



***SERDP & ESTCP Partners in Environmental Technology
Technical Symposium & Workshop***

***Challenges to Military Readiness
Posed by Climate Change***

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Report Documentation Page

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KEYNOTE ADDRESS
CLIMATE CHANGE ADAPTATION – CHALLENGES AND OPPORTUNITIES

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Humans have been adapting to the vagaries of weather for millennia, sometimes successfully, sometimes not. Today, the myriad of important federal laws that regulate the impacts of human activity in our natural environment not only complicates plans for climate change adaptation, but also act as a strong justification for proactive planning, engagement and action. The challenge of adaptation will result in increased opportunities for more effective interaction with other federal agencies, communities and scientific organizations to better meet needs of the community at large and the readiness goals of the constantly evolving military mission.



Climate Change - Scope

What I'm not going to talk about

- Mankind's role in climate change
- National security consequences – CNA study
- US role in stabilizing global climate change
- Global economic and societal implications

What I going to talk about

- Adapting to what is happening to us today



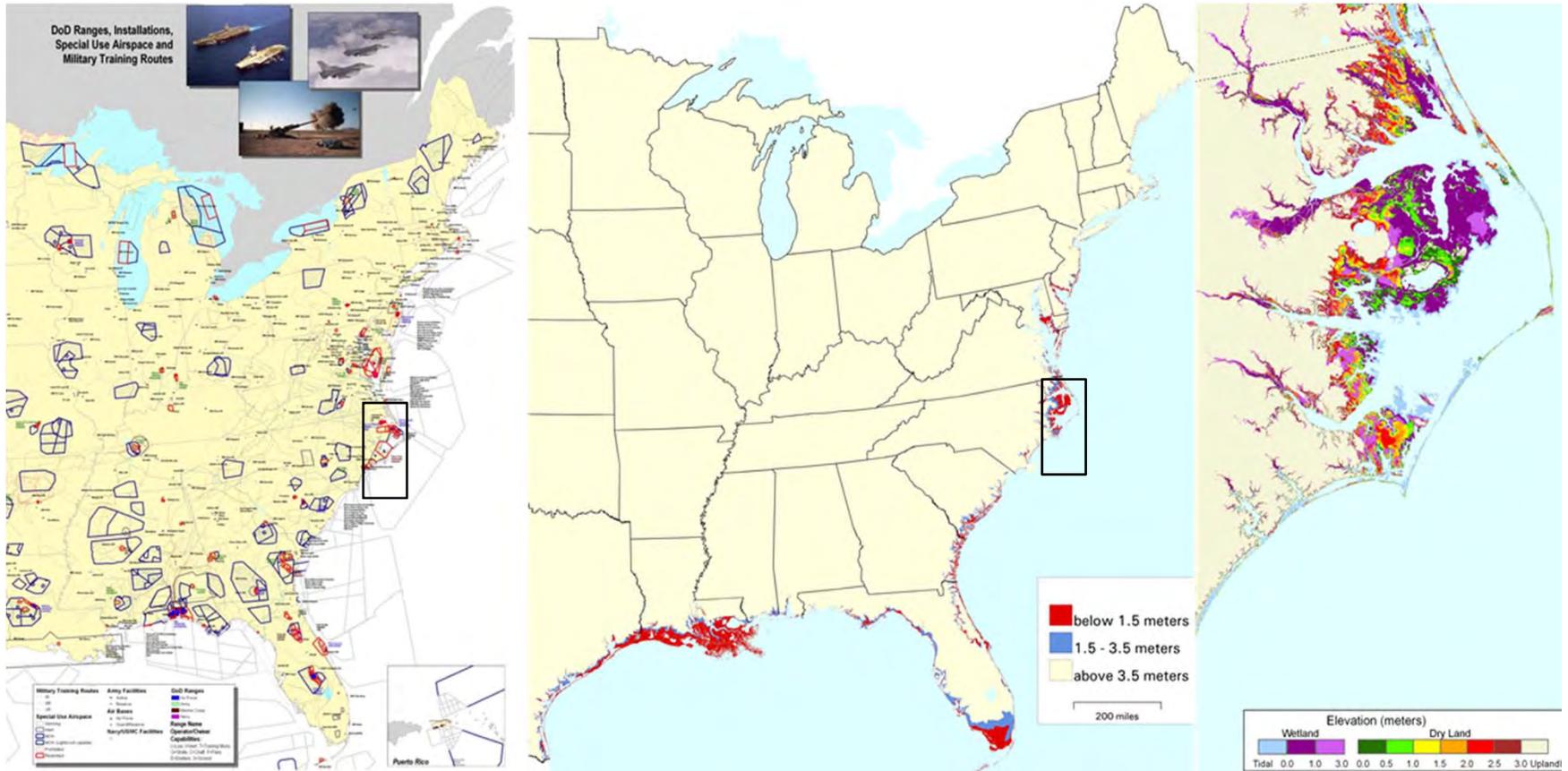
Sustainability Implications

Are they really all negative?

- Climate sensitive training/testing/basing opportunities, activities and functions will be **reduced** in some areas and **increased** in others due to the changes in climate related attributes of installations and ranges.
- Species specific habitat attributes will change, **reducing compatibility** in some areas and **increasing compatibility** in others, causing migration/adaptation of people and species, endangered and otherwise
- In a reduced economic environment, more urgency to partner early with federal/state/local agencies and tribes to develop collaborative strategies to cope with alternative futures



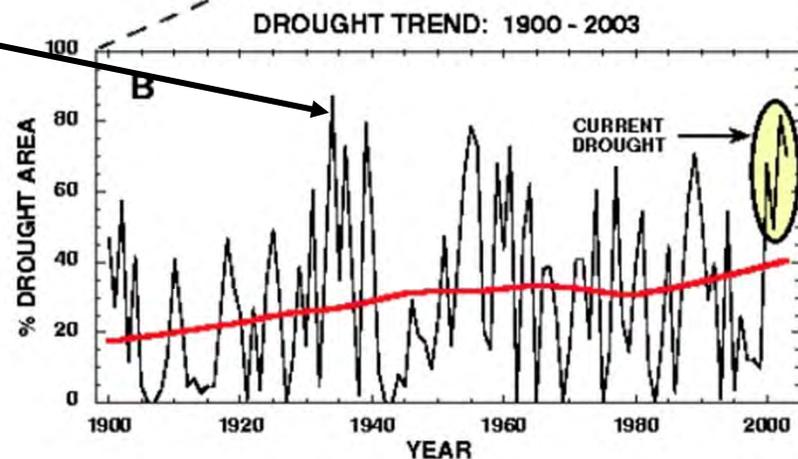
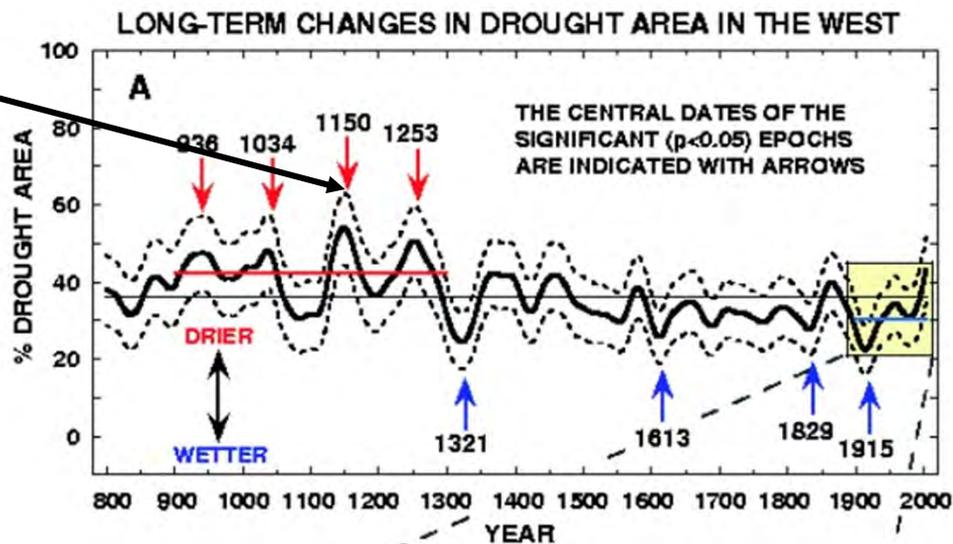
Sea Level Rise



JPL- 2011 projected sea level rise of 12.6 inches by 2050



Drought and Temperature Change

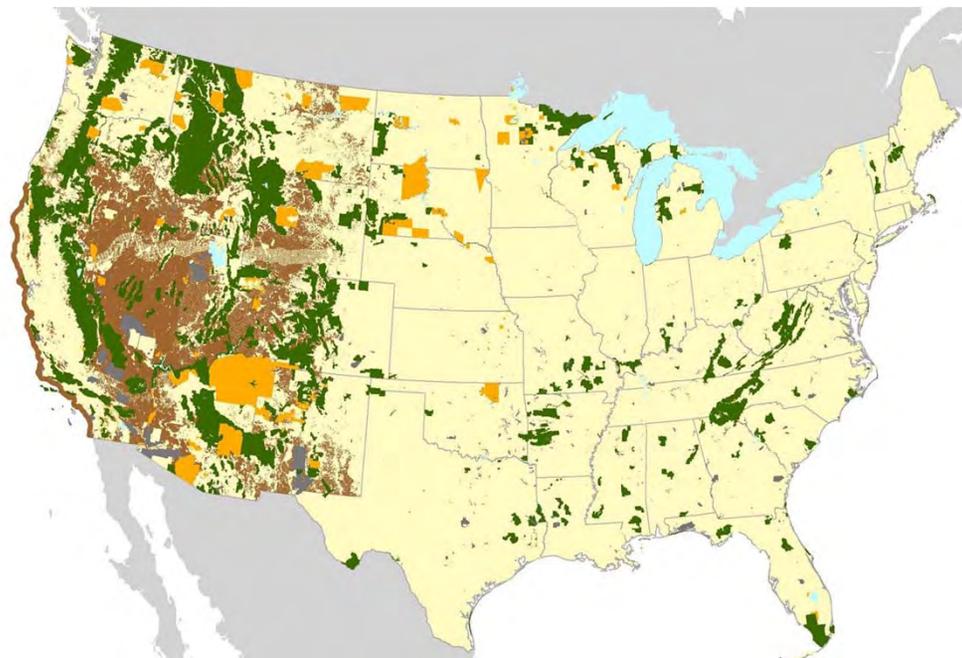
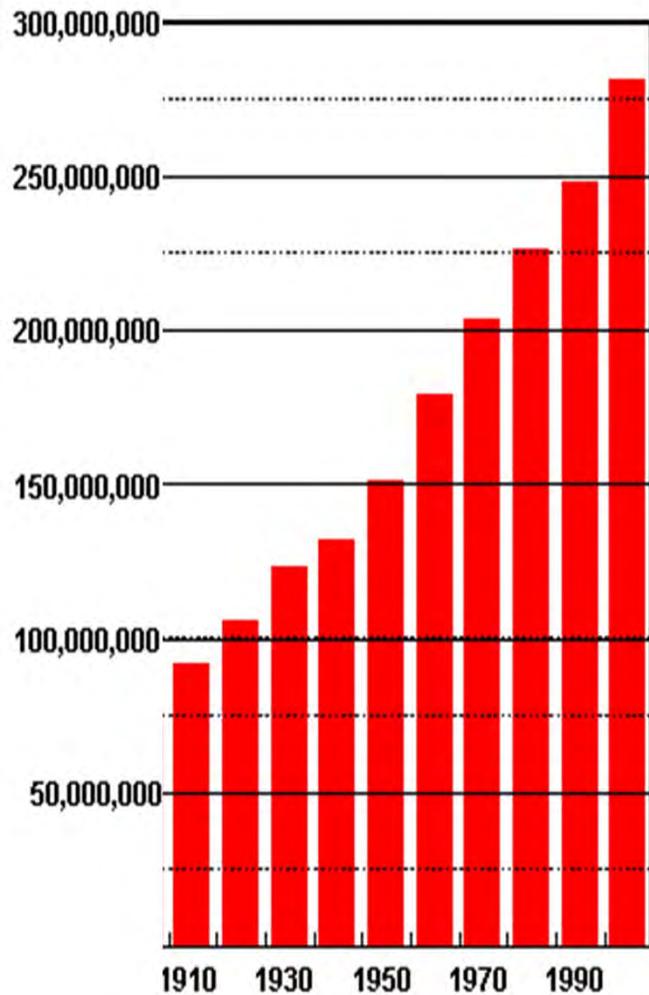


Source: Richard Seager, Celine Herweijer and Ed Cook
Lamont-Doherty Earth Observatory of Columbia University



What has Changed?

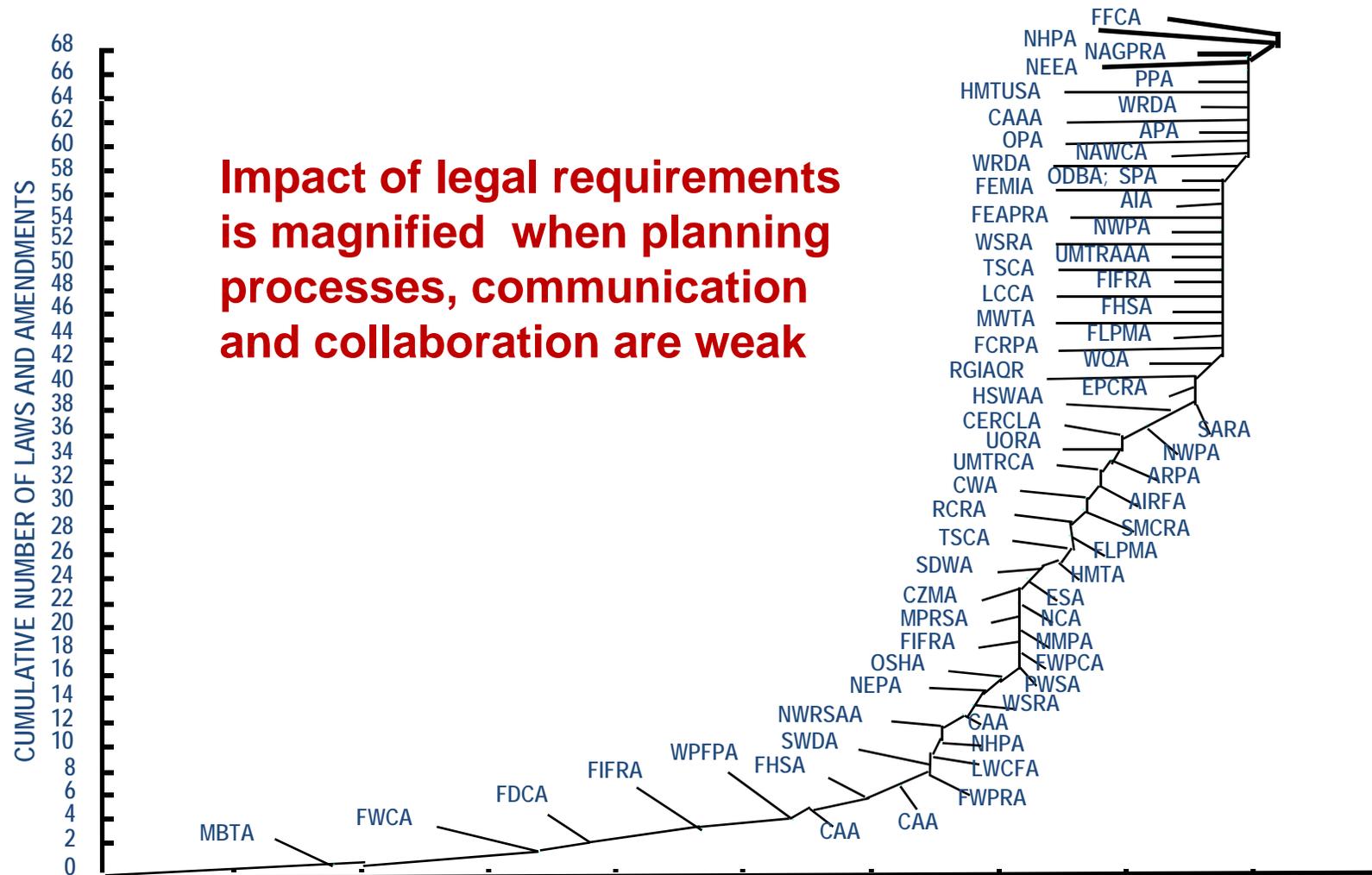
20th century shift to urban areas/Federalized lands





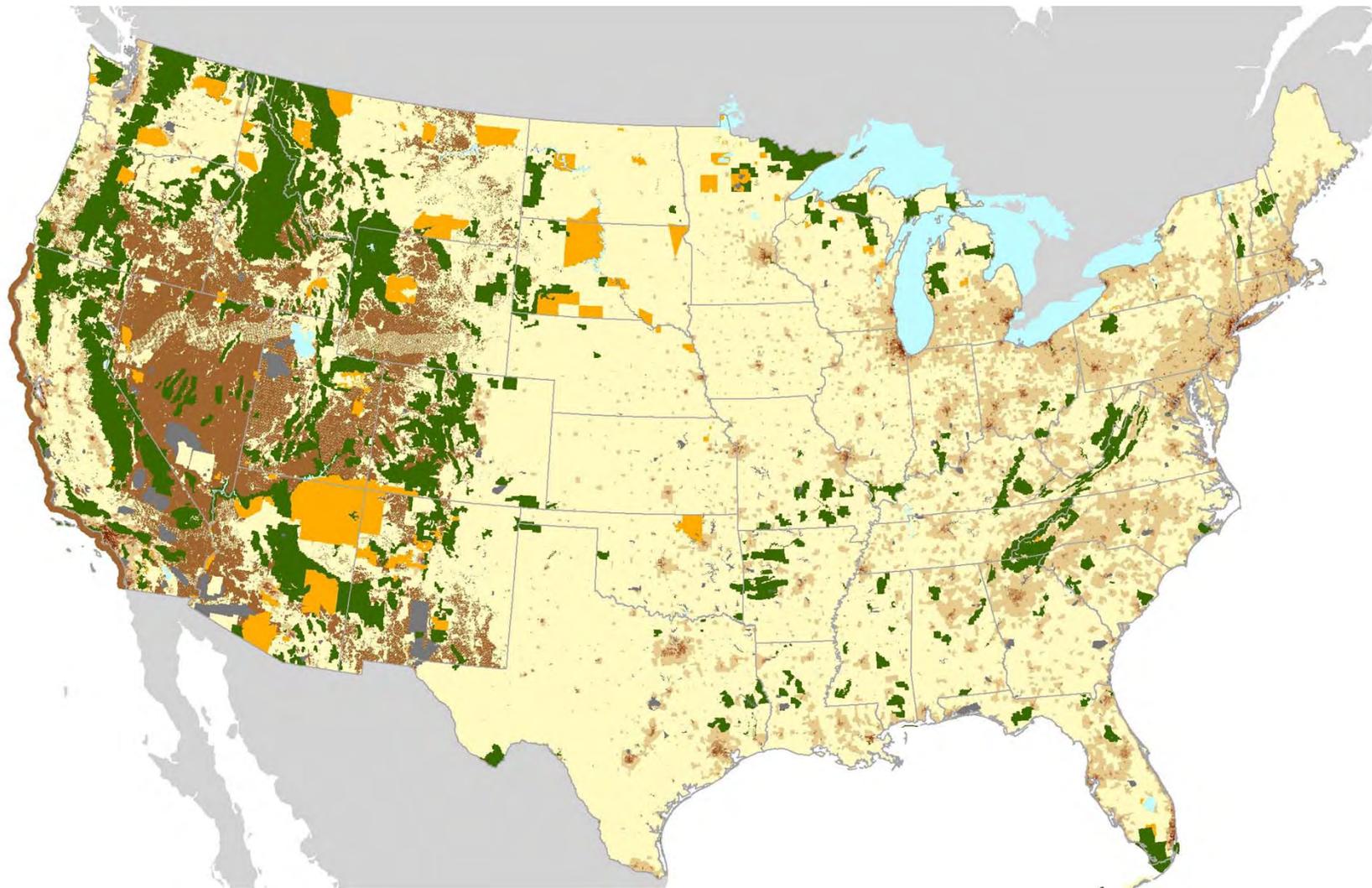
What has Changed?

20th century Environmental Legislation



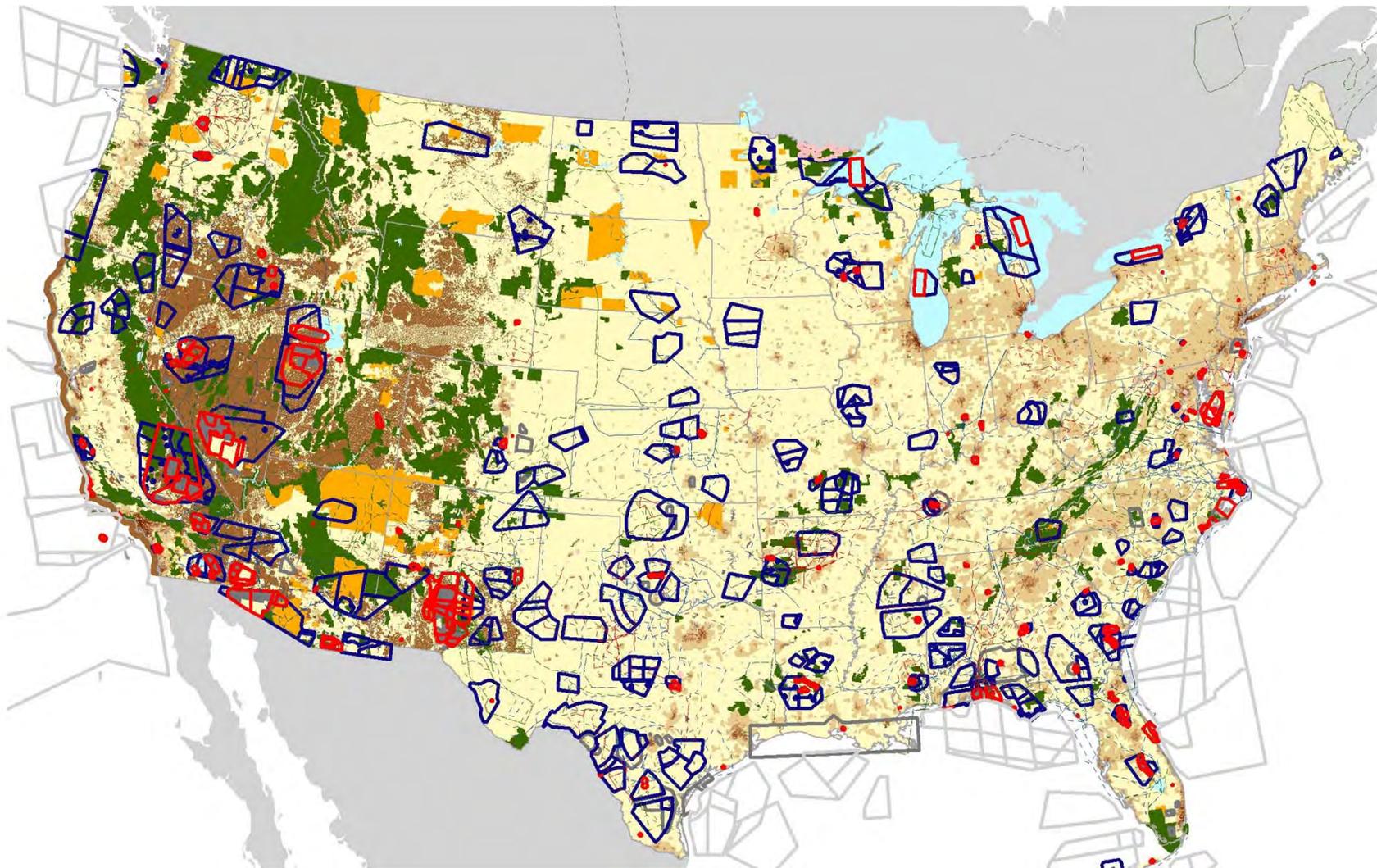


Population Density and Federal Lands





Federal Lands, Population Density, DoD Bases, Airspace and Ranges

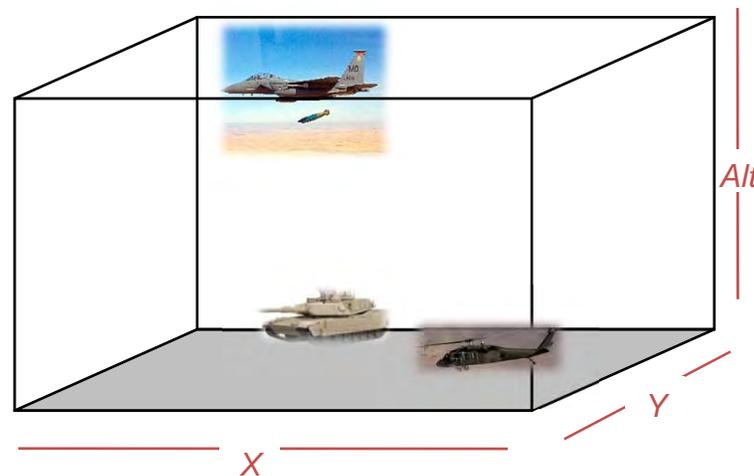




Changing Operational Relevance

Challenge for Military Planners

- **Volume** – How much land and/or airspace will a particular mission need
- **Proximity** – How close will the op area need to be to an installation
- **Time** – How much time will missions need in the area (linked to force structure/tempo)
- **Attributes** – Characteristics of the area needed for a mission, i.e. threats, impact zones, instrumentation, spectrum, etc.)

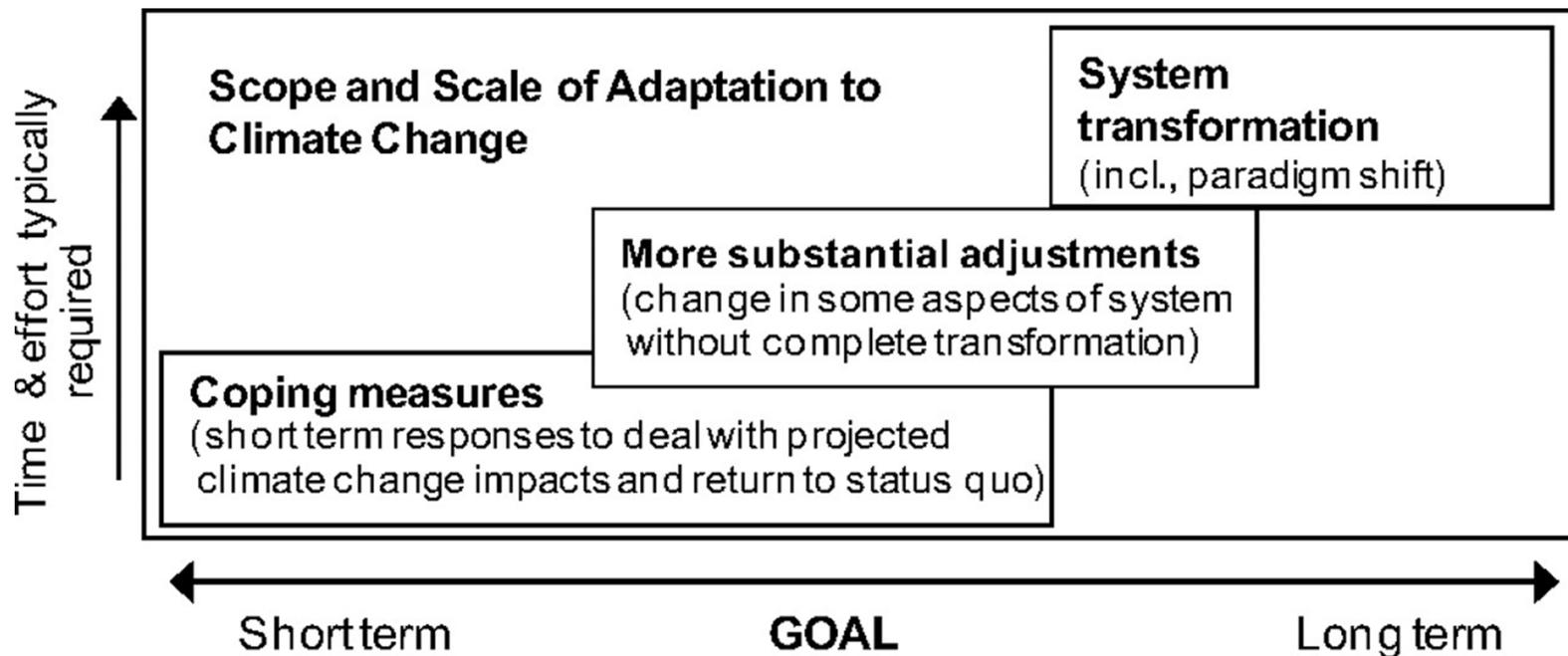


Those who expect moments of change to be comfortable and free of conflict have not learned their history...Joan Wallach Scott



Planning Considerations

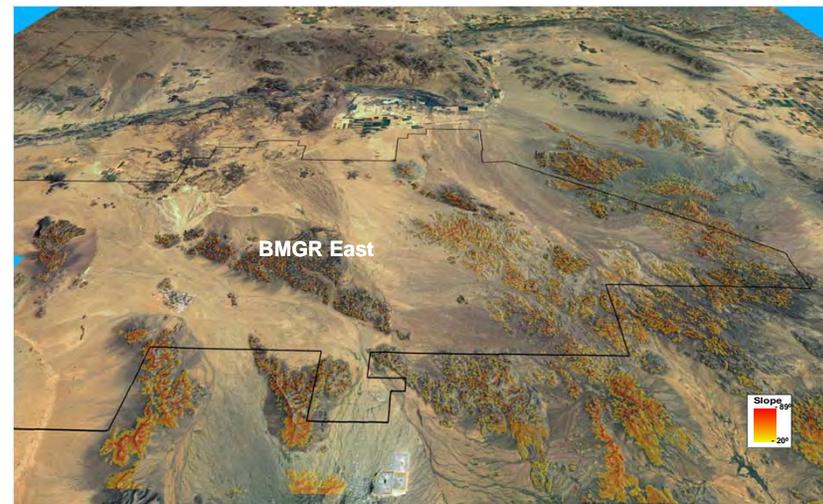
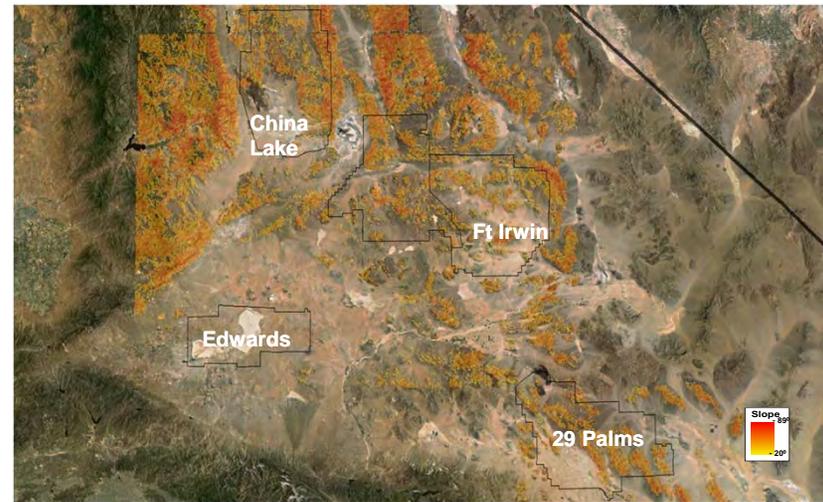
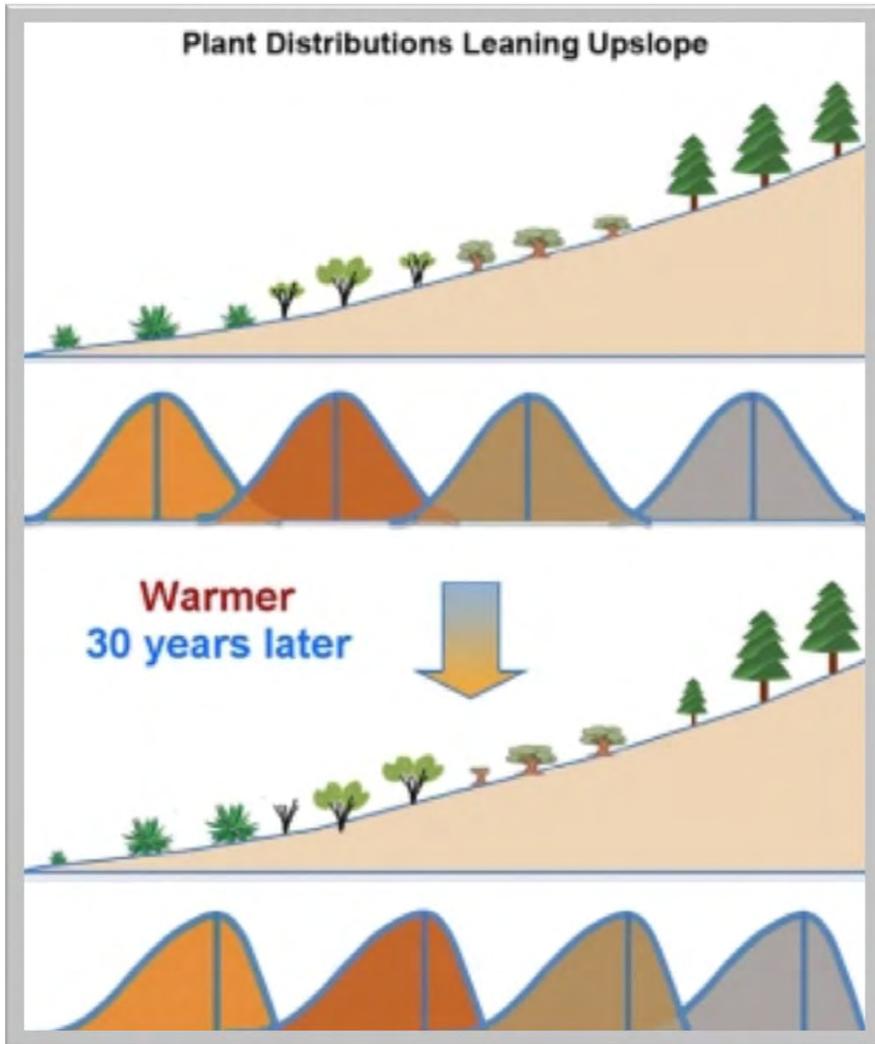
Economic Efficiency, Flexibility, Urgency, Affordability, Institutional Feasibility, Consistency, Unique or Critical Natural Resources



Source: Susanne C. Moser and Julia A. Ekstrom
Proceedings of the National Academy of Sciences December 13, 2010



DoD lands w/slope greater than 20°



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