

3° Corso di Digital Mapping Water, Food, Energy and Environment Nexus

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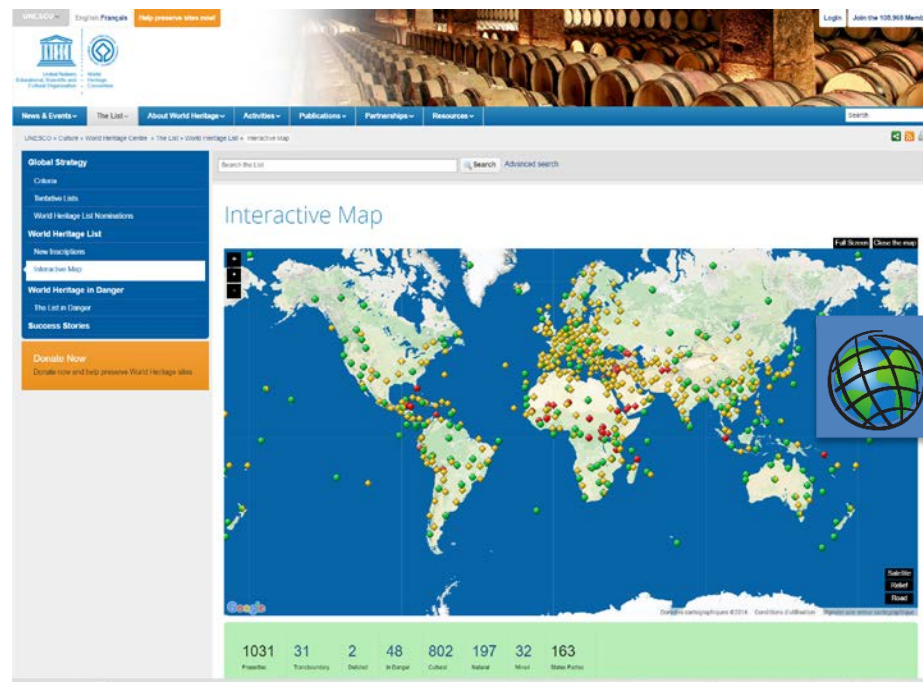
WARREDOC

Giulio Castelli (GESAAF – Unifi)

Outlines

- Background & goals
- The 3rd Digital Mapping Course theme: **water, food, energy and environment nexus**
- Work on your project: Specs. of the **STORY MAP**
- The competition: evaluation criteria

Produce a digital map including the UNESCO heritage sites with particular cultural and environmental values in Umbria and Italy



<http://whc.unesco.org/en/interactive-map/>

STORYTELLING USING DIGITAL MAPS GIS STORY MAPS to communicate

The history and culture of our cities and lands, the resources and the natural and anthropic risks COMMUNICATED using Digital Story Maps that integrate “human experience” also captured extracting/filtering social network posts

La Reggia di Caserta ed il suo Complesso storico culturale
UNESCO World Heritage Site since 1997
La Reggia di Caserta e il suo parco, due gioielli di ineguagliabile splendore, sono stati inseriti nella World Heritage List dell'Unesco nel 1997. Progettata nel Settecento da Luigi Vanvitelli, sul incarico di Carlo III di Borbone, la Reggia, che rappresenta il trionfo del barocco italiano, è una delle opere più importanti del famoso architetto napoletano: il suo visitatore resta incantato dalla bellezza degli interni e dalle magnificenze dell'esterno. Curatissima nei dettagli ed articolata su quattro monumentali cortili, la costruzione è fronteggiata da uno scenografico parco oggi meta di migliaia di turisti. Il sobrio palazzo è una fusione ideale e originale di altre due

Rhaetian Railway In The Albul/Bernina Landscapes
The Train to Nature Heaven!
The Rhaetian Railway in the Albula/Bernina Landscapes constitutes an outstanding historical, architectural and environmental ensemble which has secured many local villages in the mountains to come out of their

Villa Adriana - UNESCO Heritage Site
The Villa Adriana (at Tivoli, near Rome) is an exceptional complex of classical buildings created in the 2nd century A.D. by the Roman emperor Hadrian. It combines the best elements of the architectural heritage of Egypt, Greece and Rome in the form of an "ideal city".

The Dolomites
June 26, 2009 has surely been a significant day for the Dolomites, the mountain landscape and the environment itself. In fact, on that day in Seville (Spain) the 21 member states of the UNESCO Committee decided to inscribe nine areas of the Dolomites on the UNESCO World Heritage List, thanks to their outstanding beauty and their unique landscapes as well as to their incomparable geological and geo-morphological features.

Val d'Orcia

Fall in love with West Lake
West Lake Cultural Landscape of Hangzhou
In my heart, there is a lake
The mountains and lakes are picturesque
Spring comes early with the rose peaches and green willows
Flowers come and go, the ships stay as before
Mountains beyond mountains as the buildings by buildings
West lake in Hangzhou
West lake in Hangzhou
Romance and love left over it
In the autumn, there is poetry
As in the world, there is West Lake
Many beautiful legends
Last forever
In my dream, there is a lake
With white Alms and fresh breeze
Cumbrous fragrance strongly

Story Map Case Study: The City of Rome Cultural Heritage



Story Map Case Study: The City of Rome Heritage at Risk

A story map by Francisco Peña

Historic Center of Rome

Heritage at Risk

Heritage assets are at risk as a result of neglect, decay or inappropriate development. Natural disasters and climate change are considered major threats to World Heritage property and it's important to establish mechanisms for the optimal conservation.

On the local level, the General Urban Plan of Rome regulates the entire territory of the city and represents an innovative and flexible tool for the protection, promotion and presentation of the World Heritage property and to the surrounding areas of the town. Here the regulations take into account the integrity of the urban fabric and the features of the building typologies, allowing different practices and quality controls. It selects, defines and regulates the areas of strategic planning (e.g. the Tiber, the Forums, the city walls), as well as those for potential development. It also outlines fundraising mechanisms for conservation, promotion and presentation of the site.

Roma Capitale has developed a strategic plan containing actions and major interventions aimed at protecting and promoting the values of the property.

Heritage at Risk

Injured by rats?

Yes. On summer 2015, the fountain was overrun by rats and underwent the most extensive restoration since it was completed in 1362. The fountain was reopened in October the same year.

Weathering

Wind, ice, water and drastic temperature changes can cause potential damage to the monument.

Heritage at Risk

Want to swim? Let's go the Fountain!

Heritage at Risk

Only if you want to pay an expensive fee, and see the American tourist in 2014.

Heritage at Risk

Trend "The Road" Fountain?

On October 2005, the fountain ran red due to a vandalism attack.

Santa Maria Maggiore

Violent protests, hooligan braws, terrorism threats, pollution and lack of maintenance represent a serious risk to Rome cultural heritage.

Map labels: Vaticano, Palazzo della Cancelleria, Altare della Patria, Fiume Tevere, Piazza Spagna, Piazza, Complesso di San Giovanni.

Roadmap

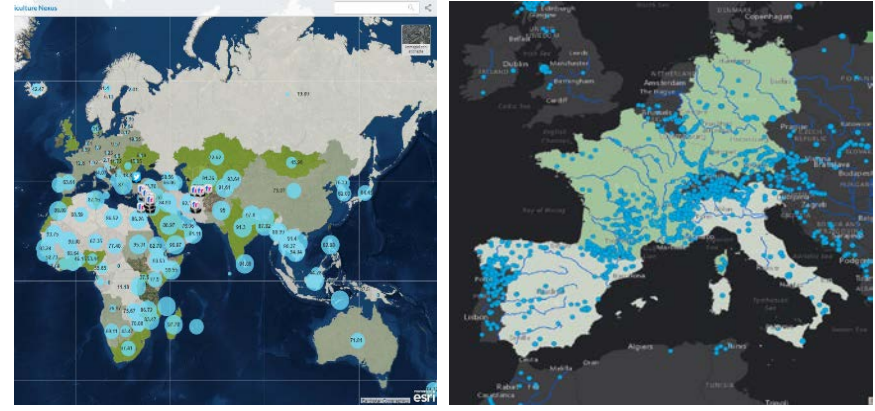
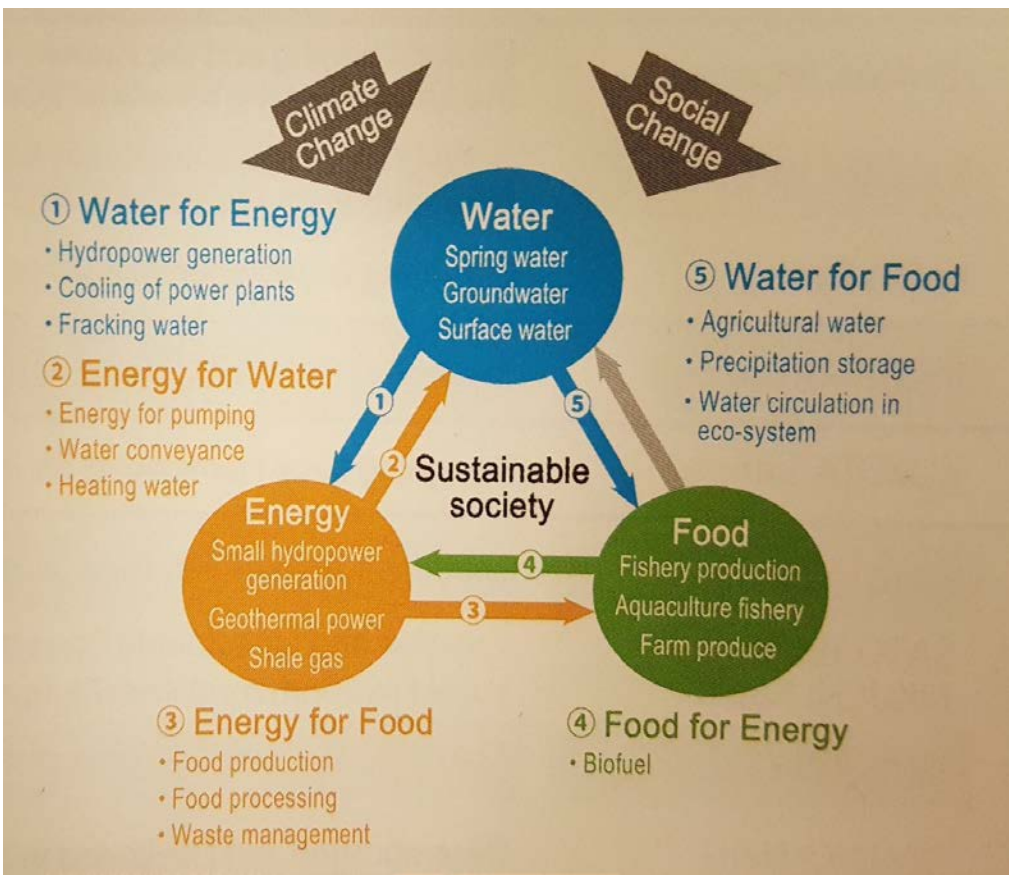


1st Digital Mapping Course
May 2016
120+ Participants
Mapping UNESCO Heritage Sites



2nd Digital Mapping Course
May 2017
45 Participants
Active Citizenship (All topics)

What is the water, food, energy and environment nexus?



StoryMap structure

1- Introduction (1 page): Select a video that best describes the topic and write a brief introduction



StoryMap structure

2- GIS section (1-2 pages): Create two maps to display the connection between water and energy (at the local, national, regional or continental scale)

Water-Food Nexus

Rice Production and Water Availability

Rice is grown in more than a hundred countries, with a total harvested area of approximately 158 million hectares, producing more than 700 million tons annually (470 million tons of milled rice). Nearly 640 million tons of rice are grown in Asia, representing 90% of global production. Sub-Saharan Africa produces about 19 million tons and Latin America some 25 million tons. In Asia and sub-Saharan Africa, almost all rice is grown on small farms of 0.5–3 ha.

Yields range from less than 1 t/ha under very poor rainfed conditions to more than 10 t/ha in intensive temperate irrigated systems. Small, and in many areas shrinking, farm sizes account for the low incomes of rice farm families. Rice grows in a wide range of environments and is productive in many situations where other crops would fail.

The highest rice yields have traditionally been obtained from plantings in high-latitude areas that have long day length and where intensive farming techniques are practiced, or in low-latitude desert areas that have very high solar energy. Southwestern Australia, Hokkaido in Japan, Spain, Italy, northern California, and the Nile Delta provide the best examples.

Rice as food

Rice is the most important food crop of the developing world and the staple food of more than half of the world's population. Rich in nutrients, and vitamins and minerals, it an excellent source of complex carbohydrates. Nine out of every ten people in the world who eat rice are Asian. In

Water-Food Nexus: Rice production worldwide

Understanding the importance of rice in global food security based on water resources

More than anywhere else in the world, rice dominates overall crop production (measured by the share of crop area harvested of rice) and overall food consumption (measured by the share of rice in total caloric intake) in rice-producing Asia.

The world's largest rice producers by far are **China and India**. Although its area harvested is lower than India's, China's rice production is greater due to higher yields because nearly all of China's rice area is irrigated, whereas less than half of India's rice area is irrigated. After China and India, the next largest rice producers are **Indonesia, Bangladesh, Vietnam, Myanmar, and Thailand**. These seven countries all had average production in 2006-08 of more than 30 million tons of paddy and together account for more than 80% of world production.

World Water Availability	World Rice Production
Annual_rain	Value
> 2,000 - 8,233	> 100,000,000 - 211,090,813
> 1,000 - 2,000	> 10,000,000 - 100,000,000
> 500 - 1,000	> 10,000 - 10,000,000
> 200 - 500	> 100 - 10,000
0 - 200	0 - 100

StoryMap structure

3- Human experience (1 page): Integrate the user experience into your map by adding social media content (using keywords and hashtags) to obtain meaningful insights on human behavior

The screenshot displays a StoryMap interface for 'Water-Food Nexus (Rice)'. On the left, a text panel titled 'Rice as food' provides context: 'Rice is the most important food crop of the developing world and the staple food of more than half of the world's population. Rich in nutrients and vitamins and minerals, it is an excellent source of complex carbohydrates. Nine out of every ten people in the world who eat rice are Asian. In Africa, rice is the fastest growing staple - and it is also growing in popularity in Latin America and the Caribbean.' Below the text is a photo of fried rice. The central map shows Europe with numerous social media icons (YouTube, Instagram, Flickr, Twitter) overlaid on various locations, each accompanied by a numerical value representing the count of contributions. A sidebar on the right allows users to toggle between 'World Water Availability', 'World Rice Production', and 'Media Layers'. The 'Media Layers' section is currently active, showing a list of social media platforms with checkboxes and settings icons.

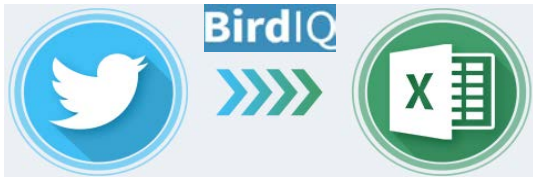
Mapping Social Open Data in GIS Environment

*VOLUNTEERED GEOGRAPHIC INFORMATION (VGI)
USER GENERATED CONTENT (UGC)
AND HUMAN SENSOR DATA (HSD)*



TOOLS

ARCGIS STORY MAPS



User-friendly interface
Allows to geocode social media content to obtain the real “user experience”
Performs spatial analysis

The filter control is limited
Search results depend on the user privacy settings and map zooming
Display results not older than 7 days

Web-based platform to download data
Full control of the social media content
Add value to map when customized properly

Not automatic
Limited to 500 tweets per search
Alternative approaches are needed to obtain what you are looking for because not all tweets contain geotagged location

Full control for post processing digital maps

Requires manual work: Download the image, open tweet, create shapefile...
Time consuming



Mapping Social Open Data in GIS Environment

Perugia/@43.0949969,12.3101129,12:



- BIRD IQ
- ARCGIS ONLINE
- GOOGLE TABLES
- GOOGLE MAPS

StoryMap structure

4- Discussion and References (2 pages): Create a brief summary of your main points and also include a bibliography

Water-Food Nexus

Conclusions

Beyond providing sustenance, rice plays an important cultural role in many countries. Products of the rice plant are used for a number of different purposes, such as food, thatching, industrial starch, and artwork.

Growing, selling and eating rice is integral to the culture of many countries. In Japan, rice was historically a product for the wealthy and is now a highly-prized crop. Many rituals surround the preparation of the rice beds, the sowing of the crop, and the harvest. In China, it has been suggested that rice has been cultivated for 3000 - 4000 years, where it gradually rose to become an important part of aristocratic life.

China's rural culture has developed around the growing of rice, and foods made from rice are the basis of festivals such as the Land Opening Festival, which marks the start of the rice cultivation season, and the Spring Festival. Even in Western countries, rice is an important part of culture. Imagine Italy without risotto or Spain without paella!

Bibliography

Water-Food Nexus

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- 6- www.americancooks.com/easy-better-takeout-chicken-fried-rice/
- 7- www.en.wikipedia.org/wiki/Saharan_Africa
- 8- www.lead4jago.com/?page_id=1490

POWERFUL NUTRITION

- More than 15 vitamins & minerals
- White rice is enriched w/ B vitamins & fortified w/ folic acid

WEIGHT MANAGEMENT

- 100 calories per serving
- Rice is a resistant starch and provides satiety

ENERGY

- Good source of carbohydrates to body and brain

GL

- 11

HOLE GRAIN

• Brown, wild, black & red rice are 100% whole grain

3° Digital Mapping Course 2018 Project Tutoring & Evaluation

3rd Digital Mapping Course

Water, Food, Energy and Environment Nexus: Technical requirements of Digital Maps

Reference Documents

- [3° Digital Mapping Course: Technical requirements](#)
- [3° Digital Mapping Course: Terms and Conditions](#)
- [3° Digital Mapping Course: FAQ](#)

Material

- [Tutorial: Water-Food Nexus](#)
- [Tutorial: Water-Energy Nexus](#)
- [Tutorial: Water-Environment Nexus](#)



2018 Tutors

Francisco Pena
Antonio Annis
Andrea Spasiano
Giulio Castelli
Fabio Palmi

- Content (*Narrative text, images and multimedia*)
- GIS and StoryMap (*Quality and presentation of data*)
- Social Media Component (*“User experience”*)



Digital Mapping Competition 2018 Jury

Fernando Nardi (President of the Jury)

Francisco Peña (WARREDOC)

Antonio Annis (WARREDOC)

Andrea Spasiano (WARREDOC)

Pietro Coffaro (ESRI Italia)

Matteo Coffaro (ESRI Italia)

Thomas Cech (MSU of Denver)

Nona Shipman (MSU of Denver)

Jennifer Riley-Chetwynd (Denver Botanic Gardens)

Maria Cristina Rulli (Polytechnic of Milan)

Rosaida Dolce (FAO)

Giuseppina Monacelli (ISPRA)

Raffaella Zucaro (CREA)

Laurens Thuy (UNESCO WWAP)