

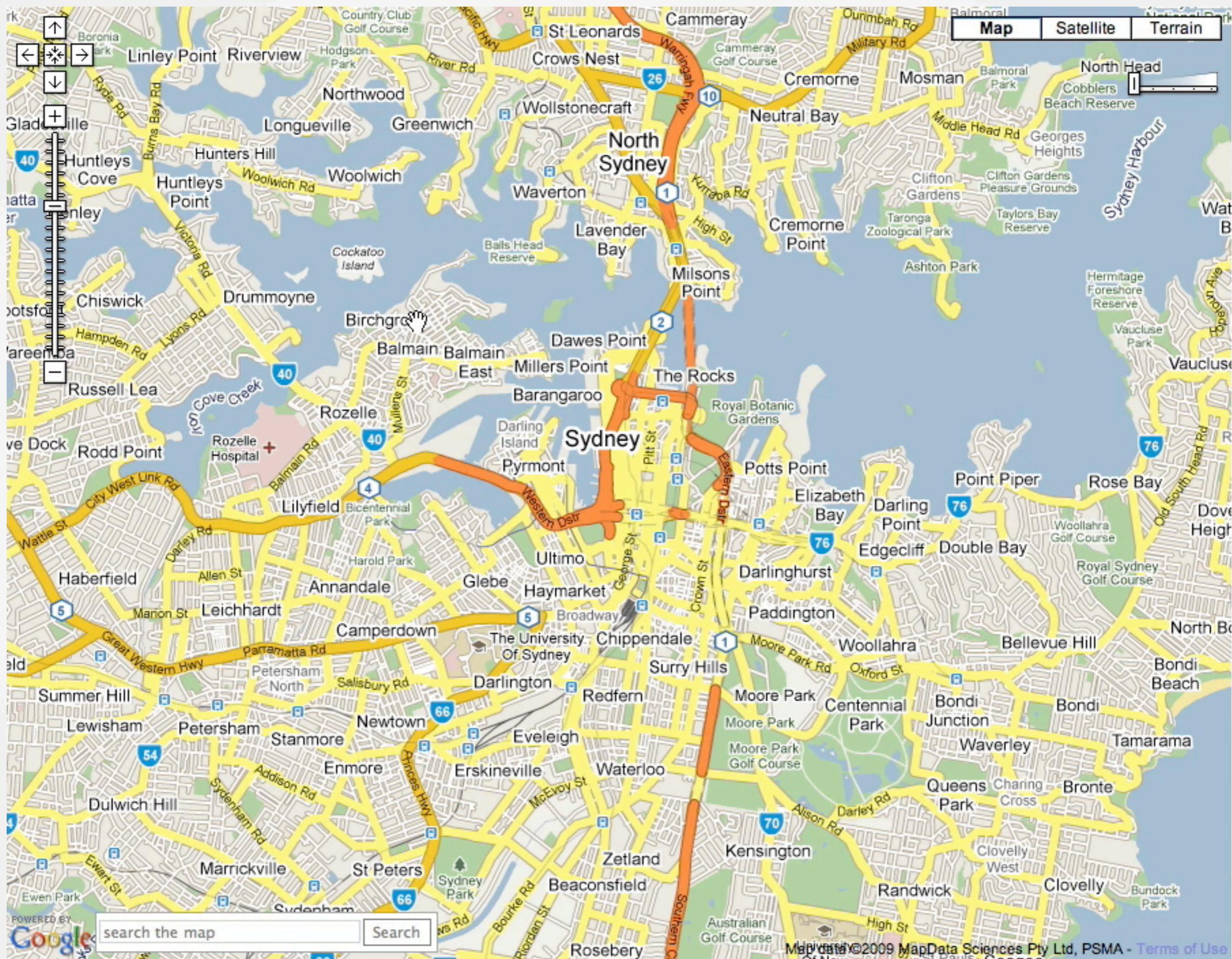


# Tile based map publishing

with WMTS TileServer, MapTiler and TileMill

Petr Pridal <[petr.pridal@klokantech.com](mailto:petr.pridal@klokantech.com)>

June 14th, Rapperswil 2013





# Dynamic

Caching / Seeding

# Pre-rendered



OpenGIS  
**WMS**

# Dynamic

MapServer  
GeoServer  
Mapnik

OpenGIS  
**WMTS**

OSGEO TMS

# Pre-rendered

MapTiler / GDAL2Tiles  
TileMill

# Caching / Seeding

TileCache  
MapCache  
GeoWebCache



# Advantages

Easy to prepare

Fast and beautiful

No extra server software needed

Any hosting or cloud storage, SLA, files or blobs

Reliability - cheaper to maintain

Basemaps, data without frequent updates

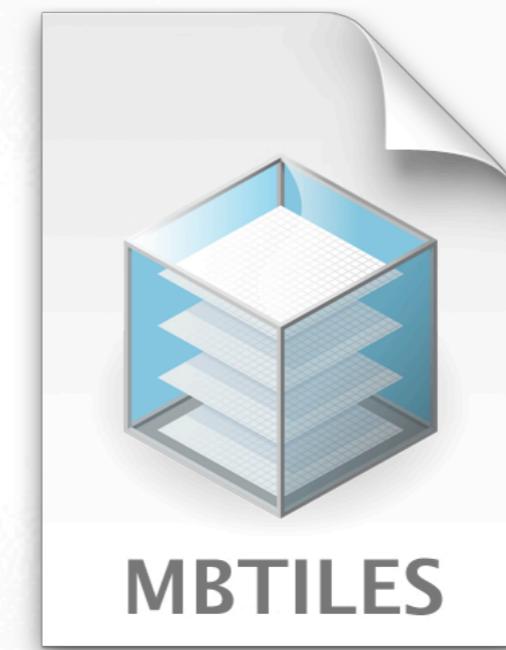
Easy offline mode - mobile apps

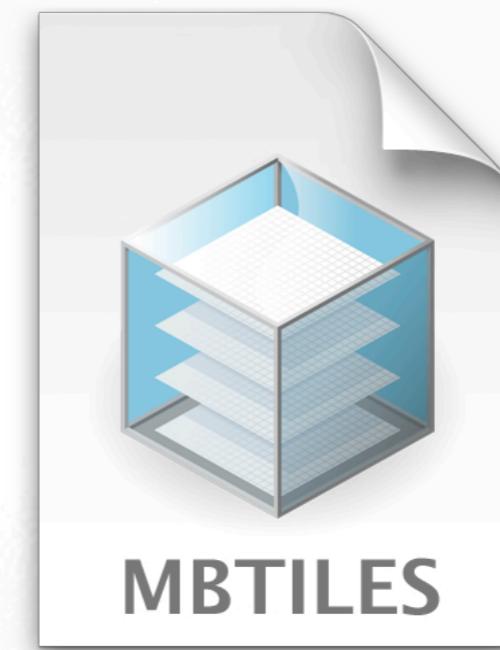
# Disadvantages

Possibly large data to store

Data for distribution different from master data

Live updates, extra processing, transfer

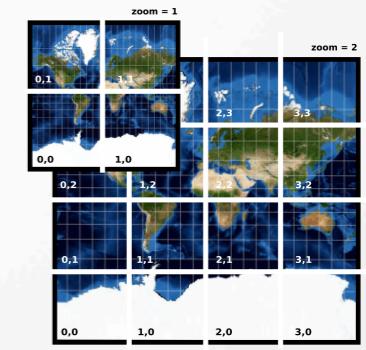
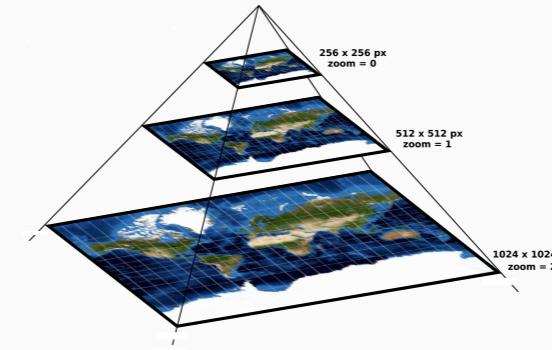
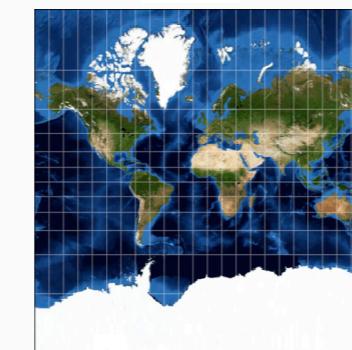
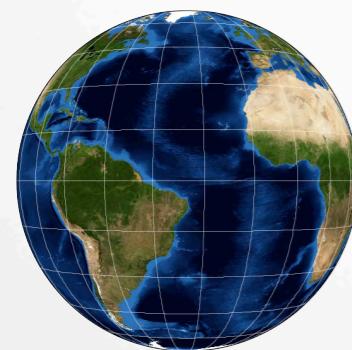
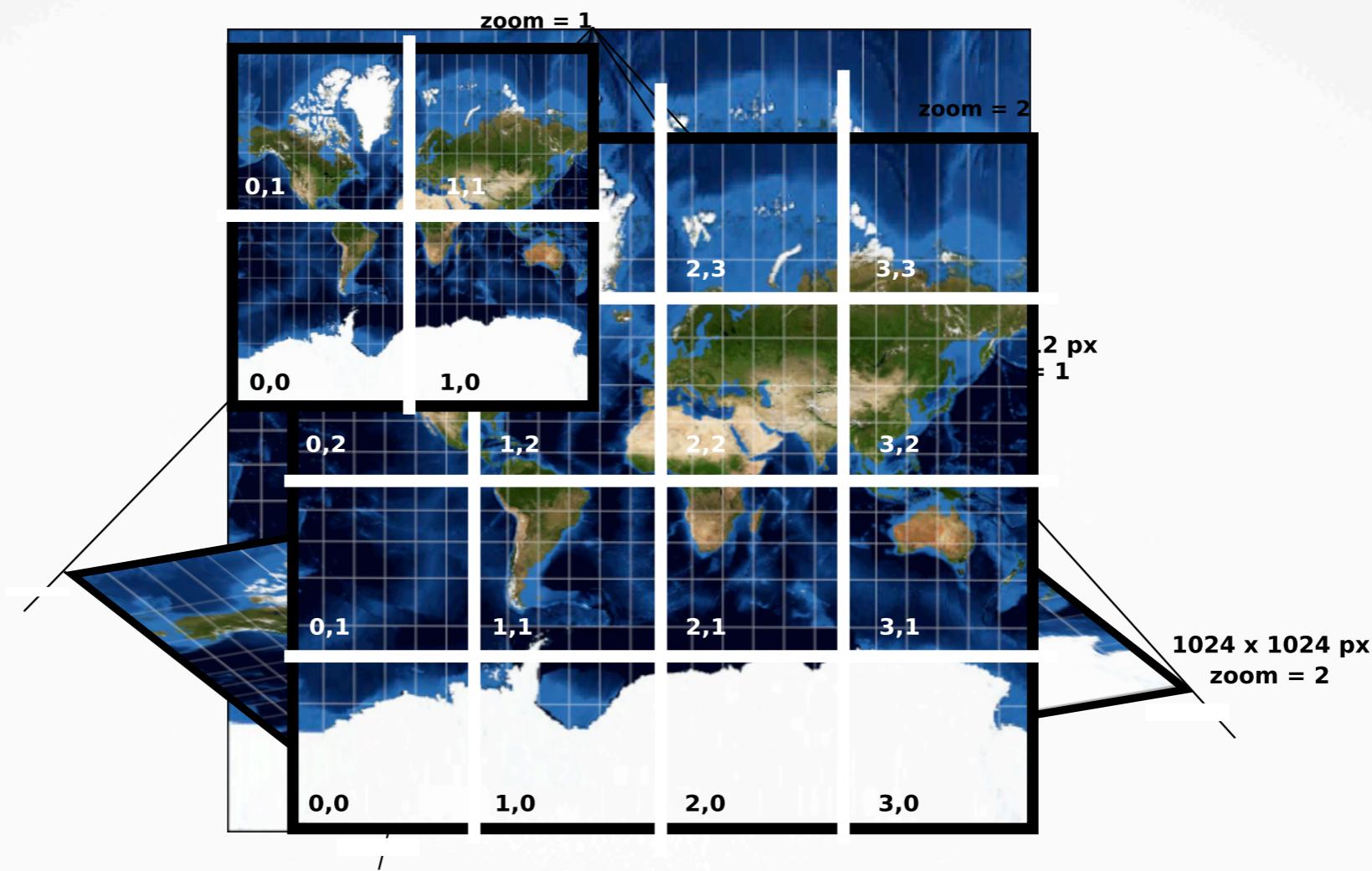




**mbutil**



Name	Date Modified	Size	Kind
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192	12:05 PM	--	Folder
401.png	12:05 PM	9 KB	Portable...image
402.png	12:05 PM	5 KB	Portable...image
193	12:05 PM	--	Folder
11	12:05 PM	--	Folder
12	12:05 PM	--	Folder
13	12:04 PM	--	Folder
14	12:04 PM	--	Folder
15	12:04 PM	--	Folder
googlemaps.html	12:04 PM	3 KB	HTML...ument
index.html	12:04 PM	1 KB	HTML...ument
metadata.json	12:04 PM	242 bytes	Plain...cument



**GEODETIC COORDINATES**  
**LATITUDE LONGITUDE**  
WGS 84 (EPSG:4326)

**SPHERICAL MERCATOR**  
**METERS**  
EPSG:3785 / EPSG:900913

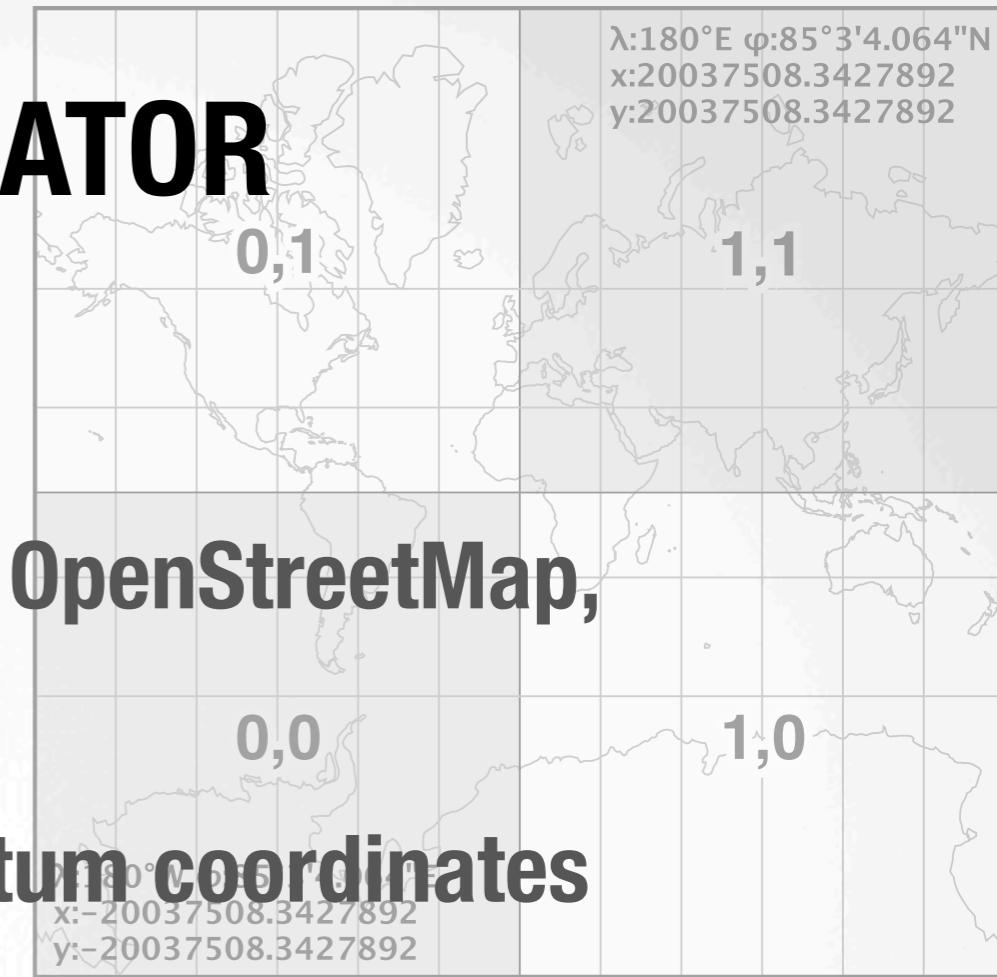
**PYRAMID COORDINATES**  
**XYZ PIXELS / ZOOM**  
WEB VIEWERS

**TILE INDEX**  
**XYZ TILE / ZOOM**  
TILE MAP SERVICE



# SPHERICAL MERCATOR

- Popular on the web: Google Maps, OpenStreetMap, Microsoft Bing Maps, ...
- Lat/Long WGS84 (GPS devices) datum coordinates always displayed to users - KML
- Map rasters are projected by a global Mercator projection: “Spherical Mercator”. EPSG:900913 / EPSG:3857 (meters)
- Conformal, cylindrical. Cropped to square (maximal latitude ~ 85.05 degrees), WGS84 ellipsoid is sphere!





# MapTiler

Raster data

[www.maptiler.org](http://www.maptiler.org)

[www.maptiler.com](http://www.maptiler.com)

Mac App Store

*GDAL / GDAL2Tiles*



# TileMill

Vector data  
OSM

[www.tilemill.com](http://www.tilemill.com)

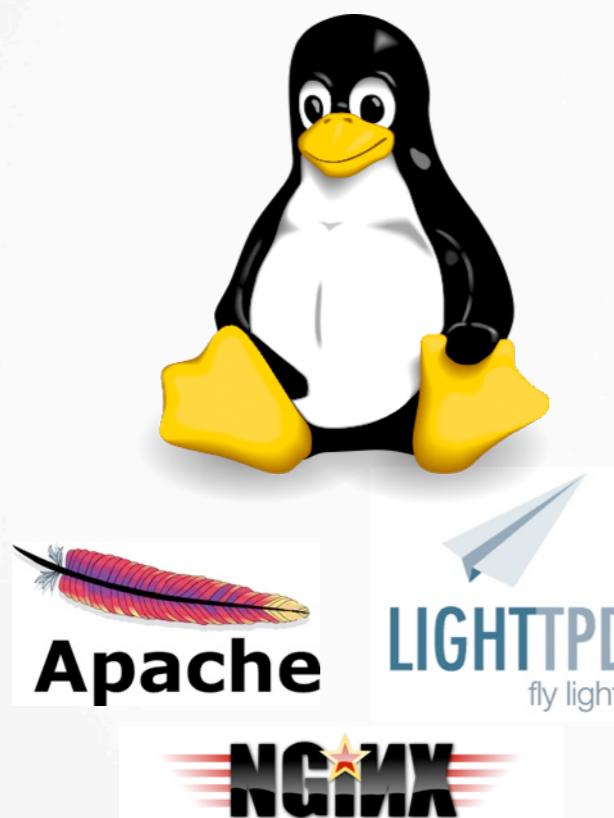
*Mapnik*



# DEMO



# Hosting





# Standards

OpenGIS

**WMTS**

OGC Web Map Tile Service (WMTS)

OSGEO Tile Map Service (TMS)

Microsoft QuadKey

EPSG:900913

EPSG:GOOGLE

Google XYZ

+ XYZ?

+ TileJSON?

+ TileServer.JSON?



# TileServer

PHP files + tile folder or .mbtiles

Alternative implementation in Python + C/C++

Amazon S3 / Google Cloud Storage

Usage: upload PHP + .htaccess

Drop the tile files in the same folder

<https://github.com/klokantech/tileserver-php/>



# TileServer - Desktop clients

QuantumGIS Desktop 1.9+

ESRI ArcGIS Desktop 10.1+

ArcBruTiles TMS plugin for ArcGIS 9.3+

GAIA - native WMTS

# TileServer: Capabilities

Protocols:

OpenGIS WMTS 1.0.0, TileJSON.js, XYZ = OSGeo  
TMS 1.0.0 (invertedTMS!)

Clients:

iOS (RouteMe) + Android (OSMDroid)  
QuantumGIS Desktop 1.9+  
ESRI ArcGIS Desktop 10.1+  
ArcBruTiles TMS plugin for ArcGIS 9.3+  
GAIA - native WMTS

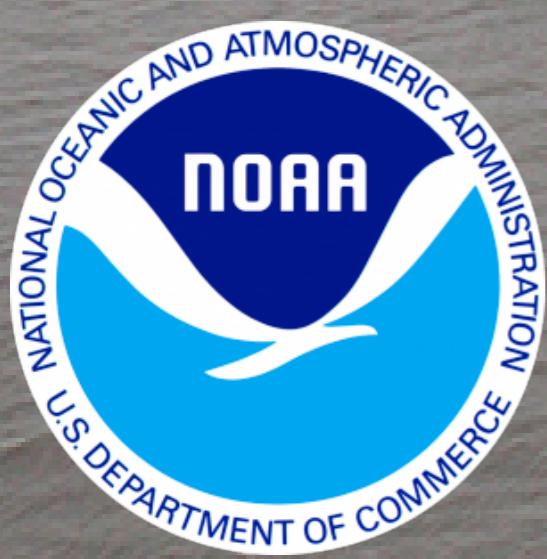


# DEMO



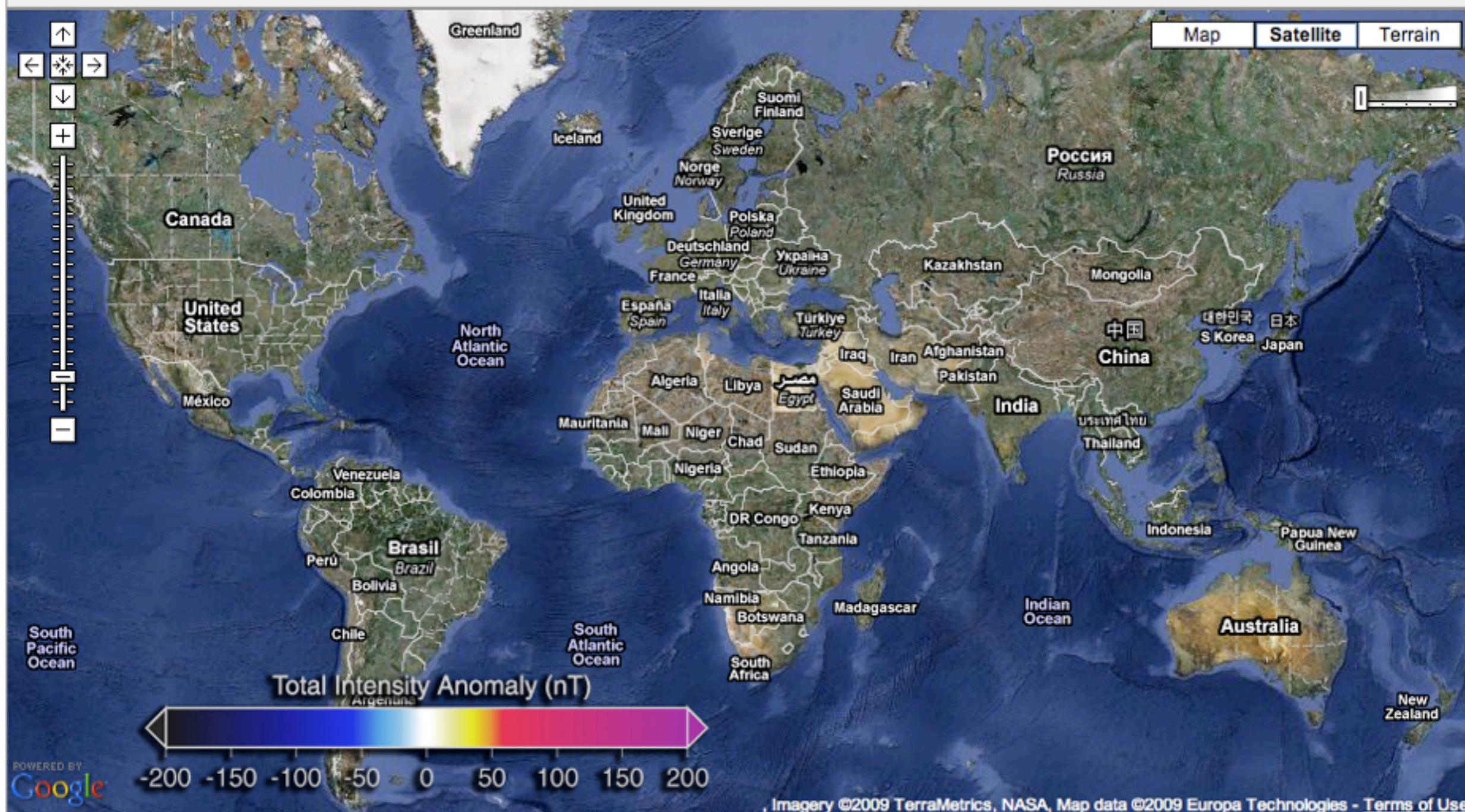


# Hurricane Sandy



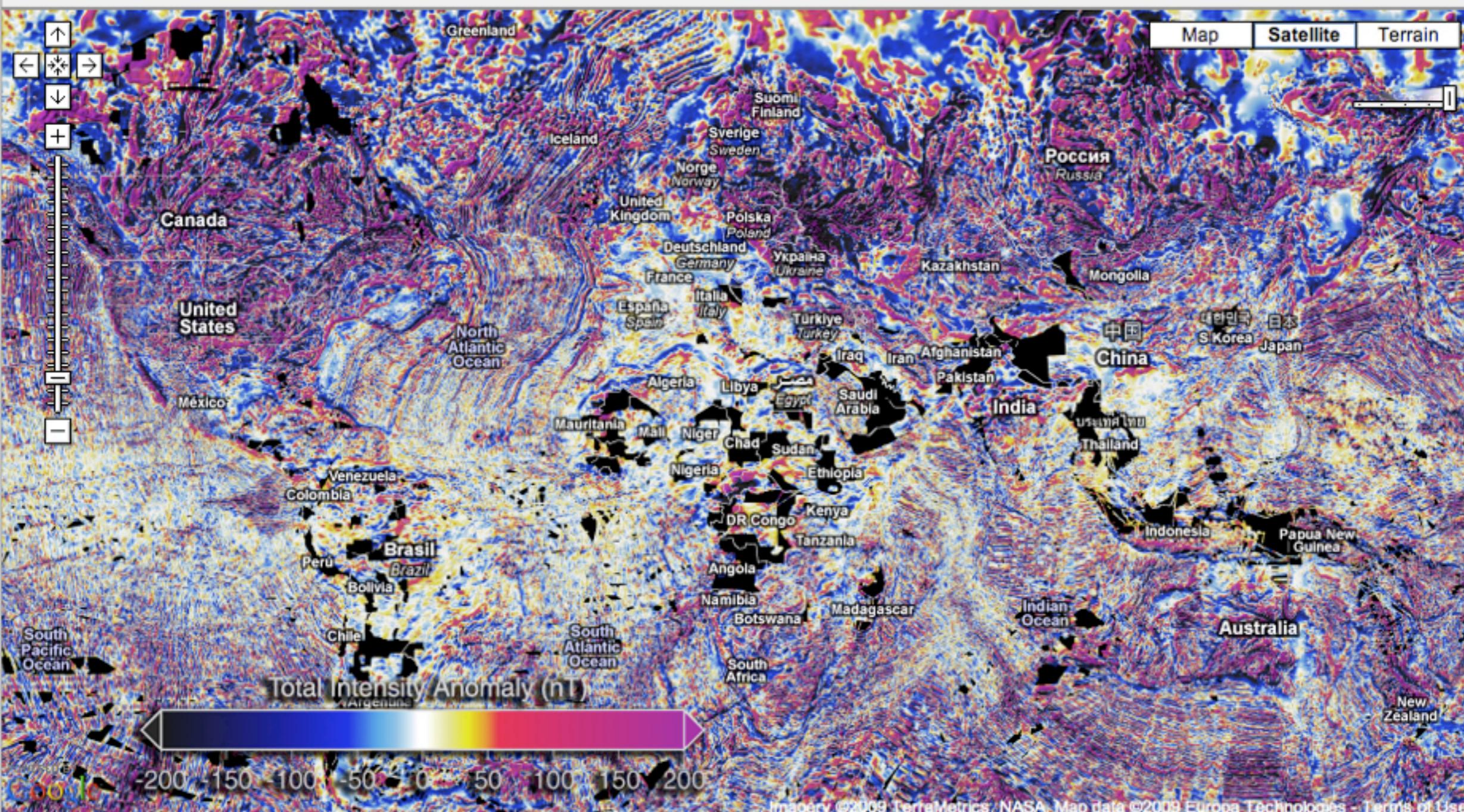


# EMAG2: Earth Magnetic Anomaly Grid (2-arc-minute resolution)

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# EMAG2: Earth Magnetic Anomaly Grid (2-arc-minute resolution)



Imagery ©2009 TerraMetrics, NASA. Map data ©2009 Europa Technologies - Terms of Use

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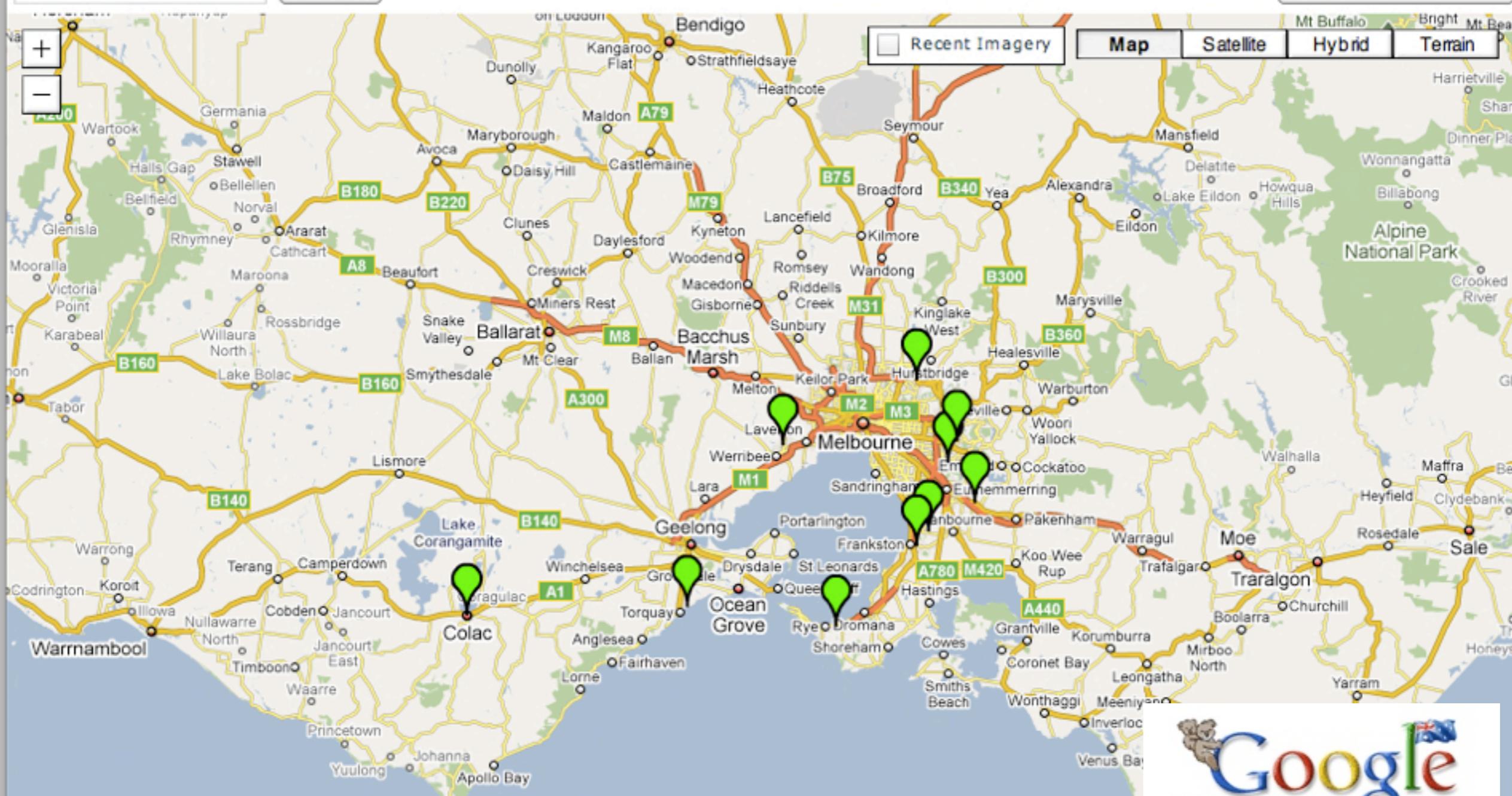
# Victorian Bushfires Map

<http://mapvisage.appspot.com/fires/FireMap.html>

google fire maps

Search

How can you help?



POWERED BY  
Google

Map data ©2009 MapData Sciences Pty Ltd, PSMA - Terms of Use

○ APPROX. LOC. | • SAFE • CONTROLLED • CONTAINED • GOING

Data from Vic CFA (Private Lands)

Image from MODIS NASA/GSFC (Updated 233d ago)

# Victorian Bushfires Map



<http://mapvisage.appspot.com/fires/FireMap.html>



google fire maps



Search

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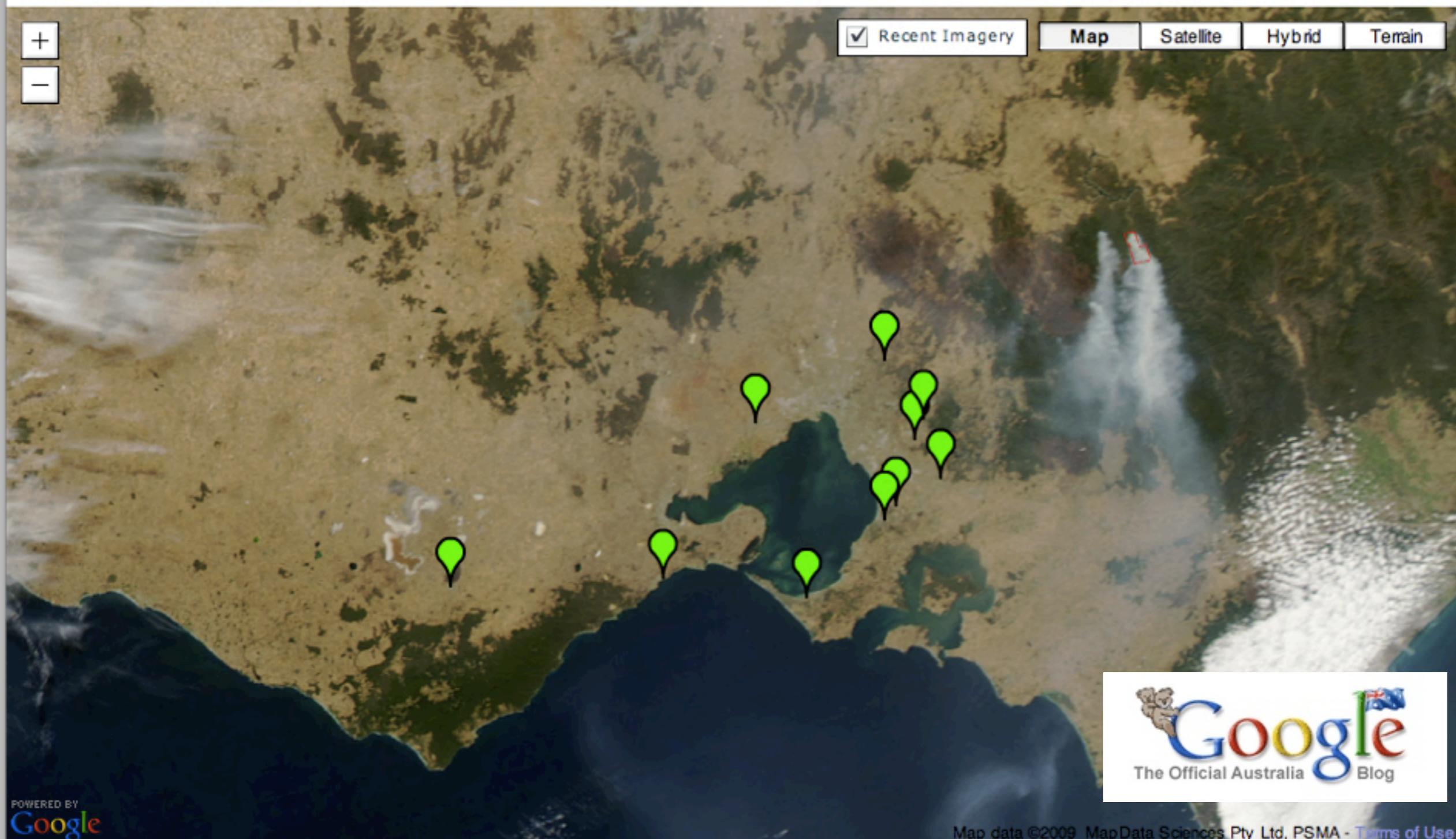
Recent Imagery

Map

Satellite

Hybrid

Terrain



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Google

Map data ©2009 MapData Sciences Pty Ltd, PSMA - [Terms of Use](#)

○ APPROX. LOC. | •SAFE• CONTROLLED • CONTAINED • GOING

Data from Vic CFA (Private Lands)

Image from MODIS NASA/GSFC (Updated 233d ago)



# David Rumsey Map Collection

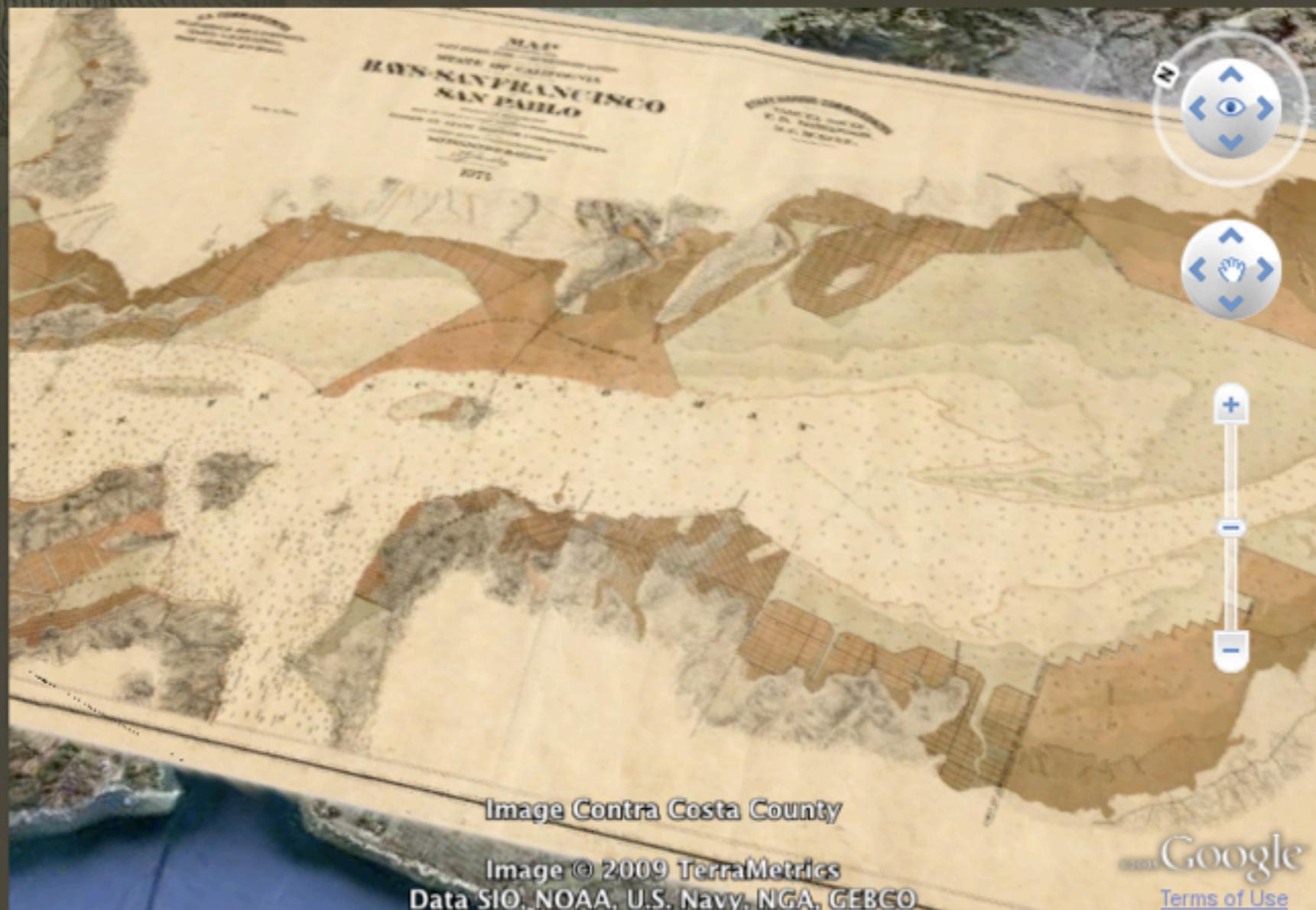
CARTOGRAPHY ASSOCIATES

## Google Earth Plugin Demo

This is an example presentation of the old map of **San Francisco Bay Tidelands from 1874**.

To open the map in **Google Earth** you should download this KML file: [sanfrancisco1874.kml](#)

Opacity: 0% 12% 25% 50% 100%



This Google Earth Superoverlay was generated with [MapTiler](#)



## Coverage checker.

100

## Location

Postcode

Find

## Map view

- Map only
  - Voice, text & internet coverage

## Level of coverage

This is predicted coverage and can't always be guaranteed.

#### Indoor & outdoor coverage

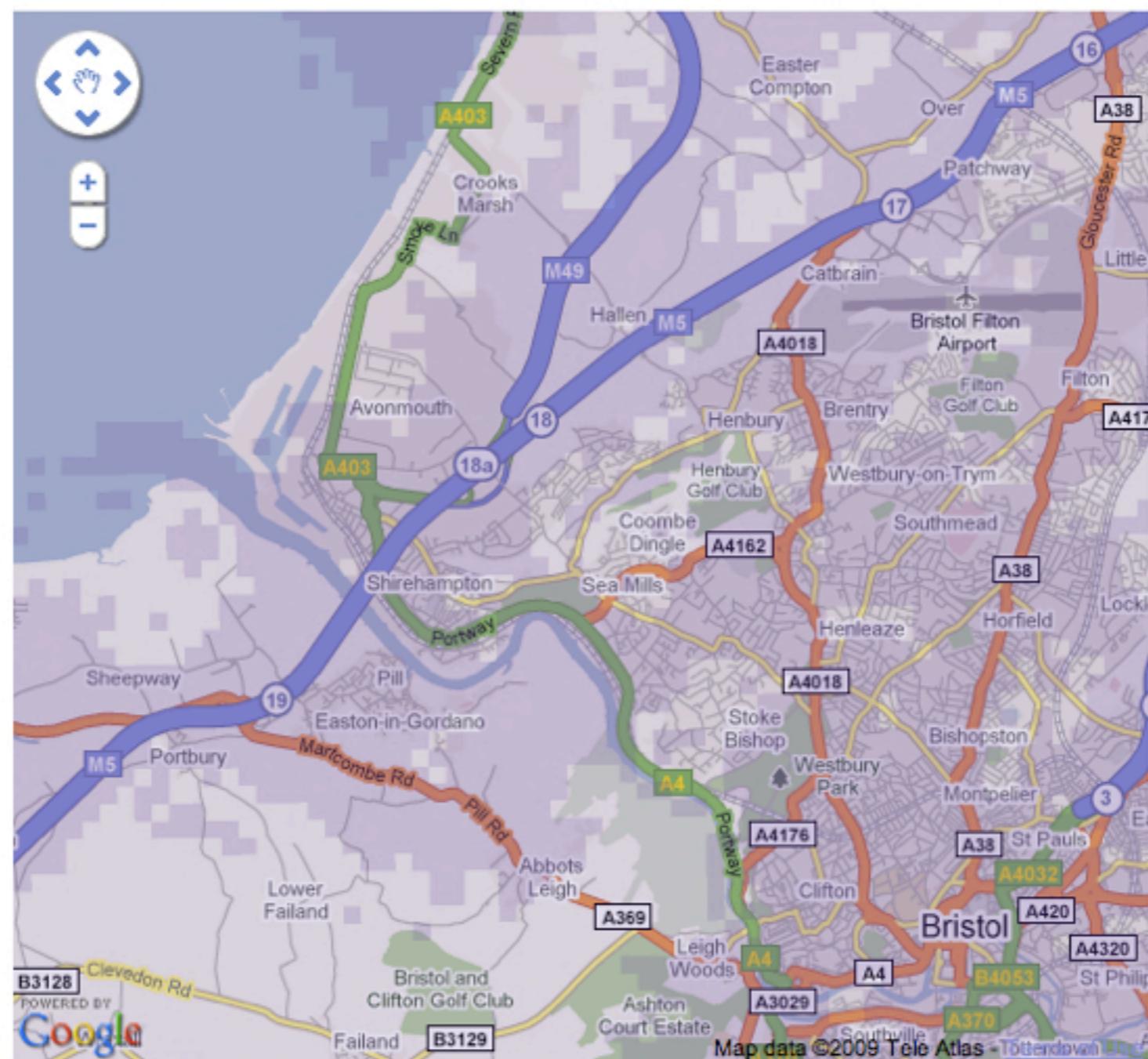
You can use your mobile to make calls, send texts and use the internet in most instances. When you're indoors the signal strength may be better in different rooms.

## Outdoor coverage

You can use your mobile to make calls, send texts and use the internet in most outdoor locations. If you're inside you may struggle to get a signal.

Help

## Help with this map





# Edinburgh, 1893

## OS Town Plans

[Home](#) | [Help](#)

A historical town plan of Edinburgh from 1893, showing the city's layout with detailed street grids, parks, and landmarks. The map is overlaid with a modern digital interface.

**Base Layer**

- Google Streets
- Google Satellite
- Google Hybrid
- Google Terrain
- Virtual Earth Roads
- Virtual Earth Aerial
- Virtual Earth Hybrid

**Overlays**

- Edinburgh, 1893

**bing**

[Permalink](#)

# Users of MapTiler GDAL2Tiles

**NOAA (Nautical Oceanic and Atmospheric Administration),  
BRGM (Bureau des Recherches Geologiques et Minières)**

**US Forest Service**

**European Commission: Joint Research Center**

**National Library of Scotland**

**Mobile operators: Three, Orange, ...**

**Companies from: USA, UK, France, Netherlands, Australia, New Zealand, Italy,  
Spain, Chile, ...**

**David Rumsey ([DavidRumsey.com](http://DavidRumsey.com))**

**BRGM (Bureau des Recherches Geologiques et Minières)**

**Moravian Library Brno, Czech Republic**



# MapTiler Pro / Cluster Services

Consulting + Support

Advanced version in C/C++ with additional features

	GDAL2Tiles	MapTiler Cluster
Rendering Time	122 minutes 7 seconds	<b>2 minutes 24 seconds</b>
Size of Tiles	2.5 GB	<b>1.1 GB</b>



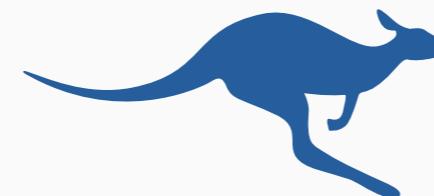
**50x faster!**



**1/2 of the size!**

[www.maptiler.com](http://www.maptiler.com)

for clients



**KLOKAN TECHNOLOGIES**

[www.klokantech.com](http://www.klokantech.com)

**Thank you!**

email contact:

**petr.pridal@klokantech.com**