Experimental climate information services in support of risk management

Robert Stabler Webb[1], Roger S Pulwarty[2, 1], Margaret A Davidson[3], Eileen E Shea[4], Claudia Nierenberg[2], Randall M Dole[1]

[1] Earth System Research Laboratory, NOAA, Boulder, CO, USA.
[2] Climate Program Office, NOAA, Silver Spring, MD, USA.
[3] Coastal Services Center, NOAA, Charleston, SC, USA.
[4] National Climatic Data Center, NOAA, Asheville , NC, USA.

NOAA Emergent Climate Service Requirement

Climate provides information about the likelihood of events

Time Average

Centennial
Decadal
Annual
Seasons
Month
Week
Day
Hour

Climate

Extreme Events

Weather resolves specific events

Seamless Suite of User and Stakeholder Information Needs

User and stakeholder information needs do not distinguish between the weather and climate or differentiate between research and operational.

Product Source

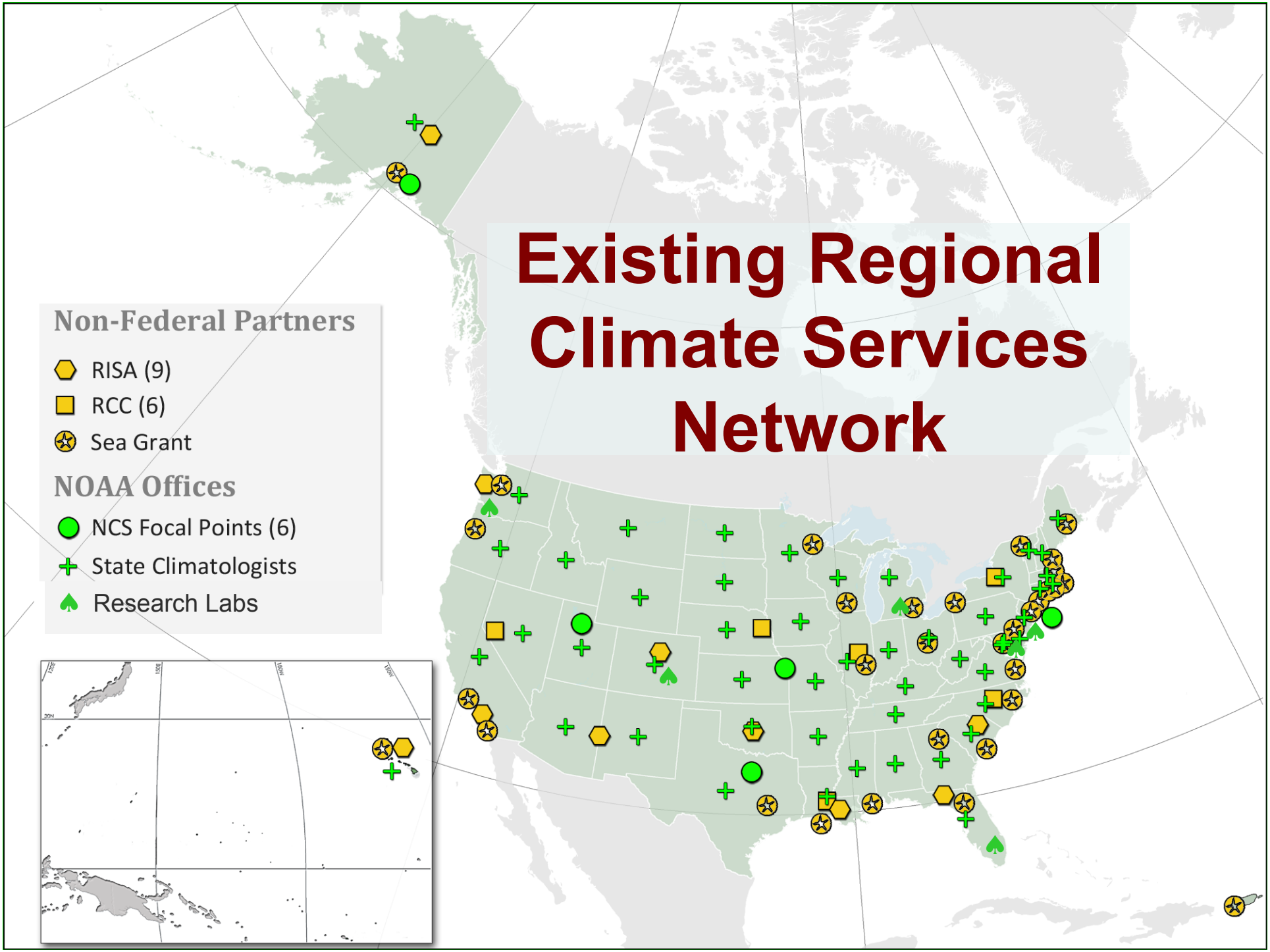
Discover | Development | Proof of Concept | Experimental | Operational

Research | **Knowledge** | **Operations**

Concluding Thoughts: climate services in support of risk management

- **Climate service will need to protect life, property, and the natural environment from climate impacts by supporting adaptation at all time scales (weeks to centuries)**
- **From a natural resource or emergency management perspective, providing climate change information 50 and 100 years in the future must be linked and integrated information to support adaptation on across timescales.**
- **Need climate information on all timescales to address near term threats and prevent life lost, extinction of a species, or destruction of property.**
- **Once topsoil is lost, once an animal or plant goes extinct, once a person dies from heat stroke, the management options to adapt to anthropogenic climate change are no longer relevant.**
- **A balanced climate service that includes information on climate change as well as near term climate variability and extremes.**

Existing Regional Climate Services Network



Changes in Climate
(variability and trends)

Changes in extreme events
amplitude and frequency

Impacts Are Why Climate Matters

- Air Quality
  - Water
- Ocean Life & Ecosystems
  - Weather (Extreme Events)
- Sustainable Food
- Security
- Coastal Inundation
- And Many Others

When it comes to managing risk *"It's the impacts stupid"*

Regional Climate Service
Case Study: Water

- **Problem and People focused:**
  - **Drought**
  - **Floods**
  - **Changes in snowpack (quantity and timing)**
  - **River stream flow**
  - **Fire outlooks**
  - **Physical Infrastructure (dams, reservoirs, delivery systems)**
  - **Planning (urban, agriculture, health)**

Federal Climate Change and Water Working Group (C-CAWWG)
Western States Federal Agency Support Team (WESTFAST)
Regional Integrated Sciences and Assessments (RISAs)
Western States Water Council (WSWC)
Western Governors' Association (WGA)
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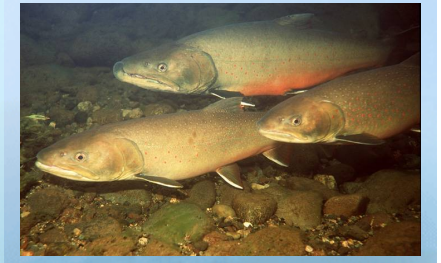
Regional Climate Service
Case Study: Resource Management

- **Natural Resource Focused**
  - Risk to protected species critical habitat
  - Complex integrated "emerging mandate" from the judiciary branch of government
  - Requires "best available scientific information" to support comprehensive analyzes of climate impacts on habitat
  - "Best available scientific information": peer-reviewed and gray literature, expert opinion and anecdotal experience, reflecting different levels of innovation, quality, respectability, and accessibility
  - Need to transform climate observations and projections into marine, freshwater and terrestrial habitat information
- **Challenge**
  - Tension between providing information at needed temporal and spatial scales to meet court mandated requirements and delivering scientifically credible and authoritative information



Some important attributes of a climate information services in support of risk management

- ✓ Provide balanced, credible, cutting edge scientific and technical information
- ✓ Engage a diversity of users in meaningful ways to ensure their needs are being met
- ✓ Link human-caused climate change and changes in natural variability to meet user needs
- ✓ Provide and contribute to science-based products and services to minimize climate-related risks
- ✓ Ensure timely assessments
- ✓ Provide predictions and projections of climate at scales relevant to decision support
- ✓ Strengthen observations, standards, and data stewardship
- ✓ Improve regional and local projections of climate change
- ✓ Inform policy options, decisions and management options of others
- ✓ Foster climate literacy and workforce development

A Prototype Pathway for Regional Climate Information Services

Regional Consultations

NON-NOAA PARTNERS

MONITORING/FORECASTS

&

DEVELOPMENT
(data, products etc.)
&

PROTOTYPING
(scenarios, applications..)

DELIVERY/MAINSTREAMING

Line Offices
Universities, and Labs

Integrating knowledge and products (PSD, RISAs, RCCs, RFCs, SCs)

Operational (RCCs, NCDC, SCs CPC, WFOs, RFCs,)

new or enhanced regional products
information delivery technology
sustained & systematic communication and feedback

The National Climate Service Partnership

- no single agency can address the climate challenge on its own

Observations/Monitoring

Research, Modeling & Assessments

National Climate Service

Resource Risk Management

Adaptation & Mitigation