

An Integrated Geospatial Information Management Approach for Disaster Management:

Developing the NOAA Community Resilience Index



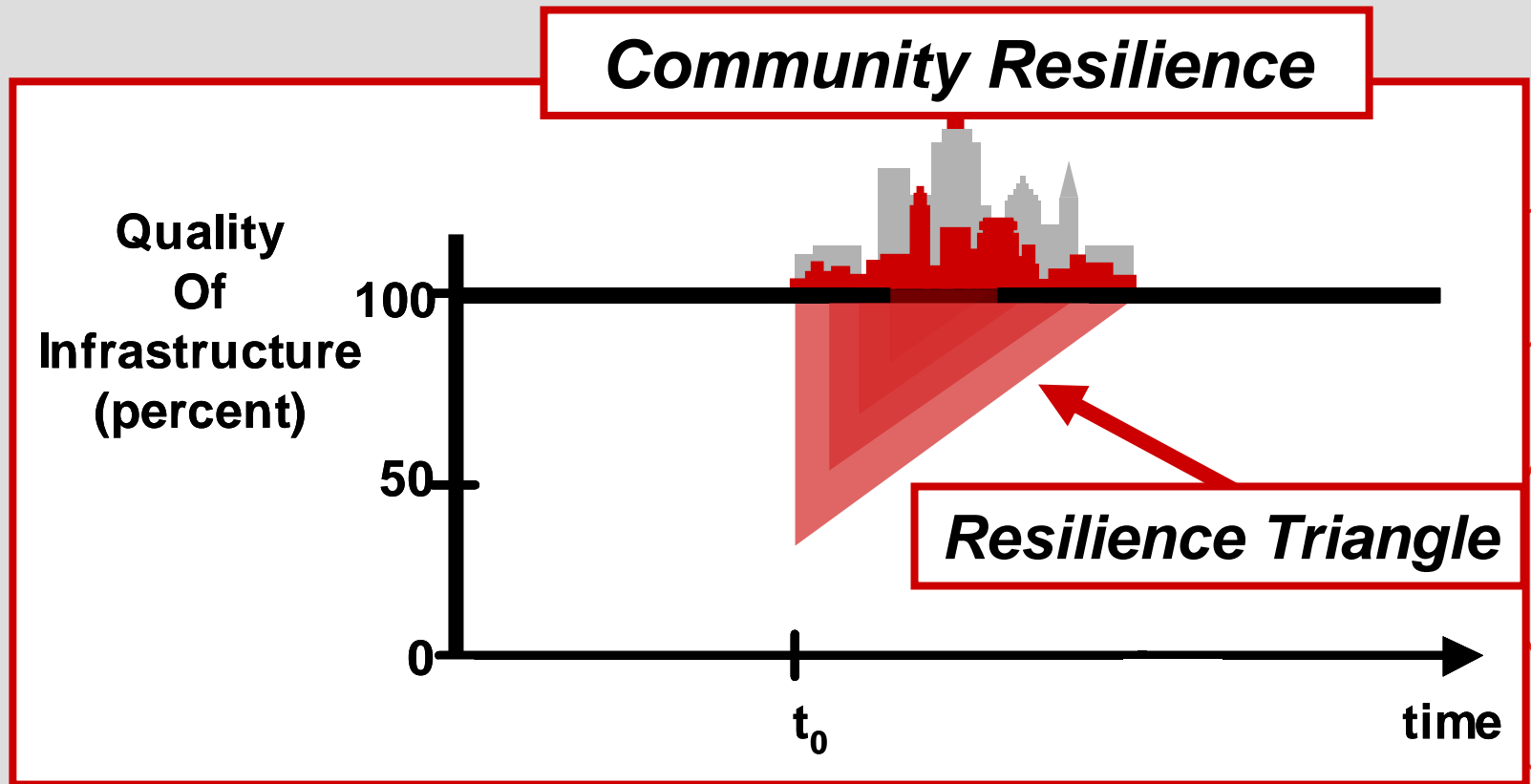
MCEER - NOAA CRI Project Team

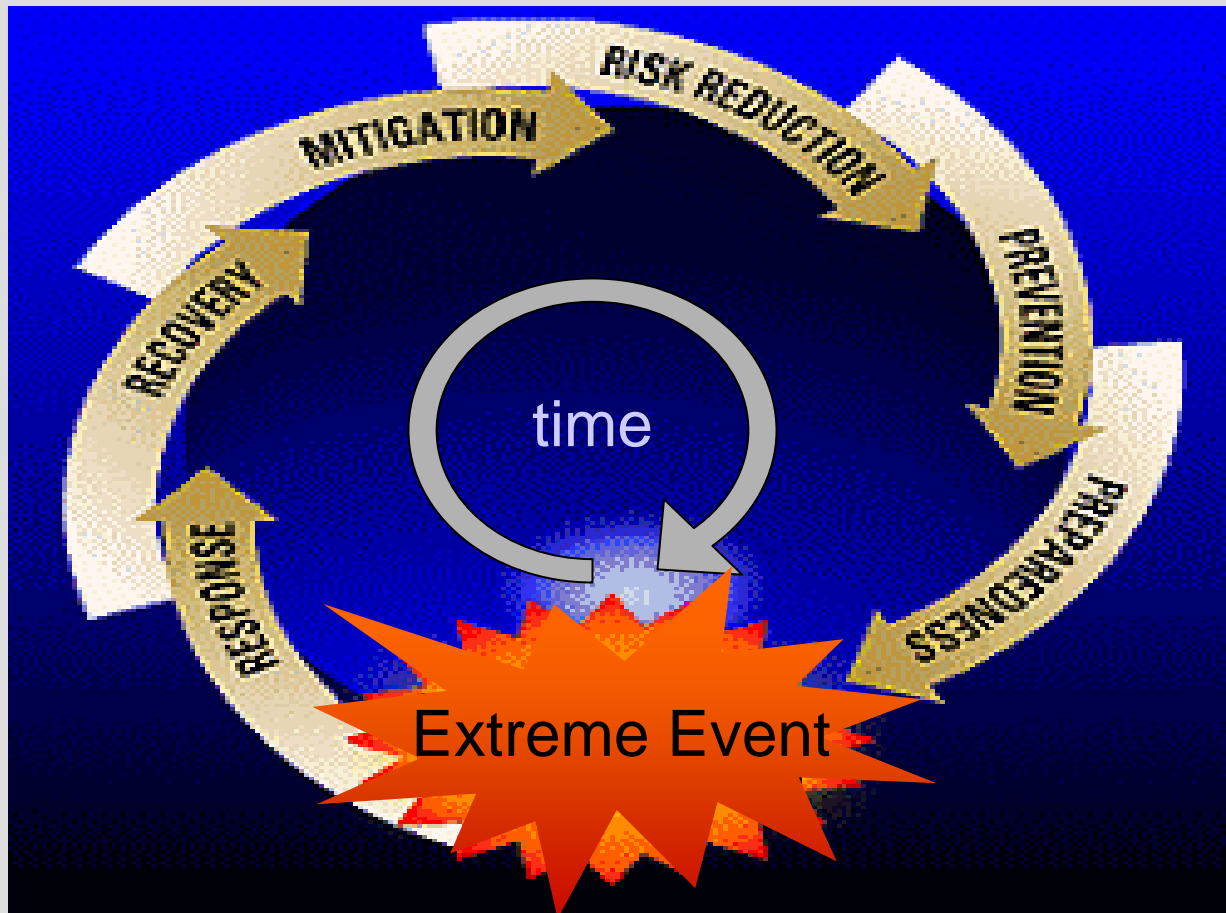
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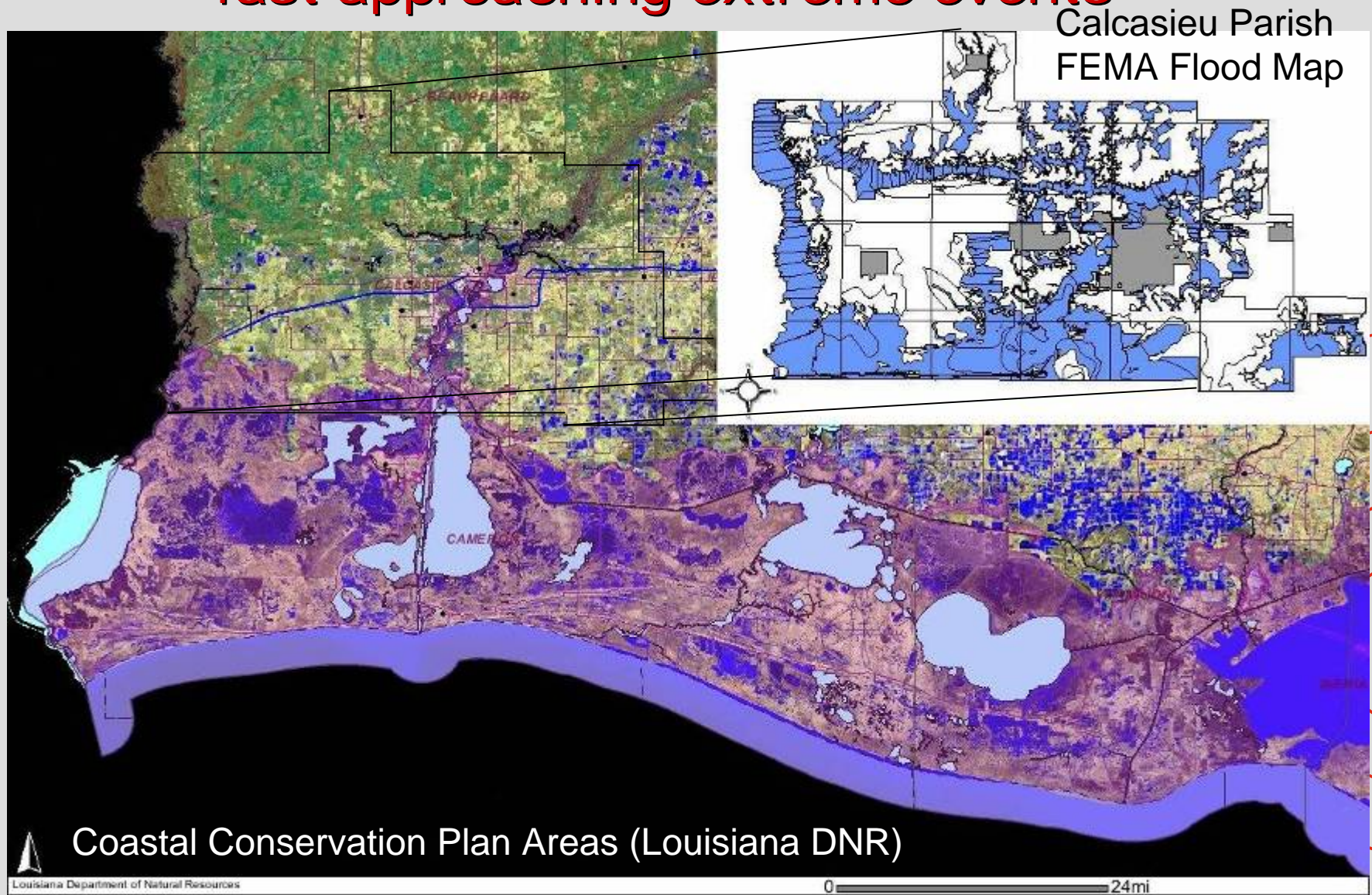


MCEER's main goal is to enhance the resilience of communities against multiple hazards.

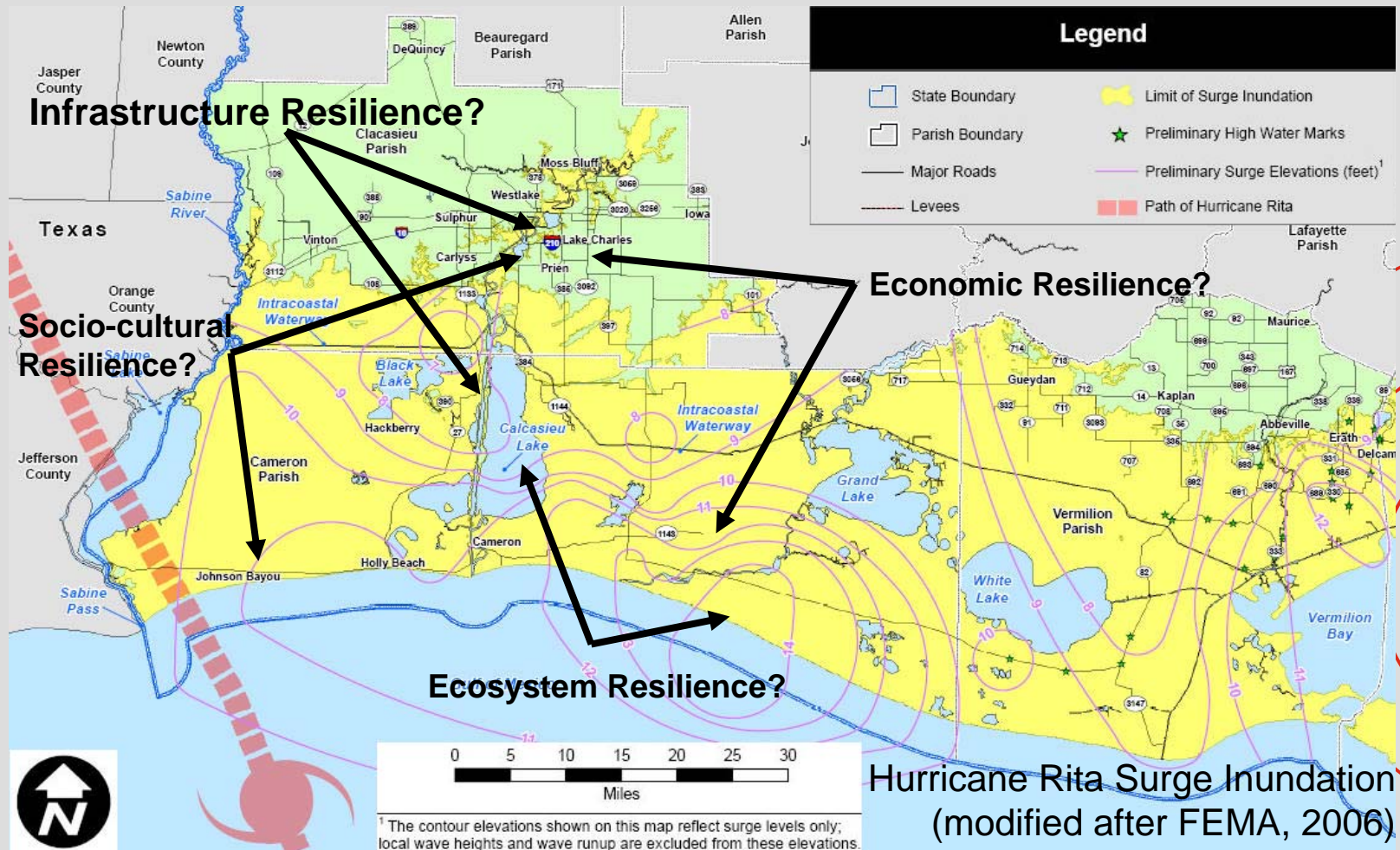




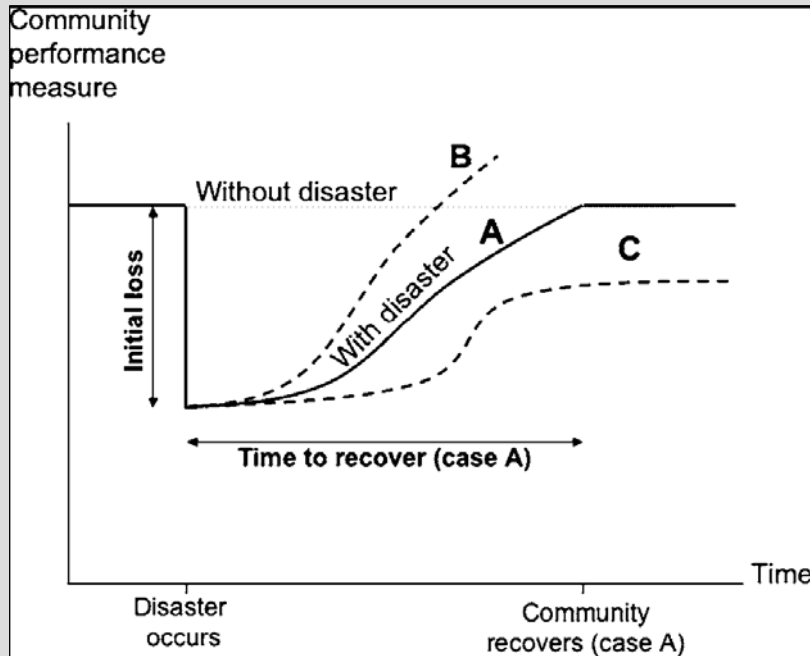
Need for integrated planning for slow- and fast-approaching extreme events



Continuously analyze resilience against multiple slow- and fast-approaching extreme events



Schematic of disaster recovery (Miles and Chang, 2006)

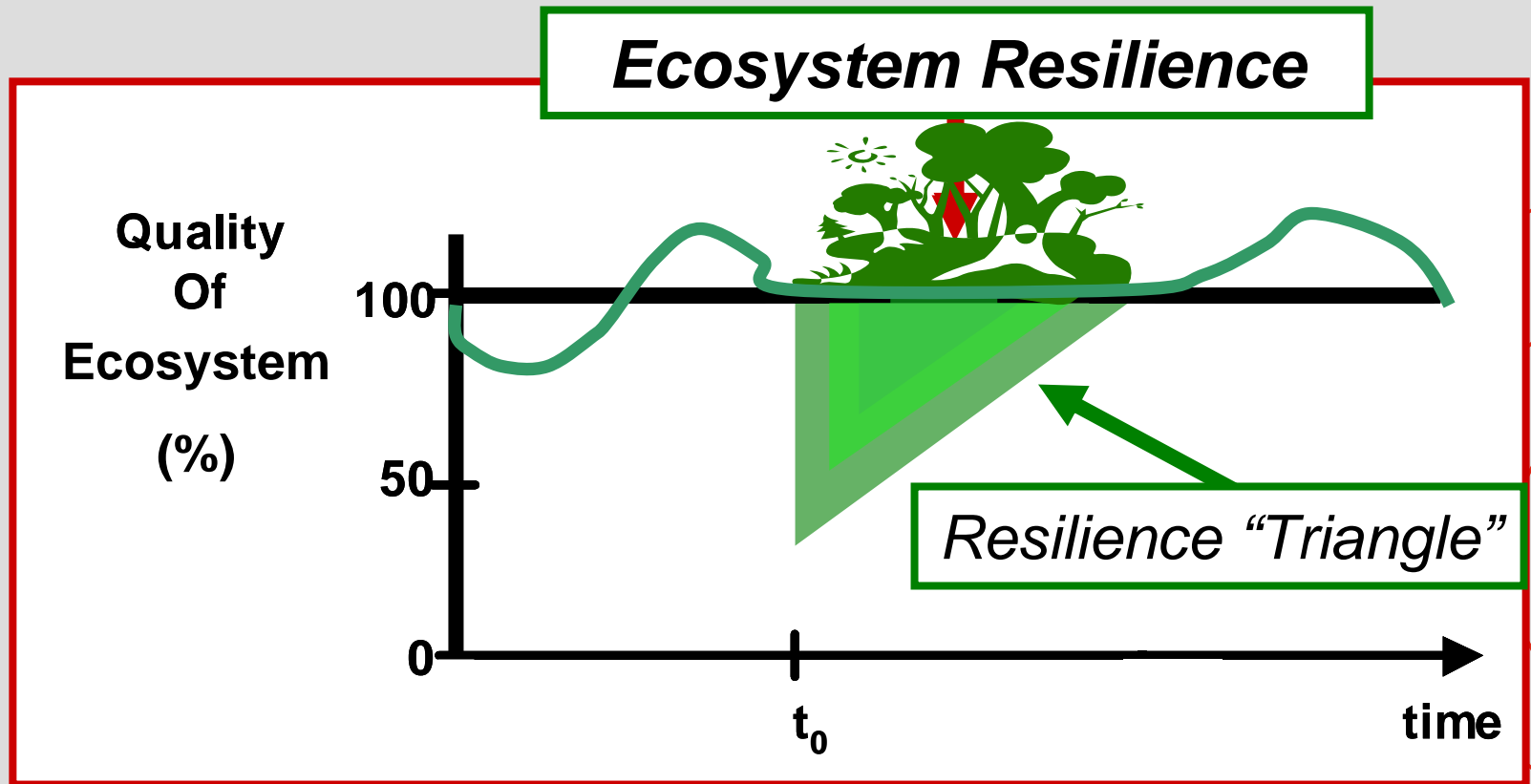


- Resilience of a community may change over time, affecting its ability to recover from disasters.
- For example, case A in the figure may reflect a community's current state of resilience, but with pro-active mitigation programs, the community may move to case B. But if vulnerability increases (e.g., urban growth continues in high-hazard areas), the community may shift to case C.
- Recovery potential therefore depends upon the vulnerability of a community's physical, economic, socio-cultural, and ecological capital.

Adaptation of Recovery Model for NOAA CRI Project

- Incorporation of ecological and socio-cultural capital, and their effects on community resilience
- Refinement of model links to economic and infrastructure capital
- Application to new case study community and coastal hazards
- Iterative refinement in consultation with communities regarding needs for resilience indicators

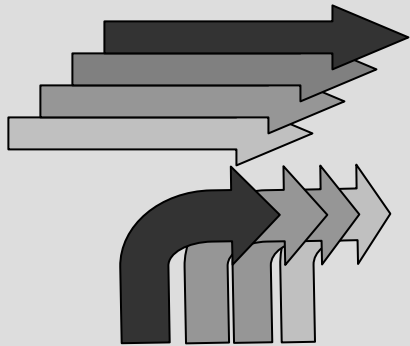
Understand and account for the dynamic variable resilience of ecosystems against multiple hazards





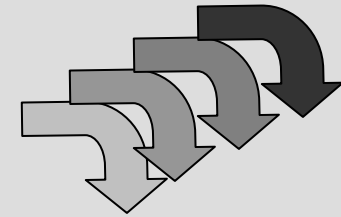
Continuous Data Input from all research initiatives

(incl. remote sensing, GIS, census, surveys)

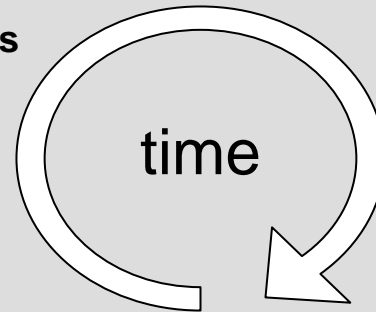
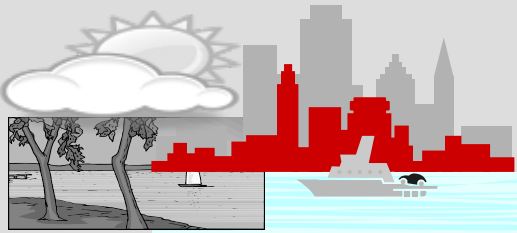


Ecosystem Resilience
Infrastructure Resilience
Socio-cultural Resilience
Economic Resilience

Continuous Monitoring
over time and space ...

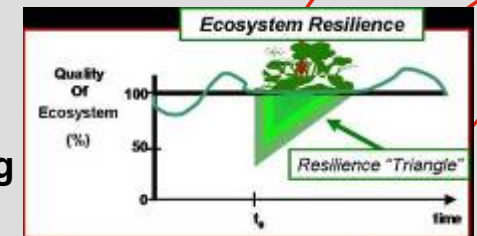


Continuous Management Decisions to Increase Resilience
over time and space ...

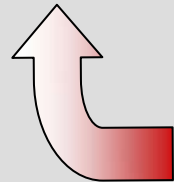


Continuous Resilience Modeling
over time and space ...

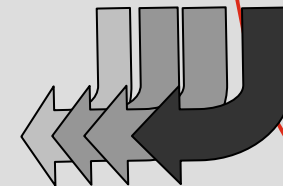
Continuous Quantification of Resiliencies
over time and space ...



Continuous Feedback
over time and space ...



**NOAA CSC
Coastal Community
Resilience Index**



Developing the NOAA Community Resilience Index (CRI)

- **conceptual framework** for monitoring, measuring, modeling, and managing community resilience
- toolkit that integrates **quantitative and qualitative methods** using spatial and non-spatial data to identify scientifically defensible indicators for community resilience
- **implementation plan** that enables local and regional stakeholders to continuously monitor and enhance their resilience against episodic and slow-onset extreme events in watersheds