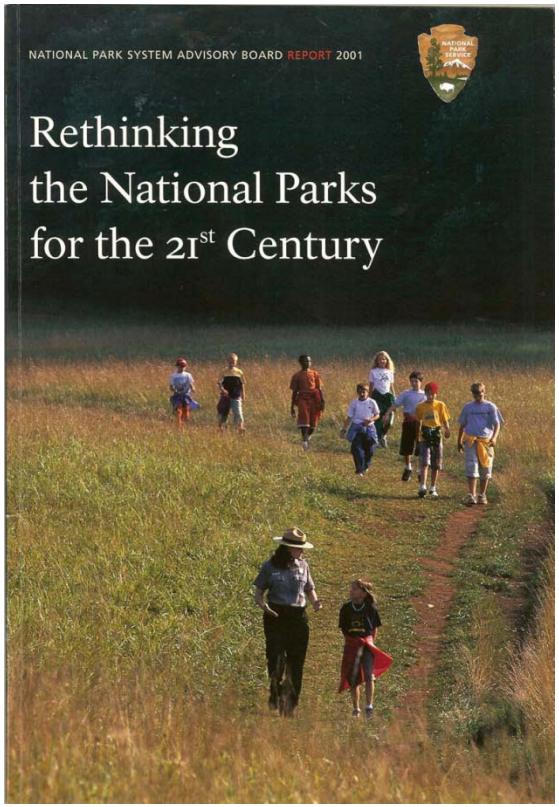
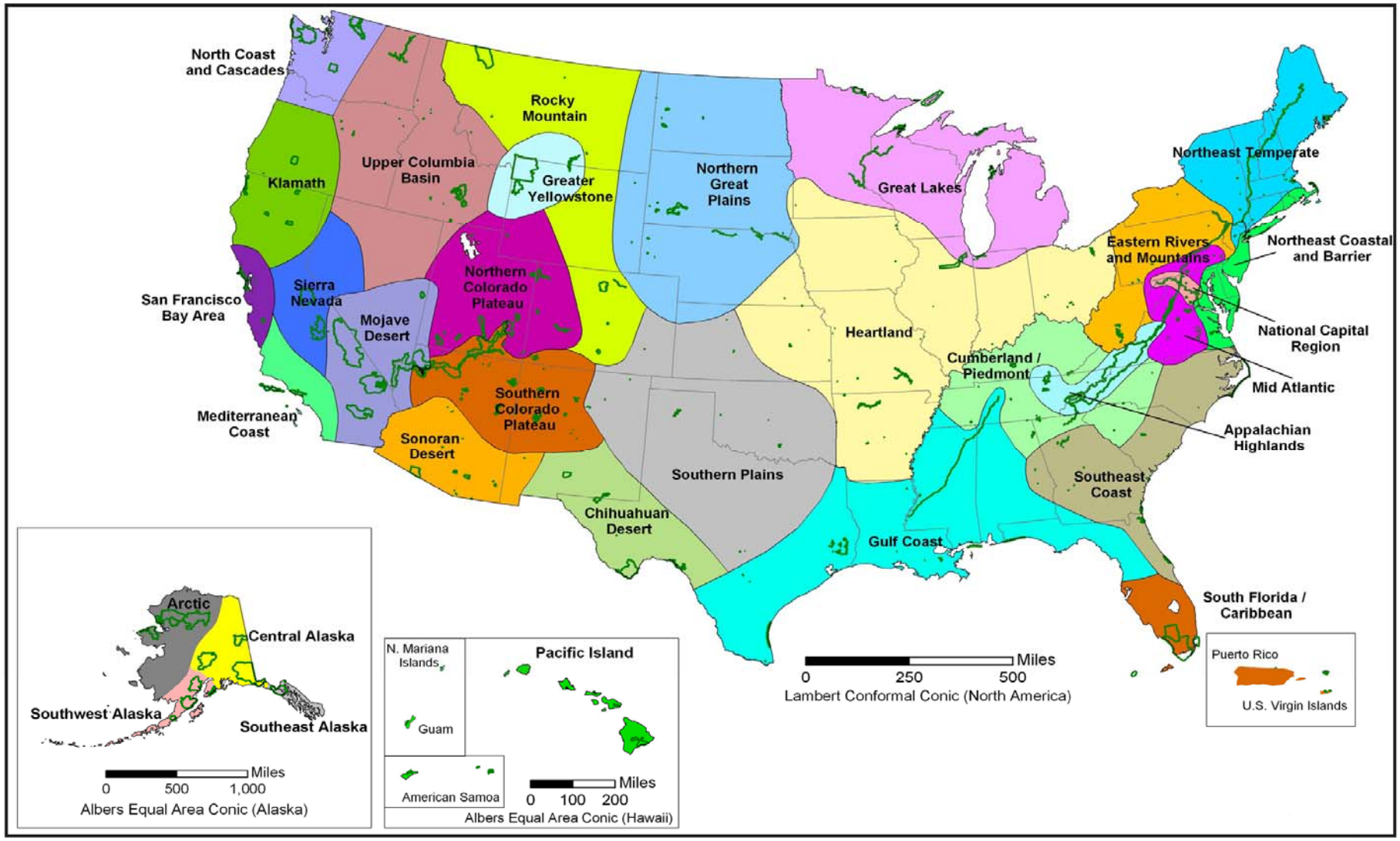
Proper Stewardship Requires Proper Science

"The Secretary shall undertake a program of inventory and monitoring of National Park System resources to establish baseline information and to provide information on the long-term trends in the condition of National Park System resources."
– NPOMA (1998)



"A sophisticated knowledge of resources and their condition is essential. The Service must gain this knowledge through extensive collaboration with other agencies and academia, and its findings must be communicated to the public. For it is the broader public that will decide the fate of these resources." – *NPS Advisory Board Report (2001)*

32 Inventory and Monitoring Networks



Map of the 32 I&M ecoregional networks that include more than 270 park units with significant natural resources. The 32 networks share core funding and a professional staff to inventory park natural resources and conduct long-term monitoring of park ecosystems.

The 32 I&M Networks provide…

Inventory and monitoring data from “boots on the ground” data collection, analysis, and routine reporting

Compilation, analysis, translation, and delivery of data collected by other programs and agencies (e.g., climate data, air quality)

Expertise (scientists, modelers, quantitative ecologists, data managers, science communication specialists)

Connection/communication between land managers and scientists through each network’s Board of Directors and Technical Advisory Committee

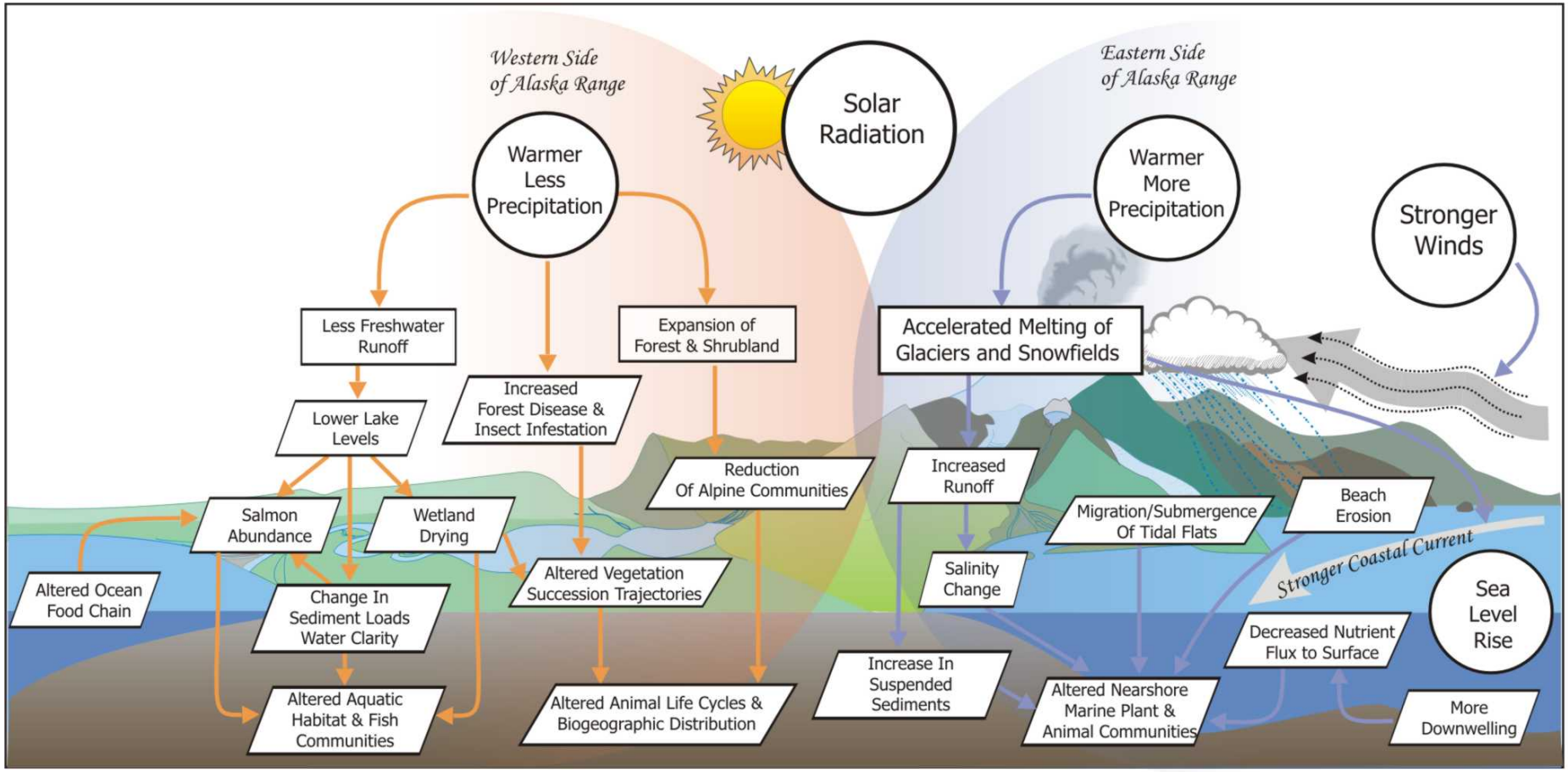
Enhanced Monitoring of Climate-Sensitive Indicators

All 32 I&M networks are contributing to Landscape Conservation Cooperatives and the DOI climate change response.

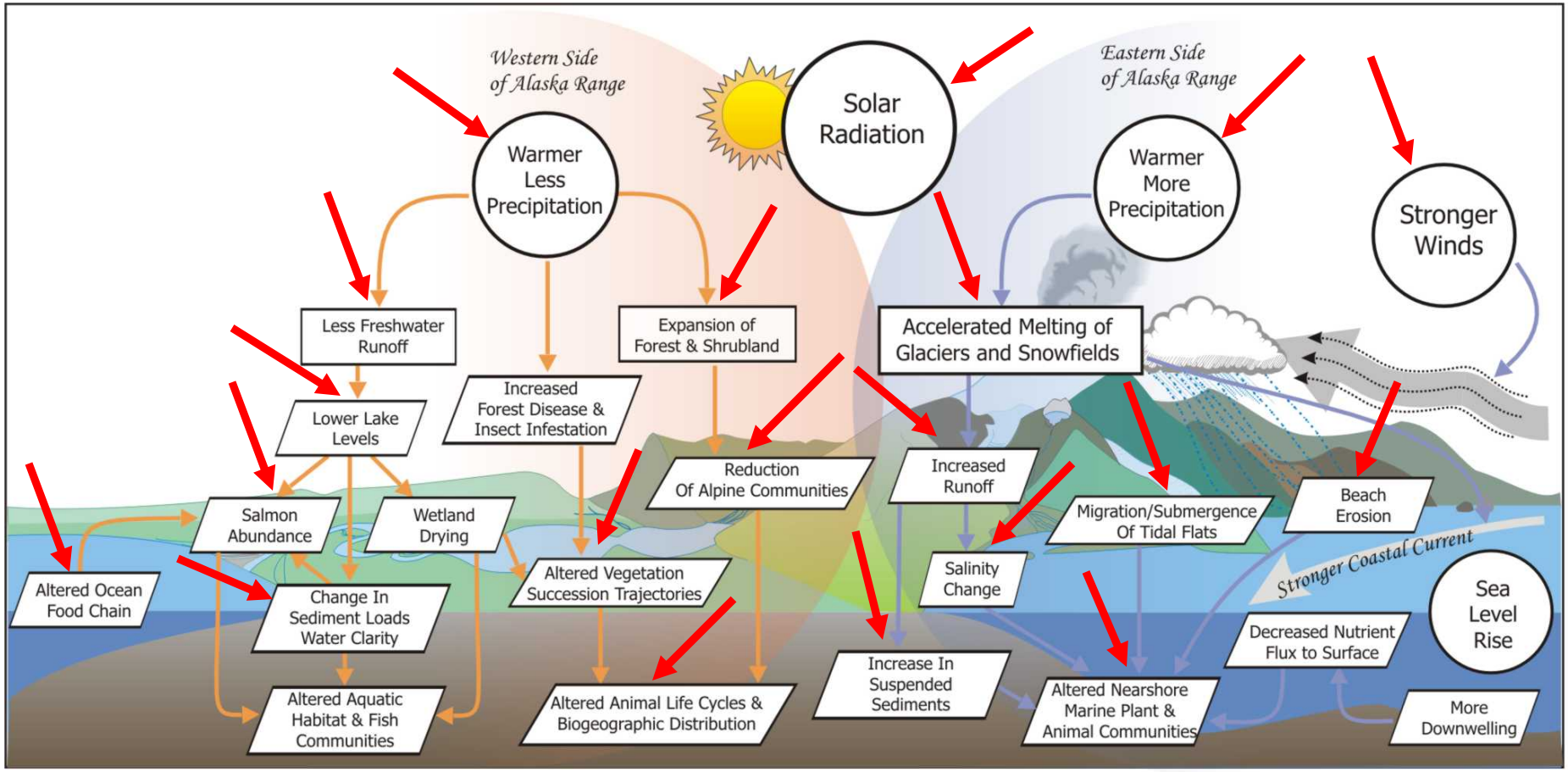
NPS will request funding for all 32 networks to enhance monitoring, beginning with 6 groups of parks that fall within four "high vulnerability to climate change effects" thematic areas:

- **High Latitude** parks in Alaska
- **Pacific Island** parks
- **High-elevation** parks in the Rocky Mountain, Greater Yellowstone, and Upper Columbia Basin Networks
- **Northern Atlantic Coastal** parks from Maine to Virginia
- **Southern Atlantic Coastal** parks in the Southeast Coast Network
- **Southwest Desert** parks in the Sonoran, Mojave, and Chihuahuan Desert networks

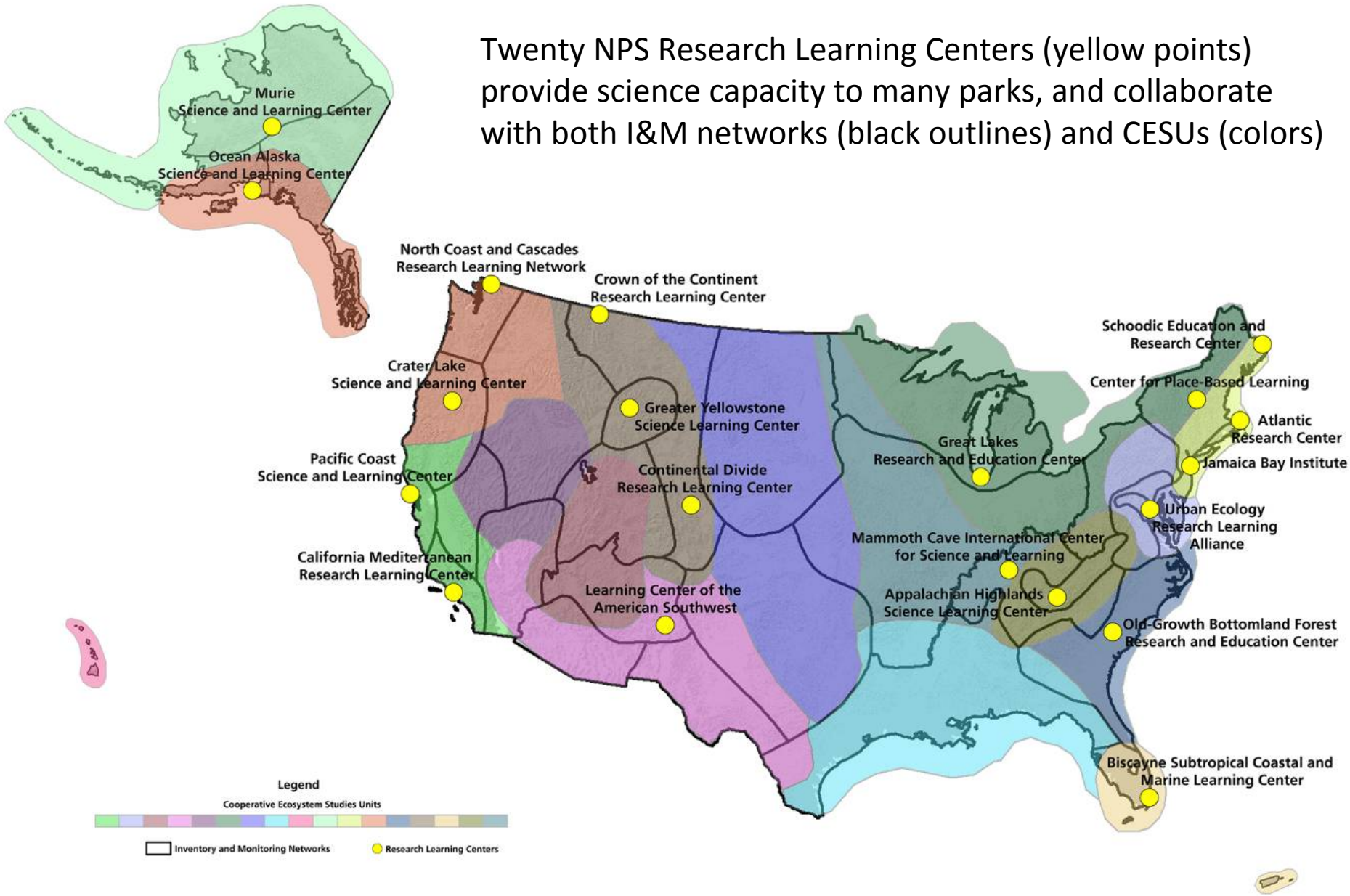
“Climate Warming” Conceptual Model for the Southwest Alaska Network (SWAN)



Vital Signs Monitoring for climate-sensitive indicators in SWAN



Twenty NPS Research Learning Centers (yellow points) provide science capacity to many parks, and collaborate with both I&M networks (black outlines) and CESUs (colors)



Research Learning Centers

NPS established **Twenty Research Learning Centers** (RLCs) in 2001 to foster new and cutting edge knowledge about park resources through research, education, and public engagement. Centers are typically park-based, but generally provide research and educational services to a network of parks.

The Mission the RLCs is to increase the effectiveness of both research and communication of science results in the national parks by:

- Facilitating use of parks for scientific inquiry
- Supporting science-informed decision making
- Communicating relevance of and providing access to research knowledge
- Promoting resource stewardship through partnerships

RLCs play an important role within the NPS Climate Response Program

1. Increase NPS capabilities to plan and adapt to climate change at local, regional, and landscape scales, and implement appropriate responses
2. Provide leadership and expertise in **climate change communication**, education, and outreach

Data Integration: Climate Change Impacts

DOI data collection, management and integration can provide a strong foundation for understanding of climate change impacts– from local to global scales.

Goals:

- Make DOI data collection comprehensive, integrated, standardized, and accessible.
- Integrate capabilities to provide essential data to other federal and state agencies, universities, Tribes, NGO's and private landowners.
- Integrate this effort in to broader Data.gov effort.

SPONSORING AGENCIES

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RESEARCH
CLIMATE SCIENCE
LAND PLANNING STRATEGIES
ADAPTATION
APPLICATIONS

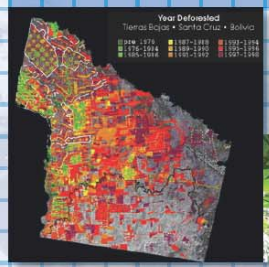
Call for Proposals is available at http://nspires.nasaprs.com/

Climate and Biological Response: Research and Applications
(ROSES-2010 A.30)

Earth Science for Society: An Interagency Effort to Apply Earth Science Data to Improve Scientific Knowledge and Enhance Natural Resource Management

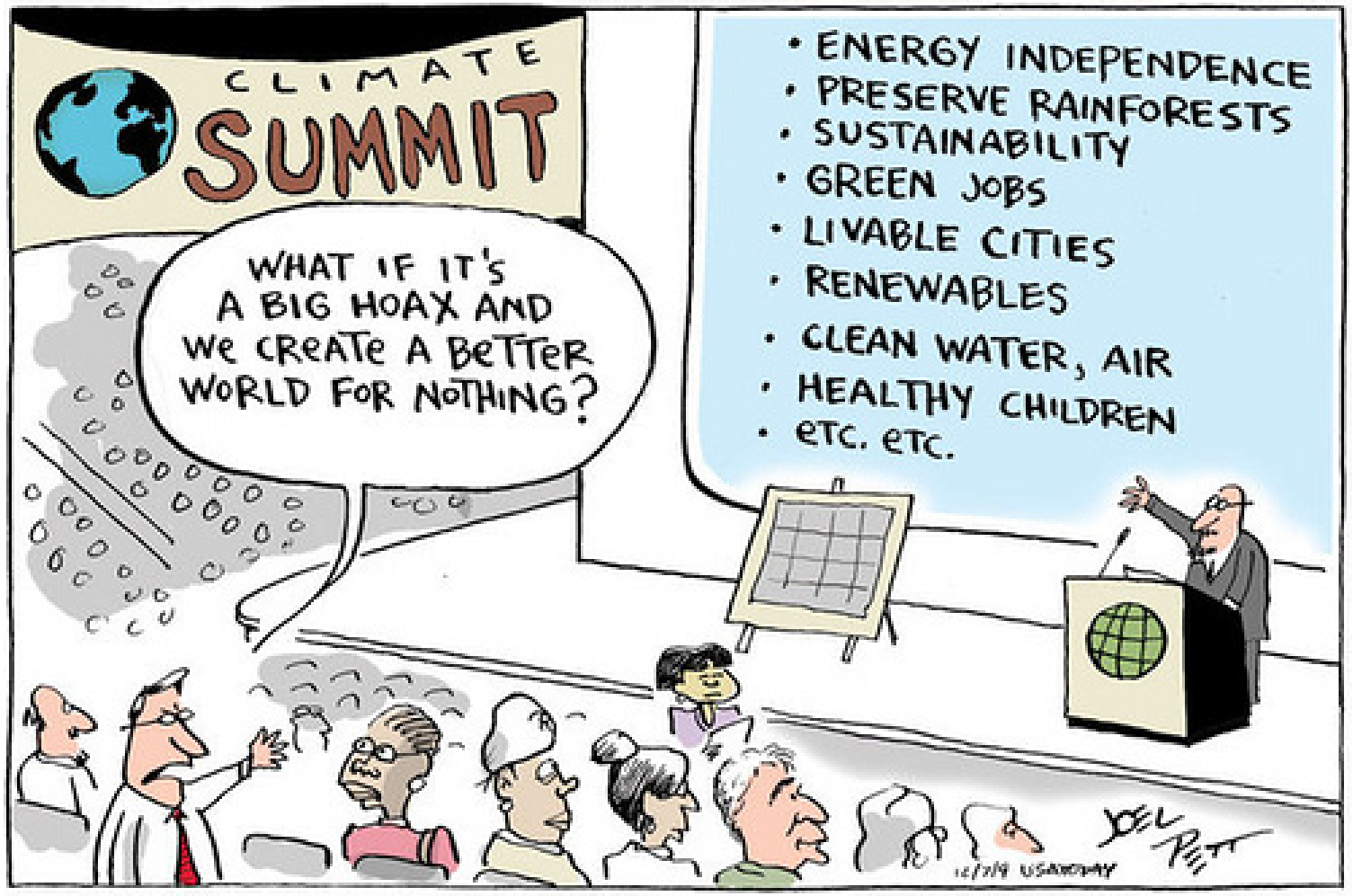
U.S. INTERAGENCY CALL FOR PROPOSALS

CLIMATE AND BIOLOGICAL RESPONSE: RESEARCH AND APPLICATIONS



Earth Science for Society: An Interagency Effort to Apply Earth Science Data to Improve Scientific Knowledge and Enhance Natural Resource Management

Axel Hieberg Island in Canada's Arctic, is shown in an April 8, 2008 image. Note the blocks of ice that have calved off the foot of the glacier (middle-bottom), as well as the melt feature and stream (bottom-right). This photograph was obtained from on board the NASA P-3B aircraft during ARCTAS, a NASA-funded contribution to POLARCAT, a core activity of the 2007/2008 International Polar Year.
Credit: Cam McNaughton, University of Hawaii


CLIMATE
SUMMIT
WHAT IF IT'S A BIG HOAX AND WE CREATE A BETTER WORLD FOR NOTHING?
• ENERGY INDEPENDENCE
• PRESERVE RAINFORESTS
• SUSTAINABILITY
• GREEN JOBS
• LIVABLE CITIES
• RENEWABLES
• CLEAN WATER, AIR
• HEALTHY CHILDREN
• ETC. ETC.
JOEL PETT
12/7/19 USATODAY

Vital Signs Monitoring

*"**Vital signs** are a subset of physical, chemical, and biological elements and processes of park ecosystems that are selected to represent the overall health or condition of park resources, known or hypothesized effects of stressors, or elements that have important human values."*

The primary goals of the I&M Program are to:

- Inventory the natural resources under National Park Service stewardship to determine their nature and status.
- Monitor park ecosystems to better understand their dynamic nature and condition and to provide reference points for comparisons with other, altered environments.
- Establish natural resource inventory and monitoring as a standard practice throughout the National Park system that transcends traditional program, activity, and funding boundaries.
- Integrate natural resource inventory and monitoring information into National Park Service planning, management, and decision making.
- Share National Park Service accomplishments and information with other natural resource organizations and form partnerships for attaining common goals and objectives.