



AHEAD

CLIMATE COMMAND IN ACTION

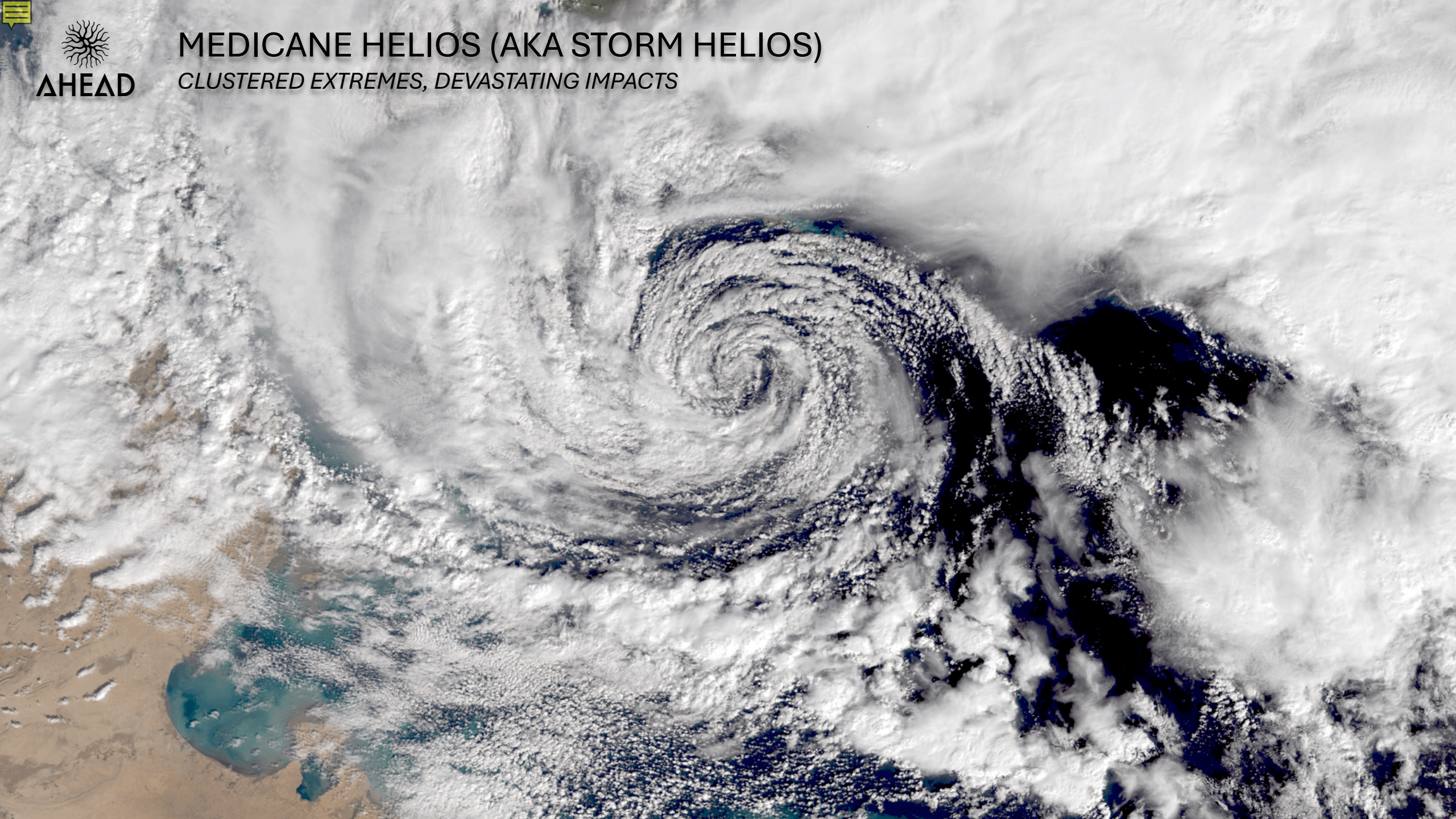
**PHASE 2 DRIVING FLOOD INTELLIGENCE AND
MULTILEVEL PREPAREDNESS**



AHEAD

MEDICANE HELIOS (AKA STORM HELIOS)

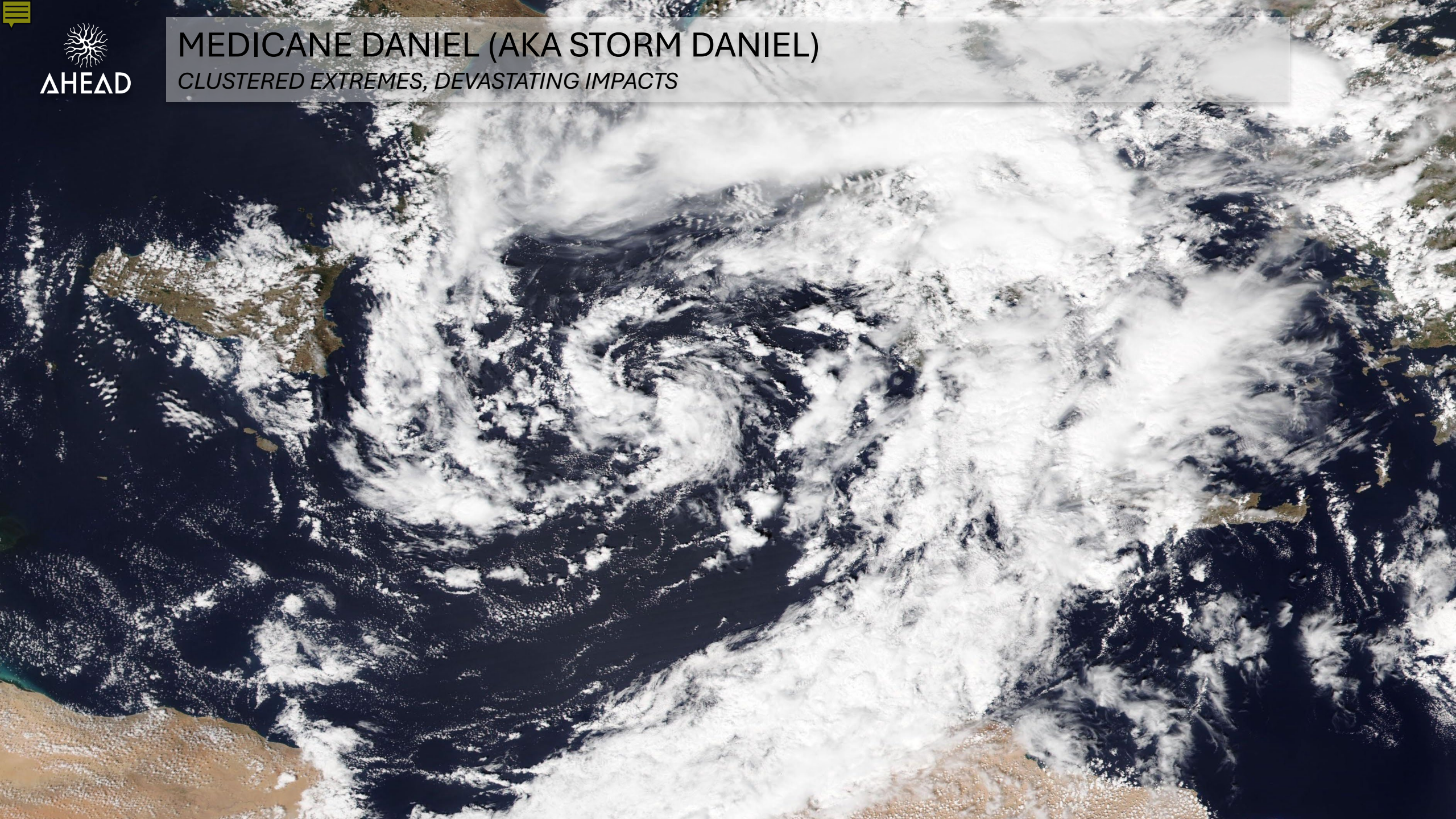
CLUSTERED EXTREMES, DEVASTATING IMPACTS





MEDICANE DANIEL (AKA STORM DANIEL)

CLUSTERED EXTREMES, DEVASTATING IMPACTS





AHEAD

MALTA HOLDS ONE OF THE OLDEST RECORDED CLIMATE EXTREMES

A MEDICANE IN 59 AD THAT SHIPWRECK ST. PAUL ON OUR SHORES

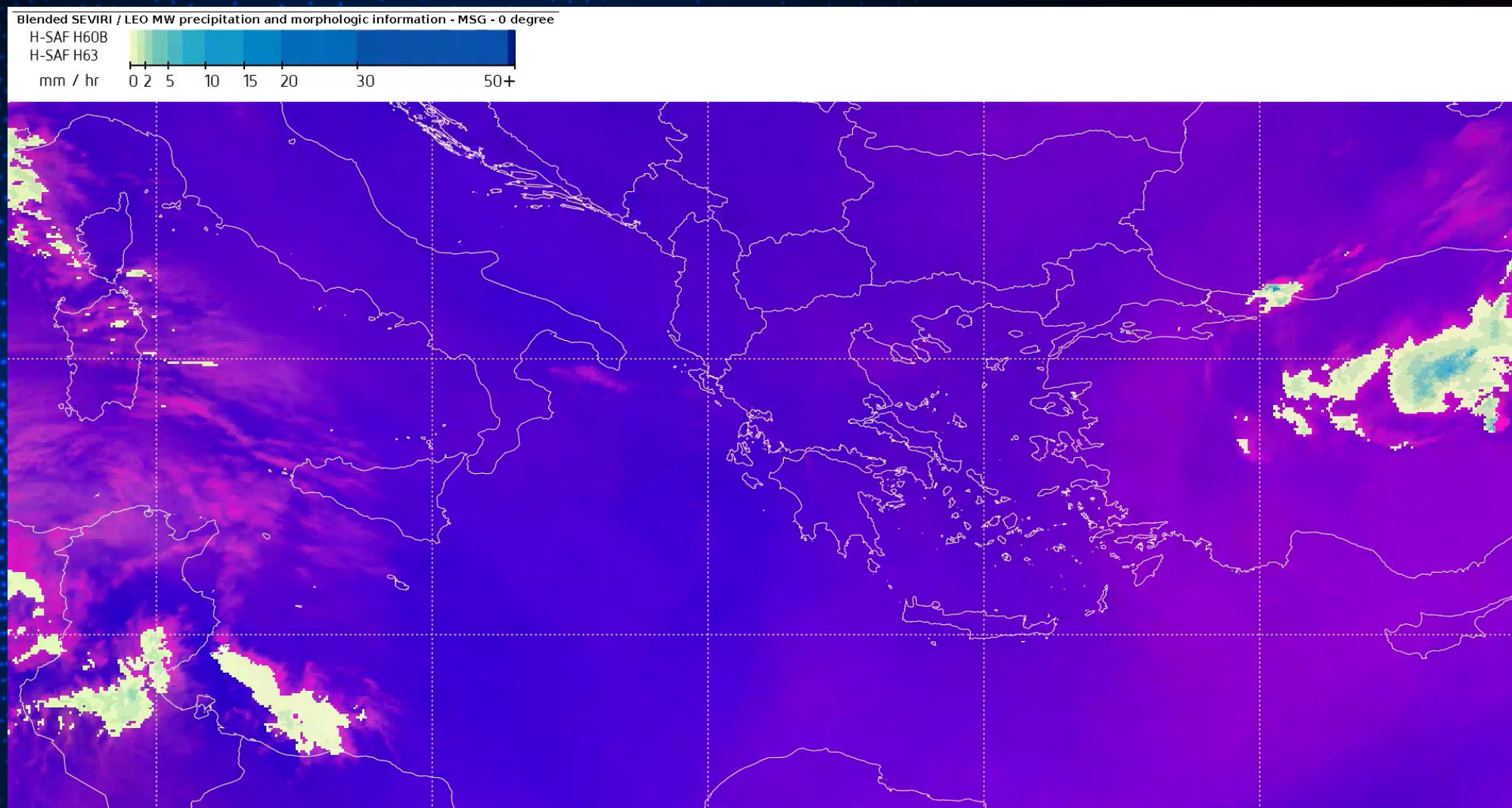


Acts of the Apostles (Acts 27)



MEDICANE DANIEL (AKA STORM DANIEL)

CLUSTERED EXTREMES, DEVASTATING IMPACTS





AHEAD

Our solution to climate extremes
Climate Command™



FABIAN BORG

*FOUNDER AND SCIENTIFIC DIRECTOR OF
AHEAD INSTITUTE AND FOUNDATION
FOR SOCIETAL ADVANCEMENT*

- Climate Intelligence Leader
- Creator of the Award-Winning PHASE engines
- Creator of Climate Command™ Doctrine
- Head of the EU Mission Adaptation to Climate Change for Malta
- Founder and Head of the Research Innovation Unit (RIU) of Malta



AHEAD



FROM ADAPTATION TO CLIMATE COMMAND.

AHEAD'S CLIMATE INTELLIGENCE LEADERSHIP IN EUROPE AND BEYOND



CLIMATE LEADERSHIP

CLIMATE ADAPTATION

CLIMATE RESILIENCE

CLIMATE INTELLIGENCE

CLIMATE COMMAND

2020 - PHASE 1 SCIENTIFIC AWARD WINNER

2018 - ESA REVIEW OF PHASE 1

2017 - PHASE 2 INCEPTION

2015 - PHASE 1 INCEPTION



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PHASE 2 © Copyright Intellectual Property,
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2024 - PHASE 2 REACHES TRL 5

2024 - DTMT01 NATIONWIDE DIGITAL TWIN

2020 - URBAN HEAT ISLAND APP

2023 - HEAT SEVERITY APP



2025 - PHASE 2 - AI CLIMATE FORESIGHT

2025 - DG CLIMA, DG CNCET, ESA, EEA

2025 - PHASE 2 SCIENTIFIC AWARD NOMINEE

AI / EO POWERED DIGITAL TWINS WITH BUILT-IN CLIMATE IMPACT SIMULATOR AND FORESIGHT

PHASE 2 – ENGINEERED FOR MULTILEVEL CLIMATE COMMAND

EXECUTING CLIMATE INTELLIGENCE ACROSS FLOODS, HEATWAVES, AND COASTAL THREATS IN REAL TIME



PHASE 2 WORKS FROM THE FRONTLINES UP — MULTILEVEL GOVERNANCE LINKING MUNICIPAL ACTION UP TO EU27 AND BEYOND

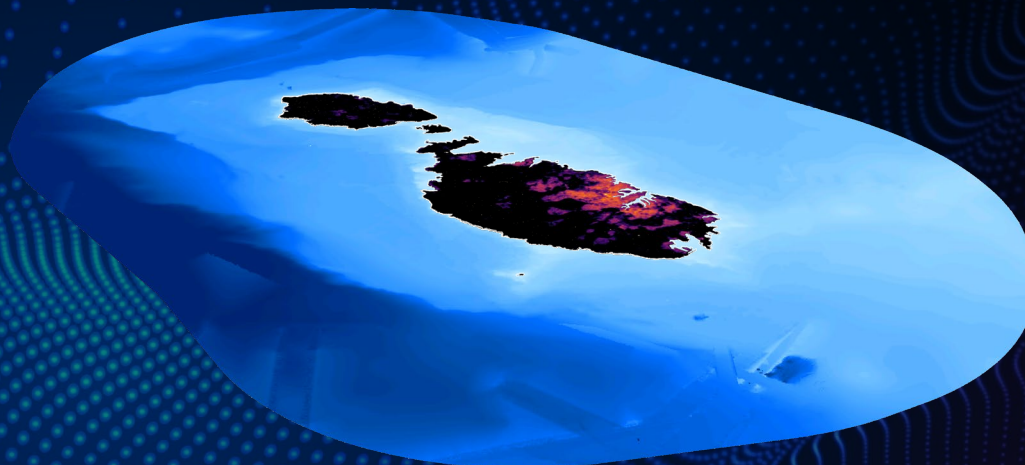


PHASE 2: THE DIGITAL TWIN OF MALTA (DTMT)

SIMULATING CLIMATE RISK WHERE GOVERNANCE MEETS REALITY



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EO/In-Situ Data Layers

Remote-Sensed 3D Buildings Layer

Remote-Sensed Soil Layer – Sentinel 2 LULC

Remote-Sensed Calibrated Topography 15cm res

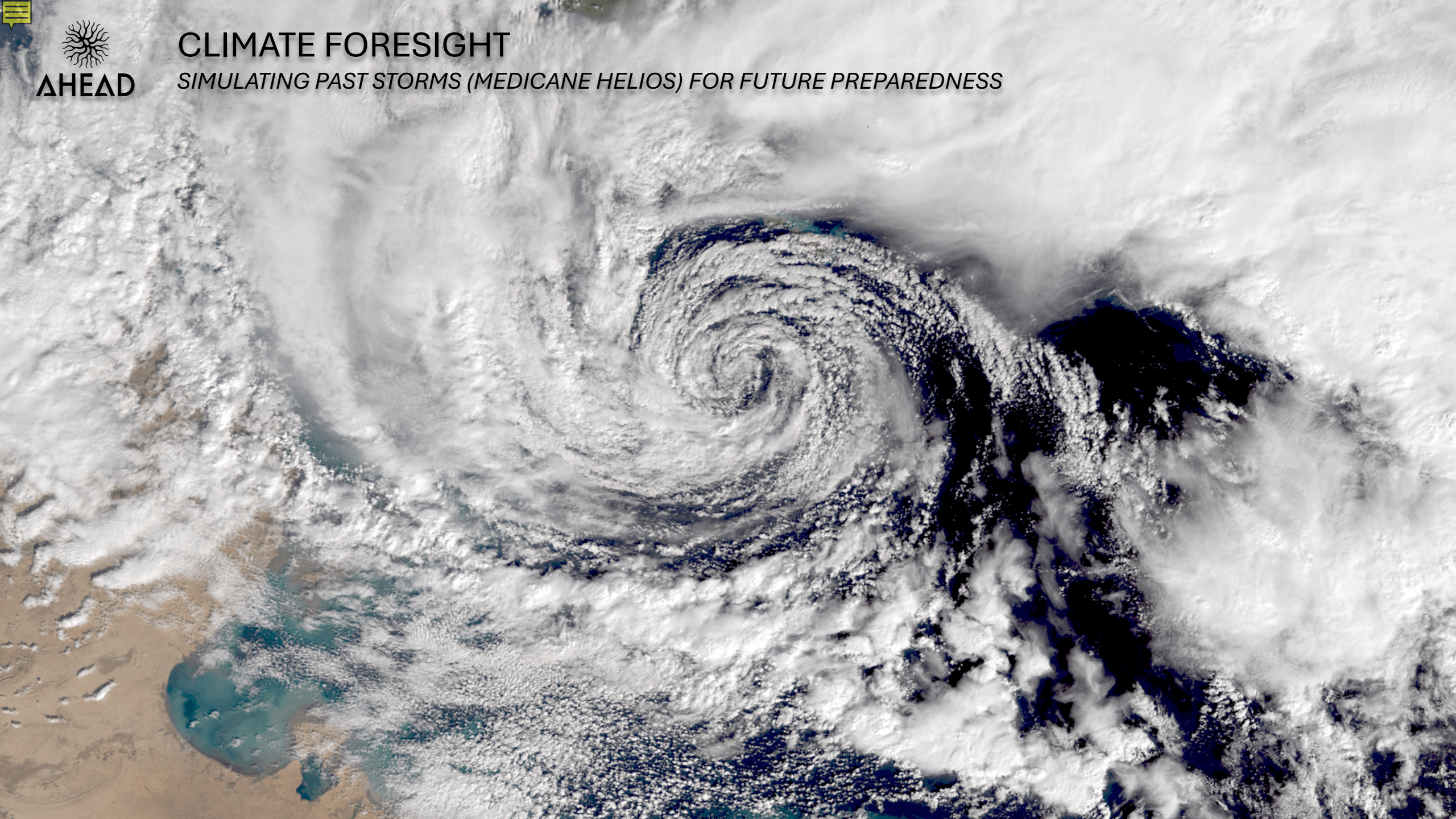
Copernicus Marine Data Store
Bathymetry of territorial waters 30m res



ΔHEAD

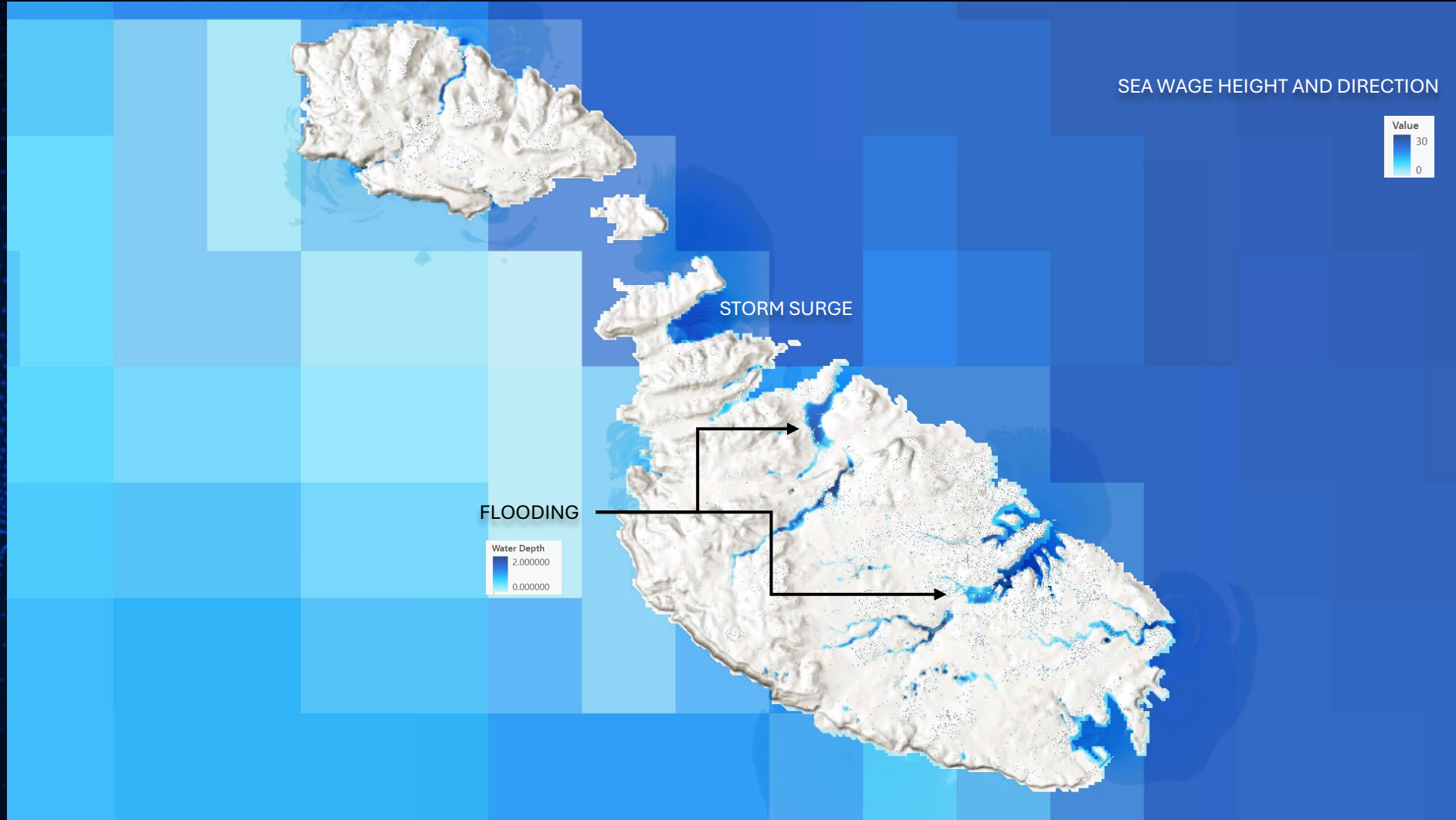
CLIMATE FORESIGHT

SIMULATING PAST STORMS (MEDICANE HELIOS) FOR FUTURE PREPAREDNESS



PHASE 2 IN ACTION

METEOHYDROLOGICAL HIGH RESOLUTION SIMULATION OF MEDICANE HELIOS



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Medicane Helios - Simulation is at 15-minute resolution (interval)



AT 00:00 OF THE STORM



AT 23:00 OF THE STORM

EXTREME EVENTS LIKE MEDICANE HELIOS TRANSCEND NATIONAL BORDERS. OUR FORESIGHT ENGINE IS CROSS-BORDER BY DESIGN
ANTICIPATING MEDITERRANEAN THREATS THAT RIPPLE ACROSS EUROPE.



AHEAD

MEDICANE HELIOS (STORM HELIOS), MALTA, 09 FEB 2023 00:00

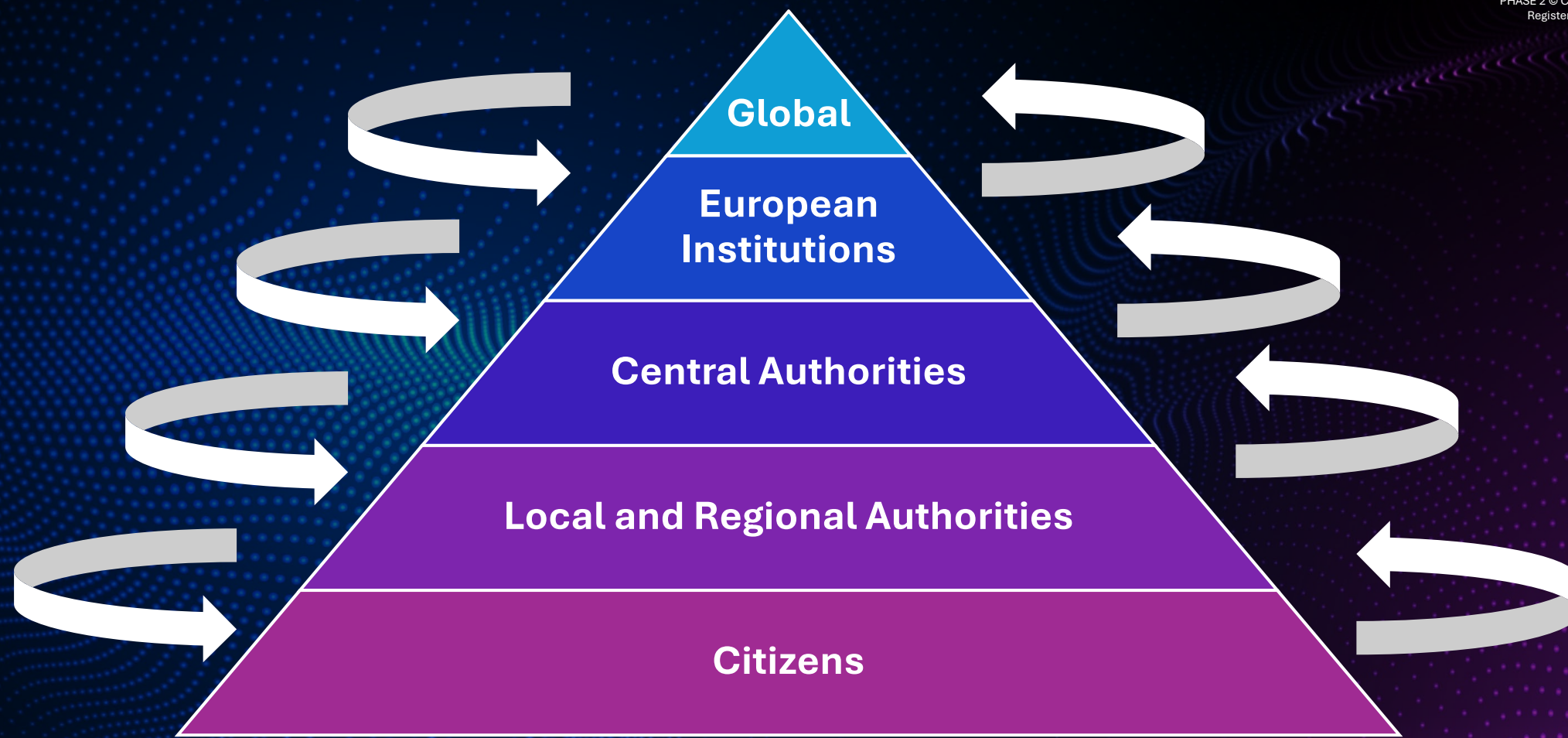
- **Plan smarter** – Drainage, basins & flood defences.
- **Act faster** – Real-time sandbagging, barriers & evacuations.
- **Simulate extremes** – Rain + runoff + surge compound risks.
- **Guide planning** – Zoning & climate-proof building codes.
- **Protect people** – Street-level flash-flood mapping (15-min scale).
- **Support policy** – Feeds EU audits & adaptation plans.
- **Trust the data** – Copernicus + in-situ, legally defensible.
- **Evolve resilience** – Continuous monitoring & calibration.



PHASE 2 is not a dashboard — it's an operational command tool.



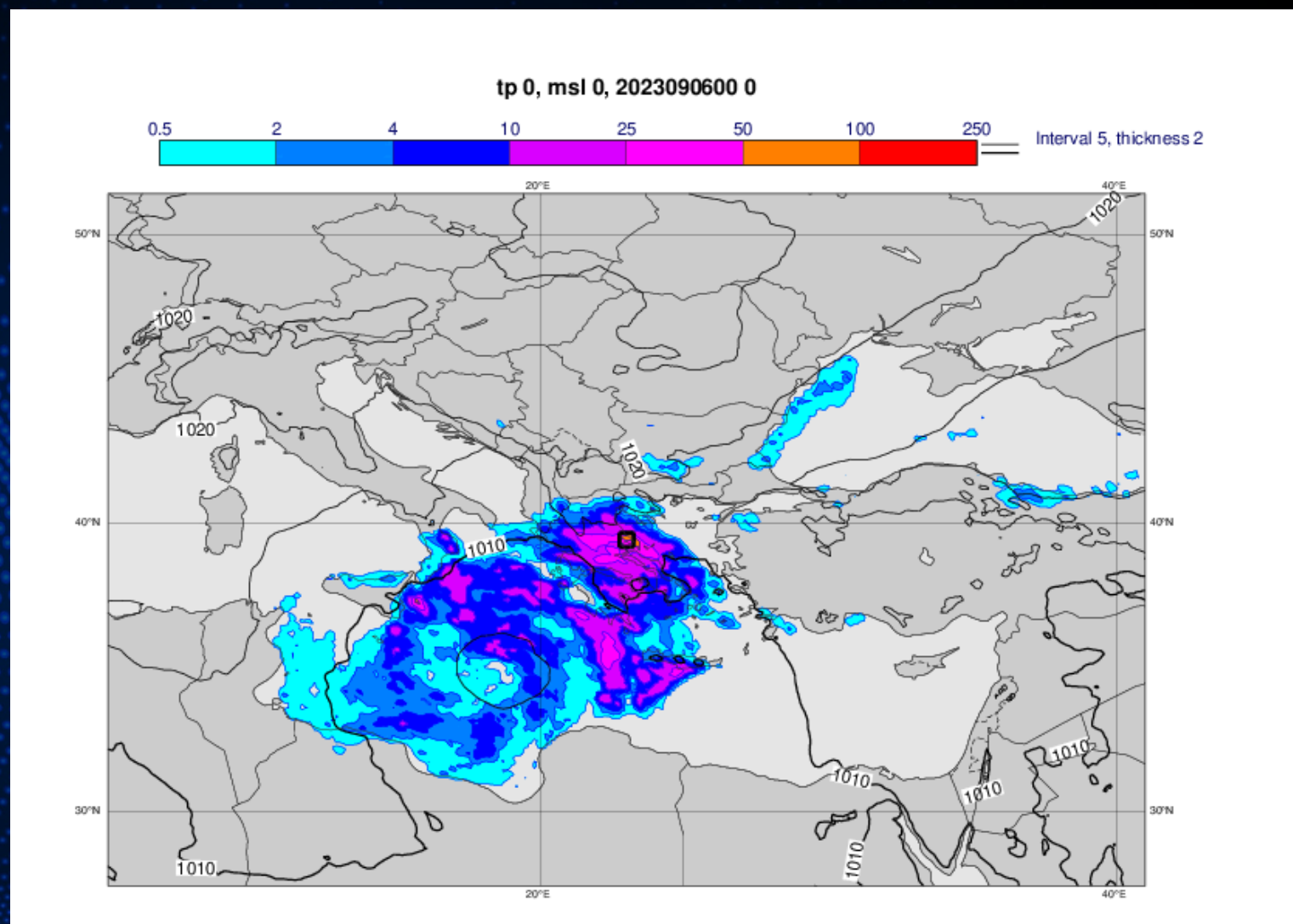
FLOOD FORESIGHT FLOWS BOTH WAYS: BOTTOM-UP INTELLIGENCE, TOP-DOWN COORDINATION





CROSS-BORDER DIPLOMACY

FLOOD EXTREMES DON'T RESPECT BORDERS



Plot source ECWMF <https://www.ecmwf.int/en/newsletter/179/earth-system-science/medicane-daniel-extraordinary-cyclone-devastating-impacts>



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Thank You

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<https://ahead.mt>