



FOSS4G 2010
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SEP 6th - 9th

OGC WMTS and OSGeo TMS standards: motivations, history and differences

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Introduction

- This presentation describes and compare 2 standards:

- Tile Map Standard (TMS)



- Web Map Tile Service (WMTS) standard



- Both standards are described and compared, including the motivation and key differences.



What we are talking about?





What we are talking about?

The World: Land Cover, Elevation and Political Boundaries - Windows Internet Explorer

http://localhost/wms/tiledworld/

The World: Land Cover, Elevation and Political Boundaries

Escala: 10° 0.00'' (1: 75 000 000) coord: XY: -141.67, 33.33

Reference layers

- Adm. Boundaries WMTS

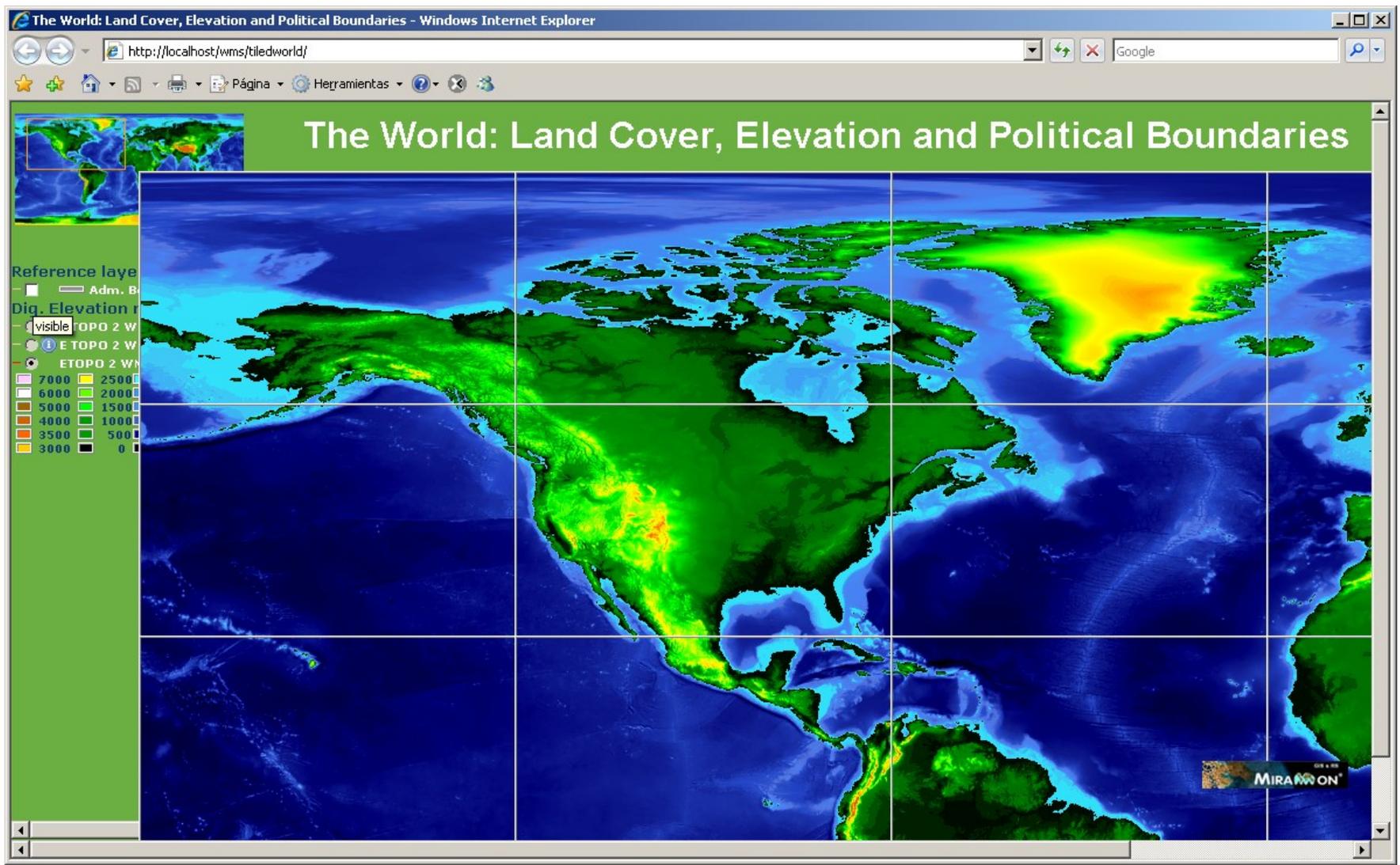
Dig. Elevation models

- E TOPO 2 WMS-c
- E TOPO 2 WMS
- ETOPO 2 WMTS

7000	2500	-50
6000	2000	-200
5000	1500	-1000
4000	1000	-2000
3500	500	-4000
3000	0	-8000

This is a tile

50° (aprox. 5000000 m at lat. 40.0°) long/lat - WGS84





Layer
TileMatrix
TileRow
TileCol

What do we only got some time ago?

- Google maps
 - <http://khm.google.com/maptilecompress/hl=en&t=3&q=90&z=4&y=8&x=9>
- Amazon s3
 - <http://s3.amazonaws.com/com.modestmaps/bluemarble/4-r8-c9.jpg>
- Yahoo! Maps
 - <http://maps2.yimg.com/hx/tl?v=5.3&intl=es&x=9&y=-1&z=5&r=1>
- Virtual Earth (quadtree encoding)
 - <http://h1.ortho.tiles.virtualearth.net/tiles/h3001.jpeg?g=266&mkt=es-us>





A lack of interoperability





A long Story (1/2)

- March to November 2006
 - OSGeo developed and tested TMS.
 - By that time, there were also other map tiles related implementations, such as OnEarth, Google Maps, etc.
- 2007
 - the OGC WMS revision working group received a change request to include support for tiles as part of the WMS interface standard.
 - the group decided to define a separate standard: WMTS.
- September 2008,
 - there was a strong dialogue at FOSS4G South Africa meeting for about map tiling and good collaboration.



A long Story (2/2)

- October 2008 to June 2009
 - In OWS-6 interoperability experiments, four independent WMTS developments were tested.
- March 2009
 - the document went to a 30 day public comment period
- September 2009
 - the final document went to vote;
- December 2009
 - The standard was approved as OGC standard
- April 2010
 - Publicly released



Tile Map Service Specification - OSGeo - Windows Internet Explorer

D:\docs\Recerca\WMS_RWG\TiledWMS\OSGeo\Tile Map

Google

Archivo Edición Ver Favoritos Herramientas Ayuda

Favoritos Página Seguridad Herramientas

Tile Map Service Specification

From OSGeo

Jump to: [navigation](#), [search](#)

This document is the work of a loose community of participants interested in client/server mapping solutions that use multi-resolution image pyramids. It is meant to be used as a baseline for the implementation of client/server mapping software. It is not an "official standard" nor is it endorsed by OSGeo as an official project or work product of the Foundation.

This document is version "1.0", and will not be edited further.

Any new revisions will take place in a new working copy.

Contents

[\[hide\]](#)

- [1 Introduction](#)
 - [1.1 Document Scope](#)
 - [1.2 Document Form](#)
- [2 Specification](#)
 - [2.1 Root Resource](#)
 - [2.2 TileMapService Resource](#)
 - [2.3 TileMap Resource](#)
 - [2.4 Profiles](#)
 - [2.4.1 global-geodetic](#)
 - [2.4.2 global-mercator](#)

2006

Listo Internet 100%



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OpenGIS® Web Map Tile Service Implementation Standard

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Document type: OpenGIS® Standard
Document subtype: OGC Standard
Document stage: Approved for release
Document language: English

2010

How on Earth it took so long !!!???

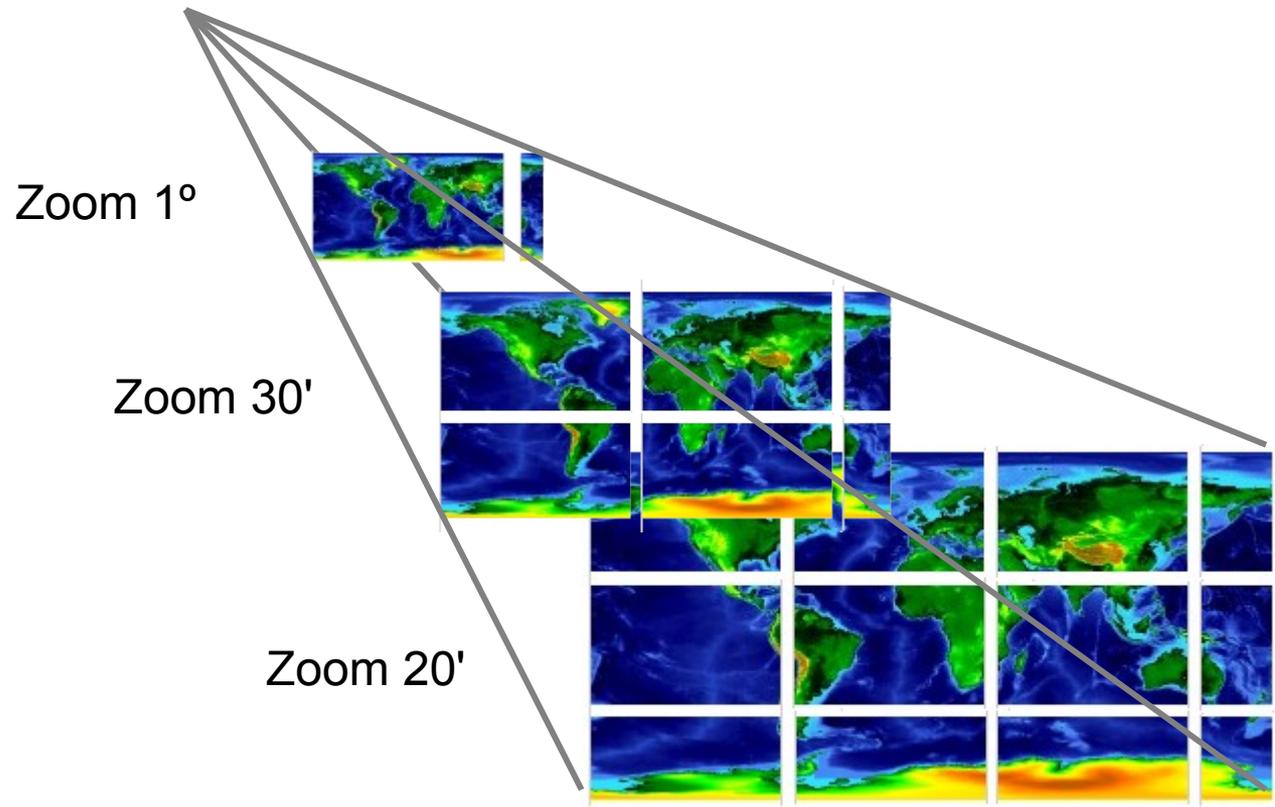


WMTS and TMS

- Both address the problems in classical map servers that used "*the whole view in one piece*" approach in concurrent environments:
 - Low performance
- Both try to save server's work:
 - Limiting the request to predefined set of tiles
 - Allowing caching mechanisms on internet to help.
- Both define:
 - A set of scales available
 - A tile matrix set for each scales
 - A way to get a particular tile as a "common" browser format like PGN, JPEG etc.



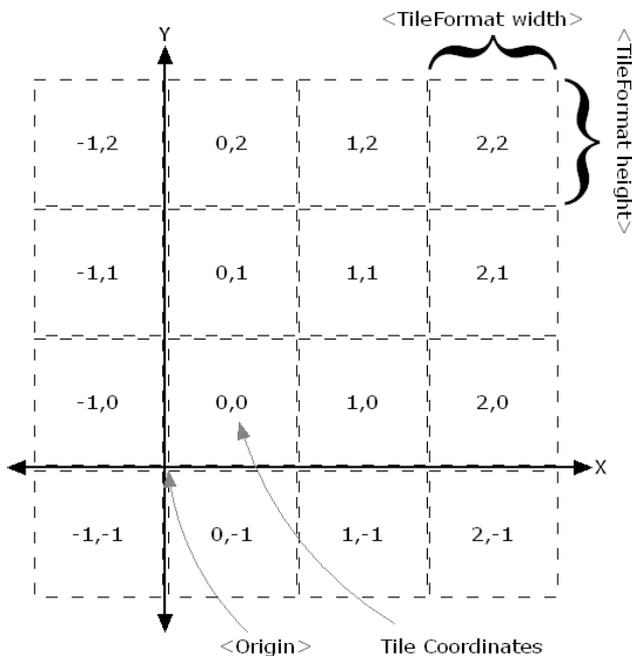
Tile matrix set



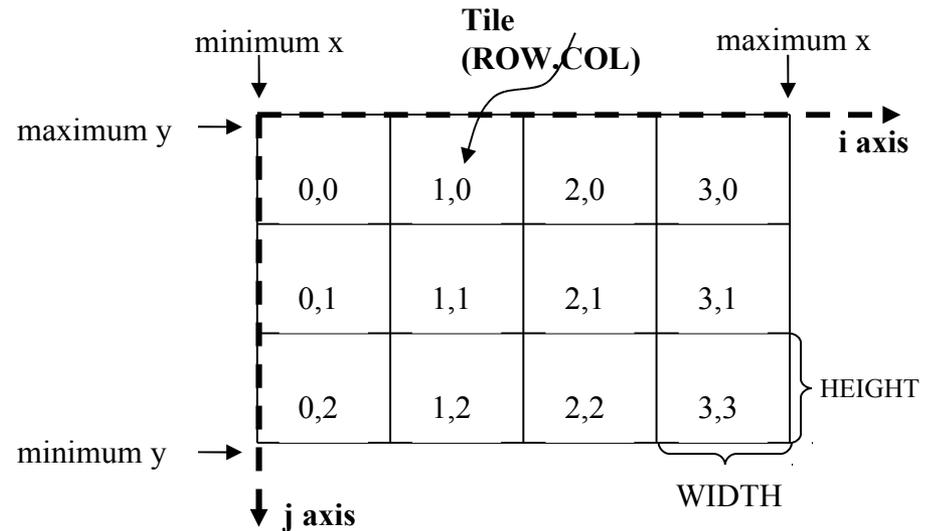


Tile matrix

- General background is almost identical in TMS and WMTS but:
 - Rectangular tiles in WMTS (instead of square en TMS)
 - Different orientation of the j axis in the tile space (coherent with WMS in WMTS)
 - Tiles of different scale can have different sizes in WMTS



OSGeo-TMS



OGC- WMTS



TMS RESTful influence on WMTS

- TMS is pure RESTful implementation build from scratch.
- OGC has its own tradition for KVP and SOAP services and OWS Common framework.
- WMTS has aligned to those, resulting in a standard easier to combine with the OGC standards baseline.
- The group made an effort to adapt RESTful ideas into OGC and suggested a RESTful approach deeply inspired in TMS, but with less granularity to make it equivalent to other encodings.



Resource representation: RESTful granularity

- The ServiceMetadata document as a single entry point to the service makes it easier to adapt to current service catalogues and more aligned to ISO 19119.
- Layers define URL templates to directly access a particular tile of a particular position and scale
- Well known Scale Sets
- Single entry point is the service collection (root resource)
- Services
- Layers (TileMaps)
- Scales (TileSets)
- Tile
- Profiles



What makes OGC WMTS better

Nothing

There are a couple of things extra in WMTS:

- 3 different encodings (KVP, SOAP, RESTful)
- in an single harmonized model (UML)
- GetFeatureInfo in a tile
- Support for extra dimensions
- Themes



End of story

- I'm telling you this because I personally when to South Africa at a FOSS4G to discuss with you the state of the specification and to look for collaboration and approval
- It was my obligation to report on the end of the story to you



OSGeo versus OGC as creators of standards

OSGeo

- Tested on developed open source solutions
- Can do that from scratch
- Can elaborate each standard independently

- Openly discussed and published in the twiki

- Faster process

OGC

- Tested on reference solutions and interoperability Experiments
- Constrained by
 - the legacy: OWS Common, KVP
 - OGC rules: SOAP interface, UML model
- RESTful interpretation is conditioned by the need for a generic (encoding independent) description of the service
- Procedures for proposals, CR and acceptance (votes).
- Part of the process is internal with open comments period. Final document publicly available on the web
- Slower process



It is not the end of the story: OSGeo and OGC MoU

- There is a memorandum of understanding between OSGeo and OGC that recognizes the value of mutual collaboration
- OSGeo have good developers and testers and can elaborate good standards
- OGC can help in the consensus process

Thanks!