Toward Improving NWS Local and Regional Climate Services

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NWS Responsibility for Climate Services

- 1890 – Weather Service Organic Act - 15 U.S.C. § 313
  - Weather and meteorological reporting/forecasting responsibilities assigned to the Secretary of Commerce; as well as monitoring and recording climatic conditions.
  - Includes COOP – Cooperative Observer Program – the Nation's weather and climate observing network of, by, and for the people
- 1979 – Full operation of Climate Analysis Center (now CPC)
- 2000 – Climate Services Division established at NWS HQ
  - To manage the NWS Climate Services Program
- 2003 – NWS Regional and Local Climate Services Implementation Plan

NWS Infrastructure for Delivery of Services

- NCEP – Products, services, field office guidance
- Field offices
  - Regional Programs
  - 122 Weather Forecast Office
  - 13 River Forecast Centers
  - 15 Weather Service Offices

NOAA's knuckles for developing information

NOAA's fingers into communities for delivery of information

NOAA's Delivery of Climate Services

- NESDIS Data Centers (NCDC)
- JCSDA
- OAR
  - ESRL
  - GFDL
  - CPO – RISAs, other programs
- NCEP (CPC, EMC)
- NCDC (inc. RCSDs)
- NWS Field Offices

NOAA's arm through which data, science, and applications development flow

Service delivery to customers

The Flow of Information to Customers

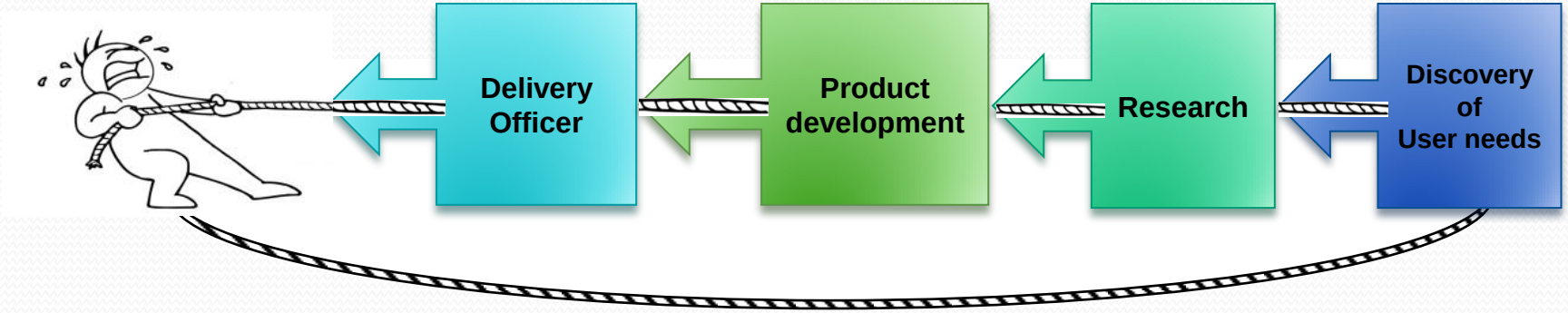
NWS delivers regional and local climate services to citizens

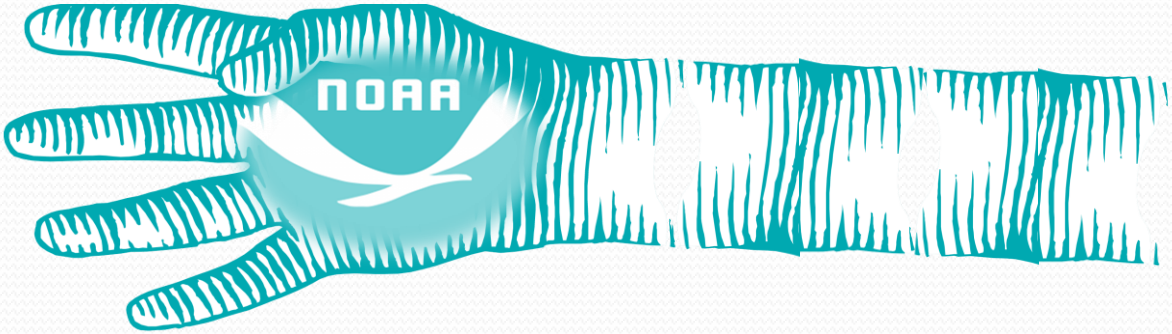
- CR Headquarters
  - Climate Response Team – public outreach for climate events
  - Climate Science Team - R&D, training, mentoring for NWS offices
- Denver/Boulder WFO
  - Routinely leverages expertise at ESRL on climate variability and change

Challenges

- These are isolated examples
- Knuckles, palm, and arm staff need to be more aware of the fingers
- How can we remove obstacles to information sharing to better reach customers through the "finger tips"

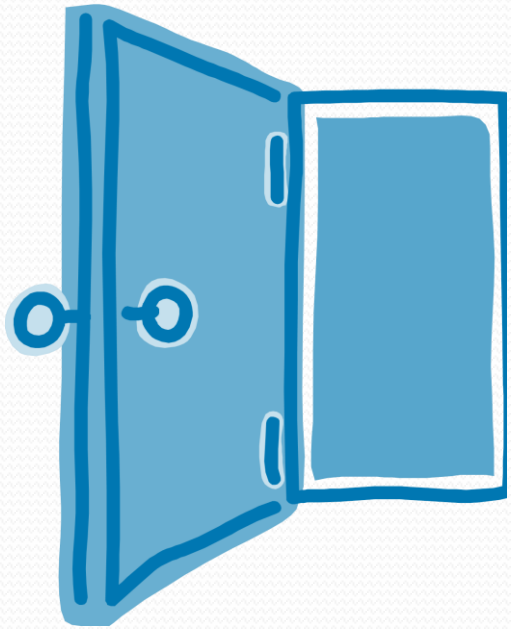
Service Development/Delivery Model





NOAA Arm Functionality

- "Open door" policy is critical for successful collaboration between the NOAA arm, palm, and fingers
- Product relevance, responsiveness, and usability are as important as skill, accuracy, and timeliness
  - Relevance includes time and space scales
  - Responsiveness includes product variety
  - Usability includes effective communication mechanisms (presentation formats/design, training, etc.)



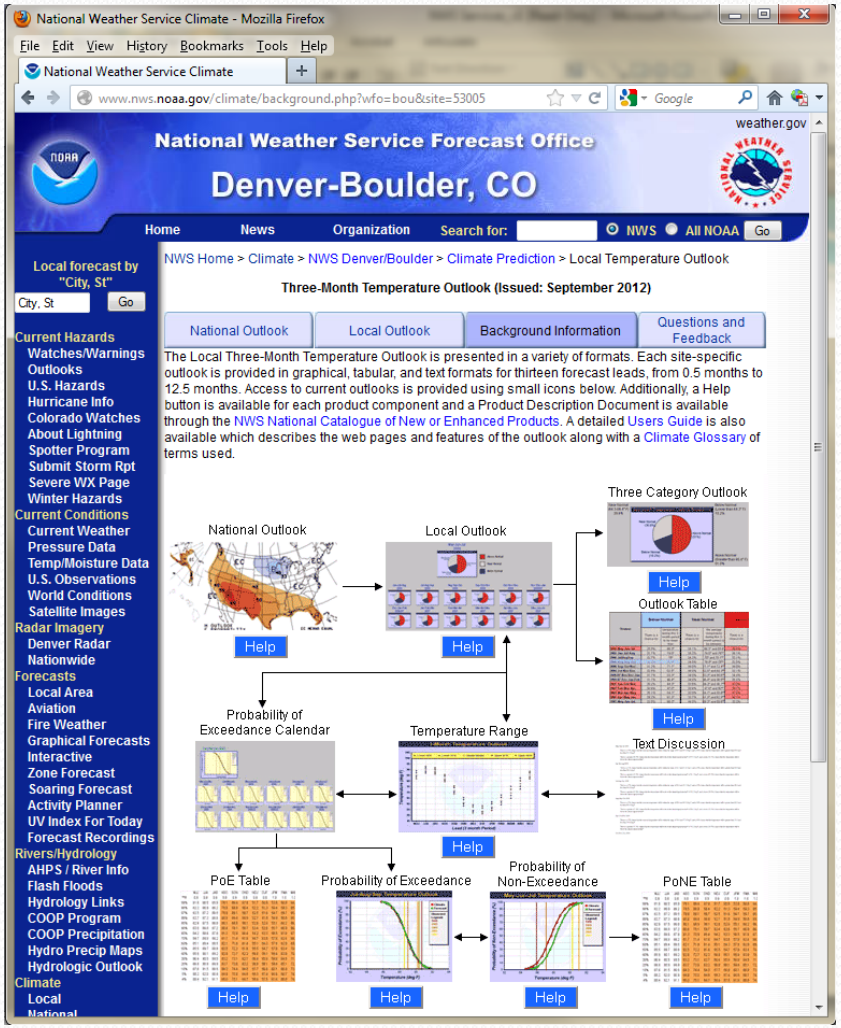
What we have in place

- Infrastructure
  - Staff
  - Training
  - Communication mechanism
  - Established framework
- Climate Information Delivery
  - Standardized climate pages – www.weather.gov/climate
- Local Forecast Product Suite
  - Local 3-Month Temperature Outlook – L3MTO
  - Local 3-Month Precipitation Outlook – L3MPO
    - Under development in response to overwhelming demand from customers and field offices
- Climate Services Tools :
  - Local Climate Analysis Tool – LCAT
  - Data Access Tools, e.g. xmACIS/NOWData
- Regional Initiatives
  - Regular briefings to the fields
  - Knowledge of regional partners
  - Experience in coordinating regional initiatives
- Local Initiatives:
  - History of drawing climate expertise from NOAA climate centers
  - Knowledge of local user needs
  - Experience in delivering technical information to wide range of users
- Partners Exchange Program
  - For field office staff to engage “up the arm”
  - To CPC, NCDC, etc.
  - To other federal agencies

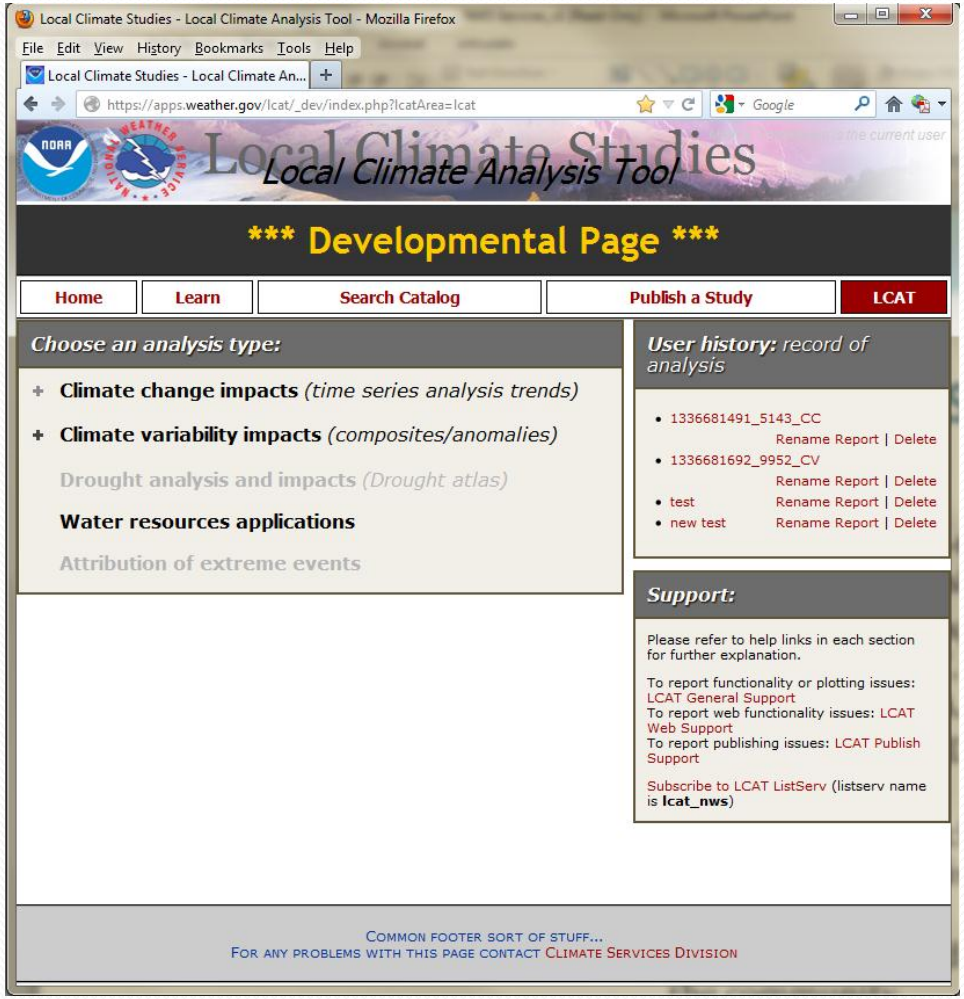
Tested Partnership Models

L3MTO Case

- Developed in partnership with CPC-CSD-WRH
- Transferred to CPC for operations
- CSD implemented web automation for product dissemination
- Local offices deliver – maintain location list, secondary QC, and customer services



Tested Partnership Models



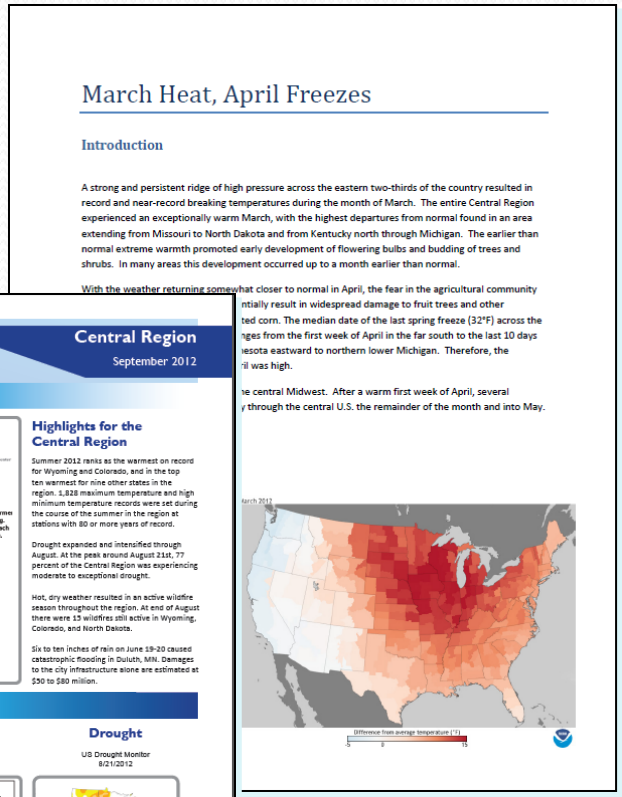
LCAT Case

- Developed in partnership with CSD, 6WFOs, MDL, CPC
- Scientific expertise drawn from NCDC, ESRL, NCDC, RCCs, RISA, UCAR
- NWS HQ (CSD/MDL) deploy into operations
- Local office and technical users develop information for decision support
- Case studies shared within the community

Tested Partnership Models

Climate Response Team

- Provide quick overview of important near-term climate events occurring during the year on a quarterly basis
- Team of state, regional, academic and government climatologists with a common approach to provide short, clear information for the public on current climate events
- The quarterly two page impacts and outlooks summary was created through a collaboration of NOAA offices, other federal agencies and core climate partners
- The collaboration with State Climatologists and academics is invaluable for their unique knowledge of climate impacts in the agriculture, energy and other climate-sensitive sectors

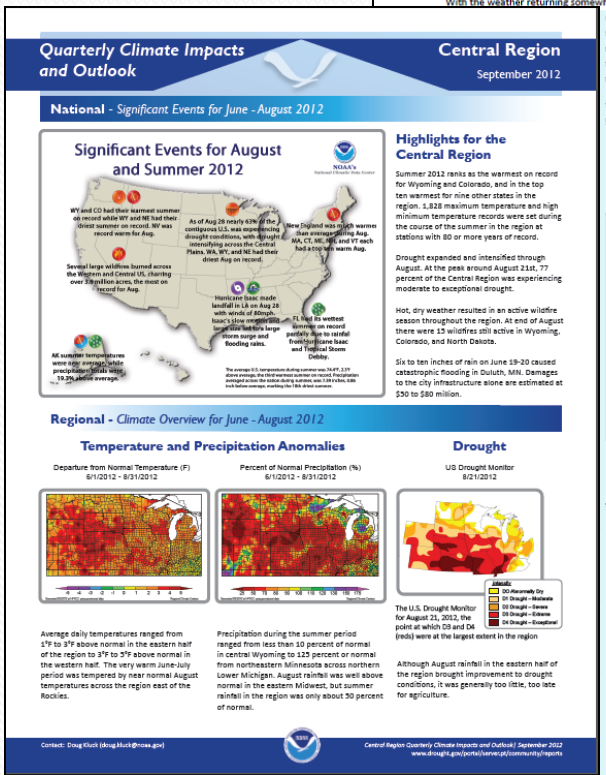

March Heat, April Freezes

Introduction

A strong and persistent ridge of high pressure across the eastern two-thirds of the country resulted in record and near-record breaking temperatures during the month of March. The entire Central Region experienced an exceptionally warm March, with the highest departures from normal found in an area extending from Missouri to North Dakota and from Kentucky north through Michigan. The earlier than normal extreme warmth promoted early development of flowering bulbs and budding of trees and shrubs. In many areas this development occurred up to a month earlier than normal.

With the weather returning somewhat closer to normal in April, the fear in the agricultural community ntially result in widespread damage to fruit trees and other ted corn. The median date of the last spring freeze (32°F) across the nges from the first week of April in the far south to the last 10 days iesota eastward to northern lower Michigan. Therefore, the il was high.

he central Midwest. After a warm first week of April, several through the central U.S. the remainder of the month and into May.


Quarterly Climate Impacts and Outlook

Central Region

September 2012

National - Significant Events for June - August 2012

Significant Events for August and Summer 2012

Highlights for the Central Region

Summer 2012 ranks as the warmest on record for Wyoming and Colorado, and in the top ten warmest for nine other states in the region. 1,828 maximum temperature and high minimum temperature records were set during the course of the summer in the region at stations with 80 or more years of record.

Drought expanded and intensified through August. At the peak around August 21st, 77 percent of the Central Region was experiencing moderate to exceptional drought.

Hot, dry weather resulted in an active wildfire season throughout the region. At end of August there were 13 wildfires still active in Wyoming, Colorado, and North Dakota.

Six to ten inches of rain on June 19-20 caused catastrophic flooding in Duluth, MN. Damages to the city infrastructure alone are estimated at $50 to $80 million.

Regional - Climate Overview for June - August 2012

Temperature and Precipitation Anomalies

Drought

Departure from Normal Temperature (F) 6/1/2012 - 8/31/2012

Percent of Normal Precipitation (%) 6/1/2012 - 8/31/2012

US Drought Monitor 8/21/2012

Average daily temperatures ranged from 1°F to 3°F above normal in the eastern half of the region to 3°F to 5°F above normal in the western half. The very warm June-July period was tempered by near normal August temperatures across the region east of the Rockies.

Precipitation during the summer period ranged from less than 10 percent of normal in central Wyoming to 125 percent or normal from northeastern Minnesota across northern Lower Michigan. August rainfall was well above normal in the eastern Midwest, but summer rainfall in the region was only about 50 percent of normal.

The U.S. Drought Monitor for August 21, 2012, the point at which D3 and D4 (reds) were at the largest extent in the region

Although August rainfall in the eastern half of the region brought improvement to drought conditions, it was generally too little, too late for agriculture.

Contact: Doug Kluck (doug.kluck@noaa.gov)

Central Region Quarterly Climate Impacts and Outlook| September 2012

www.drought.gov/portal/server.pt/community/reports

Tested Partnership Models

Vision
To develop and enhance climate science and NWS Central Region climate services.

Mission
The Central Region Climate Science Group (CSG) will organize, develop, promote, and aid in implementing climate science projects that are of high quality and value for Central Region offices.

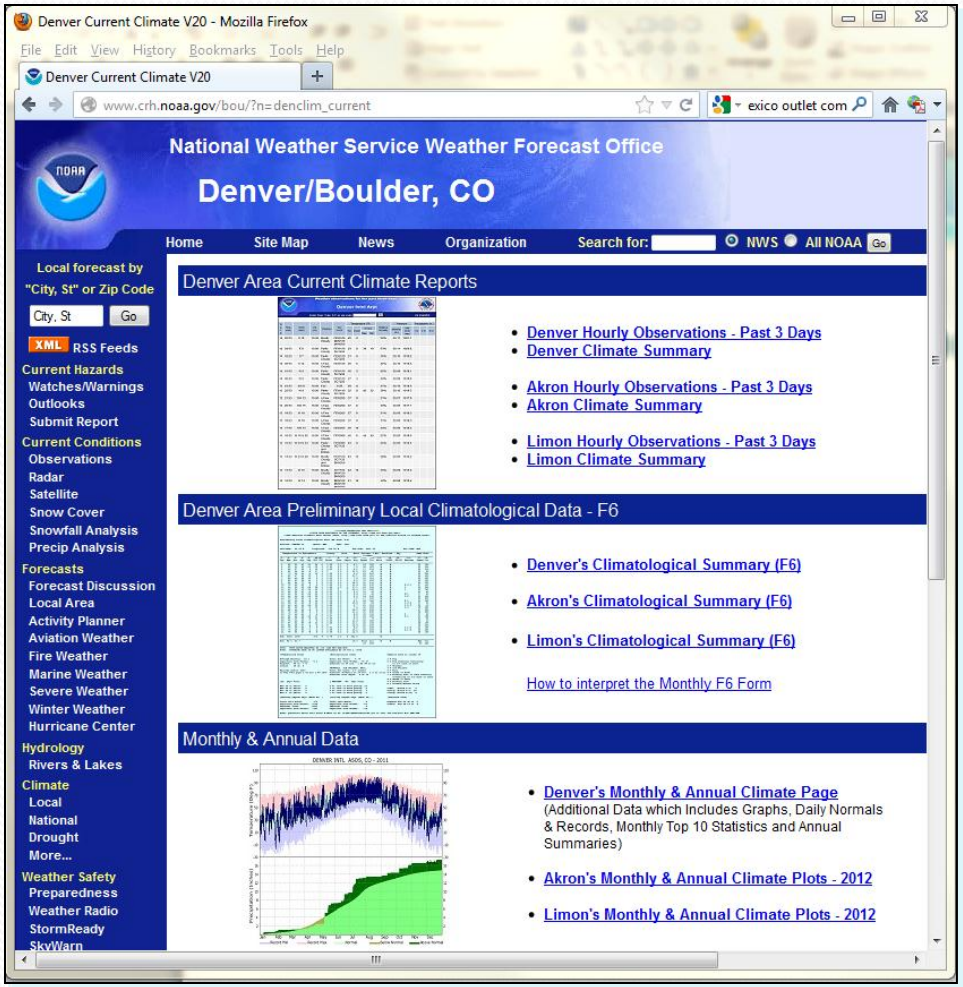
Climate Science Team

- Increase climate science knowledge to NWS offices through training, research and mentoring
- Team of highly trained NWS staff were gathered to plan, build and implement services to address the operational needs of Central Region.
- Training programs plus research and development opportunities are provided to local NWS offices
- Planning and follow up with local NWS offices is important to ensure that training, research and mentoring are applied effectively in provision of climate services

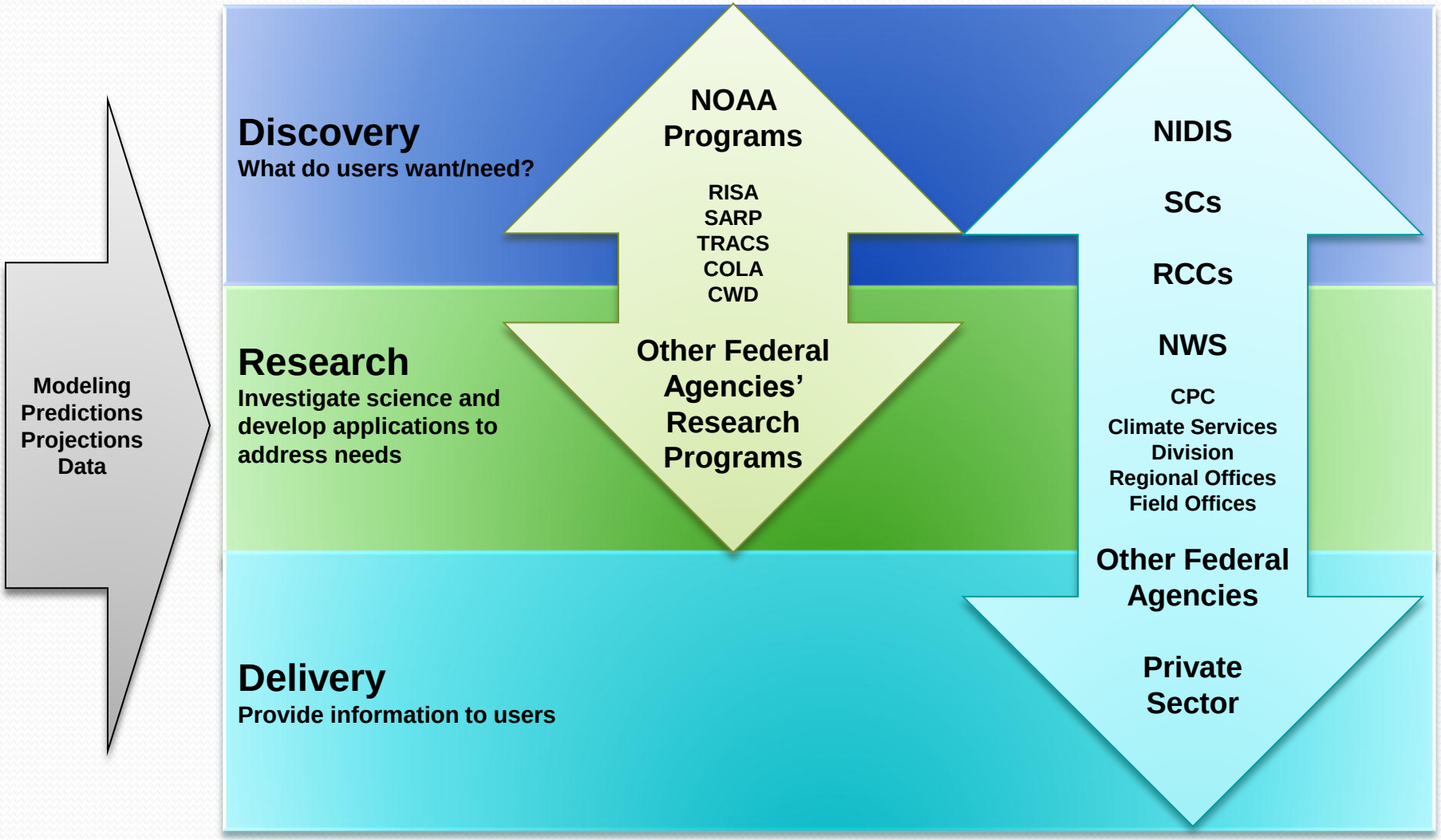
Tested Partnership Models

WFO Denver/Boulder

- Apply global and national climate information to expected local impacts.
- Frequently updated web outreach.
- WFO staff prepared to address customer questions and issues based on web presentation.
- Frequent alignment checks with NOAA/ESRL researchers and state climatologist.



Regional and Local Services



Proposed strategies to move forward

- Enhance PEP to allow more “up the arm” engagement
- Mini-Proposal Program
  - Field offices propose activities to help them better deliver climate services to their constituency
    - Engage academic/hire student for help with local studies
    - Support capacity building activities (support for meetings, etc.)
- National offices draw more frequently on local expertise for delivery support
- Remove obstacles to the flow of information out through the “finger tips”

Final Thoughts

Keep the door open! because

- Field offices are the delivery mechanism for a large part of products and services – reaching into the citizenry
- Products and services are improved through transition of research advances
- Issues identified at the finger tips will influence research and product improvements/development