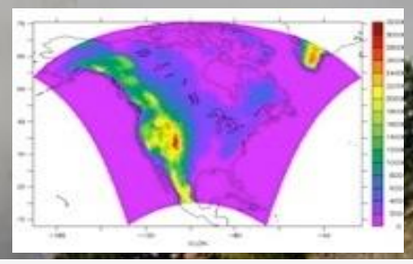
Top down:
How to make large scale products relevant to the WS scale decisions?

Climate Risk Management Tools

September 6, 2017

air • planet • people

Caspar M. Ammann
ammann@ucar.edu



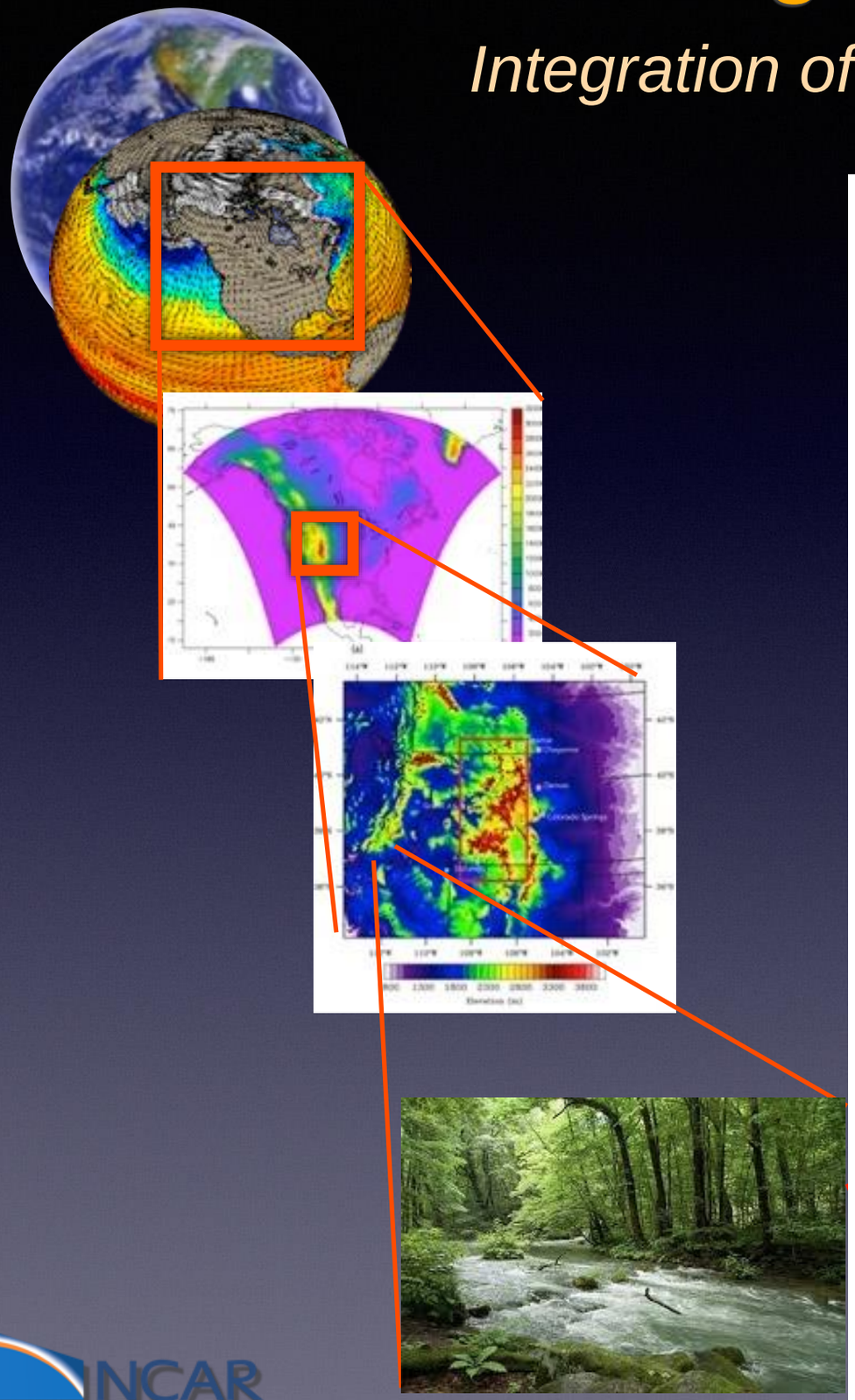
… not just data and information …

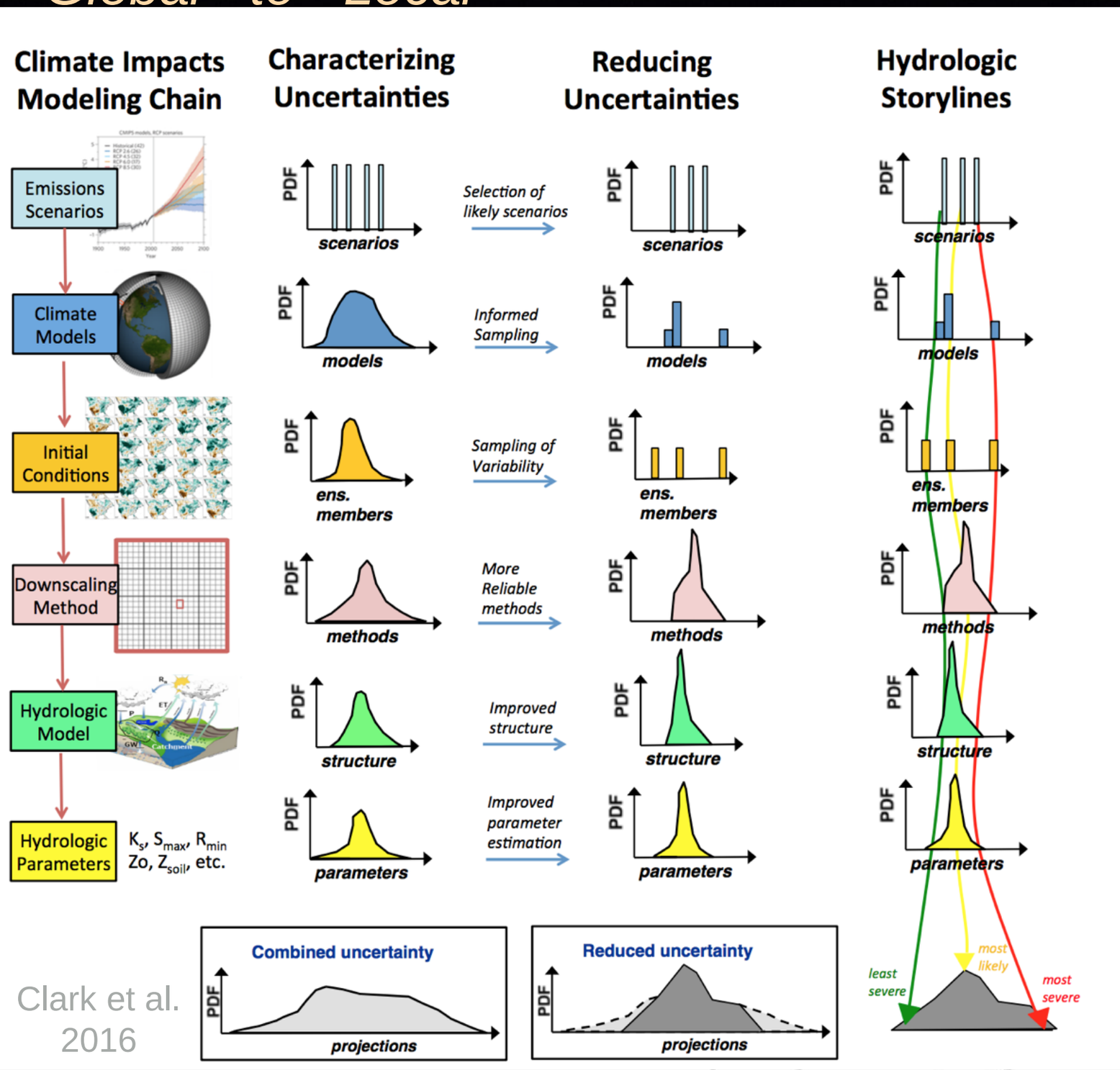
Louis Ritman: Flower Garden

a picture is more than pixels

Focus on Regional Climate and Impacts

Integration of data and knowledge across scales.
Global - to - Local





Clark et al. 2016

NCAR

NCAR
UCAR

air • planet • people

Water: Precipitation ≠ Precipitation

Application-specific understanding and evaluation needed

Itaipu : Hydropower

Mexico : Drought

Panama : Flash Flood

Haiti : Hurricane

Climate Impact Studies : Current Climate Data Libraries

IPCC AR4 (2007) total: 35 TB (Terabyte)

IPCC AR5 (2013) total: 2,200 TB (Petabyte)

IPCC AR6 (~2021) expected: 0.2-1 EB (Exabyte) ~ 1,000,000 TB

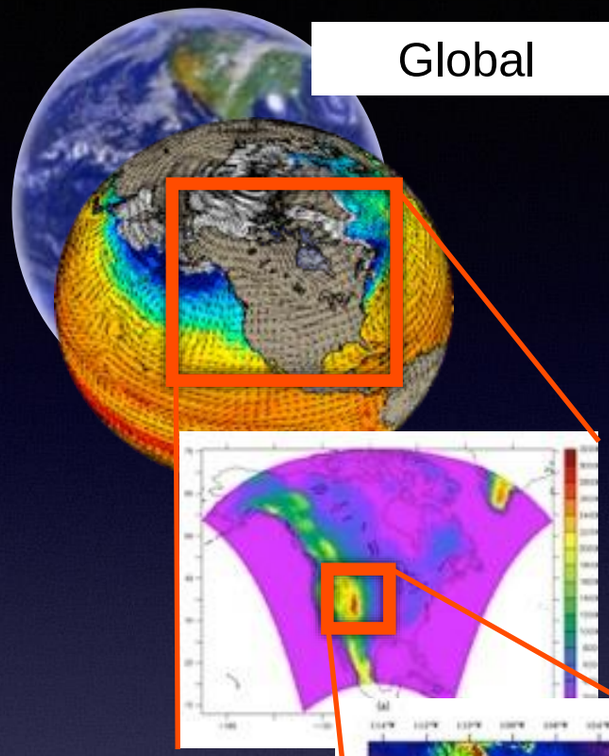
NCAR

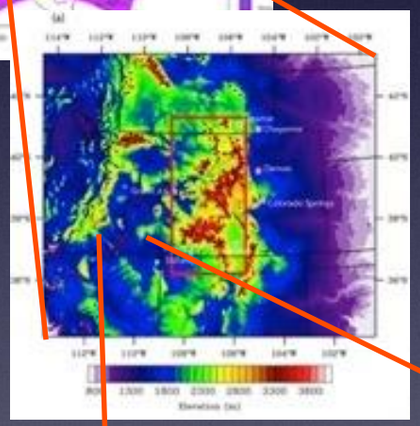
Cascade of Challenges

Integrating Spatial Scales

Temporal Needs

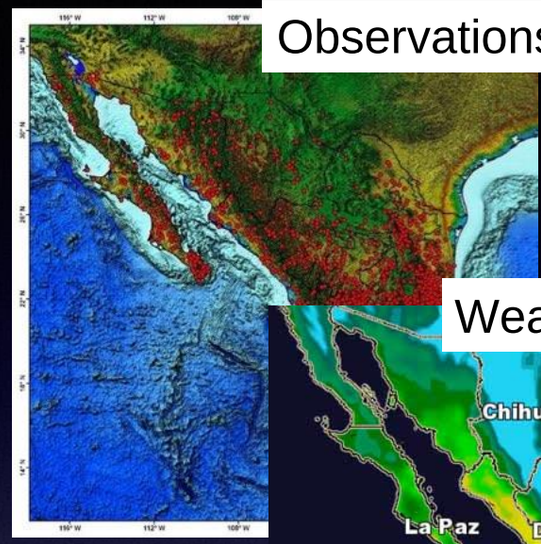
Global





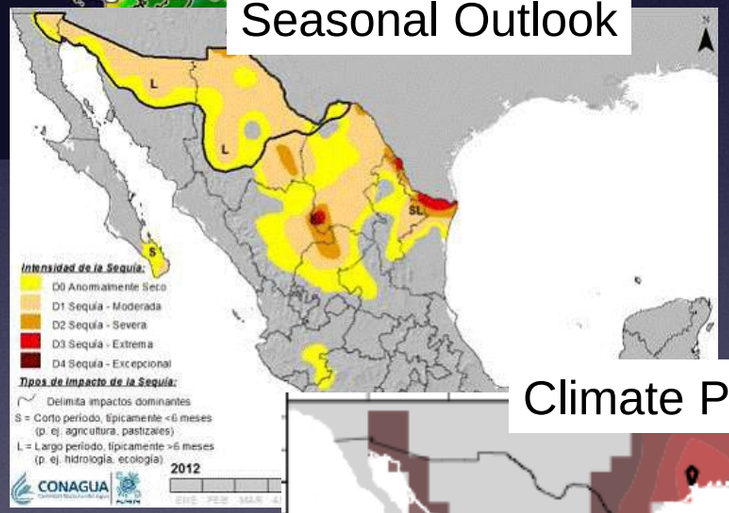
Local

Observations

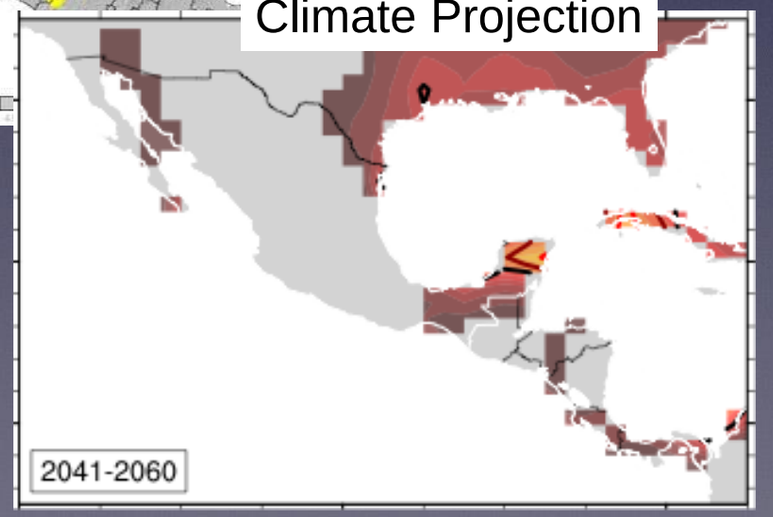


Weather Forecast

Seasonal Outlook



Climate Projection



NCAR

Primary exposure categories by sector

Many similarities, but different thresholds, and some unique

Ports Hazards
High wind
Wave heights
Harbor water levels
River water levels: Flood / Drought
Storm surge
Extreme Temperatures: Heat/Cold
Cooling degree days
Tropical cyclone risk

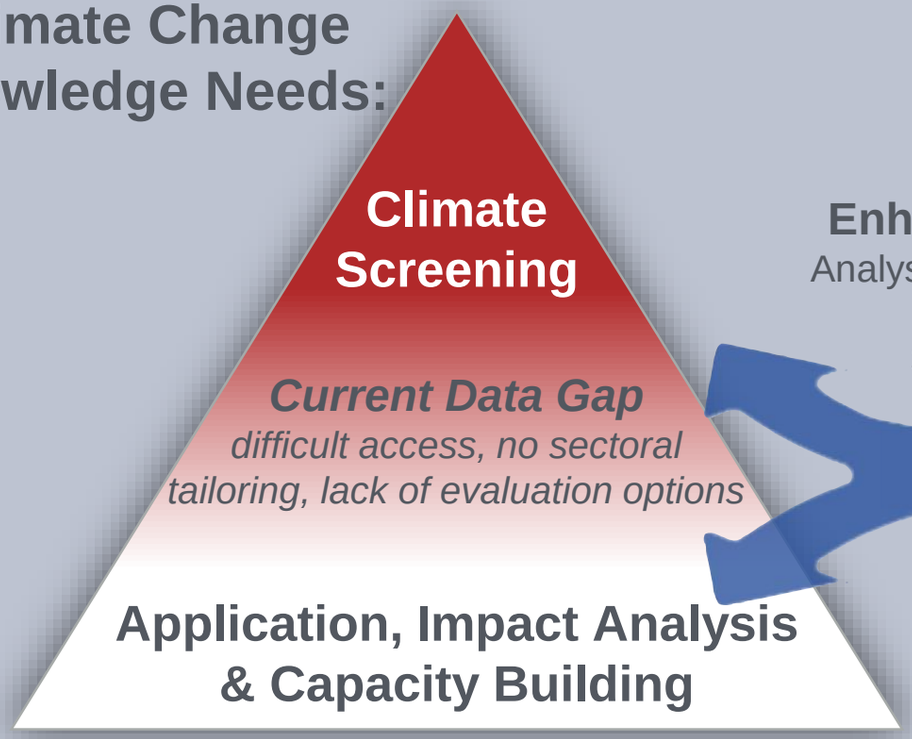
Forestry Hazards
Fire
Drought
Geographic / Optimal Range
River flooding, Flash flood
Wind
Snowfall
Water scarcity
Extreme Temperatures: Heat/Cold
Tropical cyclone risk

Insurance Hazards
Storms & Tropical cyclones
River flooding, Flash flood
Wintry precipitation
Storm surge
Extreme Temperatures: Heat/Cold
Drought
Fire
Country-level integration

Climate Change Impacts on Water and Agriculture: Developing Country-level Strategies

Adding Value for Screening and Applications

Climate Change Knowledge Needs:



Enhanced Data Tools
Analysis, Tailored Evaluation, Bias-Correction, Sector Syntheses

NCAR-CRMe:

Climate Data Archives
Observations: gridded and station
Models: global, regional, downscaled

Analytics and Evaluation
Indicators: sectoral tailoring
Comparisons: QA/QC diagnostics
Analyses: variability, change, uncertainty
Others: Downscaling strategies, bias-correction options, Weather-Generators

Visualization and Access
Maps: Zoomable products
Dashboards: Sector-specific summaries
Download: gridded and time series

IDB Inter-American Development Bank

NCAR National Center for Atmospheric Research