Citizen Science and Sustainable Mobility

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Content

+ 52°North
+ About Citizen Science & Sustainable mobility
+ The enviroCar platform
+ Cloud GIS as a means for communication and collaboration
52\textdegree North – Open Innovation Network

+ Open network with partners from industry, academia and public administration
+ Applied research in the field of Geoinformatics
+ 52\textdegree North is the network’s legal body and service center, non-profit
+ All results published as open source SW
Citizen Science

„Citizen‘s Participation in Scientific Research“


Research Questions

Literature Theories Methods

Experiments, Observations, Measurements

Analysis, Interpretation Publication, Discussion

http://blogs.plos.org/citizensci/
Mobility & Environment

Wissenschaft

Verwaltung

Bürger

Industrie
Research questions

+ **Citizens**
  > How’s my driving style compared to others
  > What is the CO2 footprint of my driving compared to others
  > ..

+ **Scientists**
  > Which indicators for mobility and its environmental impact can be derived from VGI
  > How to model the quality of data when dealing with heterogeneous sources of information
  > ..

+ **Urban planners**
  > What is the actual quality of traffic flow in my planning area
  > What was the impact of changing traffic management for this road in terms of traffic flow, energy consumption and CO2 emission
  > ..
enviroCar Platform
collecting and sharing floating car data
enviroCar Platform
sharing tools for data analysis

EnviroCar
Community

Statistics
Traffic flow quality - indicators
Derived data products

EnviroCar
Platform
sharing tools for data analysis

EnviroCar
Server
enviroCar Platform
sharing and discussing data & results
enviroCar WebSite

Be a Citizen Scientist

denviroCar - off we go!

It's an app - collect floating car data

It's an internet platform - share and analyze anonymized open data

It's a community - collaborate with other citizens, traffic planners and scientists worldwide!
enviroCar WebSite
enviroCar @ArcGIS Online

Analyzing Envirocar trajectory data with R

We can import the envirocar directly into spatial objects by exploiting the GeoJSON format which is supported by OGR, hence R function readOGR in packages like RPyOGR. For a connection, we need RGeo.

```r
url = "https://giv-car.uni-muenster.de/stable/rest/tracks/5207d871e4b058cd3d66a9e" require(rgdal) # readOGR
```

## Loading required package: rgdal Loading required package: sp rgdal:
## version: 0.6-11 (2016-08-23) Geospatial Data Abstraction Library
## extensions to R successfully loaded Loaded GDAL runtime: GDAL 1.10.0.
## released 2015/04/24 Path to GDAL shared files: /usr/share/gdal/1.10
## PROJ.4 runtime: Rel. 4.8.0, 6 March 2012, [P3_VERSION: 480] Path to PROJ.4
## shared files: (autodetected)

```r
layer = readOGR(url, layer = "OGRGeoJSON")
```

## OGR data source with driver: GeoJSON
## Source: "https://giv-car.uni-muenster.de/stable/rest/tracks/5207d871e4b058cd3d66a9e", layer: "OGRGeoJSON"
## with 373 features and 3 fields.
## Feature type: wkbPoint with 2 dimensions

```r
class(layer)
```

Analyzing Envirocar trajectory data with R - by Edzer Pebesma Last updated 10 months ago
enviroCar Tracks
CO2 Hot Spots
CO2 Hot Spots
enviroCar - Citizen Data Portal
Further Roadmap

+ **Extending the eC platform**
  > Enhanced communication & collaboration support
  > Methods and tools for data quality management and data analysis
  > Extending further transport modes (public transport, bicycles, ..)

+ **Developing the Community**
  > Further improving the user experience (attractiveness, IOS, ..)
  > Networking with research groups and local authorities
  > Case Studies such as the Cologne Citizen Data Portal on mobility & environment
Further Information

- Website - www.envirocar.org
- Mail - enviroCar@52north.org
- ArcGIS Online - http://52north.maps.arcgis.com
- Youtube – www.youtube.com/watch?v=LTSuUEOfWa0

enviroCar Partner

Thanks ..