Unveiling hidden migration: Analysis of 6 million phones around a cyclone in Bangladesh

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Methodological challenges for climate-migration research

• Panel survey data
  • not planned around climate change impact;
  • out-migration;
  • doesn’t account for in-migration, or net migration!
Study area: Barisal and Chittagong Divisions, Bangladesh
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- **Date** vs. **total number of calls**
- **4/14**
- **5/9**
- **5/15, 5/16**
- **5/31**

**Cyclone Mahasen**
Cyclone Mahasen (16 May 2013): Forecasted versus Actual Landfall
An aside: Short-term patterns of mobility:

"Normal" mobility

Evacuation, 15 May 2013

Red = positive flows compared to normal
Blue = negative flows compared to normal
An aside: short-term patterns of mobility

During landfall
00:00 to 06:00
16 May 2013

Barisal City

Chittagong

Red = positive flows compared to normal
Blue = negative flows compared to normal
What is “normal” mobility? Anomaly detection

Long-term patterns of migration:

Chittagong: the net change in SIM cards from 16 May baseline
Chittagong: the net change in SIM cards from 16 May baseline

[Published] 0.96 correlation between net flows in 2013 (the storm year) to flows in 2012 (a non-storm year).

IT WAS THE MONSOON!
Climate change will amplify a very predictable pattern. We need larger-scale, long-term, spatiotemporally resolved data, including unaffected areas.
Thank you