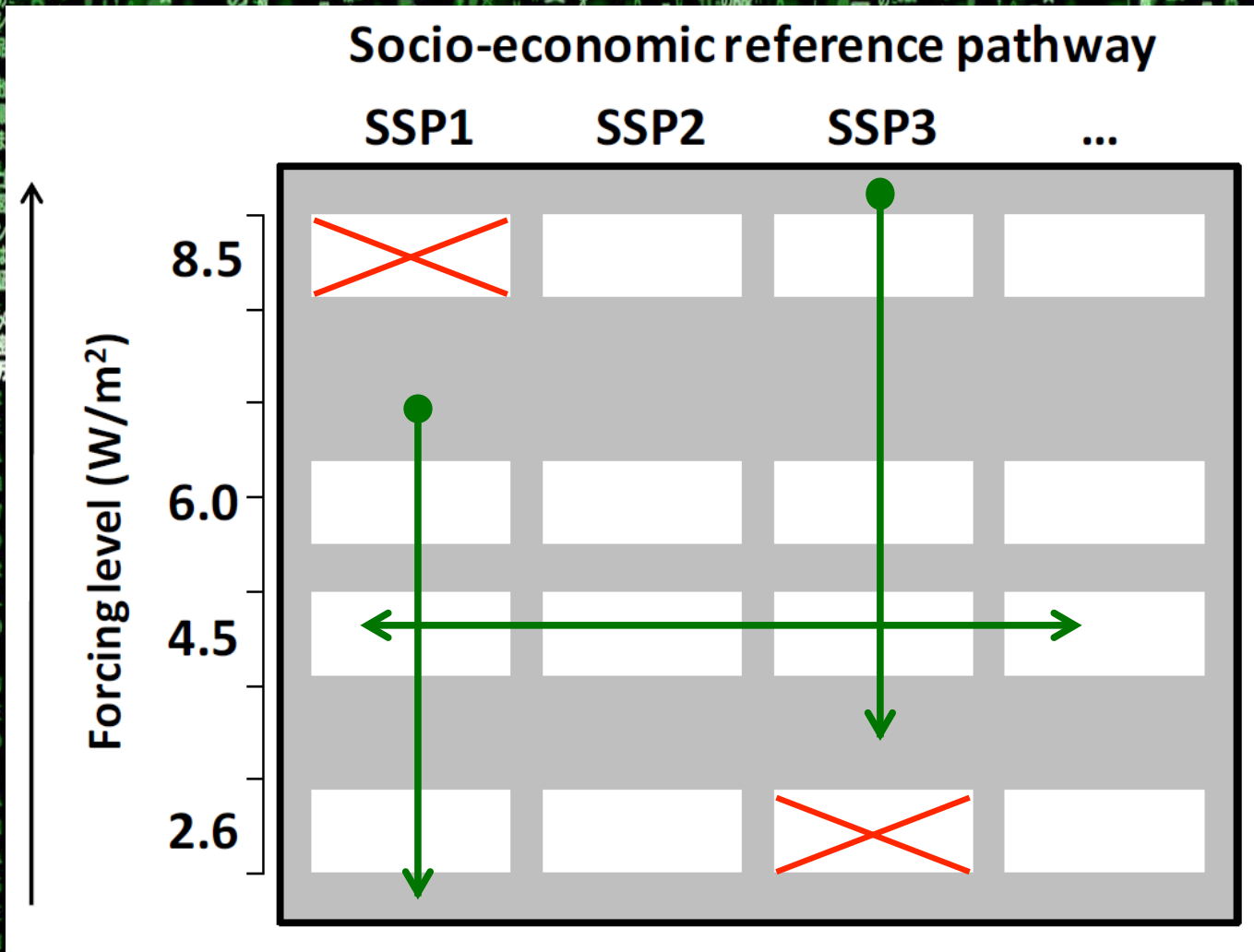
Explore many alternative socioeconomic pathways consistent with particular RCPs

Shared Socioeconomic Pathways (SSPs)

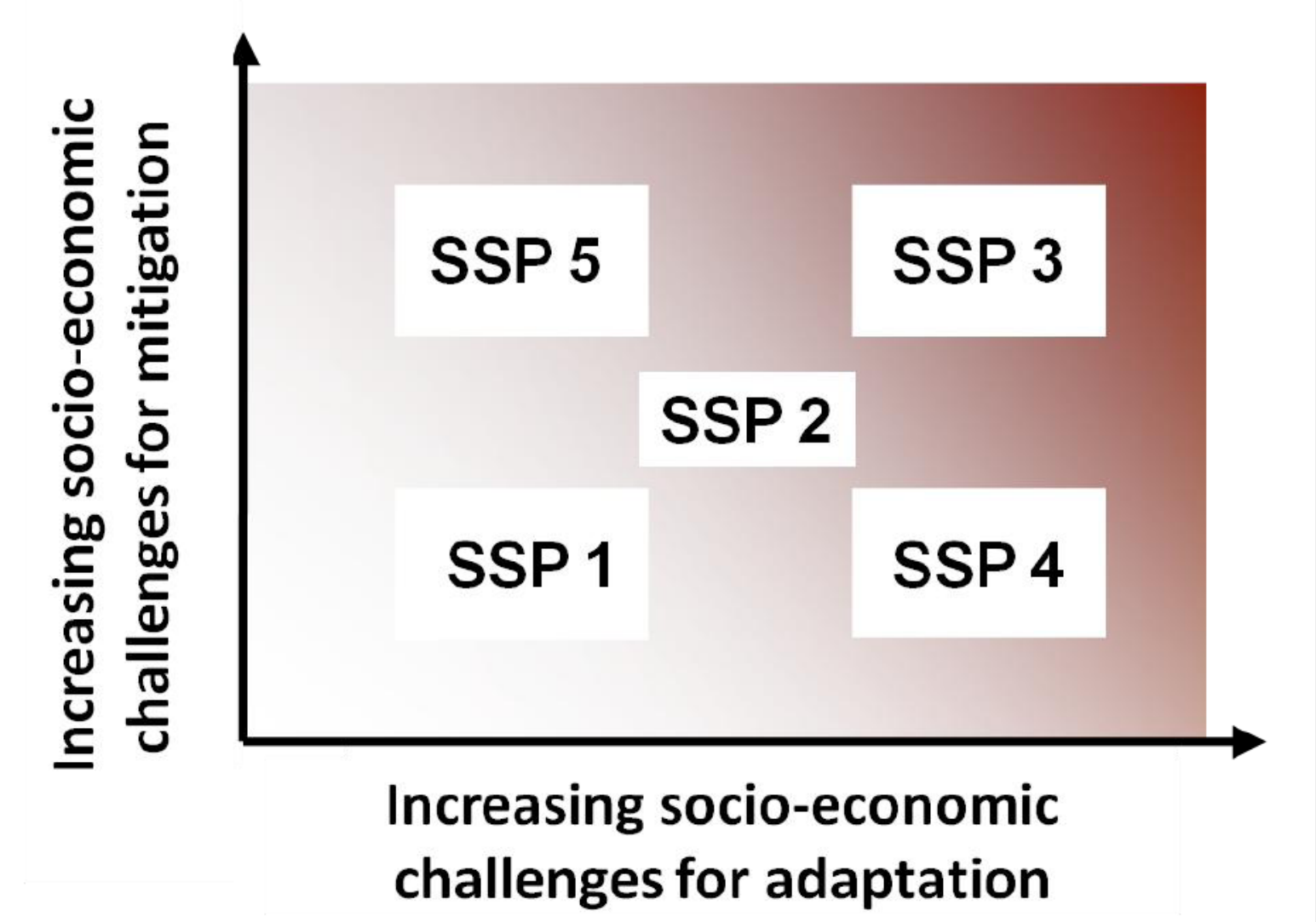
Develop small number of socioeconomic pathways to facilitate interdisciplinary research and assessment

The Matrix

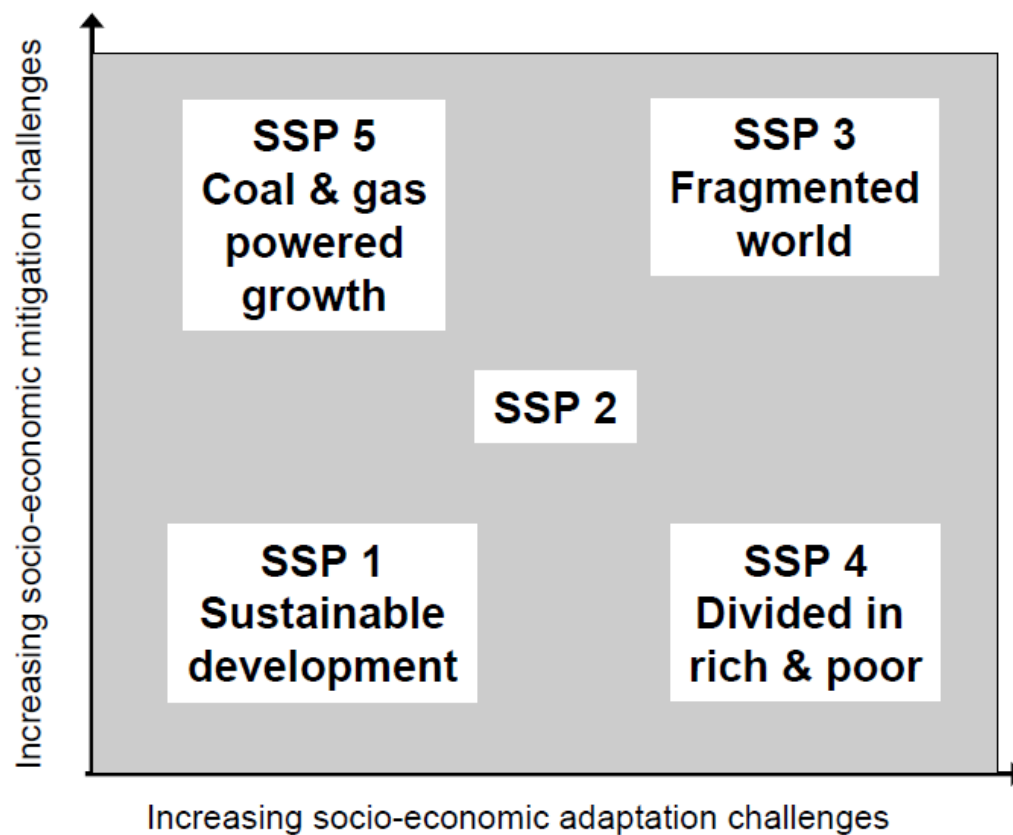
The Scenario Matrix Architecture



SSP Logic



Which storylines to choose?



Process

IPCC Expert Meeting, Berlin, November 2010

*experiments with SSP conceptualization and model runs
development of scenario information (urbanization projections)*

SSP workshop, Korea, July 2011

*circulate Framework Paper, August
continued experimentation and development of proposals*

IAMC workshop, Austria, October 2011

- *Assemble IAM experiments with SSPs*

SSP workshop, NCAR, November 2-4, 2011

- *Adopt “basic” SSPs*
- *Prioritize needs for “extended” SSP elements*

IPCC Workshop, early/mid 2012?

- *Launch “basic” SSPs*
- *Assess progress on “extended” SSPs*

Climate Modeling Questions

- **How to handle uncertainty in climate change outcomes associated with each RCP?**
 - “marker models”?
- **How to produce climate outcomes for forcing pathways other than RCPs?**
 - What are limits of pattern scaling?
 - How to characterize climate in SSP reference scenarios?
- **What forcing scenarios are “consistent with” a given RCP?**
 - Shape vs level
 - Short-lived species
 - Land use