AGIA ZONI II

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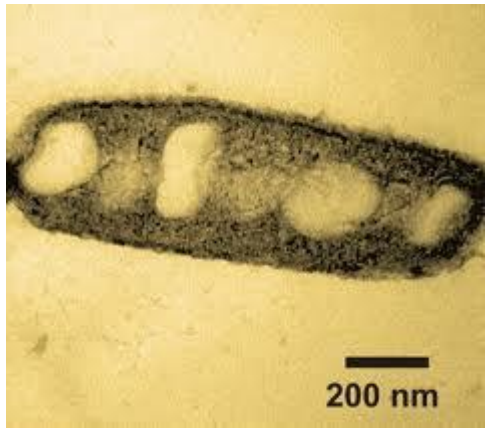
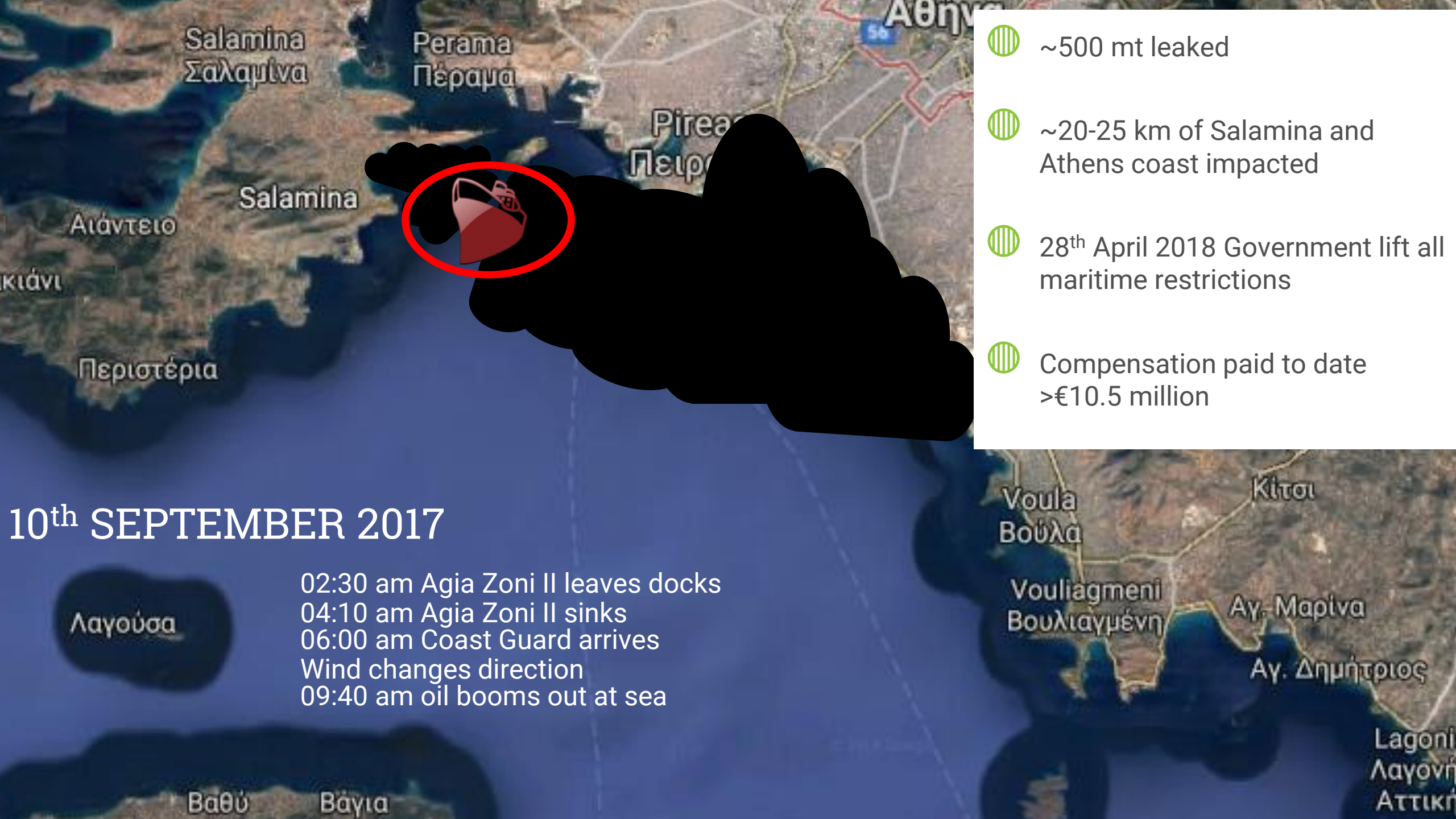
Intro

- Specific microbes can degrade a range of hydrocarbons.
- Wealth of literature on oil-spill ecology…but…
- Importance of understanding microbial response in all environments.
- Rare and important opportunity to study *in situ*.
- Improve and design post-oil-spill models.
- Provide feedback on clean-up response efficiency.





- ~500 mt leaked
- ~20-25 km of Salamina and Athens coast impacted
- 28th April 2018 Government lift all maritime restrictions
- Compensation paid to date >€10.5 million

10th SEPTEMBER 2017

02:30 am Agia Zoni II leaves docks
04:10 am Agia Zoni II sinks
06:00 am Coast Guard arrives
Wind changes direction
09:40 am oil booms out at sea

4 Days after the Spill

NO SMOKING
AGIA ZONI II

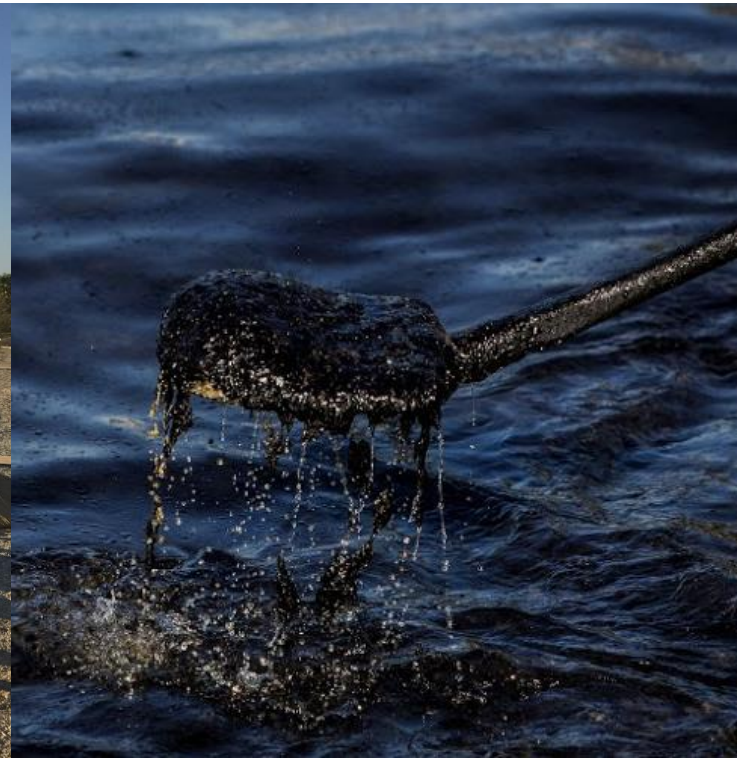
NO SMOKING
AGIA ZONI II

Response

High-Powered Washing

Response

Remove/Wash/Replace, or, Landfill



Aims & Objectives

1. Evaluate the clean-up efficiency and place into context of oil spill response.

2. Evaluate the effect of oil contamination on microbial ecology and how this can guide post-oil-spill monitoring guidelines.

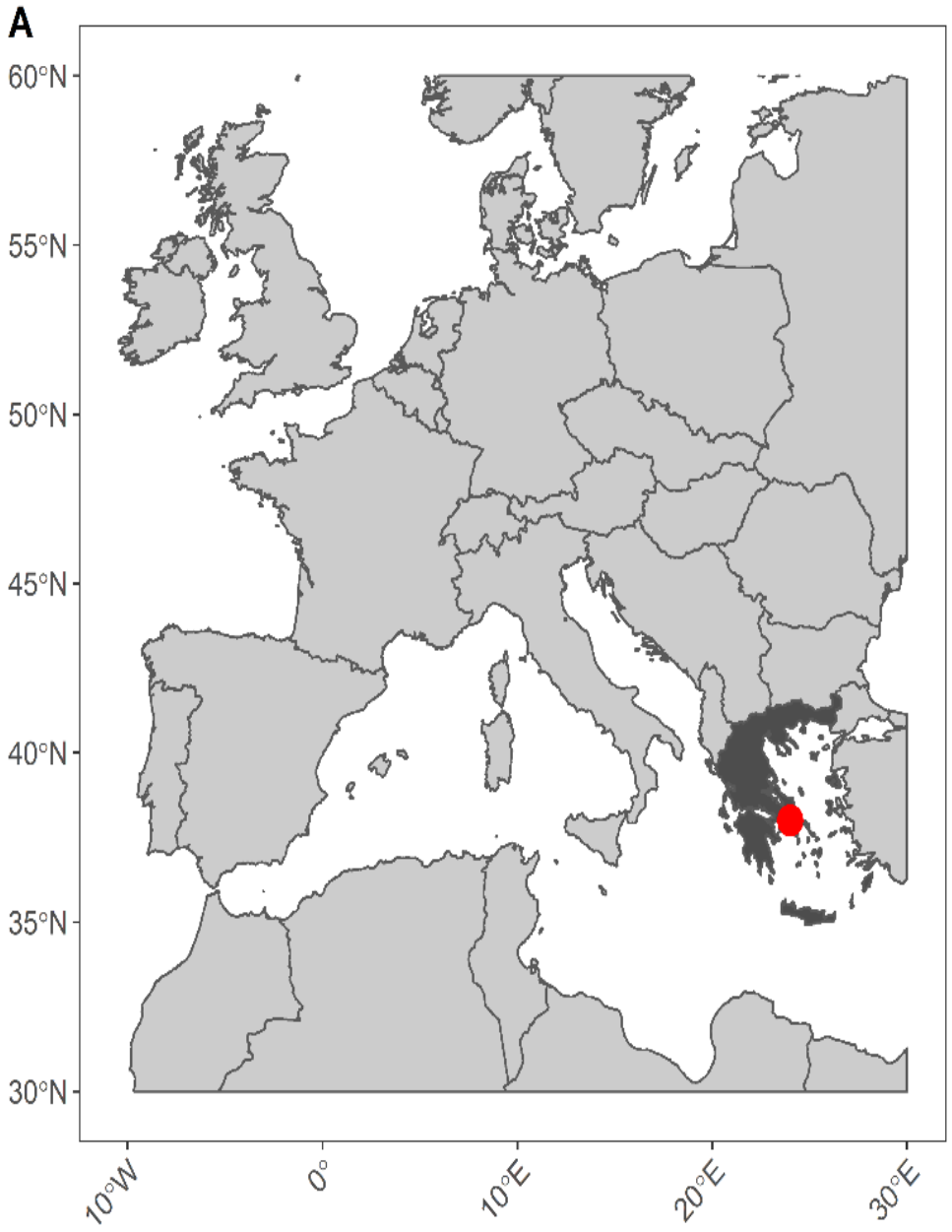
- Quantify the composition and concentration of hydrocarbons over time.

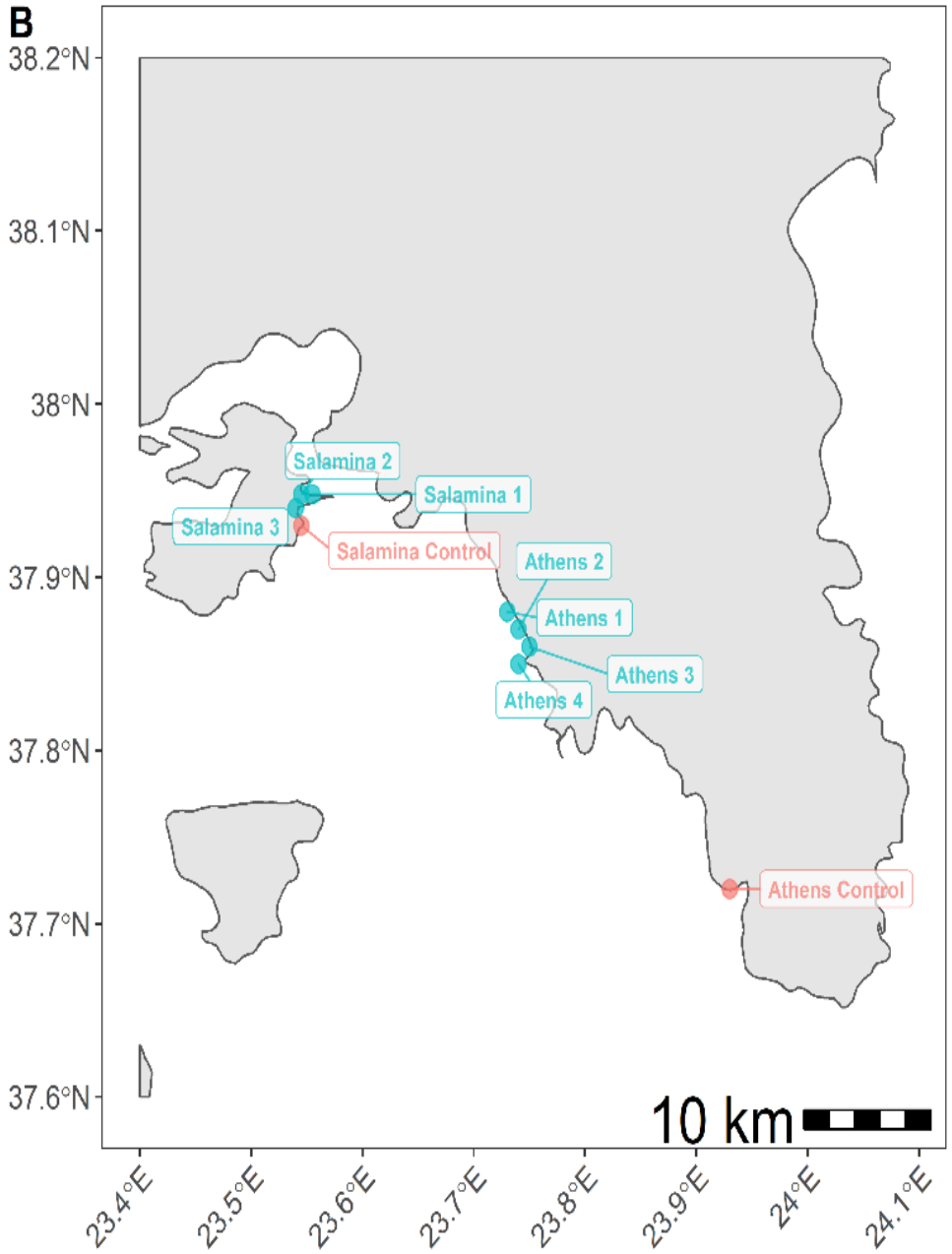
- Determine changes in microbial community abundance, diversity, and succession in relation to hydrocarbon composition and concentration.

SAMPLING

- Coastal sediment samples (surface gravels at ~1 cm depth)
- September 2017 to April 2018
- Contaminated and uncontaminated sites along the Athens and Salamina coasts

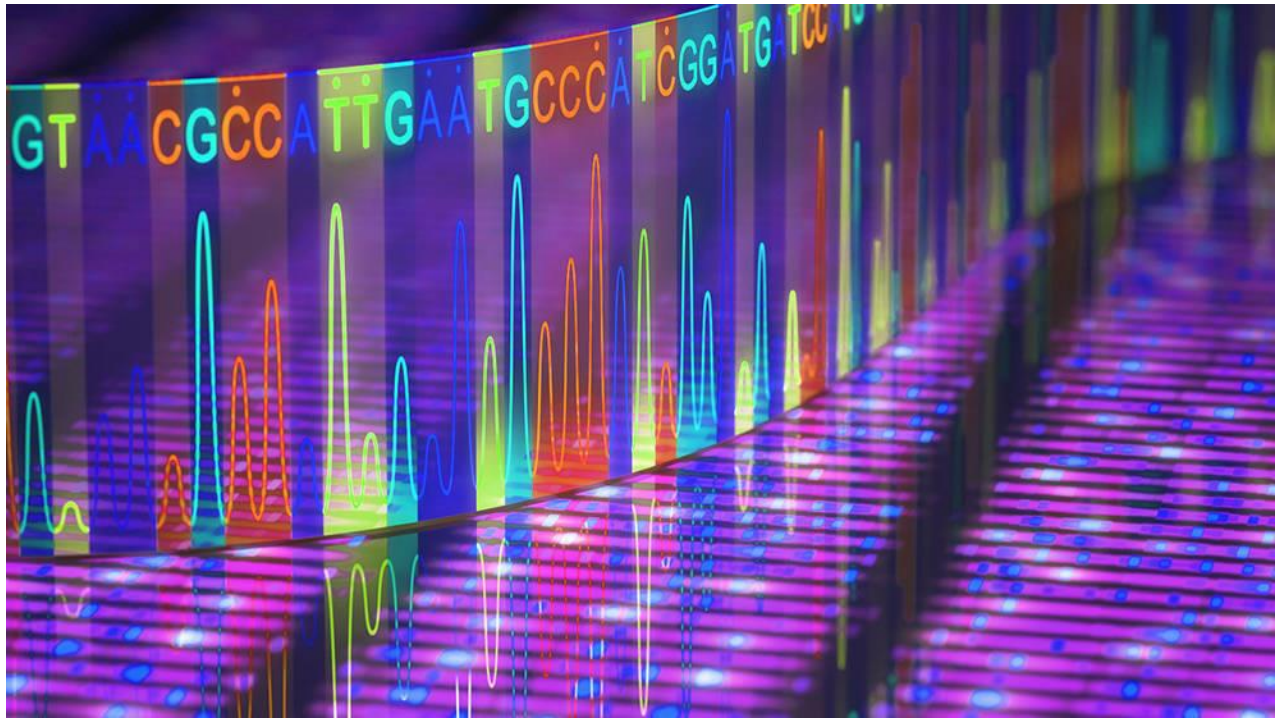
SAMPLING


A
60°N
55°N
50°N
45°N
40°N
35°N
30°N
10°W
0°
10°E
20°E
30°E


B
38.2°N
38.1°N
38°N
37.9°N
37.8°N
37.7°N
37.6°N
Salamina 2
Salamina 1
Salamina 3
Salamina Control
Athens 2
Athens 1
Athens 3
Athens 4
Athens Control
10 km
23.4°E
23.5°E
23.6°E
23.7°E
23.8°E
23.9°E
24°E
24.1°E

Methods

- Sample collection →
  - DNA Extraction → DNA Sequencing / qPCR
  - Hydrocarbon Extraction → GC-MS Analysis
- Microbes → Bacteria and Archaea



Sediment Hydrocarbon Concentrations

- If you wish to discuss results please contact:
  - Gareth Thomas (gthomab@essex.ac.uk) or
  - Dr Boyd McKew (boyd.mckew@essex.ac.uk).

Effects of the Oil-spill on Microbial Communities

- If you wish to discuss results please contact:
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Discussion

- If you wish to discuss results please contact:
  - Gareth Thomas (gthomab@essex.ac.uk) or
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