

*Information Flows and Policy:
Use of Climate Diagnostics and Cyclone Prediction for Adaptive Water-Resources
Management Under Climatic Uncertainty in Western North America*

Project Inception Meeting
Udall Center for Studies in Public Policy
Tucson, Arizona
October 29, 2007

Participants

Martín Montero, IMTA
Nicolás Pineda, COLSON
Graciela de Raga, UNAM
Andrea Ray, NOAA
Barbara Morehouse, Institute for UA
Gregg Garfin, ISPE/UA
Margaret Wilder, Latin American Studies, UA
Robert Varady, Udall Center for Studies in Public Policy, UA
Ashley Coles, Geography & Regional Development, UA
Christopher Scott, Udall Center and Geography & Regional Development, UA

Via teleconference: David Gochis, NCAR
Unable to attend: Anne Browning-Aiken, Udall Center, UA

Program

- 9:00 Welcome (RV)
9:15 Introductions
9:30 Project overview (CS)
9:45 CRN II Tropical Cyclone project overview (GR)
- 10:15 Task A (improve the flow of climate diagnostics for policy adoption) discussion of activities and methodologies (GG)
- 11:00 Break
- 11:15 Task B (assess urban vulnerability) discussion of activities and methodologies (NP)
- 12:00 Lunch
- 1:00 Task C (evaluate rural vulnerability) discussion of activities and methodologies (CS)
- 1:45 Task D (conduct outreach and dissemination to managers) discussion of activities and methodologies (MM)

2:30 Workplan definition

- linkages among tasks
- outputs
- timeframes (see project timeline on next page)
- budget and subcontracts

3:15 Break and small workgroups to identify indicative titles of outputs

4:00 Linkages with ongoing and pending projects for climate-water-society research

4:15 Other business, wrap up

Timeline of Activities

Milestone (X), Output (O), Task (shaded)	Nov. 2007	Feb. 2008	May 2008	Aug. 2008	Nov. 2008	Feb. 2009	May 2009	Aug. 2009	Nov. 2009
Oct. 29, 2007 inception meeting	X								
A. Climate outlook product									
B. Urbanization dimension									
C. Rural/ agricultural transformation									
IAI Project PI meeting in Panama		X							
D. Dissemination for improved contingency planning									
Outputs	O (work- plan)				O (outlook product)				O (syn- thesis)
Final outputs, reporting									

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Minutes of the Project Inception Meeting, October 29, 2007

Summary: Discussion of the project tasks and linkages to other initiatives (CRNII2048, NOAA) led to preliminary identification of project outputs and next steps (see p. 5 of these minutes)

Participants: Martín Montero, Nicolás Pineda, Graciela de Raga, Andrea Ray, Barbara Morehouse, Gregg Garfin, Margaret Wilder, Robert Varady, Ashley Coles, Christopher Scott, David Gochis (via telephone), Robert Merideth, Stephanie Buechler, Laura López-Hoffman.

Welcome – Robert Varady welcomed everyone and noted:

This IAI call – human dimensions small grant linked to existing IAI science program (thanks to Graciela de Raga)

NOAA SARP project final report submitted today; new NOAA SARP proposal submitted Sept. Together, these represent the team and programmatic initiative on climate-water-decisionmaking

Introductions

Graciela de Raga - Center for Atmos. Sciences UNAM Mexico City – E. Pacific cyclones, cloud-aerosol interactions. IAI stressed links with human dimensions

Nicolas Pineda – COLSON public policy, urban water management, emerging interest in climate change and environmental factors

Martin Montero – IMTA hydromet dept., NW Mexico (Martin has some background with stakeholders) focus is of interest to IMTA

Chris Scott – water as the link between climate and society

Gregg Garfin – strengthening links, CLIMAS. Bob further emphasized drought interest, climate outlook product

Andrea Ray – NOAA Boulder, links with NAME, science-stakeholder processes, Western Water Assessment (focused on “interior west” including climate outlook product).

Ashley Coles – climate hazard, risk and vulnerability; RA to work over 2 years on this project

Barbara Morehouse – ISPE, Climate Assessment for SW, social-ecological resilience in US-Mex borderlands

Margaret Wilder – Latin Am. Studies and Geography, water management and development (poverty emphasis) in Mexico and Central America.

Stephanie Buechler – Bureau of Applied Research in Anthropology, work on gender-water-livelihood issues, interested in gender and climate

Laura Lopez-Hoffman – visiting scholar – ecology and the border, past postdoc at UNAM

Robert Merideth – Udall Center, interest in publications from this project

Dave Gochis – chair NAME science working group, Sonora fieldwork (via telephone link)

Project Overview – Chris Scott summarized:

Interdisciplinary, binational, applied research project. How do climate science and water resources shape decision making? What types of users might access this information? How does the information guide or inhibit decisionmaking?

- Task A: Linking climate diagnostics to water resources and vulnerability, for both drought and floods. Deliverables will include a bi-national climate product.
- Task B: Studying urban vulnerability in terms of access to resources and information for both surface and groundwater. How do urban water resources link to rural resources?
- Task C: Rural vulnerability. Drought is considered a driving factor for rural groundwater, but cyclones might have an effect. Will be looking at articles found by Nicolás Pineda following Hurricane Henriette. Will also consider drought response, contingency planning.
- Task D: How will notions of climate and water systems be expressed in outreach and products? Who are the target users – official agencies, broader public?

CRNII-2048 – Overview by Graciela de Raga:

Partners – New Mexico Tech., CICESE, UNAM Centro de Ciencias de la Atmosfera, Costa Rican and Cuban partners

Objectives: factors and processes of tropical cyclone intensification (= category 5 etc.); evaluate which could be more important under global change; wave impact

Methodology: gridded climate models as well as ground and satellite observations

Interest in bimodal summer precipitation – much less precipitation in July-August related to lower level wind speeds and direction that affects cyclone activity in terms of location, intensity, and frequency of cyclogenesis. More cyclones in September, and source of precipitation is different from that in July.

Quikscat wind speed and direction modeling shows precip patterns strongly influenced by surface topography (Isthmus of Tehuantepec in southern Mexico)

CENAPRED – Centro Nacional de Prevencion de Desastres – historical analysis of probability of landfall

Rosengaus et al – Climate Atlas of Mexico (Graciela has pdf copy).

Luis Farfan CICESE La Paz (CRNII-2048 project partner) interested in our IAI project

Discussion centered on: Precip resulting from cyclones? Any seasonal historicity? Multiannual cycles? What cyclone intensity triggers hurricane watch, warning in Mexico?

Links with Caribbean and North Atlantic (high pressure anomalies)

Sea surface height anomalies and forcing of intensification. Larger ocean processes such as sea surface temperatures are not driving cyclogenesis, except over eddy anomalies.

Lightning strike as indicator of cyclone activity, particularly precip

Structural question – how does human dimensions interest of IAI (and our project) get expressed with other linkages? How are outputs tailored to specific interest of (HD) stakeholders?

March 2008 meeting in Los Cabos.

IAI support for training in CRNII-2048, and potential input this project could make.

Task A – Gregg Garfin

Border climate outlook

Prototype at http://ispe.arizona.edu/climas/forecasts/borderoutlook_prototype.pdf

What region of interest to this project? –Sierra Madre Oriental to the west?

Executive summary with major highlights, provides temperature, precipitation, El Niño Southern Oscillation phases and implications, reservoir levels. Provide previous month and season as well as probabilistic forecast, with zoom capability

Interpretive guides, caveats on use and application, FAQs usually repeated issue-to-issue in “Notas” section, with new material interpreting information presented in current issue.

Info needed to “prime the pump” i.e., to indicate to managers and decision-making that new possibilities exist (derived products...)
How to interpret contradictory forecasts, forecast skill?
Format of presentation (leading to “climate literacy”) will vary by region, not just language. IE, capacity building will be essential.
Outlook on multiple time scales.
CLIMAS website now in Spanish, too.
User feedback thus far? Some gathered in Arizona and Mexico liked feature article, liked multiple sources of info (“honest, objective”).
Dissemination – targeted vs broad media coverage? Via emails to subscribed users, sent also to selected reporters, agency (water, ag, fire) managers, cooperative extension
Competing vs. strengthening alternate “official” products? SMN and CNA links in Mexico critical
Difference in public perceptions between US and Mexico? Climate literacy differences. But this has not been aimed at general public, instead at managers. What target groups (audience)?
Example of climate info for maize growers in Tlaxcala (Halley Eakin and Cecilia Conde)
Operational continuity of the product? May be eased by quarterly dissemination.
Water resources forecasts (based on hydrological modeling) – reservoir and streamflow forecasts. Is there an analogous product in Mexico?
Storm and cyclone forecasts as part of the binational outlook? Graciela – yes, this should be possible.

Task B – Nicolás Pineda

Has focused on industrial and public water supply in Hermosillo and Cananea
Prospects and agents for change and adaptation? Risks and threats?
Framework of institutional analysis following Ostrom 2007: physical conditions, community attributes, rules-in-use. Evaluate based on efficiency, equity, adaptability
Drought and flood – rules in use including lack of planning and no conservation
Politicization and power-control management. How can climate and water info make decisionmaking more democratic, transparent?
Users – profiles of urban sub-sectors and their interactions
Action arena – problem perception (scarcity-waste), notions of climate change...
What is known, what is not known about climate change and regional impacts?
Elinor Ostrom and Oren Young’s work on institutions relevant here
Networks within which actors operate (and outlook product disseminated) will be important
Framework of institutional analysis (Ostrom 2007)
Physical/nature, community, rules in use → Action Arena – action, actors → patterns of interaction → outcomes ← evaluation criteria – efficiency, equity, adaptability
Articulate what is known and what isn’t known about climate on a regional level.
Will need a parallel methodology to do comparative work.

Task C – Chris Scott

Rural groundwater and agricultural irrigation, overexploited aquifers
Difficult to measure and pinpoint usage, but can look at groundwater energy use as a proxy.
Who has access to resources?
Sustainability – water titling and rights, monitoring and compliance.

Once you have a well, do you go back to other sources? Perhaps if energy costs increase.
Groundwater pumped is greater than groundwater titled (based on assessments of energy usage)
Effects of nighttime tariffs and irrigation – pumping more water and pumping it faster when power is cheaper at night, so costs still increasing.
How much produced for export versus domestic uses?
Commodity chain analysis – Barbara.
Virtual water – Mexico “importing” US rainwater and “exporting” groundwater. Where is the water coming from, all from northern Mexico desert groundwater? Coastal irrigation (groundwater) districts are geared towards export, surface water for domestic markets, further inland are more subsistence.
Farmers seldom use groundwater to supplement lack of surface water on the same plot, often have a separate plot.
Easier for US cities to take water from agriculture than for the same to happen in Sonora.
Urban growth is faster than the national average in Sonora.
Cyclone season precip – what contribution to annual water budget? But more important from a risk from extreme events analysis
Equity of access to groundwater? Margaret

Task D – Martin Montero

Cyclones and emergency response
Info for task D derived from CRNII2048 and task A
Flood and water shortage forecasting.
Hydrological modeling either at IMTA or ITSON?
Workshops with managers
Determine current policy on climatic data and contingency planning. But how to get the unpublished data? Maybe develop a partnership that exchanges information for products.
Mexican products for emergency alert. Eg, Ricardo Prieto ex-IMTA analysis of precip estimates based on storm track
Workshops – May 08 Hermosillo – to make stakeholders aware of climate info “classes” available, major findings of IPCC 4th Assessment, NAME forecast forum results (Gochis, Luis Farfan, Rene Lobato)
Interactive workshop design on climate literacy, targeted climate-water needs by invited managers/ stakeholders.
Synthesis – should start earlier than the end of the project, ie, synthesis of existing practice, info flow, etc. contributing to synthesis over the course of the project.
Don’t necessarily want to produce prognostic products, just provide the ones already existing.
To what extent do water and emergency managers communicate already?
Possible incorporation with CISESE
Take reports to users, regional managers that can disseminate the information locally.

NOAA and related activities – Andrea Ray updated:

Climate Prediction Program for the Americas (CPPA) – NAME results on streamflow and precip (Gochis); stream-reservoir predictions and nowcasts and forecasts of soil moisture (Lettenmaier)
Hollings Scholarship intern (Michael Barnes, GRD and HWR) at NOAA Boulder Summer 08.

Potential Outputs – Group discussion and identification of possible collaborative papers, presentations with indicative topic areas:

1. E. Pacific cyclone prediction current and expected capabilities: communicating to water and emergency managers (Raga, Varady, Montero and others)
2. Comparative Hermosillo-Tucson urban water vulnerability assessment framework (Pineda, Morehouse and others)
3. Risk and vulnerability of Mexico's groundwater irrigation farmers (Scott, Wilder, Coles and others)
4. Agricultural-urban water interface for Sonora's coastal tourism resort growth in Sonora (Wilder and others)
5. Agricultural surface- and groundwater management decisionmaking using forecasts (monsoon rainfall, evap demand, soil moisture) and assessment of information-decision pathways (Gochis, Scott, Montero and others)

Next Steps – Chris Scott and Bob Varady, following the project timeline:

November 9, 2007 – inception meeting minutes and presentations circulated

November 16, 2007 – task leaders submit short (1-2 page) workplans for their tasks

November 26, 2007 – compiled project workplan circulated

February 24-29, 2008 – IAI project PI and data management meeting in Panama

May or June, 2008 – workshop with managers (Montero) on NAM prelim forecast (Gochis, Watts?)

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