

From the Venice Lagoon Atlas towards a collaborative federated system

CITTA' DI
VENEZIA



City of Venice

Alessandro Mulazzani



CORILA Consortium for Coordination of Research Activities Concerning the Venice Lagoon System



ISMAR-CNR Marine Science Institute of the National Research Council:

Stefano Menegon

Summary of this presentation

- Brief news from the Atlas of the lagoon
- The CIGNo model for data federation



The Atlas of the lagoon: what happened since ICAN4

Back to the “Atlas”

- At ICAN 4 we described the evolution from a paper book (the Atlas of the lagoon) to a portal named *Informative System of the Lagoon (SIL)*
- After ICAN 4 we decided to call the web portal simply “*Atlas of the lagoon*”



Atlante della laguna

il sistema informativo della Laguna
e della zona costiera
di Venezia

[Partner](#) | [Come aderire](#) | [Cataloghi WMS](#) | [Contatti](#) | [Crediti](#)

menu

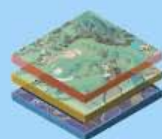
- [Home](#)
- [A chi è rivolto](#)
- [Accesso pubblico ai dati ambientali](#)
- [Presentazione dell'Atlante \(3/02/2011\)](#)
- [Help](#)
- [Inserire un'osservazione](#)
- [Esempi](#)

l'Atlante della laguna

L'Atlante della laguna è una banca dati cooperante di informazioni ambientali sull'ecosistema della laguna di Venezia che l'[Osservatorio della Laguna e del Territorio](#) ha iniziato a raccogliere nel 2003, con la finalità, tra le altre, di realizzare un Atlante della laguna che contenesse per la prima volta dati organizzati provenienti da enti ed istituti di ricerca sparsi nel territorio comunale, ciascuno dei quali specializzato in una disciplina particolare e quindi con una visione parziale del territorio e dell'ambiente lagunare.

Gli strumenti/prodotti principali dell'Atlante della laguna messi attualmente disposizione del [pubblico](#) sono i seguenti:

Atlante dinamico




La **versione dinamica** è un'evoluzione dell'Atlante 2006
([leggi i dettagli](#))

Atlante della laguna: Venezia tra terra e mare (2006)



Il contenuto integrale della **prima versione** dell'Atlante della laguna
([leggi i dettagli](#))

 [english version](#)

In evidenza:

[Una mappa per la Bandiera Blu del Lido](#)

[Un esempio di utilizzo dell'Atlante](#)

[L'Atlante della laguna citato tra i più significativi atlanti costieri europei](#)

[Foto della laguna dallo spazio](#)

Avviso legale importante

Scarica la [Mappa della Laguna di Venezia](#) (ITA/ENG) a cura dell'Osservatorio della Laguna e del Territorio (2 MB)



[Link e informazioni utili](#)



CITTA' DI VENEZIA




Osservatorio della Laguna e del Territorio



ISMAR
CNR
Istituto di Scienze Marine



 Mi piace

 Piace a 12 persone.



L'Atlante aderisce alla Rete Internazionale per gli Atlanti Costieri - [ICAN](#)

[per inviare suggerimenti e contattare i responsabili dell'Atlante](#)

Questo portale utilizza esclusivamente applicativi **open source**



ICAN 4 effect

- The Atlas of the lagoon has been mentioned among European coastal atlases by DG MARE

<http://ec.europa.eu/maritimeaffairs/>



The screenshot shows the website of the European Commission's European Atlas of the Seas. The browser address bar displays the URL http://ec.europa.eu/maritimeaffairs/atlas/about/related_links/index_en.htm. The page header includes the European Commission logo and the title "European Atlas of the Seas". A navigation bar at the top contains links for "FAQ", "Links", "Site map", "Search on EUROPA", "About this site", "Contact", and "Legal notice". The main content area is titled "Related projects and other atlases" and contains a paragraph about ocean, sea, and coastal atlases. A sidebar on the left lists navigation options under the "Atlas" section, including "Home", "About us", "European Atlas of the Seas", "How to use the atlas", "Technical details", "Related projects and other atlases", and "Sea basins". A search box on the right allows for free text or keyword searches, with suggestions for "maritime affairs", "atlas", and "research".

European Commission
European Atlas of the Seas

European Commission > Maritime Affairs > Atlas > About > Related links

Maritime Affairs Fisheries Atlas Forum

Atlas

- Home
- About us
- European Atlas of the Seas
 - How to use the atlas
 - Technical details
 - Related projects and other atlases
- Sea basins

Related projects and other atlases

Ocean, sea and coastal atlases use different ways to show all aspects of the oceans and seas, from geographical features to political, economic, social and environmental ones. There are many related projects going on in Europe and in the world, some focusing on the collection of data, others on disseminating the information; some designed for experts, others for the broad public.

Please note that most of the links provided below go to external sites over which the Commission services have no control and for which the Commission assumes no responsibility. If you wish to suggest adding a link, [send us a mail](#).

EU projects

Search

Free text

Search

by keywords

[maritime affairs](#)
[atlas](#)
[research](#)

[more keywords](#)

Atlas official launch on 3rd Feb 2011



Atlas official launch on 3rd Feb 2011

- About 250 participants



Atlas official launch on 3rd Feb 2011

- Speakers from several bodies acting in the Venice lagoon and national context:
 - City of Venice
 - Veneto Region
 - ISMAR CNR
 - Ministry of Environment
 - University of Padoa
 - Venice Water Authority (MAV)

Atlas official launch on 3rd Feb 2011

- The membership of the Atlas with ICAN has been outlined



Atlas official launch on 3rd Feb 2011

- During the concluding workshop several bodies involved in the management of the lagoon area had shown their intention to collaborate for the publication of their spatial data
- At present we are actively working to consolidate collaboration agreements with those bodies which are not yet partners of the Atlas

Site visits

Dashboard

19 Jun 2011 - 19 Jul 2011



Site Usage

1,134 Visits

3,643 Pageviews

3.21 Pages/Visit

40.12% Bounce Rate

00:04:47 Avg. Time on Site

62.61% % New Visits

Visitors Overview



Map Overlay



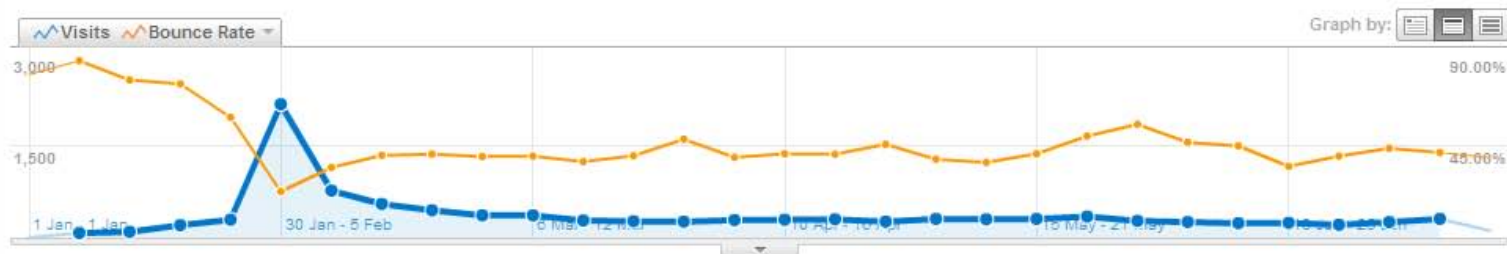
VENEZIA



Site visits

Dashboard

1 Jan 2011 - 19 Jul 2011



Site Usage

10,474 Visits

33,173 Pageviews

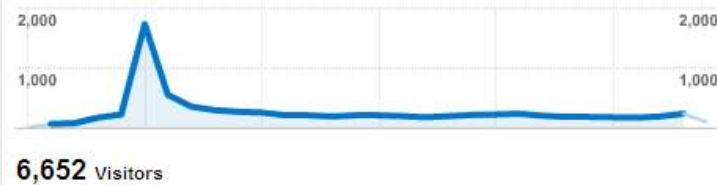
3.17 Pages/Visit

39.19% Bounce Rate

00:04:20 Avg. Time on Site

62.33% % New Visits

Visitors Overview



[view report](#)

Map Overlay



[view report](#)

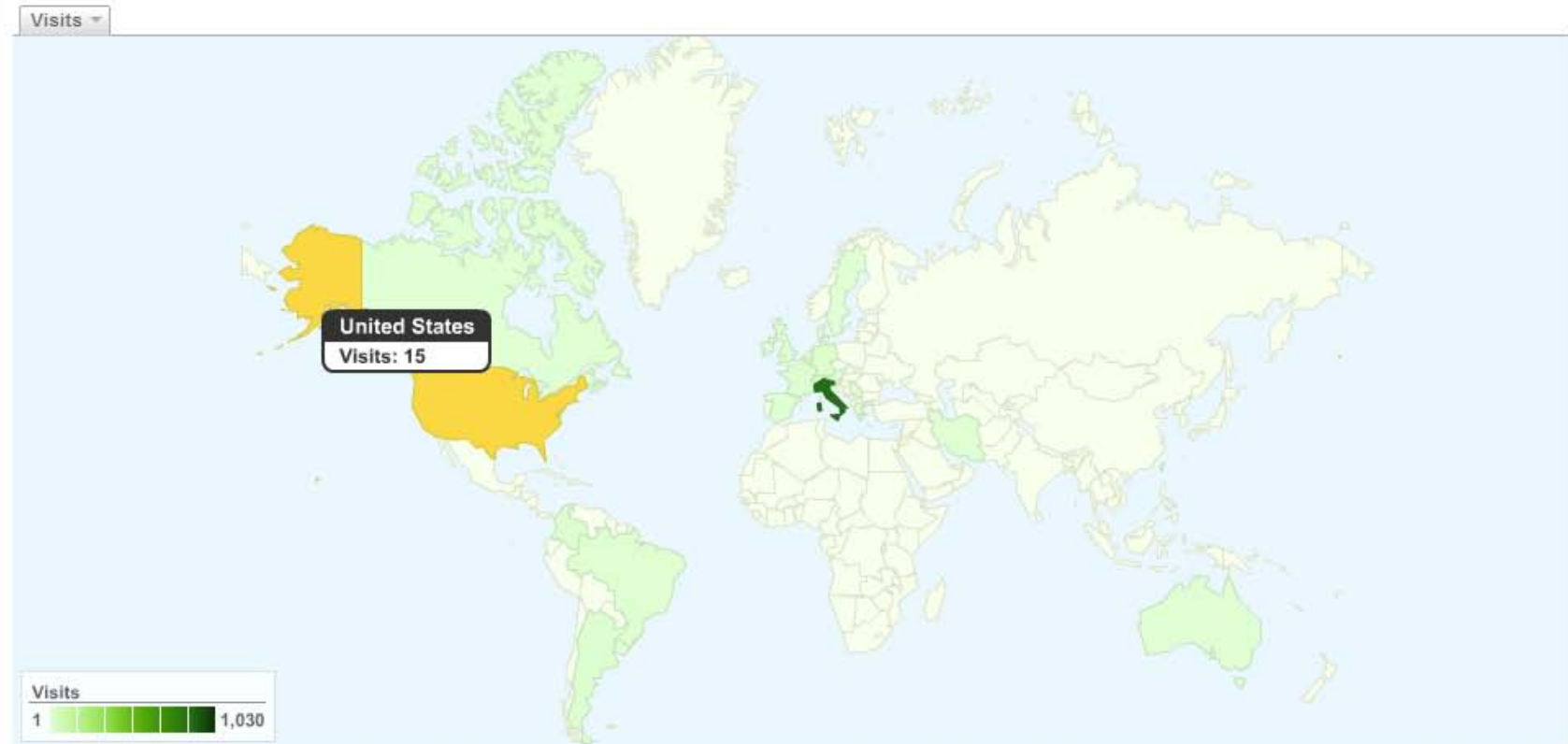


Site visits

Overview »

Map Overlay

19 Jun 2011 - 19 Jul 2011 ▾



1,134 visits came from 26 countries/territories



Site visits

Country/Territory Detail:

Italy

19 Jun 2011 - 19 Jul 2011



This country/territory sent 1,030 visits via 100 cities

Detail Level: Town/City Dimension: None



Examples of new contents

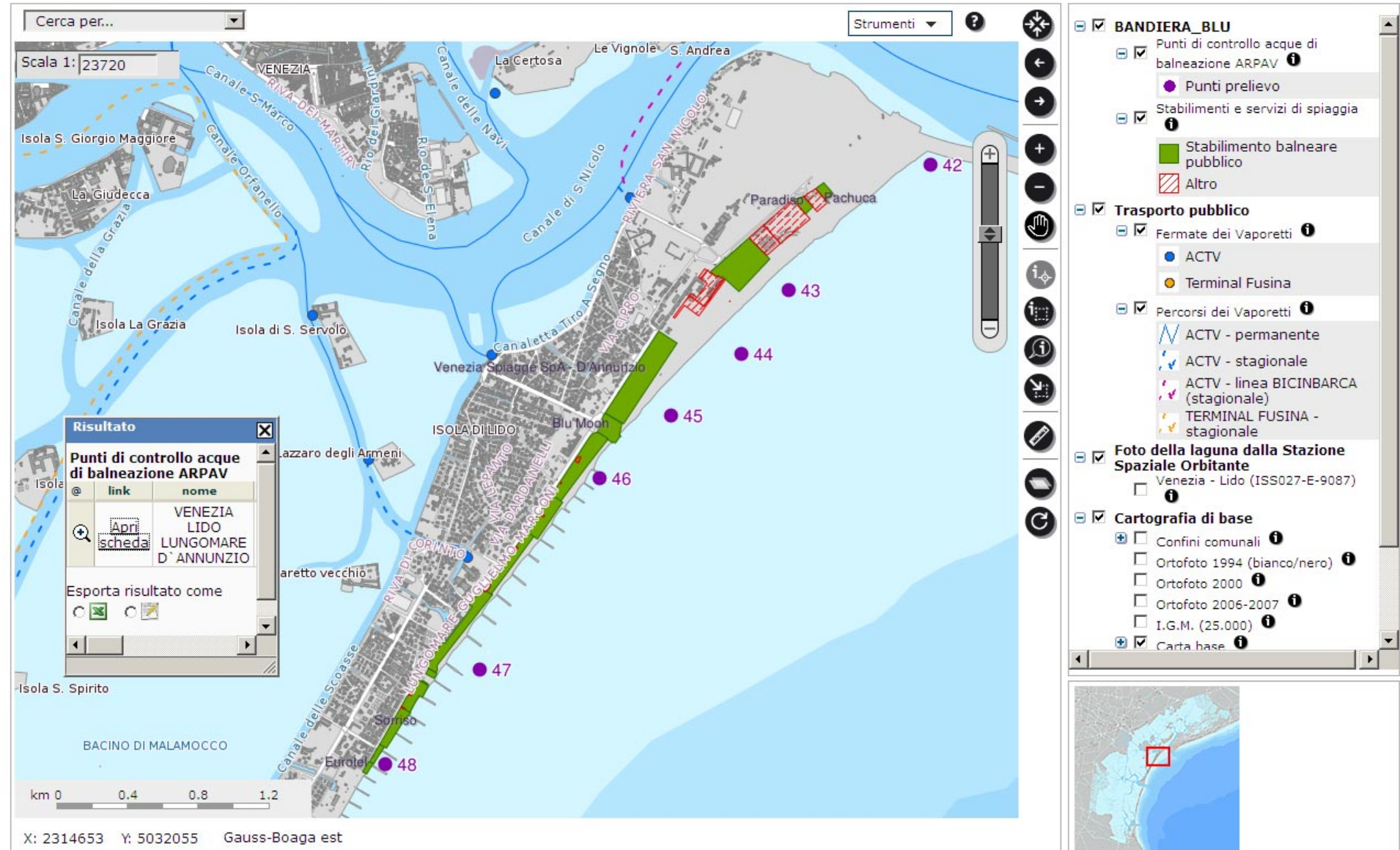
- *Blue flag* map
- ISS georeferenced photos
- Scope extended to marine habitats off Venetian coast (“*tegnue*” reefs)
- Evolution of the lagoon




Atlante della laguna

il sistema informativo della Laguna e della zona costiera di Venezia

Elenco mappe
Link sulla mappa attuale
AVVISO LEGALE IMPORTANTE

Bandiera blu



-  zona idonea
-  zona temporaneamente non idonea
-  zona permanentemente non idonea



Atlante della laguna

il sistema informativo della Laguna
e della zona costiera
di Venezia

Elenco mappe
Link sulla mappa attuale
AVVISO LEGALE IMPORTANTE

Foto NASA dalla Stazione Spaziale Internazionale

Cerca per...
Scala 1: 244200

Strumenti ?

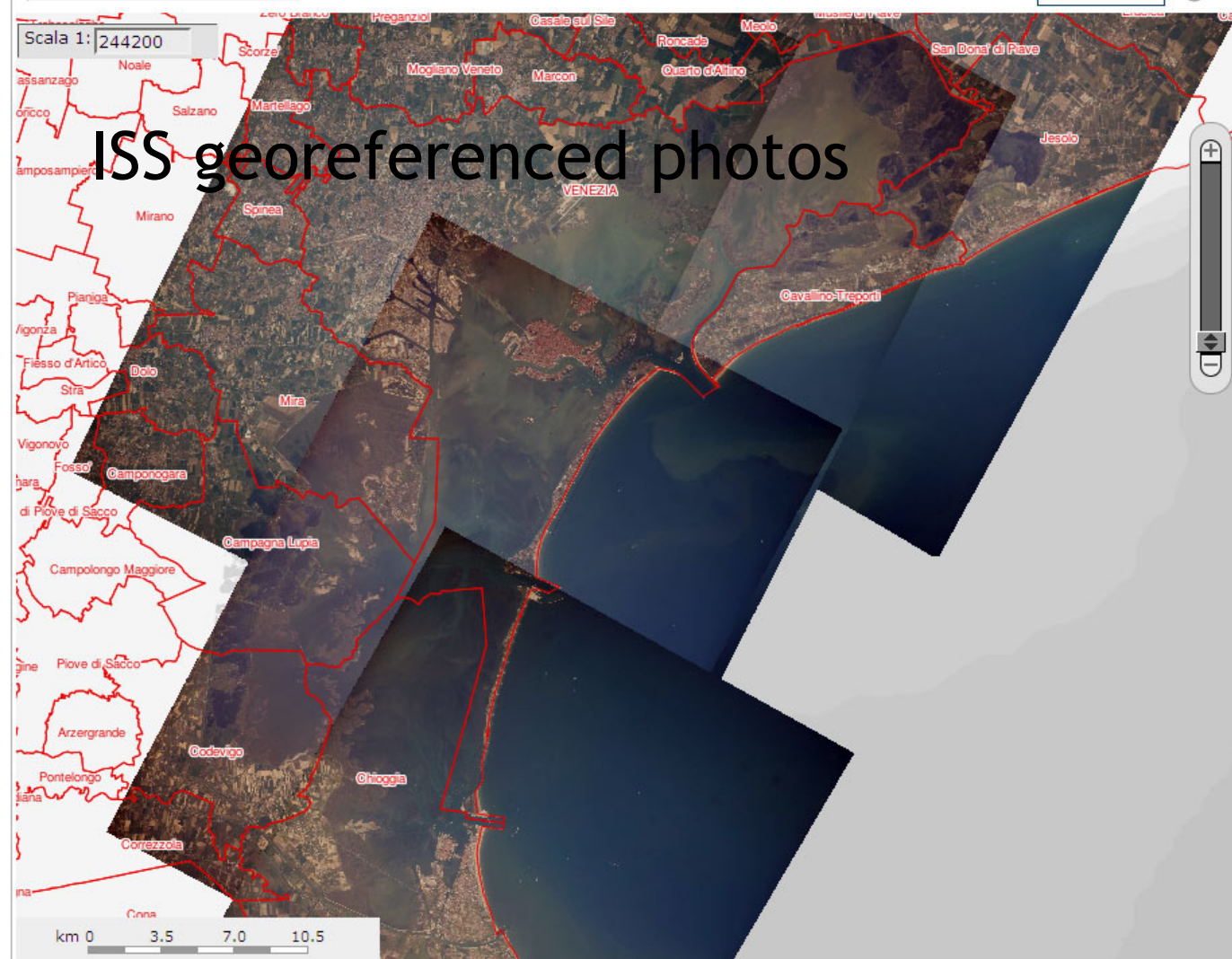
ISS georeferenced photos

30 marzo 2011
29 marzo 2010
2 dicembre 2009
19 agosto 2009
☒ Cartografia di base

km 0 3.5 7.0 10.5

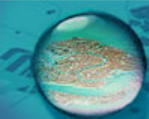
X: 2344171 Y: 5036741 Gauss-Boaga est

ISS georeferenced photos



X: 2343267 Y: 5046806 Gauss-Boaga est





Atlante della laguna

il sistema informativo della Laguna
e della zona costiera
di Venezia

Elenco mappe
Link sulla mappa attuale
AVVISO LEGALE IMPORTANTE

Foto NASA dalla Stazione Spaziale Internazionale

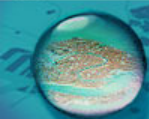
Cerca per...
Scala 1: 244200

Strumenti ?

ISS georeferenced photos

30 marzo 2011
29 marzo 2010
☒ 2 dicembre 2009
19 agosto 2009
☒ Cartografia di base

X: 2339976 Y: 5033967 Gauss-Boaga est



Cerca per...
Scala 1: 244200

Strumenti ?

ISS georeferenced photos

attendere prego

km 0 3.5 7.0 10.5

X: 2340944 Y: 5051000 Gauss-Boaga est

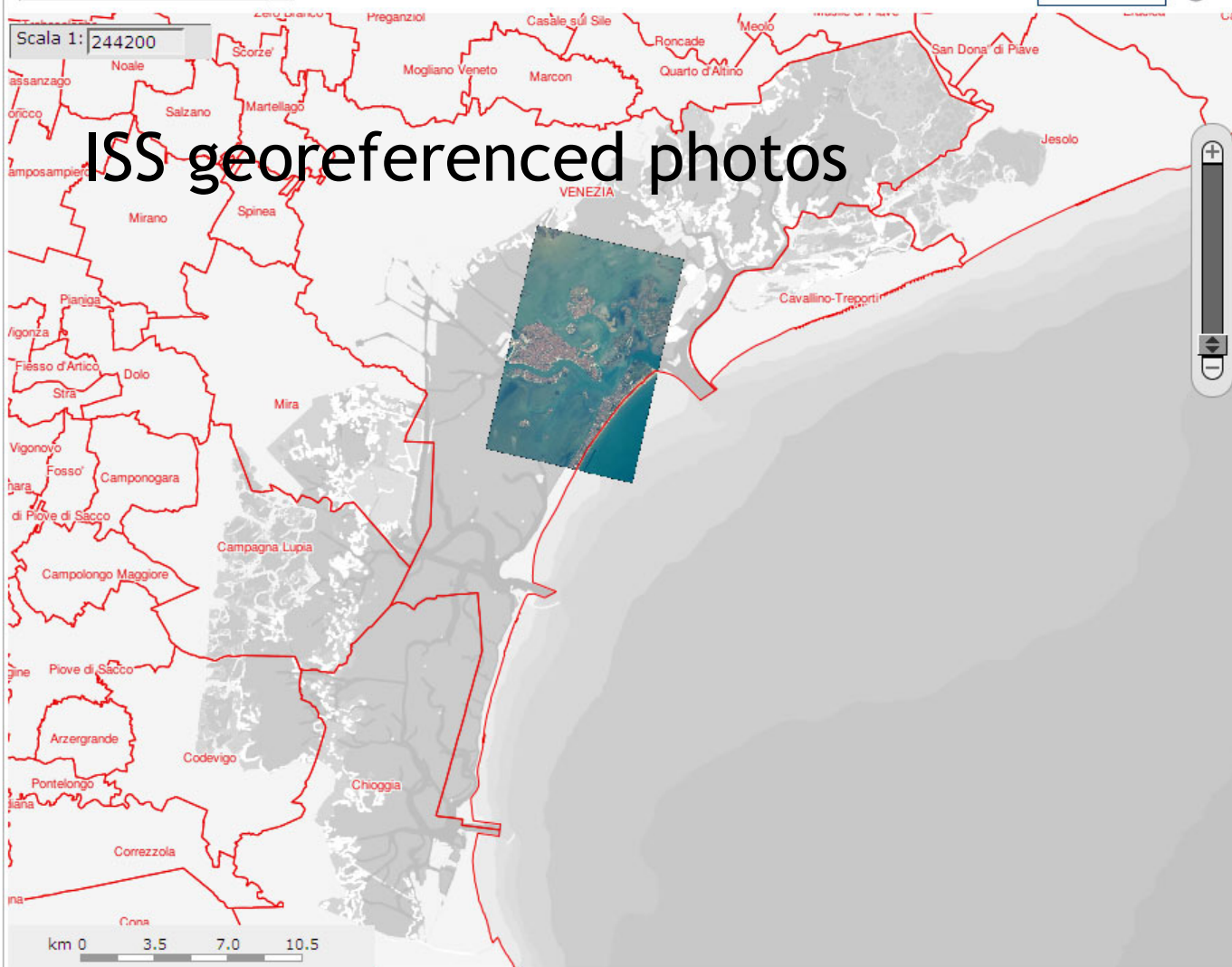
- ☐ 30 marzo 2011
- ☒ 29 marzo 2010
- ☐ 2 dicembre 2009
- ☐ 19 agosto 2009
- ☒ Cartografia di base

Scala 1: 244200

Strumenti ▼

- ☒ 30 marzo 2011
☐ 29 marzo 2010
☐ 2 dicembre 2009
☐ 19 agosto 2009
☒ Cartografia di base

ISS georeferenced photos



X: 2341202 Y: 5023773 Gauss-Boaga est



Cerca per...

Strumenti

Scala 1: 40920

ISS georeferenced photos

Sposta

km 0	0.75	1.50	2.25
------	------	------	------

X: 2316018 Y: 5033425 Gauss-Boaga est

p.mapper MAPSERVER W3C XHTML 1.0

Cerca per...

?

Scala 1: 7000

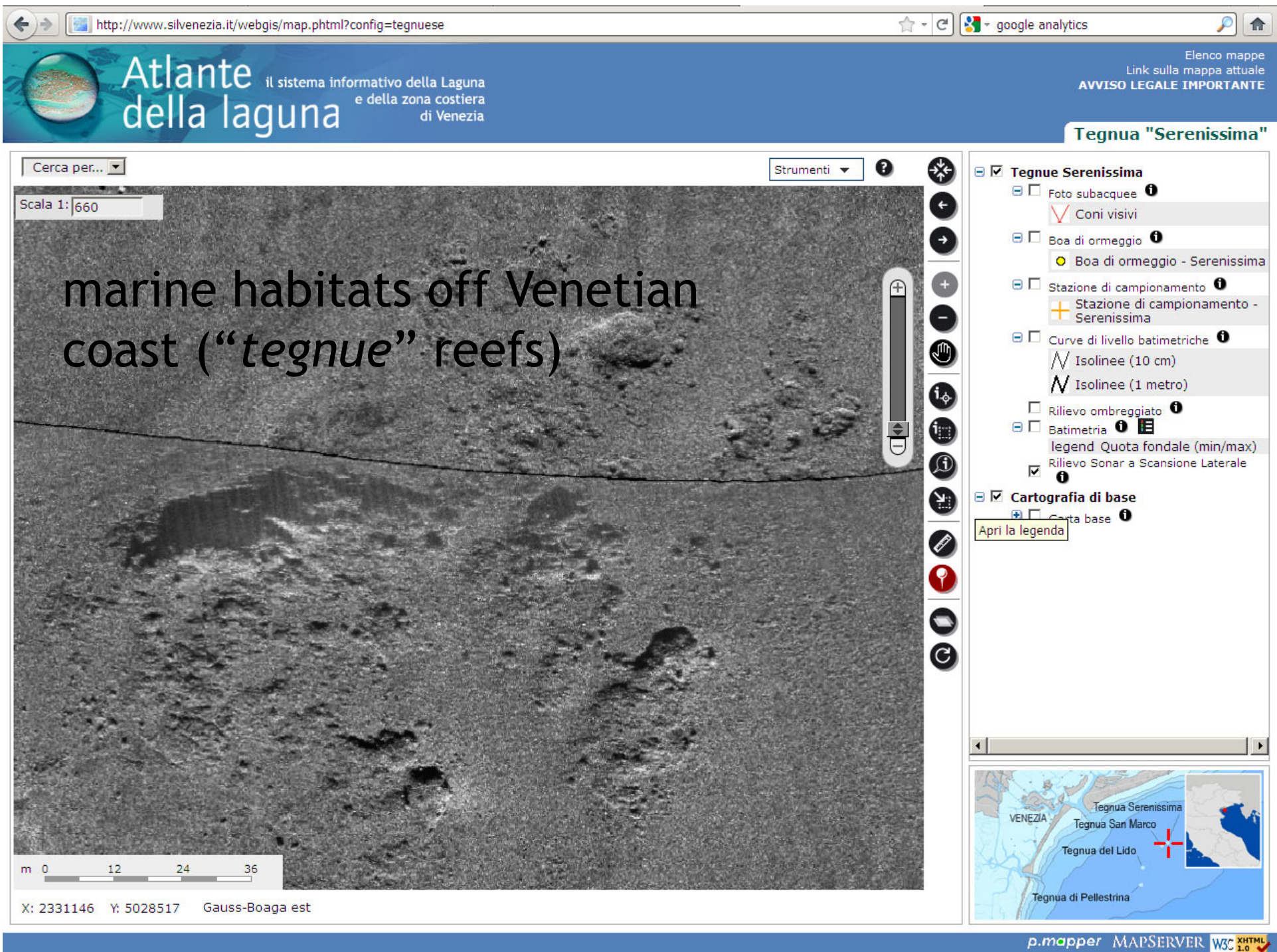
ISS georeferenced photos

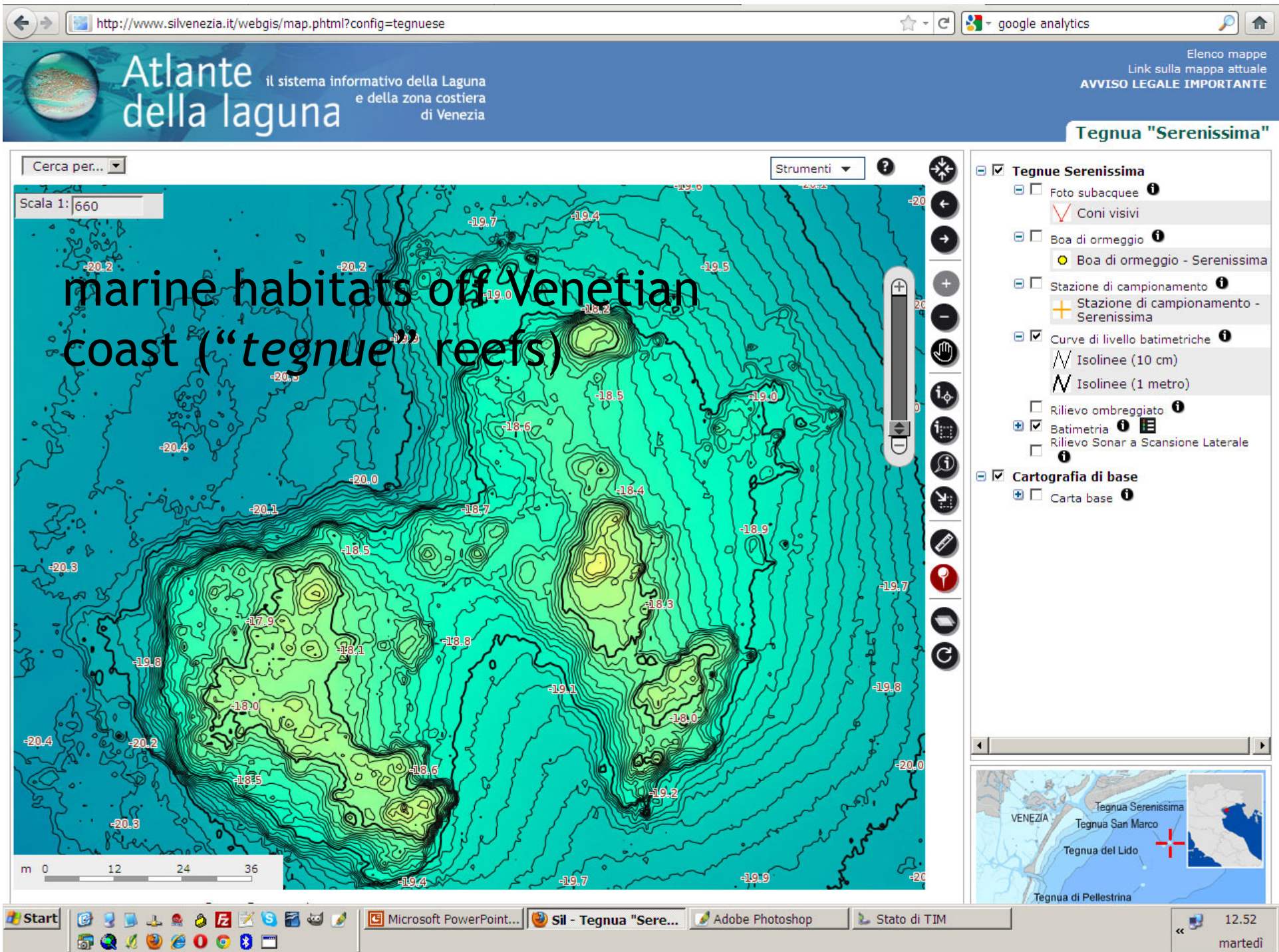


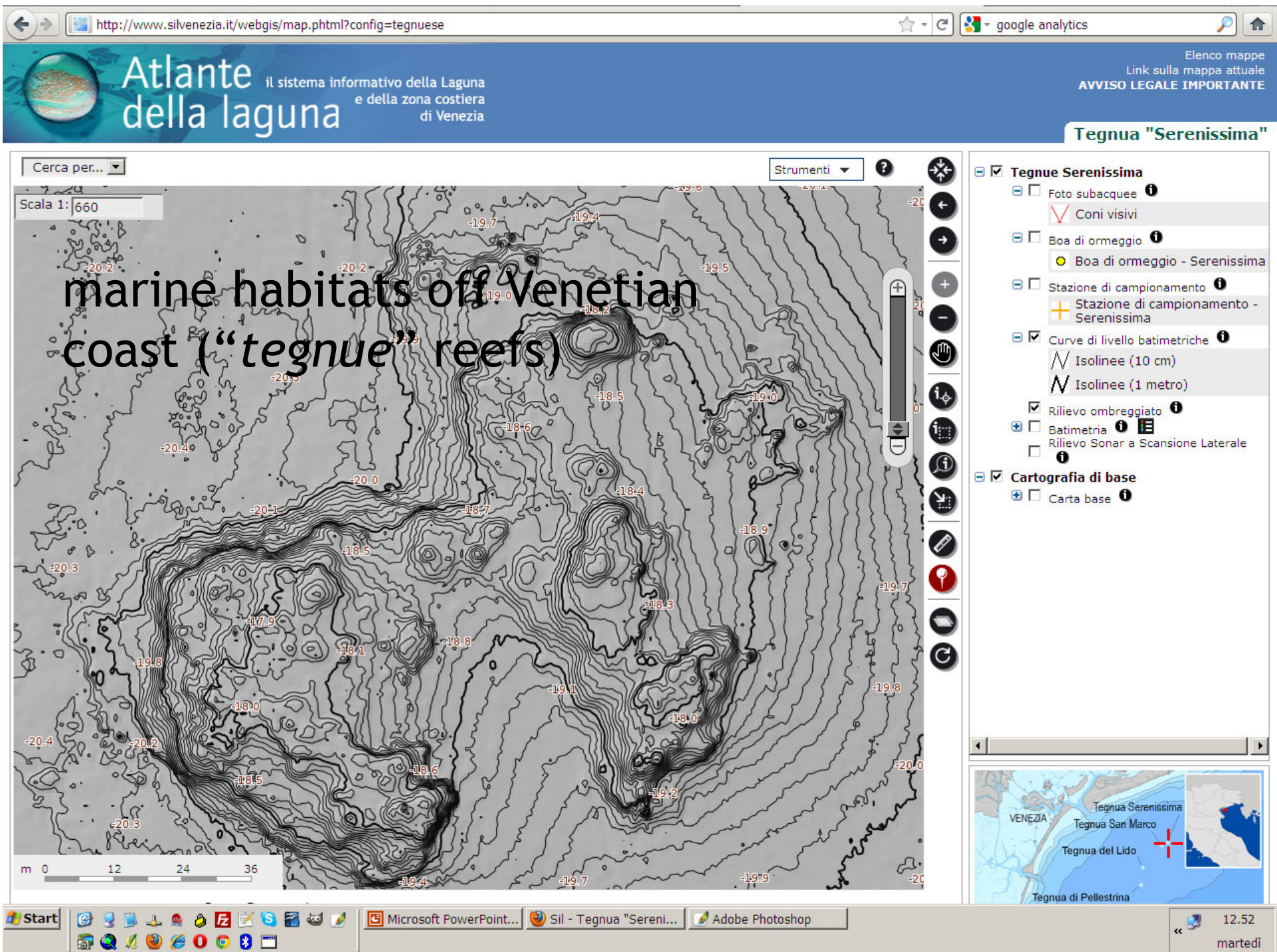
X: 2313932 Y: 5035839 Gauss-Boaga est

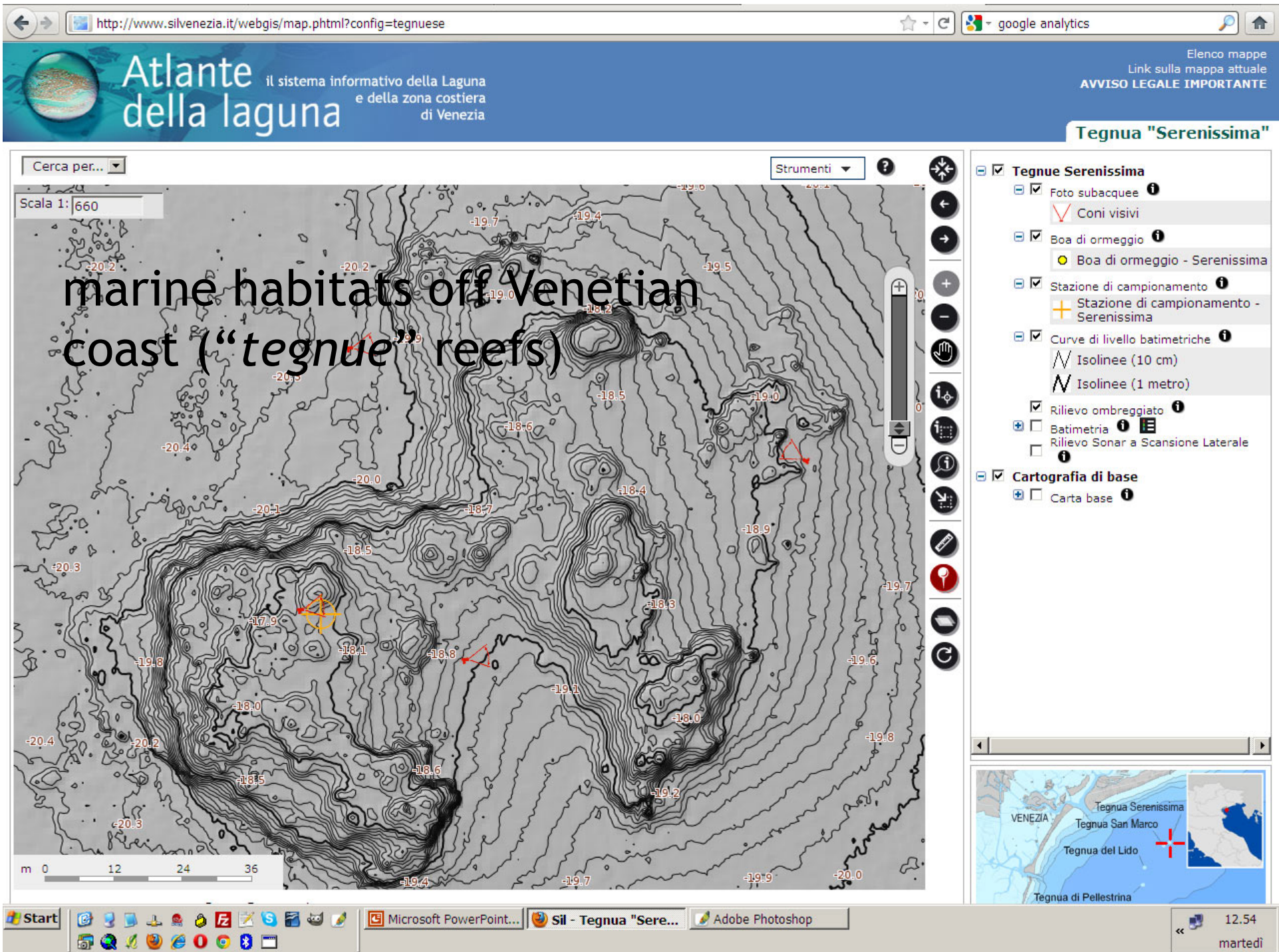
- ☒ 30 marzo 2011
☐ 29 marzo 2010
☐ 2 dicembre 2009
☐ 19 agosto 2009
☒ Cartografia di base











marine habitats off Venetian coast ("tegnue" reefs)

serenissima4.jpg (Immagine JPEG, 4000x3000 pixel) - Riscalata (12...)

http://tegnue.silvenezia.it/schede/foto_sub/serenissima4.jpg

Elenco mappe
Link sulla mappa attuale
AVVISO LEGALE IMPORTANTE

Tegnua "Serenissima"

Tegnue Serenissima

- ☒ Foto subacquee ⓘ
 - ☒ Coni visivi
- ☒ Boa di ormeggio ⓘ
 - ☒ Boa di ormeggio - Serenissima
- ☒ Stazione di campionamento ⓘ
 - ☒ Stazione di campionamento - Serenissima
- ☒ Curve di livello batimetriche ⓘ
 - ☒ Isolinee (10 cm)
 - ☒ Isolinee (1 metro)
- ☒ Rilievo ombreggiato ⓘ
- ☐ Batimetria ⓘ
- ☐ Rilievo Sonar a Scansione Laterale ⓘ

Cartografia di base

- ☒ Carta base ⓘ

VENEZIA

Tegnua Serenissima
Tegnua San Marco
Tegnua del Lido
Tegnua di Pellestrina

Start

Microsoft PowerPoint...

Sil - Tegnua "Sereni...

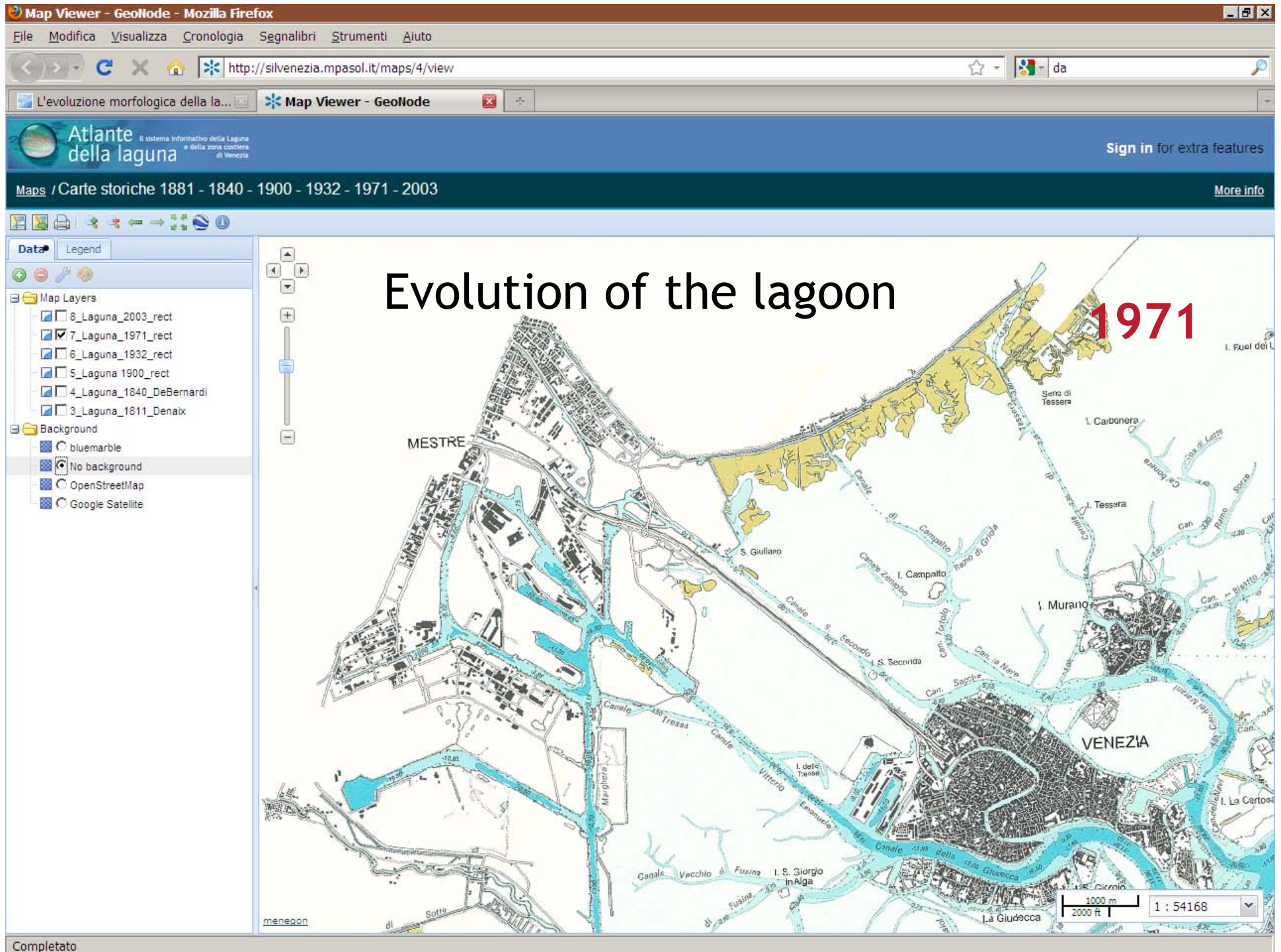
serenissima4.jpg (...)

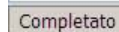
Adobe Photoshop

12.56
martedì

Evolution of the lagoon

2003







Connections with other information systems

- One of the main problem for the Atlas of the lagoon is still the availability of new and updated data on the lagoon
- Since sept 2010 the Consortium for Coordination of Research Activities Concerning the Venice Lagoon System (CORILA) with the technical assistance of the Marine Science Institute of the National Research Council (ISMAR-CNR) started a project, named **CIGNo**, which could become a model for data management produced by the several bodies operating in the lagoon.







CIGNo

CIGNo network



Issues

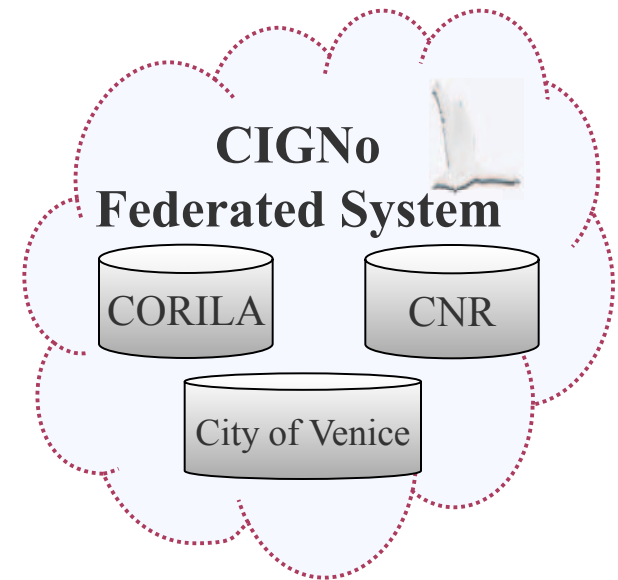
- Most of the Atlas data are not produced by City of Venice;
- Data are acquired, produced, updated by several different research bodies and institutes;
- Difficulty in sharing and reusing data due to a lack of interoperability





The proposed solution: CIGNo network

- A **collaborative federated system** to manage heterogeneous multimedia data (scientific and geographic, textual documents, measurements tables, programs to generate new higher level products)
- **CIGNo** (Collaborative Interoperable Geographic Node)
- Help users (stakeholders, administrators, scientists) to **generate/discover knowledge** on phenomena of interest.
- **Help Venice Lagoon Atlas** to include an up-to-date collection of maps, geographic layers, documents and datasets. Highly customized web interface.





CIGNo implementation: strategic choices

- use of Free Open Source Software (**FOSS**).
- use of international **interoperability** standards: W3C (World Wide Web Consortium), OGC (Open Geospatial Consortium), INSPIRE (Infrastructure for Spatial Information in Europe)
- **modularity** to permit further evolution of the platform (eg, integration of tools: Sensor Observation Services, Web Processing Service, THREDDS - Thematic Real-time Environmental Distributed Data Services);
- **web 2.0 paradigm**: user-generated content, social dimension to enable the collaborative involvement of the scientific community
- follow the bottom-up principle in the management of existing scientific information, avoid to define new models of data storage, giving priority to the **reuse of data in their original form**;





CIGNo

CIGNo's Architecture

Users

Researcher

Public Administration

Manager
Planners

Citizens

Geographic data acquisition
Quality assurance
Metadata + semantics

Discovery - search maps/
documents

Access/ viewing to source data
guided browsing
composition of data and maps
browse by resources relationship

Venice Lagoon Atlas
highly customized web interface

Open Source Tools

Uploading
interface

Querying
interface

Map
composer

Developed Tools

Layers /resources
relationship manager

Uploading
interface

OGC WMS, WFS, CSW

Compliant access module to source data

Raster and Vector
repository

Metadata
storage

Documents/Resources
repository

Extended Metadata
storage (INSPIRE)

CIGNo Node

**CIGNo
Federated System**

Node1

Node2

Node3



CIGNo's Architecture



- **GeoNode** is the core of CIGNo
- open source platform for creation, sharing, and collaborative use of geospatial data.
- integrates robust social and cartographic tools

Basic architecture

- resource layer: PostgreSQL/PostGIS and files storage
- interoperability layer: GeoServer, GeoNetwork
 - OGC standards (WMS, WFS, WCS, SLD, CS-W)
 - metadata standards (eg ISO/TC211, Dublin Core)
- community layer: Django, ExtJS, OpenLayers, GeoExt
 - alignment between geodata and metadata
 - single authentication and authorization service
 - high-level Graphical User Interface (GUI)





CIGNo

Data uploading



Upload geospatial data, documents, images

- Upload geospatial data
- Upload files / link web resources

Add digital resource

Upload mode: ☒ Upload file ☐ Link web resource ☐ Import web resource

Resource:

Title:

Resource type:

Abstract:

Add geographic data

Title:

Data:

DBF:

SHX:

PRJ:

SLD:

Abstract:

Permissions

Who can view and download this data?

- ☐ Anyone
- ☐ Any registered user
- ☒ Only users who can edit

Who can edit this data?

- ☐ Any registered user
- ☒ Only the following users or groups:

Who can manage and edit this data?





CIGNo

Metadata compiling

Change Metadata

en

History

View on site

Metadata (Show)

Identification (Show)

Responsible Party (Show)

Classification e Keywords (Hide)

Inspire:

Yes

Topic category:

Available topic category



farming
biota
boundaries
economy
elevation
geoscientificInformation
health

Choose all

Chosen topic category

Select your choice(s) and click

environment
inland waters

Clear all

Keywords:

GEMET Thesaurus



Search: aquifer



Use water body

water body

Narrower terms

aquifer
water bottom

Broader terms

hydrosphere

Related terms

Any mass of water having definite hydrological, physical, chemical and biological characteristics and which can be employed for one or

Keywords

Delete

Terms

[en] hydrosphere > water body > water bottom
[it] idrosfera > corpo idrico > fondo di corpo idrico
[en] hydrosphere > water body > aquifer
[it] idrosfera > corpo idrico > acquifero



CIGNo

Data searching

The screenshot shows the CIGNo web application interface. At the top, there is a header with the CIGNo logo, navigation links (Home, Data, Maps, Admin), and user information (corila, Change password, Log out). The main content area is divided into two panels. The left panel, titled "Search for geospatial data", contains a search input field with the text "Biodiversity" and a "Search" button. Below the search field is a list of search results. The first result is "Biodiversity", which is highlighted. It includes an abstract, provided by information, metadata links, keywords, and download options (Zip, Shapefile, GML 2.0, GML 3.1.1, CSV, Excel, GeoJSON, JPEG, PDF). The right panel, titled "Refine Search", contains a checkbox labeled "By area" which is checked. Below this is a map of the Venetian lagoon area, showing various locations like Sant'Erasmus, Punta Sabbioni, and Lido di Venezia. A "Refine" button is at the bottom of the map. Below the map is a section titled "Selected Data" which shows a list of selected items: "c1101011_SIC" and "Biodiversity". At the bottom of the page, there are links for "Create a new map" and "Export selected: Zip".

CIGNo

corila (Change password | Log out)

Home Data Maps Admin

Search for geospatial data

Biodiversity Search

Refine Search

☒ **By area**
Limit the search to data that includes features in the displayed area.

Selected Data

Use the checkboxes in the search results to add data to your selection.


☒ c1101011_SIC
☒ Biodiversity

Clear Selected Clear All

Create a new map

Export selected: Zip

Text and spatial search

**CIGNo**

andrea (Cambia password | Esci)

Home Data Maps Tools Profile Admin Help

Consultazione dei dati per testo libero

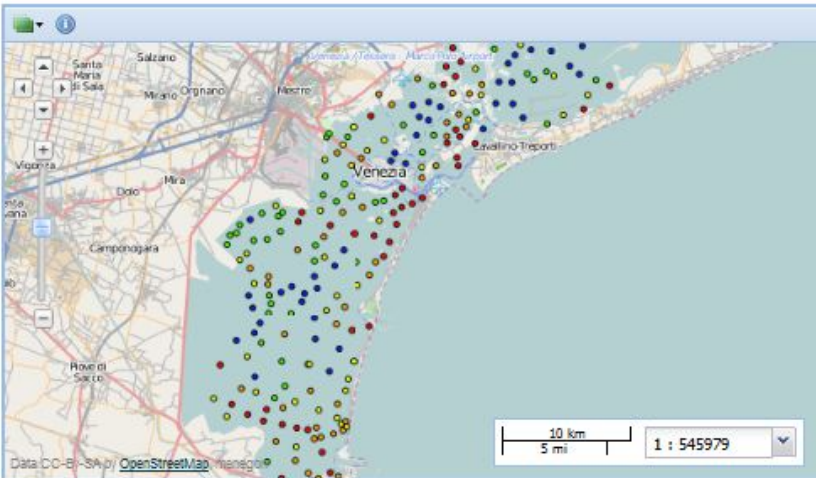
Nel riquadro sottostante sono elencati i dataset al momento consultabili, si distinguono in due categorie i documenti e i layer GIS. Ai documenti è comunque associato un layer GIS che localizza l'area di indagine oggi.

La ricerca avviene in base ai metadati.

Nella scheda

Biodiversita 3.11

Abstract: Mappa della distribuzione spaziale delle classi dell'indice Biodiversità (BI), calcolate utilizzando i percentili della distribuzione cumulativa di frequenza.



Tipo di risorsa: dataset

Metadata padre: [Indicatori e indici di qualità ambientale per la laguna di venezia 3.11](#)


Metadati dipendenti:

Altri dettagli:

Informazioni supplementari:

Raffina la ricerca

☒ **Per area**
Limita la ricerca ai dati che sono inclusi nell'area visualizzata.



Refine

Selected Data

Usa le caselle nei risultati della ricerca per aggiungere dati alla tua selezione.

- ☒ - Analisi e monitoraggio dei processi m
- ☒ Pozzi ISES Bacino Zennare 3.1b
- ☒ Campi spettrometro Bacino Zennare 3.1b





CIGNo

Browse by relationship



Seasonal reactive phosphorus

Abstract: No

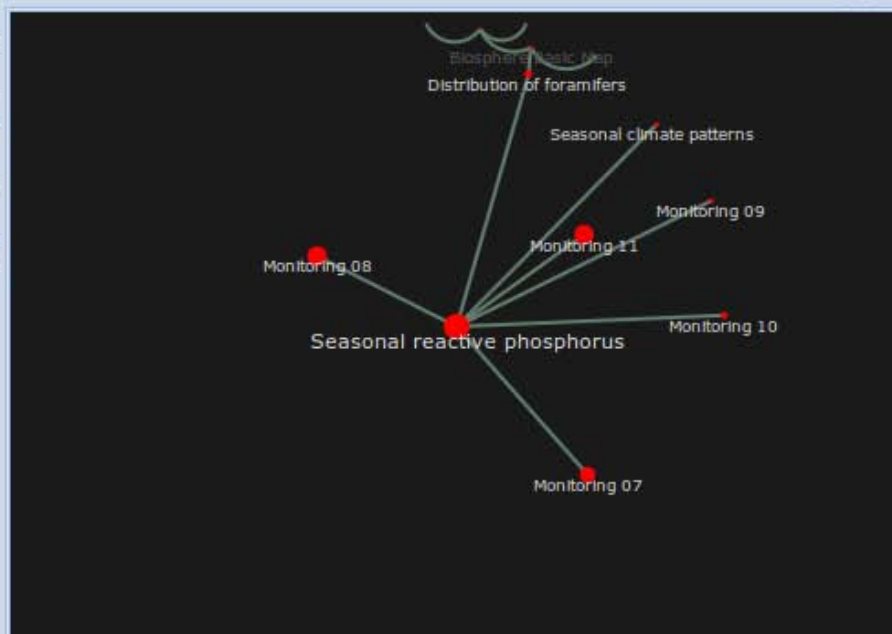
Resource type

Metadata created

Metadata reviewed

Contact [admin](#)

Connections graph



Seasonal reactive phosphorus

Abstract: No abstract is provided for this layer.

Provided by: No attribution information is provided for this layer.

Metadata Links: No metadata URLs are defined for this layer.

Keywords: None

Download: No download URLs are defined for this layer.

Related resources

hasPart

- [Monitoring 07](#)
- [Monitoring 08](#)
- [Monitoring 09](#)
- [Monitoring 10](#)
- [Monitoring 11](#)

IsParent

- [Seasonal climate patterns](#)

References

- [Distribution of foraminifers](#)

[Browse by connections](#)

Download

Data: [HTML](#)

Metadata: [Dublin Core](#)

Manage

- [Update the description of this data](#)
- [Upload a new version of this data](#)
- [Remove](#)

Permissions

Who can view and download this data?

CIGNo

Map composer

The screenshot shows the GeoNode Map composer interface. The main map area displays a satellite view of the Venice Lagoon. On the left, a sidebar contains a 'Data' tab (circled in red) and a 'Legend' tab. Below these, there are sections for 'Overlays' and 'Base Layers'. The 'Overlays' section includes 'Biodiversita 3.11', 'Tossicità 3.11', 'Tipologie idriche lagunari 3.11', and 'Indicatori e indici di qualità ambient'. The 'Base Layers' section includes 'Google Satellite', 'bluemarble', 'No background', and 'OpenStreetMap'. The 'Available Layers' dialog box is open, showing a list of layers. The 'View available data from:' dropdown is set to 'Atlas of Venice Lagoon' (circled in red). The list includes several layers, with the first one selected: 'carte_storiche:3_Laguna_1811_Denaix'. The details for this layer are shown below the list.

Available Layers

View available data from: Atlas of Venice Lagoon | add a new server.

Name	Title
carte_storiche:3_Laguna_1811_Denaix	3_Laguna_1811_Denaix
carte_storiche:4_Laguna_1840_DeBernardi	4_Laguna_1840_DeBernardi
EEA:FACILITYREPORT_MainIAAc_1	FACILITYREPORT_MainIAAc_1
EEA:FACILITYREPORT_MainIASe_1	FACILITYREPORT_MainIASe_1
sil2:Fanerogame2002	Fanerogame2002
Abstract: No abstract provided Provided by: menegon Metadata Links: TC211 Keywords: No keywords are listed for this layer. Download: PDF , KML , GeoTIFF , SHP (ZIP)	
sil2:SIC	SIC

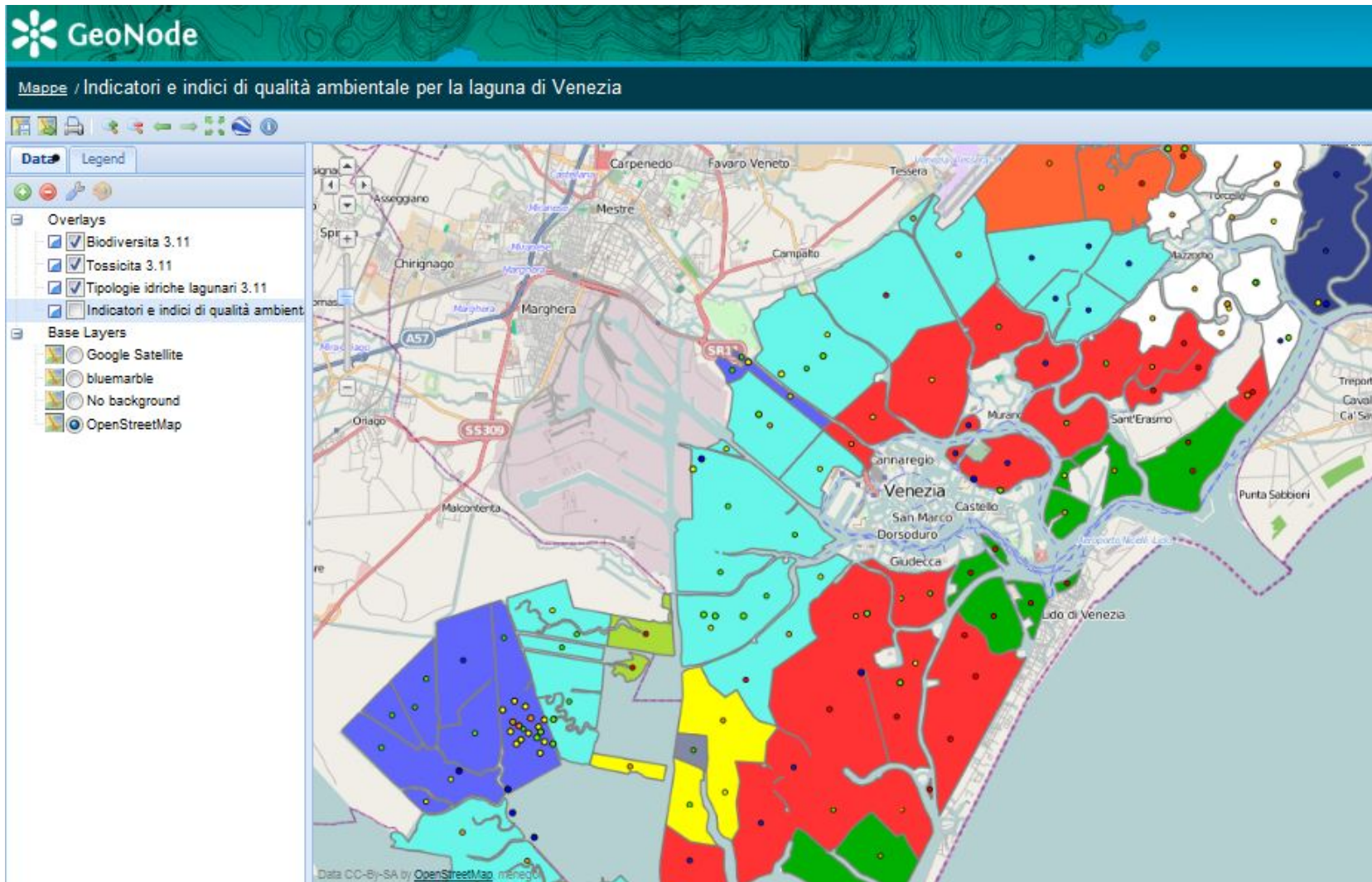
[Add Layers](#) [Done](#)





CIGNo

... and viewer



Things to do

- Attempt to adopt the ICAN semantic framework
- Further development of software platform to enhance the linkage to national and international sharing environmental data systems and framework (GIIDA, SEADATANET, ICAN)
- Dissemination of projects outputs within the local researchers community
- ...and search funds to continue...
- Of course any suggestions are welcome!

