



living planet symposium | BONN

23-27 May 2022

TAKING THE PULSE
OF OUR PLANET FROM SPACE



Climate Security assessment and mitigation support tools

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May 25th 2022

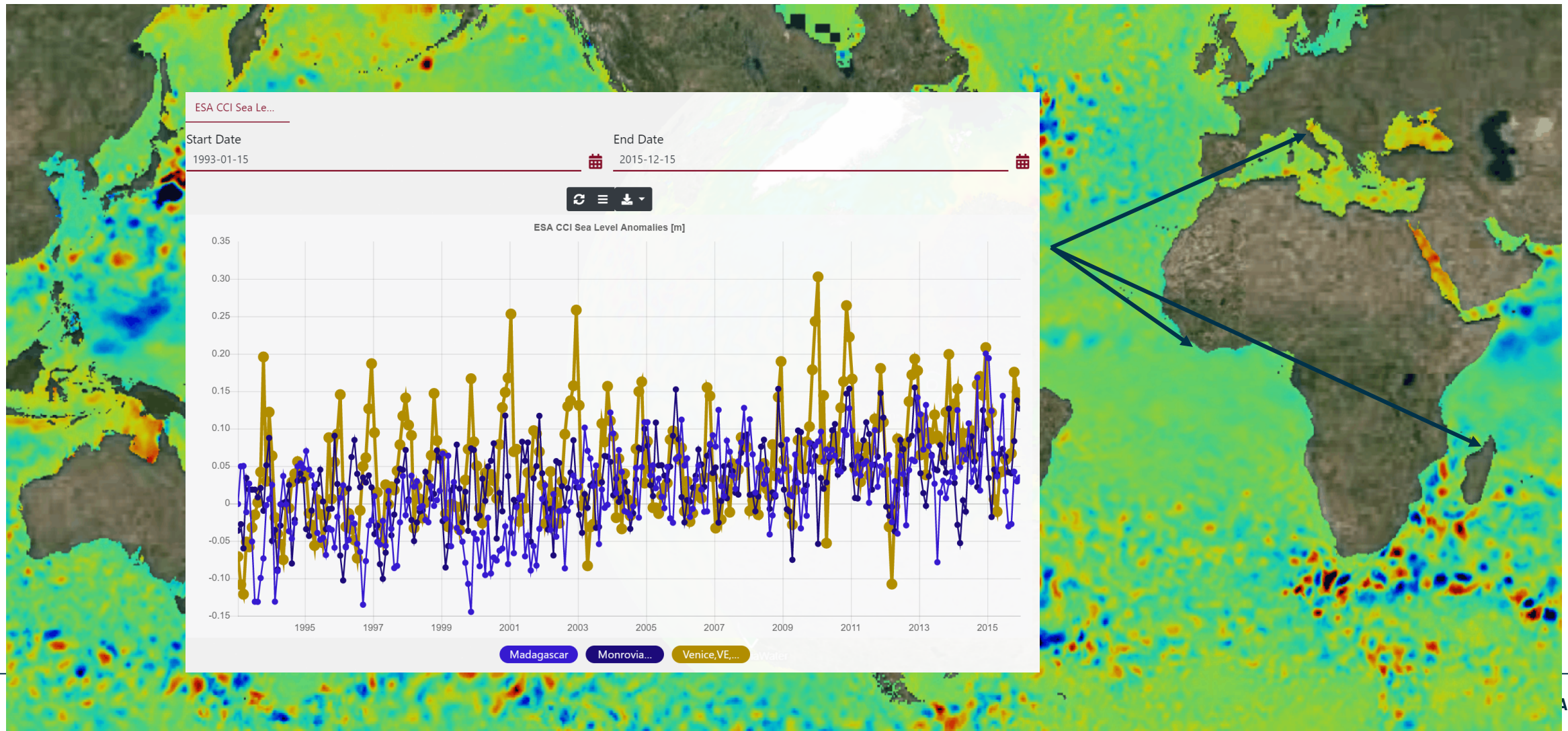
ESA UNCLASSIFIED – For ESA Official Use Only



→ THE EUROPEAN SPACE AGENCY



How different cities can react to sea level rise ?





E-Shape FRIEND project – flood impact assessment

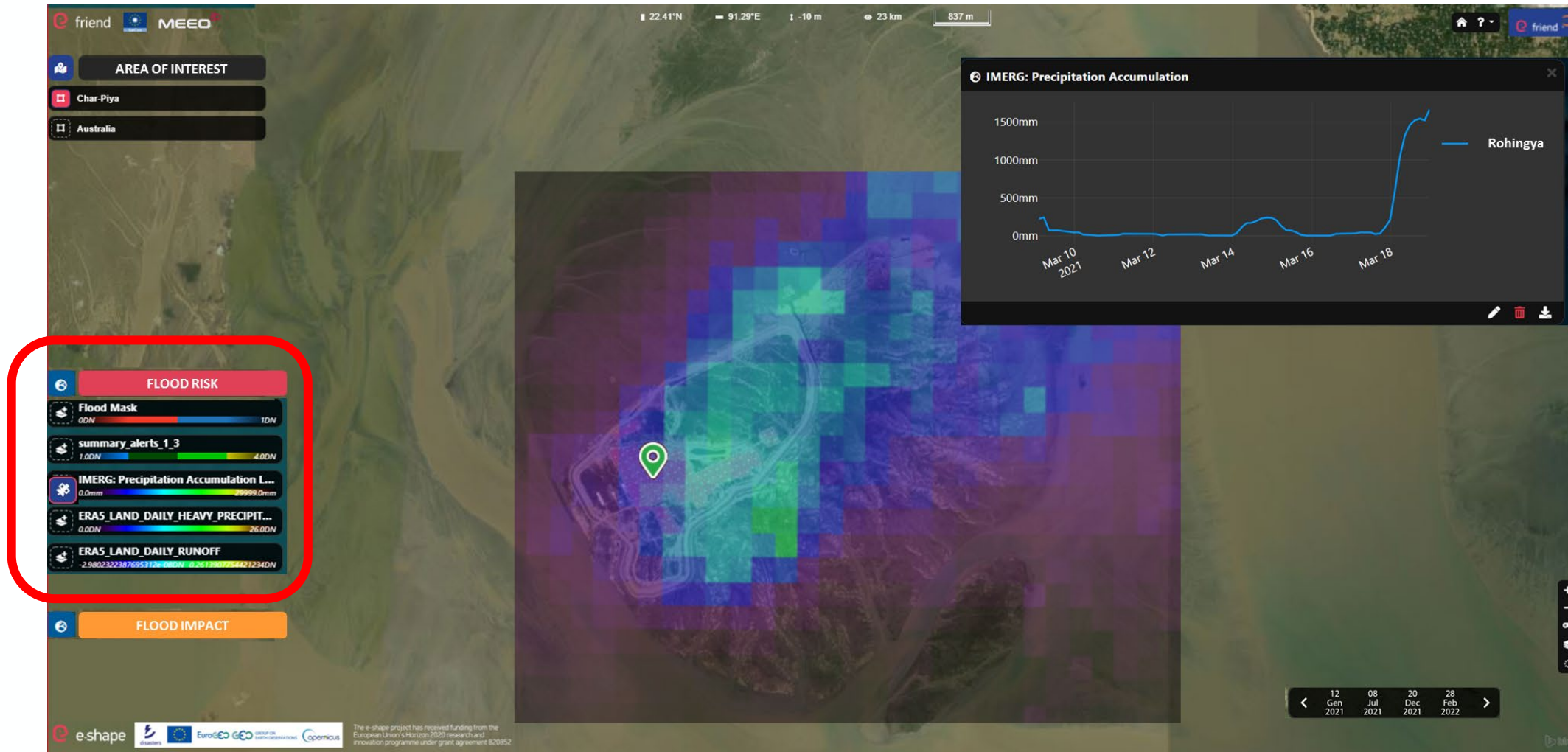
The screenshot displays the FRIEND project interface. On the left, there are navigation panels for 'AREA OF INTEREST' (Char-Piya, Australia), 'Products' (FLOOD RISK, FLOOD IMPACT, S1 Change detection, S1 Flood mask), and a red-bordered box highlighting the 'FLOOD IMPACT' section. The main map shows a satellite view with a red flood impact overlay and a green location pin. On the right, a data table lists product details:

Identifier	Title	Data Type	Start	End
4abf7a98-cac5-11ec-8166-3ecba5966d74	S1_ACD_DB_20170421T234759Z_20170726T234804Z	Byte	2017-04-21T23:47:59Z	2017-07-26T23:48:04Z
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82cb0c8-d1e5-11ec-b991-e2b0381bfa9	S1_ACD_DB_20170421T234759Z_20220501T234830Z	Byte	2017-04-21T23:47:59Z	2022-05-01T23:48:30Z
9661f17e-cac5-11ec-8166-3ecba5966d74	S1_ACD_DB_20170421T234759Z_20170608T234747Z	Byte	2017-04-21T23:47:59Z	2017-06-08T23:47:47Z
dfc5276a-d299-11ec-bff3-e2b0381bfa9	S1_ACD_DB_20190309T120349Z_20190707T120354Z	Byte	2019-03-09T12:03:49Z	2019-07-07T12:03:54Z
e93bdbc0-c7b5-11ec-97f8-3ecba5966d74	S1_ACD_DB_20210427T120403Z_20210813T120409Z	Byte	2021-04-27T12:04:03Z	2021-08-13T12:04:09Z

At the bottom of the interface, there is a date navigation bar showing dates from 12 Gen 2021 to 28 Feb 2022, and a footer with logos for e-shape, ESA, EuroGEO, Copernicus, and funding information from the European Union's Horizon 2020 program.



E-Shape FRIEND project – flood risk assessment





Global projected inundation service to provide risk maps up to 2150

- Input data:

- AR6 sea-level change projections from CMIP6 ensemble
- Copernicus DEM Global GSD 90m (2020)
- Copernicus Waterbodies Inland Global GSD 90m (2020)
- Coastline Global

- Output:

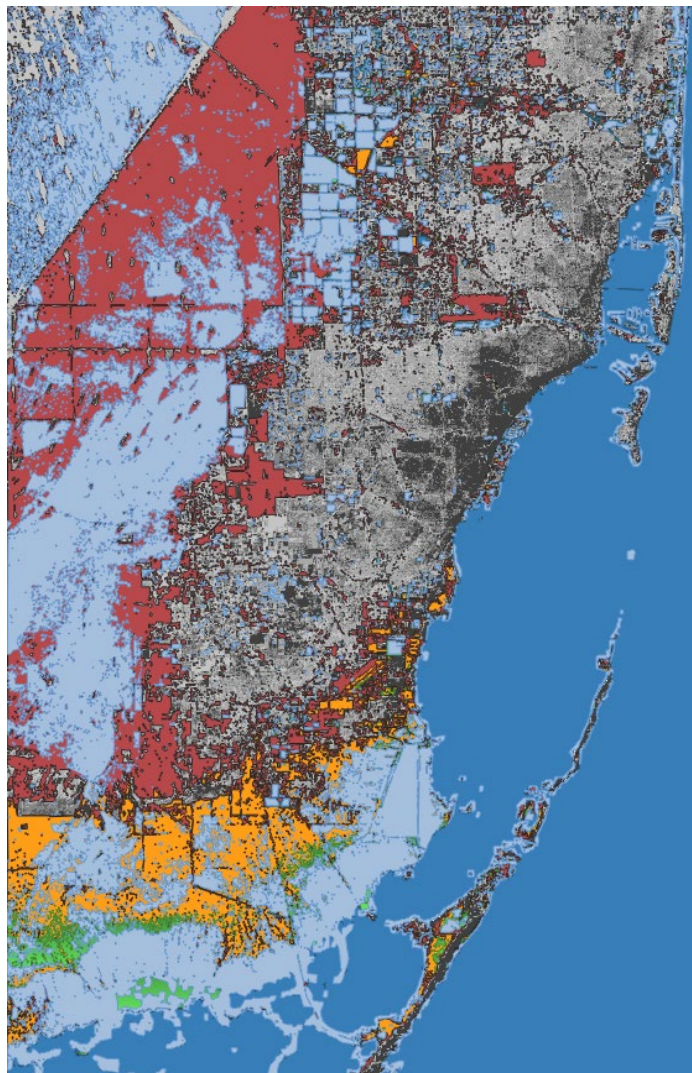
- Three layers:
 - Potentially flooded areas
 - Already defended areas In 2020
 - potentially flooded by a storm surge
- 5 Shared Socio-economic Pathways (ssp119, ssp126, ssp245, ssp370, ssp585)
- 6 storm surge values (0.5m, 1m, 1.5m, 2m, 3m, 5m)
- 2020 baseline and three time steps: 2050, 2100, 2150

Flood security

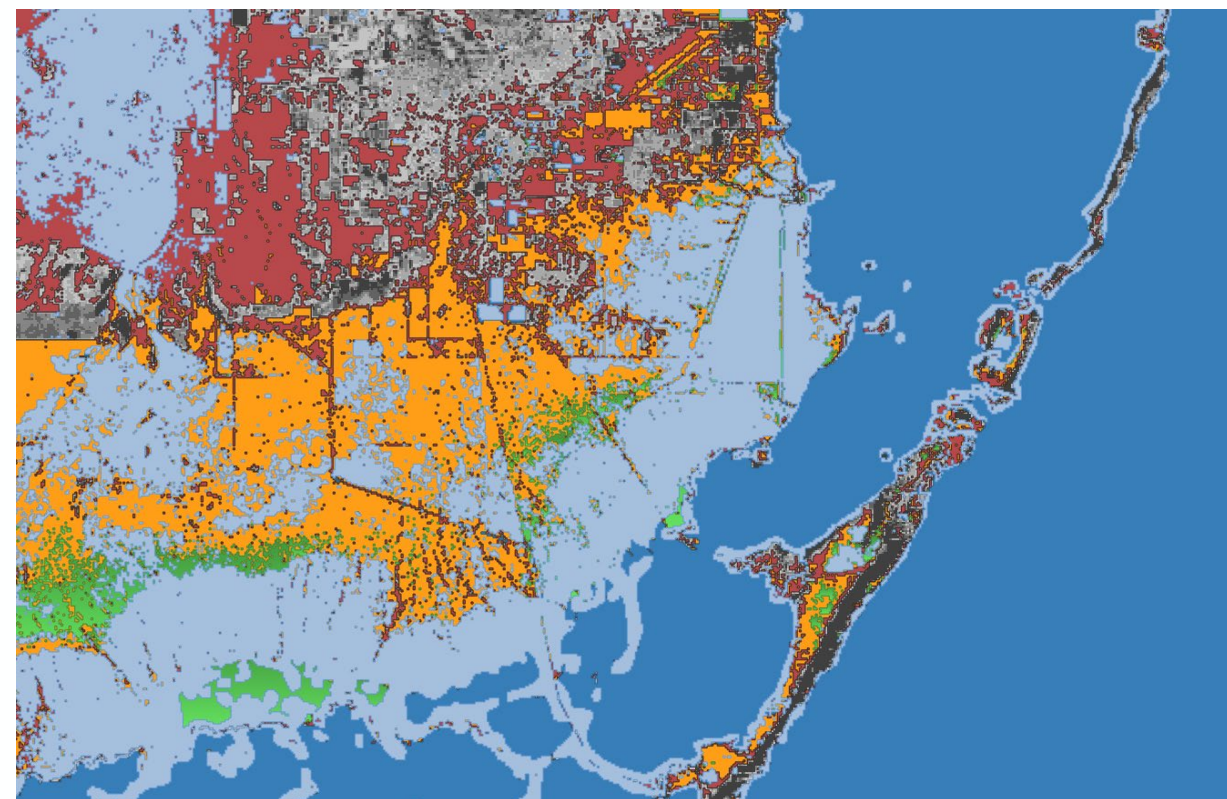


Florida

- year: 2100
- ssp: 8.5
- Storm surge: 1.5m



- Florida_DEM_Water_vec
- Florida_DEM_Sea
- Florida_DEM_protected
- total_2100_ssp585_SeaRise_Florida_DEM_raw_flooded_no_ss
- total_2100_ssp585_SeaRise_Florida_DEM_raw_flooded_1_5



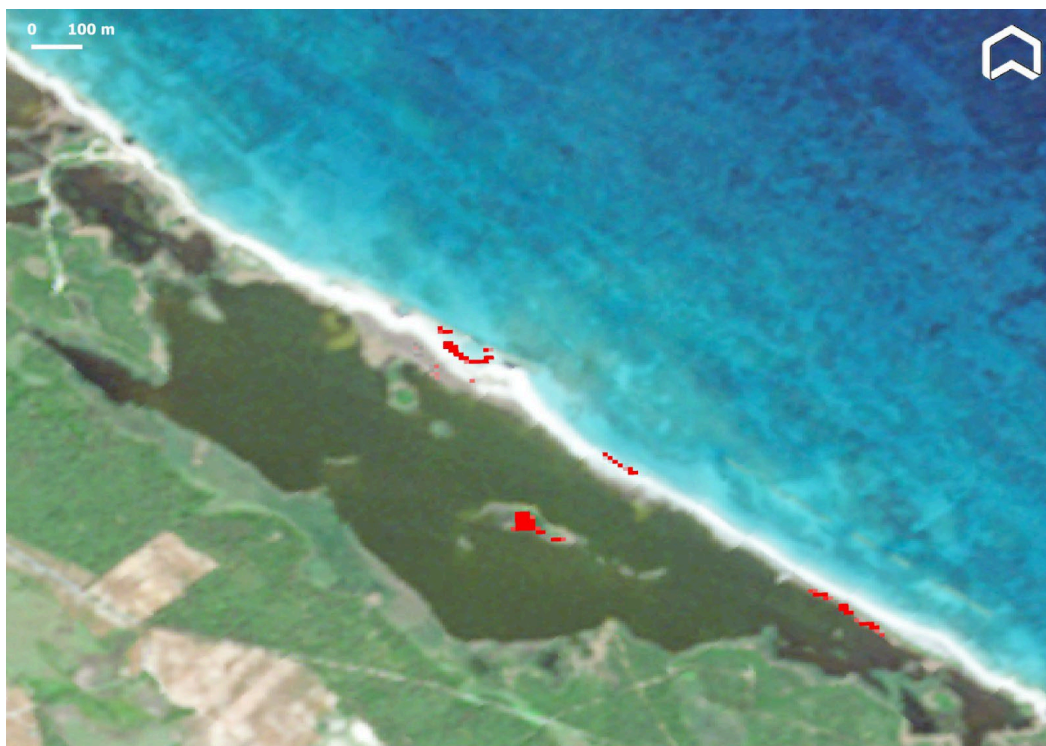


World Wildlife Fund site: climate threats

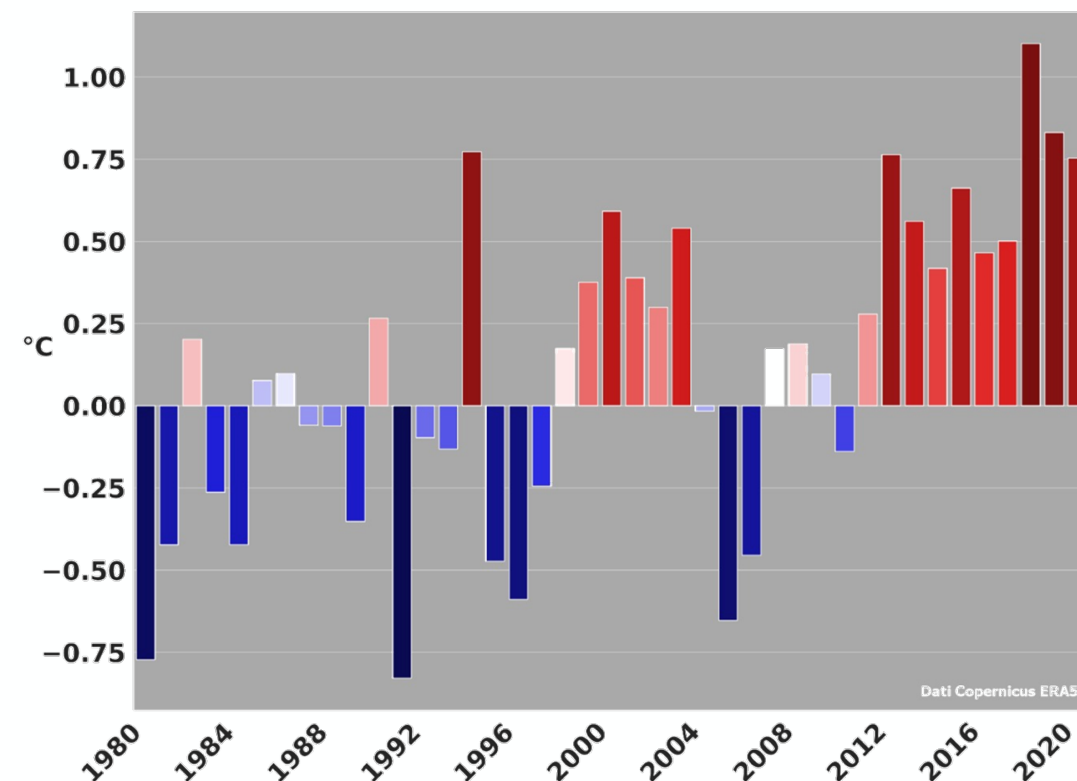
- Coastal risk
- Climate risk → degradation → impact on migration routes



Oasi Cesine, Apulia, Italy – Coastal Erosion (sentinel 2, 2017 – 2022)



Yearly temperature anomalies 1980 – 2021 (ref. 1986 – 2005)



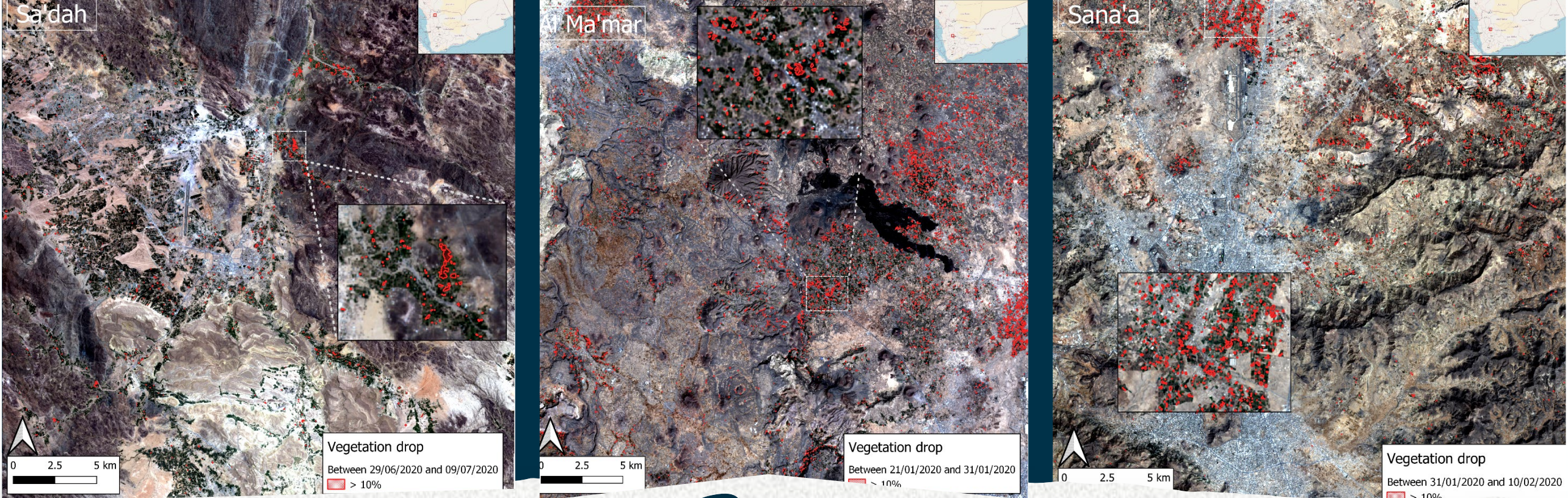
Dati Copernicus ERA5



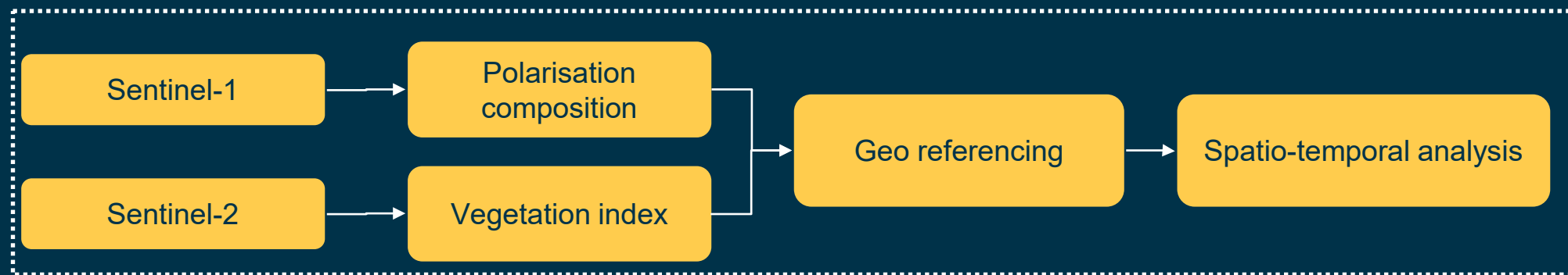
Locusts have always represented a **plague** for populations living mainly in **Africa and Asia**. Despite the large use of **pesticides** to try keeping their diffusion under control, **extension of agriculture** and **climate change** have driven an **increasing impact** of locusts on **human life**

Two services:

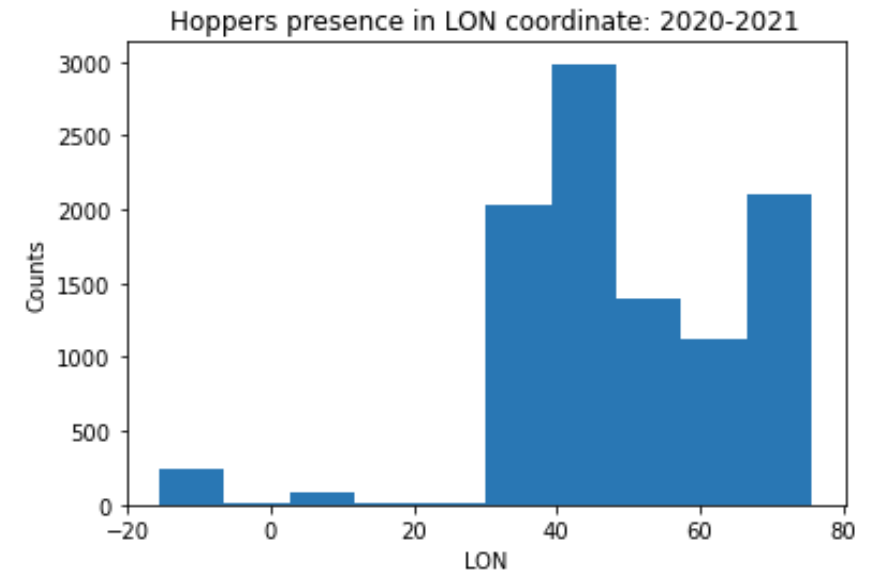
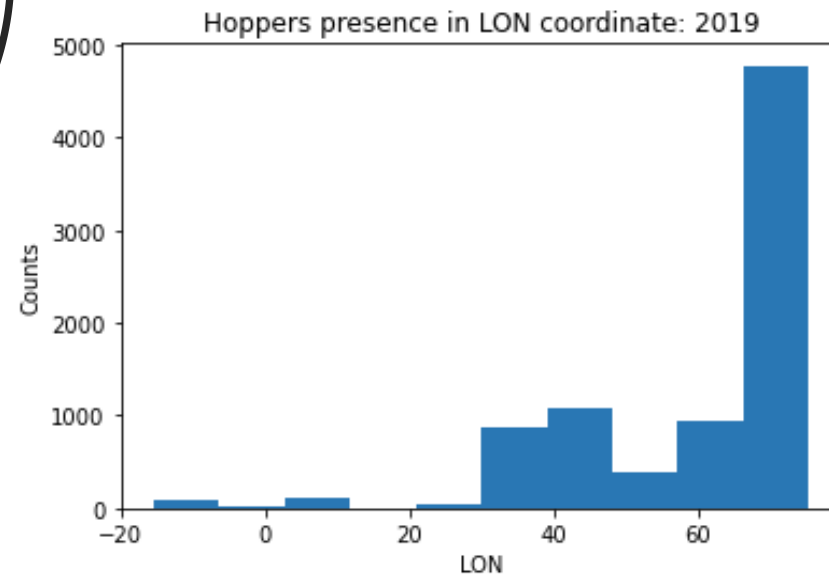
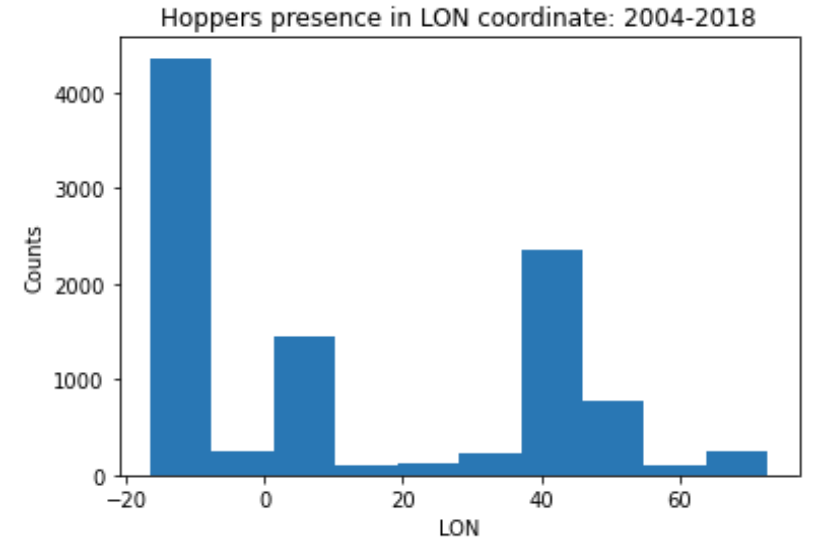
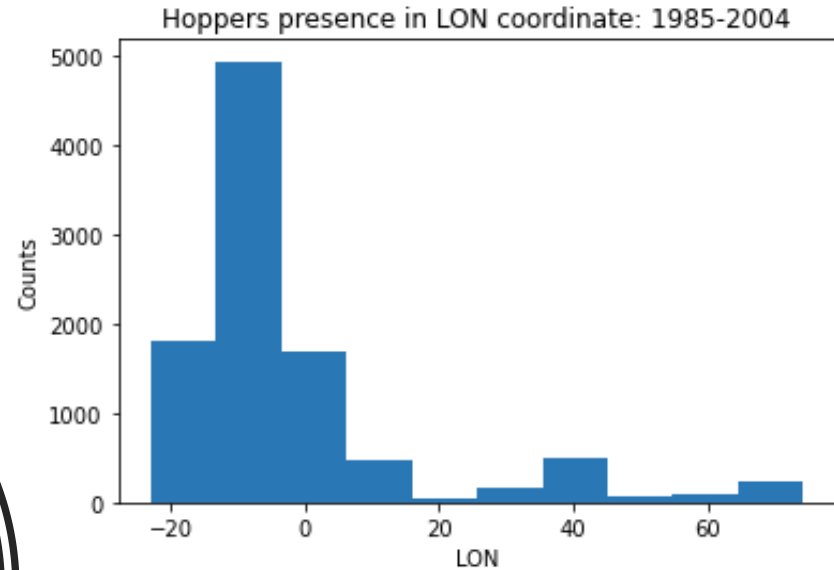
- Locusts damage assessment
- Locusts occurrence prediction



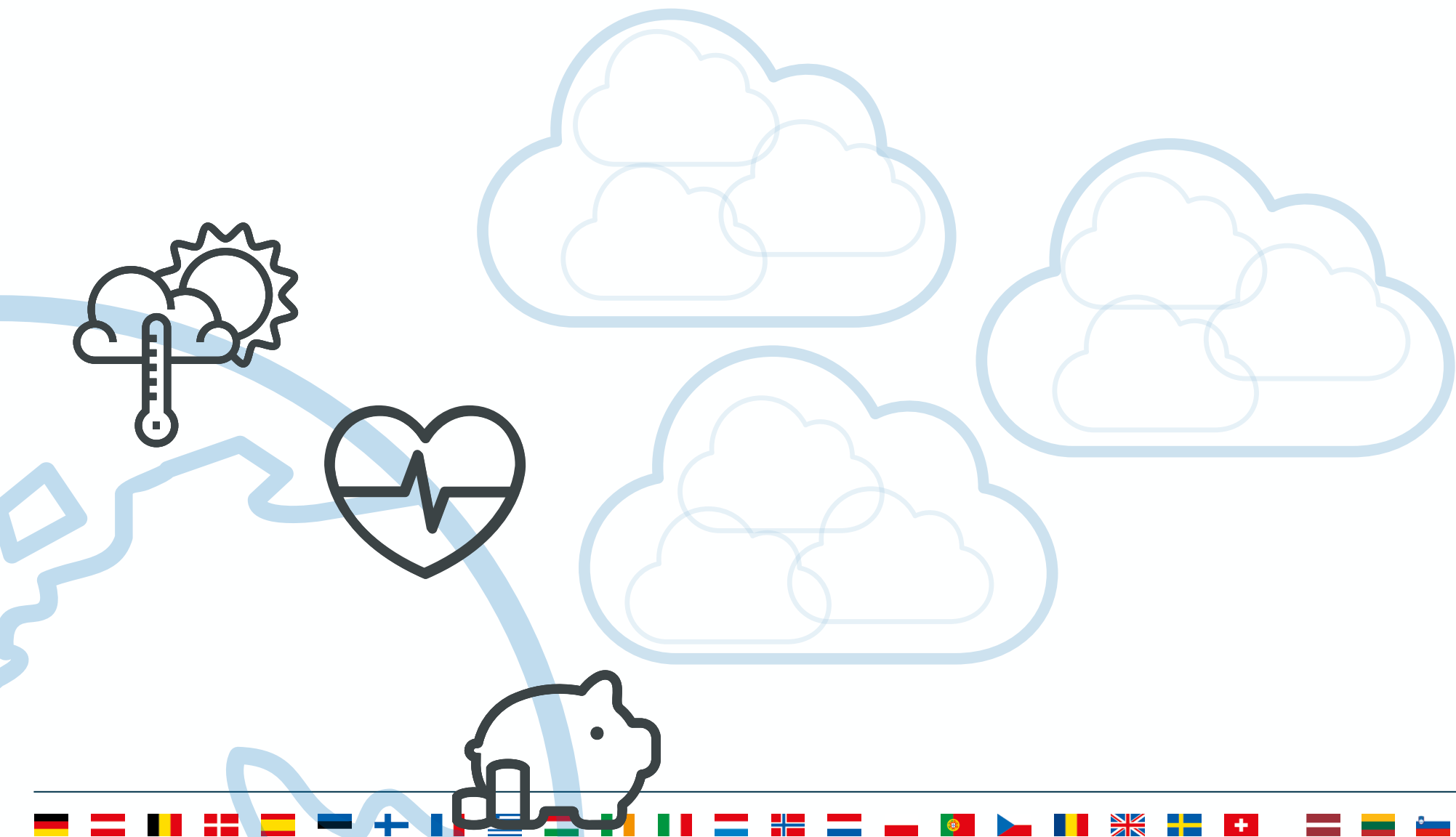
Locusts impact assessment using optical and SAR data fusion



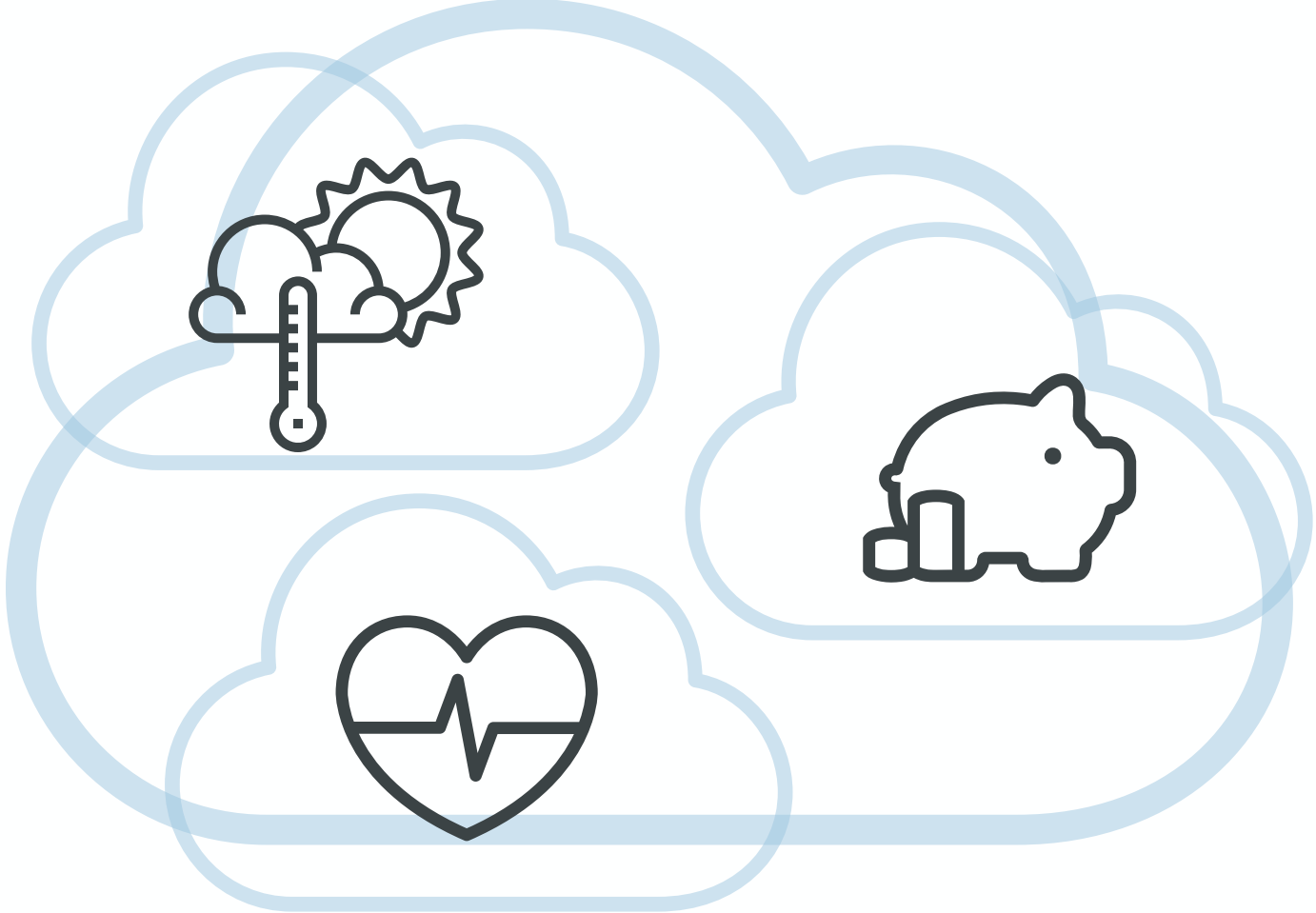
Locusts evolution over time



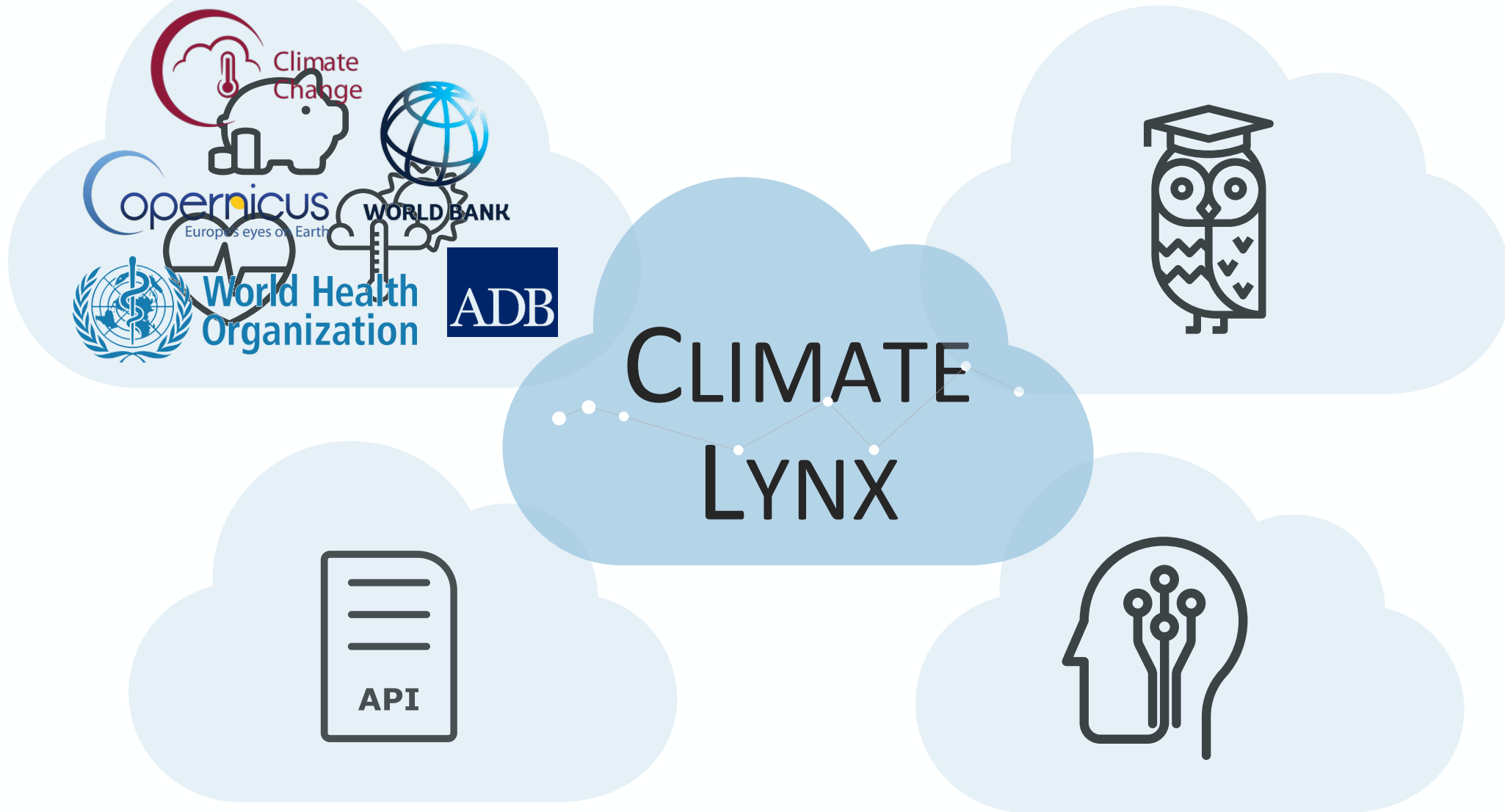
Climate risk – a multidimensional issue



Climate risk – a multidimensional issue



Climate risk – a multidimensional issue





Climate Lynx
Friday 27th
Poster #67280
Resilient Cities



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