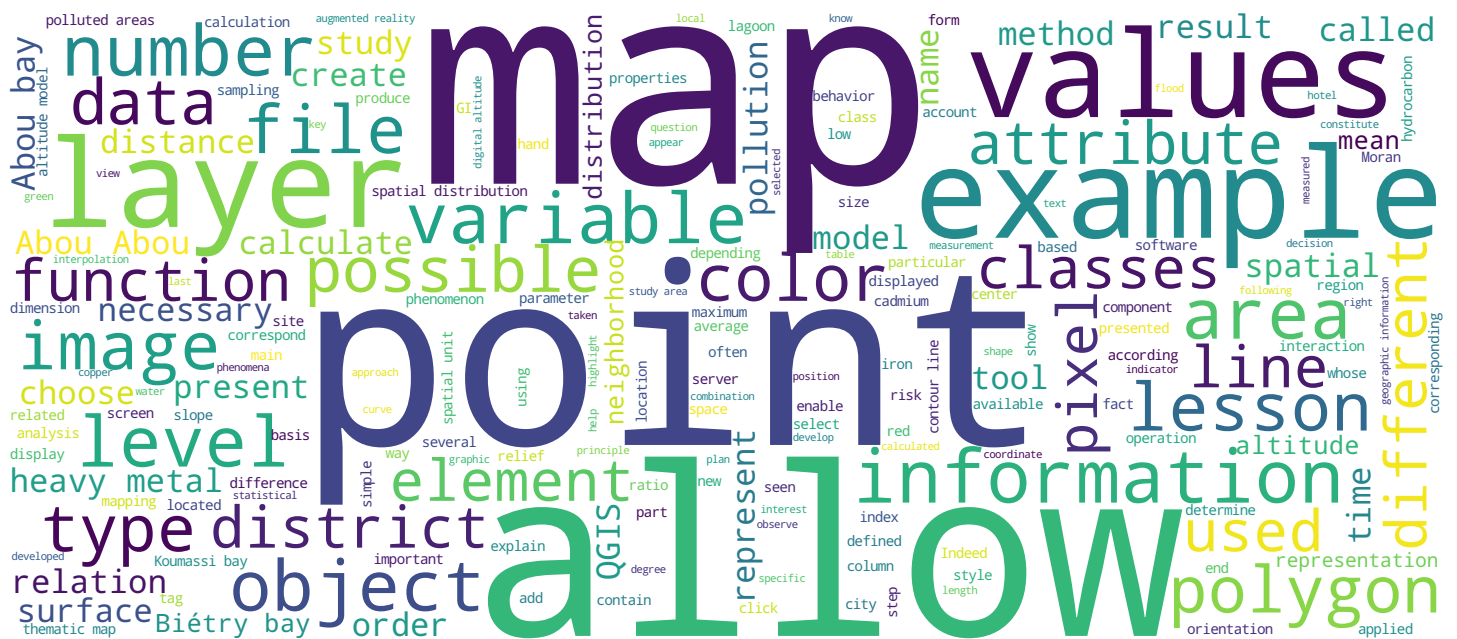


Summary

Case study – Pollution in the Ebrié Lagoon in Abidjan

Geographic Information Systems

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Video



Decision Support



- **Heavily polluted** = high heavy metal concentrations
- **Lightly polluted** = low heavy metal concentrations
- **Thematic maps identifying polluted zones** additive combination of maps created through reclassification

Geographic Information Systems

The purpose of a GIS is to enable to make decisions. In our case, it is a question of clearing areas identified at the level of the lagoon on the basis of objective criteria that could be qualified as polluted areas or really polluted or little polluted. For that, we will qualify the polluted areas as highly polluted areas if they record at the same time high levels of analyzed heavy metals if the areas of occurrence of heavy metals are high. There are some areas with little pollution if they record at the same time the lowest concentration levels of heavy metals. Thus, the 4 themes of polluted areas are deduced by the combinations of raster data such as the addition that will be applied to the 4 different indices of pollution of metals and hydrocarbons. This is how we get the synthesis map which allows to make decisions.

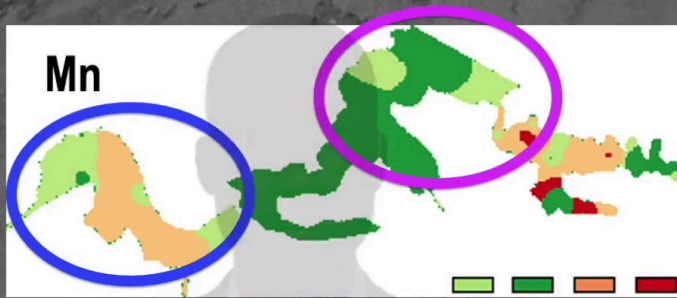
Notes

Summary



0m 05s

Decision Support



Biétry Bay

- High manganese concentration
- Moderate cadmium concentration

Koumassi Bay

- Low manganese concentration
- High cadmium concentration

Abou Abou Bay

- High manganese concentration
- Low cadmium concentration

Geographic Information Systems

The spatial distribution of iron and copper concentration reveals the following points. In the Biétry bay, we have a very high iron content, a very high copper content. In the Koumassi bay, we have a very high iron content and an average copper content. In the Abou-Abou bay, very low iron and copper contents. If we start talking about the spatial distribution of the manganese and the cadmium, what do we see? There is a high manganese content and a high cadmium content in the Biétry Bay. As for the Koumassi bay, we have a low manganese content and a high cadmium content. It is in the Abou-Abou bay that we observe a high manganese content and a low cadmium content.

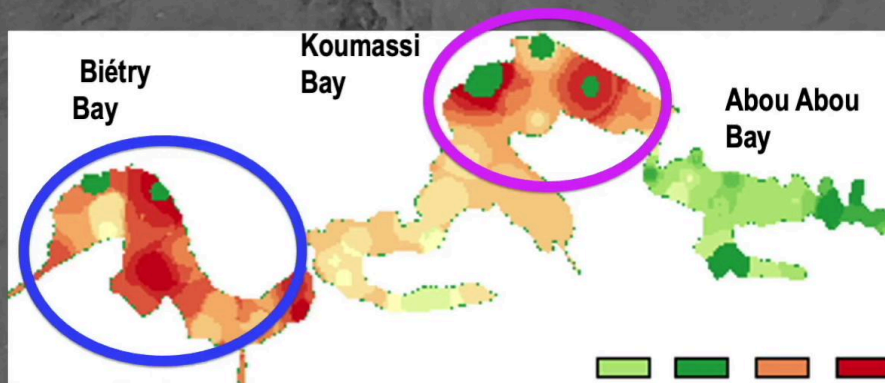
Notes

Summary



1m 07s

Decision Support



Map of pollution distribution in the Ebré lagoon

Pollution

- Biétry and Koumassi Bays: strongly polluted
- Abou Abou: less polluted

Geographic Information Systems

In the case of hydrocarbons, we observe that the sediments of the Biétry Bay, there are high hydrocarbon content while in the Koumassi bay and the Abou-Abou bay, the rates are low to very low. The synthetic map of the level of pollution which was obtained by adding all the maps of the pollution indices shows that the Biétry bay and the Koumassi Bay are of a higher heavy metals pollution level. The existence of heavy industries and the high urbanized area rate in these areas could explain this level of pollution in a context marked by a low level of equipment of sanitization. The Abou-Abou bay is the least polluted because the anthropic activities are weakly developed. The different levels of pollution highlight the impact of industrial development activities on the quality of water resources at the level of the city of Abidjan.

Notes

Summary



2m 04s

Decision Support



Dredging the lagoon in the Plateau neighbourhood in 2015

Measures to be taken

- Reduce pollution (introduce a pollute and pay policy)
- Restore the ecosystems
- Rebrand the Ebrié lagoon system as the "**pearl of lagoons**" once again
- Encourage respect for the environment through the government-led Cocody Bay management project

Geographic Information Systems

The GIS tools allow to highlight the risks to which the local populations bordering the bays are exposed. The maps obtained at the end of this study can guide the ivoirien authorities to take protective measures. Reduce the pollution, enforce the principle of "polluter-payer", of the water Code and the environmental Code. This action is related to the legislative and regulatory framework. Another measure, is to restore the ecosystems. It is to develop and act on the ecosystem. Another measure is to give back the Ebrié lagoon system its name "pearl of the lagoons." Thus, we must act and reverse the pollution trend. Finally, it is necessary to adopt a citizen behavior in respect of the environment in the governmental project of the Cocody Bay development. For that, we will raise the awareness of all.

Notes

Summary



3m 09s

Summary

- Using GIS to exploit results from complementary analyses (heavy metal concentrations: Cd, Cu, Fe, Mn, Zn and hydrocarbons)
- Mapping the spatial distribution of heavy metal concentrations can help to identify areas that are particularly vulnerable to pollution
- Biétry Bay is heavily polluted, while Abou Abou Bay is relatively less polluted
- Strong spatial correlation between certain elements, such as: Fe, Zn and Cu

Geographic Information Systems

What can we learn from this lesson? We have seen that we can use a GIS to exploit the results of chemical analysis collected on the ground. Analysis results for the heavy metal contents, the cadmium, the copper, the iron, the manganese, the zinc and the hydrocarbons. The study also allows to relate the levels of heavy metals and to identify the sectors vulnerable to pollution. So you see that the Biétry bay is heavily polluted while the Abou-Abou bay is weakly polluted. There is a strong spatial correlation between certain elements such as iron, zinc and copper. This GIS application to the mapping of pollution indices can be applied to other continuous variables. Goodbye and I look forward to seeing you for another lesson.

Notes

Summary



4m 17s