

COLLIN HAFNEY, ECOLOGIST

USGS - NEW MEXICO LANDSCAPES FIELD STATION

PLACE BASED

SCIENCE-MANAGEMENT

PARTNERSHIPS:

ECOSYSTEM SERVICES

LONG-TERM OBSERVATIONS

- been working in the Jemez & northern New Mexico for 30+ years
- observed and measured changes
- focused on fire and forest ecology



Full Range of Experiences



J. HAFEEY



PLACE-BASED SOLUTIONS

- relying too heavily on “best” management practices limit creativity
- decentralized approach to strategic analysis
- explore challenges and solutions with a broad group

from: *Game et al., 2013*
& *Petraeus 2006*



Ecosystem services are the benefits provided by ecosystems that contribute to making human life both possible and worth living.

UK NATIONAL ECOSYSTEM ASSESSMENT

FEDERAL POLICY

OMB & CEQ memo (M-16-01):

- Directs agencies to develop and institutionalize policies to promote consideration of ecosystem services in planning.
- Provides direction for relevant Federal programmatic and planning activities, including environmental reviews under NEPA.

USFS 2012 Planning Rule (CFR 36.219):

- Requirements to provide for ecosystem services
- 36 CFR 219.1(c) -- Plans will guide management of NFS lands so that they have the capacity to provide communities with ecosystem services

SUSTAINING ECOLOGICAL CAPITAL INITIATIVE

- USGS led program
- coordinate ecosystem services research
- integrate ES into land management decision making

<https://my.usgs.gov/seci>



SECI PILOT PROJECTS

- *Delaware River Basin* – links information on freshwater mussels with original economic data to estimate benefits of clean water
- *Chesapeake Bay Watershed* – flood control; in-stream nutrient and sediment reduction; carbon sequestration.
- *National Water Quality Assessment (NAWQA)* – water quality database linked with economic modeling of residential property prices.

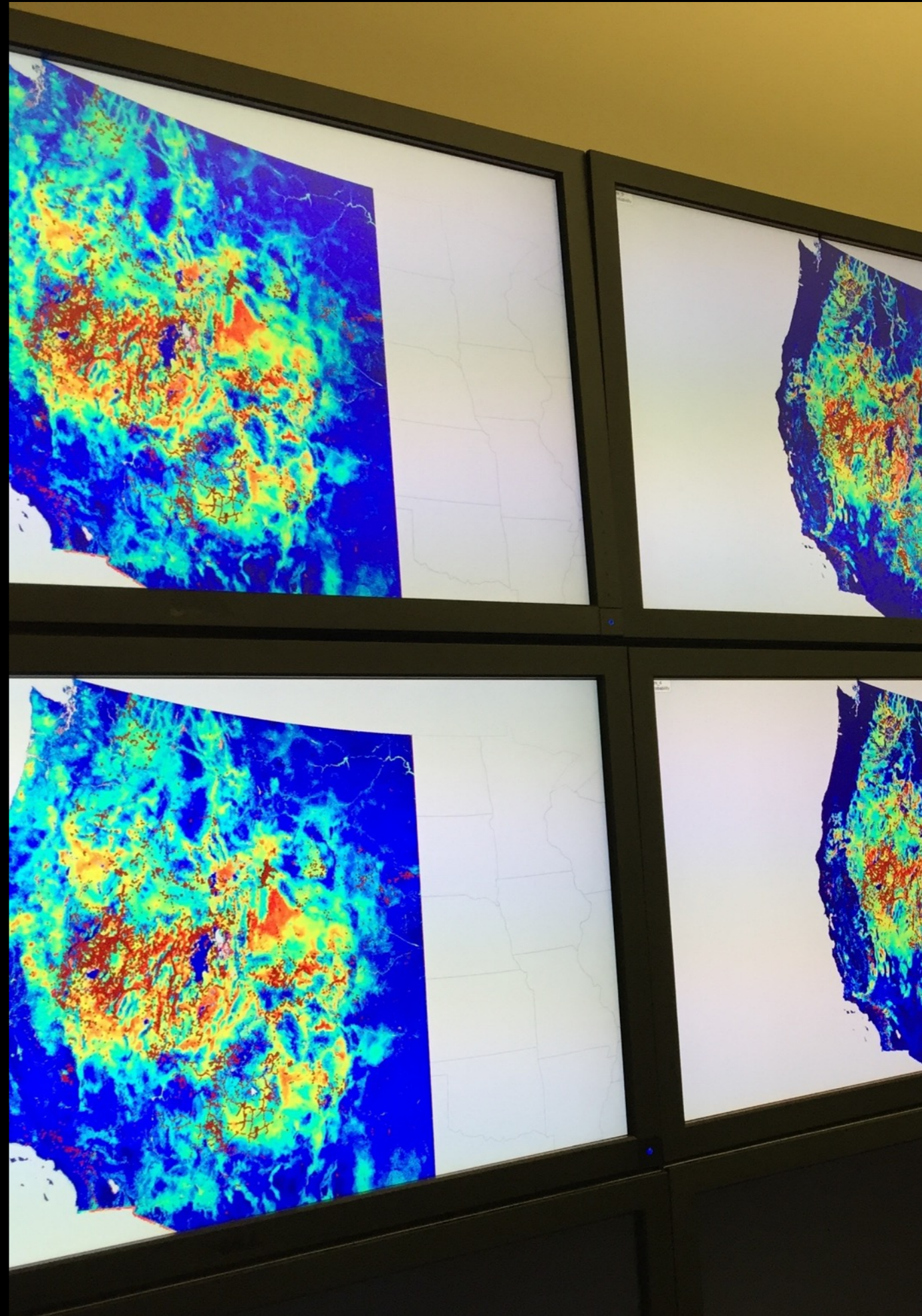


SECI - NEW MEXICO

- Broad range of ecosystem services (ES) research potentials
- Interested in cultural, economic, & biophysical ES; how to integrate understanding of them
- Potential to be incorporated into Taos Valley Watershed, Santa Fe fire shed, CF(L)RP projects
- SECI Team comprised of economists, social scientists, software developers and natural resource

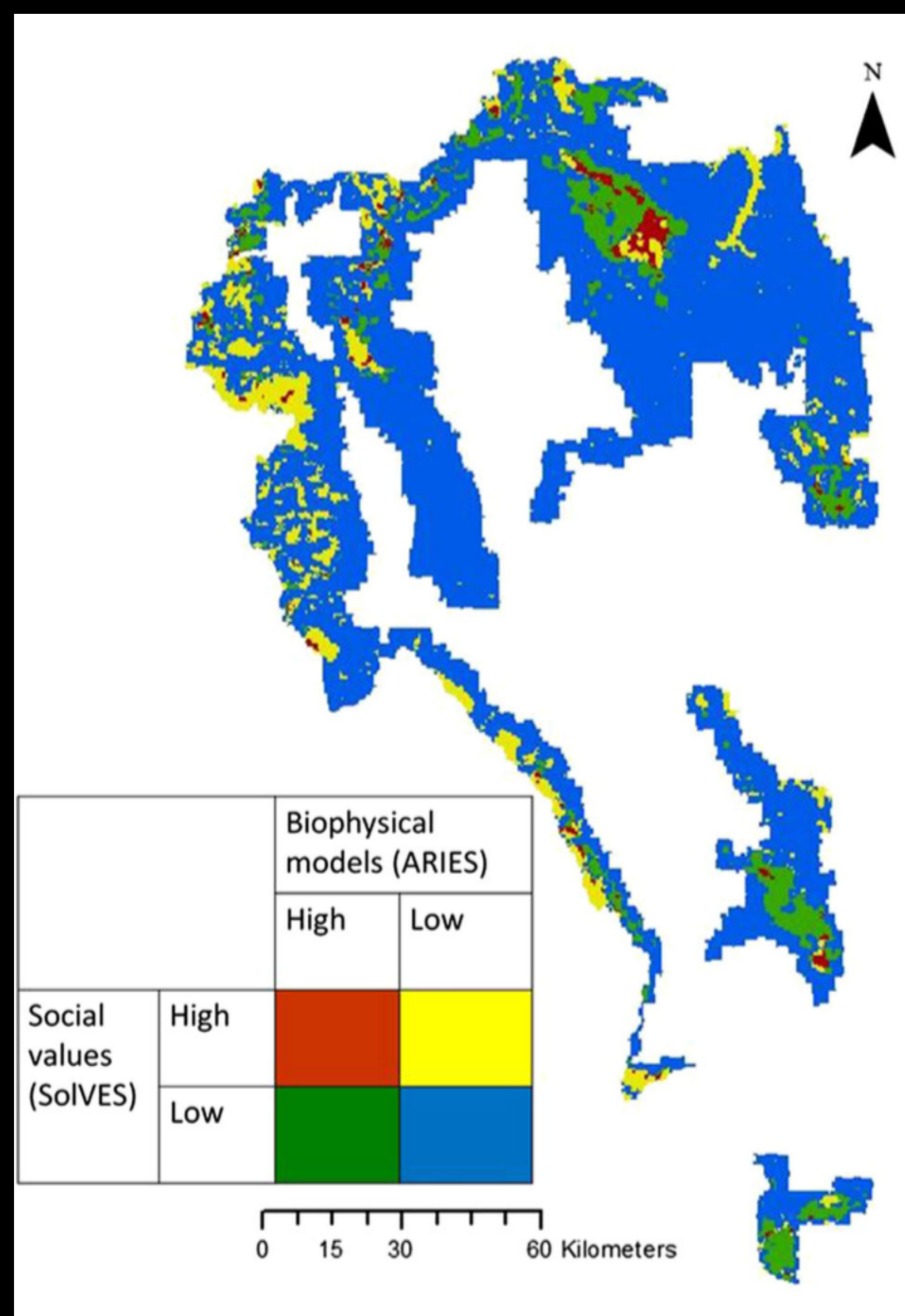
ARIES ARTIFICIAL INTELLIGENCE FOR ECOSYSTEM SERVICES

- Simulation modeling platform
- Beneficiaries identified along with sources, sinks and pathways
- Integrates multiple models to develop spatially explicit output, incorporates local information, uses machine learning to determine "best" model for a specific area



CASE STUDY: ROCKY MOUNTAINS

- identified social and biophysical ecosystem service hotspots
- showed spatial overlap and differences between social mapping and biophysical mapping.



WILDERNESS STUDY

- Part of a broader report on values of Federal Wilderness
- includes economic, cultural, & recreation valuations
- plan for economic survey looking at water resources, fire risk, cultural resources of NM wilderness



HELP FROM COORDINATING GROUP

- What has already been done with regard to Ecosystem Services research & development in northern New Mexico?
- What Ecosystem Services research is planned/ongoing?
- What is needed in terms of continued ecosystem services research & development?

CONTACTS

- James Meldrum - SECI New Mexico & Wilderness Ecosystem Services Lead, USGS Fort Collins
- Brian Voigt - ARIES, Gund Institute for Ecological Economics, University of Vermont
- Rudy Shuster - SECI coordinator, USGS Fort Collins
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