

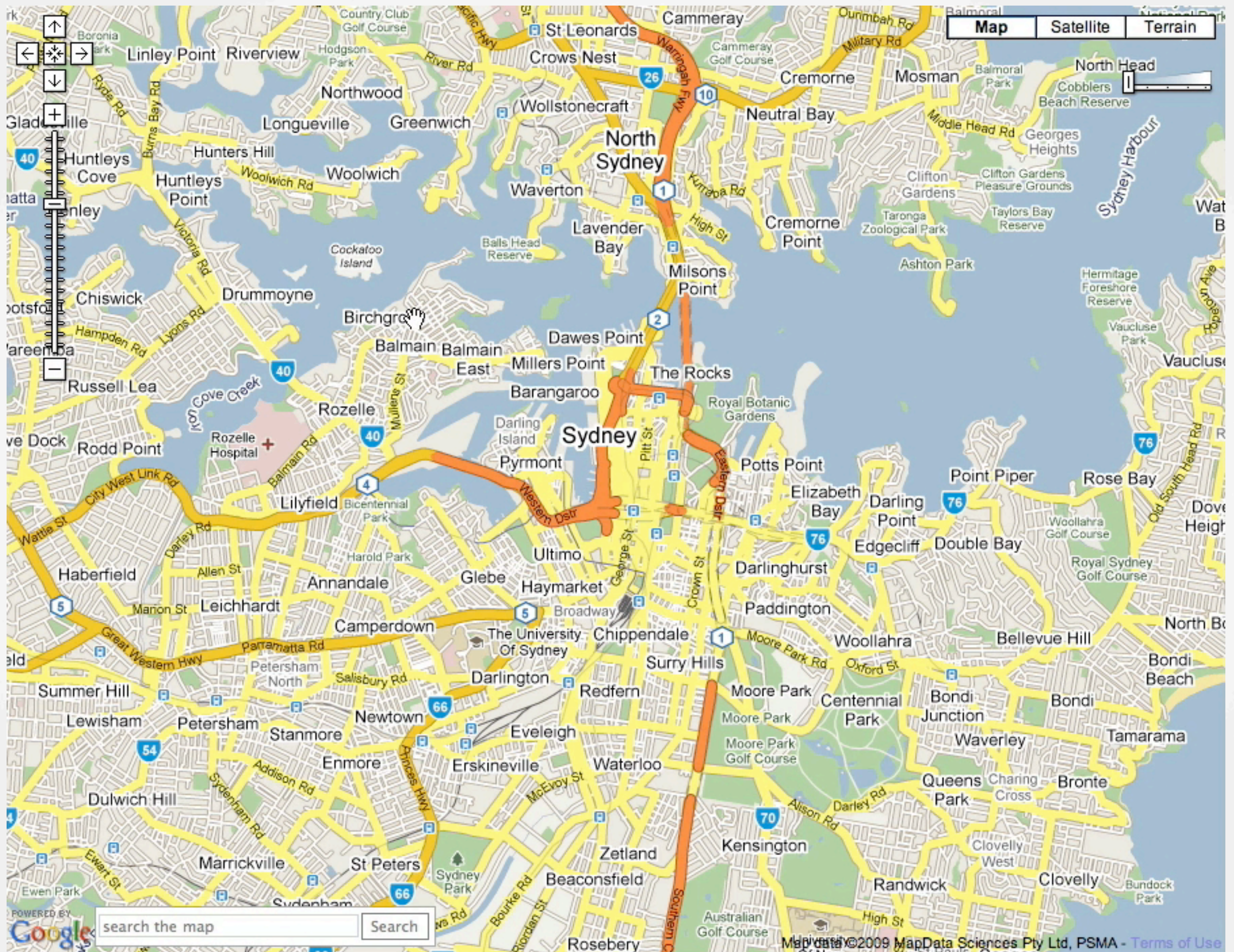


Tile based map publishing

with WMTS TileServer, MapTiler and TileMill

Petr Pridal <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

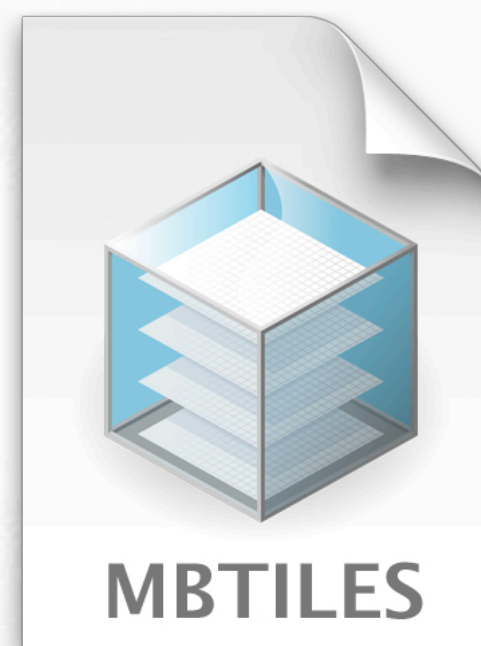
Easy offline mode - mobile apps

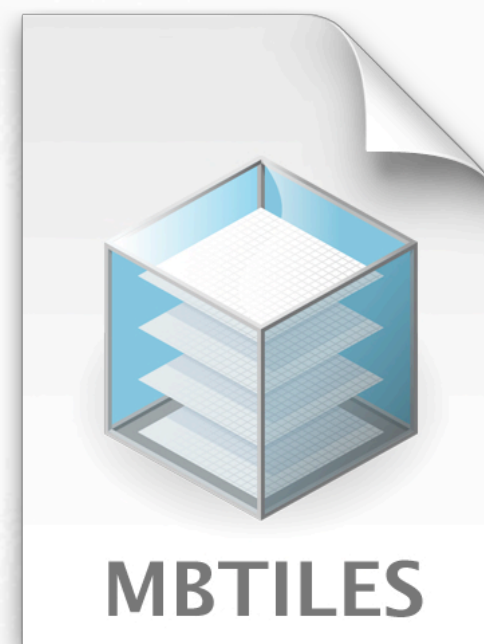
Disadvantages

Possibly large data to store

Data for distribution different from master data




Live updates, extra processing, transfer

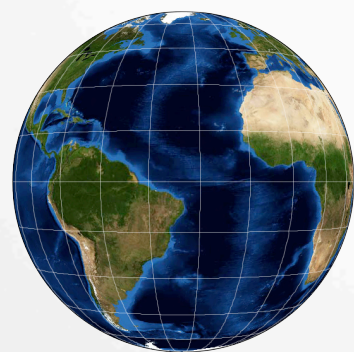
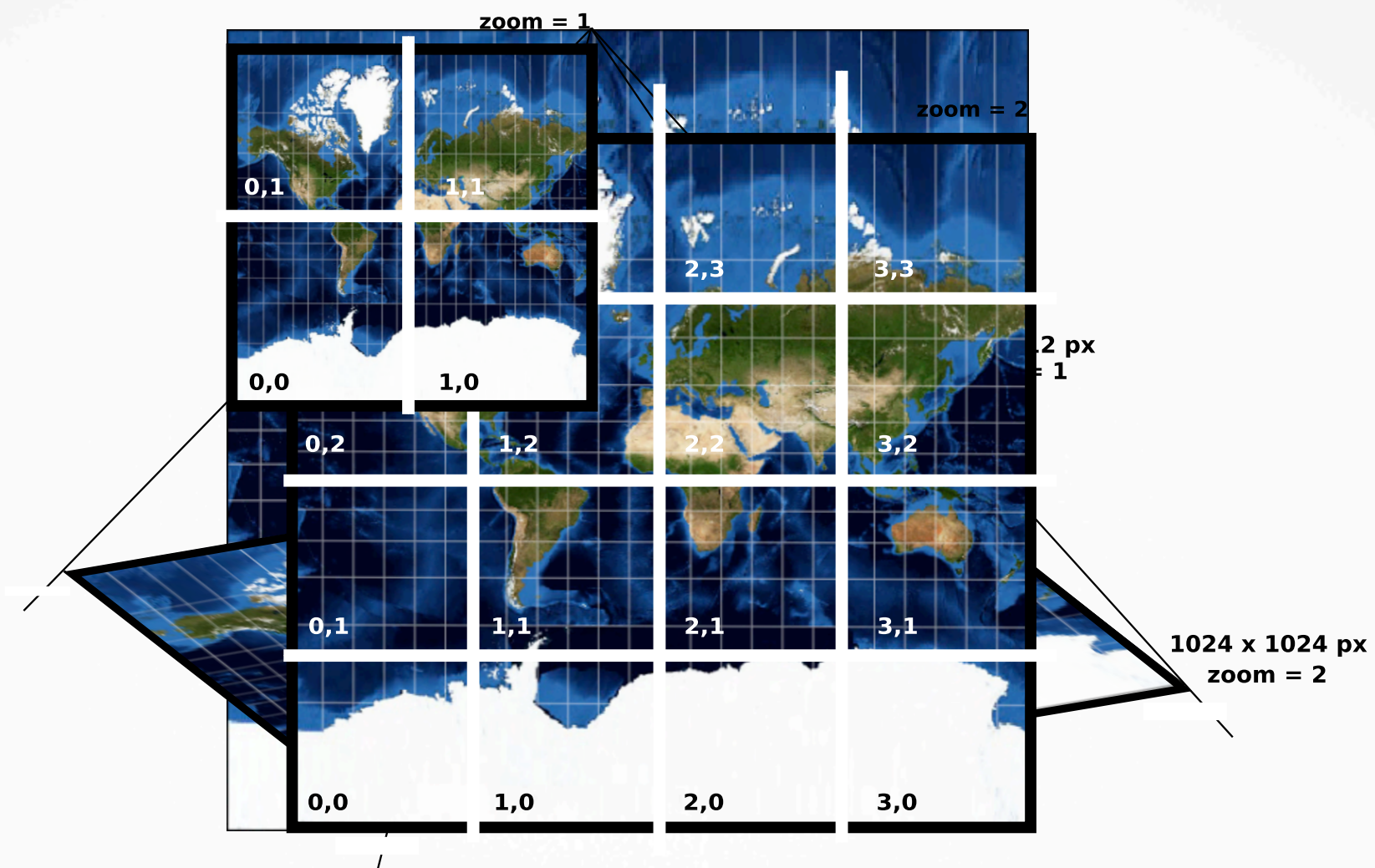




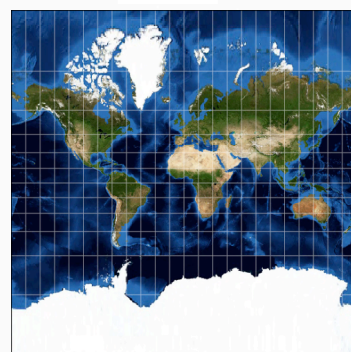
mbutil



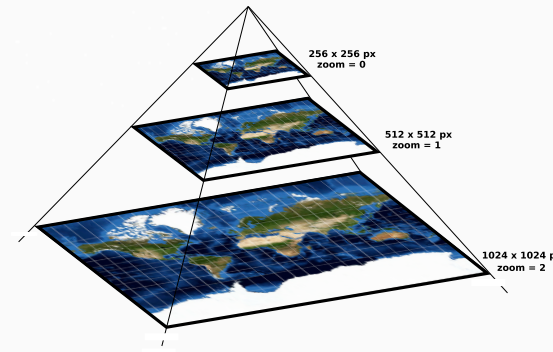
Name ▲	Date Modified	Size	Kind
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▼ 192	12:05 PM	--	Folder
401.png	12:05 PM	9 KB	Portab...image
402.png	12:05 PM	5 KB	Portab...image
▶ 193	12:05 PM	--	Folder
▶ 11	12:05 PM	--	Folder
▶ 12	12:05 PM	--	Folder
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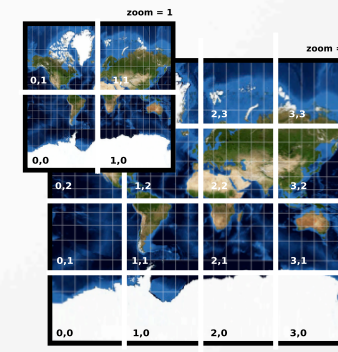
GEODETIC COORDINATES
LATITUDE LONGITUDE
WGS 84 (EPSG:4326)



SPHERICAL MERCATOR
METERS
EPSG:3785 / EPSG:900913



PYRAMID COORDINATES
XYZ PIXELS / ZOOM
WEB VIEWERS

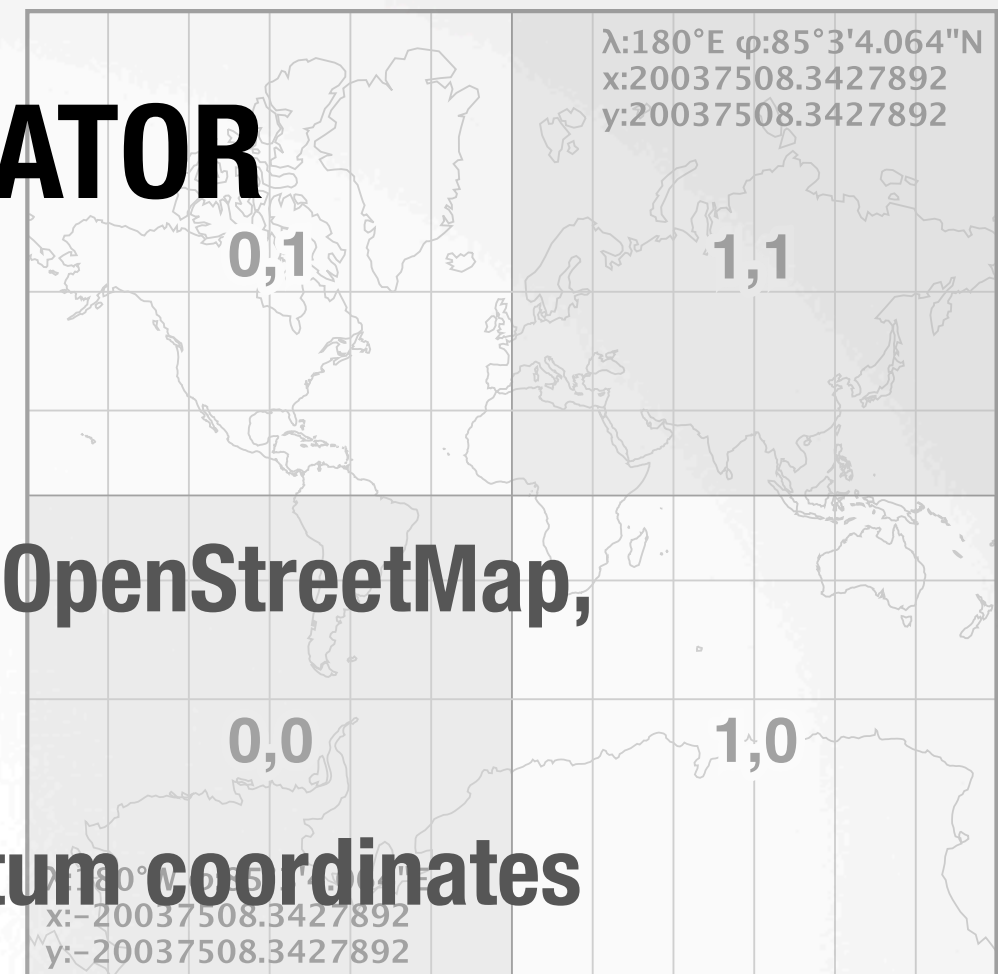


TILE INDEX
XYZ TILE / ZOOM
TILE MAP SERVICE



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
www.maptiler.com
Mac App Store

GDAL / GDAL2Tiles



TileMill

Vector data
OSM

www.tilemill.com

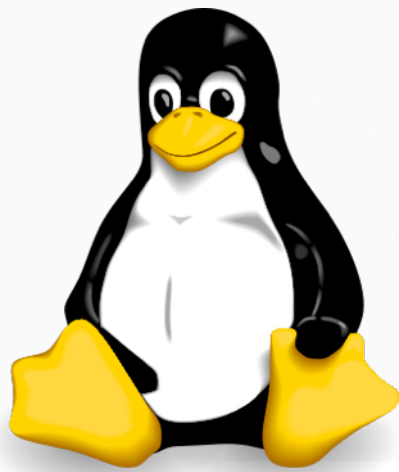
Mapnik



DEMO



Hosting



Apache



LIGHTTPD
fly light.



amazon
web services™



Windows Azure™



RACKSPACE®
CLOUD FILES™



MapBox



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:

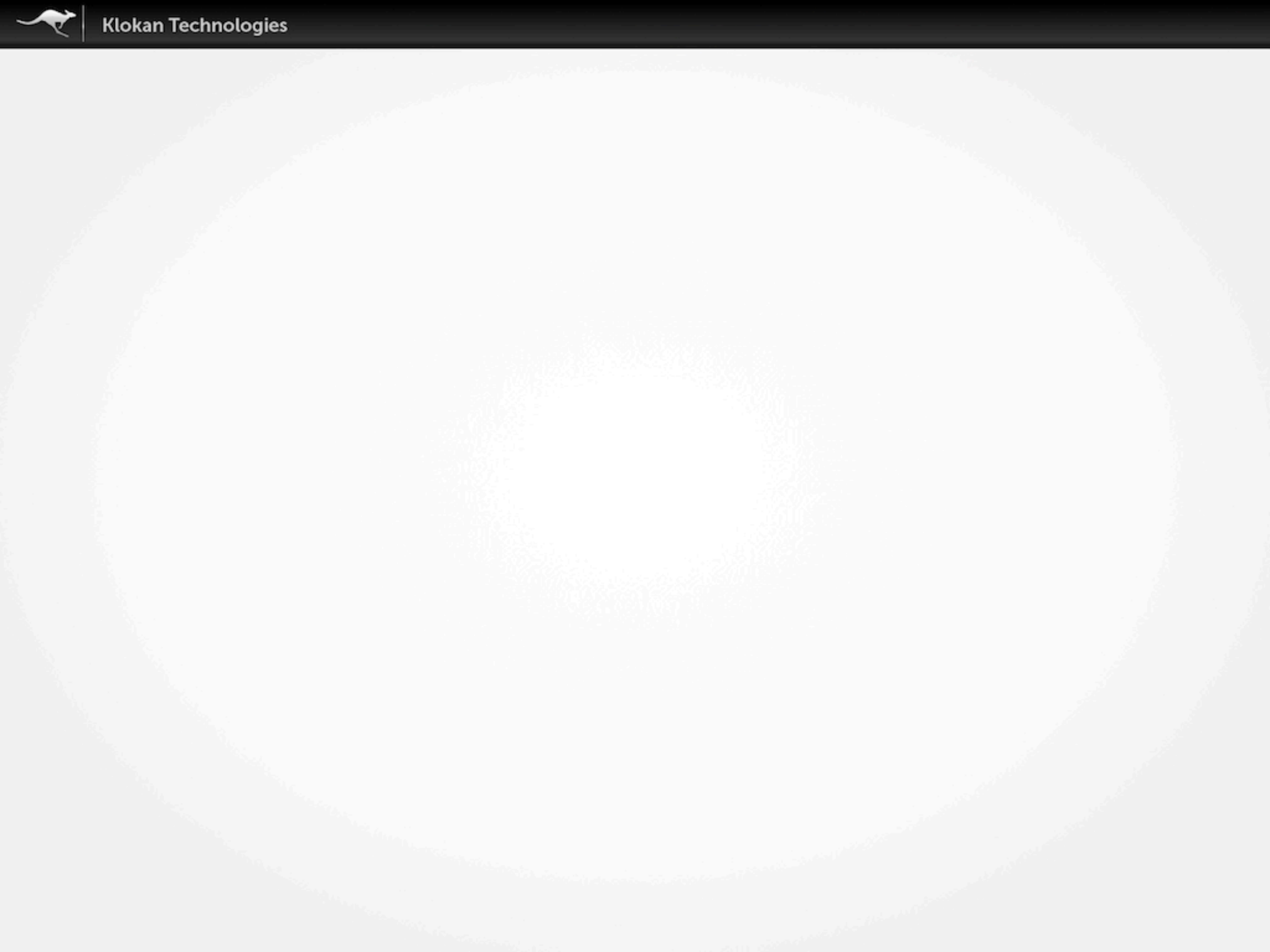
OpenGIS WMTS 1.0.0, TileJSON.js, XYZ = OSGeo
TMS 1.0.0 (invertedTMS!)

Clients:

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

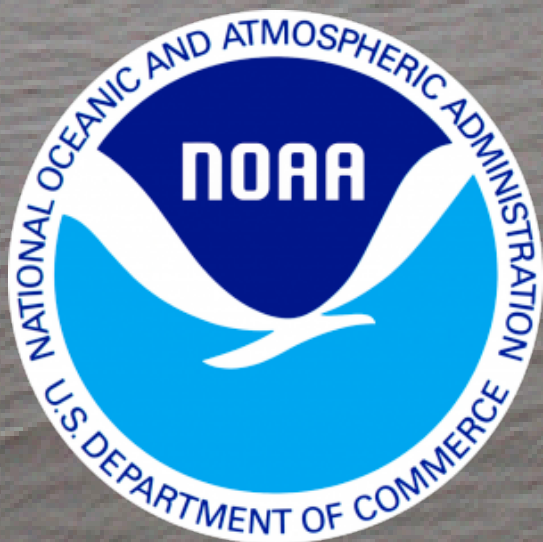


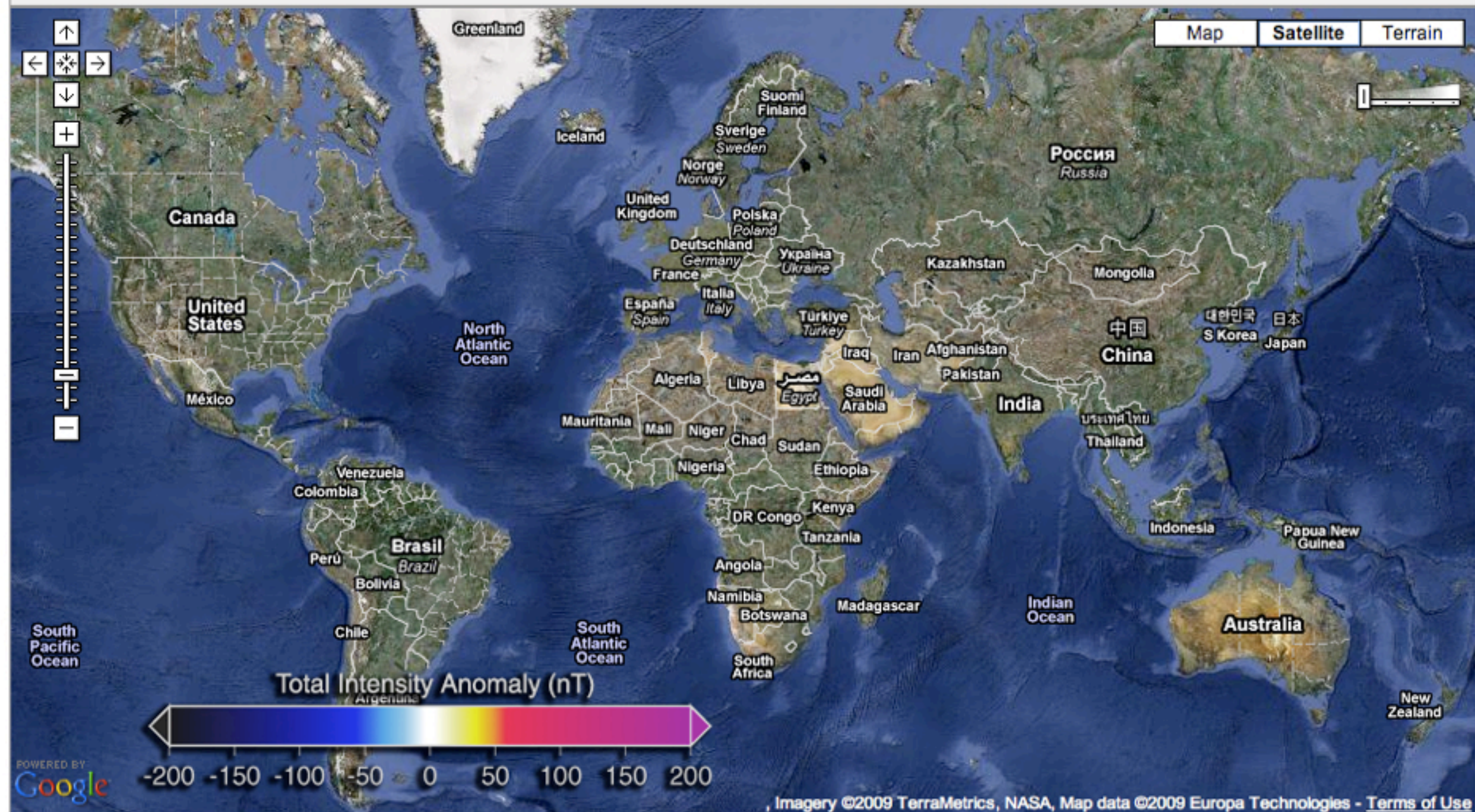
DEMO





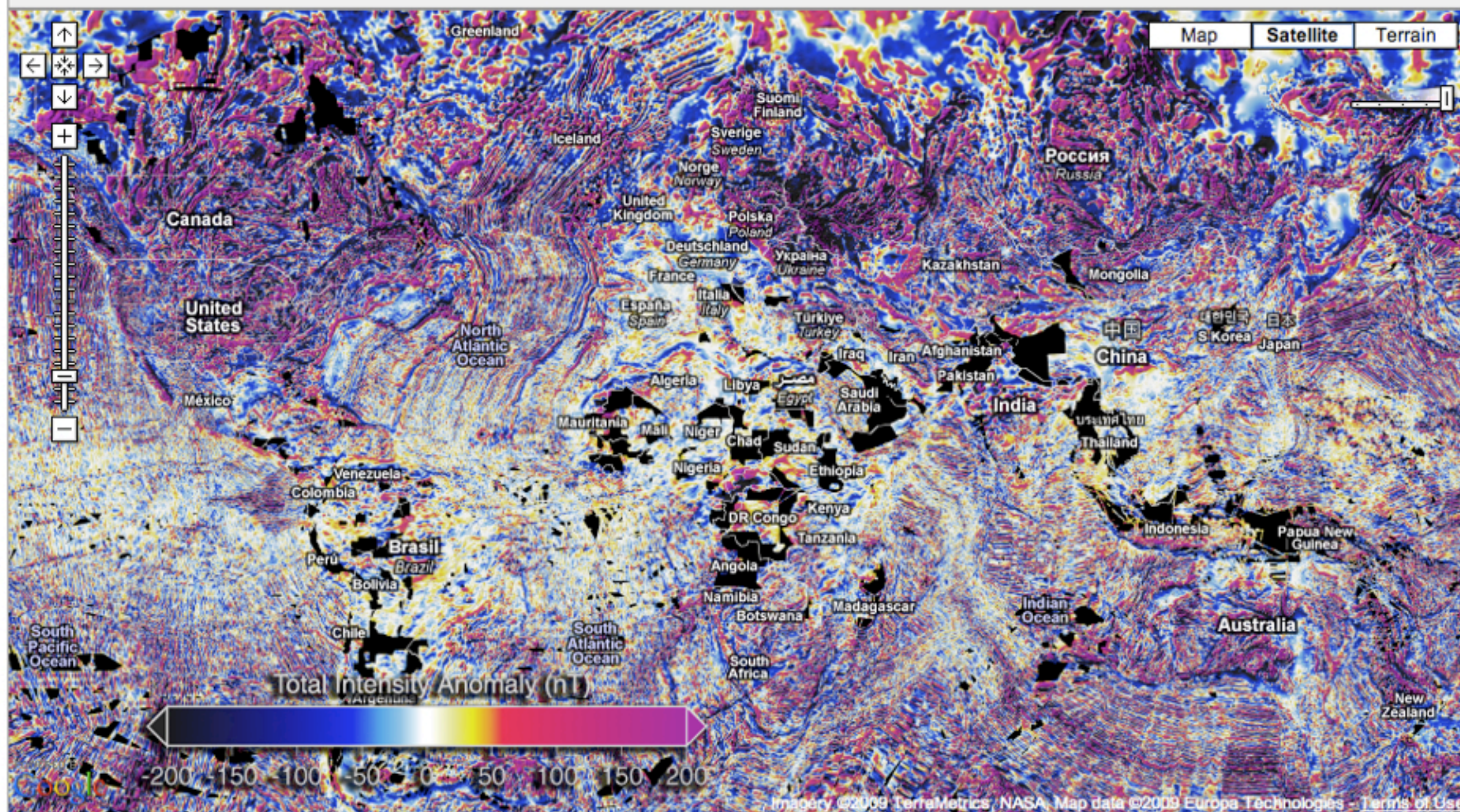
Hurricane Sandy







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



Victorian Bushfires Map



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

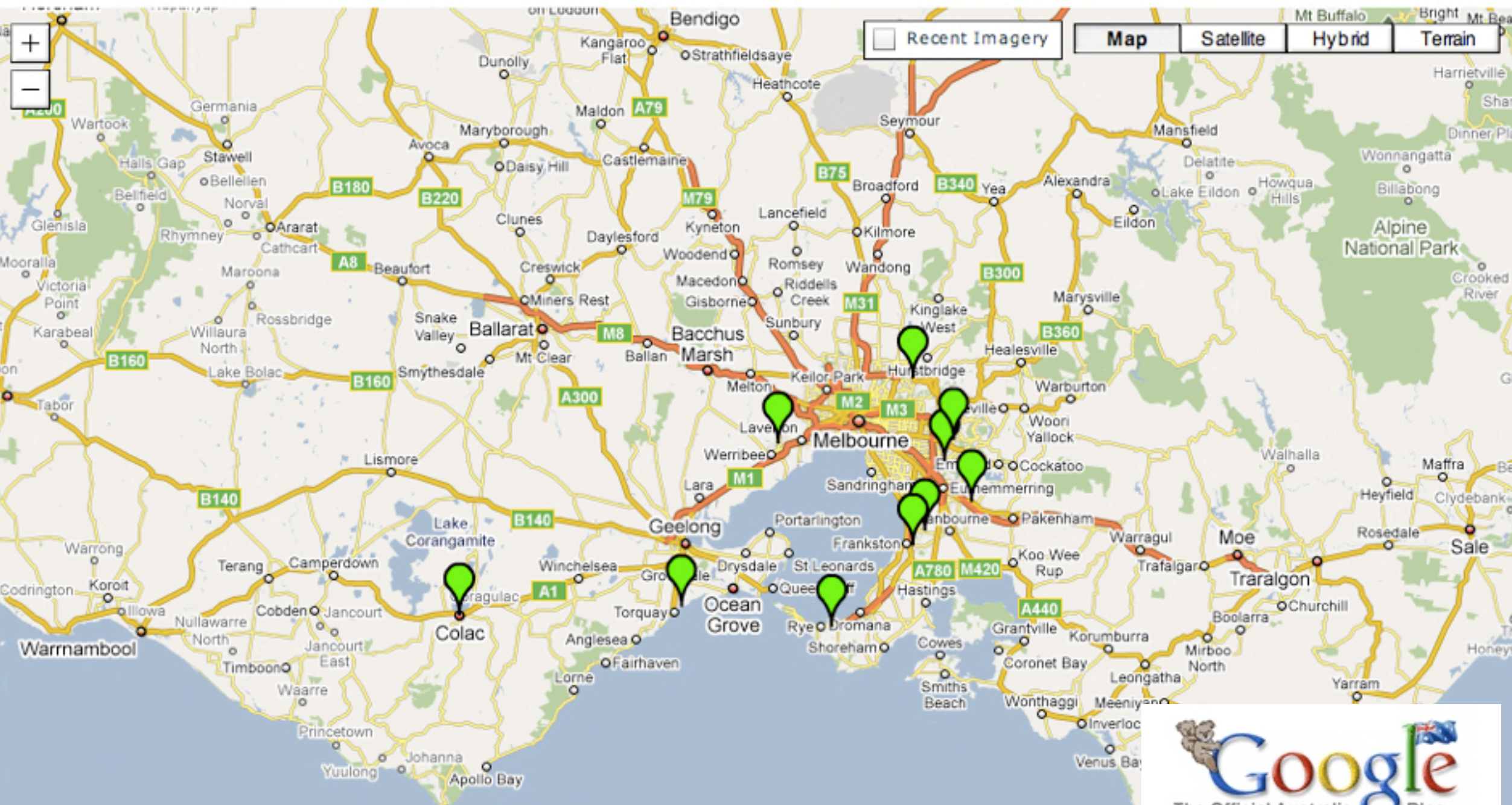


google fire maps



Search

How can you help?



POWERED BY
Google

Google
The Official Australia Blog

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

Data from Vic CFA (Private Lands)

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



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



google fire maps



Search

How can you help?



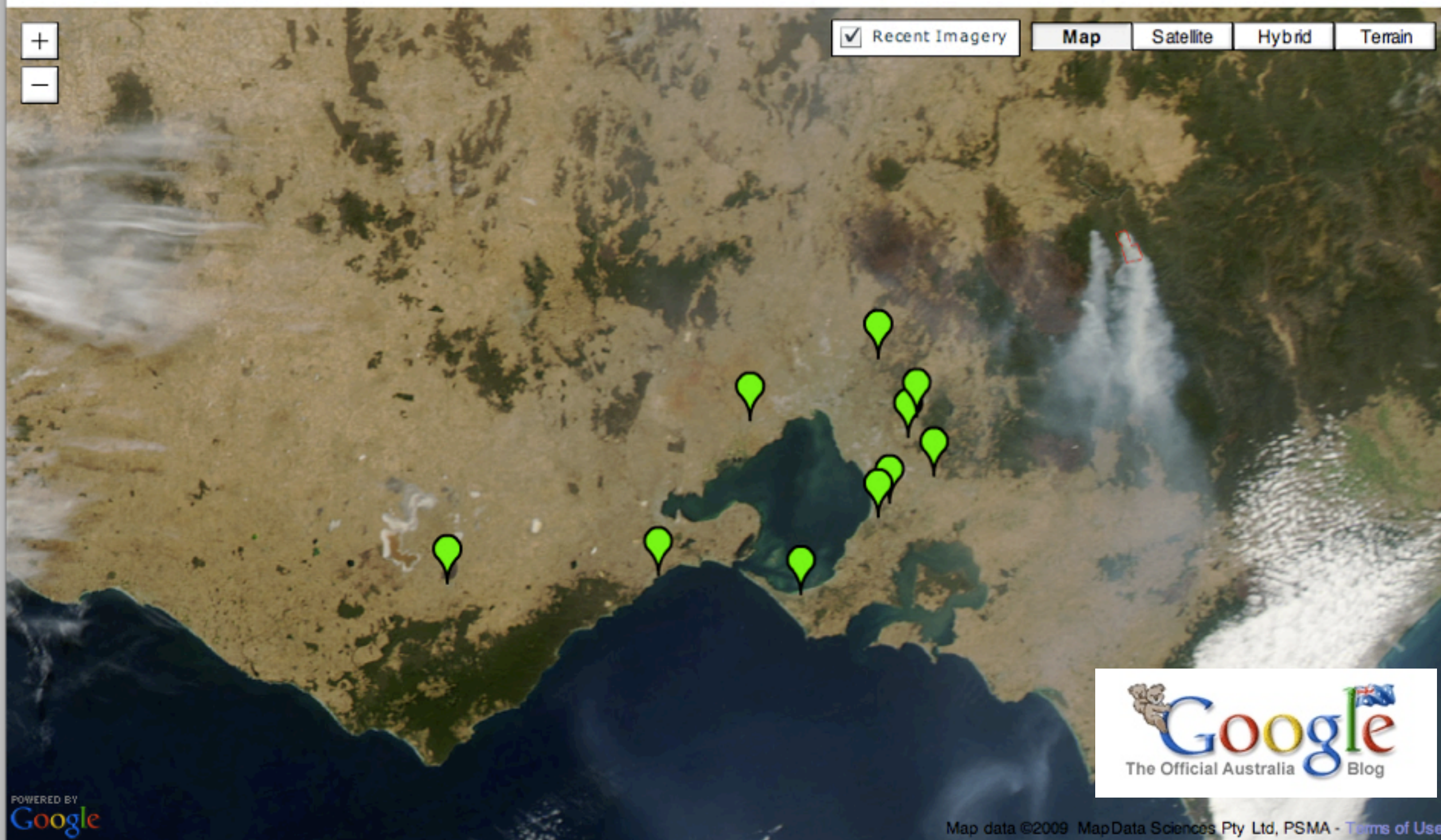
☒ Recent Imagery

Map

Satellite

Hybrid

Terrain



POWERED BY
Google



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○ 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.

Location [Find](#)

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

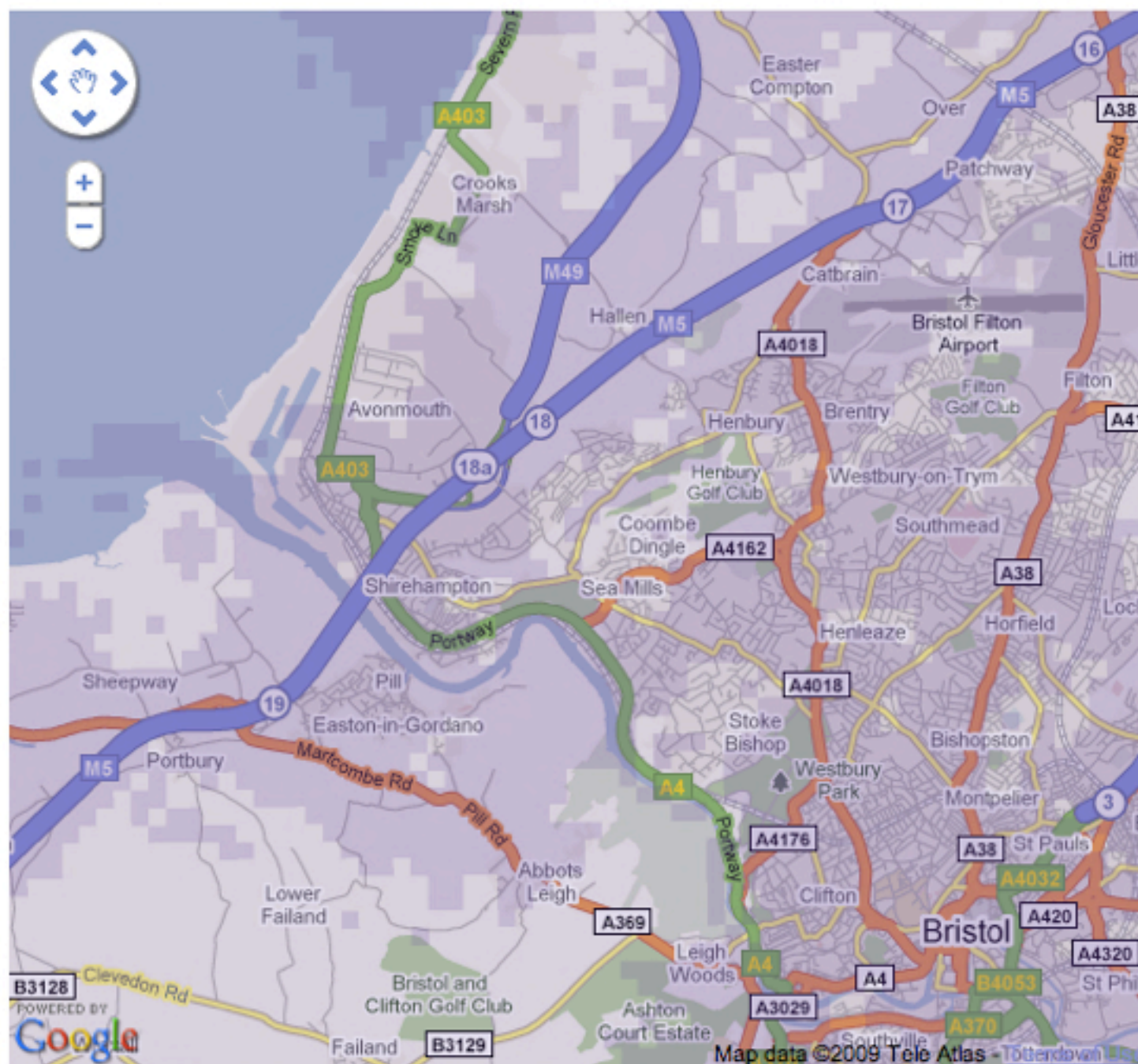
You can use your mobile to make calls, send texts and use the internet in most instances. When you're indoors the signal strength may be better in different rooms.

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



Base Layer

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

Overlays

- ☒ Edinburgh, 1893



[Permalink](#)

© 2009 Microsoft Corporation © Getmapping 3 21178 55 95642



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)

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

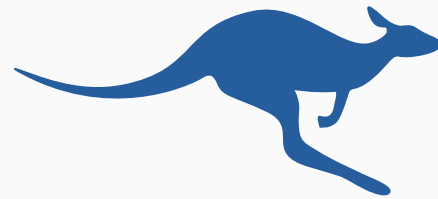
	GDAL2Tiles	MapTiler Cluster
Rendering Time	122 minutes 7 seconds	2 minutes 24 seconds
Size of Tiles	2.5 GB	1.1 GB



50x faster!
1/2 of the size!

www.maptiler.com

for clients



KLOKAN TECHNOLOGIES
www.klokantech.com

Thank you!

email contact:

petr.pridal@klokantech.com