Assumptions & Expectations

- Goal

  Develop a bilateral research agenda and a multi-year implementation plan to strengthen forecasting for natural hazard occurrence and impacts on societal systems.

- Process

  1. Review existing methods
  2. Identify barriers and gaps
  3. Identify new research to address barriers and gaps
  4. Develop agenda and implementation plan

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Existing Methods

- Occurrence
  - Many scientific forecast models exist to generate predictions of future events. Over 40 are used by the U.S. National Hurricane Center alone. Models for floods, fires, and other hazards exist.
- Impacts
  - HAZUS-MH MR4 (Version 1.4)

    Combines science, engineering and mathematical modeling with GIS technology to estimate losses of life and property—and shows those losses on a map. Estimates impacts to the physical, social, and economic vitality of a community from earthquakes, hurricane winds and floods.

Other Methods

- Post-Disaster Assessment
  - UN Economic Commission for Latin America and the Caribbean (ECLAC) *Handbook for Estimating the Socio-Economic And Environmental Effects Of Disasters*

    Framework for determining disaster damages (i.e., direct damages, indirect losses) and effects (i.e., socioeconomic, macroeconomic). The framework also considers effects on the environment and women.
  - Socio-economic impact assessment (SEIA) model for emergencies

    Developed by Australia to capture socioeconomic impacts for intangibles such as health, the environment, and memorabilia.
- Natural Capital
  - UN Environment Programme's The Economics of Ecosystems & Biodiversity (TEEB) work to valuate ecosystems and biodiversity

Challenges

- Forecasting *cascading events* that occur as a direct or indirect result of an initial event

  FEMA's RiskWiki pilot project utilizes user-created network diagrams to diagram cascading events

- Quality and availability of *data*
- Identifying and quantifying *intangibles* (e.g., loss of lives, health impacts, ecological damages, destruction of community life) (i.e., nonmarket, noneconomic impacts)
- Methods typically better at measuring direct damage and losses rather than induced damages and indirect losses
- Public access to information and technology and public education to ensure appropriate action