



# MapStore at *geOcom 2023*

Tobia Di Pisa  
**GeoSolutions**



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- What's new in MapStore and for the MapStore integration with geOrchestra
- MapStore and geOrchestra integration roadmaps for 2023

# Who uses MapStore in geOrchestra?

## Some geOrchestra instance using MapStore

objetid	numero	genre	espece	variété	is
25	08agADRI	CORNUS	KOUSA		
26	08agADRI				
27	08agADRI				
28	08agADRI	CORNUS	KOUSA		
29	08agADRI	CORNUS	KOUSA		
20	08agADRI				
25ag	Roms				

Arbres d'alignement - Nombre d'espèces  
2,550

A special thanks goes to them for their contribution! 😊

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# What's new in MapStore

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What has been released in MapStore  
from the last geOcom

?

Two major series in the middle:

**2022.02** (geOrchestra v23.0)

Released in Sep 2022 (2 minor releases included)

**2023.01** (compatible with geOrchestra v23.0)

Released in Apr 2023 (1 minor release included so far the next  
in June 2023)

=

Lots of new powerful updates!



Let's see together the main ones  
interesting for geOrchestra!



# New with 2022.02 - Improved 3D data handling



- Support to **WFS layers** and **imported vector layers** (GeoJSON, Shapefile...) in 3D mode
  - Visualization of 2D and 3D Geometries in 3D mode
  - Support to **Styling**
  - Support to **Identify**



Look at

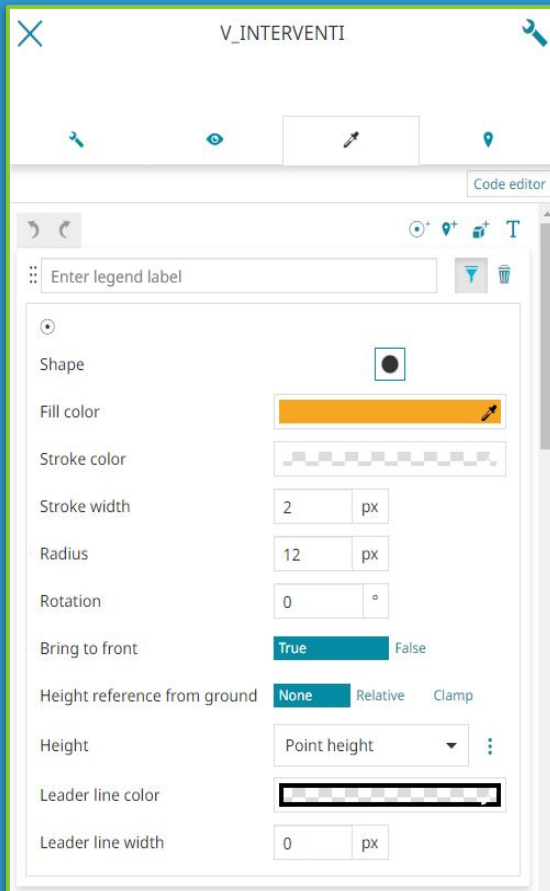
<https://docs.mapstore.geosolutionsgroup.com/en/v2023.01.01/user-guide/layer-settings/#styling-of-vector-layer>

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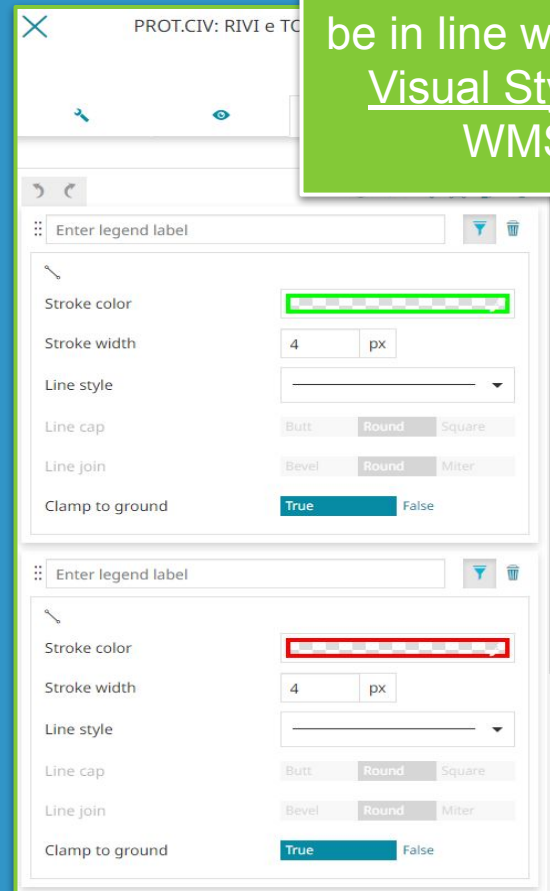
- **Styling properties** specific for 3D mode with the inclusion of dedicated symbolizers!

Normalized the UI/UX to be in line with the existing Visual Style Editor for WMS layers



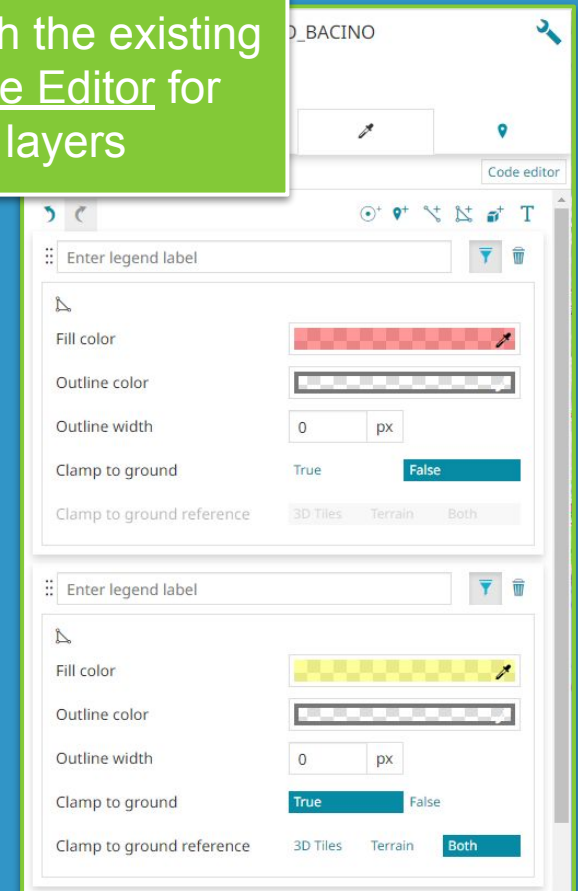
Visual Style Editor for Points (V\_INTERVENTI). The interface includes a legend label input, a shape selector (circle), and various styling options: Fill color (orange), Stroke color (dashed), Stroke width (2 px), Radius (12 px), Rotation (0°), Bring to front (True), Height reference from ground (None), Height (Point height), Leader line color (dashed), and Leader line width (0 px).

Points



Visual Style Editor for Lines (PROT.CIV: RIVI e TC). The interface includes a legend label input and styling options: Stroke color (green), Stroke width (4 px), Line style (solid), Line cap (Butt), Line join (Round), and Clamp to ground (True).

Lines



Visual Style Editor for Polygons (BACINO). The interface includes a legend label input and styling options: Fill color (red checkered), Outline color (dashed), Outline width (0 px), Clamp to ground (True), and Clamp to ground reference (Both).

Polygons



# New with 2022.02 - Improved 3D data handling



- Enhanced the support for the **Identify** (click on map) in **3D mode** according to the camera orientation

The screenshot displays the MapStore interface in 3D mode. The main view shows a 3D city model with various colored layers. A search bar at the top contains the text "Search by location name". On the left, a layer list includes "Genova 3D WFS", "V\_INTERVENTI", "V\_INTERVENTI\_AREA", "V\_PIANO\_BACINO", "PROT.CIV. RIVI e TO...", and "Genova3D". An "Identify" popup is visible in the bottom right, showing a 3D view of buildings and a table of data:

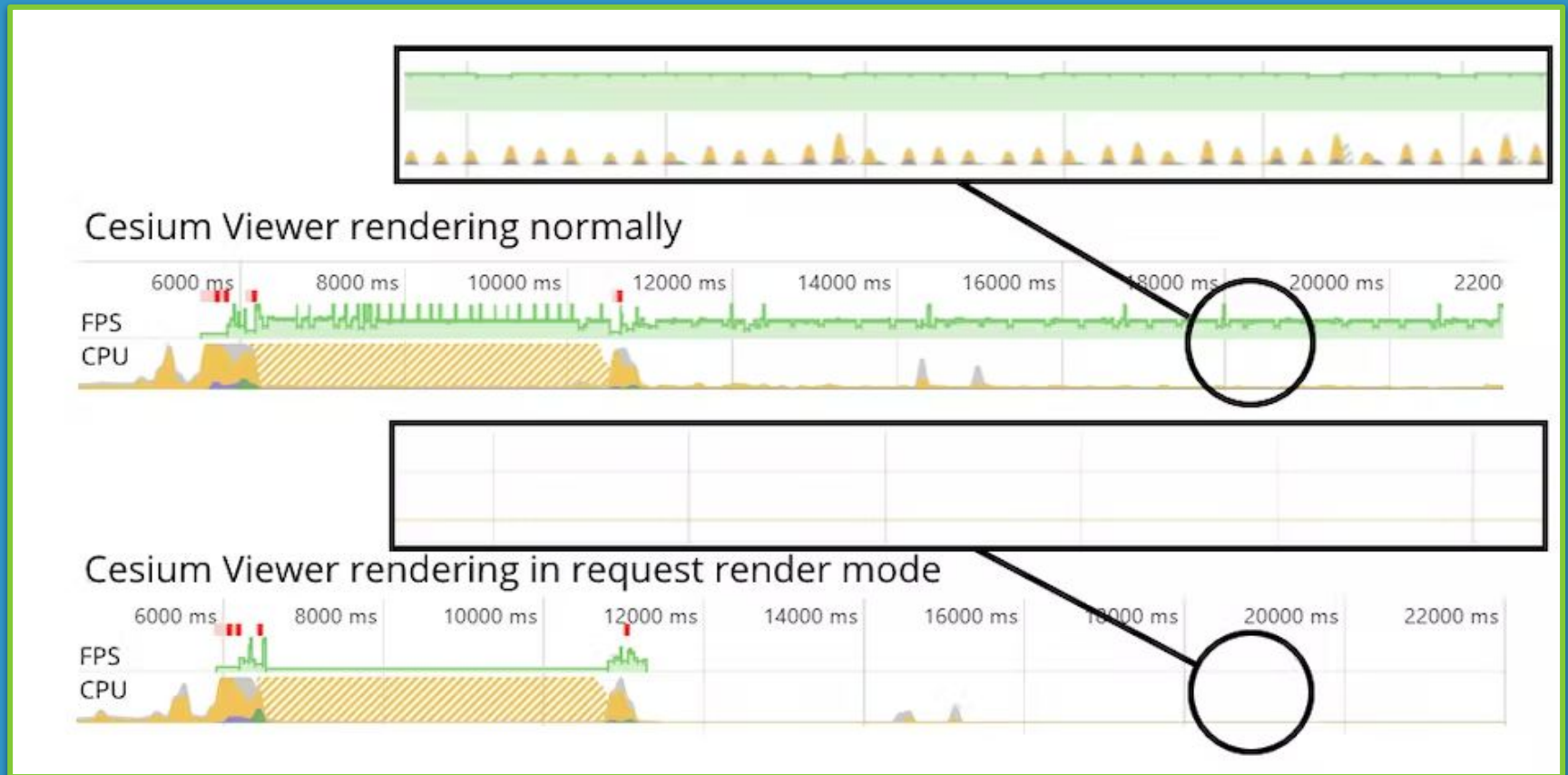
batchId	height	name
63	64.0879974365234	mesh_115
89	67.2789993286133	mesh_155
90	66.5070037841797	mesh_156

**Identify for 3D Tiles and Vector layers in 3D!**

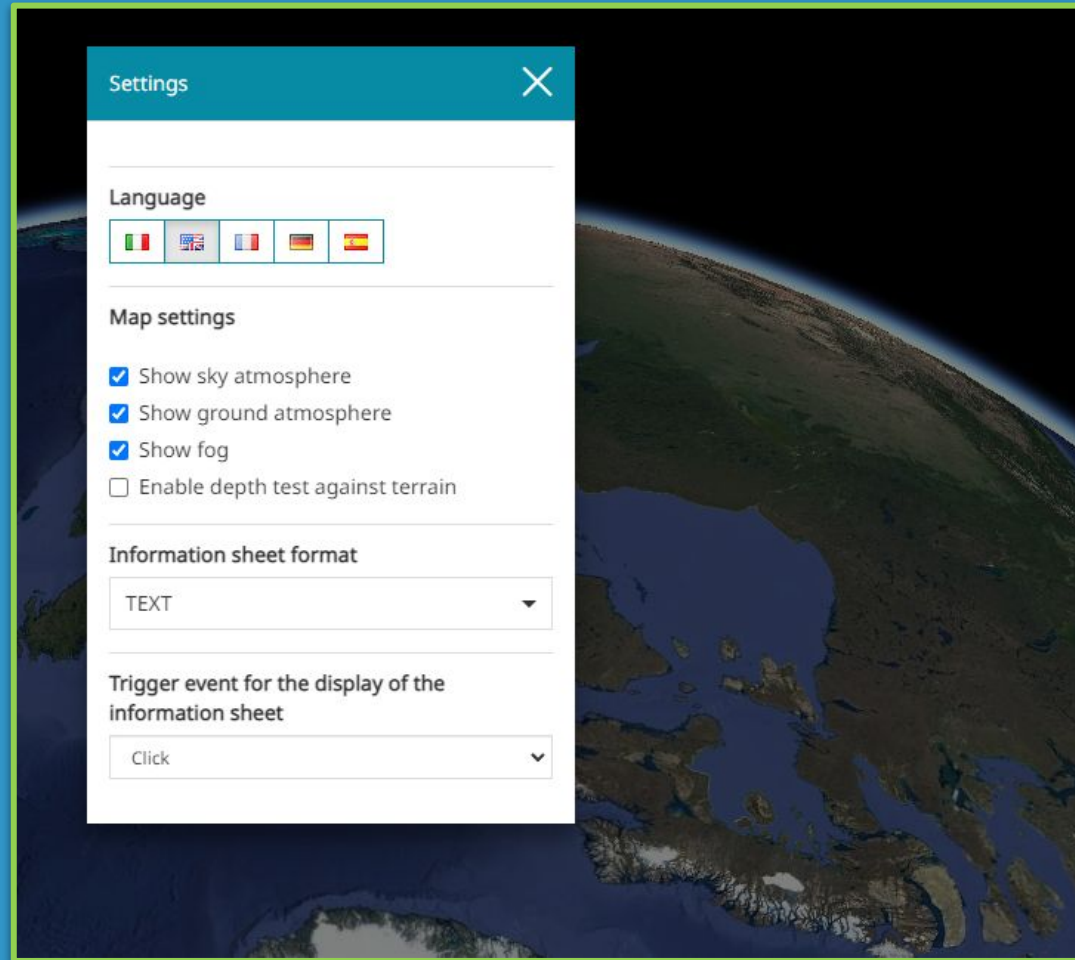
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- **Improved 3D mode performances:** applied Explicit Rendering strategy to avoid frames loading when the map is idle



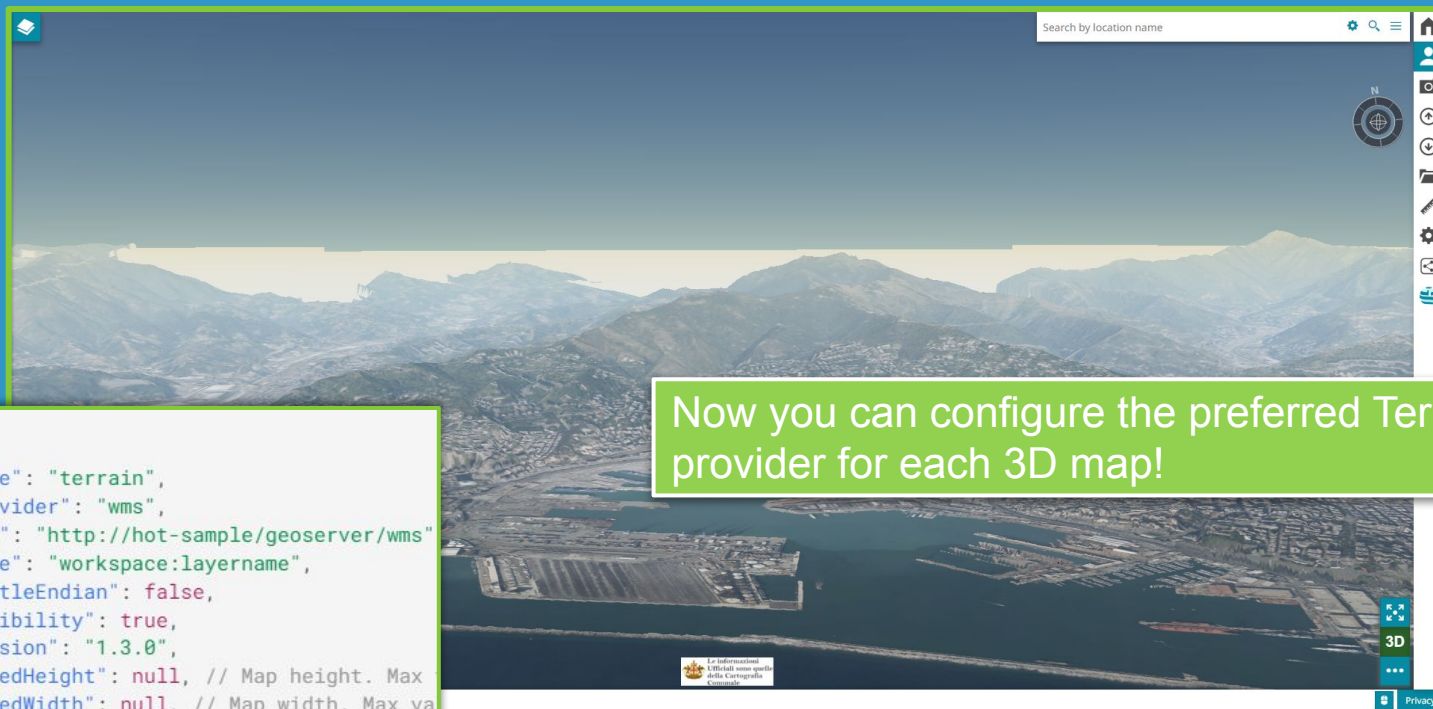
- Improved the **3D Map Options** related to the globe in Map Settings: enable atmosphere, enable fog and enable depth test



# New with 2022.02 - Improved 3D data handling



- Improved the support for **Terrain layers** including a new **dedicated layer type** to support **terrain provider layer** for the 3D viewer



```
{  
  "type": "terrain",  
  "provider": "wms",  
  "url": "http://hot-sample/geoserver/wms",  
  "name": "workspace:layername",  
  "littleEndian": false,  
  "visibility": true,  
  "version": "1.3.0",  
  "fixedHeight": null, // Map height. Max  
  "fixedWidth": null, // Map width. Max va  
  "crs": "CRS:84" // Supports only CRS:84  
}
```

Now you can configure the preferred Terrain provider for each 3D map!

Look at

<https://docs.mapstore.geosolutionsgroup.com/en/v2023.01.01/developer-guide/maps-configuration/#terrain>

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## But... not only updates for 3D!



# New with 2022.02 - Loading Time

- Further performance improvements from [v2021.02](#) concerning the loading time of MapStore pages
  - Reduced the initial MapStore JS bundle size by lazy-loading needed lib dependencies
  - [Modular Plugin](#): for a dynamic import of plugins and extensions only when lib dependencies are needed



2022.01.02

mapstore2.js 2.6 Mb

Thanks to Rennes  
Métropole & Co from  
geOrchestra! 😊

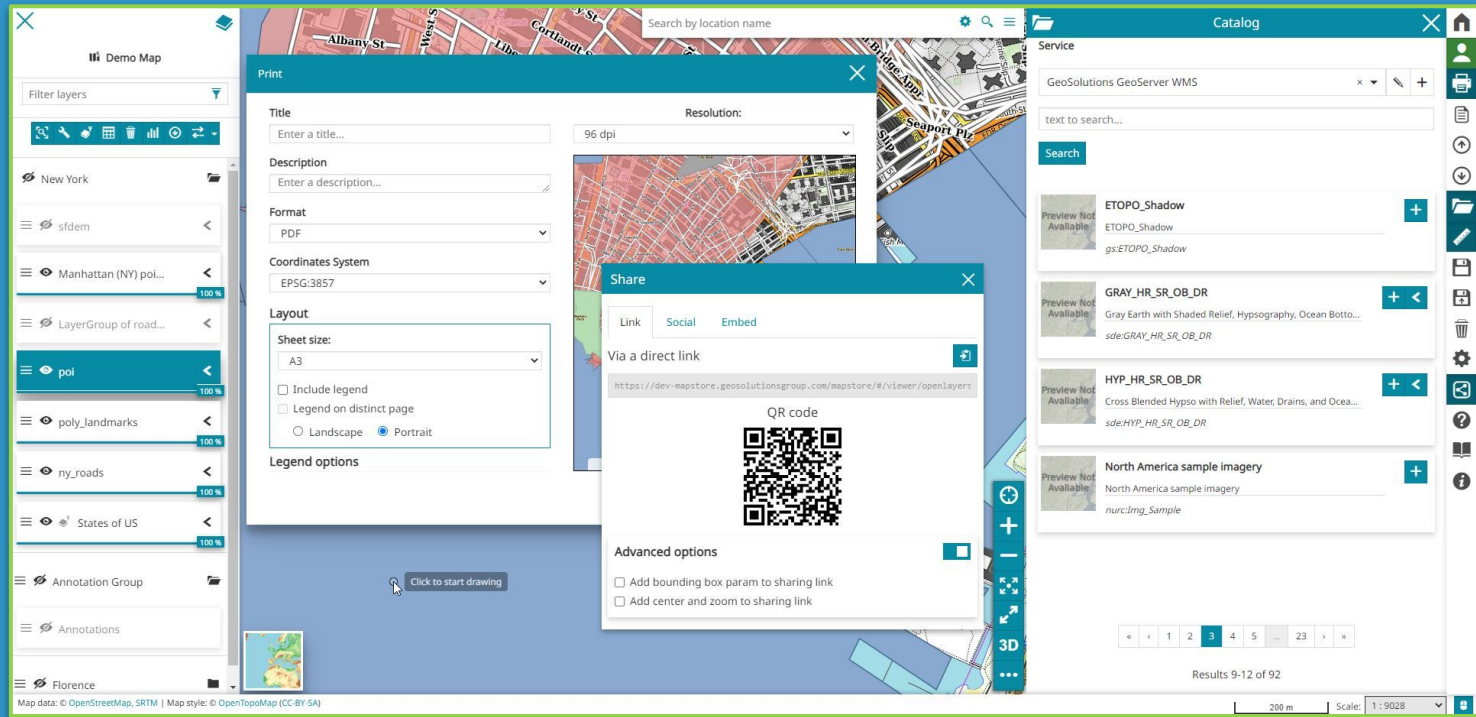
2022.02.02

mapstore2.js 1.4 Mb

# New with 2022.02 - Side Toolbar



- **Side Toolbar:**
  - A new design for the MapStore map viewer
  - Faster and easier access to MapStore tools
  - Allows concurrent use of multiple tools on the same map



Thanks to Rennes Métropole & Co from geOrchestra ! 😊

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# New with 2022.02 - Query params handling



- First implementation in **v2022.01.01** series
  - Provided the ability to send query params using POST
- Enhanced in **v2022.02.00**
  - Support to **multiple embedded maps** on the same web page via POST
- Enhanced respectively in **v2022.02.01** and **v2022.02.02**
  - Provided support for a **simplified handling** of query parameters
  - Support of query params for **3D mode**

More documentation  
available online at:

<https://docs.mapstore.geosolutionsgroup.com/en/v2023.01.01/developer-guide/map-query-parameters>

Example

[https://mapstore.geosolutionsgroup.com/mapstore/#/viewer/openlayers/new?addLayers=gs:us\\_states&center=-106.458,45.699&zoom=5&mapInfo=gs:us\\_states&mapInfoFilter=STATE\\_FIPS=30](https://mapstore.geosolutionsgroup.com/mapstore/#/viewer/openlayers/new?addLayers=gs:us_states&center=-106.458,45.699&zoom=5&mapInfo=gs:us_states&mapInfoFilter=STATE_FIPS=30)

Thanks to Rennes Métropole & Co from geOrchestra ! 😊

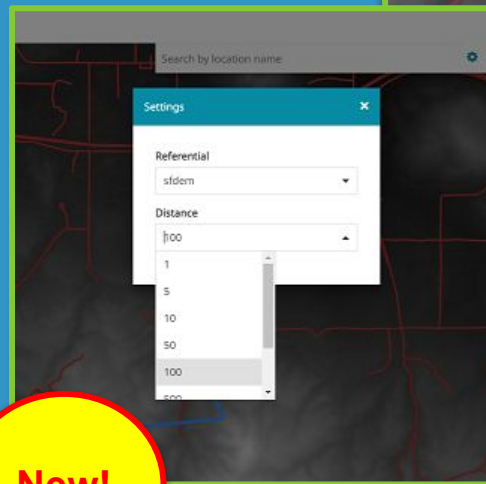
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# New with 2022.02 - Longitudinal Profile

**The Longitudinal Profile Extension:** new MS tool released in Q4 of 2022 to provide a longitudinal profile visualization for MapStore in geOrchestra (based on the WPS provided by Le Puy en Velay)

Based on  
<https://github.com/geosolutions-it/MapStoreExtension>



Settings

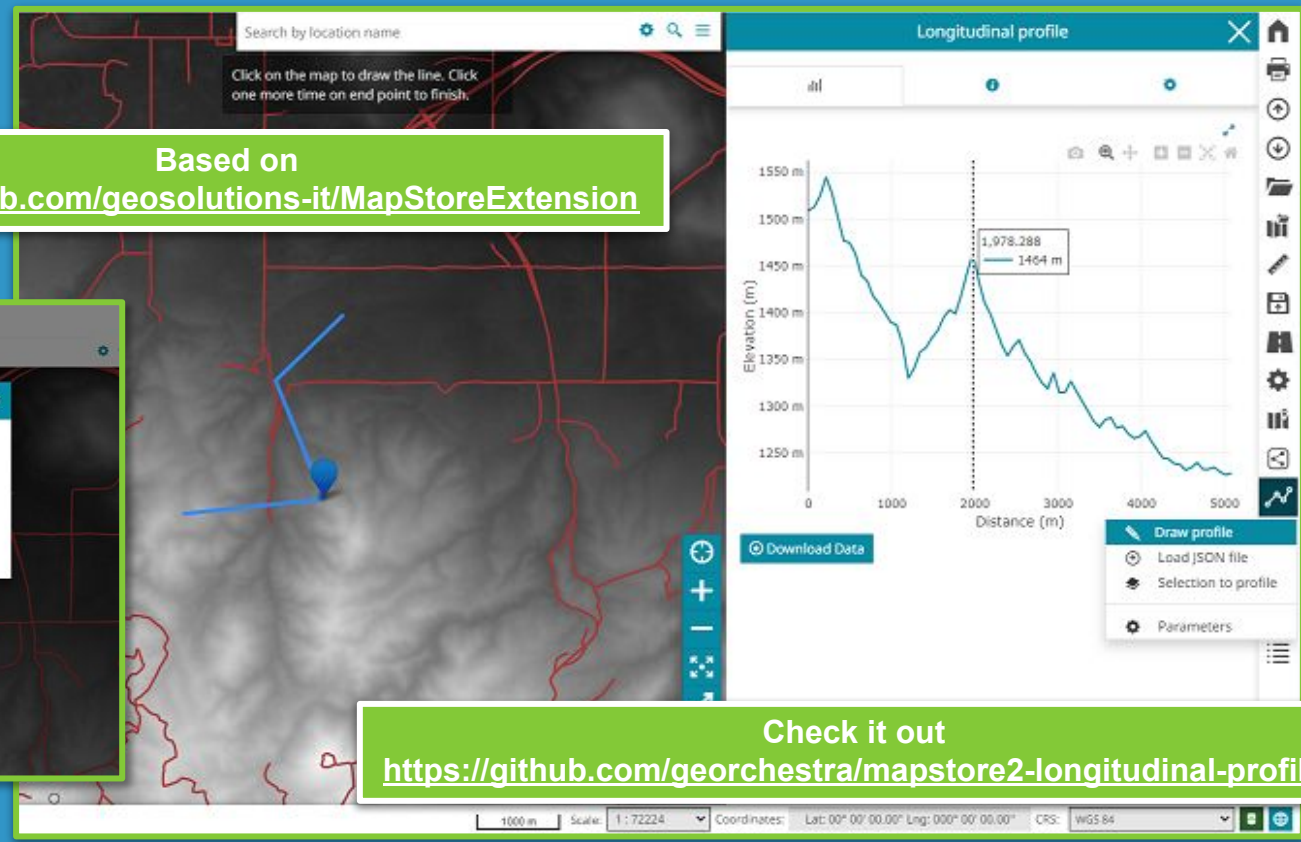
Referential: srdem

Distance: 100

1, 5, 10, 50, 100, 200

**New!**

Check it out  
<https://github.com/georchestra/mapstore2-longitudinal-profile>



Thanks to Rennes Métropole & Co from geOrchestra ! 😊

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## And... what about 2023.01 ?



### Check it out on Github

<https://github.com/geosolutions-it/MapStore2/releases/tag/v2023.01.00>

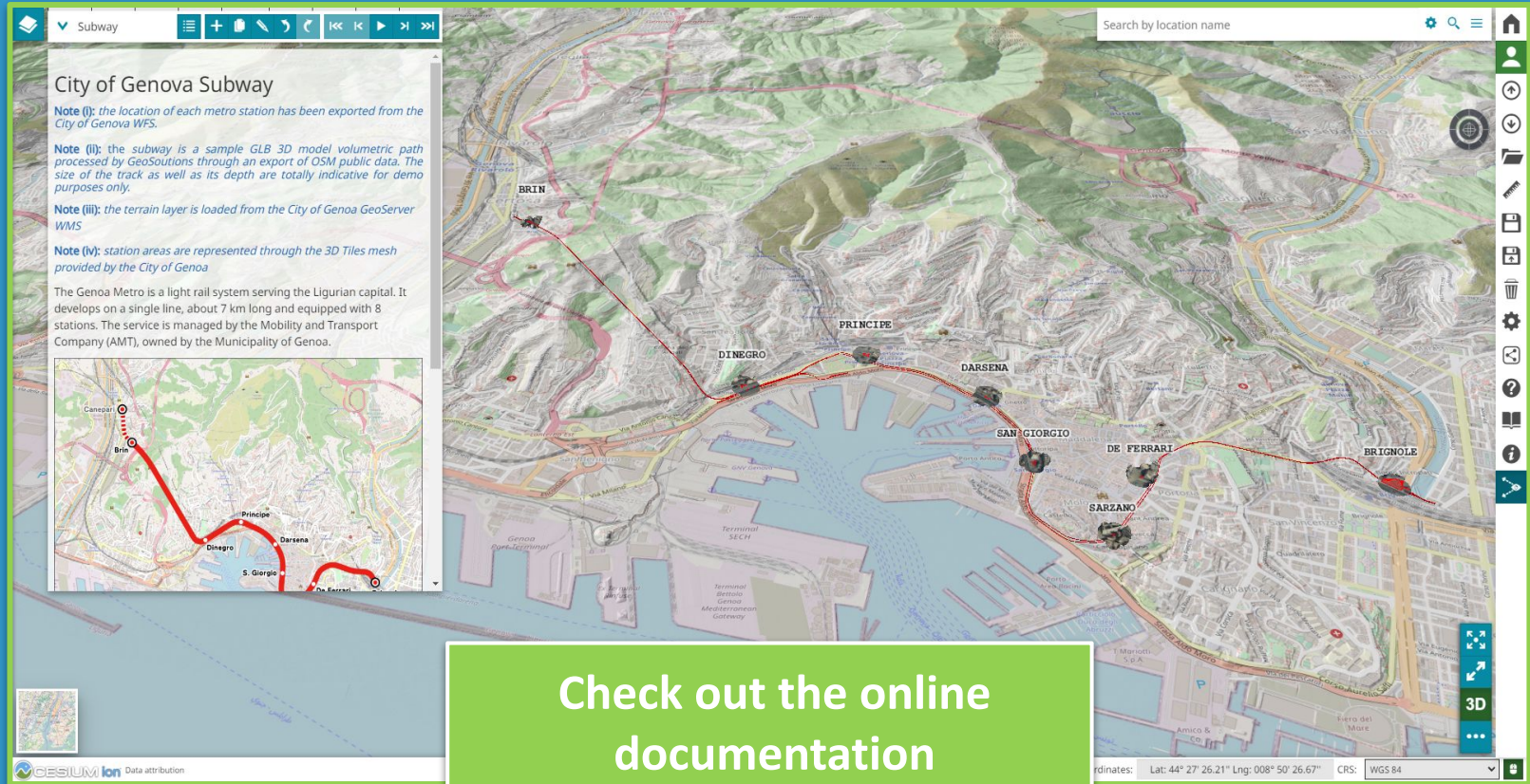
<https://github.com/geosolutions-it/MapStore2/releases/tag/v2023.01.01>



# New with 2023.01 - Map Views



- Create your **immersive experience** within the **MapStore Viewer** using the new powerful **Views Tool!**



Check out the online documentation



<https://docs.mapstore.geosolutionsgroup.com/en/v2023.01.01/user-guide/map-views/>

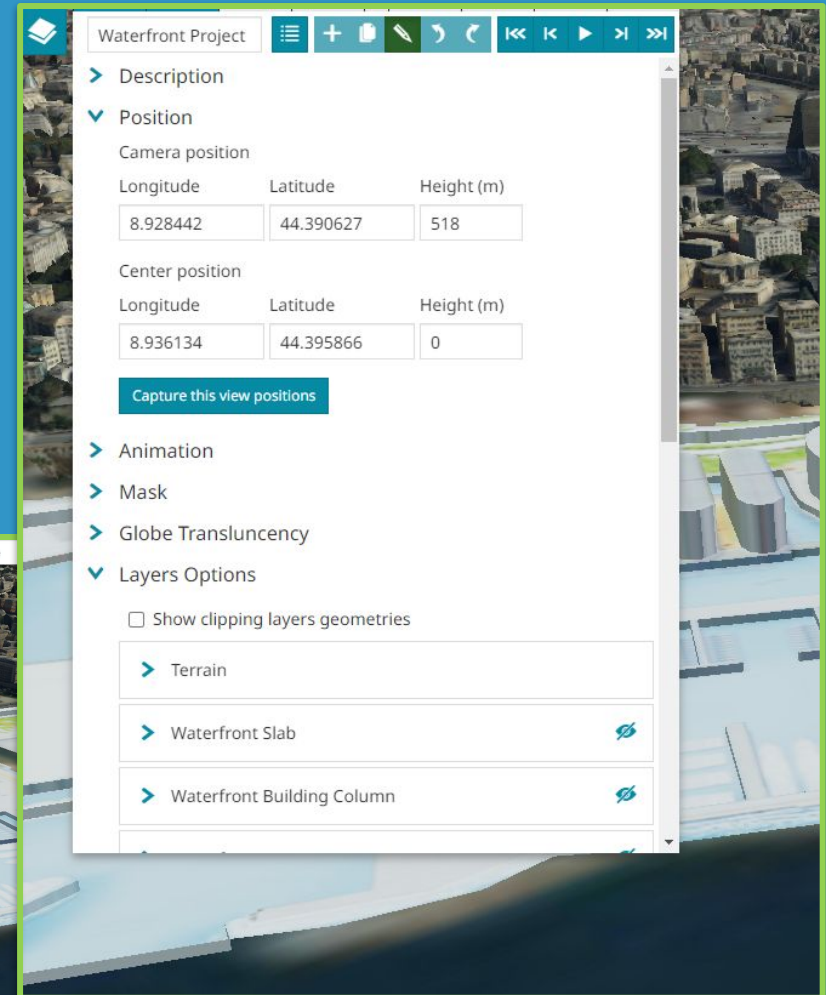
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# New with 2023.01 - Map Views

- Configuring different custom views within the same map is now possible!

- Descriptive panel
- Map position and camera orientation
- Animation time
- Custom layers visibility
- More options for 3D!



Waterfront Project

> Description

▼ Position

Camera position

Longitude	Latitude	Height (m)
8.928442	44.390627	518

Center position

Longitude	Latitude	Height (m)
8.936134	44.395866	0

Capture this view positions

> Animation

> Mask

> Globe Translucency

▼ Layers Options

Show clipping layers geometries

- > Terrain
- > Waterfront Slab
- > Waterfront Building Column



Waterfront Proj...

The Waterfront Project

Sample of GLB 3D model processed by GeoSolutions from the RPBW e OBR Project

*Note: for demo purpose only. Data might have different dimensions from the real project structure.*

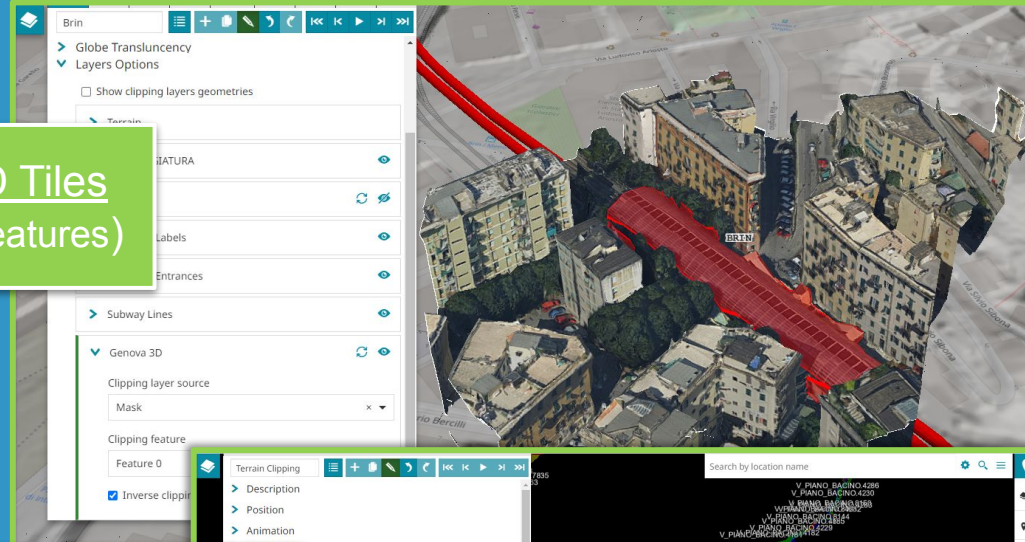
The area of the ex Fiera di Genova is one of the most sensitive areas being abandoned in the city and one of the most fragile stretches of its coastline. Now the vision of the Eastern Waterfront donated by Renzo Piano to the City of Genova intends to recreate a strong urbanity on the sea, addressing the theme of the port starting from the city, redeveloping the abandoned areas in the delicate border between land and sea.

3D

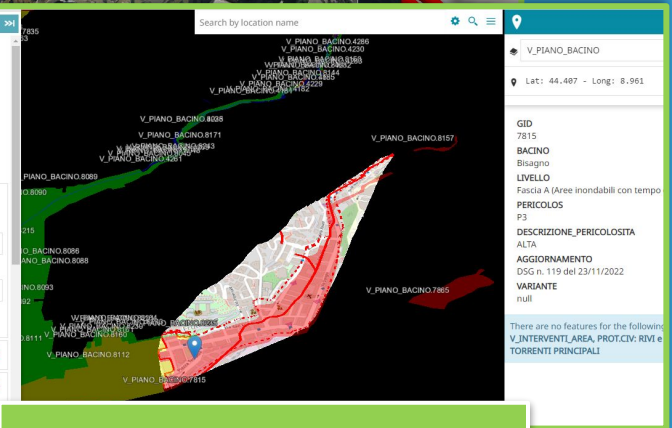
# New with 2023.01 - Map Views

- Additional and **advanced options** are available for the **3D mode**

Clip and Mask of 3D Tiles  
(using WFS or Vector features)



Clipping of Terrain Layers



Globe Translucency

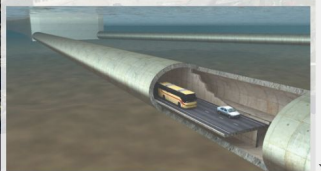


## The Support Tunnel Project

Sample of GLB 3D model processed by GeoSolutions from data provided by the Municipality of Genoa

*Note: for demo purpose only. Data might have different dimensions from the real project structure.*

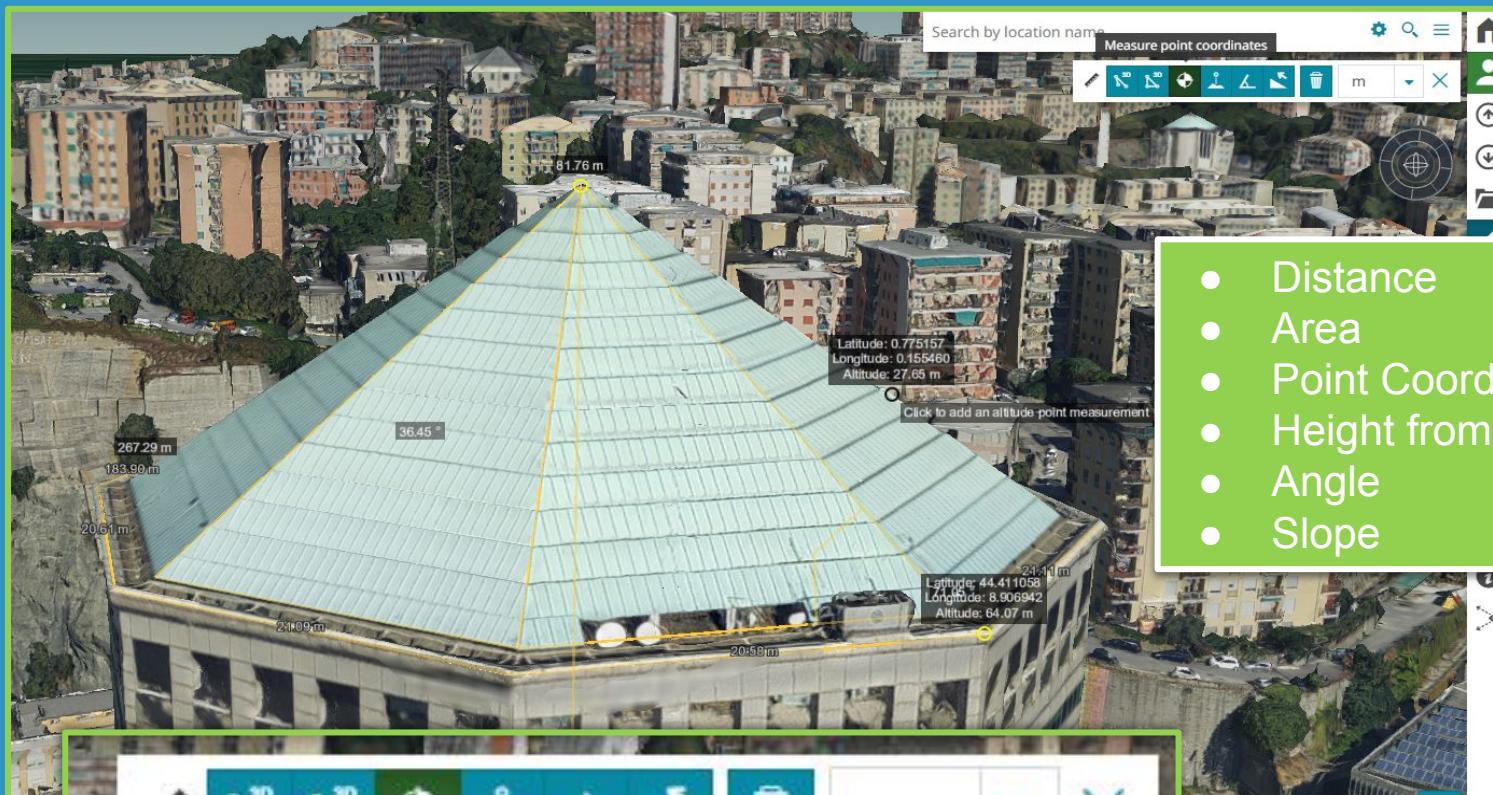
A 4.2 km route that will connect *viale Brigate Partigiane* with the *Canepa* seafront, first passing under *Carignano*, with a median intersection between the *Madre di Dio* area and the *Giano* pier, then under the port, re-emerging at the foot of the *Lanterna* at the *San Benigno*. This is the summary of the content of the technical-economic feasibility project of the *Genoa Support Tunnel*



# New with 2023.01 - 3D Measurement



- The **Measurement** tool is now supported also in **3D mode**



- Distance
- Area
- Point Coordinates
- Height from terrain
- Angle
- Slope

A completely **new design** provides a Measurement tool more compact and flexible to improve also the **UX!**

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# New with 2023.01 - 3D Styling



- **Leader line property** to connect a marker, **3D model**, icon or **text** to the terrain

The screenshot displays the MapStore interface with a 3D map view. On the left, a 'Code editor' window is open, showing the 'Leader line' property configuration panel. The panel includes the following settings:

- 3D Model: <https://demo.geo-solutions.com>
- Scale: 1
- X axis rotation: 0 °
- Y axis rotation: 0 °
- Z axis rotation: 0 °
- Color: [Color picker]
- Height reference from ground: **None** (Relative, Clamp)
- Height: Point height
- Leader line color: [Color picker]
- Leader line width: 3 px
- Geometry transformation: Center

The main map view shows a 3D terrain with several markers: three orange spheres on poles, a blue cone, and a red leader line connecting a marker to the terrain. An inset window shows a detailed 3D view of a building complex with red leader lines connecting markers to the terrain.

# New with 2023.01 - 3D Styling



- **3D Models** support as a new Point Symbolizer type



Based on glTF model support (raw GLB is also supported)

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# New with 2023.01 - WFS/Vector Legend



- Layer items in TOC will show the **legend for WFS and vector layers** when a style has been defined

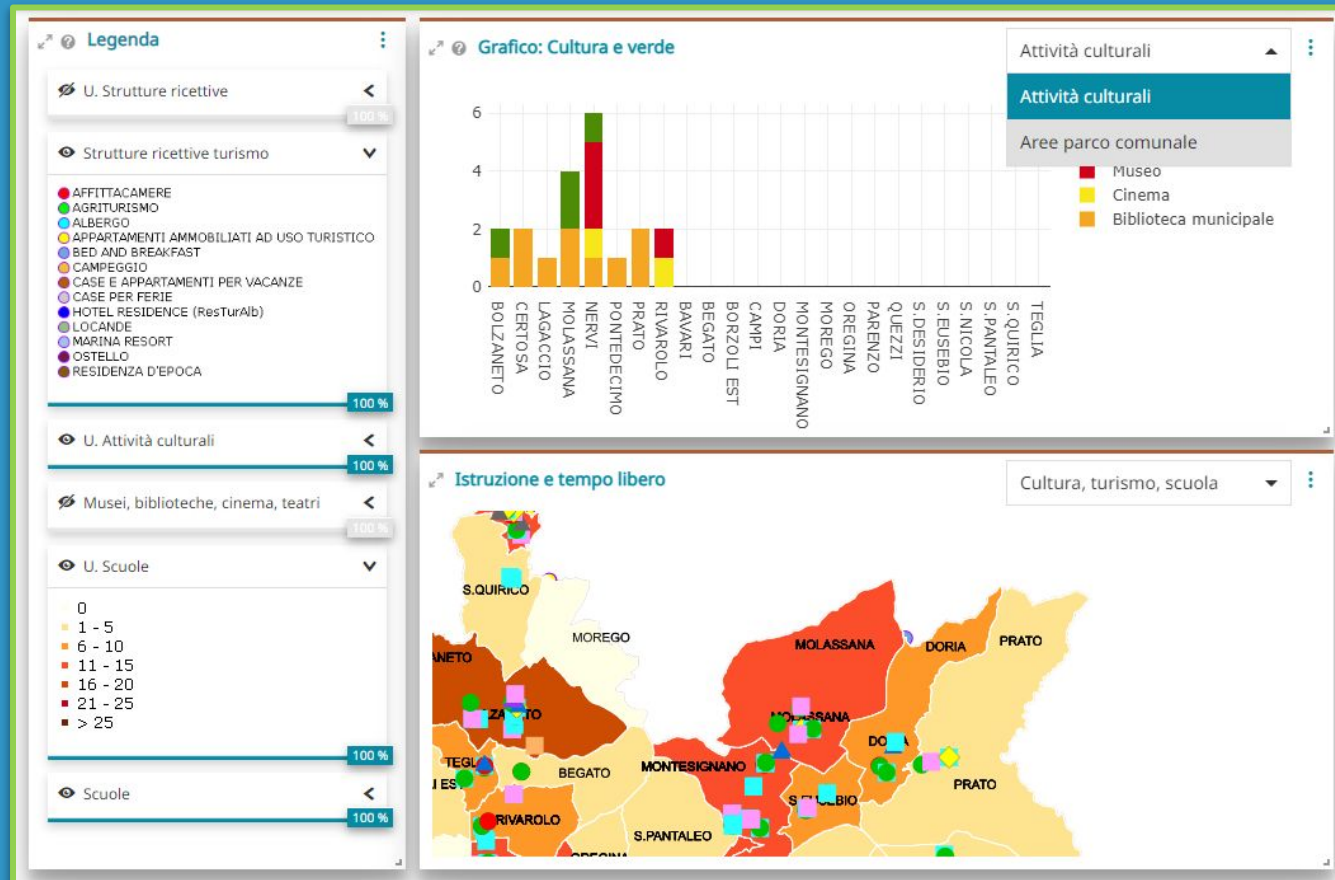
The screenshot displays the MapStore interface for a 3D map of Genova. The Table of Contents (TOC) on the left lists several layers, including 'V\_PIANO\_BACINO'. A legend popup for this layer is shown, detailing the following categories:

- Fascia C (Aree inondabili con tempo di ritorno di 500 anni)
- Fascia BB (Ambito Normativo BB)
- Fascia A3 (Aree storicamente inondate non studiate)

# New with 2023.01 - Dashboards



- **Chart Switcher/Map Switcher:** to allow switching between multiple charts and maps respectively using a single widget
- **Legend widget improved:** to make it interactive and more responsive

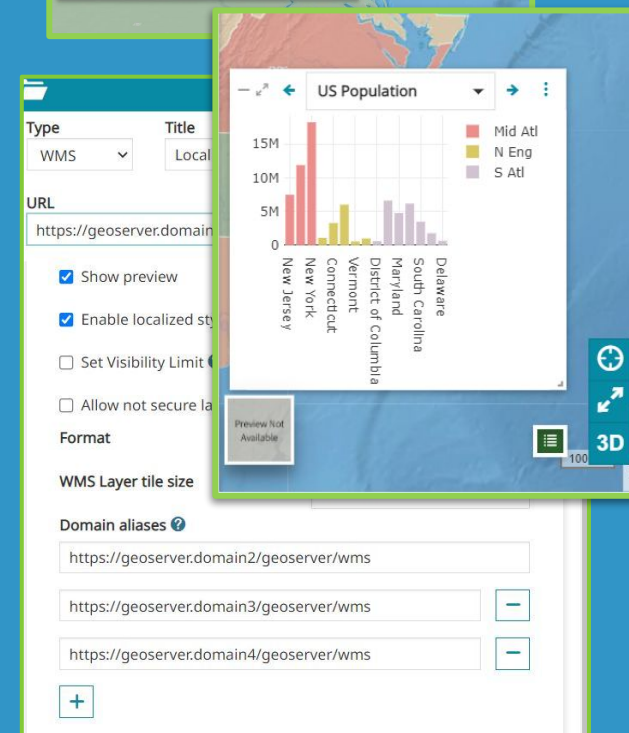
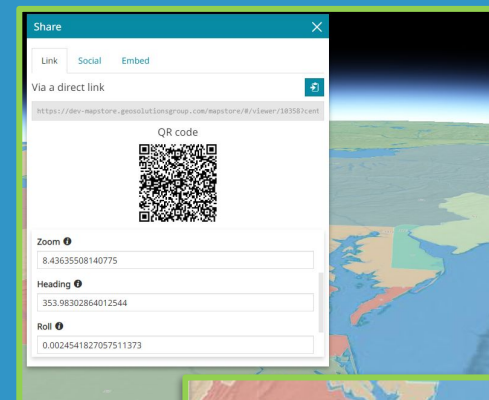


# What's new in MapStore



Lots of other enhancements to the existing MapStore capabilities have been also included

- Improved interoperability with services other than GeoServer (**Server Type** option and **more**)
- ... and allow to load 3D Tiles tilesets via query parameters (THANKS to CRAIG! 😊)
- **Filter by viewport** in Attribute Table
- Improved **responsiveness** for **MS widgets in mobile**
- Ability to set **domain sharding** directly from the Catalog component
- **3D zoom** via share URL now supports the **camera orientation**
- Client side customization for **WMTS background layers attributions**
- **...and much more.** Check out the releases page in Github to learn more!





# Ongoing work - geOrchestra



For the **geOrchestra integration** we are working on some new interesting features that will land in

**MapStore**  
and

**mapstore2-georchestra**

**THIS YEAR!**



Thanks to Rennes Métropole & Co from geOrchestra ! 😊

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# Ongoing work - geOrchestra



- **Update to MapStore 2023.01:**
  - The **mapstore2-georchestra** downstream project will be updated to the latest version of MapStore **2023.01.xx**

Q2

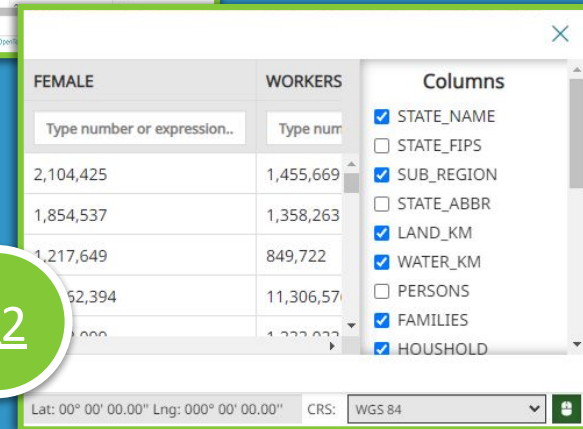
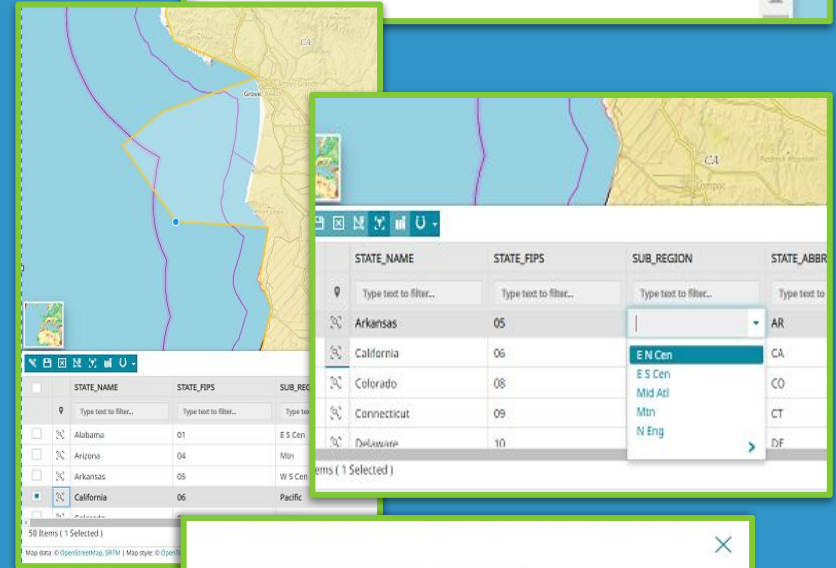
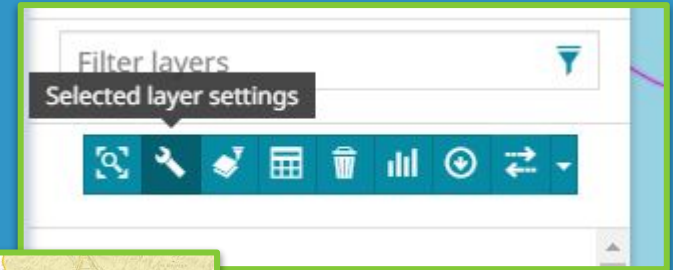
All new features of **MapStore 2023.01** will be available in **geOrchestra soon!**

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# Ongoing work - geOrchestra



- **Attribute Table:**
  - Ability to disable editing functions for layers in TOC (**read-only layers**)
  - Restrict editing functionalities only to certain MS groups (**geOrchestra roles**)
  - Keep the state of the UI column visibility settings when **saving a map** and in **user session**



Q2

# Ongoing work - geOrchestra



- Application Context:

- Import/export tool will be available for MapStore Contexts as it is for Maps, Dashboards and GeoStories

The screenshot displays the geOrchestra web interface. At the top, there is a navigation bar with the logo 'Portail des données géographiques de Rennes Métropole EXT' and menu items 'catalogue', 'viewer', 'viewer[new]', and 'maps'. Below the navigation bar is a search input field. The main content area is titled 'Contexts' and features a 'New Context' button. A grid of six map thumbnails is visible, with titles such as 'Contexte-Martin\_Luther\_King', 'couches-intercommunales', 'Application de gestion des esp', 'geosolutions\_geojardins', 'geosolutions\_test\_22022022', and 'geosolutio'. An 'OPTIONS' menu is overlaid on the interface, showing 'EXPORT' and 'IMPORT' options. To the right of the main content, a circular badge contains the text 'Q3'. A 'Share' dialog box is open, showing options for 'Link', 'Social', and 'Embed'. The 'Link' option is selected, displaying a direct link: <https://dev-mapstore.geosolutionsgroup.com/mapstore/#/viewer/10358> and a QR code.

- Sharing options:

- Share tool enhancement for creating **permalinks** so that it will be possible to share the exact state of the map without saving it



# Ongoing work - geOrchestra



- Cloud Optimized GeoTIFF (COG):
  - The support for a new source type will be included in MapStore **Catalog** tool ...



Q4

- Efficient Imagery Data Access:
  - Only the data you need
  - Improving scalability and reducing bottlenecks
- Reduced Data Duplication:
  - Data available online for all consumers
- Many Providers:
  - eg. S3, Google Cloud Storage, Azure

... to be in line with many software already using it!





# Ongoing work - MapStore



**GeoSolutions**  
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We are actively working on interesting new features and improvements for existing and new tools to be available in next releases!

The MapStore community is also growing a lot,  
Thank you all for using MapStore!



# Ongoing work - Even more on 3D



- Further updates to align the **3D** measurement capabilities to the one available in **2D**:
  - Export to **GeoJSON**
  - Convert measurements to **Annotation**
  - Convert measurements to **vector layer in TOC**



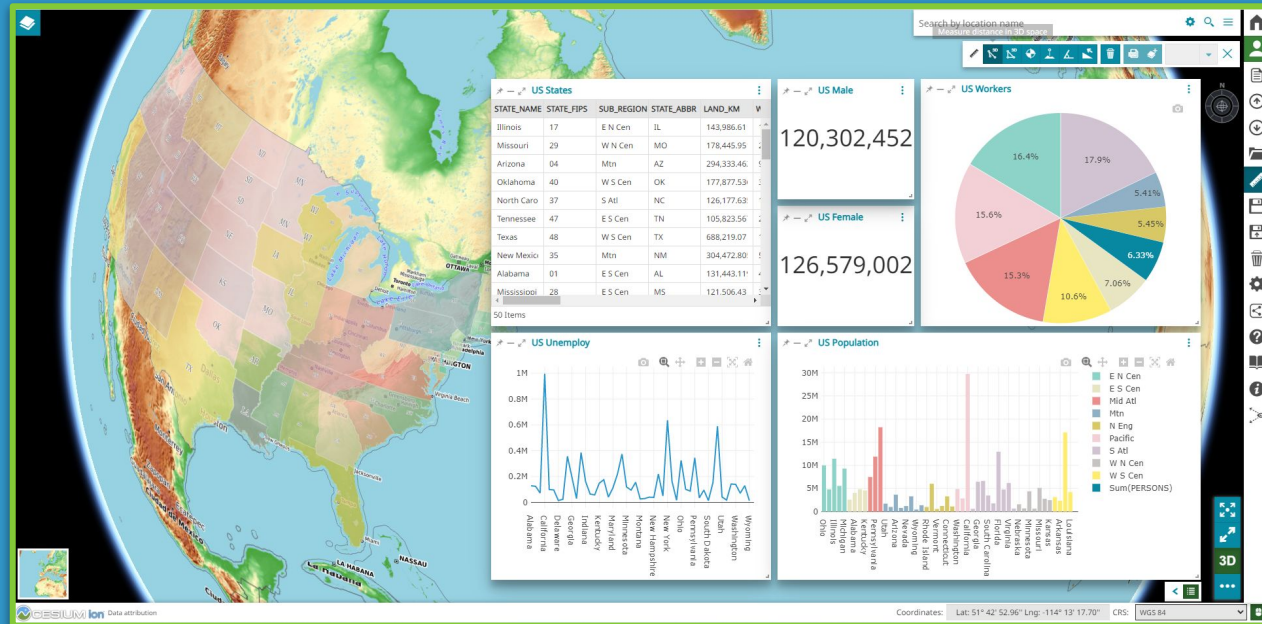
- **Map type** and **camera orientation** persisted when saving a map
- **Features editing** support for **3D** (also for **Annotations**)
- **CesiumJS update** to the last version (to support 3D Tiles version 1.1)



# Ongoing work - Even more on 3D



- MapStore **Widgets** available also in 3D mode!



Q3

- Experimentation on possible performance improvements for **Terrain layers** rendering:
  - BIL Terrain caching server side and GeoServer enhancements on DDS/BIL format
  - Terrain layer served with static **quantized-mesh**

Q4

# Ongoing work - Even more on 3D

- Support of 3D maps also in **Dashboards** and **GeoStories**!

**States Map**

CESIUM ion Data attribution

**Persons**

State	Persons
Alabama	~10M
California	~30M
Delaware	~10M
Georgia	~10M
Indiana	~10M
Kentucky	~10M
Maryland	~10M
Minnesota	~10M
Montana	~10M
New Hampshire	~10M
New York	~10M
Ohio	~10M
Pennsylvania	~10M
South Dakota	~10M
Tennessee	~10M
Vermont	~10M
Washington	~10M
Wyoming	~10M

**Water Km**

State	Water Km
Kansas	~200k
North Dakota	~200k
test ed	~400k
Washington	~600k
Wisconsin	~200k
Mississippi	~200k
Tennessee	~200k
KY	~200k

**Media**

- demo map
- Demo Map
- demo map m88
- NPA Demo Map
- NPA Demo Map - CL...

**Mauna Kea Observatory**

Aerial view of part of the Mauna Kea Observatory, showing the Keck and Subaru telescopes. Photo by NASA/JPL-Caltech.

- **Geometry Transformations** in Visual Style Editor for WFS and Vector layers

○ **Geodesic line**  
(LineSymbolizer)

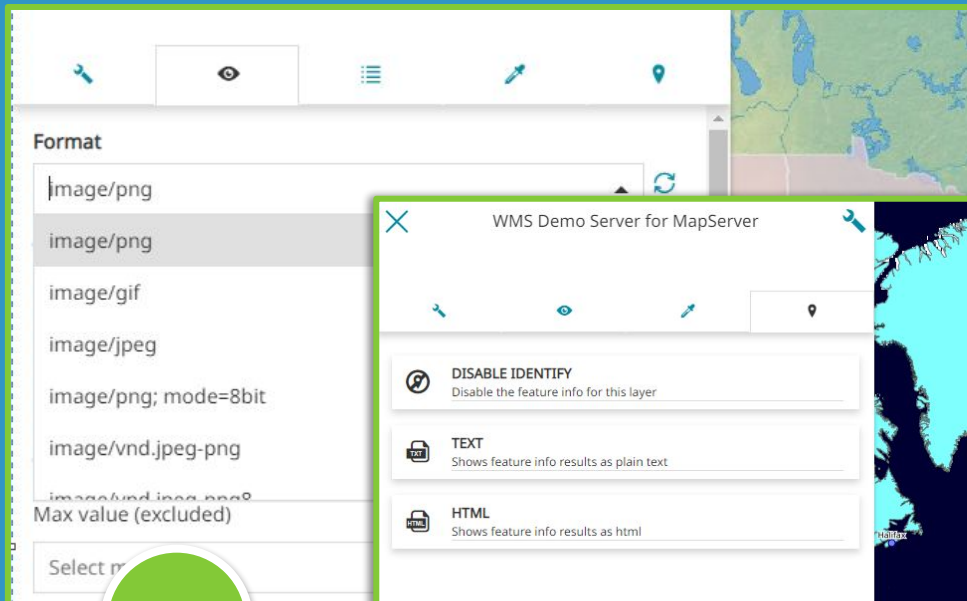
○ **Start/End Point**  
(PointSymbolizer)

Q3

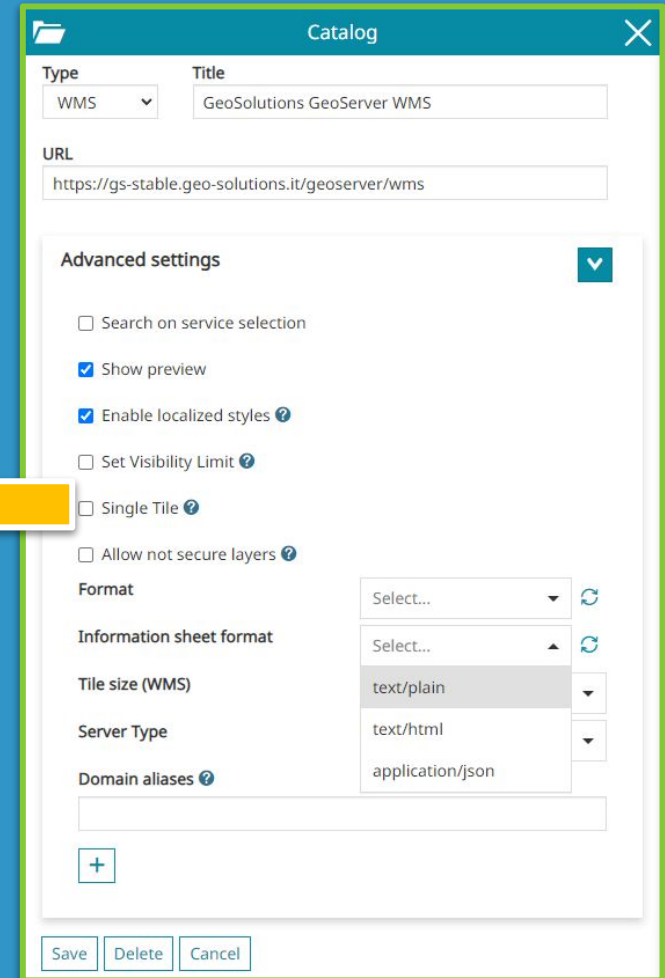
# Ongoing work - More for the Interoperability



- Improved the **Interoperability** with OCG compliant services other than GeoServer
  - Better handle of **GetMap and GetFeatureInfo format list** in Catalog and Layer Settings from WMS services



Q3



A special thanks goes to **CRAIG** for the effective cooperation! 😊

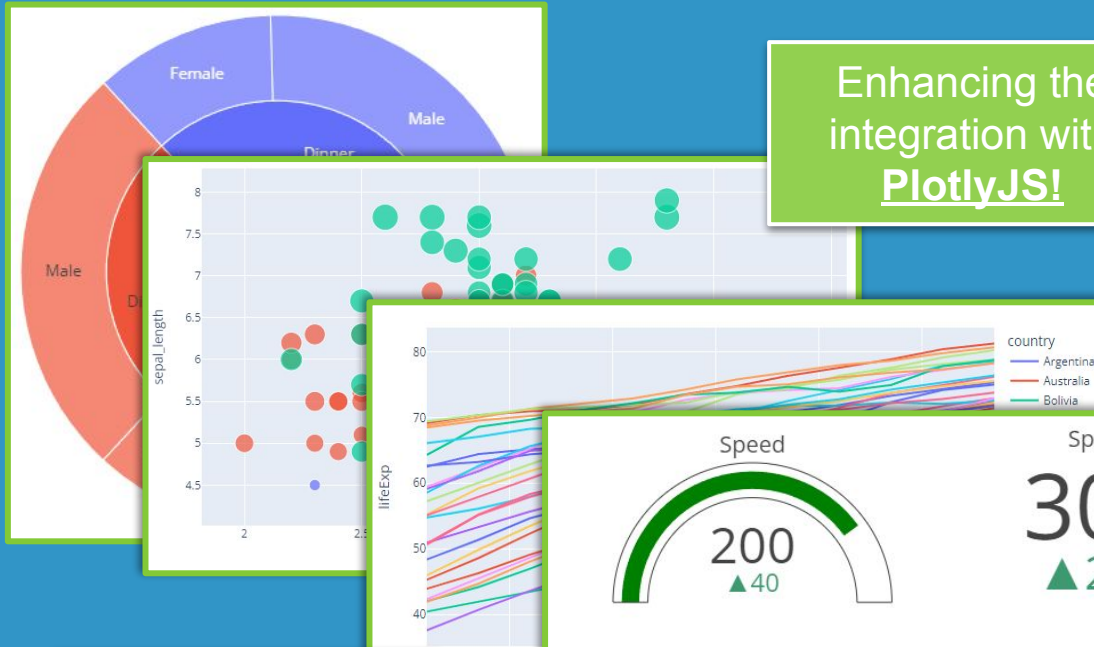
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# Ongoing work - Charts

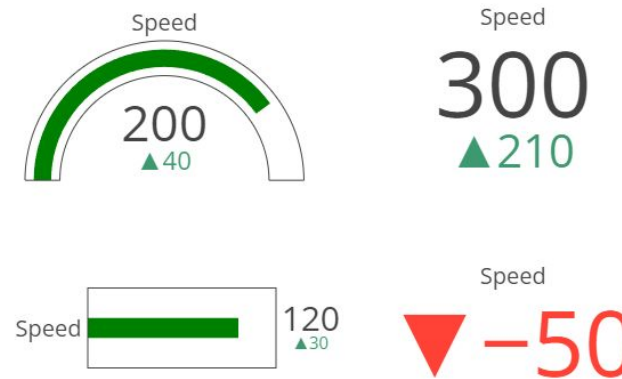
- **MapStore Charts** will be improved:
  - **Multiple variable** charts
  - **Additional chart types**
  - **More configuration options**

Q4

Enhancing the integration with **PlotlyJS!**



Both **Dashboard** and **MapViewer!**



Widget

Configure data

Chart-1

Chart type: Multi Chart

Traces: Trace-1

Trace type: Line Chart

Layer: States of US

X Attribute: STATE\_NAME

Y Attribute: PERSONS

Operation: SUM

Color: Red

Y axis: yAxis-Title

Anchor: X

Position: 0.13

Side: Left

Template: Prefix: e.g.: ~, Format: .2s, Suffix: e.g.: W, Formula: e.g. value / 100

Advanced Options

# Ongoing work - Aliases



- Manage **Feature Attributes Aliases** across MapStore tools

Filter Layer

Attribute filter

Match **any** of the following conditions:

Sub Region	=	
Sub Region	=	
Sub Region	=	
Sub Region	=	

Search: [ ]

- State Name
- State Fips
- Sub Region**
- State Abbreviation
- Land Kilometers
- Water Kilometers
- PERSONS

Identify

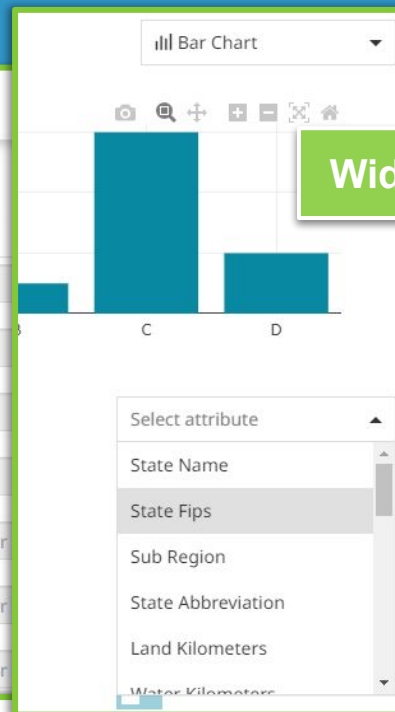
us\_states.38

State Name  
Nebraska

State Fips  
31

Name	Alias	Type
STATE_NAME	State Name	string
STATE_FIPS	State Fips	string
SUB_REGION	Sub Region	string
STATE_ABBR	State Abbreviation	string
LAND_KM	Land Kilometers	number
WATER_KM	Water Kilometers	number
PERSONS		number

Widgets



Q3

Attribute Table

State Name	State Fips	Sub Region	State Abbreviation
Type text to filter...	Type text to filter...	Type text to filter...	Type text to filter...
Alabama	01	E S Cen	AL
Arizona	04	Mtn	AZ
	05	W S Cen	AR
	06	Pacific	CA
	08	Mtn	CO

50 Items

Style Editor

Code editor

Label: State Abbreviation

Font family: State Name

Font color: State Fips

Font size: Sub Region

Font style: State Abbreviation

Font weight: Land Kilometers

Halo color: Water Kilometers

Halo width: [ ]



# Ongoing work - Google Photorealistic 3D Tiles



- Google Photorealistic 3D Tiles: ongoing experiments on MapStore DEV are giving really good results with this!

Keeping up with Google by using Map Tiles APIs with MapStore

Q3

**The Google Photorealistic 3D Tiles map**

This *demo* map is intended to provide an overview of some cities around the world using the **Photorealistic 3D Tiles** released by Google as part of *Google I/O 2023* series.

**Photorealistic 3D Tiles - Lower Manhattan**

This is possible thanks to **MapStore** developments in 3D functionality performed during the last year, including the ability to use **3D Tiles** in maps (such as the Photorealistic 3D Tiles) and the **Map View** tool through which it is possible to set up multiple map views and navigate between them.

Still Experimental (Pre-GA Offerings)

**Paris**

Paris is the capital and most populous city of France, with an official estimated population of 2,102,650 residents as of 2023 in an area of more than 105 km<sup>2</sup> (41 sq mi).

Since the 17th century, Paris has been one of the world's major centres of finance, diplomacy, commerce, fashion, gastronomy, and science.

Paris is especially known for its museums and architectural landmarks: the **Louvre** received 7.8 million visitors in 2022, keeping its position as the most-visited art museum in the world. The **Musée d'Orsay**, **Musée Marmottan Monet** and **Musée de l'Orangerie** are noted for their collections of French Impressionist art.

Check it out!

<https://dev-mapstore.geosolutionsgroup.com/mapstore/#/context/MapStorePhotorealistic3DTiles/44034>

CesiumJS version updated to 1.91.0!

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# MapStore Online Documentation



Check out the updated **User and Developer** guides of the last MapStore release

**v2023.01.01**

**<https://docs.mapstore.geosolutionsgroup.com/en/v2023.01.01/user-guide/>**

**<https://docs.mapstore.geosolutionsgroup.com/en/v2023.01.01/developer-guide/>**



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- **Demo site:** <https://mapstore.geosolutionsgroup.com>
- **User documentation:**  
<https://mapstore.readthedocs.io/en/latest/user-guide/home-page/>
- **Developers documentation:**  
<https://mapstore.readthedocs.io/en/latest/developer-guide/requirements/>
- **GitHub Repo:** <https://github.com/geosolutions-it/MapStore2>
- **Youtube Videos:**  
[https://www.youtube.com/playlist?list=PLe2yzutVrnZ5tjYGYYcKmZzo\\_M9ku5I9X](https://www.youtube.com/playlist?list=PLe2yzutVrnZ5tjYGYYcKmZzo_M9ku5I9X)
- **Mailing Lists:** <https://groups.google.com/g/mapstore-users>  
<https://groups.google.com/g/mapstore-developers>



## Questions?

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