Nevada Infrastructure for Climate Change Science, Education, and Outreach

New research infrastructure in Nevada: Climate change science, education, and outreach

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NSF

EPSCoR
Experimental Program to Stimulate Competitive Research

NEVADA SYSTEM OF HIGHER EDUCATION
1865

Vision

- *Create a statewide interdisciplinary program and virtual climate change center to....*
- *Stimulate transformative research, education, and outreach on the effects of regional climate change on ecosystem services (especially water resources) and....*
- *Support use of this knowledge by policy makers and stakeholders.* ***Use Science to Understand Issues.***

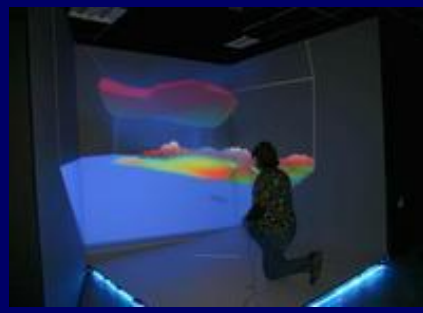
Project Leaders

Project Director
Gayle Dana (DRI)

Principal Investigators
Nick Lancaster (DRI), Mike Collopy and Scott Mensing (UNR), Tom Piechota (UNLV)

Project Basics

- 5 years (Sept 2008 to Aug 2013)
- NSF: $15,000,000 ($3,000,000/yr)
- NSHE EPSCoR: $6,500,000
- NSHE Institutions
  - University of Nevada, Reno
  - University of Nevada, Las Vegas
  - Desert Research Institute
  - College of Southern Nevada
  - Nevada State College



Project Science Structure

Key Goals of Water/Eco/Climate

- To improve understanding of processes controlling local- and basin-wide impacts of climate on species dynamics, disturbance regimes, and water recharge rates
- To evaluate interactions between biophysical indicators and landscape-level processes, and between surface and groundwater systems
- To assess interactions between water and ecology under climate variability scenarios
- To make data and information available for researchers, stakeholders, and land management agencies (NPS, BLM, USFS, etc)
  - i.e., hydrologic and ecologic data could be used for NPS Landscape Conservation Cooperatives

Observational transects

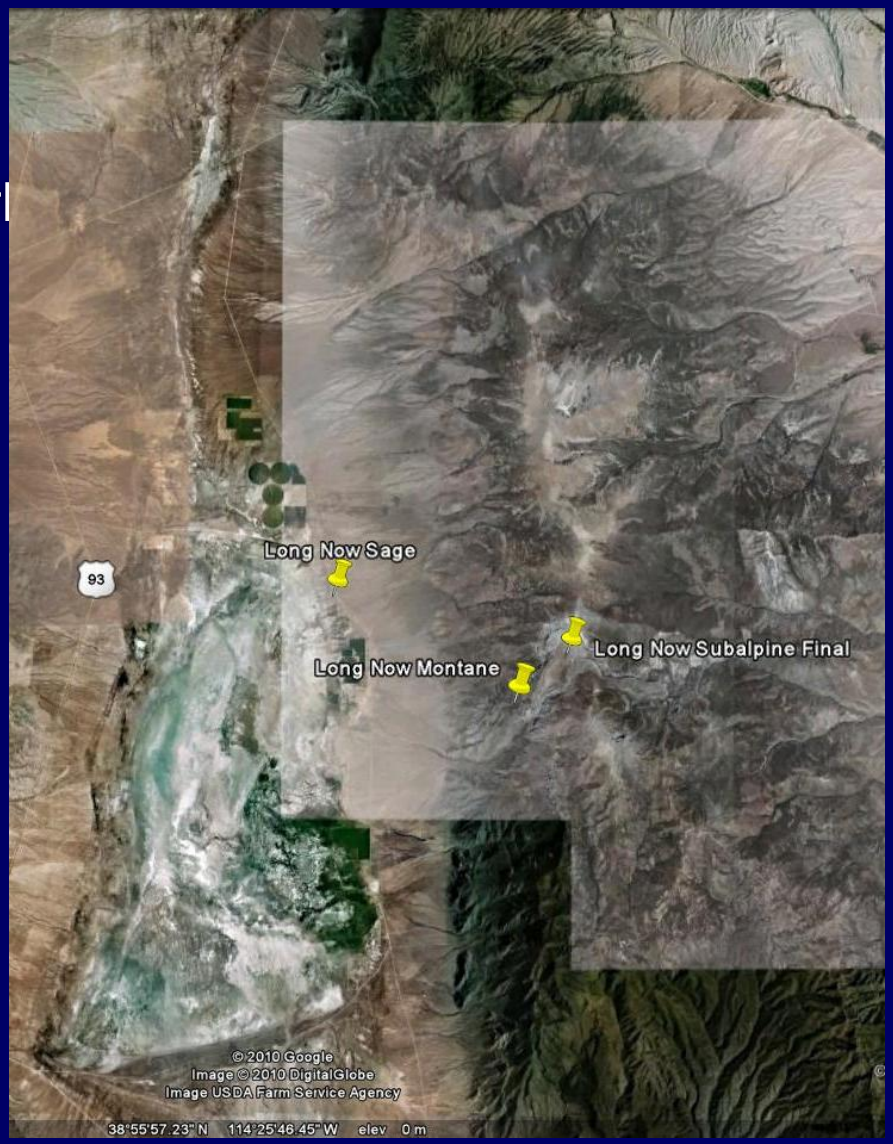
- Designed to assess how climate change effects and ecological and hydrological responses differ between elevations and latitudes within NV
- Stations in areas with diverse climatic regime (one controlled by snowpack, the other influenced by summer monsoons)
- Define baseline conditions, capture ongoing changes, and perform field experiments
- Design will be comparable to other networks (CZOs, NEON, etc.)
  - Data will also be compared to other regional transect efforts (e.g., Reynolds Creek, ID, Dry Creek)

Criteria for Selection

- Focus: climate, hydrology, ecology
- Common instruments and uses
- Latitude and elevation comparison
- Ability to compare ecotone shifts
- “Permittable” sites that have access
- Sites large enough for experiments
- Relatively permanent
- Avoid ecotones – use representative vegetation zone
- Data need to be collected in real-time and easy to share with landowners, scientists and stakeholders!

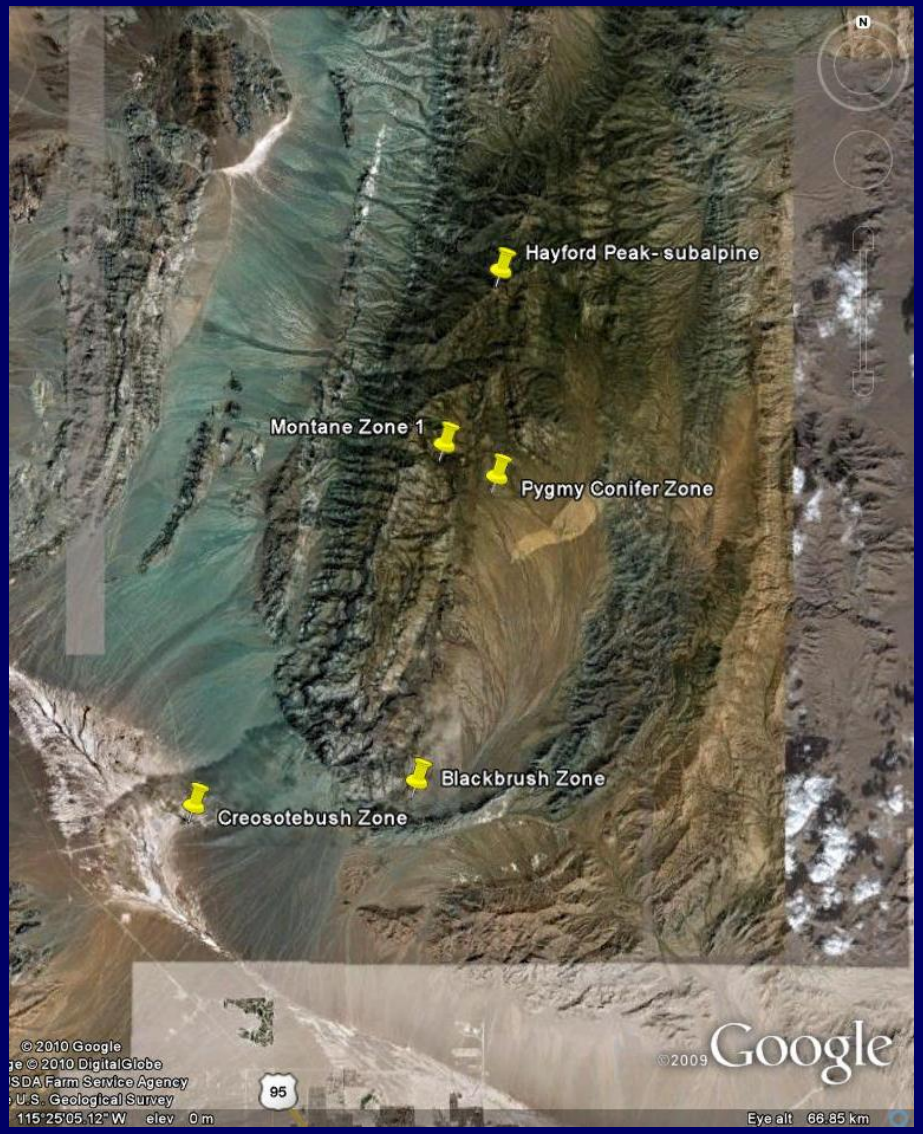
Eastern Transect – Spring/Snake Valleys

- Eastern Transect
  - Great Basin National Parl
  - BLM
  - Private land owners
- Vegetation Zones
  - Greasewood
  - Sage
  - Montane
  - Upper Pinyon
  - Pinyon-Juniper
  - Subalpine
  - Alpine

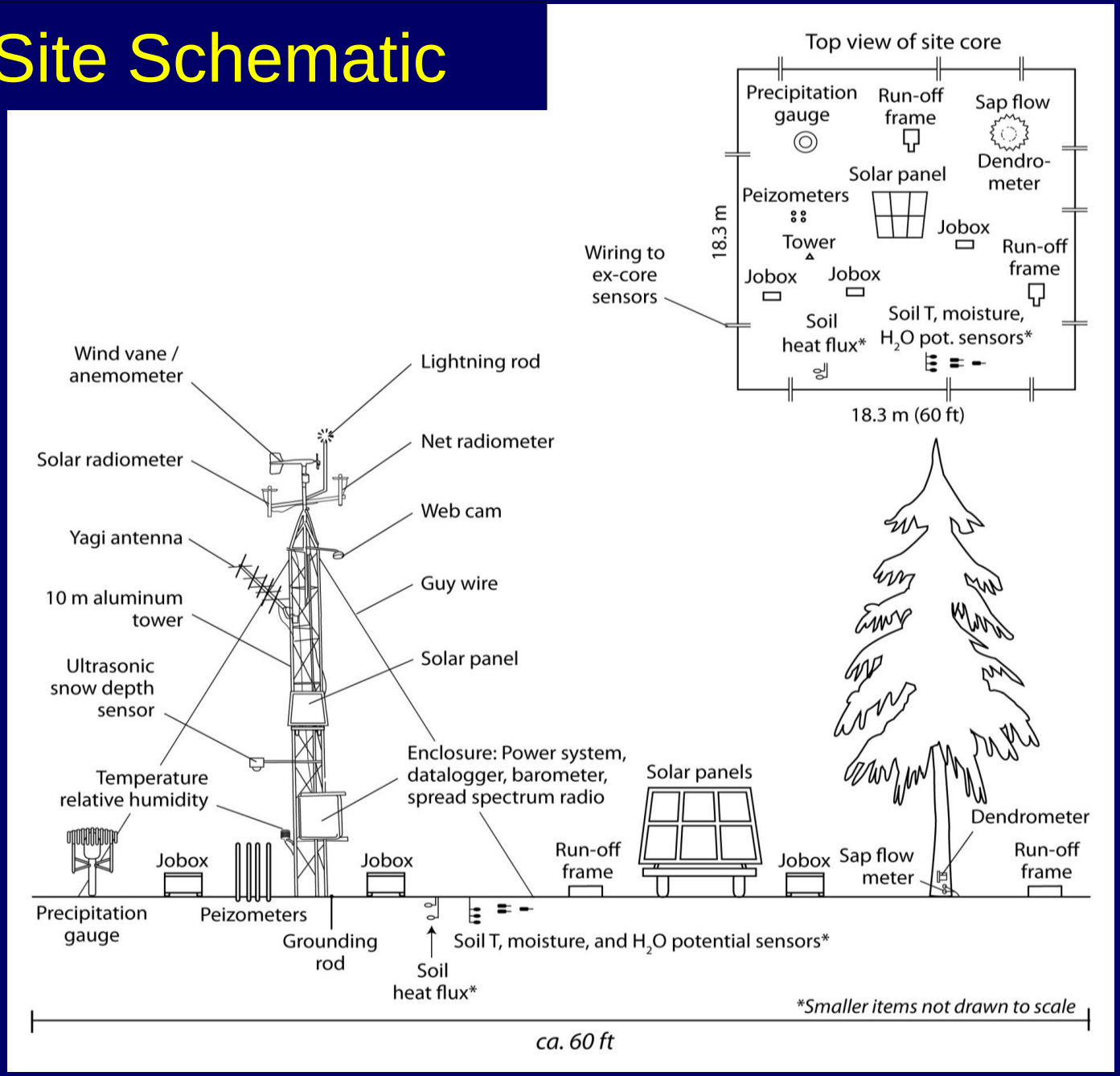


Southern Transect – Sheep Range

- Eastern Transect
  - Partnering with Desert NWR and NRCS
- Vegetation Zones
  - Creasotebush*
  - Blackbrush
  - Pygmy Conifer*
  - Montane
  - Subalpine*



Site Schematic

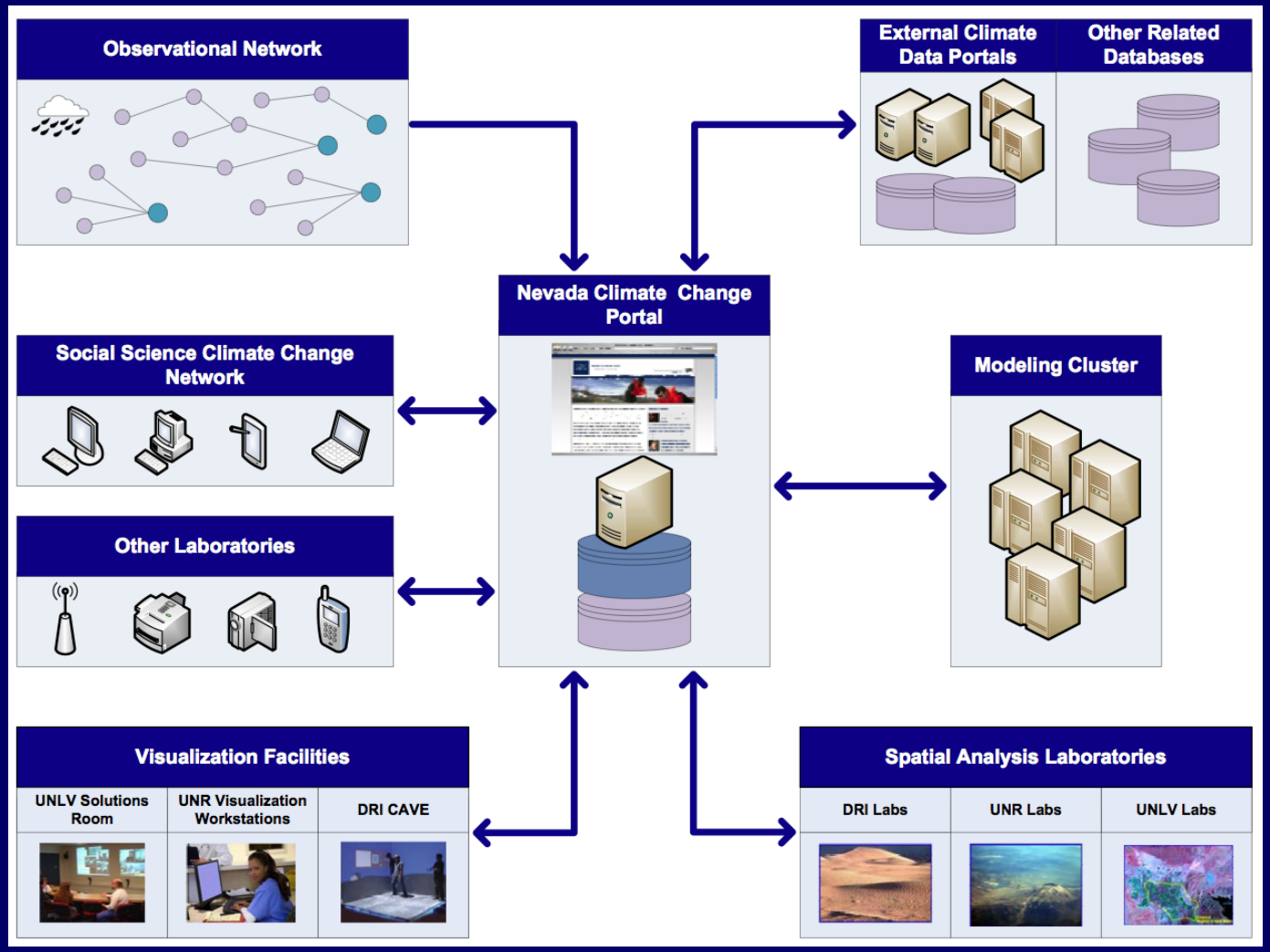


Test Tower Before Deployment –

Urban Water Conservation Center, NLV

Photo taken with user-controllable webcam

Cyberinfrastructure and Data Portal



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Timeline

- 2010:
  - Complete instrumentation of sites
  - Continue data collection
  - Complete search for new faculty at DRI and UNR
- 2010-2011:
  - Continue data collection
  - Hire new faculty at DRI and UNR
  - Initiate modeling
- 2011-2013:
  - Continue data collection
  - Establish baseline conditions and conceptual linkages
  - Complete model development
  - Obtain additional funding to sustain transects

Sources of Horsepower –
who does much of the work?

- Brian Bird – UNLV
- Dave Charlet – CSN
- Richard Jasoni – DRI
- Dave Simeral – DRI
- Scotty Strachan – UNR

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Thank you!

www.nvclimatechange.org