

# A 'Spray-Can' Tool for Fuzzy Geographical Analysis

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LANCASTER  
UNIVERSITY



Jonny Huck  
Duncan Whyatt  
Paul Coulton  
Simon Yielding  
Harriet Stanford

Lancaster Environment Centre, School of Computing and Communications

# Introduction

- Most information used in policy making contains a spatial component
- This data can be collected from the public in order to gauge opinion
- PPGIS (Public Participation GIS)
- Typically discrete point / line / polygon data collection
- Typically web-based

# The web as a platform for PPGIS

- Ideal in many ways:
  - Speed and Reach
  - Anonymity
  - Interactive
  - Multi-media
  - Web 2.0
- Issues:
  - Digital divide



# “Fuzzy” data

- Spatial data is often “fuzzy”
  - town centre
  - mountain
  - rough-area
  - coast
- Often cannot be adequately captured as discrete points, lines or polygons.

# Web-based “spray-can” interface

Click to turn the Spraycan off

Clear Reset Map Satellite

**Where is good for wind farms?**

What is good about these areas?

What would be the benefits to the area of a wind farm?

What would be the wider benefits of having a wind farm?

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# Web-based “spray-can” interface

- Waters & Evans “TAGGER” 2003 / 2008
  - Java based
  - Raster surfaces of spray patterns
  - Contextual comments
- Rosser & Morley “Rate-My-Place” 2010
  - Google Maps / Flash based
  - Collected spray ‘paths’ into a database
- Project to build upon this work in 2009
  - “*where is good for wind farms?*”

# Web-based “spray-can” interface

- Generating rich ‘*raw*’ data – allow access to the spray itself, not a derived product
- Every ‘blob’ of paint
  - Geographical point with attributes
- Encourage sub-setting
  - Any combination of spatial and attribute data
- ‘Extensible’ selection of analytical choices

# Data collection & sub-setting

- Data stored in a relational database
  - **Data about users:**
    - Demographic information
    - IP Address
    - Browser
    - Timestamp
  - **Spatial data** (each 'blob'):
    - Latitude, longitude
    - Map scale
    - Timestamp
    - Free-text comments provided by the user.

# Sub-setting by free-text

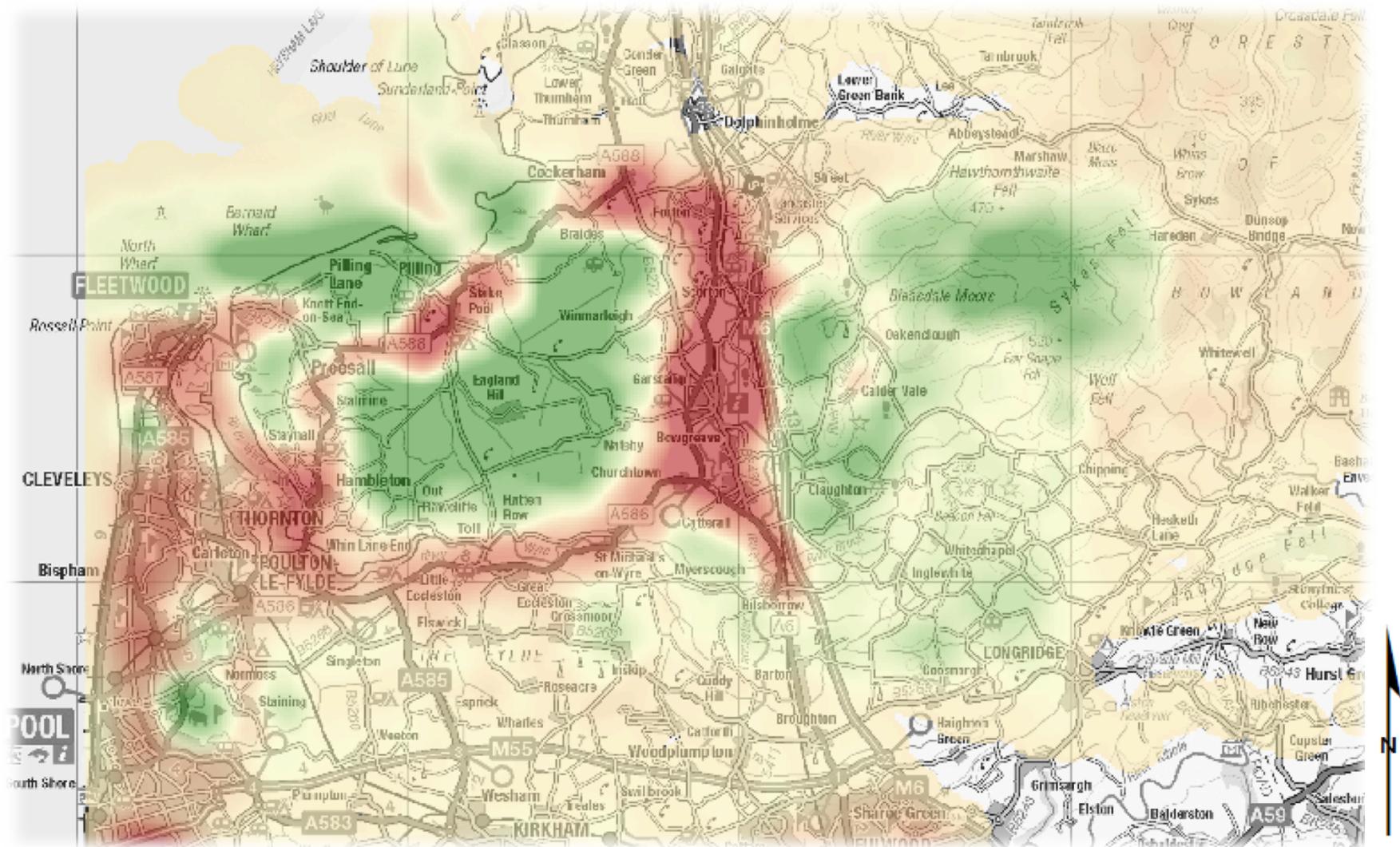
- Use Natural Language Processing techniques to extract spray relating to specific spatial elements
  - ‘Noun counting’
- Focus analysis upon particular features or locations
- Can provide an indication of how well people are relating their text and spray patterns.

# Noun extraction and location





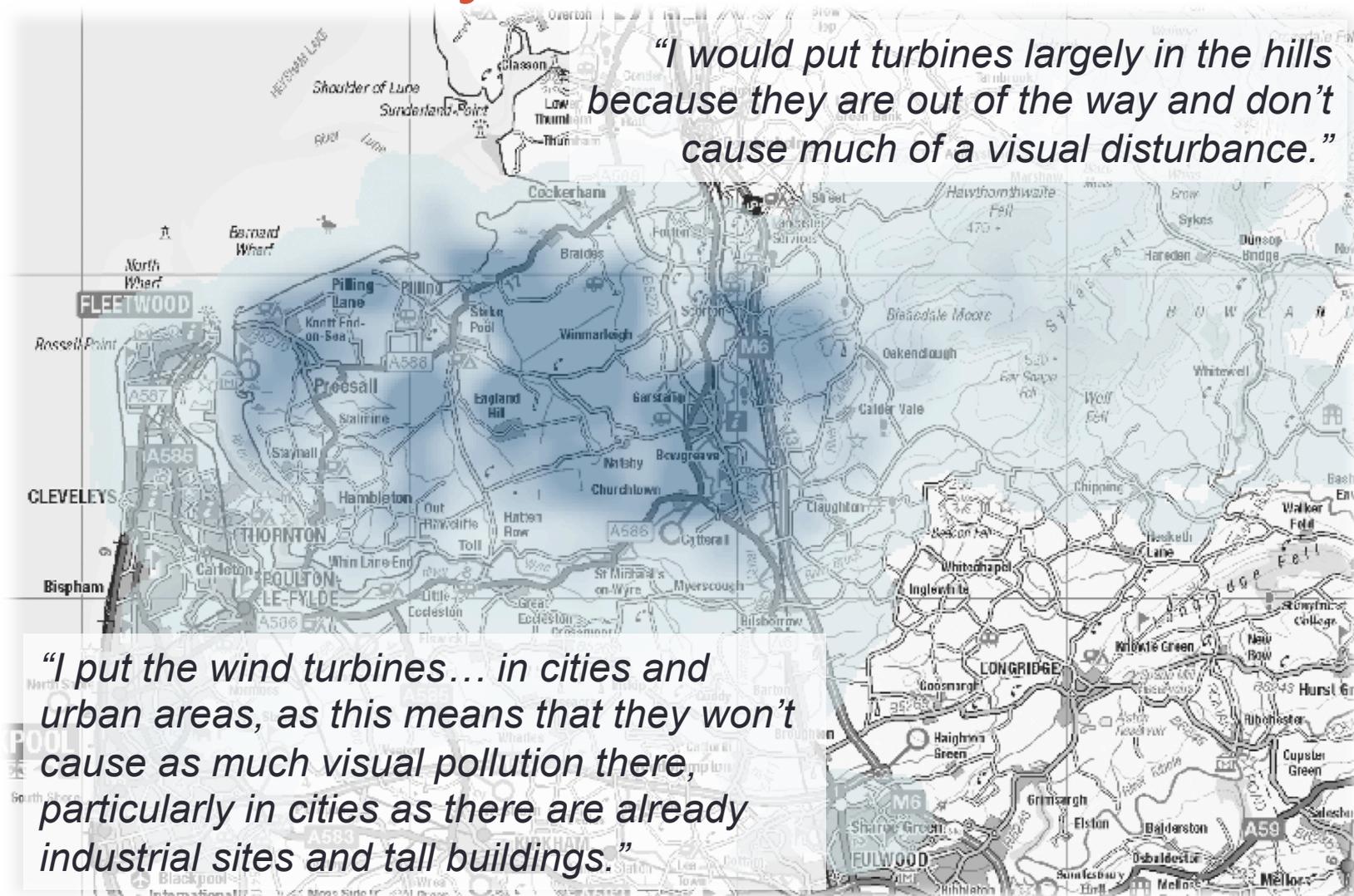
# Spatial consensus



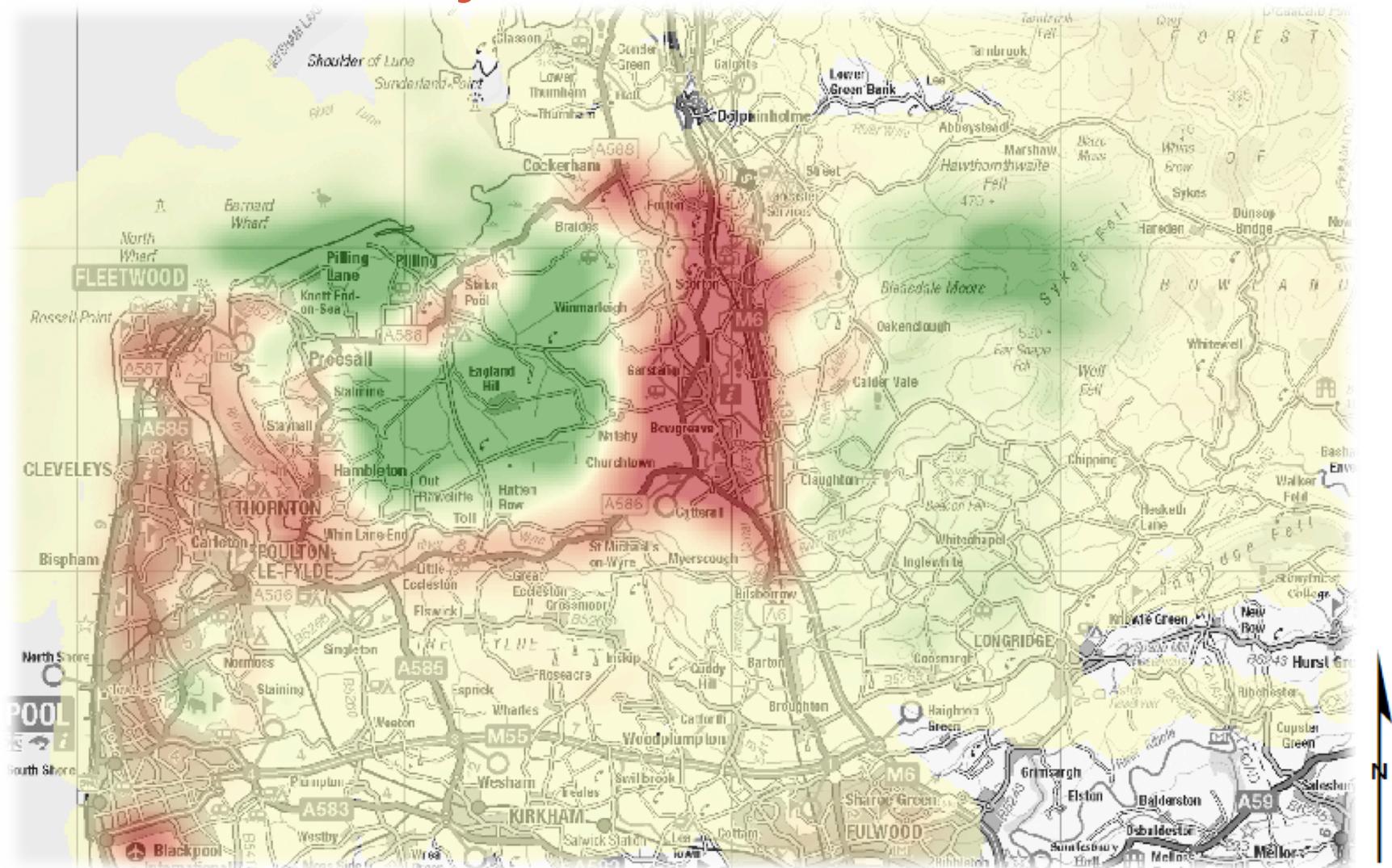
# Conflict analysis

*"I would put turbines largely in the hills because they are out of the way and don't cause much of a visual disturbance."*

*"I put the wind turbines... in cities and urban areas, as this means that they won't cause as much visual pollution there, particularly in cities as there are already industrial sites and tall buildings."*



# Cluster analysis



# Track the user around the screen



# Conclusion

- Our system:
  - Advantages of web 2.0 / Google Maps interface
  - Provide the analyst with access to the 'spray' itself, not a derived product
    - Maximise flexibility in analytical techniques
    - Maximise opportunity to understand the fuzzy thoughts and feelings of the participating public.
- Future...

# Further free-text analysis

- More in-depth analysis based upon Spatial Natural Language Processing.
  - ‘Geoparser’ techniques
    - Contextually identify places and spatial entities for analysis
  - ‘Sentiment analysis’ techniques
    - Determine positive / negative comments from free-text for analysis.

# Map-Me.org

<http://map-me.org/>

logged in as: jonnyhuck [logout](#)

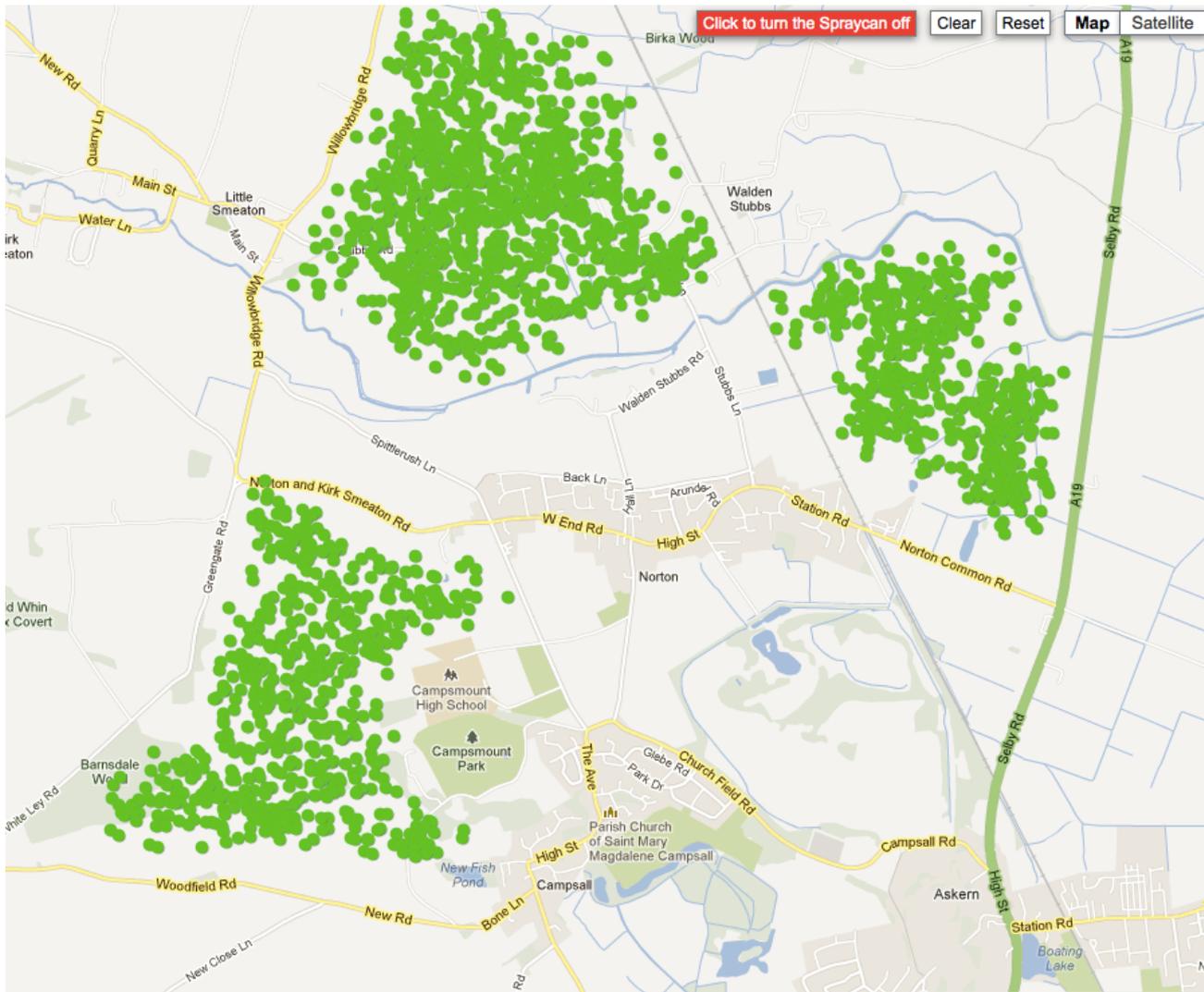
## Map-Me Manager

Hi, jonnyhuck, what would you like to do...?

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# Map-Me



**Where is good for wind farms?**

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# Thanks!

[j.huck2@lancaster.ac.uk](mailto:j.huck2@lancaster.ac.uk)

<http://map-me.org>