Bringing New Forms of Data to the Study of Cities

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Geographic **D**ata **S**cience **L**ab

Geography & Planning

University of **Liverpool**

Today

- The (Geo-)Data Revolution
- Geographic Data Science
- Examples
  - Spoken Postcodes
  - ST-LISA Calendar

The (Geo-)Data Revolution

The last decade has seen an explosion of data available to researchers .

The last decade has seen an explosion of new forms of data available to researchers .

The last decade has seen an explosion of new forms of urban data available to researchers.

The last decade has seen an explosion of new forms of urban (geo-) data available to researchers .

The last decade has seen an explosion of new forms of urban (geo-) data available to researchers accidentally.

Accidental Urban Data

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- Indiviual data collected from (mobile) sensors

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- Businesses moving (at least partly) online

Accidental Urban Data

- **Indiviual** data collected from (mobile) sensors
- **Businesses** moving (at least partly) online
- **Governments** releasing more and more datasets for efficiency and transparency reasons

Opportunities

Challenges

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- Higher **granularity** over space and time
- Better **measurement** of certain phenomena
- "*Always-on*" observatory

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Challenges

- Quality (e.g. bias, coverage...)
- Technical
- **Methodological**

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Data Science

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GIS + Data Science

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GIS + Data Science = **G**eographic **D**ata **S**cience

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Combination of DS approach and tools to deal with modern datasets and the expertise developed by GISc to deal with location and geospatial data

Examples

The Spoken Postcodes

Neighborhoods are areas in cities that share the same *character*

A lot of public funding and social science relies on the neighborhood as a meaningful **unit of analysis**

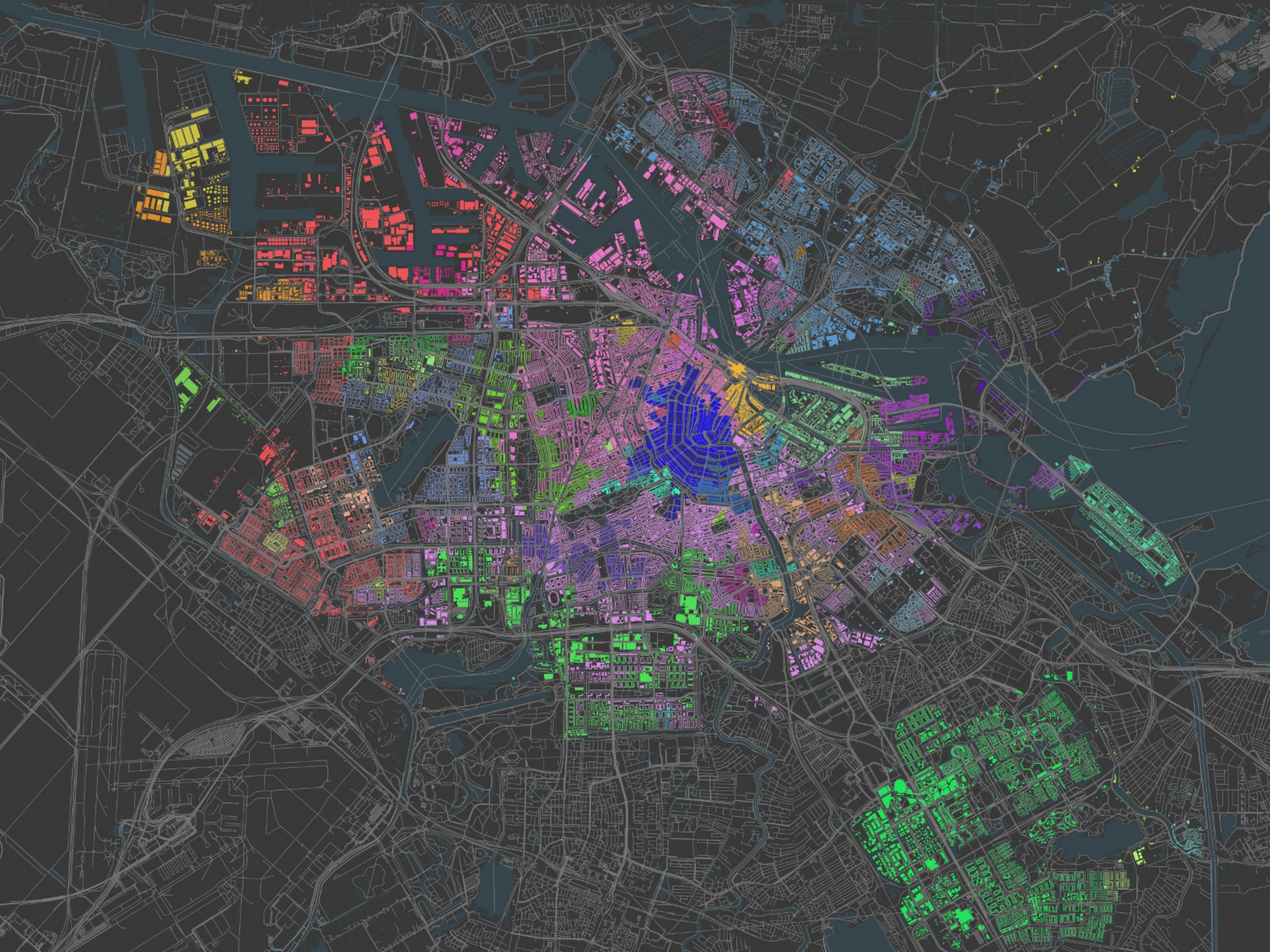
Neighborhoods are areas in cities that share the same *character*

A lot of public funding and social science relies on the neighborhood as a meaningful **unit of analysis**, yet available ones (**administrative** boundaries) are probably **not good** proxies

Redraw neighborhood boundaries so they better represent *character*

Redraw neighborhood boundaries so they better represent *character*, using a new source of data (Twitter)

Redraw neighborhood boundaries so they better represent *character*, using a new source of data (Twitter), and GDS methods



ST-LISA Calendar

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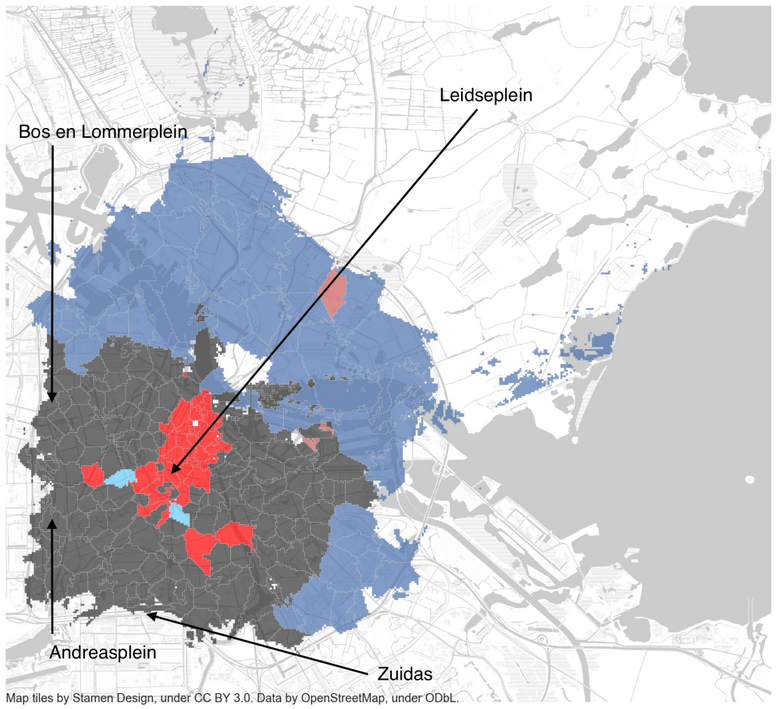
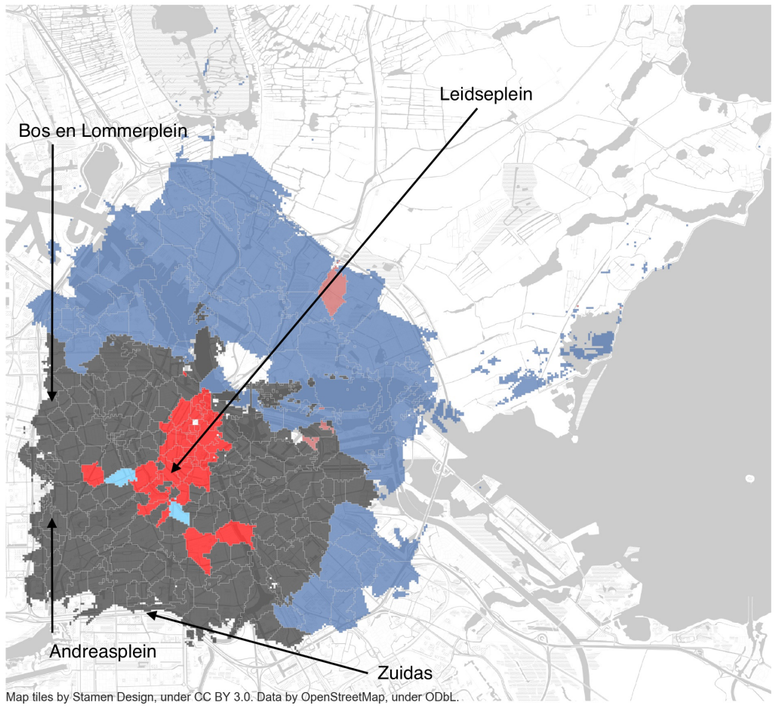
Designing new **visualization** approaches that allow to **make sense** of large, granular datasets about **urban** activity

ST-LISA Calendar

Identify **hotspots** of activity in 3 Years of **mobile phone** activity in Amsterdam



Map tiles by Stamen Design, under CC BY 3.0. Data by OpenStreetMap, under ODbL.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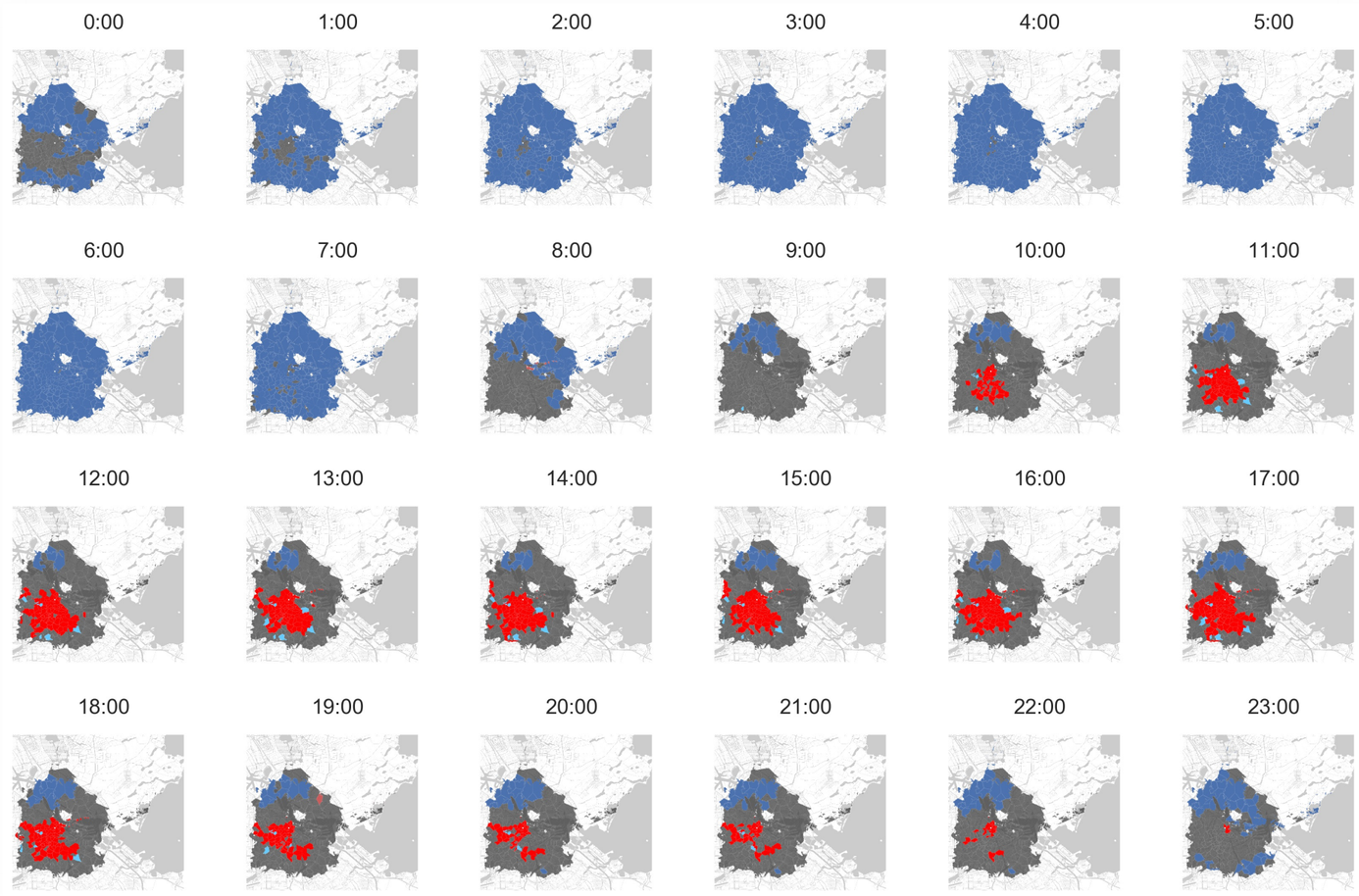
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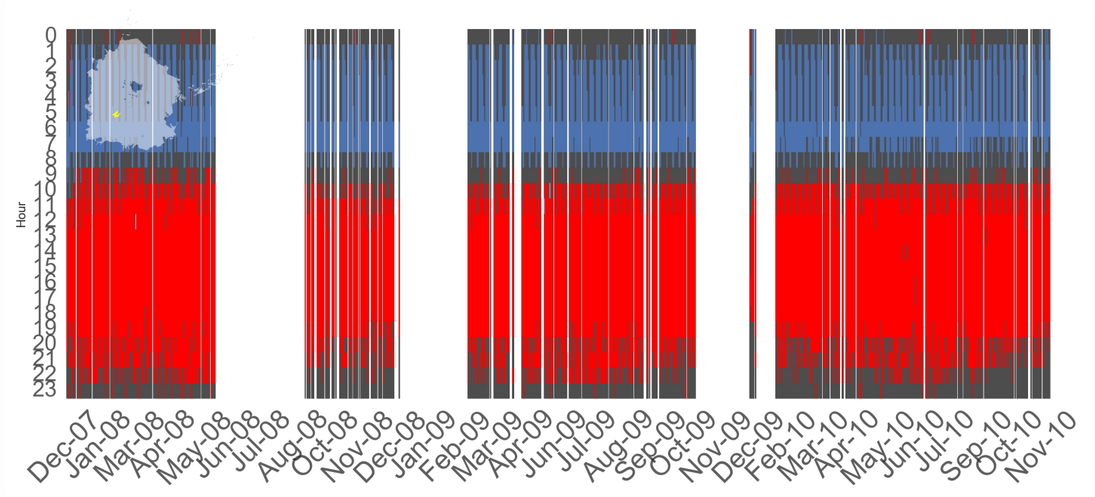
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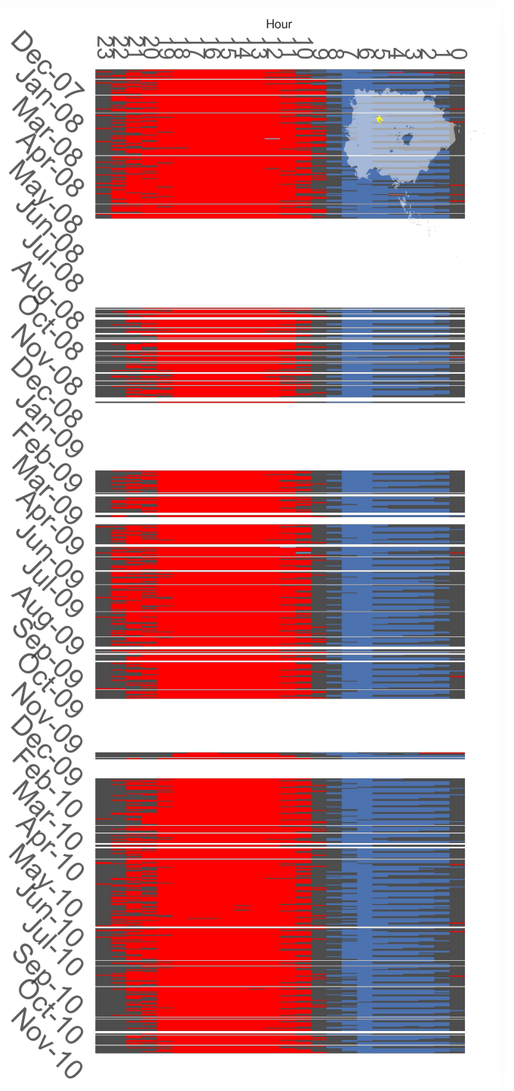
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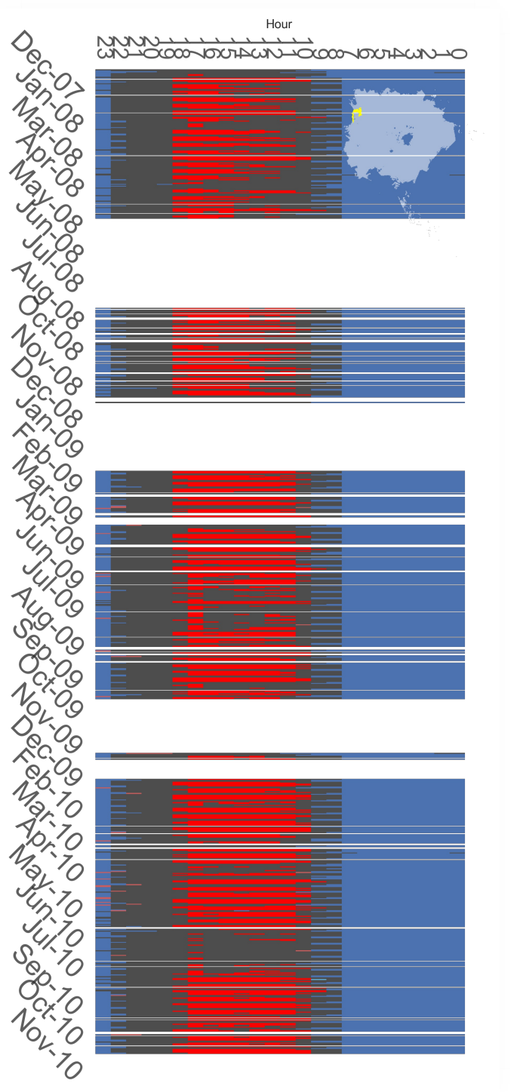
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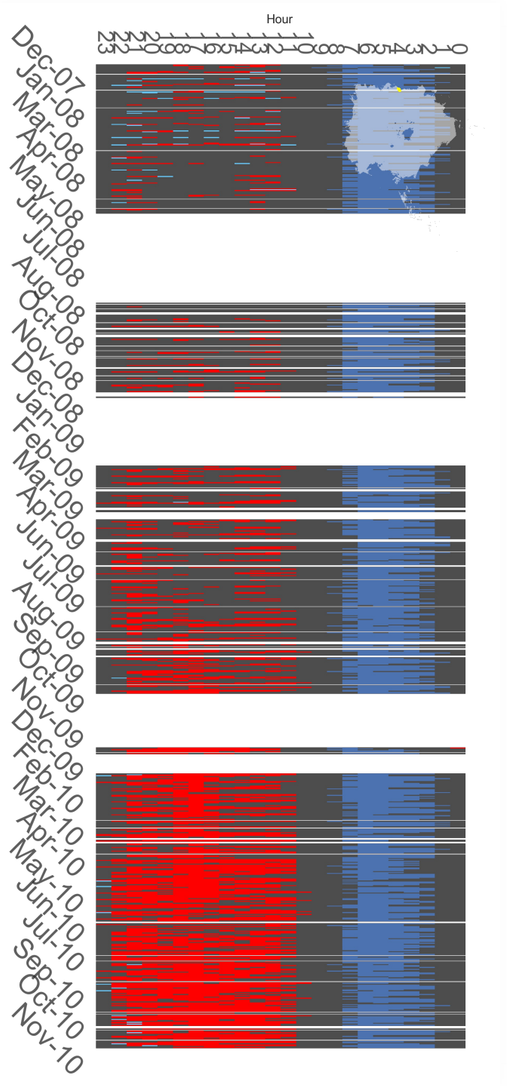
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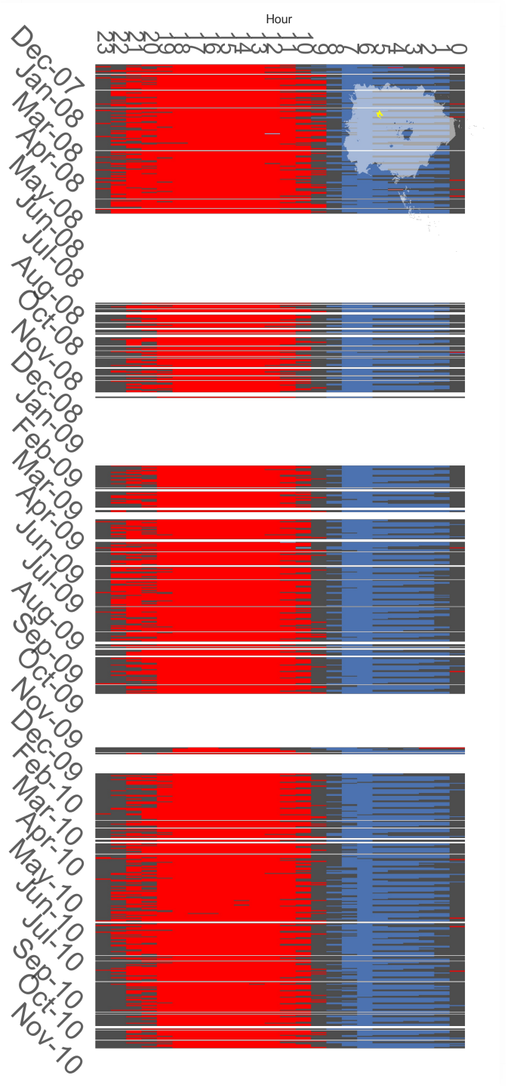
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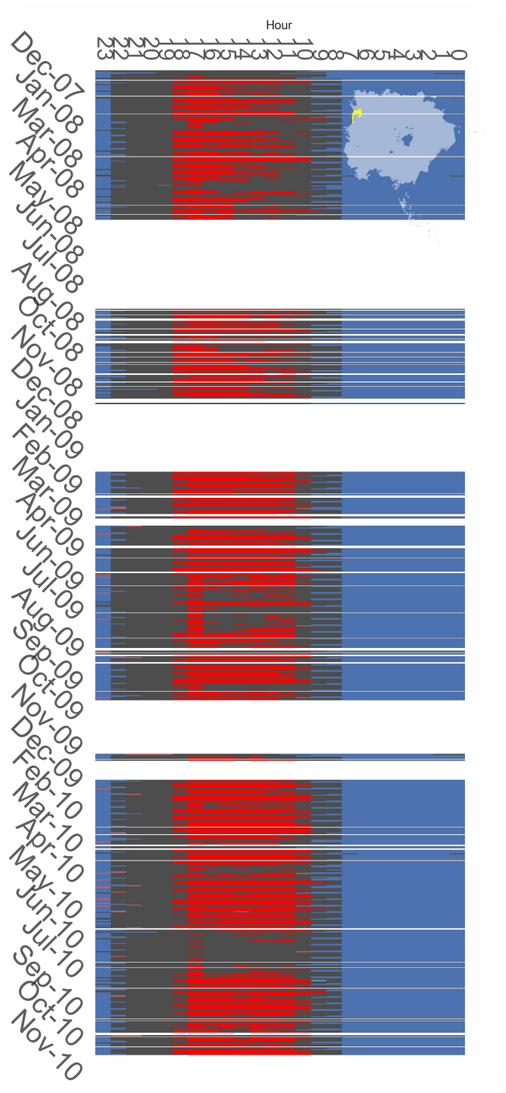
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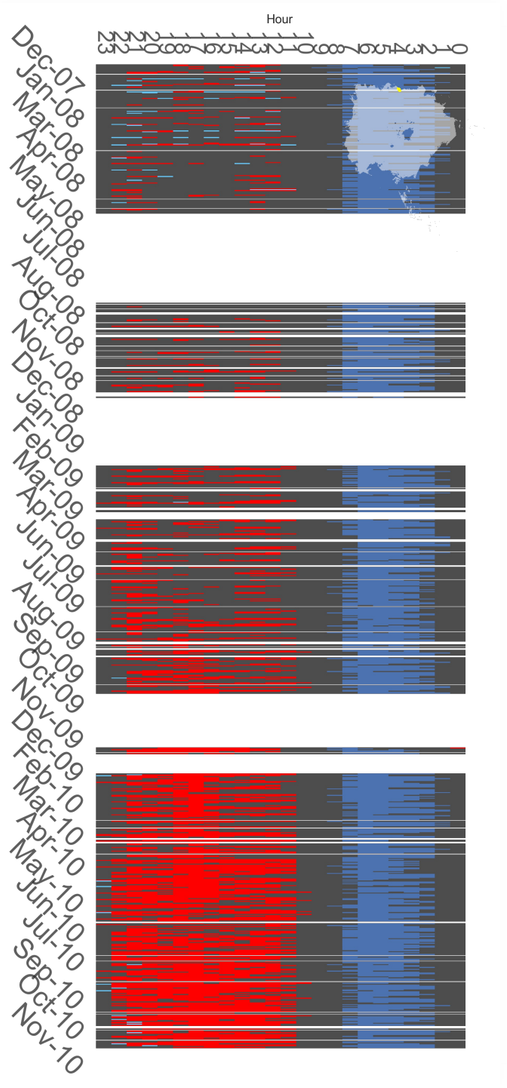
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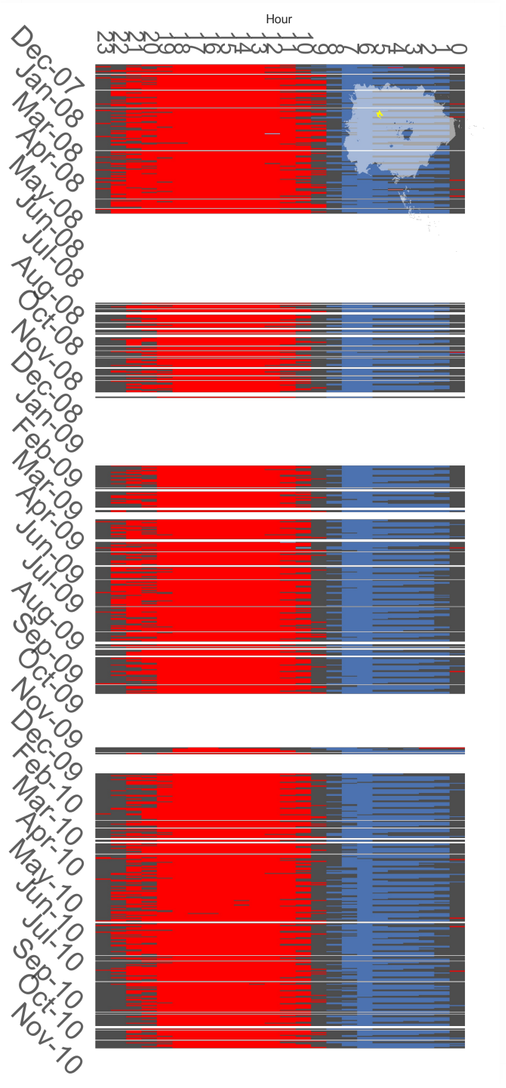
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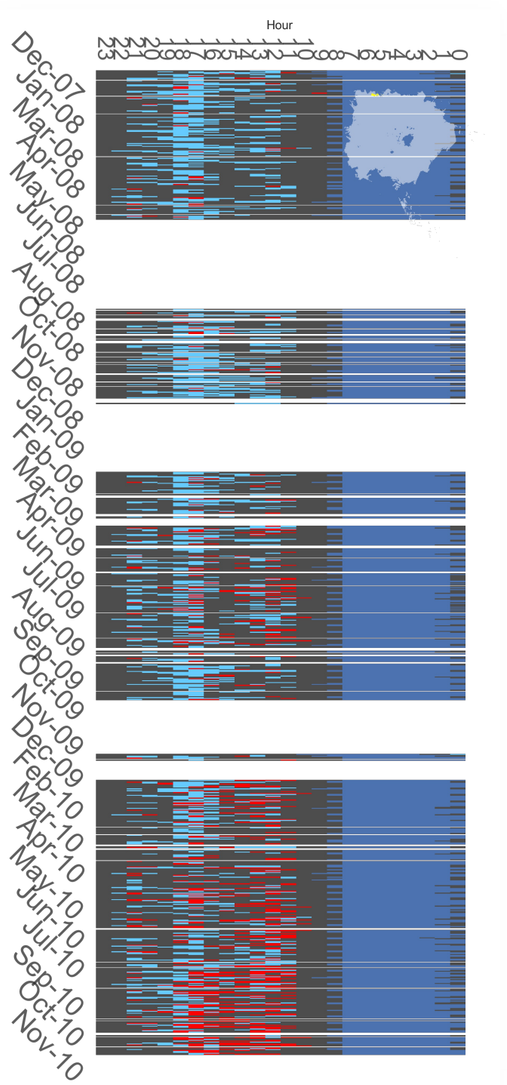
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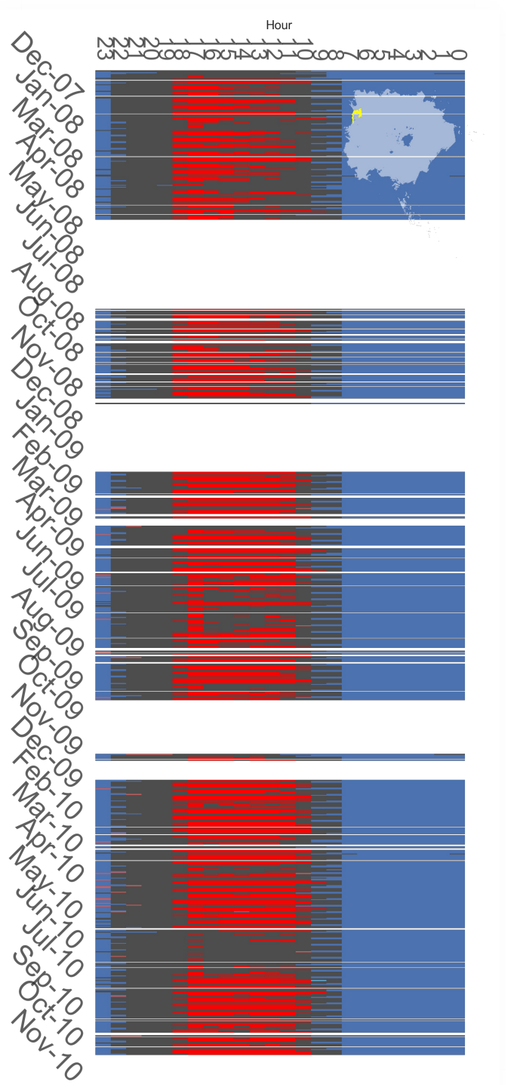
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To Take Away

- The (data) world has expanded
- This is a huge opportunity to urban scientists
- Traditional methods need to expand to take full advantage of this landscape

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