Rethinking Community Resiliency: New Geospatial Dimensions

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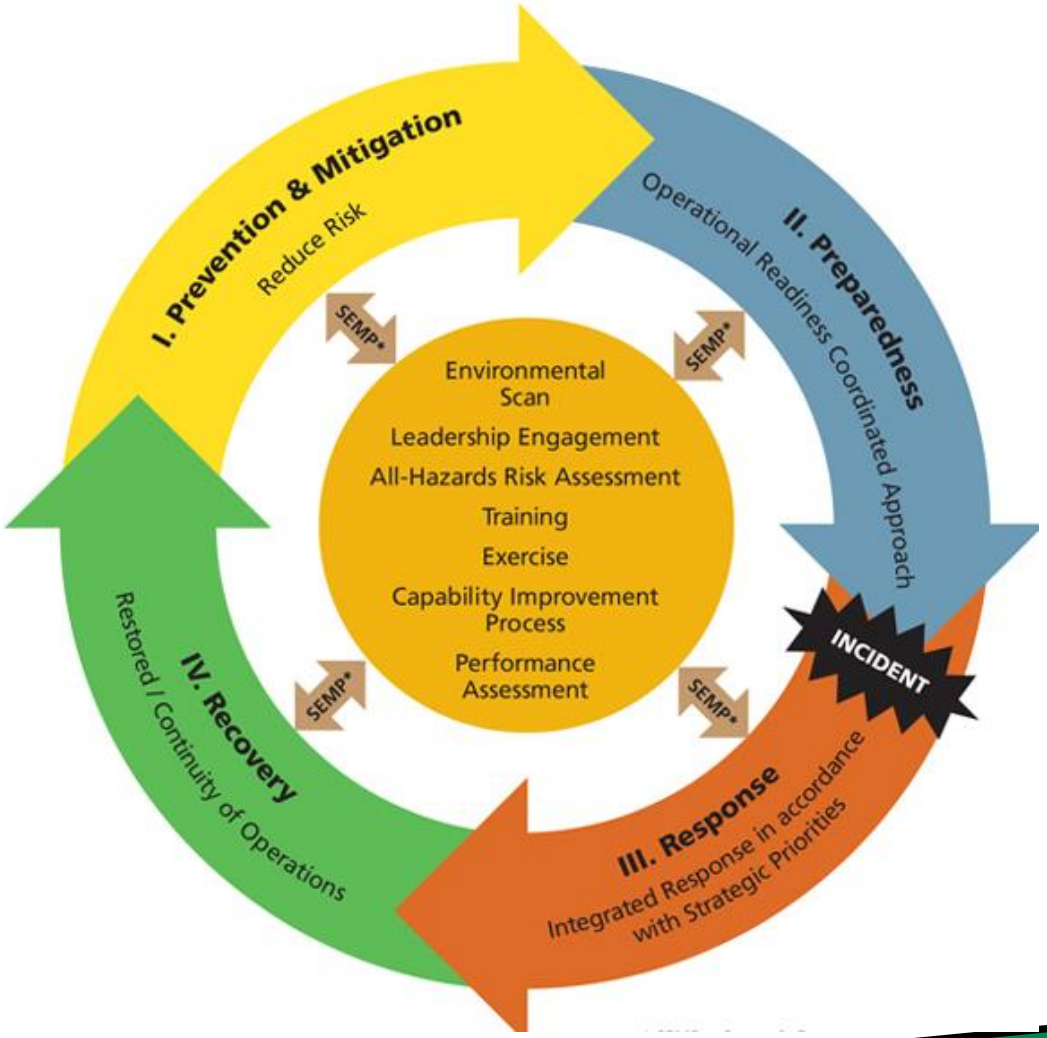
Overview

- The Disaster Management Lifecycle
- Understanding the Evolution of Community Resilience
- Global Security Perspectives On Resilience
- Geospatial Dimensions
- Resilience: The New Lifestyle
- Questions

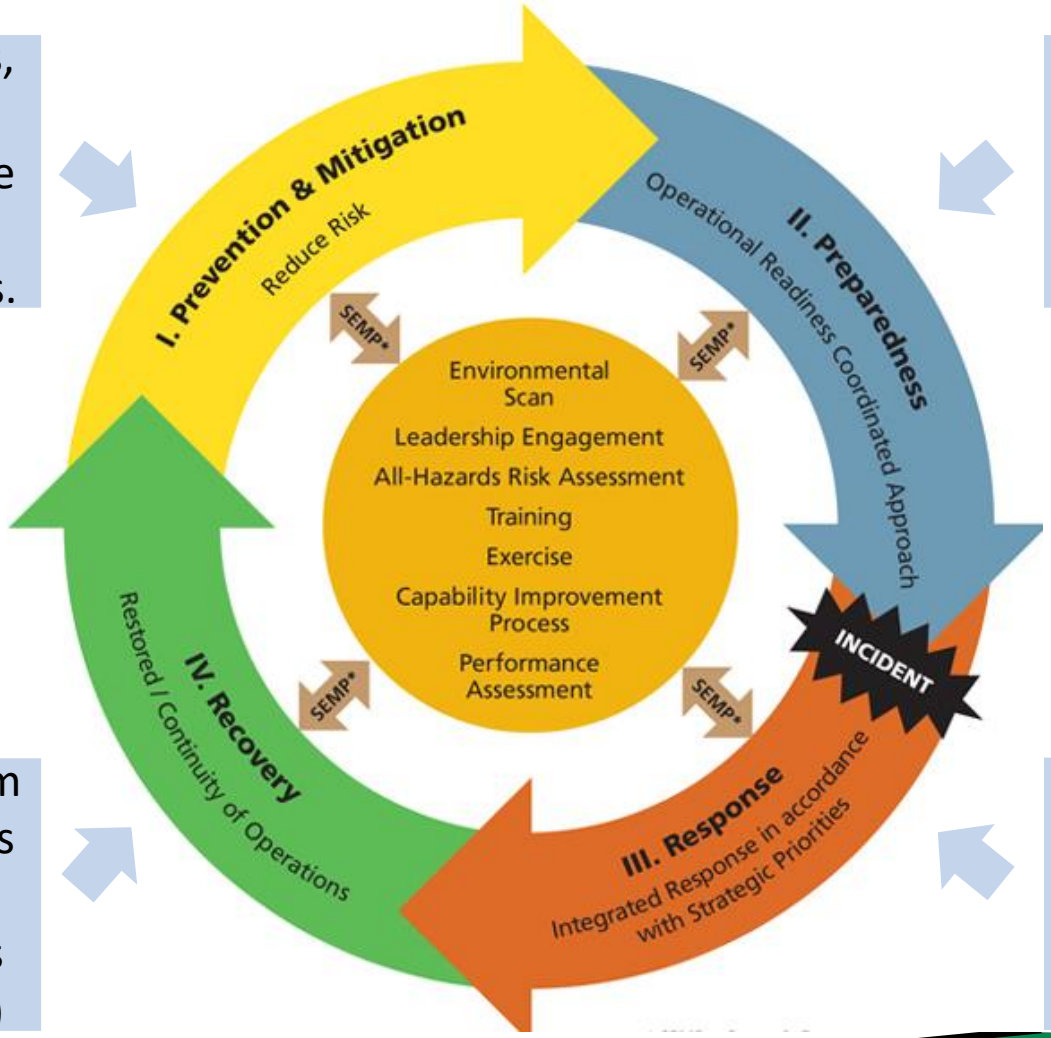
Disaster Management Continuum



Disaster Management Continuum

Identify flood zones, earthquake faults, and similar. Evaluate risks & prioritize actions. Simulations.

Make evacuation maps, harden structures, educate people



Evaluate longer-term food &shelter needs (terrain analysis), establish aid points (transport analysis)

Damage maps, maps for first responders, maps to raise money, maps for politicians

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Resilience

Sendai Framework defines **resilience** as “The ability of a system, community or society exposed to hazards to resist, absorb, accommodate to and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions”.

US Dept. of Homeland Security

- How may geospatial technologies be used to improve resilience?
- Are there other fields in which geospatial technologies are used to improve resilience?
- Do we need to change how we think about resilience?

Resilience: Etymology

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www.nat-hazards-earth-syst-sci.net/13/2707/2013/
doi:10.5194/nhess-13-2707-2013

Natural Hazards and Earth System Sciences
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Resilience and disaster risk reduction: an etymological journey

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Abstract. This paper examines the development over historical time of the meaning and uses of the term resilience. The objective is to deepen our understanding of how the term came to be adopted in disaster risk reduction and resolve

1 Introduction

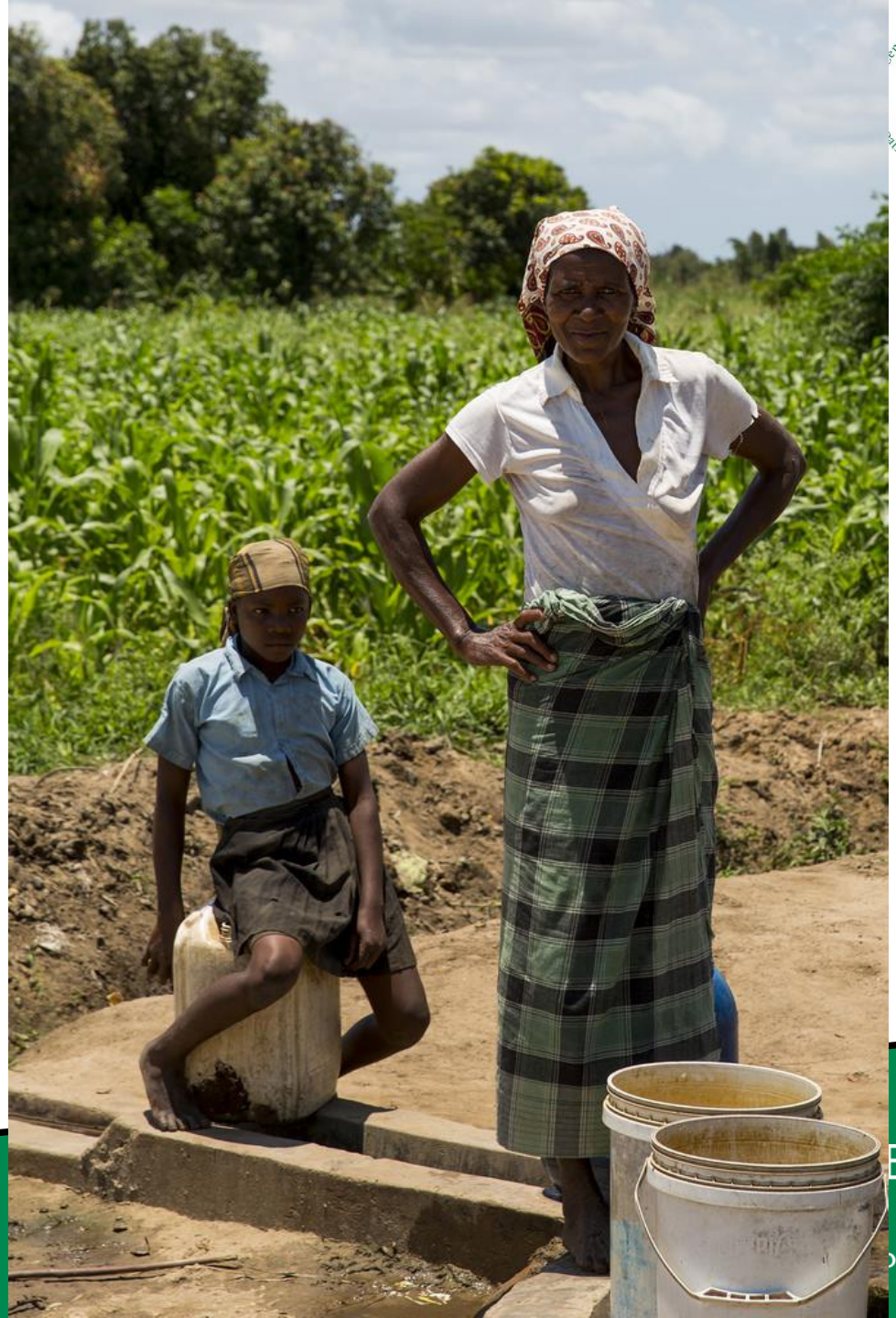
The purpose of this paper is to clarify some issues regarding the ways in which the word *resilience* is used in the field of

An Evolution of Resilience

- Early uses traced to the first and second century and used to describe resilience as **avoidance** and **to spring back** (like a toad)
- King Henry: **to restore to prior position**
- Modern warfare: **to resist**
- Psychology: **to suffer through the effects of**
- Ecology: **robustness**

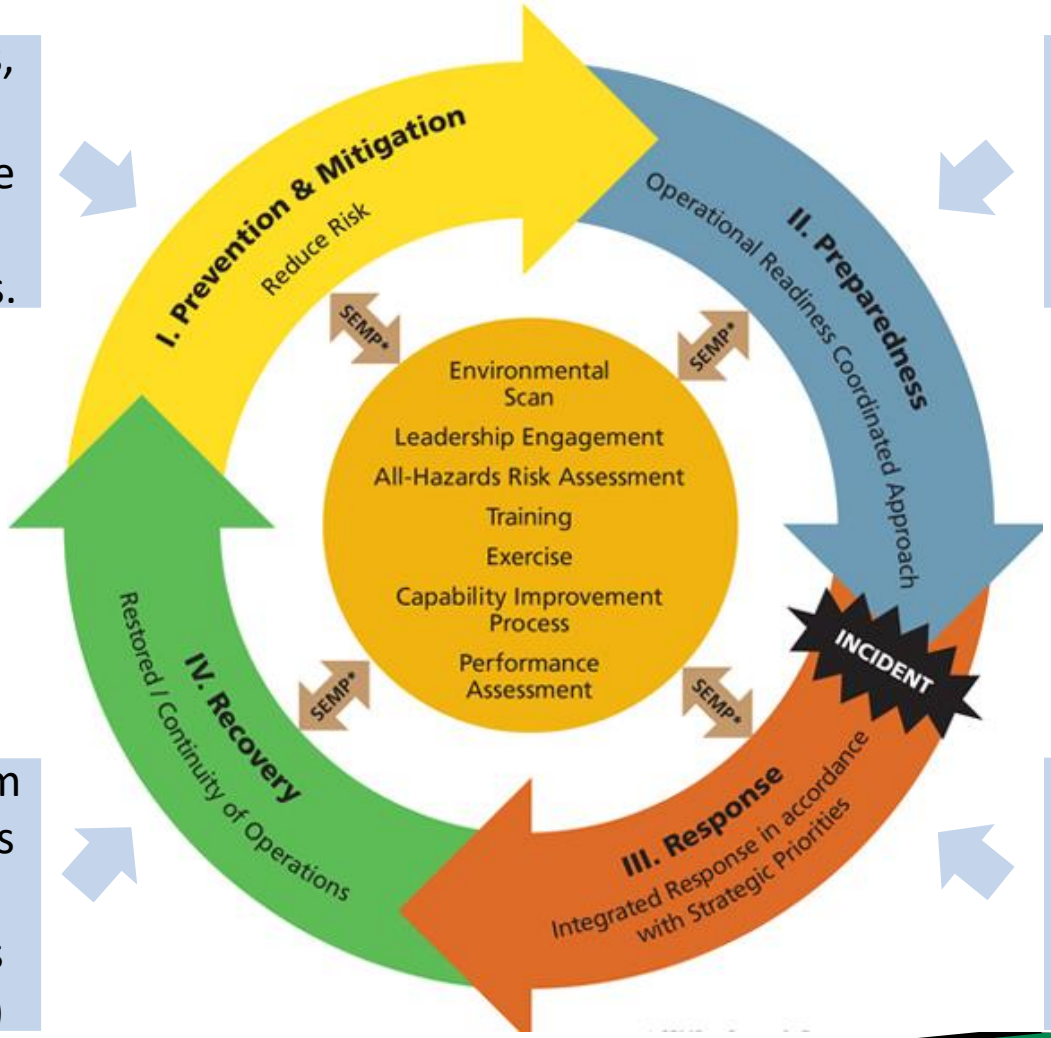
Inspiration

This is Resilience



Is This Still A Valid Model?

Identify flood zones, earthquake faults, and similar. Evaluate risks & prioritize actions. Simulations.



Make evacuation maps, harden structures, educate people

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Does This Definition Still Work?

- Sendai Framework defines **resilience** as “The ability of a system, community or society exposed to hazards to resist, absorb, accommodate to and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions”.
- This is static and neglects the ongoing role of adaptation and advancement

Characteristics of Resiliency

- Geographic in nature
  - Risk of disaster is location based
  - Risk tolerance varies culturally and thus geographically
  - Failure of disaster resilience is location specific: the weakest link
- Is a social endeavor
  - Modification of individual behaviors and values to direct resource investment
  - Social endeavor (weakest link)
  - Facilitated and ongoing
  - Evolves and adapts
- Extends far beyond natural disasters

Current Approach

- Emphasis is placed upon treating disaster management as a specialty/discipline/government agency (and plans that link/coordinate among organizations in a limited means)
- Disproportionate investment in planning, risk reduction, response, and recovery because we treat them as static phases
- Tend to limit thinking to loss of life and infrastructure
- **Our application of the concepts of resilience and geospatial technologies is reactionary**

A Holistic Approach

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A Holistic Approach to Resiliency…

- …seeks knowledge to achieve a decision advantage.
- …occurs as a natural sequence of human question asking to technical information processing to human decision making.
- …is based upon how human action is constrained by the physical landscape and human perceptions of Earth.
- …seeks to anticipate patterns of life through time.
- …is prone to failure due to unrecognized bias.

Adapted from
Todd Bacastow, PSU

Implementation

- Integration and daily operational use of geospatial technologies across all elements of government and enterprise.
- Education which results in the practice of resilience as a **lifestyle** and not a once monthly fire drill or thought exercise
- Treated as an inward-facing national intelligence practice focused on combating all things disaster related

GeoINT???