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Economics and Policy

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Beyond normalization: unresolved methodological issues, determinants of losses and policy implications

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Some unresolved issues in current Normalisation Methodology

- Temporal aggregation of losses: use annual, monthly or even weekly aggregates?
- The influence of outliers: employ moving average or other data smoothing techniques?
- Trend detection techniques: employ more sophisticated time-series econometric techniques than the simple linear or exponential fitting of a trend line?

Beyond normalization: descriptive studies of economic loss determinants?

- Are economic losses systematically higher in some groups of countries than in others (e.g., developed versus developing)?
- Absolute loss figures are meaningless
- An alternative approach for measuring relative loss

Our alternative approach

$$Normalized\ Damage_t = \frac{Damage_t}{Wealth_t}$$

- Wealth measures wealth of affected area
- Damage expressed as destroyed values as a share of total destroyable values ⇒ actual-to-potential-loss-ratio (APLR)
- In theory bounded by 0 and 1
- Sum of APLRs per year if more than one disaster

Problems with alternative approach

- Data for wealth proxy: Nordhaus' Gross Cell Product (GCP), data available for 1990, 1995, 2000 and 2005
- Assumption of equally sized affected area highly problematic
- Consequence: Sometimes large APLRs:
  - Coding Error
  - Disaster centre in sparsely populated area/ small island
  - Wide spread disasters like droughts, wildfires
  - 204 disasters have APLR > 1
  - APLRs > 50 dropped (20 out of 19,360 disasters)

Examples of very high APLR

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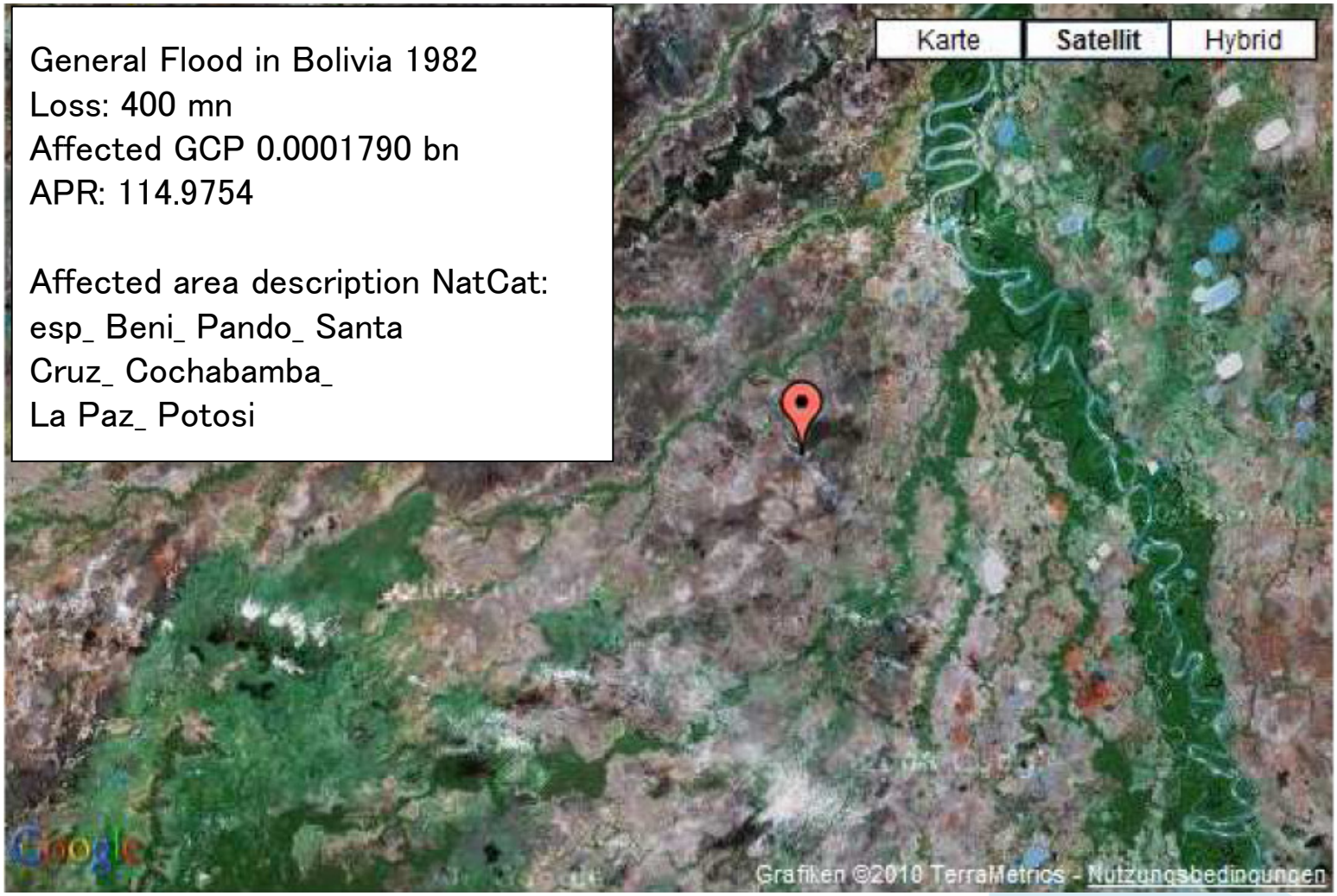
Examples of very high APLR

General Flood in Bolivia 1982
Loss: 400 mn
Affected GCP 0.0001790 bn
APR: 114.9754

Affected area description NatCat:
esp_ Beni_ Pando_ Santa
Cruz_ Cochabamba_
La Paz_ Potosi



Beyond normalization: analytical studies of economic loss determinants?

- Studies of human loss suggest disaster fatalities lower in democracies, in countries with lower levels of corruption and lower levels of inequality (e.g., Kahn 2005, Anbarci et al. 2005, Escaleras et al. 2007, Plümper and Neumayer 2009)
- A study of earthquake fatalities suggests human loss lower in high-propensity countries and quake propensity's effect is systematically conditioned by economic and political characteristics (Keefer, Neumayer and Plümper and Neumayer 2009)
- Do we expect similar determinants of normalized economic losses and should this be studied in detail?

Beyond normalization: Policy implications?

- All normalization studies suggest that increased exposure is dominant driver of strong upward trend in deflated economic losses
- Need to undertake cost-benefit analyses of zoning and planning as well as building regulations?
- Need to engage more actively in policy advice?