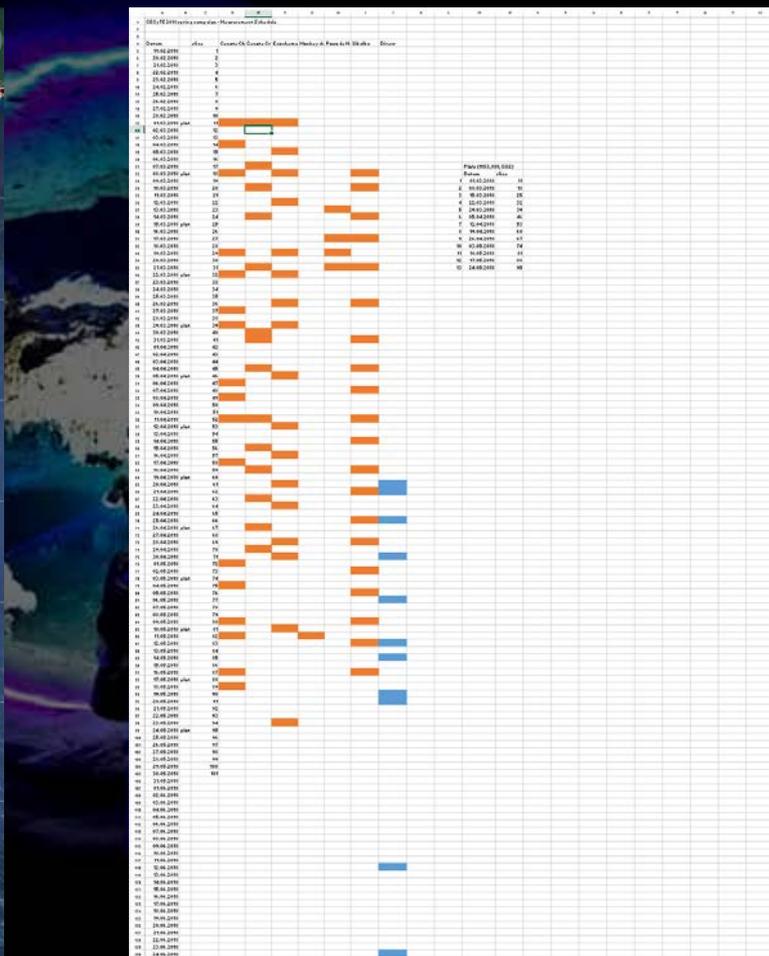


Citizen Science Campaign Spring 2018

March 1st – May 23rd, ~30 pupils, 2 teachers, 3 divers, 2 assistants of ASK

Spatial distribution (16 locations)

Temporal distribution distribution (98 measurements)

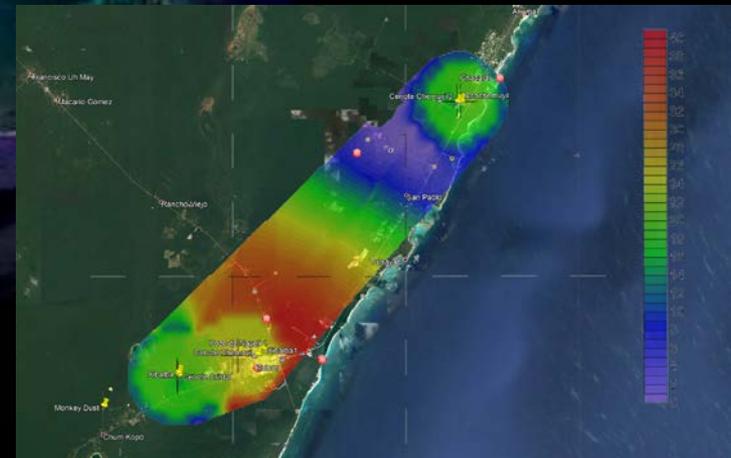
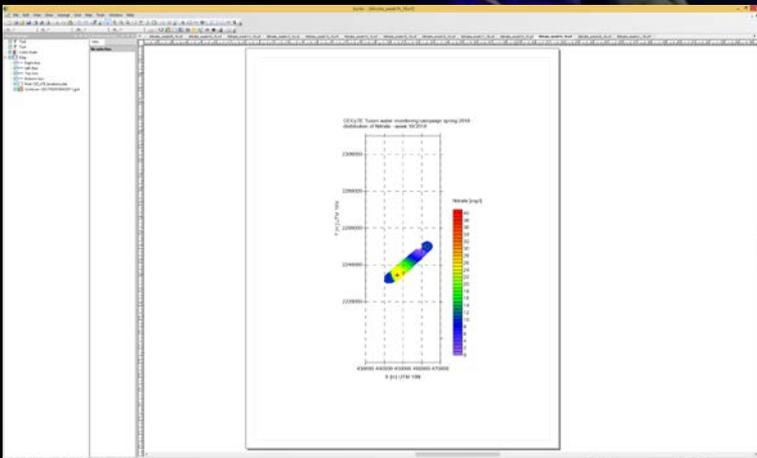
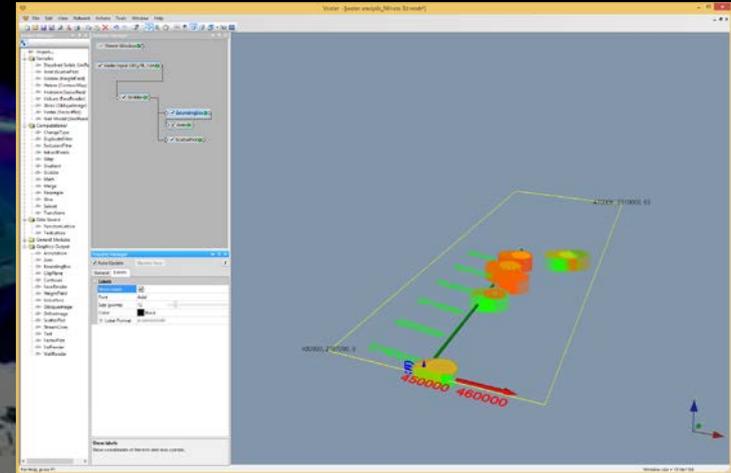


1. Quality control

2. 3d - time-space interpolation of irregularly distributed data (3d-gridding => x,y,t-dataset)

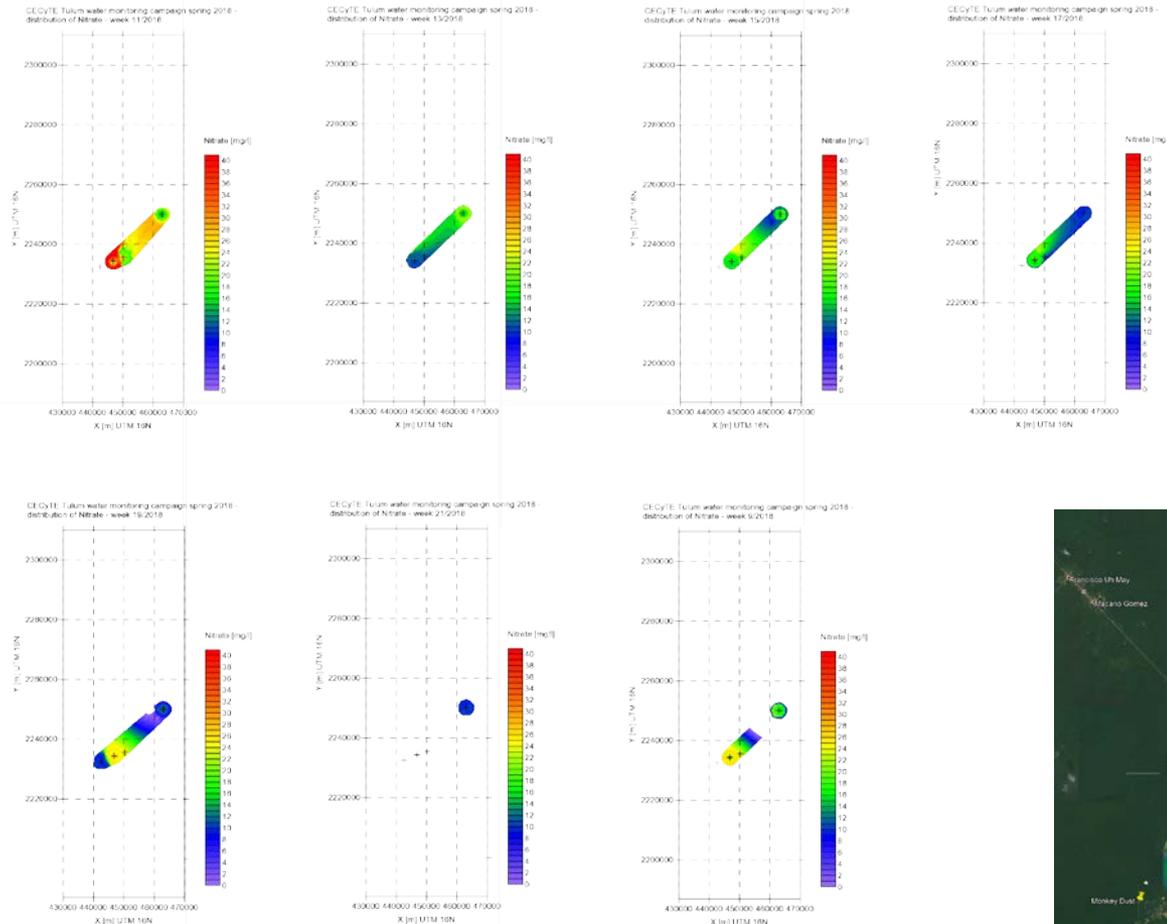
3. Time slices gridding

4. Visualization in GIS

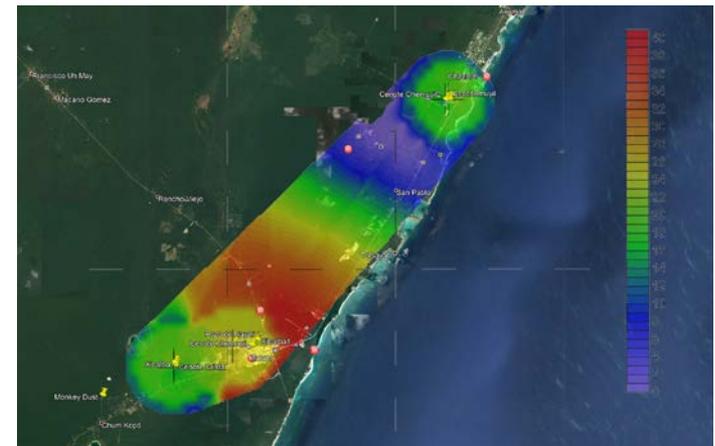


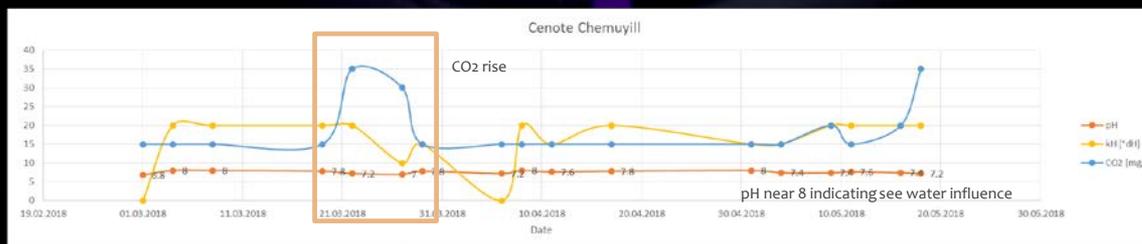
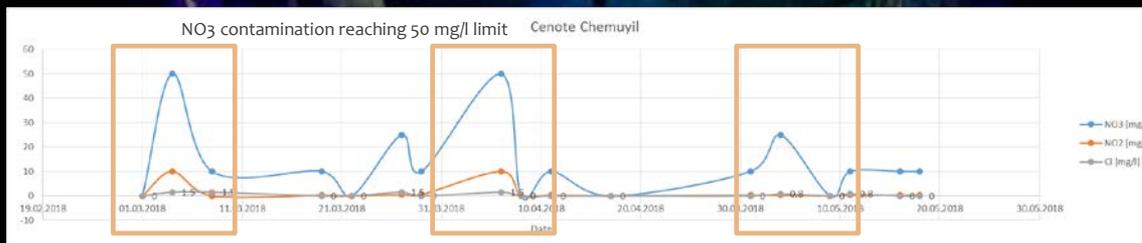
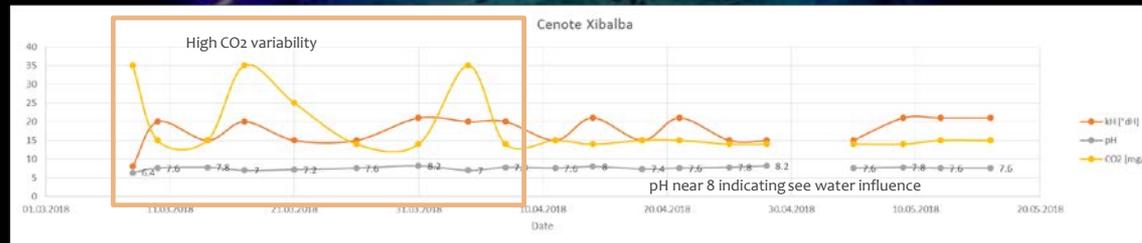
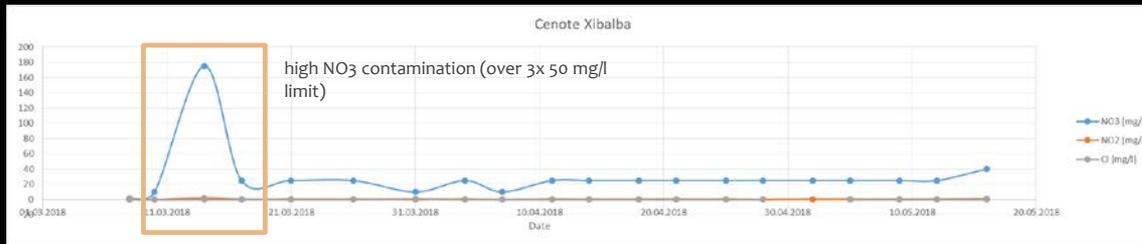
NO₃ – maps

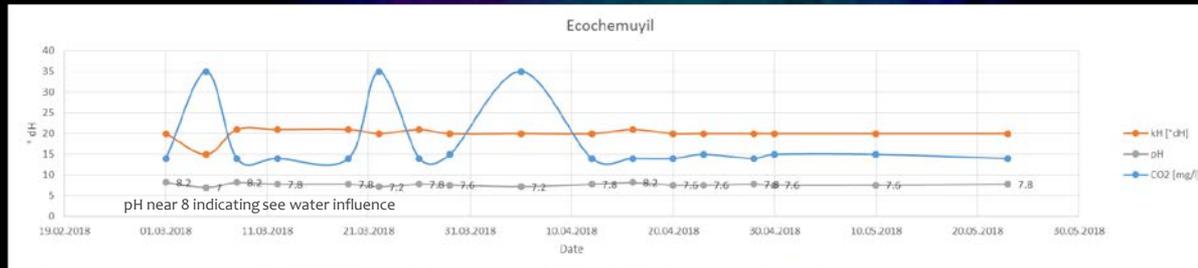
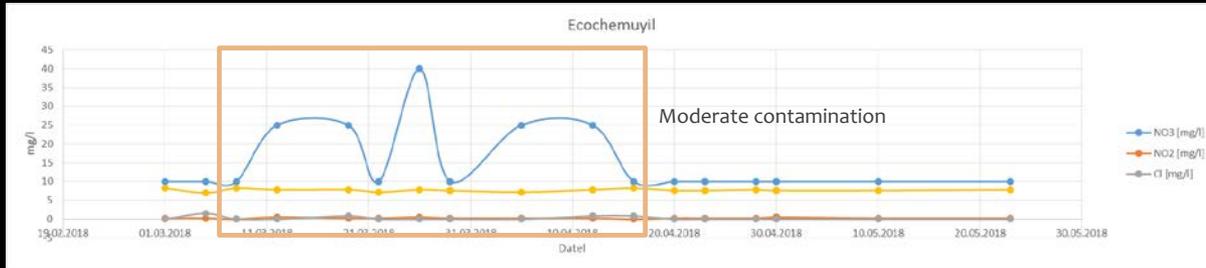
(High spatial variation => interpolation difficult, careful interpretation)



Left: weeks 9, 11,13,15,17,19,21
Below: week 12 in GIS







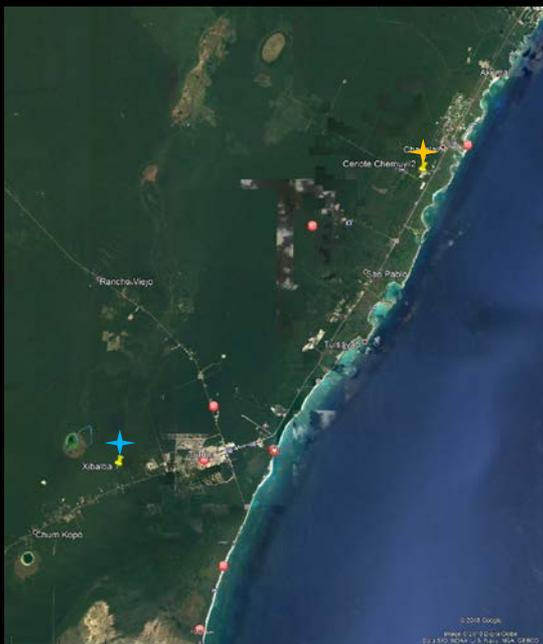


Interpretation:

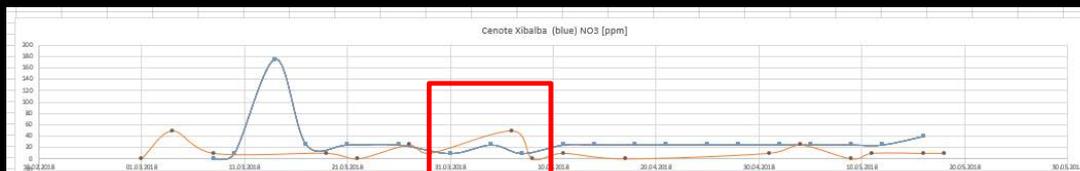
- temporally moderate to high NO₃-contamination in Cenotes Xibalba, Chemuyil, Cristal
- Simultaneous Cl₂-rise indicates water originating from public water supply => waste water input, NO₃ rise without Cl₂ rise indicates different origin.
- Pozo de Nayeli: Higher pH => salt water influence.
- pH temporally also high at other locations which may also be a consequence of saltwater presence.
- High CO₂ variation at locations Xibalba and Chemuyil, constant CO₂ at Ecochemuyil and Cristal – reasons to be analysed.

**Time series: Comparison Cenotes
Xibalba (south, blue)
Chemuyil (north, orange)
8.3. – 16.5. 2018**

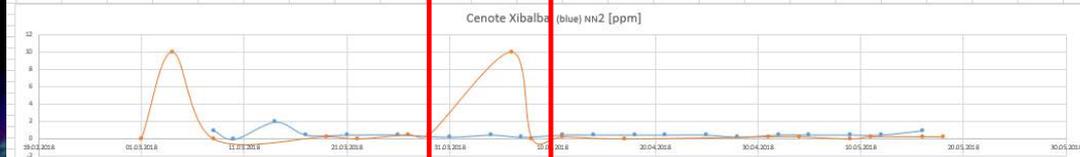
**Red marked period: Indication of possible
wastewater input in Cenote Chemuyil
(orange)**



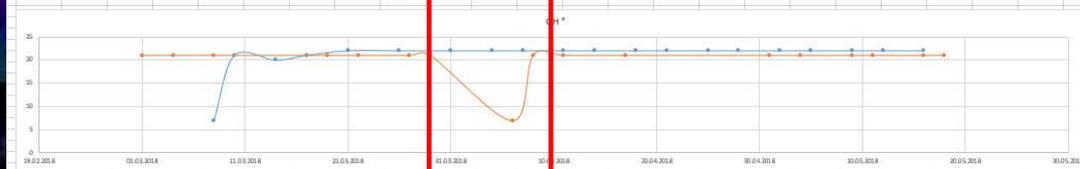
NO₃



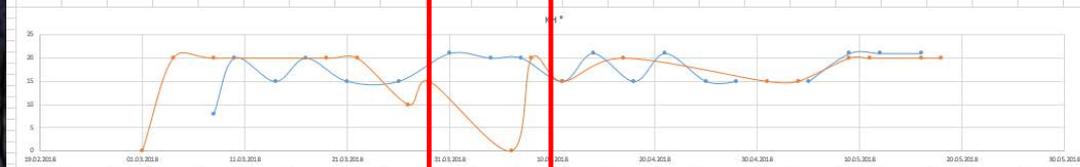
NO₂



GH



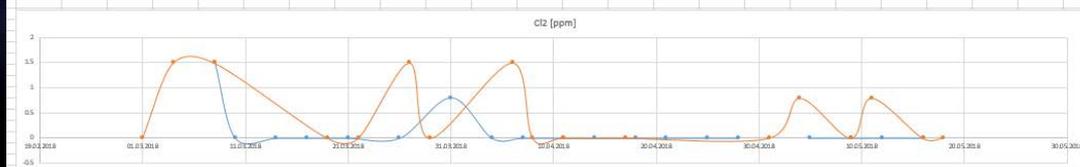
KH



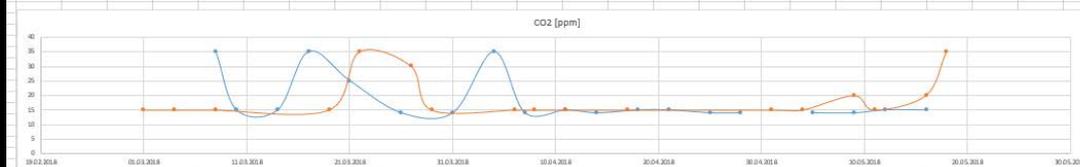
pH



Cl₂



CO₂



Citizen Science –Summary of experience:

- Xib_TCS = test of a new method (,complex sensor network‘, capturing dynamics)
- Reaching citizen scientists (Internet ↓ , direct contact, events, schools ↑)
- Significant organizational and social effort (local mobilizer, cont. support)
- Data quality control
- Feed back (communicating significance of results, successes, problems,...)
- Transmission/publication of data and results considering stakeholders => sensitive (population, tourism, community, education, preservation of nature and culture)
- Slow start but interest and problem awarness accelerating (schools are doors to community, CS projects need ,warm up‘)
- High potential in optimizing integration of classic, automatic and citizen science monitoring