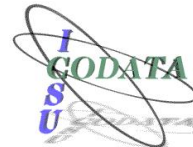
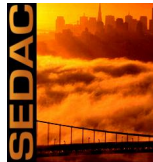


Current Hotspots Limitations & Potential Improvements

or

How to Clean Up the Hot Spots in Hotspots!



World Data Center for Human
Interactions in the Environment



- **Individual Hazards**

- Small events probably undercounted
- Rare events not characterized properly
- Insufficient data to assess underlying shape of probability distributions
- Simple models of areas exposed to hazard, e.g., circles for volcanoes, wind speed model for storm tracks, interpolated station data for rainfall anomalies
- Simplification of physical effects associated with hazards, e.g., no storm surge modeling for storm tracks
- Assumption of underlying stability in frequencies; no long-term trends

- **Hazard Comparability**

- Different measures of hazard probability depending on hazards (probabilities, frequencies, indices)
- Varied spatial resolution
- Varied temporal coverage
- Variable quality of data, uncertainties in data
- No effort to model joint hazard distributions

- **Population**

- Single point in time for population location based on census
- Night time, not day time
- No accounting for daily, weekly, seasonal variations, commuting, tourists, institutional populations, etc.
- Census resolution varies, poor in some hazardous countries
- Population only, no urban/rural identification, age/gender structure, etc.
- Used end point population, not time series of population or population projections

- **Economic Activity**

- Limited subnational resolution
- No link to type of land use or type of income generation
- No measure of assets, wealth in place

- **Mask**

- Based on pixels with agricultural land use or minimum population density based on residence, not potential presence during a hazard event
- Arbitrary cutoff of 5 persons/km²

- **“Net” Vulnerability**

- Assumes stability of vulnerability over 20-year period
- Assumes adequate characterization of vulnerability with only 20 years of data
- No disaggregation of different physical, societal vulnerability factors in event data, e.g., deaths due to direct earthquake damage, secondary landslides, evacuations, or poor health status
- Location and extent of events in EM-DAT matched by country, not exact location and extent on the grid
- Arbitrary use of World Bank income classes to estimate different vulnerability levels
- Small disasters probably undercounted
- Rare events not characterized properly
- Losses due to multiple hazards may be embedded and not identified
- EM-DAT loss estimates not consistent, especially for economic losses
- Allocation of losses across multiple years not consistent
- Losses assumed to be equal across affected areas

Potential Areas for Methodological Improvements

1. Modeling of hazard probability distributions
2. Setting thresholds of significance by hazard
3. Matching exposure data to different hazard types
4. Creating more specific conditional vulnerabilities
 - Physical fragility
 - Socioeconomic factors
5. Estimating absolute risks; only mask out clearly low risk areas
6. Categorizing risk levels into a limited number of categories (4-5?)
7. Aggregating risks across hazards and different loss types using general categories