Collaborative Research: EaSM3: Integration of Decision-Making with Predictive Capacity for Decadal Climate Impacts

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Meeting Goals

1) Introduce Participants
2) Review Project Goals and Scope
3) Identify Links with Other Projects
4) Identify Case Study Projects
5) Establish First Steps
6) Establish Communication Among Participants.

Kick Off Meeting, Oct 27 2014

Project Goals

1. Understand societal need and usage of decadal predictive information;

2. Build predictive capacity of the needed information by combining our developing dynamical modeling capability with observed data via advanced statistical models;

3. Transform how scientists from multiple disciplines and practitioners conceptualize decadal climate prediction.

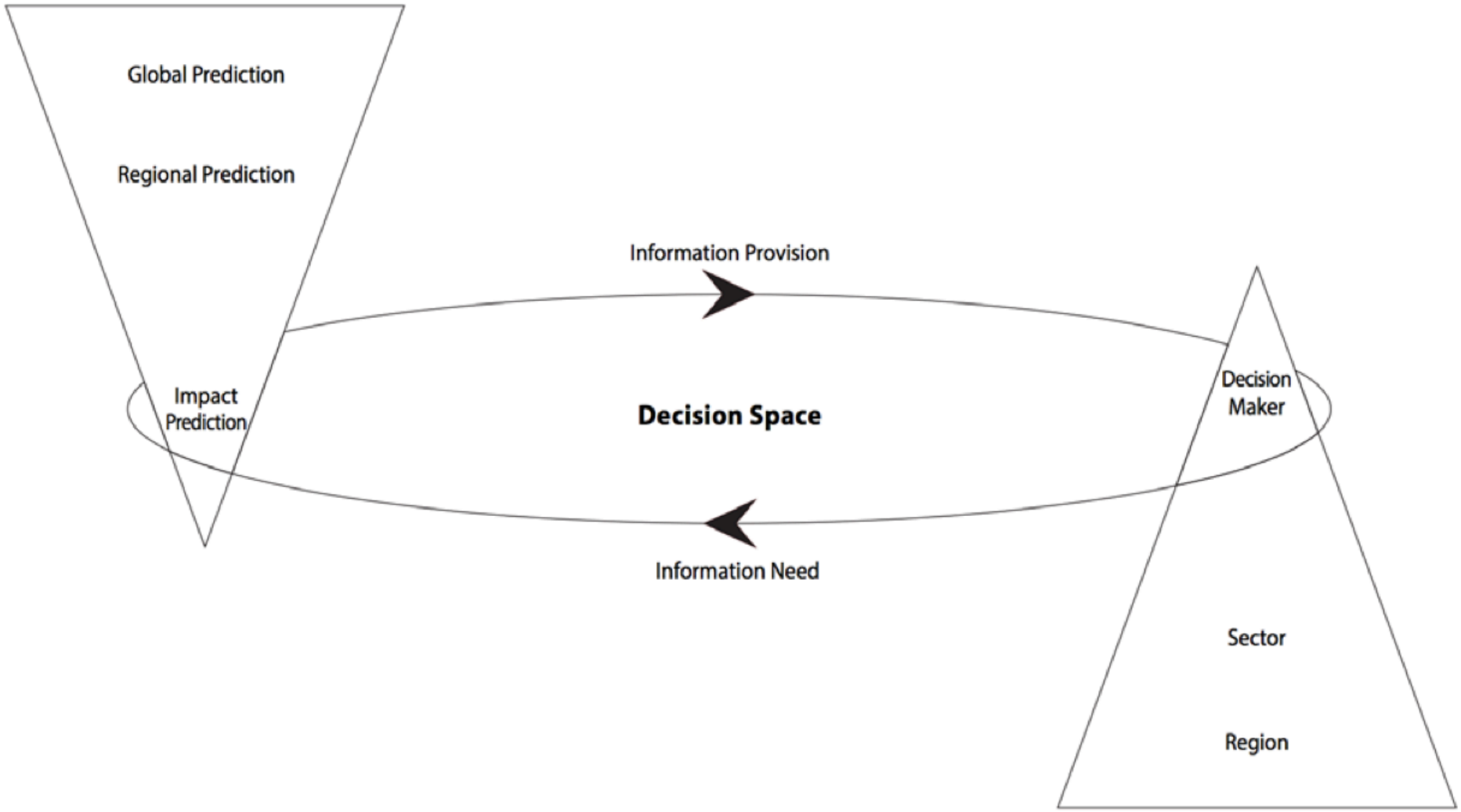
Project Scope

Phenomena: Flood, drought (TCs dropped).

Timescales: 5-30 years

Practitioners: Engineering designers and others tbd (agriculture, Native American communities, water resources etc).

Approach


Global Prediction
Regional Prediction
Information Provision
Impact Prediction
Decision Space
Decision Maker
Information Need
Sector
Region

Approach: Two Concurrent Parts

Part I: Understand current information needs and usage:

In-depth understanding for a single stakeholder;

- collect data on interaction with climate information.

Broad understanding across multiple stakeholders;

- collect data through focus groups/detailed interviews.

Approach: Two Concurrent Parts

Part II: Build predictive capacity for the needed information by:

- developing new statistical-dynamical modeling techniques that combine climate and impact data and incorporate uncertainty;

- test prototypes with stakeholders;

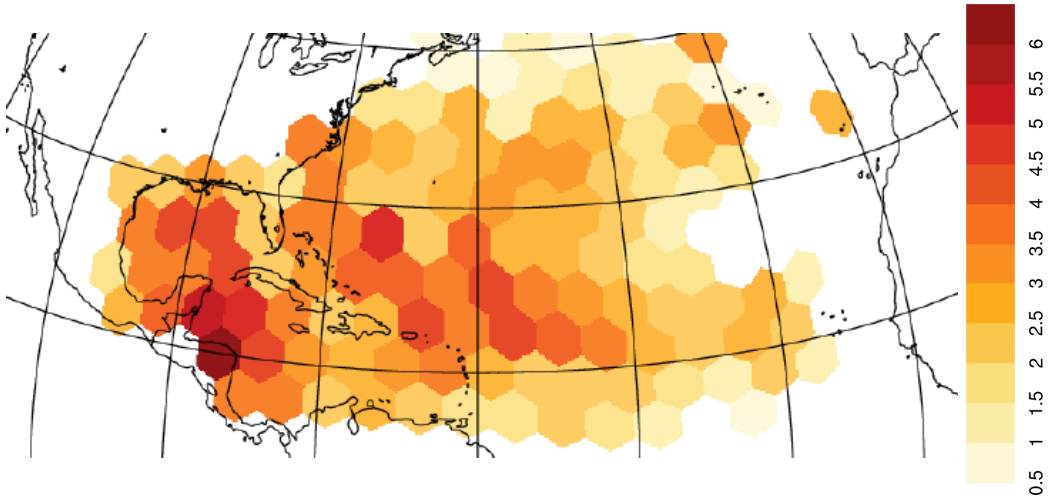
- iterate between the information needs and predictive capacity.

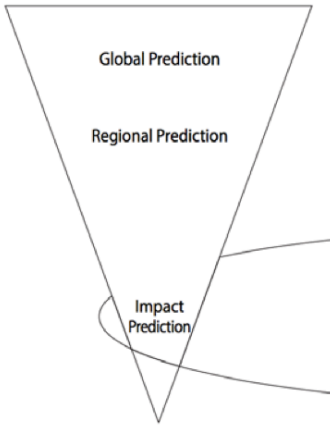
Overall Project Outcome

A generalized interdisciplinary research framework to integrate predictive capacity with decision-making.

The Cyclone Damage Potential Index

$$CDP = 4\frac{[(\frac{v_m}{65})^3 + 5(\frac{R_h}{50})]}{v_t},$$





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Potential Case Studies

Criteria:

1. Phenomena: Flood and/or drought.
2. Timescale: 5-30 years.
3. Climate information is relevant.
4. Impact data are available.
5. Interested participants.
6. Colorado preference.

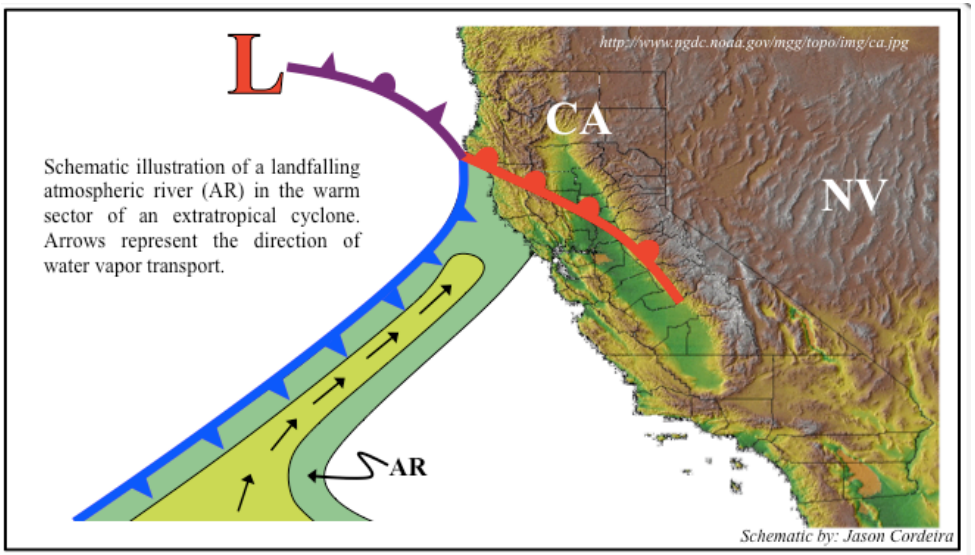
Russian River, Sonoma Co. CA

agriculture/sanitation/ecosystem

- flood/drought ✓
- timescale ✓
- climate relevant ✓
- impact data **?**
- willing participant ✓
- project 3 months in, vulnerability assessment in 2015 ✓
- Colorado ✗

CA Central Valley Flood Assessment

agri/industry/recreation?



- flood ✓
- timescale ✓
- climate relevant ✓
- impact data **?**
- interested participants **?**
- already downscaled CMIP5 ✗
- Colorado ✗

City of Boulder Flood

stakeholders ?

- flood ✓
- timescale ✓
- climate relevant ✓
- impact data **?**
- interested participants ✓
- stage of project **?**
- Colorado ✓

Aurora Water Supply

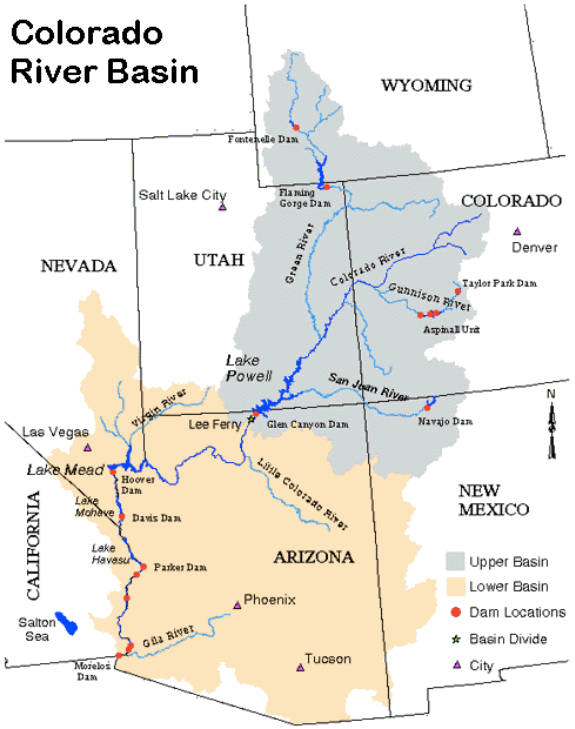
stakeholders ?

- drought ✓
- timescale ✓
- climate relevant ✓
- impact data **?**
- interested participants ✓
- Stage of project **?**
- Colorado ✓

CO River Basin

agri/industry/recreation

- drought ✓
- timescale ✓
- climate relevant ✓
- impact data **?**
- interested participants ✓
- assessments completed, implementing adaptation pilots ✗
- Colorado ✓



Links with Other Projects

1) Engineering for Climate Extremes Partnership
2) Willis, DNV, RPSEA.
3) South Florida Water Delivery Project.
4) . . .

First Steps

1) Decide on case studies
2) Identify stakeholders
3) Hire graduate student
4) Revise the 5-year plan

Communication

1) Project meetings every 3 months, one speaker to focus discussion.
2) Next meeting, early January 2015.
3) The key is to interact across disciplinary components.

Reminders

Acknowledge this grant in talks and papers.

SOARS students.