

# Pandemics | Human Factors

Europe

#COVID\_19 SpaceAppsChallenge

**GOAL: Containment of COVID19 up to 8 days in advance,  
for communities using waterways as sewers.**

Made with 🇪🇸 from Tarragona, Catalonia (ES) 📍 on May 2020, by:

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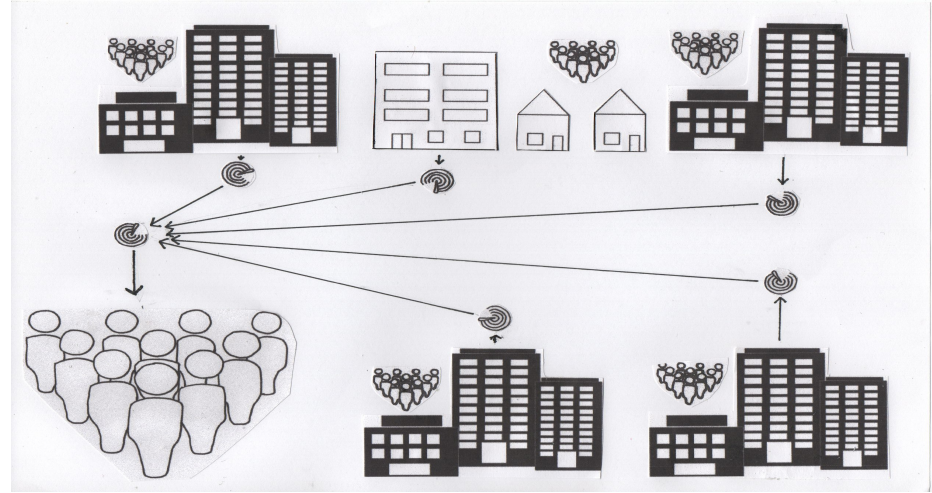
👉 <https://github.com/sfrias/pandemics>



# Foundations for collective screening using sewage

Studying sewage for public health information is known as Wastewater-based epidemiology(WBE).

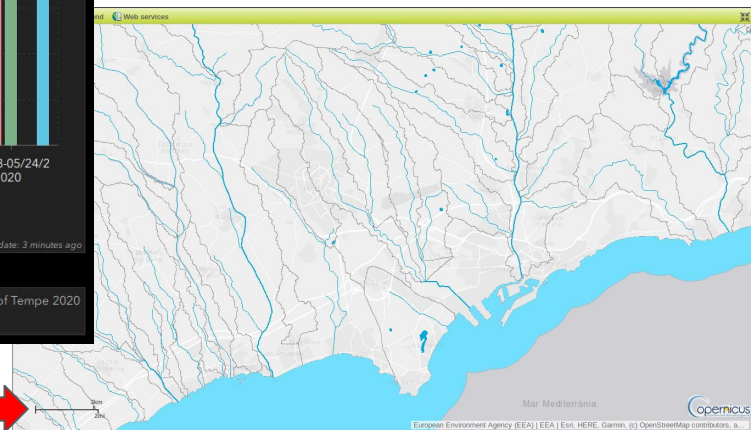
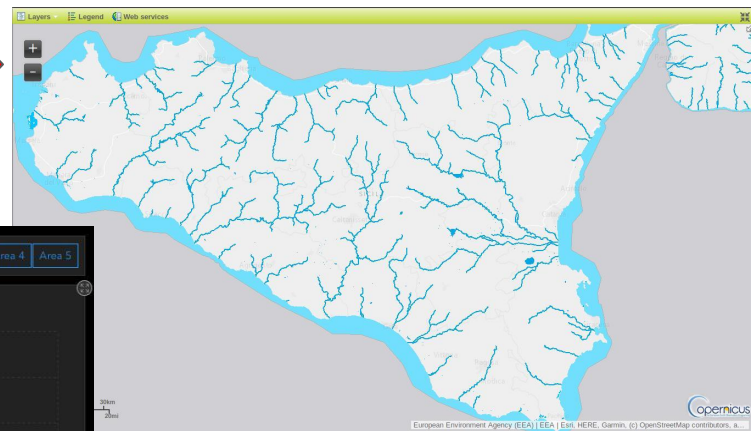
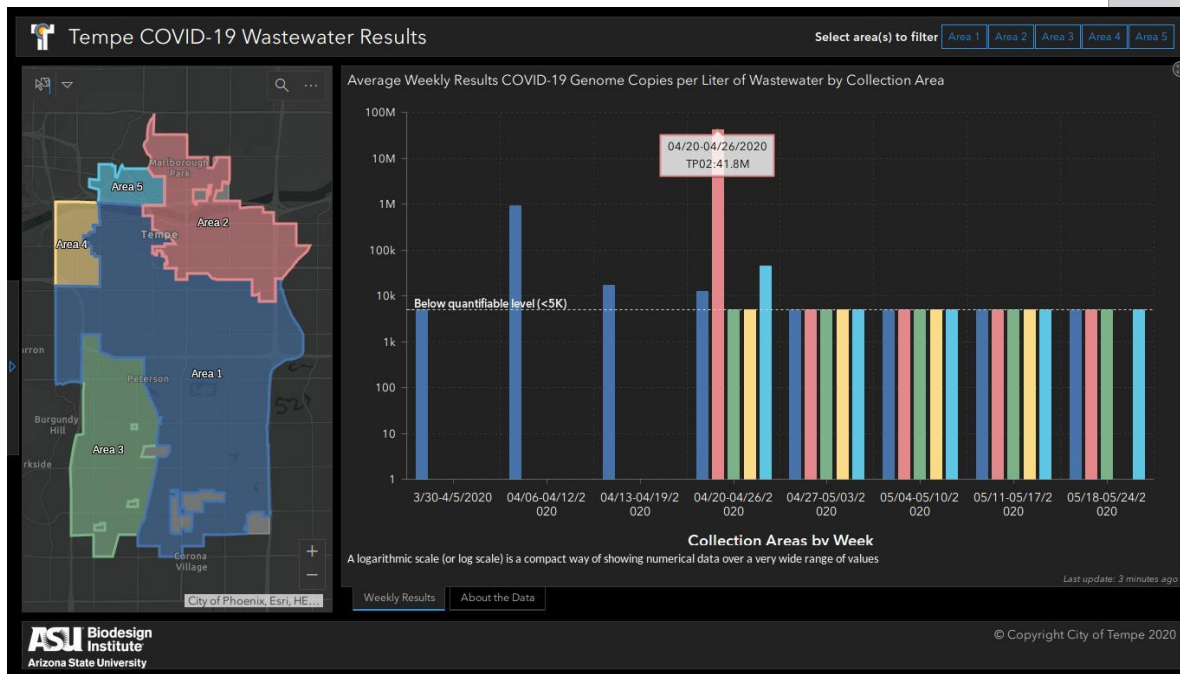
**A Method to establish faster, better points for the sample collection without sewage system info.**



# Best selection or the sample collection without sewage system info around world.

For global zones, sewage paths are near superficial water →

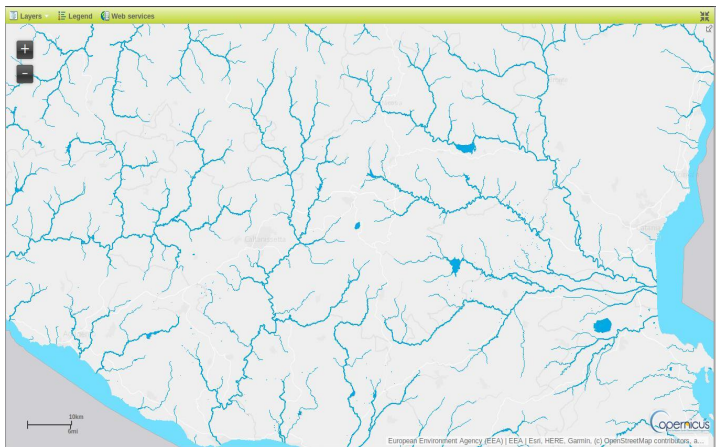
↓ Urban zones have collectors where can be sampled infections



For select sample points if complex, drainage zones are the key →

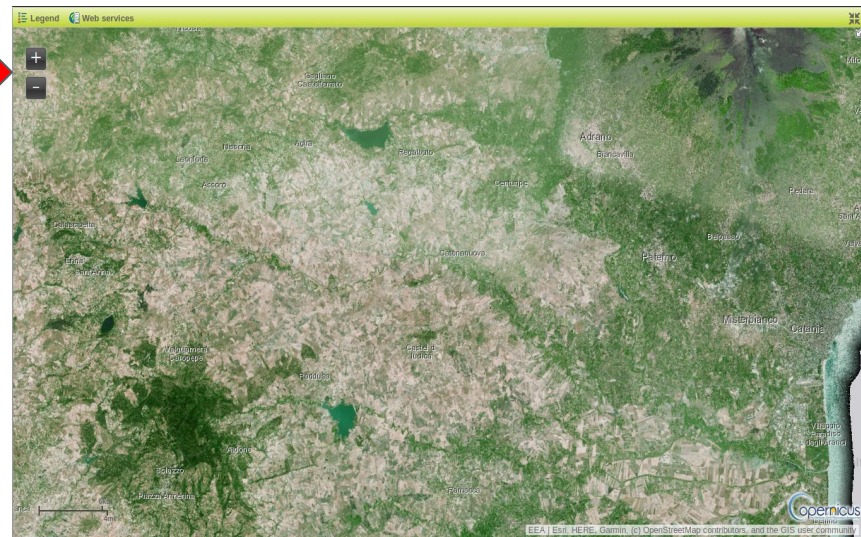
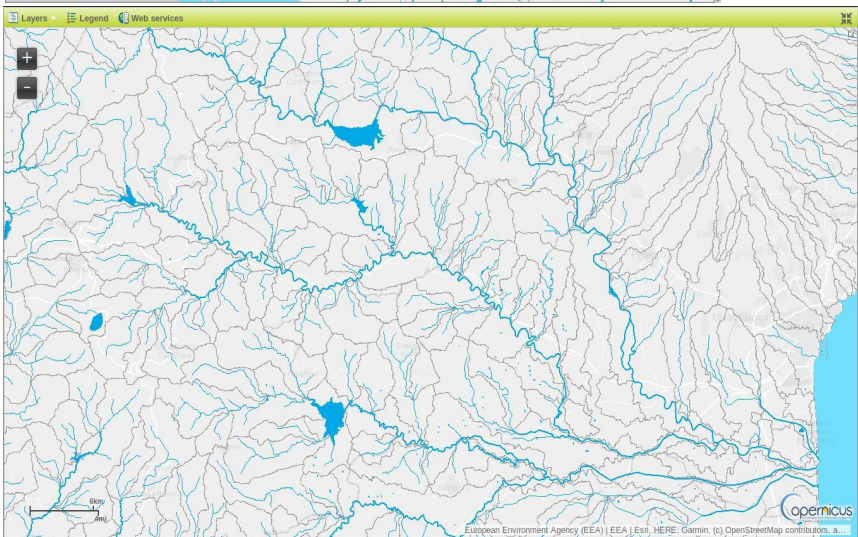
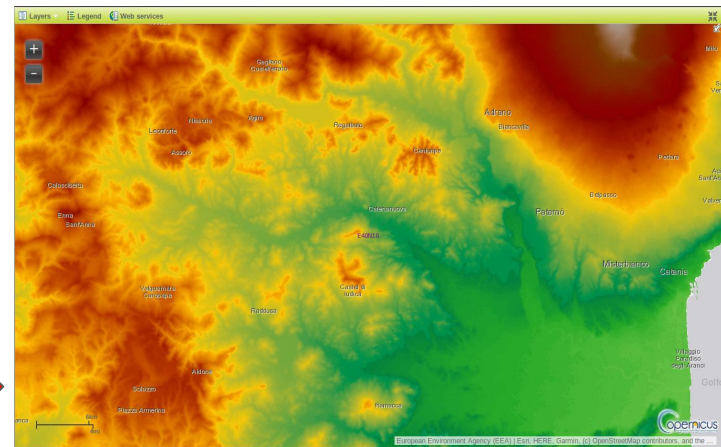


# Benchmark selection for sample points splitting: several scopes prevent non optimal(I)



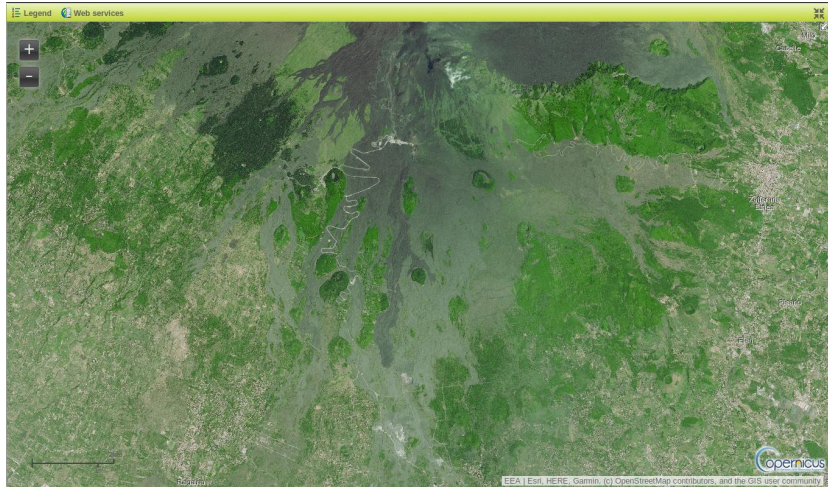
← Superficial water paths at 1:10K

1:6K with drainage zones and elevation →

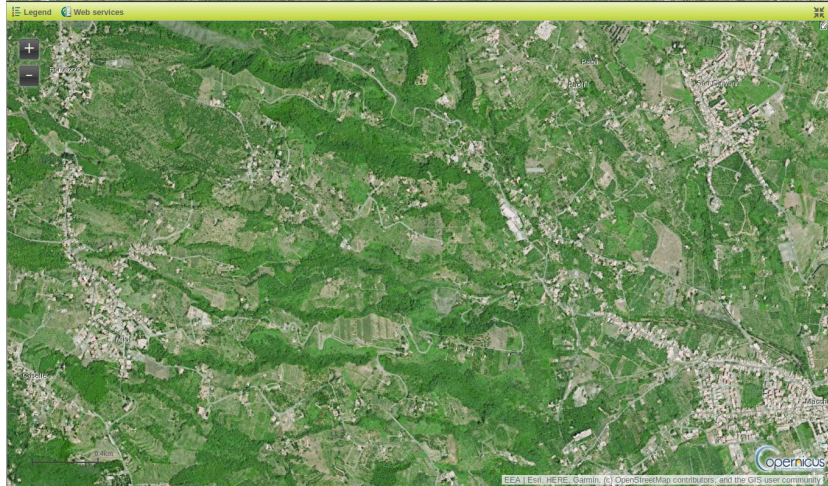
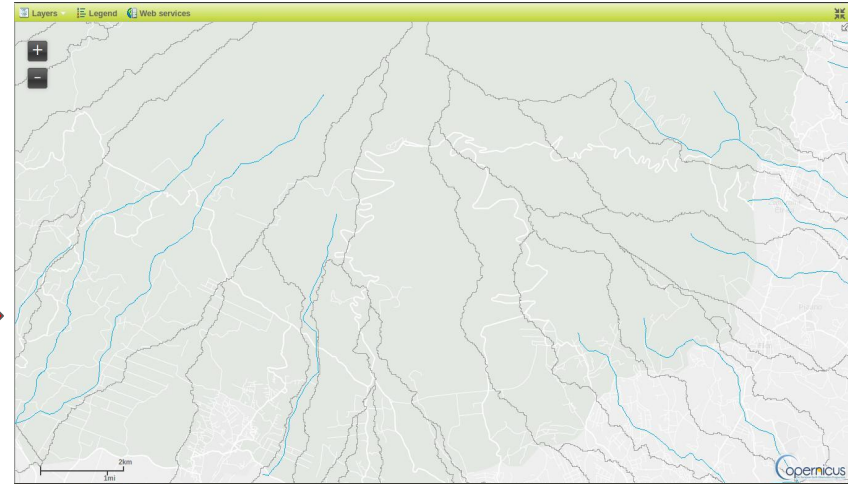
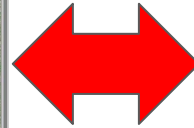




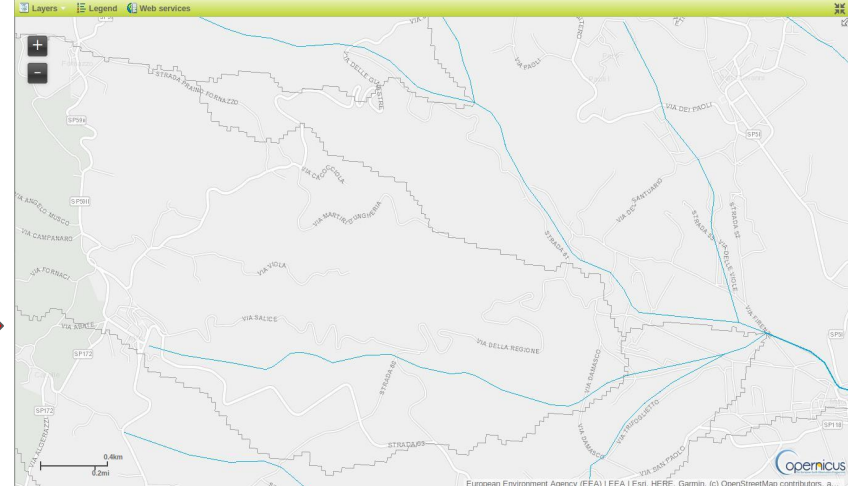
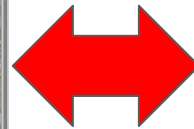
# Benchmark selection for sample points splitting: several scopes prevent non optimal(II)



1:2K



1:400



## Conclusion

This Proof of Concept, has shown that combining satellite imagery with data analysis, in order to accurately determine the watersheds where waterways used as sewers converge, can be a cost-effective way to mitigate COVID19 outbreaks, giving up to 8 days in advance notice to implement containment measures.

