

WEB CARTOGRAPHY

Using Open Source Software

Edward Mac Gillavry



webmapper
what the **map** can be



WEBMAPPER: what the map can be

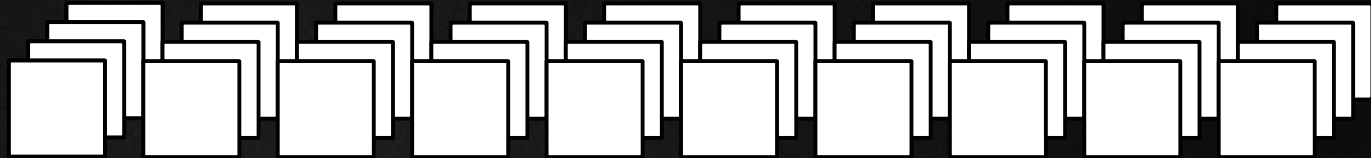
- Richard Duivenvoorde – biologist
- Edward Mac Gillavry – cartographer
- Haarlem/Utrecht (2009)
- Geo-applications for the (mobile) Web
- OpenGeoGroep



ONLINE MAPPING

CLASSIC VALUE CHAIN

- Application



- Service



- Platform



- Data



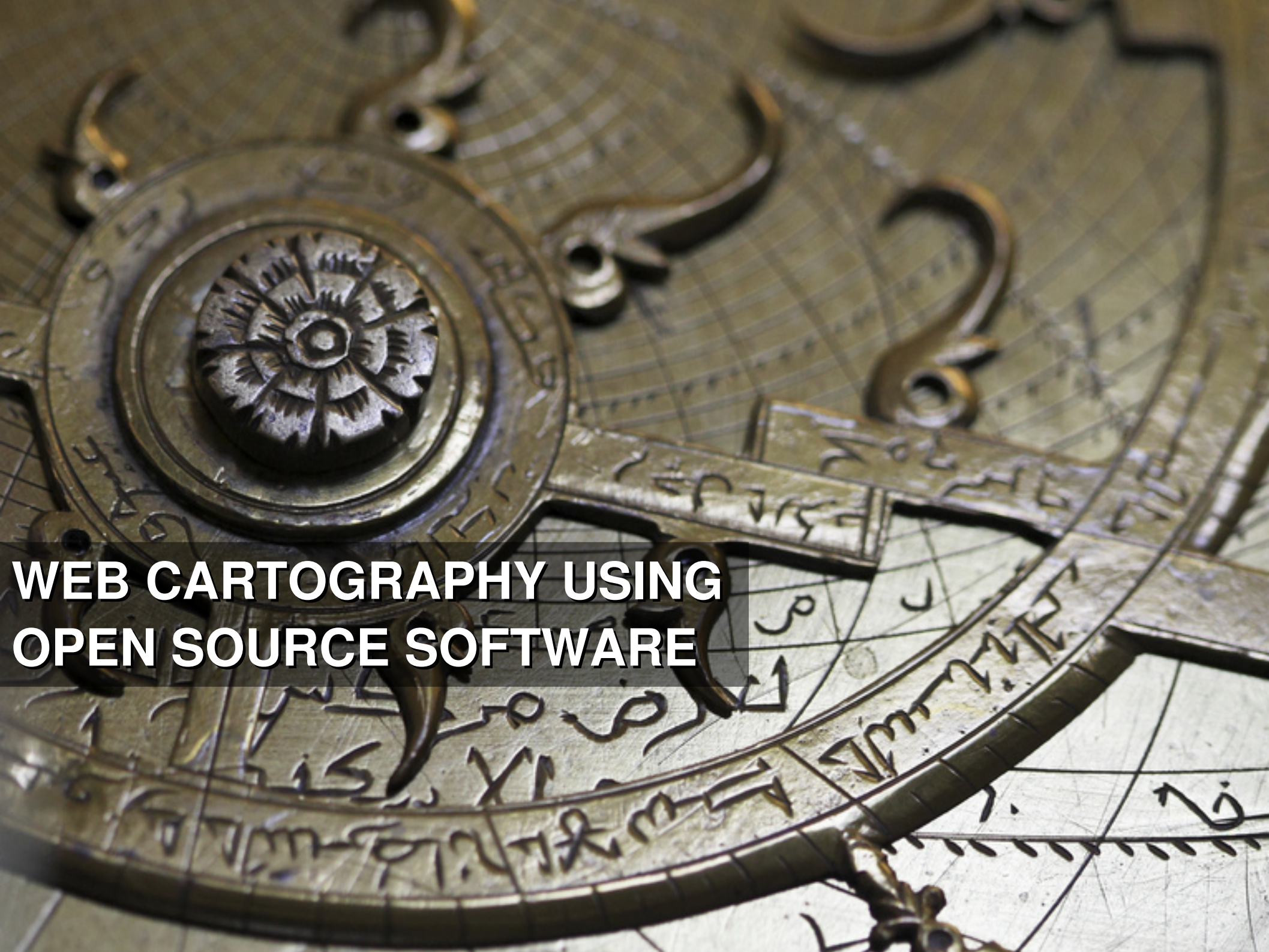
WEB MAP = ART IMITATES LIVE



<http://www.flickr.com/photos/zachklein/3609217246>

WEB MAPS = RED DOT FEVER



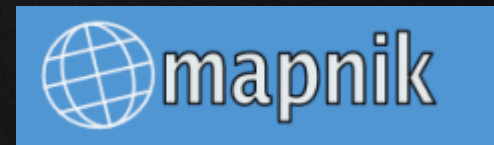
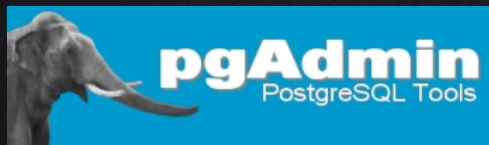
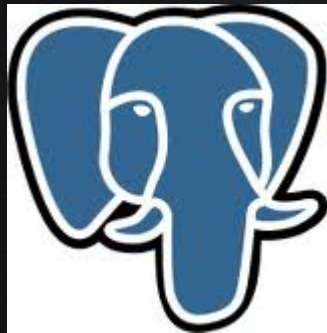


WEB CARTOGRAPHY USING OPEN SOURCE SOFTWARE

MAPPING AND THE TERMINAL



OUR OPEN SOURCE TOOLBOX

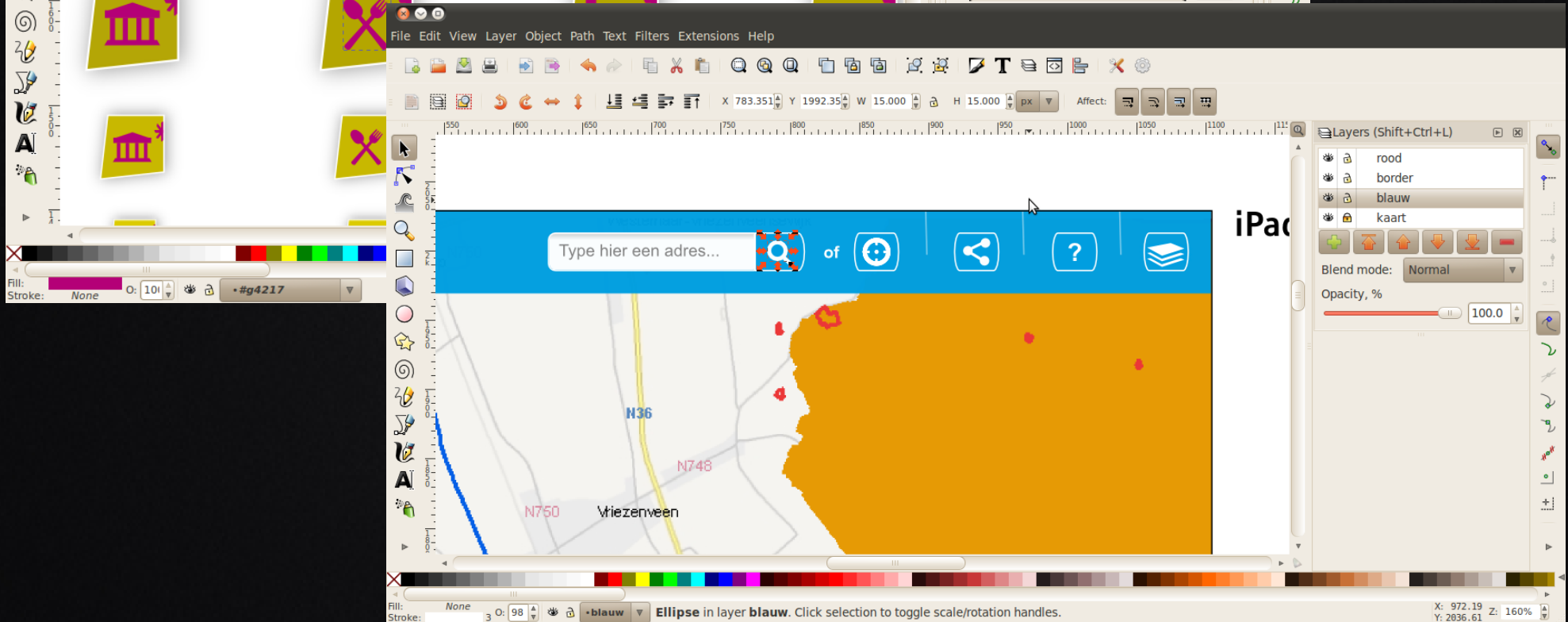
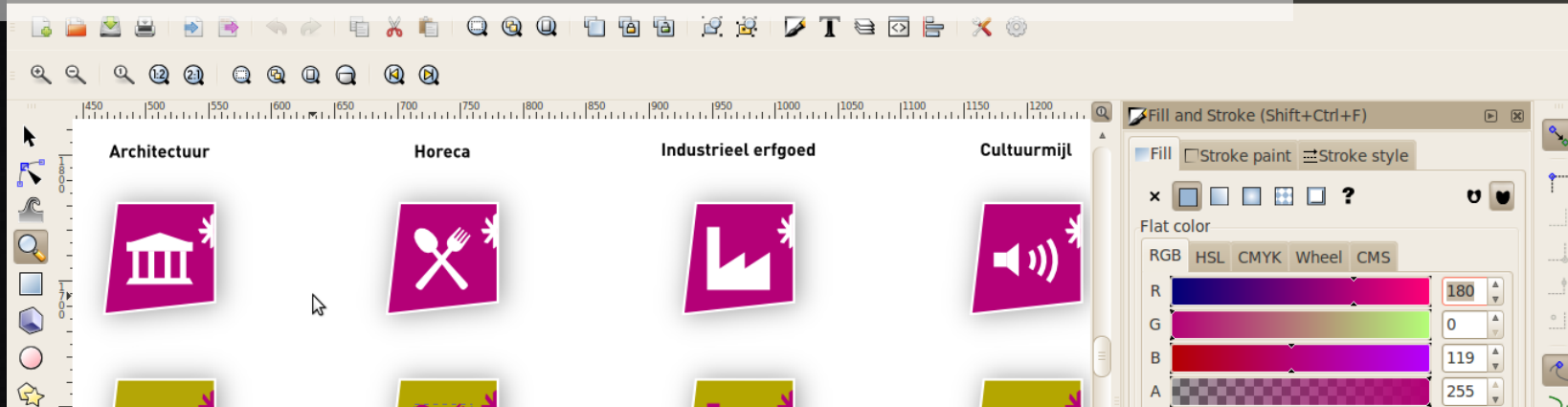


INKSCAPE

Icons, patterns, interface



File Edit View Layer Object Path Text Filters Extensions Help



QuantumGIS

Explore, style, edit



The screenshot displays the QuantumGIS 1.8.0-Lisboa interface. The main window shows a map of a coastal area with various land use zones. A 'Layer Properties - brt_2010_gn1' dialog is open, showing the 'Style' tab. The 'Column' is set to 'AANT_INW', and the 'Color ramp' is set to 'source'. The 'Classes' are set to 6, and the 'Mode' is 'Pretty Breaks'. The 'Symbol' is set to 'change'. The 'Layers' panel on the left shows the layer 'brt_2010_gn1' selected. The 'Attribute table - brt_2010_gn1 :: 0 / 11689 feature(s) selected' is open, showing a table with columns: GM_CODE, GM_NAAM, AANT_INW, AANT_MAN, AANT_VROUW, P_00_14_JR, and P_15_24_JR. The table contains 8 rows of data for Amsterdam. The status bar at the bottom shows the coordinate '131853,477634', scale '1:113481', and projection 'EPSG:28992'.

QuantumGIS 1.8.0-Lisboa

File Edit View Layer Settings Plugins Vector Raster Database Help

Layer Properties - brt_2010_gn1

Style Labels Fields General Metadata Actions

Graduated Old symbology

Column: AANT_INW

Symbol: change

Classes: 6

Color ramp: [source]

Mode: Pretty Breaks

Symbol Range Label

Symbol	Range	Label
[light yellow]	0.0000 - 50...	0.0000 - 5000.0000
[light orange]	5000.0000 - ...	5000.0000 - 10000.0000
[orange]	10000.0000 ...	10000.0000 - 15000.0000
[dark orange]	15000.0000 ...	15000.0000 - 20000.0000
[red-orange]	20000.0000 ...	20000.0000 - 25000.0000
[red]	25000.0000 ...	25000.0000 - 27100.0000

Classify Add class Delete class

Restore Default Style Save As Default

Help

Layers

- brt_2010_gn1
- Bevolkingsker...
- bag_woonpla...
- brt_2010_gn1

Control rendering order

Attribute table - brt_2010_gn1 :: 0 / 11689 feature(s) selected

	GM_CODE	GM_NAAM	AANT_INW	AANT_MAN	AANT_VROUW	P_00_14_JR	P_15_24_JR
0	GM0363	Amsterdam	4635	2380	2255	12	13
1	GM0363	Amsterdam	10255	5175	5075	13	13
2	GM0363	Amsterdam	7970	3955	4015	14	13
3	GM0363	Amsterdam	9295	4690	4605	17	16
4	GM0363	Amsterdam	9685	4600	5080	12	16
5	GM0363	Amsterdam	13510	6445	7065	18	14
6	GM0363	Amsterdam	3075	1440	1635	10	7
7	GM0363	Amsterdam	2010	1025	985	4	42
8	GM0363	Amsterdam	13770	6985	6785	10	15

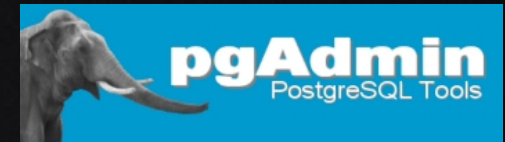
Look for: amsterdam in GM_NAAM Search

Show selected only Search selected only Case sensitive Advanced search ? Close

Coordinate: 131853,477634 Scale: 1:113481 Render EPSG:28992

PgAdmin

Explore, edit, pre-process



pgAdmin III Box OSF

File Edit Plugins View Tools Help

Object browser

- Databases (3)
 - gisdb
 - Catalogs (2)
 - Schemas (2)
 - cbs
 - Domains (0)
 - FTS Configurations (0)
 - FTS Dictionaries (0)
 - FTS Parsers (0)
 - FTS Templates (0)
 - Functions (0)
 - Sequences (1)
 - Tables (1)
 - gemeenten2010
 - Columns (28)
 - ogc_fid
 - geom28992
 - gm_code
 - gm_naam
 - aant_inw
 - aant_man
 - aant_vrouw
 - p_00_14_jr
 - p_15_24_jr
 - p_25_44_jr

Query - gisdb on gisuser@192.168.56.20:5432 *

File Edit Query Favourites Macros View Help

gisdb on gisuser@192.168.56.20:

SQL Editor Graphical Query Builder

```
CREATE INDEX gemeenten2010_geom_idx
ON cbs.gemeenten2010
USING gist
(geom28992);
```

Scratch pad

Edit Data - Geo-warehouse (192.168.56.20:5432) - gisdb - cbs.gemeenten2010

File Edit View Tools Help

100 rows

	89%	gm_code	gm_naam	aant_inw	aant_man	aant_vrouw	p_00_14_jr	p_15_24_jr
	try	character	character	numeric(1)	numeric(1)	numeric(1)	numeric(1)	numeric(1)
6	002	GM0014	Groningen	187500	92075	94025	15	25
7	002	GM0015	Grootegast	12140	6210	5930	21	11
8	002	GM0017	Haren	18515	8720	9795	17	9
9	002	GM0018	Hoogezand	34755	17160	17595	17	11
10	002	GM0022	Leek	19365	9570	9795	19	11
11	002	GM0024	Loppersum	10450	5315	5140	18	11
12	002	GM0025	Marum	10450	5390	5060	20	12
13	002	GM0034	Almere	188160	93510	94650	21	14

Scratch pad

100 rows.

Output pane

Data Output Explain Messages History

ready

Retrieving Table details... Done.

0.02 secs

GeoServer Styling



GeoServer

Logged in as admin. [Logout](#)

Server

[Server Status](#)
[Contact Information](#)
[Global Settings](#)
[JAI Settings](#)
[About GeoServer](#)

Services

[GWC](#)
[WCS](#)
[WFS](#)
[WMS](#)

Data

[Workspaces](#)
[Stores](#)
[Layers](#)
[Layer Groups](#)
[Styles](#)

Security

[Users](#)
[Data security](#)
[Service security](#)
[Catalog security](#)

Demos

Layer Preview

Style Editor

Edit the current SLD style. The editor can provide syntax highlight and be brought to full screen. Click on the "validate" button to verify the style is a valid SLD document.

Name

Copy from existing style
 [Copy ...](#)

70
71
72
73
74
75
76
77
78
79
80
81
82
83
84
85
86
87
88
89
90
91
92
93
94
95
96
97
98
99
100
101
102
103

```
<Stroke>
  <CssParameter name="stroke">#4e4e4e
  <CssParameter name="stroke-width">3
</Stroke>
</LineSymbolizer>
</Rule>
<Rule>
  <Title>Straat: lijn</Title>
  <ogc:Filter>
    <ogc:And>
      <ogc:PropertyIsGreaterThanOrEqualTo>
        <ogc:PropertyName>visualisa
        <ogc:Literal>20900</ogc:Lit
      </ogc:PropertyIsGreaterThanOrEqualTo>
      <ogc:PropertyIsLessThanOrEqualTo>
        <ogc:PropertyName>visualisa
        <ogc:Literal>20960</ogc:Lit
      </ogc:PropertyIsLessThanOrEqualTo>
    </ogc:And>
  </ogc:Filter>
  <MinScaleDenominator>0</MinScaleDenominator>
  <MaxScaleDenominator>75000</MaxScaleDenominator>
  <LineSymbolizer>
    <Stroke>
      <CssParameter name="stroke">9c9c9c<
      <CssParameter name="stroke-width">2
    </Stroke>
  </LineSymbolizer>
</Rule>
<Rule>
  <Title>Lokale weg: lijn</Title>
  <ogc:Filter>
    <ogc:And>
      <ogc:PropertyIsGreaterThanOrEqualTo>
```

MAP FILES, SLDs, MapnikXML

```
<?xml version="1.0" encoding="ISO-8859-1"?>
<StyledLayerDescriptor version="1.0.0"
  xsi:schemaLocation="http://www.opengis.net/sld StyledLayerDescriptor.xsd"
  xmlns="http://www.opengis.net/sld"
  xmlns:ogc="http://www.opengis.net/ogc"
  xmlns:xlink="http://www.w3.org/1999/xlink"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
  <NamedLayer>
    <Name>osm_line</Name>
    <UserStyle>
      <Title>A boring default style</Title>
      <Abstract>A sample style that just prints out a green line</Abstract>
      <FeatureTypeStyle>
        <Rule>
          <MinScaleDenominator>0</MinScaleDenominator>
          <MaxScaleDenominator>48000</MaxScaleDenominator>
          <Name>osm_line</Name>
          <Title>Start- en landingsbanen</Title>
          <Abstract>Visualisatie van start- en landingsbanen</Abstract>
          <ogc:Filter>
            <ogc:PropertyIsEqualTo>
              <ogc:PropertyName>aeroway</ogc:PropertyName>
              <ogc:Literal>runway</ogc:Literal>
            </ogc:PropertyIsEqualTo>
          </ogc:Filter>
          <LineSymbolizer>
            <Stroke>
              <CssParameter name="stroke">#ffffff</CssParameter>
              <CssParameter name="stroke-width">8</CssParameter>
              <CssParameter name="stroke-linecap">round</CssParameter>
              <CssParameter name="stroke-linejoin">miter</CssParameter>
            </Stroke>
          </LineSymbolizer>
        </Rule>
      </FeatureTypeStyle>
    </FeatureTypeStyle>
    <Rule>
      <MinScaleDenominator>0</MinScaleDenominator>
      <MaxScaleDenominator>48000</MaxScaleDenominator>
      <Name>osm_line</Name>
      <Title>Taxibanen</Title>
      <Abstract>Visualisatie van taxibanen</Abstract>
      <ogc:Filter>
        <ogc:PropertyIsEqualTo>
          <ogc:PropertyName>aeroway</ogc:PropertyName>
          <ogc:Literal>taxiway</ogc:Literal>
        </ogc:PropertyIsEqualTo>
      </ogc:Filter>
      <LineSymbolizer>
        <Stroke>
          <CssParameter name="stroke">#ffffff</CssParameter>
```


DESIGNERS V. TERMINALS

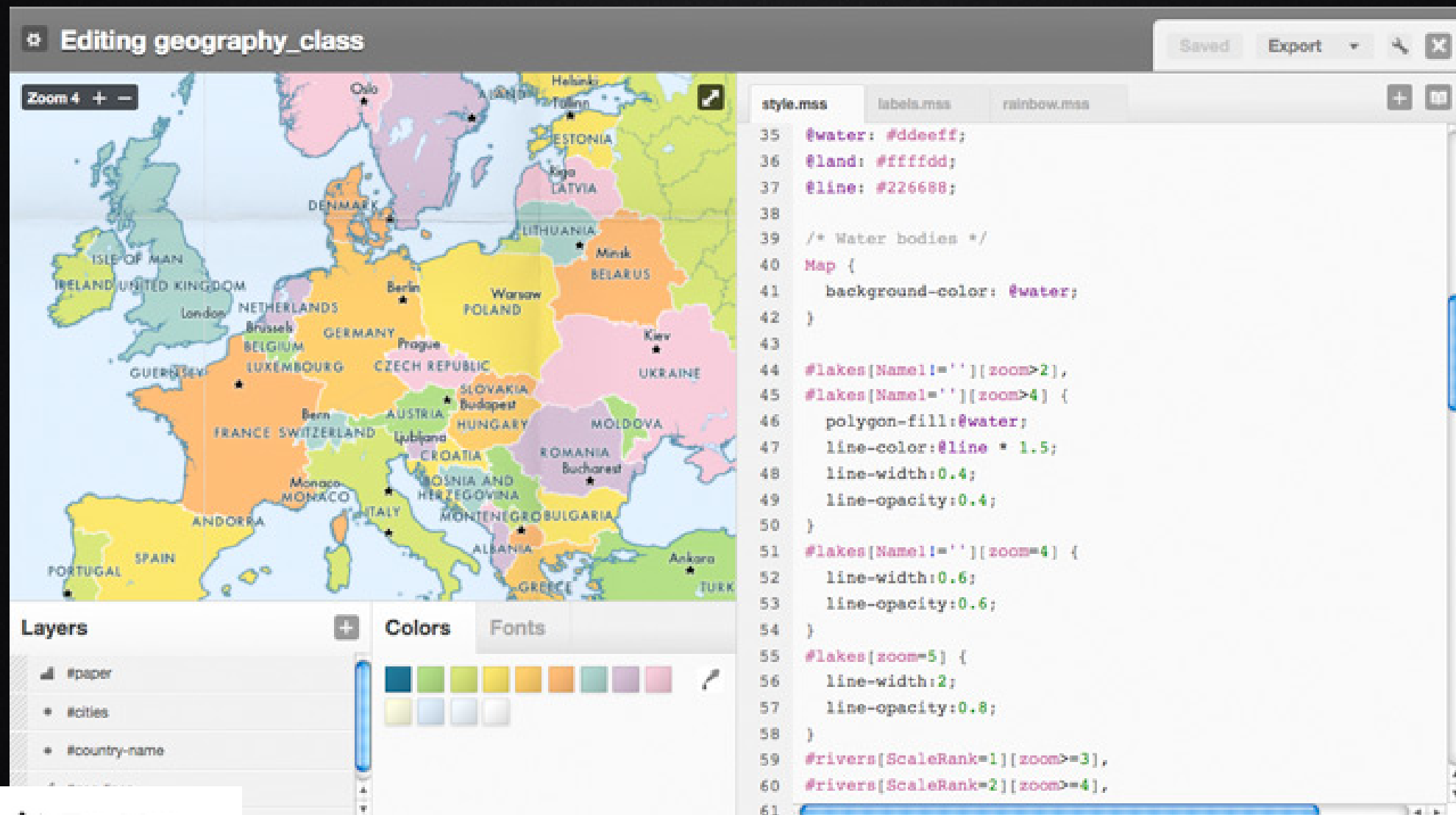
- Desktop GIS

- QuantumGIS: Map file (plugin) and SLD (native)
- OpenJUMP: SLDs (Geotools)
- ESRI ArcGIS: GeoCat Bridge plugin

- CSS-like

- GeoServer CSS plugin
- Cascadenik
- Carto

TILEMILL: A CARTO EDITOR

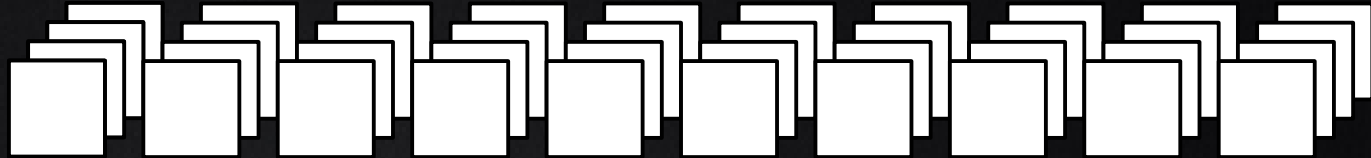


TileMill

Design beautiful maps

CLASSIC VALUE CHAIN

- Application



- Service



- Platform

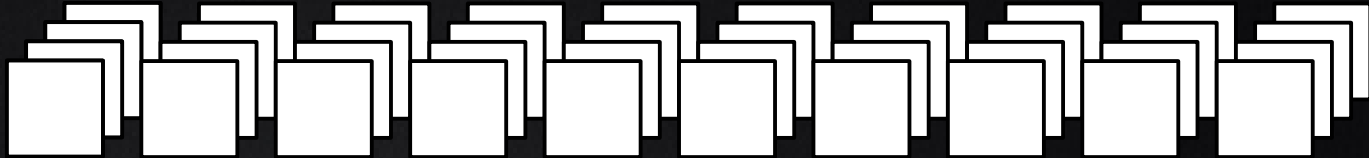


- Data



NEW VALUE CHAIN

- Application



- Service

YOU!

- Platform



- Data



Made with
Natural Earth

Free vector and raster map data @ naturalearthdata.com



DIR. GEN. PUBLIC WORKS



Rijkswaterstaat
Ministerie van Infrastructuur en Milieu

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[zoek](#)

[Sitemap](#) [Uitgebreid zoeken](#)

[Home](#)

Andere categorie: Werkzaamheden

Selecteer kaart: Geplande werkzaamheden weg

Selecteer hinderklasse: Werk in voorbereiding **Van:** 12-08-201 **Tot:** 19-08-201

Zoek locatie: Adressen [Zoek >](#) [Link](#)

Postcode, plaatsnaam en/of adres



[Kaart >](#) [Satelliet >](#)

[Print](#) [Stuur door](#)

Gerelateerde informatie

- > [Actuele verkeersinformatie](#)
- > [Zie van A naar Beter voor hinderinformatie](#)
- > [Wegenoverzicht](#)



MapServer
open source web mapping

PUBLIC SERVICE ON THE MAP

Zoek op locatie

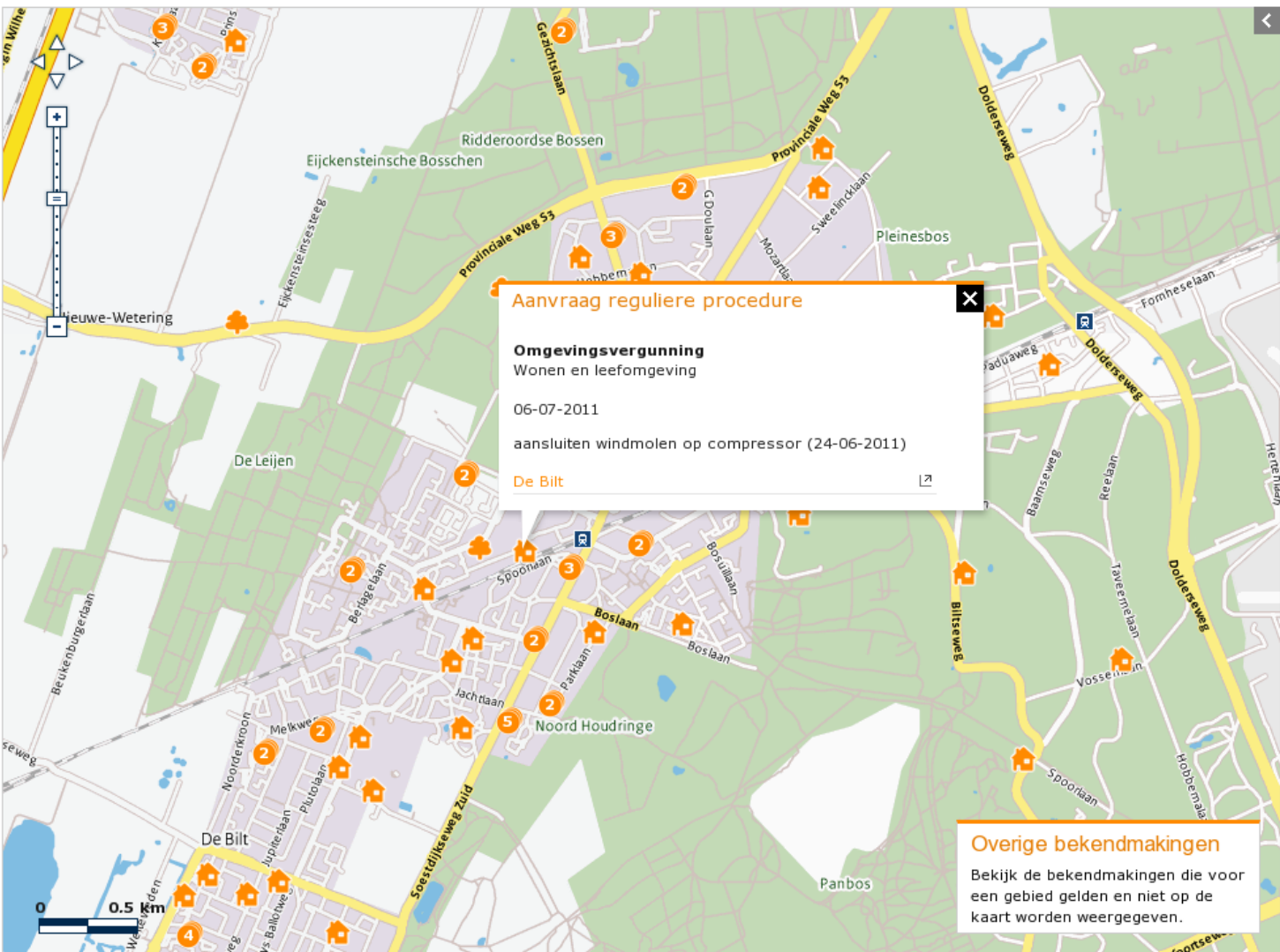


Postcode of plaatsnaam

Zoek locatie >

Onderwerpen ⓘ

- Consumentenzaken ☒
- Cultuur, sport en vrije tijd ☒
- Familie, jeugd en gezin ☒
- Natuur en milieu ☒
- Overheid en democratie ☒
- Rechtspraak en veiligheid ☒
- Verkeer, voertuigen en wegen ☒
- Wonen en leefomgeving ☒
- Meerdere bekendmakingen



Aanvraag reguliere procedure

Omgevingsvergunning
Wonen en leefomgeving

06-07-2011

aansluiten windmolen op compressor (24-06-2011)

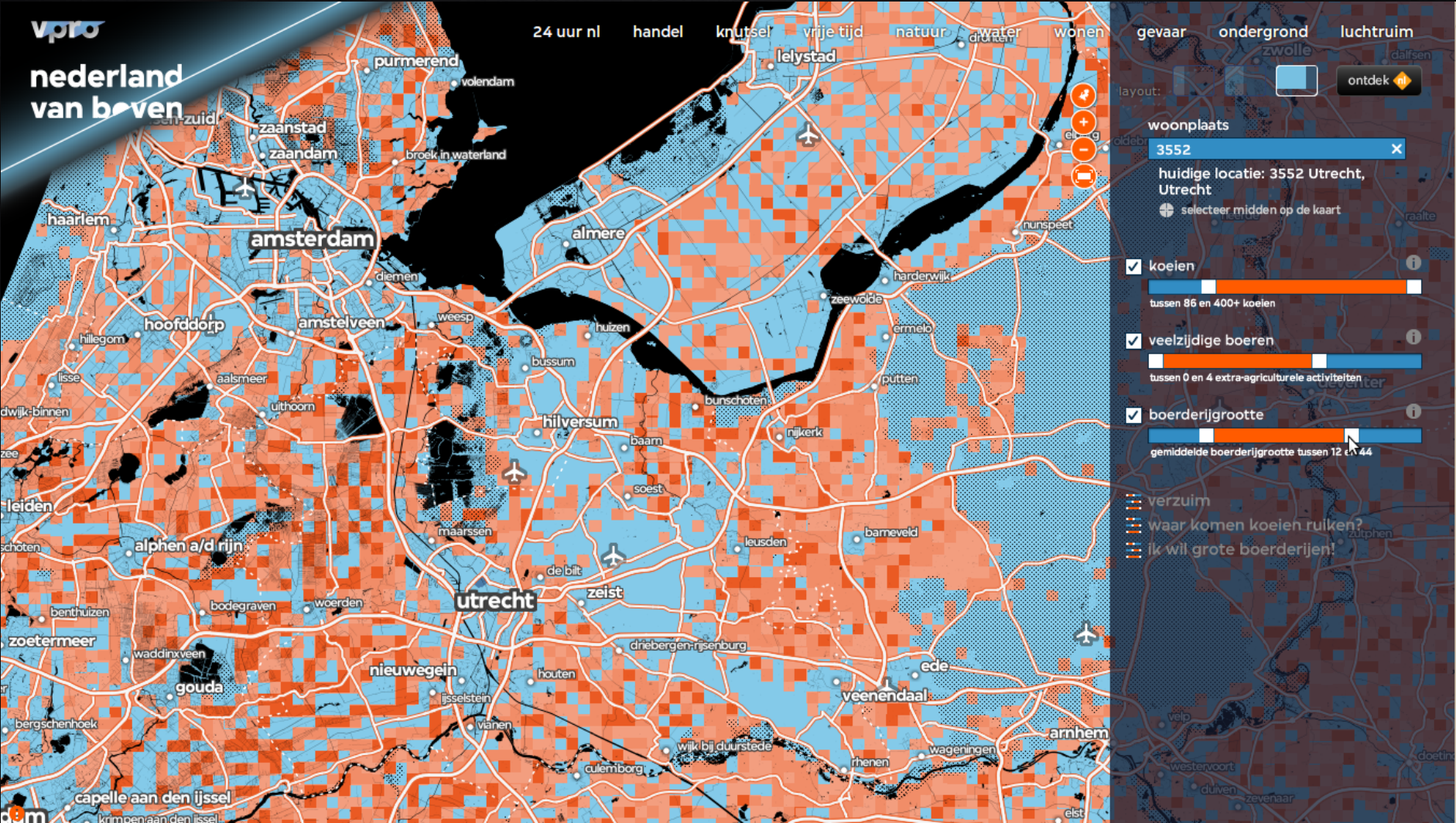
[De Bilt](#)

Overige bekendmakingen

Bekijk de bekendmakingen die voor een gebied gelden en niet op de kaart worden weergegeven.

Kaartgegevens: © CBS, Kadaster, [OpenStreetMap](#)-auteurs ([CC-BY-SA](#)).

NETHERLANDS FROM ABOVE

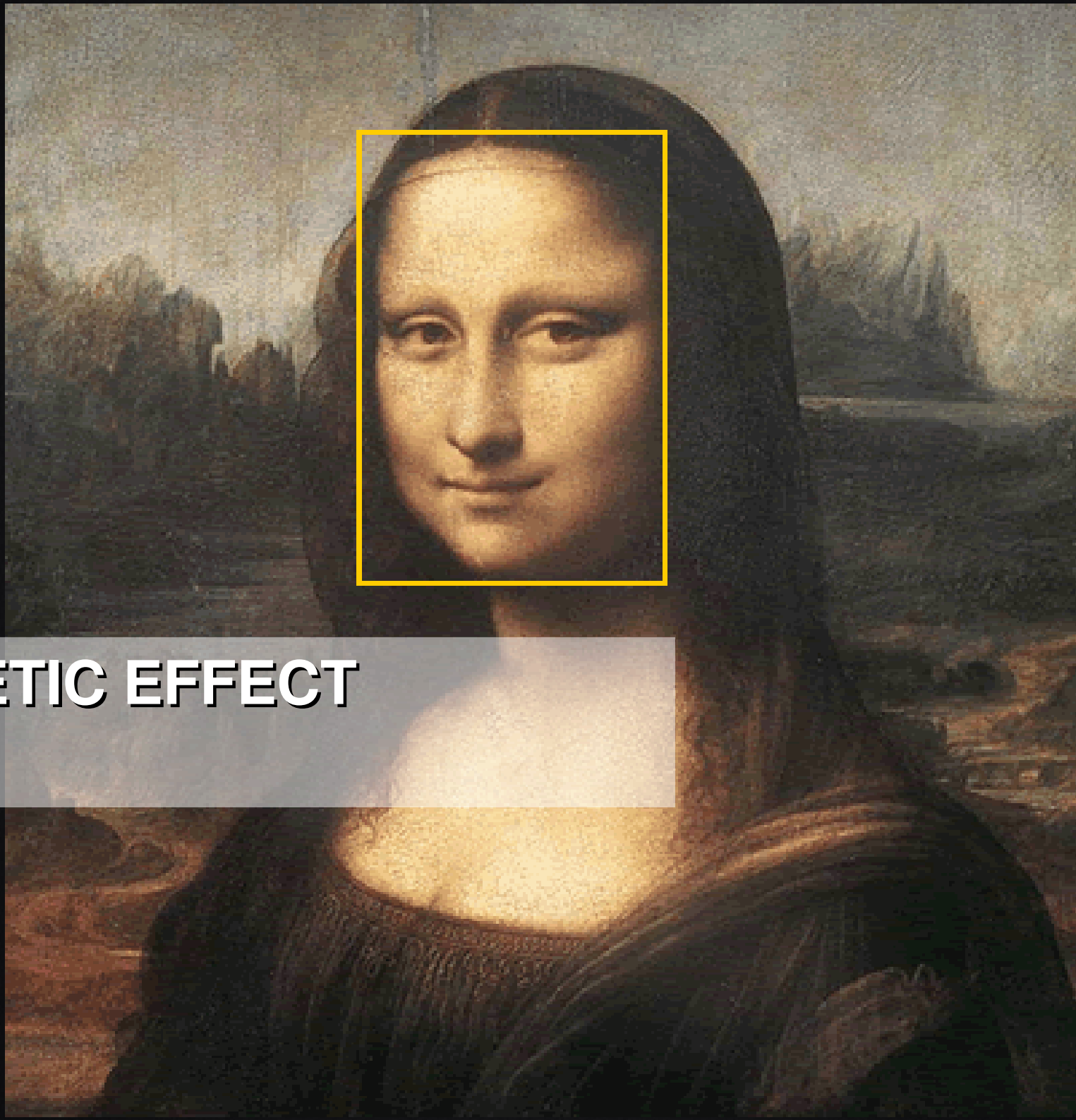


Cartography is

the science,
the technology and

the **art**

of making maps



ESTHETIC EFFECT

Beautiful designs
are perceived as
more user-friendly
and better

Fotogalerij

| Diensten |

Zoek

  Nederlands ▼

[Ga naar Schip](#)

▼ Meer...

- ## Ontvangststations

Available on the iPhone
App Store

Supported by:

Microsoft CRM Online
werkt zeer eenvoudig

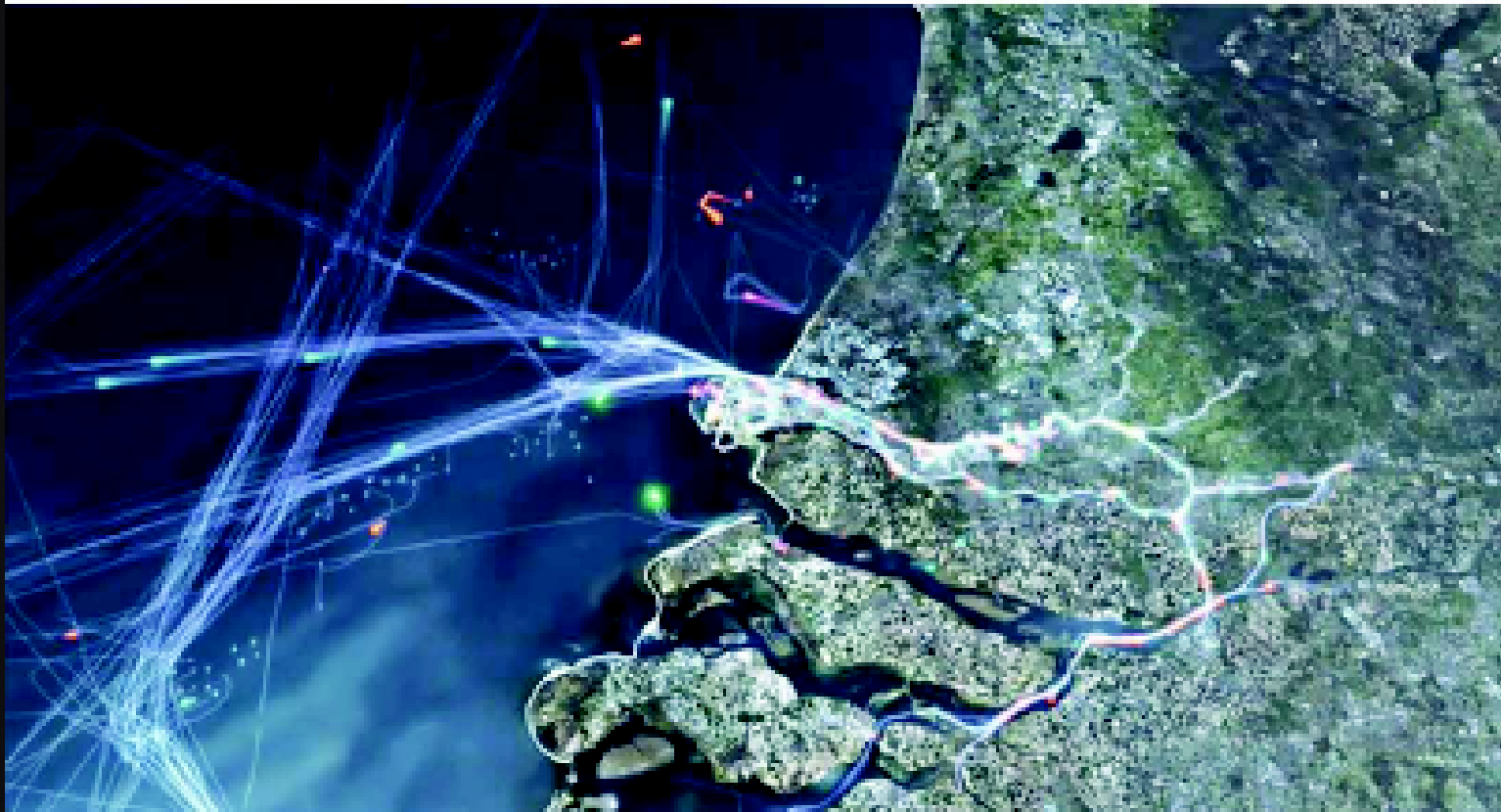
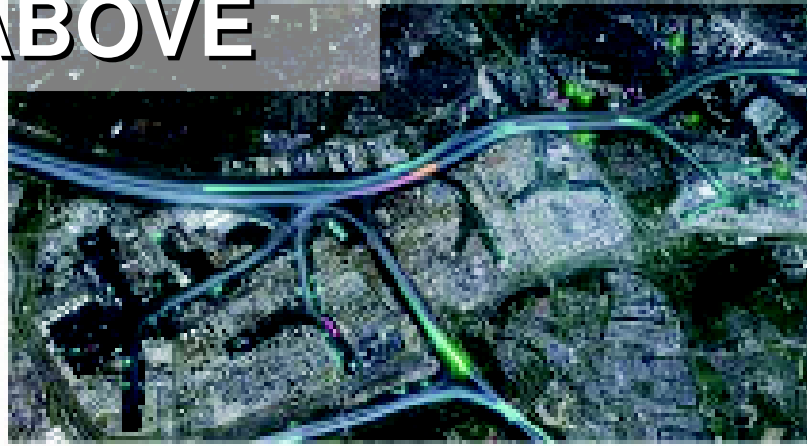
Egeïsche Zee [Lees de gebruiksvoorwaarden](#) **Notices:** Scheepsposities kunnen tot één uur oud of onvolledig zijn. Gegevens worden informatief verstrekt en kunnen niet gebruikt worden scheepsnavigatie. Alle rechten voorbehouden. Geen enkel deel van MarineTraffic mag worden gekopieerd, gereproduceerd of uitgezonden in eender welke vorm of op enige andere wijze, zonder voorafgaande schriftelijke toestemming van het wetenschappelijk

Holland America Line
Experience Our Award-Winning Service. Find
Your Cruise Now.

nl.HollandAmerica.com AdChoices

   Like  1k

NETHERLANDS FROM ABOVE

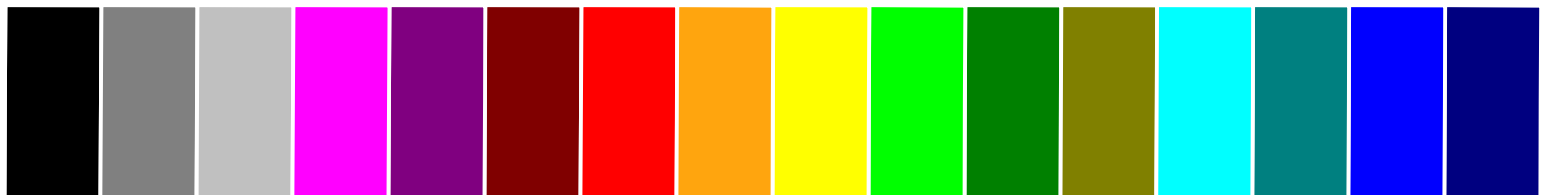
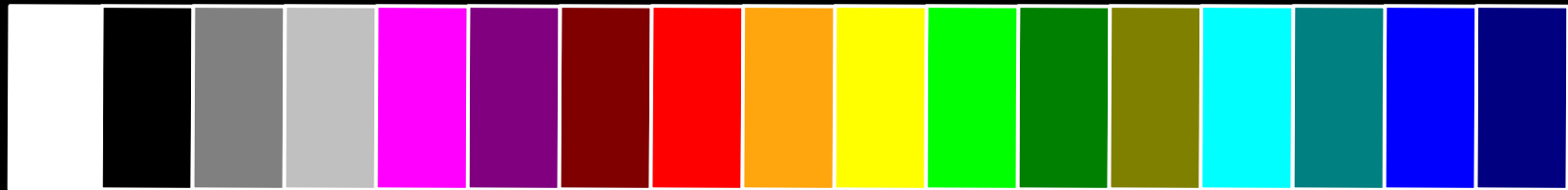




COLOUR USE

WEB COLOURS

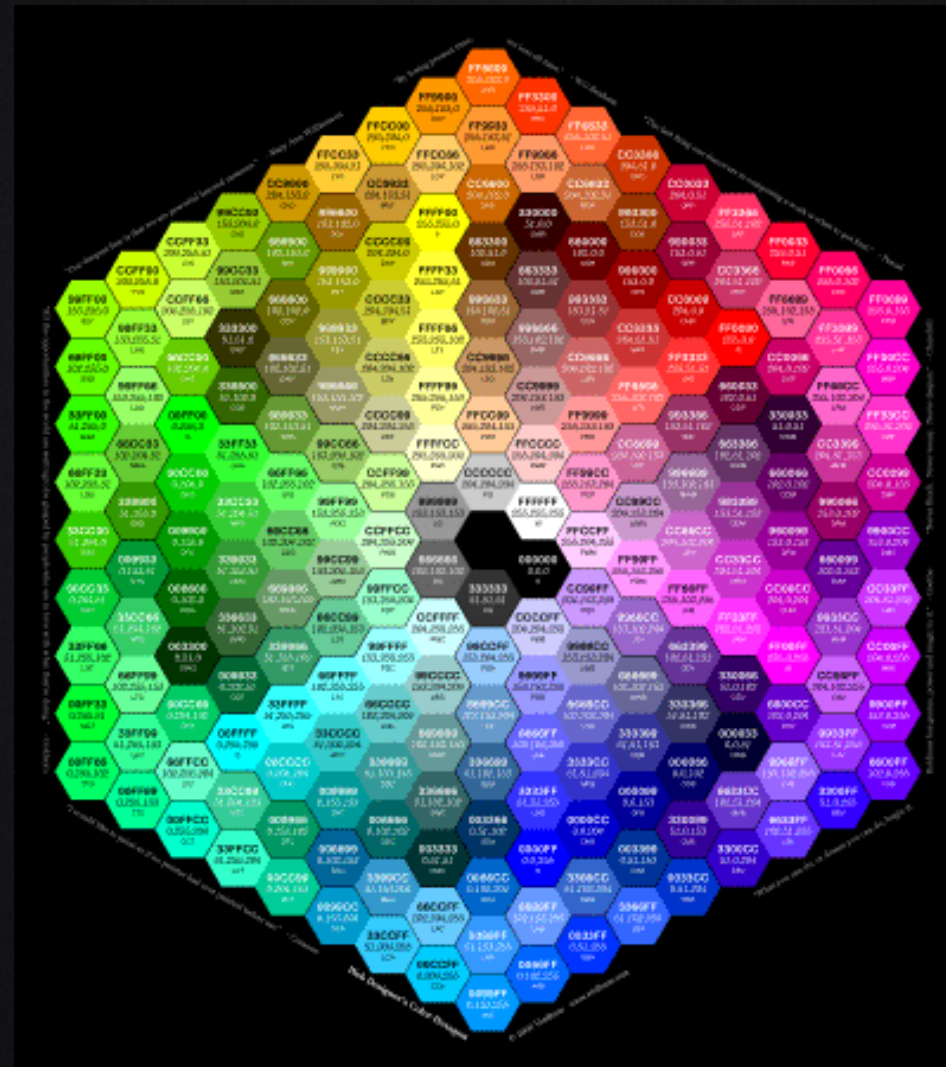
HTML4 and CSS 2.1: 16 + 1



+130 colours in SVG 1.0 = 147 in CSS 3

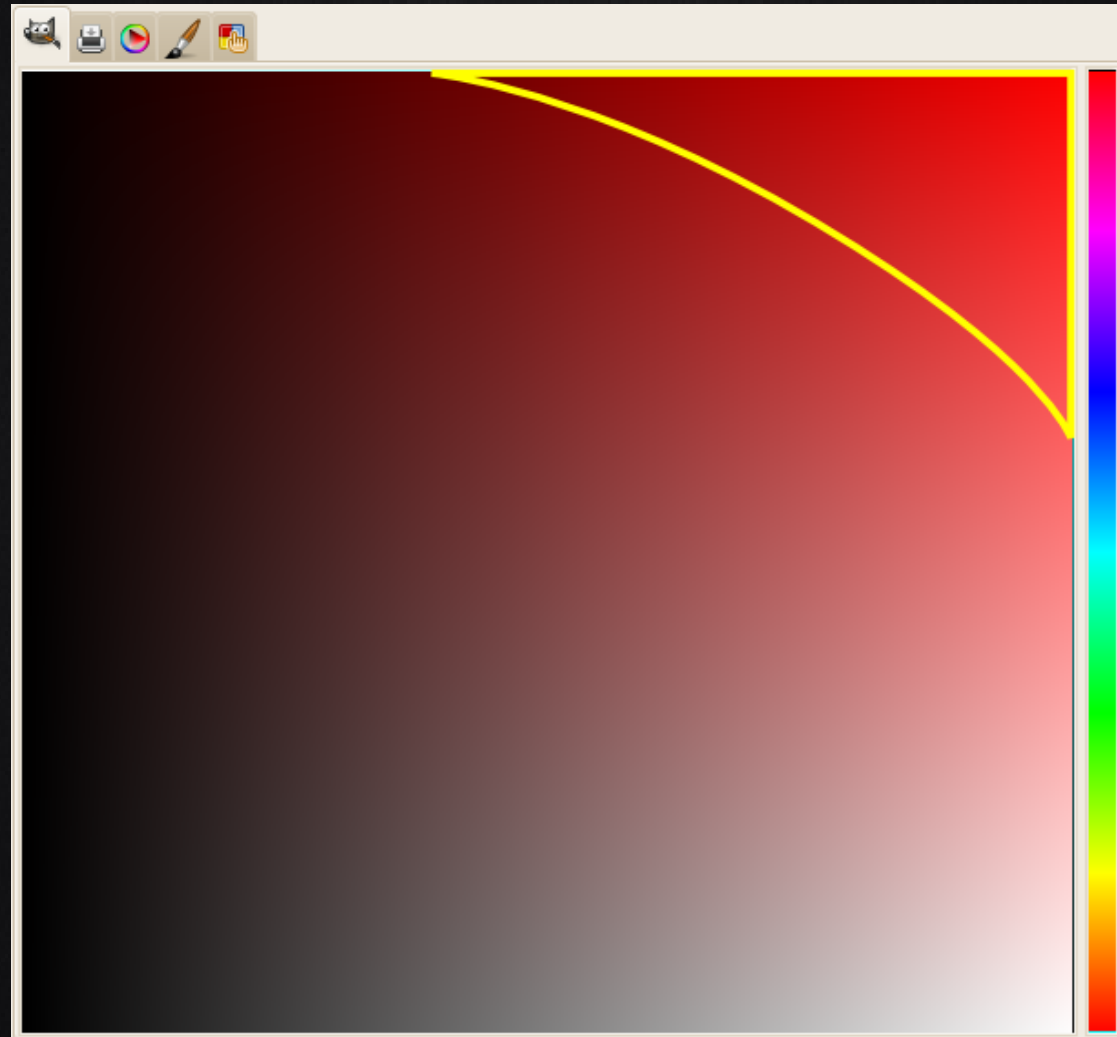
WEB COLOURS

216 “web safe” colours

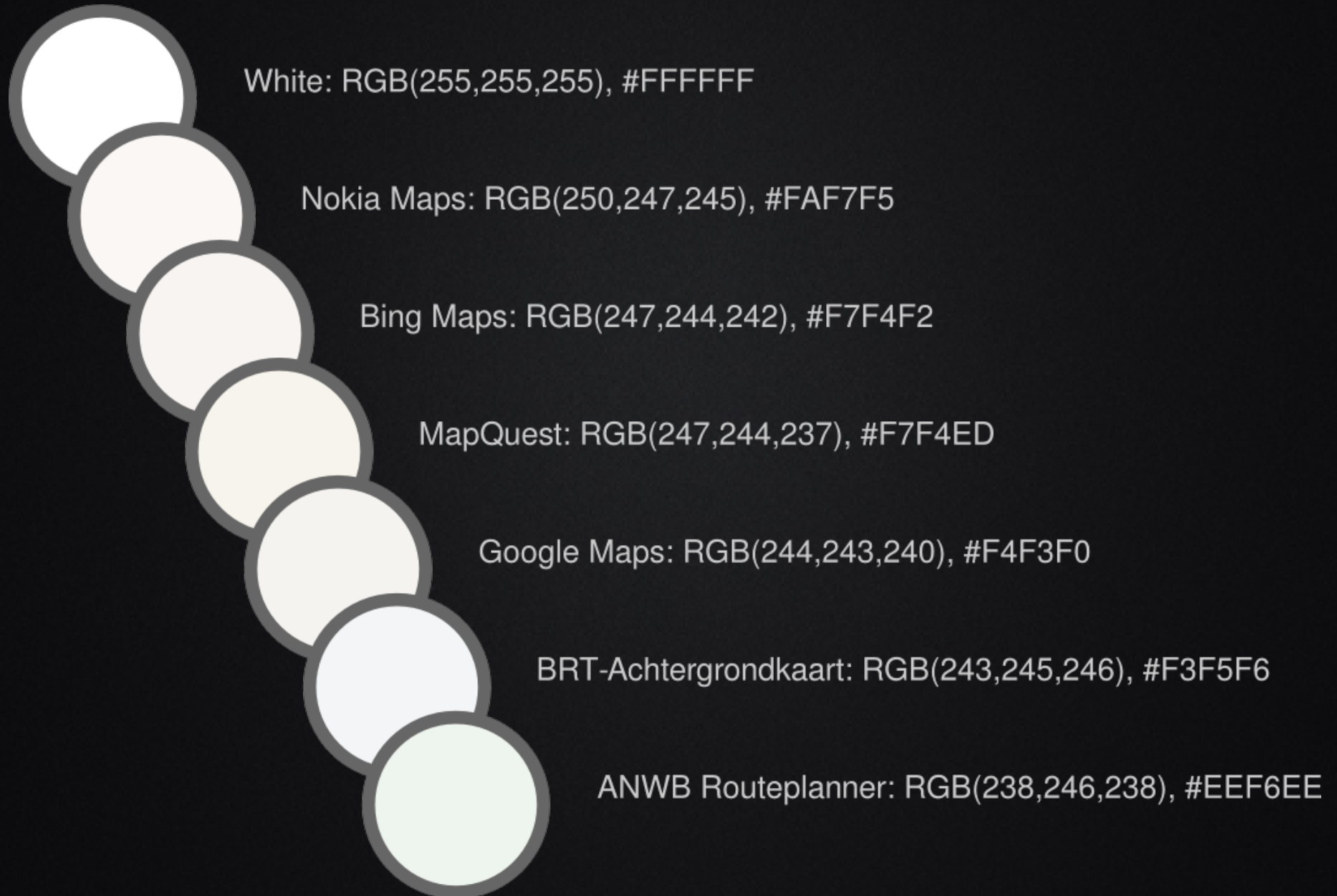


SATURATION

Hue, Saturation, Lightness (HSL)



SATURATION: WHITE



SATURATION: BLACK

+Edward Zoeken Afbeeldingen Maps Play YouTube Nieuws Gmail Documenten Agenda Meer -

Google

Edward Mac Gillavry 0 + Delen

Routebeschrijving Mijn plaatsen

Standaardlocatie instellen
Zet uw bedrijf op Google Maps

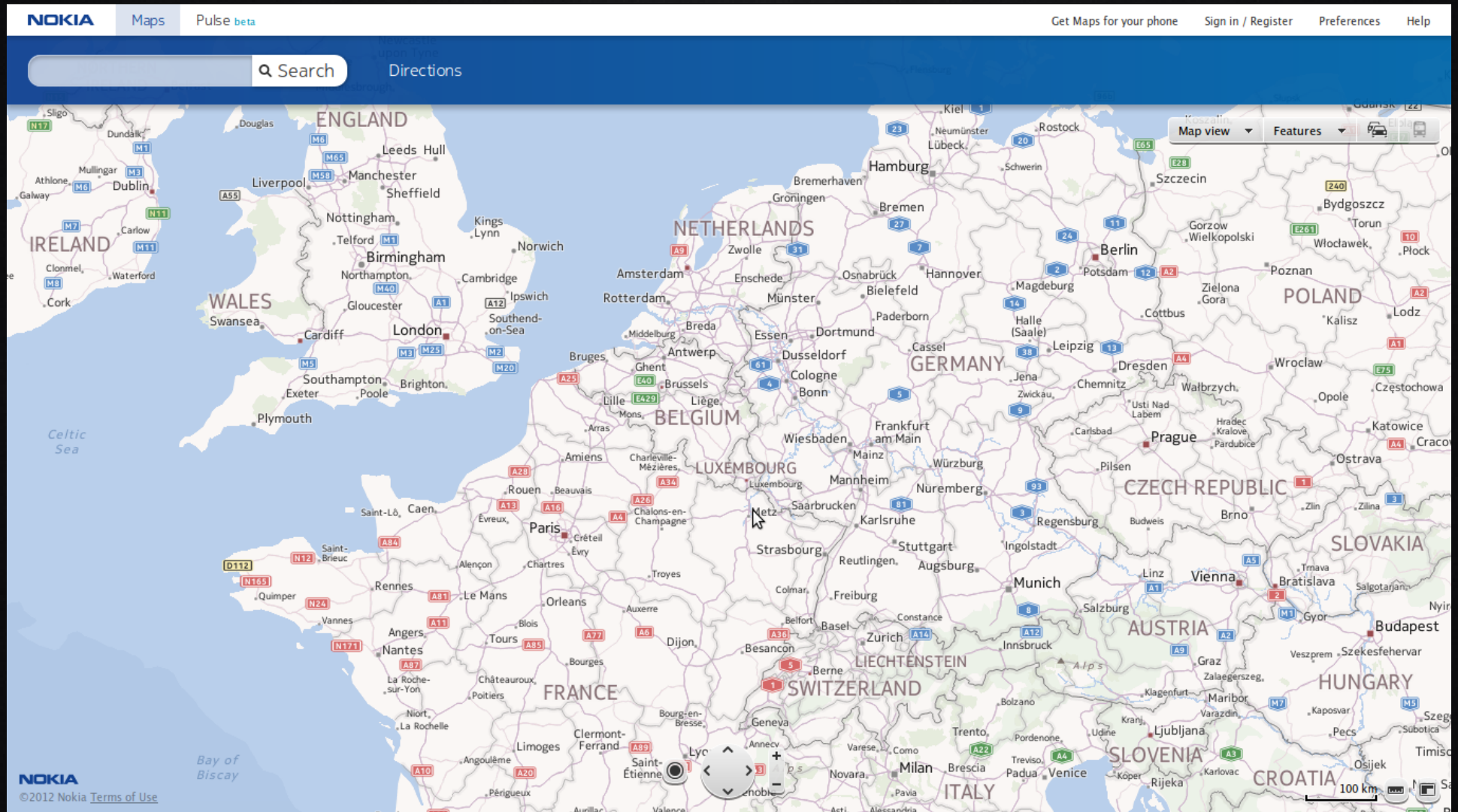
Ervaar MapsGL

Een probleem melden - Labs-functies voor Maps - Help
Google Maps - ©2012 Google - gebruiksvoorwaarden - Privacy

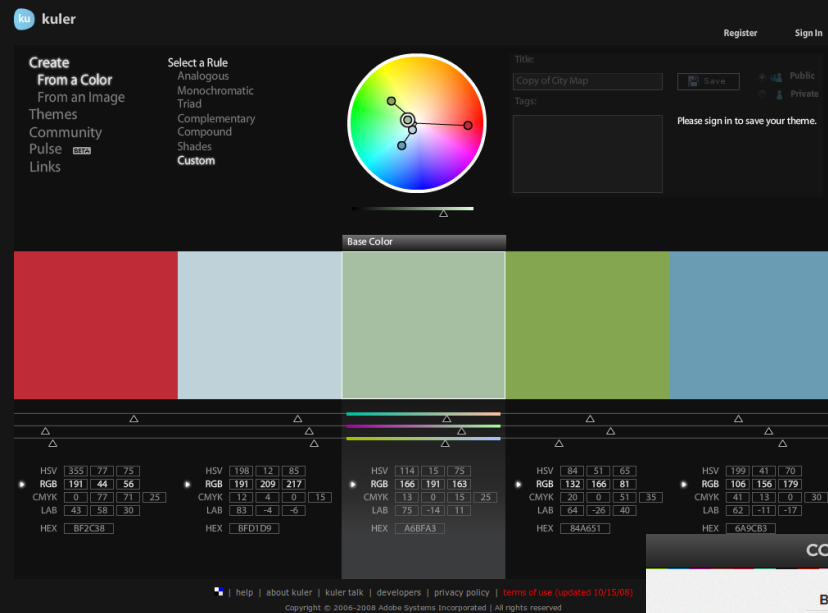


Map showing Europe, including the United Kingdom, France, Germany, Switzerland, Austria, and the Czech Republic. Major cities like London, Paris, Amsterdam, and Berlin are visible. The map is labeled with country names in Dutch and German: Nederland (Netherlands), België (Belgium), Deutschland (Germany), Schweiz Suisse Svizzera (Switzerland), Österreich (Austria), and Česká republika (Czech Republic). The map also shows the English Channel, the North Sea, and the Atlantic Ocean. A scale bar at the bottom left indicates 100 miles and 100 kilometers. The Google Maps interface is visible, including the search bar, navigation controls, and a sidebar with links to 'Routebeschrijving' and 'Mijn plaatsen'.

SATURATION: BLACK

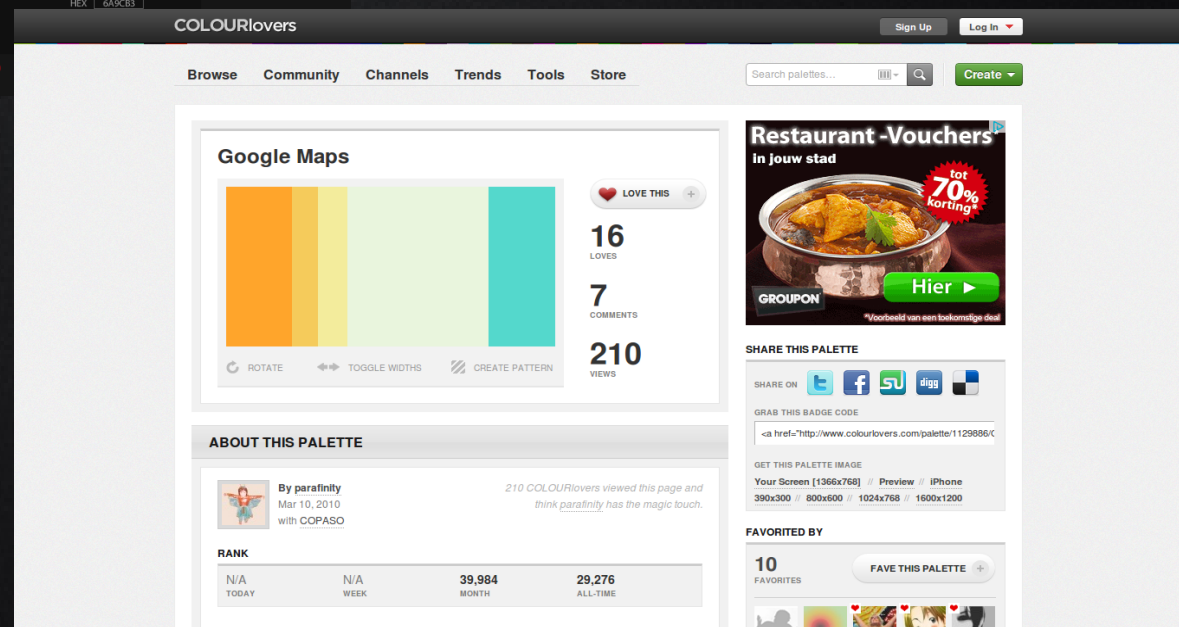


COLOUR COMBINATIONS



kuler.adobe.com

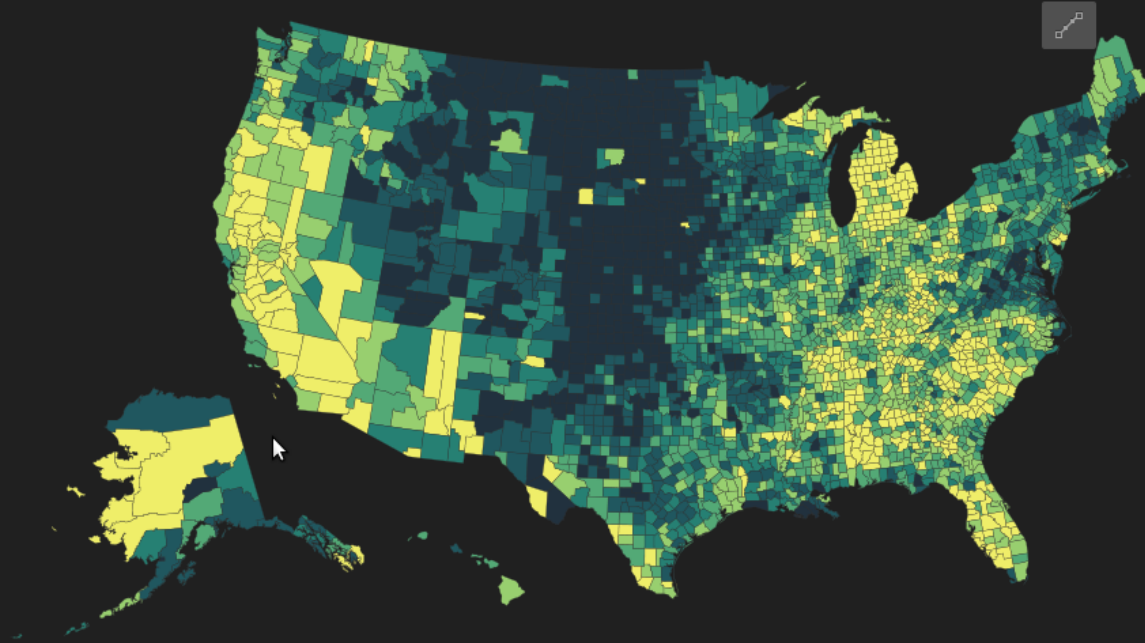
www.colourlovers.com



COLOUR COMBINATIONS



hue, chroma, lightness colorpicker for data.



Built off of Gregor Aisch's [demo](#) and color conversion library [chroma.js](#). Map powered by [D3.js](#).

tristen.ca/hcl-picker/

COLOUR COMBINATIONS

number of data classes on your map
5 [learn more >](#)

the nature of your data
sequential [learn more](#)

pick a color scheme: Oranges

(optional) only show schemes that are
☐ colorblind safe ☐ print friendly
☐ photocopy-able [learn more >](#)

pick a color system
254, 237, 222 ☒ RGB ☐ CMYK ☐ HEX
253, 190, 133
253, 141, 60
230, 85, 13
166, 54, 3

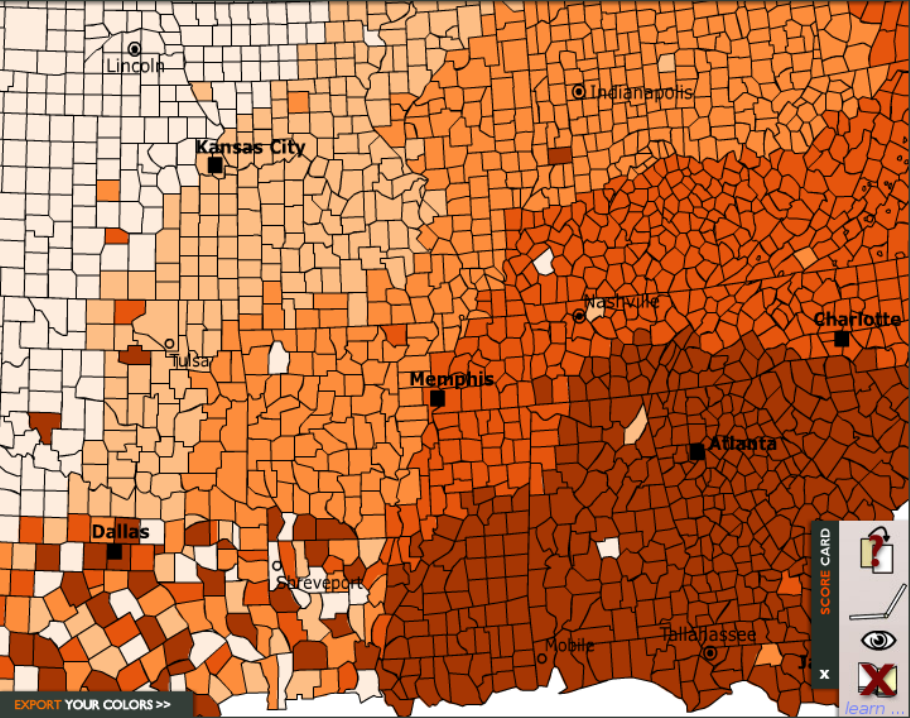
adjust map context
☐ roads
☒ cities
☒ borders

select a background
☒ solid color
☐ terrain

EXPORT YOUR COLORS >>

how to use | updates | credits

COLORBREWER 2.0
color advice for cartography



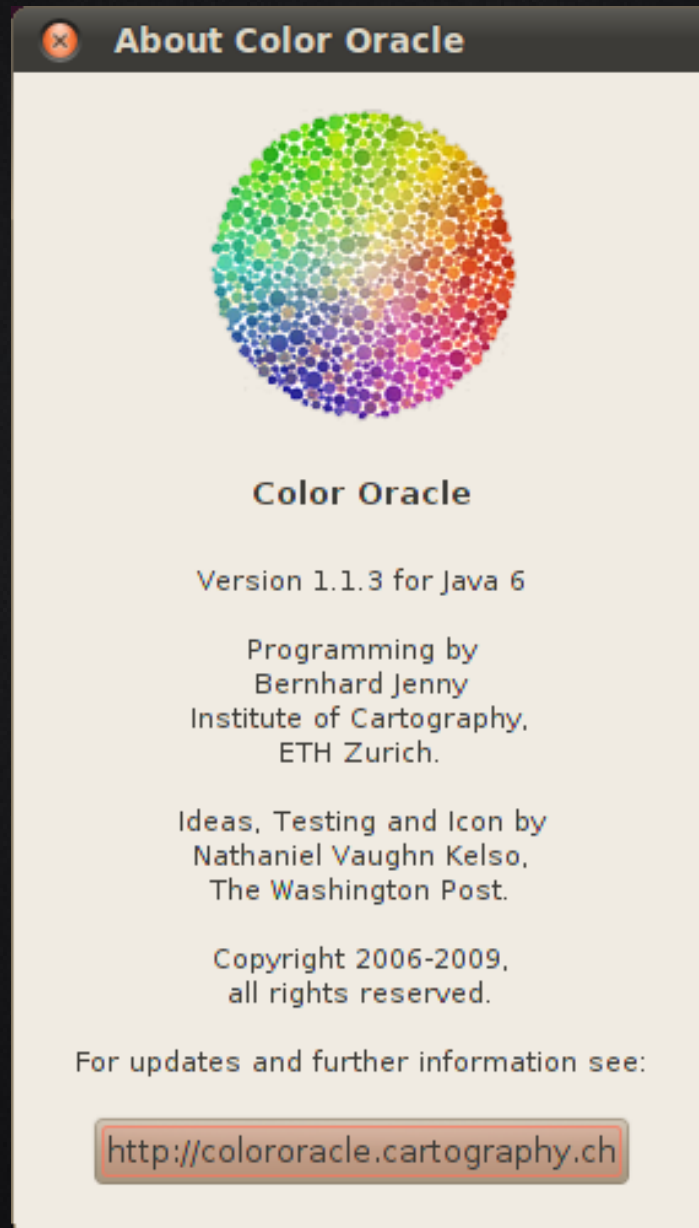
SCORE CARD

axm

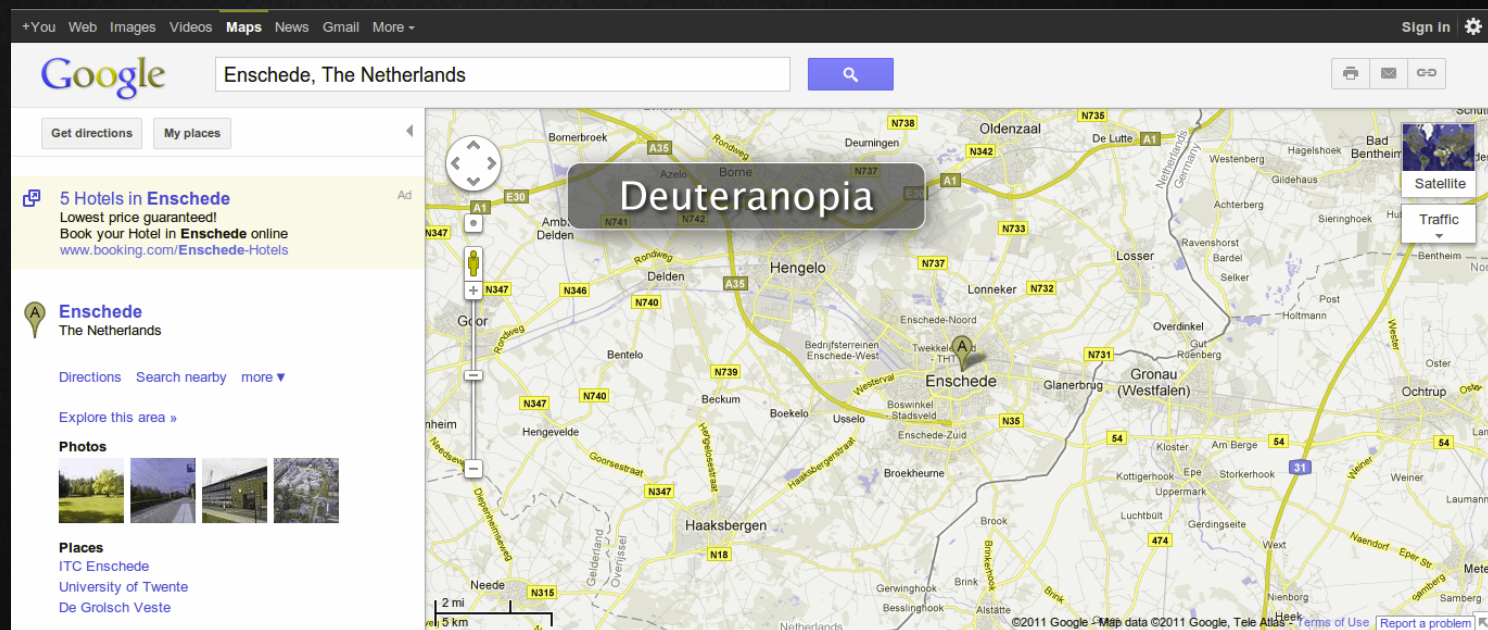
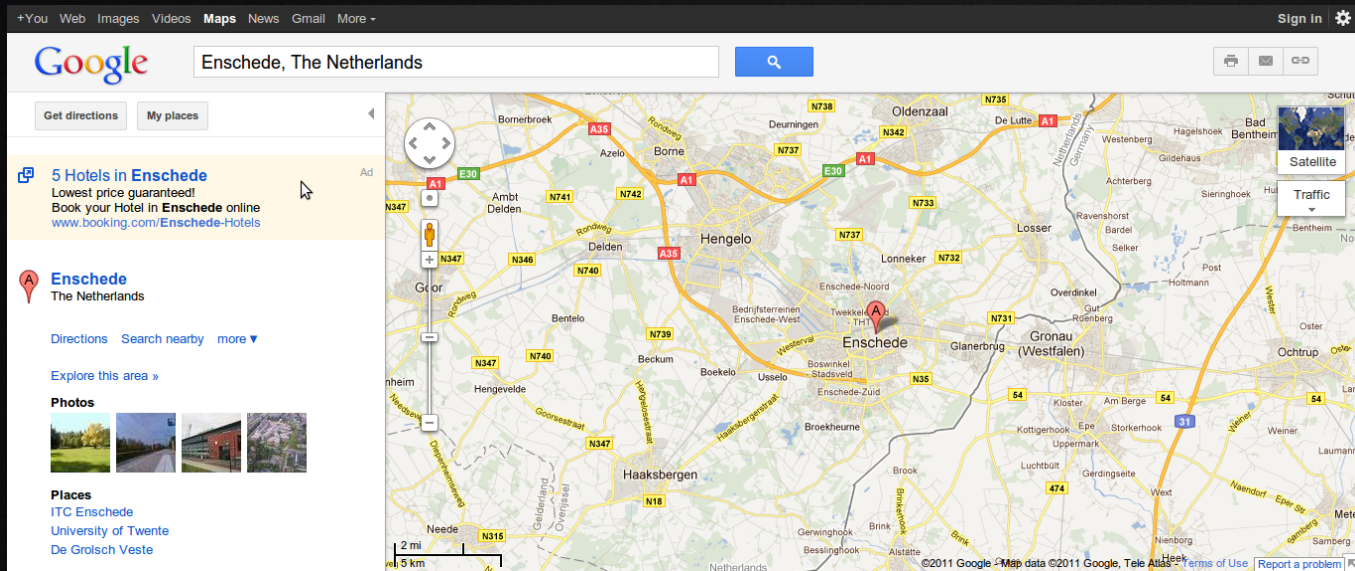
© Cynthia Brewer, Mark Harrower and The Pennsylvania State University
[Support](#)
[Back to ColorBrewer 1.0](#)

www.colorbrewer2.org

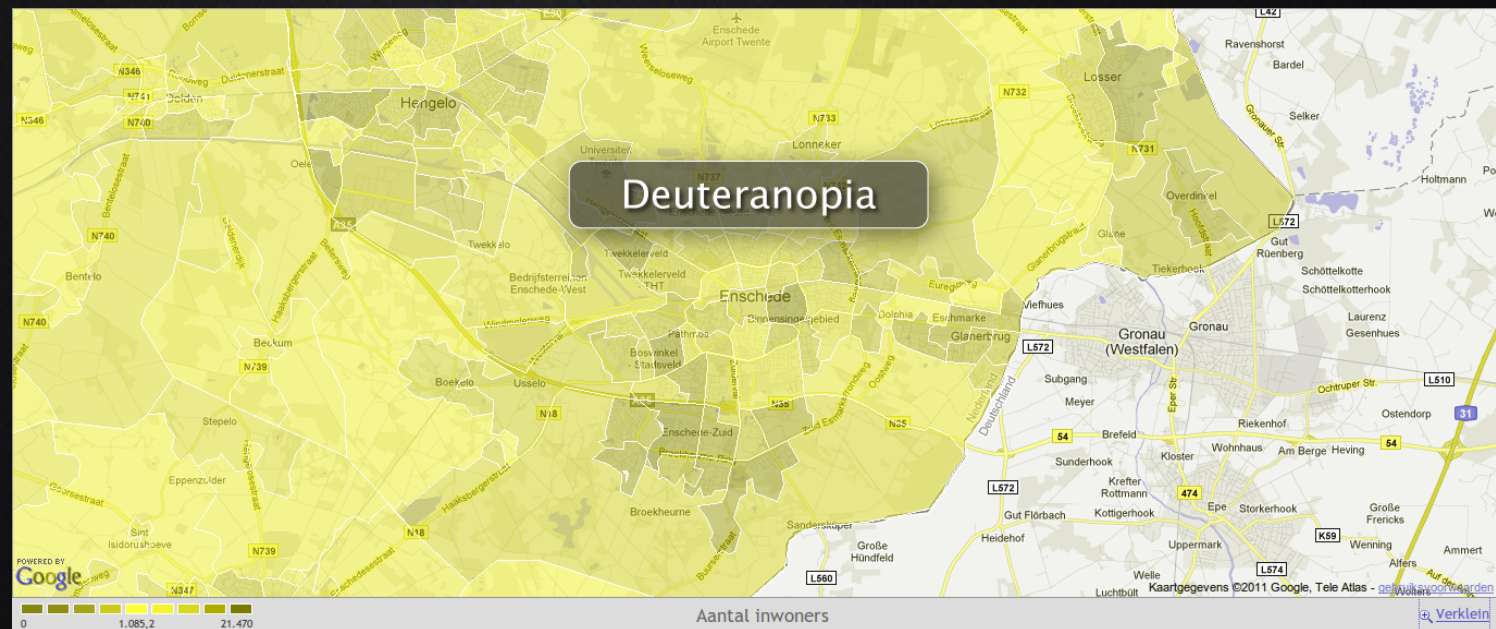
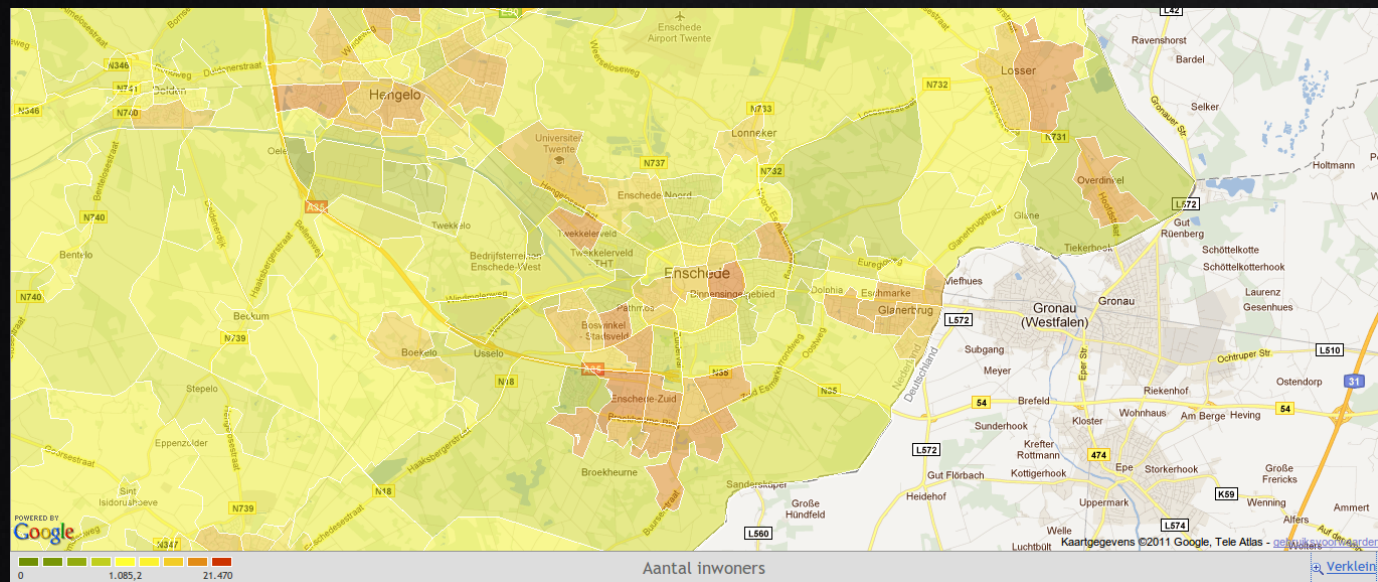
COLOUR BLINDNESS



COLOUR BLINDNESS



COLOUR BLINDNESS





TYPOGRAPHY

TYPEFACE SELECTION

- Sans-serif or **serif** ?
- Different weights:
 - Medium, Semi-bold
 - Bold
- Condensed

COMBINING TYPEFACES

2 EXPLORE Learn More >>

Restart Reload

CONTEMPORARY | B

Size Density Tracking

☒ Terrain ☒ Highlight ☐ Text Only

3 GET SPECS Learn More >>

Map for: ☒ Screen ☐ Print

Labels Other Text

Countries
Font: Glypha 55 Roman
Size(pt): 10.5 - 21 Track: 0

Capital Cities
Font: Univers 57 Condensed
Size(pt): 14 Track: 0

Cities
Font: Univers 45 Light
Size(pt): 11.5 Track: 0

Mountains
Font: Univers 45 Light Obl
Size(pt): 12 - 23 Track: 37 - 875

Oceans
Font: Glypha 55 Obl
Size(pt): 12 - 18.5 Track: 25 - 50

Rivers
Font: Glypha 55 Obl
Size(pt): 11.5 Track: 12

Islands
Font: Glypha 55 Obl
Size(pt): 14 Track: 25

4 COMPARE

Your Fonts Font Alternatives Font Info

Type Families: Glypha / Univers

5 EXPORT Download the Template Print Spec Sheet

HELP

TYPEBREW

Major Places and Natural Features

0 150 300 miles

LAMBERT CONFORMAL CONIC PROJECTION

Info on Corsica and Sardinia: <http://en.wikipedia.org>
Places and Natural Features: CIA World Fact Book: <http://www.cia.gov/cia/publications/factbook/>

Joe Cartograper

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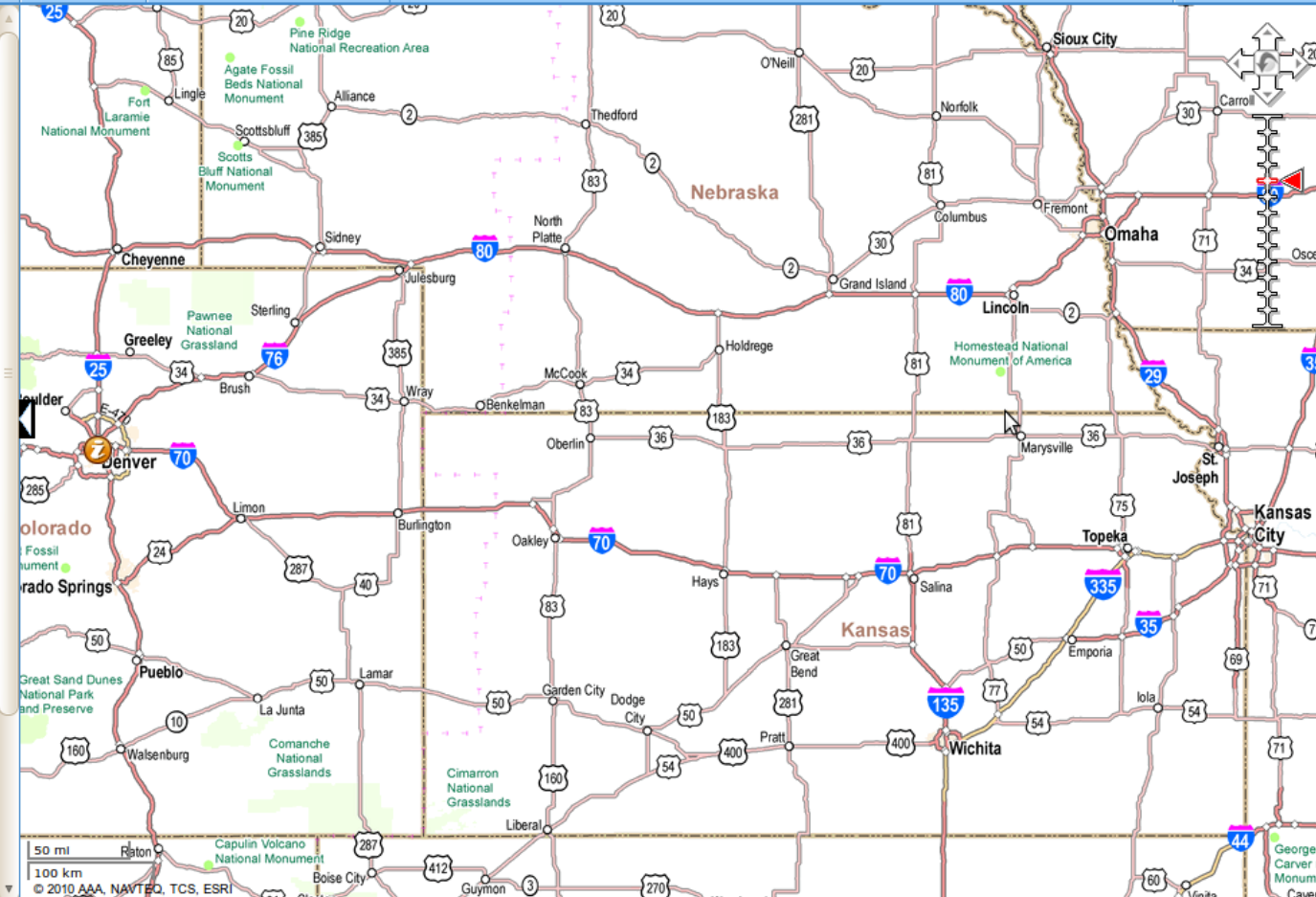
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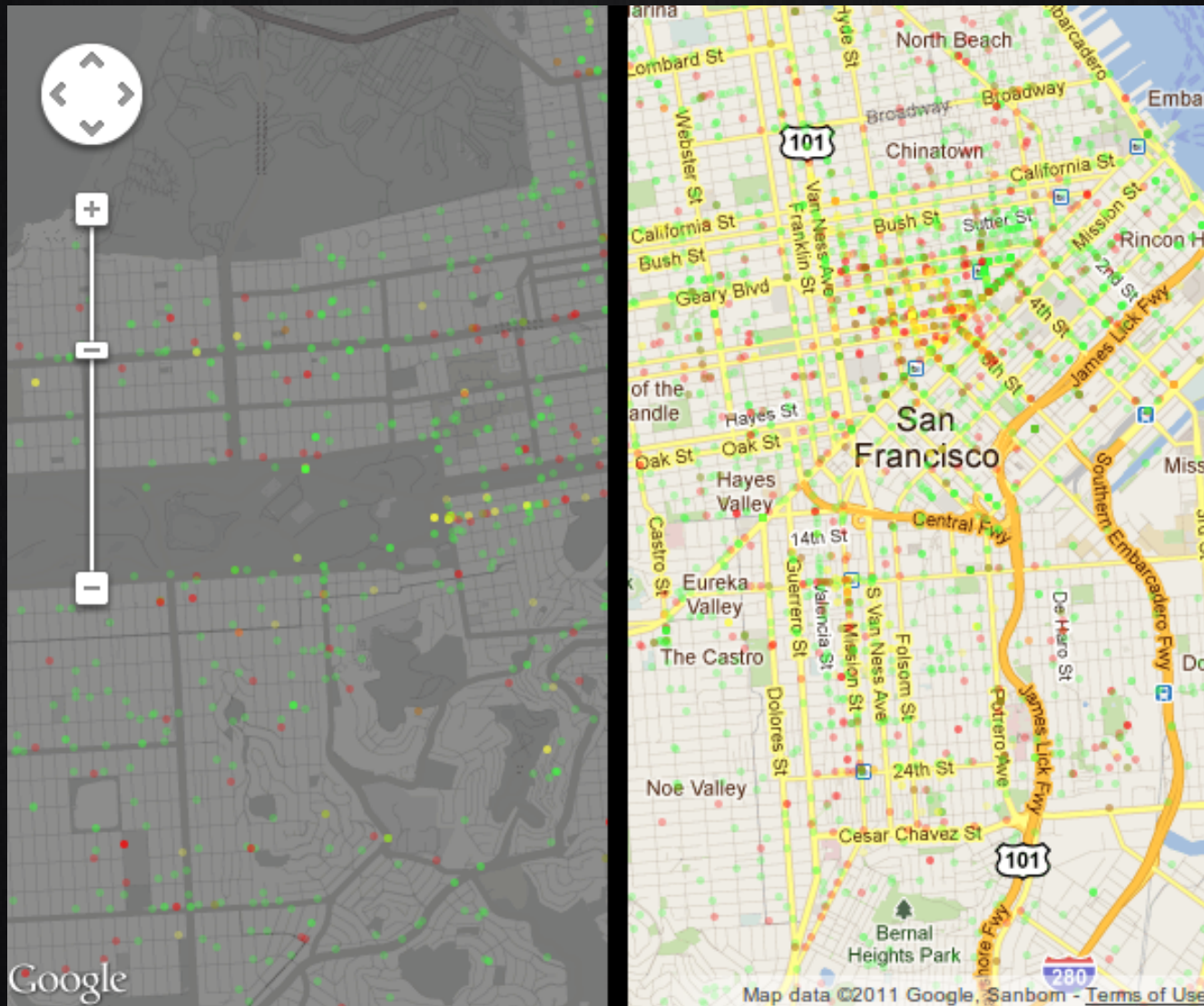

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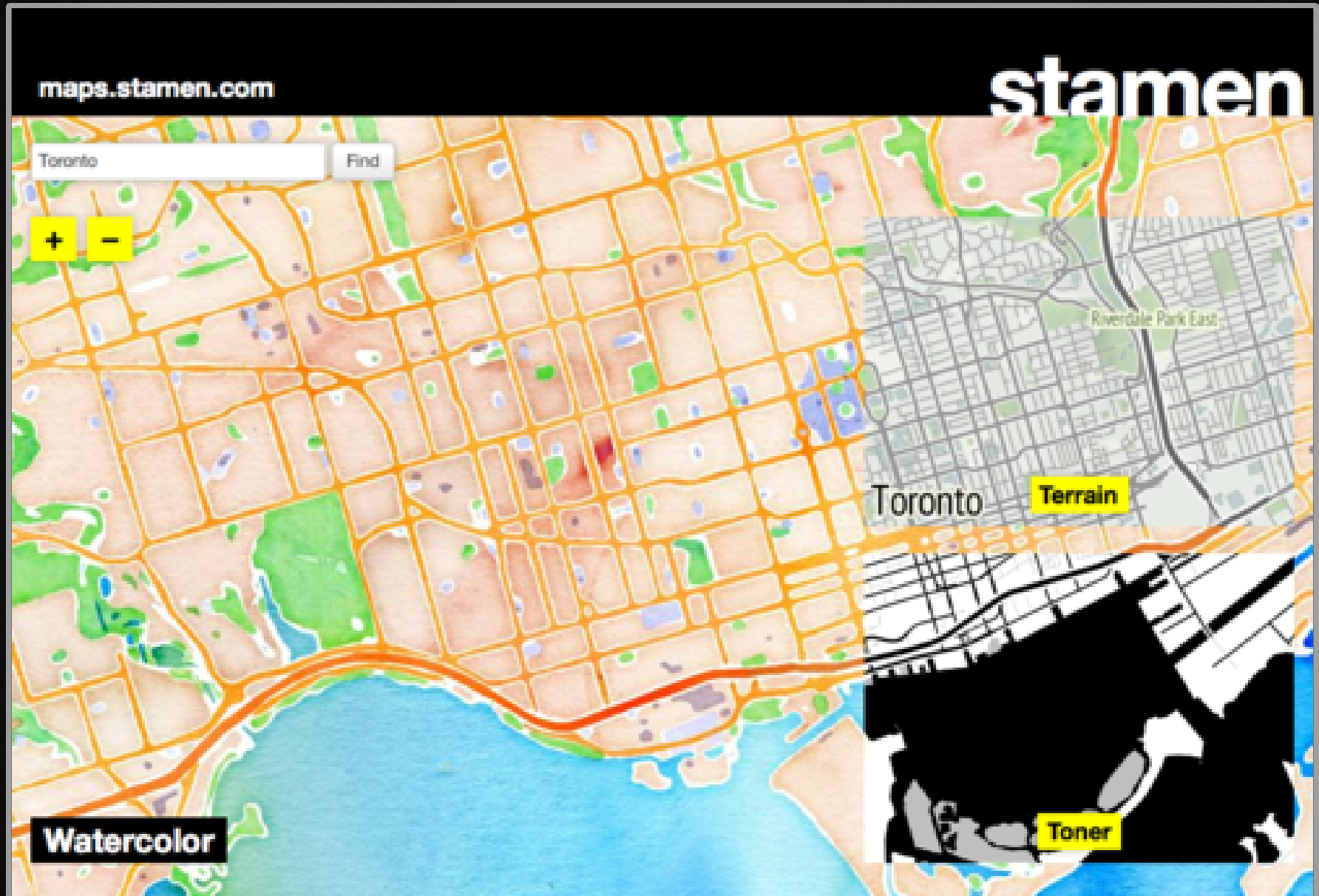
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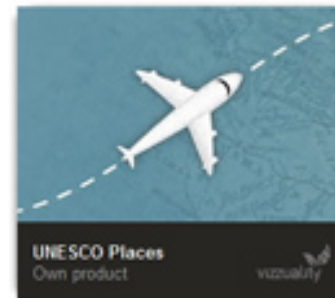
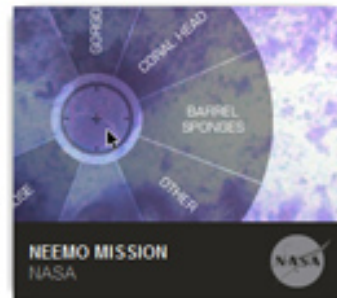


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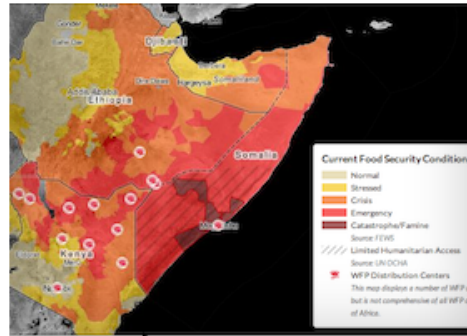
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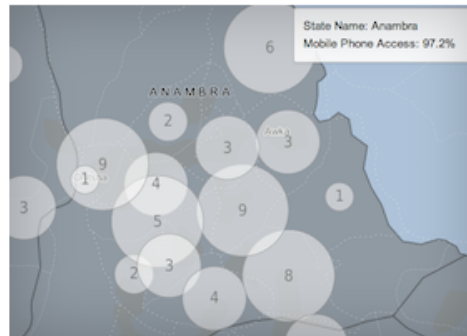
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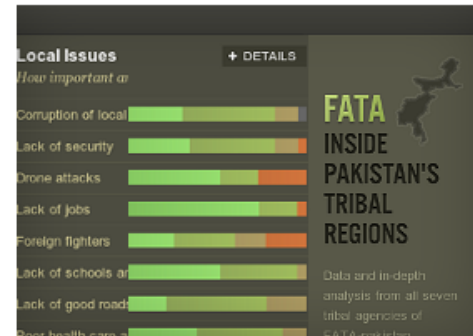
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