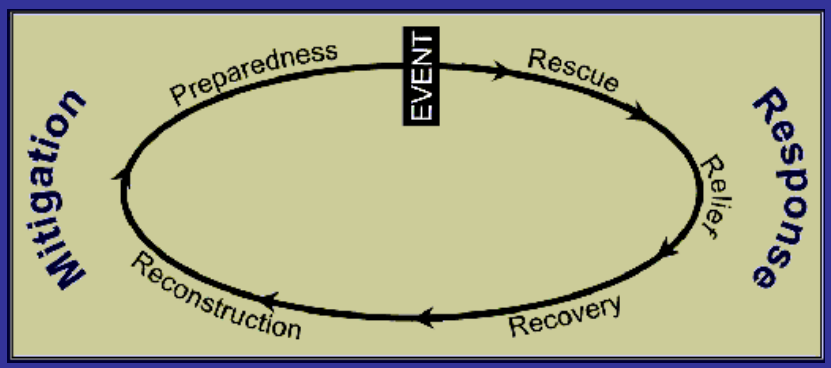
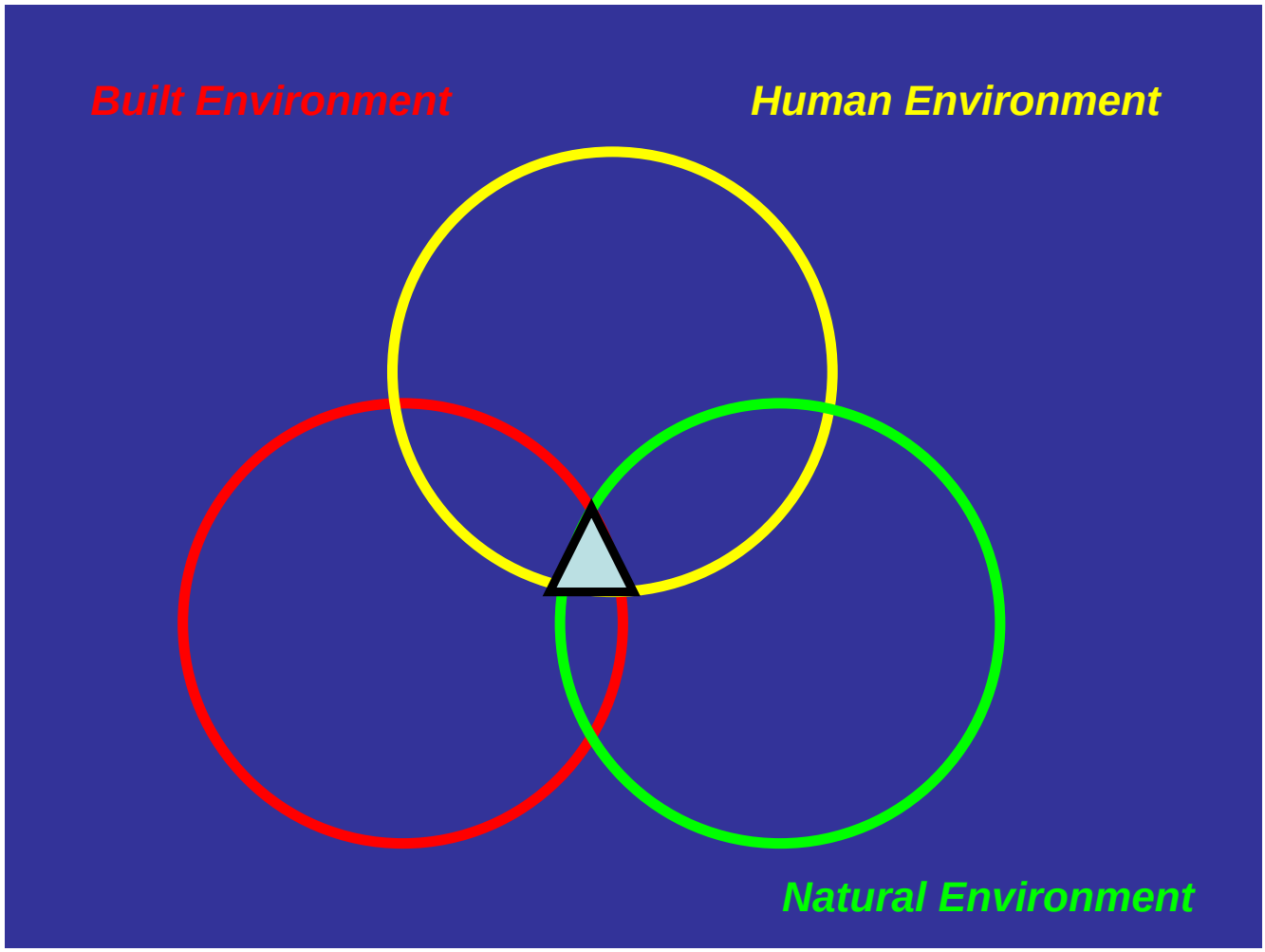
GEOGRAPHY, DISASTER RECOVERY AND REMOTE SENSING



Arleen A. Hill and Lisa D. Keys-Mathews
Department of Earth Sciences
The University of Memphis

Disaster Management Cycle

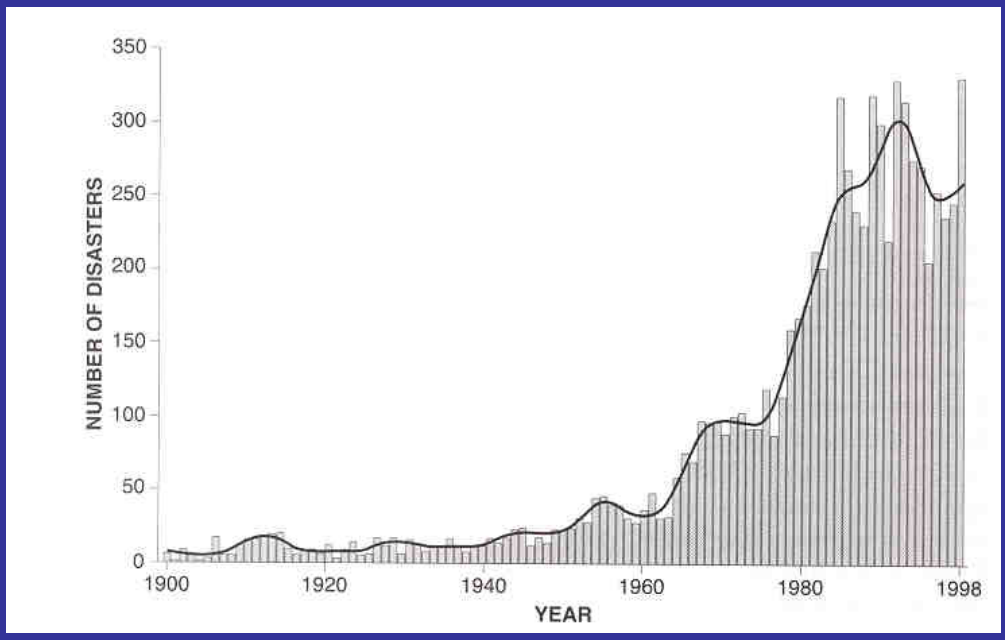




Vulnerable or Resilient Places

- Capacity to absorb the impact of a disruption
  - A continuum
  - Mitigated by external resources (pre- or post- disaster)
  - Disasters serve to highlight community and individual vulnerabilities or resiliencies
  - Variable with space and time

Why do we care?



Elements of the Problem

Disruptions due to disasters exert pressures on people and places.

More and more disasters are occurring.

Less resources are available for each disaster.

Suggestion:

Investigate how remote sensing might support effective and efficient recovery.

Consider how remote sensing might aid in disaster loss reduction.

Research Questions

- What surface features are characteristic of each phase of the recovery process?
- What is the best feature-to-image match?
- Which image analysis techniques support the study of recovery?
- Can the application of remote sensing technology and techniques help to manage the processes of recovery?

Data Requirements

- Repeatable data collection and analysis
- Systematic data collection
- Large spatial extent of data collection
- Unbiased and unobtrusive data collection

… plus others that we could discuss

Phases of Recovery

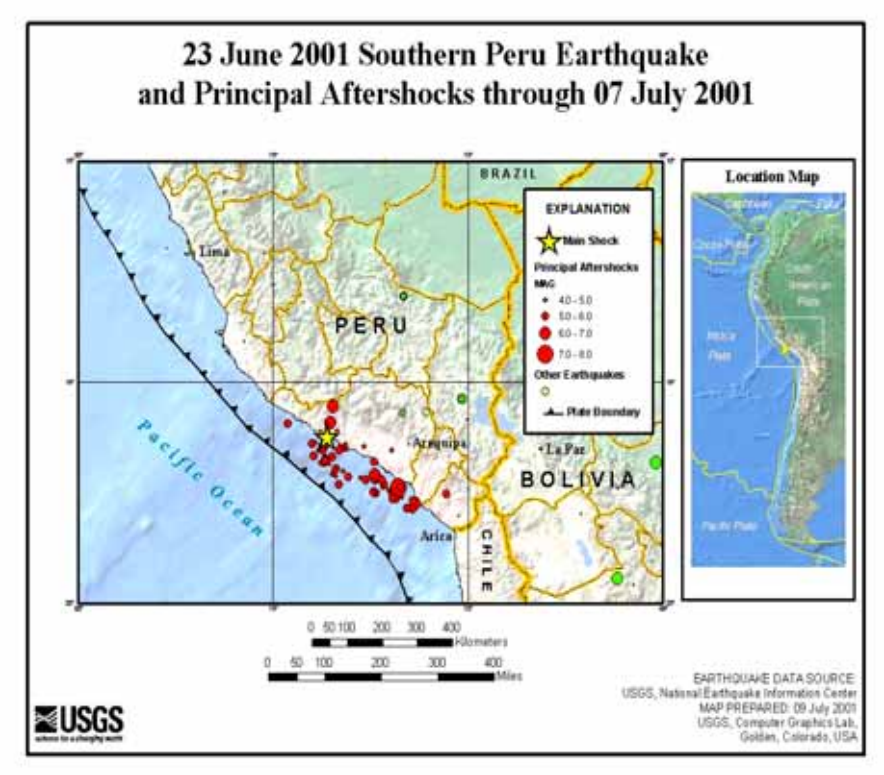
The Four Sub-phases of the Kates-Pijawka "Model of Recovery Activity"			
Sub-Phase	**Timing**	**Characteristics**	**Denotes End of Phase**
Emergency	0 – 2 ½ weeks	• Coping • Limited normalcy	• Search & rescue ends • Emergency shelter activities decrease • Main roads cleared of debris
Restoration	1 – 20 weeks	• Patching of structures • 'normal' level of social and economic activities	• Restoration of major urban services • Return of refugees • Most or all debris cleared
Reconstruction I	10 – 200 weeks	• Activities are return to pre-disaster equivalents	• Total population and activities return to pre-disaster levels
Reconstruction II	100 -500 weeks	• Large, government funded construction projects to commemorate the event or better the community	• Completion of major construction projects
Source: Kates and Pijawka, 1977			

The Plan

- Study of past events based on:
  - Field reconnaissance,
  - Image analysis,
  - Economic analysis
  - Demographic analysis

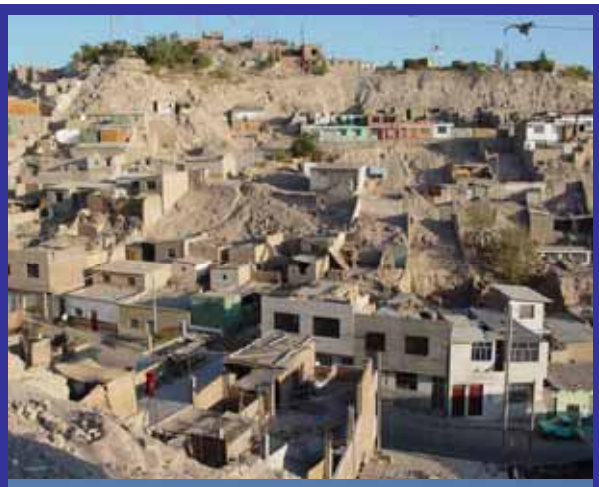
  - Damage assessments (repeated change detection)
  - Vulnerability assessments (change detection)

Case Study: Dissertation Research



Arequipa, Peru

Moquegua, Peru



Study of Recovery: Suggested Actions