




# ENVIRONMENTAL #OSINT

*Twitter @BenHeubl*

*28/05/2021*



# Overview

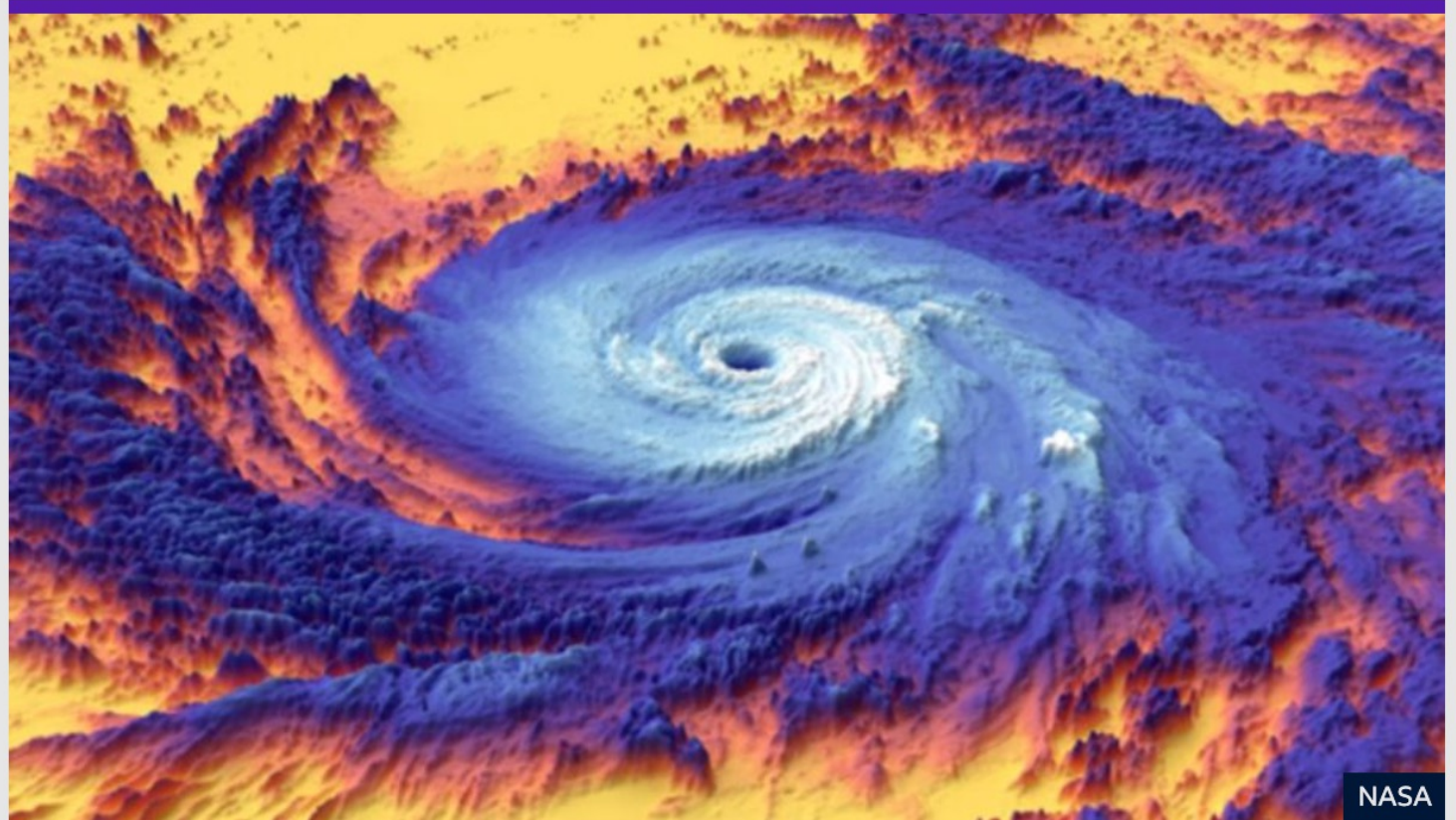
- Announcement
- Satellite OSINT (simple)
- Satellite OSINT (advanced)
- Using social intelligence (SOCINT) in the mix
- Deforestation/Biomass investigation
- Examples of recent environmental investigations

- Aerosols
- Address uncertainty on climate change, air quality forecasting, and prediction of severe weather
- Drought assessment and water use
- Climate change and impact on food and agriculture, habitation, and natural resources
- Sea-level and landscape change driven by climate change, hazard forecasts, and the role of earthquakes, volcanoes, landslides, glaciers, groundwater, and the Earth's interior

# How is Nasa trying to tackle climate change?

[View Comments \(6\)](#)

🕒 26 May 2021 Last updated at 11:37



NASA's new programme will guide efforts to better understand hurricanes such as Hurricane Maria, shown here in a 2017 thermal image captured by NASA's Terra satellite

**Nasa has announced it'll be designing a new set of mission focussed on Earth, rather than exploring space.**

# Satellite OSINT (simple)

Google Earth, Sentinel Hub, NASA

- Sentinel Hub
- Foreign [plastic](#) pollution (case)
- The [impact](#) of intense farming on the environment (case)
- Fire at the *Mishraq Sulphur State Company*
- [Visible Infrared Imaging Radiometer Suite](#) (VIIRS)
- Finding a ship that burns

# Satellite scripts

## custom-scripts

A repository of custom scripts that can be used with Sentinel-Hub services.

[View On GitHub](#)

### Collection of custom scripts

Custom Scripts Repository

- Relevant reading
  - Sentinel-1
  - Sentinel-2
  - Sentinel-3
  - Sentinel-3 OLCI
  - Sentinel-3 SLSTR
  - Sentinel-5P
  - Landsat 8
  - Landsat 5 and 7
  - MODIS
  - DEM

## Collection of custom scripts

### Custom Scripts Repository

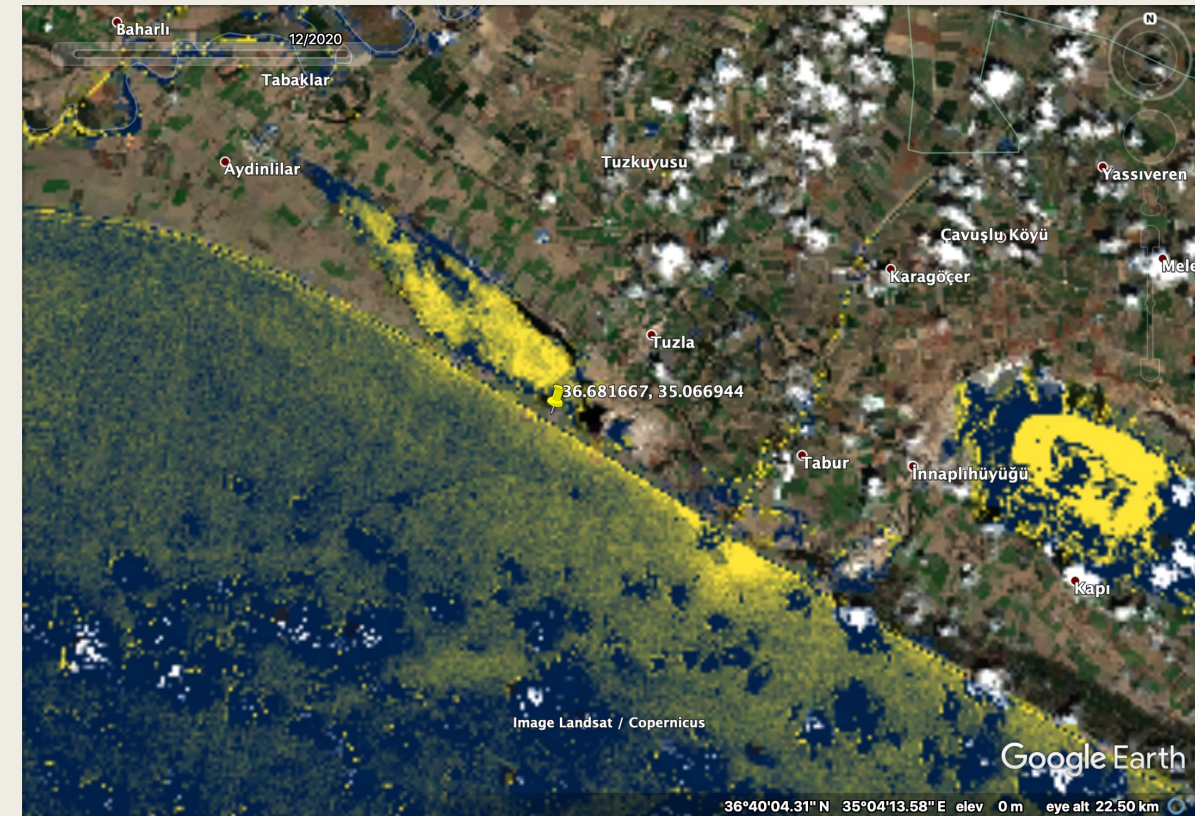
This repository contains a collection of custom scripts for [Sentinel Hub](#), which can be fed to the services via the URL.

Scripts are organised by sensors supported on Sentinel Hub:

- › [Sentinel-1](#)
- › [Sentinel-2](#)
- › [Sentinel-3](#)
- › [Sentinel-5P](#)
- › [Landsat 5 and 7](#)
- › [Landsat-8](#)
- › [MODIS](#)
- › [DEM](#)



# Investigating plastic pollution in Turkey





## Mosul battle: Hundreds treated over toxic fumes in Iraq

🕒 22 October 2016



EXIF not found x



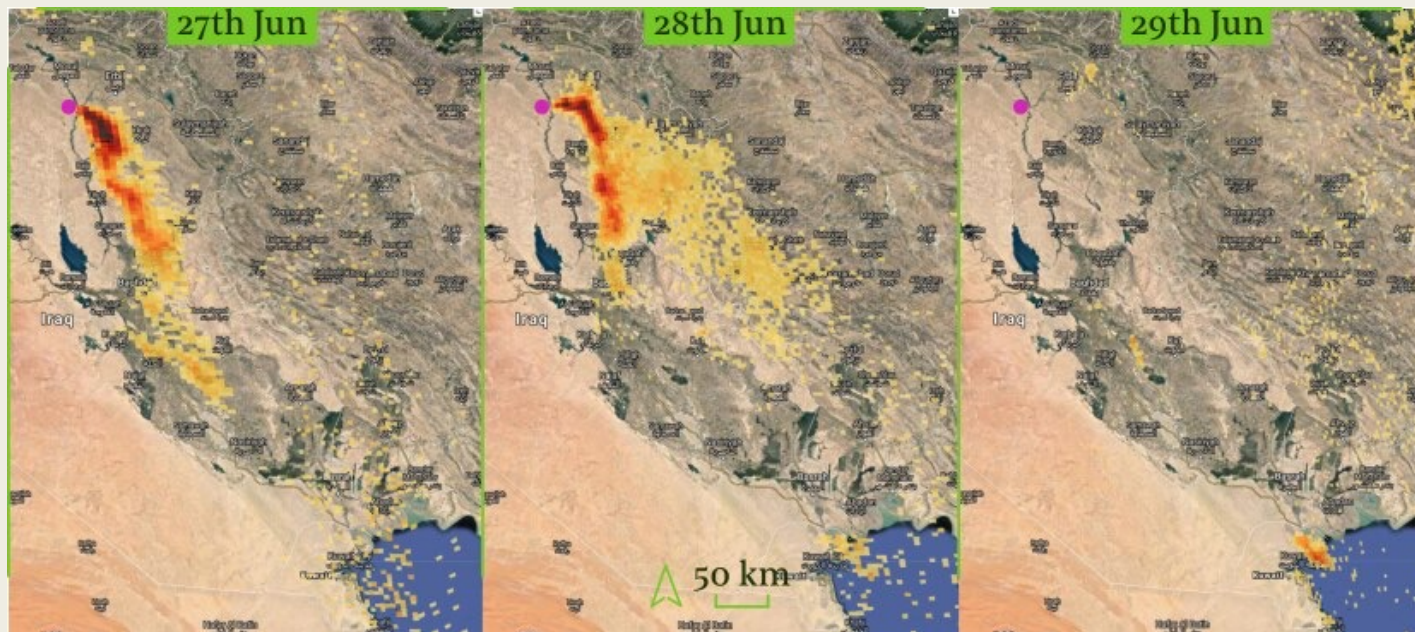
• Al-Mishraq

Sulphur  
Dioxide

0.01 ~640

$\frac{\text{mol}}{\text{m}^2}$   $\frac{\mu\text{g}}{\text{m}^3}$

0 0



Sulphur dioxide plume from a fire at the Mishraq Sulphur State Company, as measured by the TROPOMI sensor. The vertical column density is reported in  $\text{mol m}^{-2}$  and converted to  $\mu\text{g m}^{-3}$  by assuming the plume reached no higher than 1 km (consistent with photographic evidence, [source](#))

# Satellite OSINT (advanced) Using Google Earth Engine

- Detection waste dumps in Turkey
- Cyanobacteria concentration in Uruguay, rivers and coastal zones (GEE)



# Explore VIIRS in Google Earth Engine: Investigating methane pollution

- A problem for climate and health (America's South)

# Explore VIIRS in Google Earth Engine

- Olli Ballinger's work with VIIRS – investigation into Iraq's pollution from oil extraction
- Solar [panels in Africa](#)
- Cyanobacteria concentration in rivers and coastal zones
- Illegal waste dumps in Turkey

# Reporting on fires, live in Bangladesh



UNHCR in Bangladesh ✓  
@UNHCR\_BGD

A fire has broken out in the [#Rohingya](#) camps.

Fire services, RRRC, rescue & response teams are at the scene trying to control the fire & prevent further spread.

Humanitarian partners have mobilized hundreds of volunteers w equipment to combat the fire & support those affected

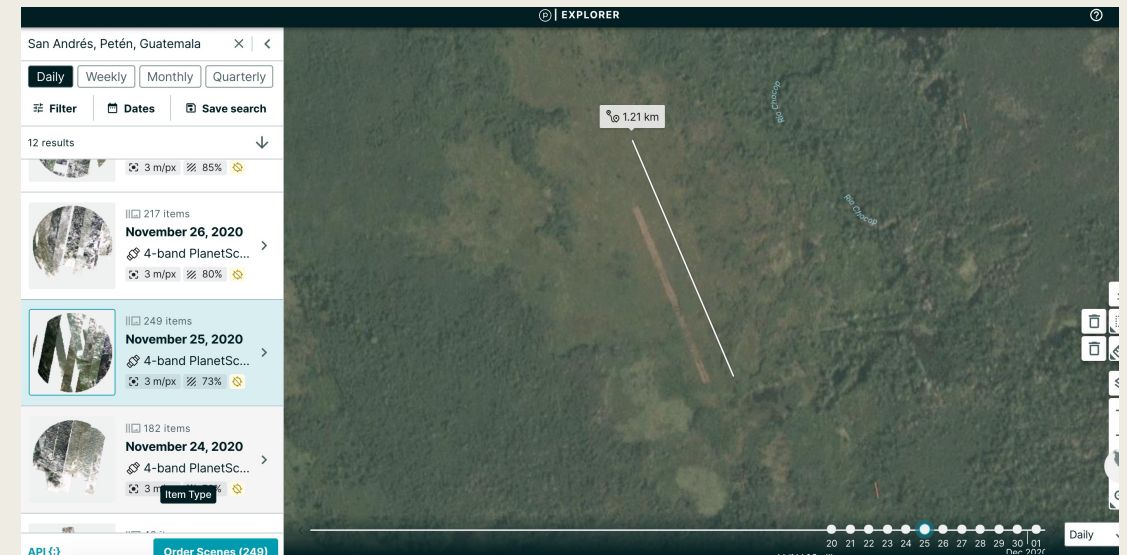
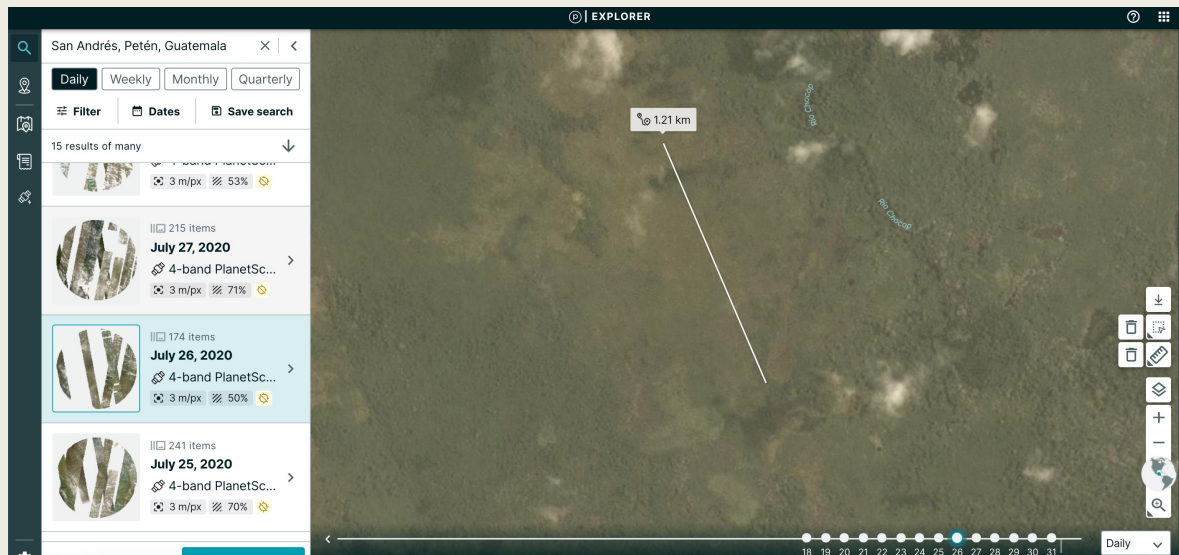


UNHCR, the UN Refugee Agency and UNHCR Asia Pacific

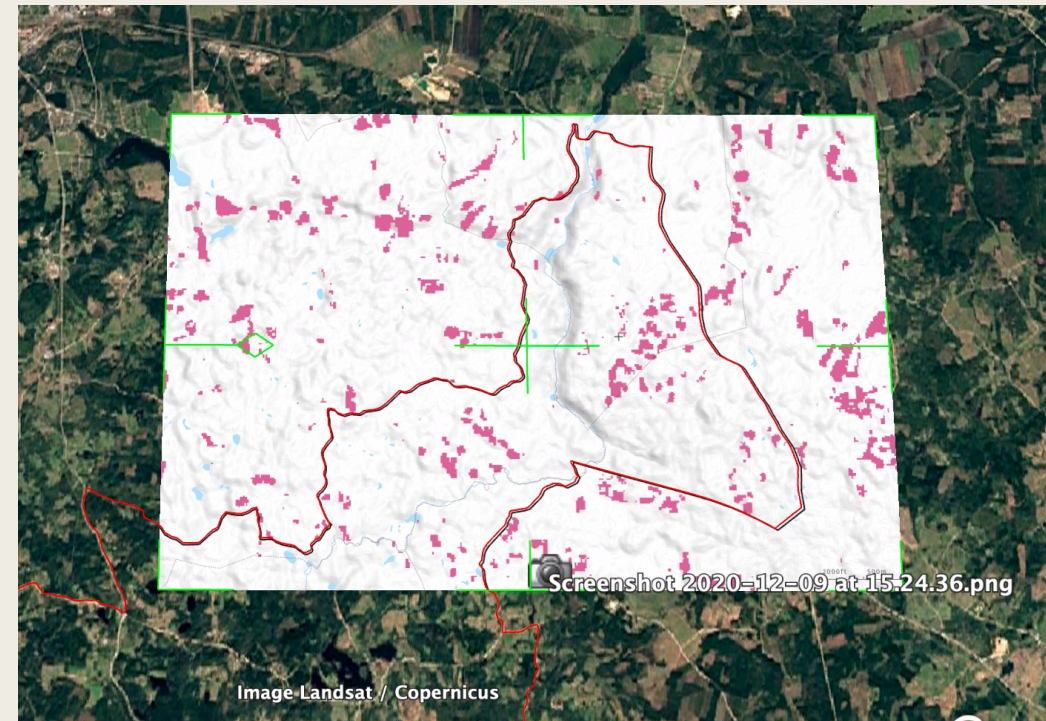
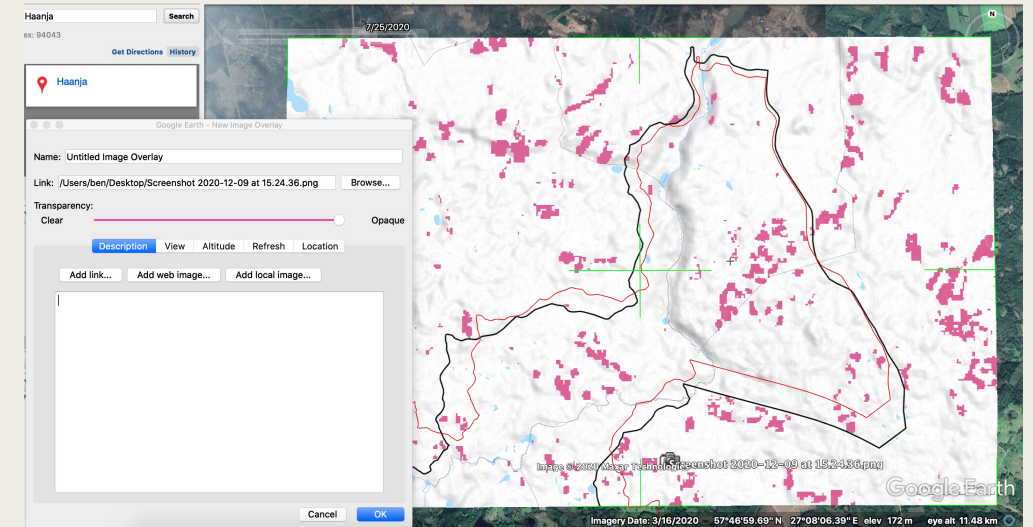
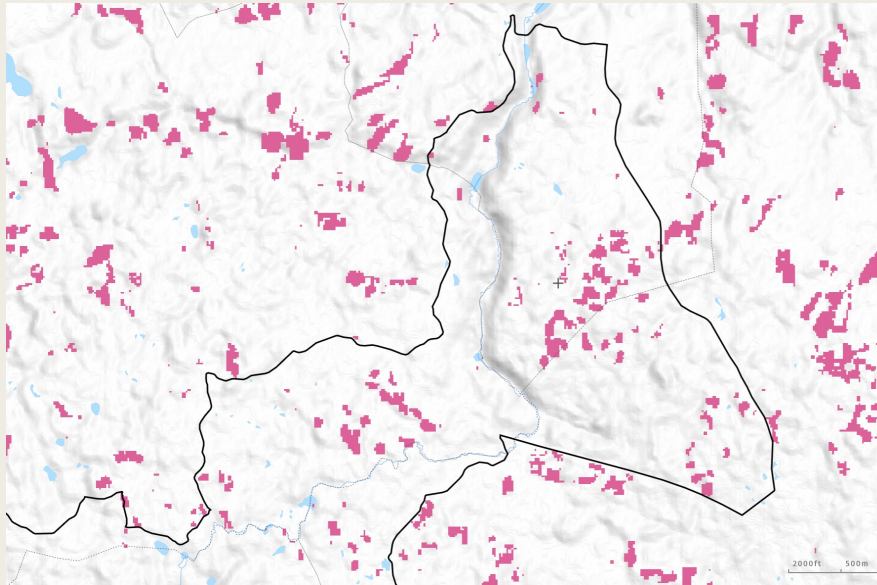


# Deforestation

- ... to find illegal narcotics trafficking aircraft landing strips in [South America](#)



# Using image as an overlay in Google Earth Pro



# Merging open data with maps

Mexican drug cartels, poised to  
[affect Lithium mining project.](#)



# Map of the mining concessions

## Location of the Sonora Lithium project concessions:

1. Buenavista
2. Megalit Fracc. I
3. San Gabriel
4. Fleur
5. Fleur I
6. El Sauz
7. El Sauz I
8. El Sauz 2
9. La Ventana
10. La Ventana I

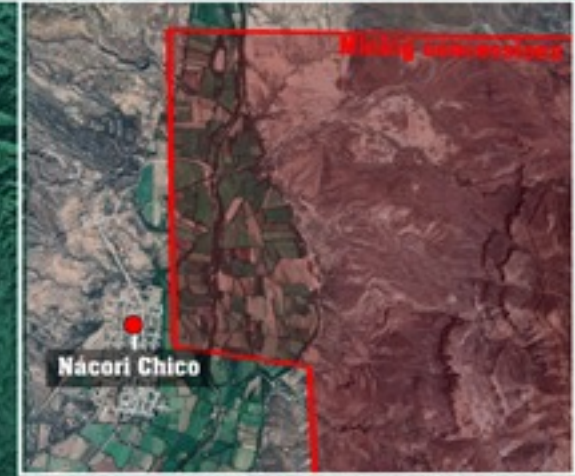
*Mexico's mining undersecretary Francisco Quiroga said the Bacadéhuachi mine will bring "progress and wellbeing" to Sonora*

**Bacadéhuachi**  
Headquarters of the lithium mine

### Bavispe river

In 2016, fish died in the waters of the Liqi river, in Tibet, where a toxic chemical leaked from the Ganzizhou Rongda lithium mine. Bacanora's CEO says there is no reason for similar concerns here. His firm's mine will be a zero-waste operation. The 2018 feasibility study found no risk in this regard.

**Nácori Chico**, a small town in Nácori Chico Municipality



**Problematic overlap** with agricultural areas and water resources near the city of Huásabas, a municipality in the northeast - and its population of 966 registered citizens (2000).

# Environmental OSINT around food production

- Perils of Britain's [intense farming](#) sector

# Environmental OSINT in conflict zones

- *Environmental issues in [conflict zones](#)*
- Oil pollution in Iraq



# Investigating historical environmental catastrophes

- Oil spill in [Ecuador](#) four decades later - [Medium](#)

# Social intelligence (SOCINT) for environmental investigations

- Climate change deniers and lobbyists
- Trade of illegal wildlife (examples, eBay, Facebook)

# Investigating biomass exports from Estonia

- Google Street View (example) + exporting images



# Thanks

Reach out via Twitter, @BenHeubl