



MESPAC

THE POWER TO UNLOCK
THE DATA YOU NEED

SPACE-BASED METOCEAN INTELLIGENCE



Business & Management



Scientific Excellence



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CEO
Aerospace Eng., MBA



Success story:
ISWEC



GIUSEPPE GIORGI

CTO
Mech Eng., Post-Doc



GIULIA CERVELLI

Head of Ocean Science
Civil Eng., PhD



EDOARDO PASTA

Head of Data Science & AI
Mech Eng., PhD



Our Advisors:



John Dmohowski
Strategy & Maritime



John Straw
Serial Entrepreneur



Giovanni Aliboni
C-Level executive

Marco Torello
Cloud & Data Security



business
incubation
centre





Research Center composition



- Department of Mechanical and Aerospace Engineering
- Department of Energy
- Department of Management and Production Engineering
- Department of Mathematical Sciences
- Department of Structural, Geotechnical and Building Engineering

Main expertises of MORE Laboratory

Resources assessment

Mooring design

Design and experimental test

Control strategies

Wind and wave resource analysis

from the Politecnico di Torino department



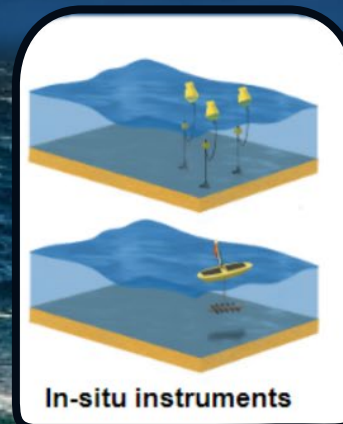
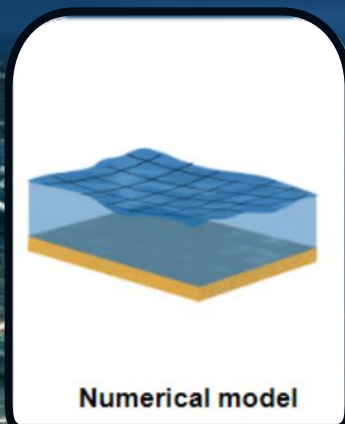


Offshore In-Situ Analysis From Space

MESPAC integrates existing reliable **SatEO data sources with proprietary AI algorithms** into an innovative data driven approach to serve the **development of offshore wind and ocean energy applications.**

MESPAC provides a suite of services that aims to **empower the offshore wind and ocean energy industries** by supplying accurate, continuous and spatially-refined wind, wave and other environmental and metocean information for project development, financing and operation.



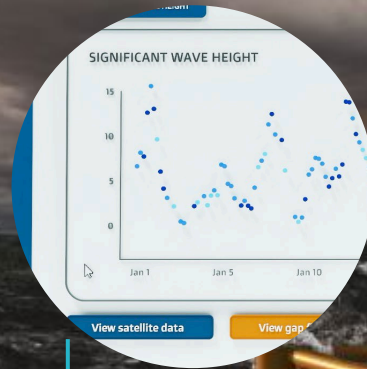


Features	Satellite Observations	Numerical model	In-situ instruments
Accuracy	5 green blocks	2 orange, 3 white blocks	5 green blocks
Reliability	4 green, 1 white block	5 green blocks	2 orange, 3 white blocks
Time continuity	4 green, 1 white block	5 green blocks	2 orange, 3 white blocks
High informative content	2 orange, 3 white blocks	4 green, 1 white block	5 green blocks
Timeliness	5 green blocks	3 yellow, 2 white blocks	1 red, 4 white blocks
High temporal resolution	1 red, 4 white blocks	5 green blocks	4 green, 1 white block
Easiness of acquisition	4 green, 1 white block	5 green blocks	2 orange, 3 white blocks
Cheap	5 green blocks	4 green, 1 white block	1 red, 4 white blocks
Large geographic coverage	5 green blocks	5 green blocks	1 red, 4 white blocks



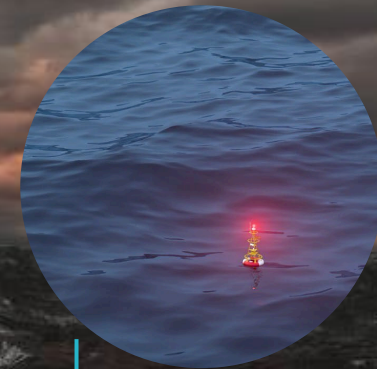
INEFFICIENCY

Too much time



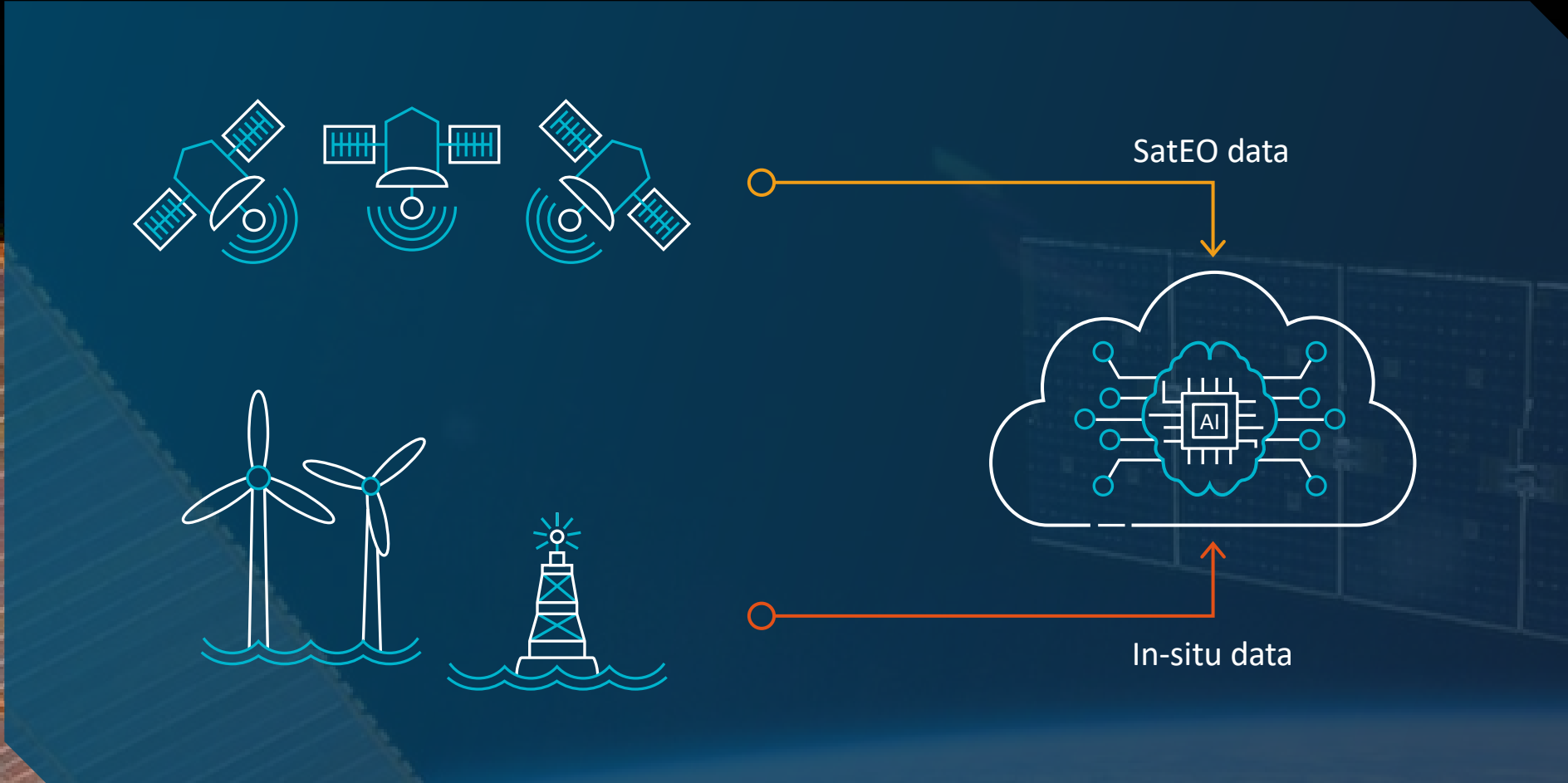
INCONSISTENCY

Too many gaps



INSUFFICIENCY

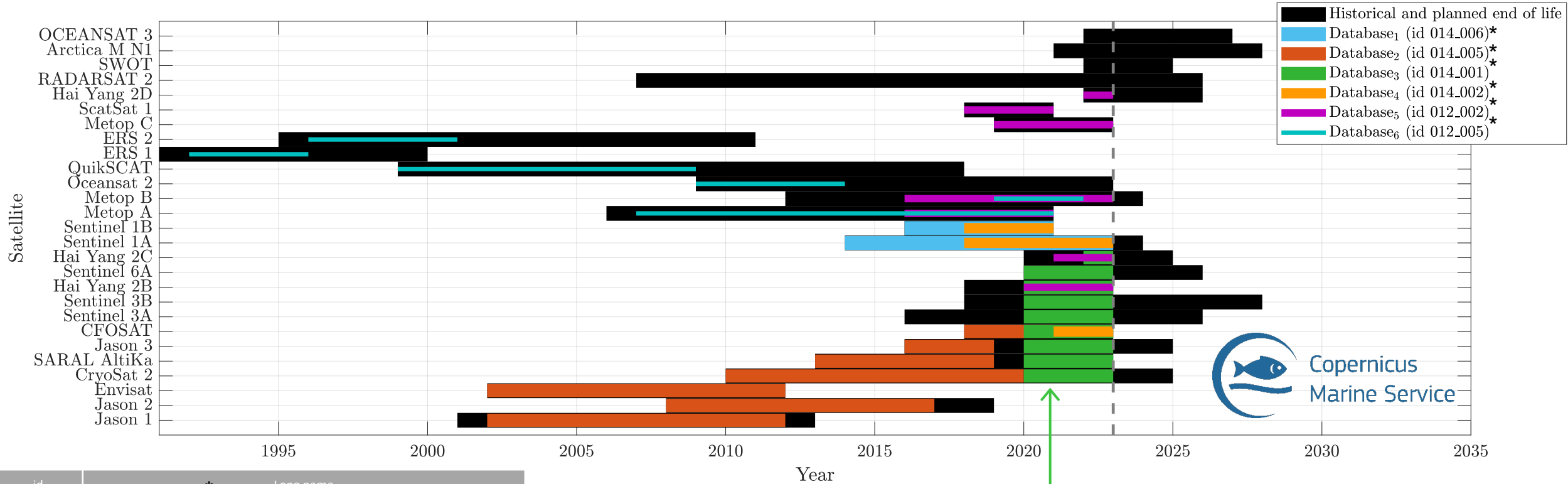
Too few assets





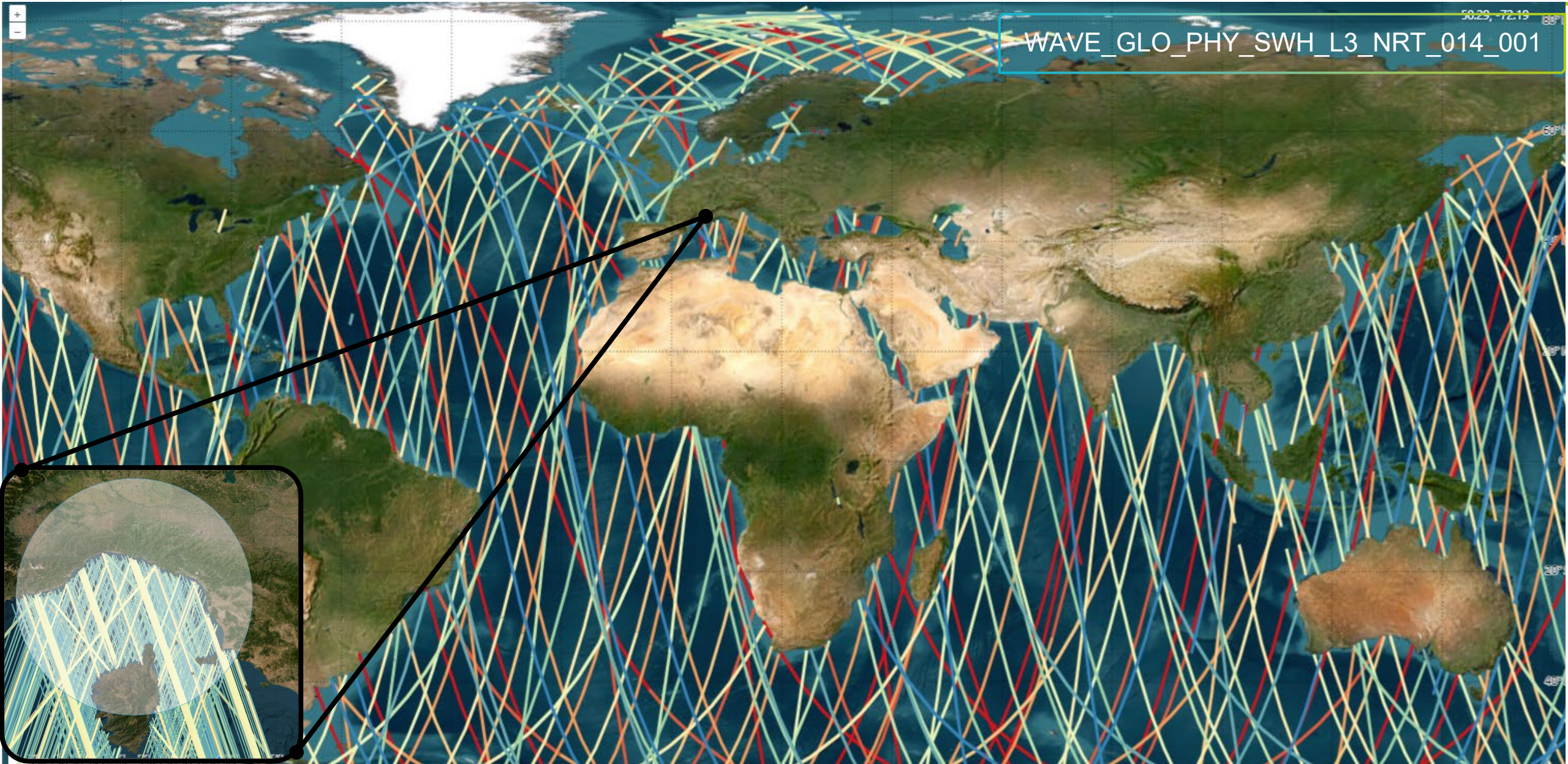
Temporal coverage of copernicus satellite dataset

27 Historical satellite missions
 6 satellite dataset product
 > 18 future satellite missions approved



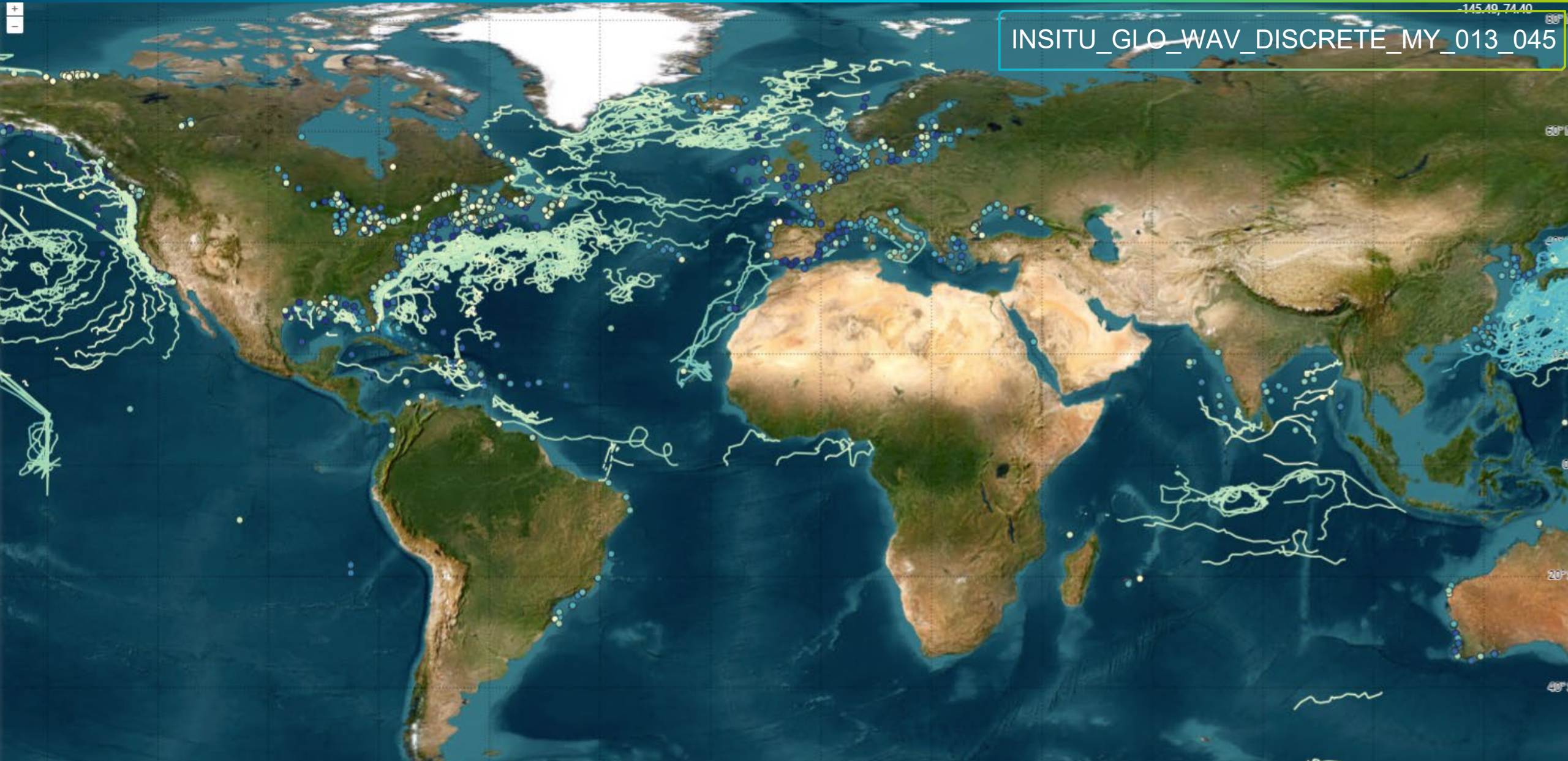
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014_005	WAVE_GLO_PHY_SWH_L3_MY_014_005
014_002	WAVE_GLO_WAV_L3_SPC_NRT_OBSERVATIONS_014_002
014_006	WAVE_GLO_PHY_SPC_L3_MY_014_006
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012_005	WIND_GLO_WIND_L3_REP_OBSERVATIONS_012_005

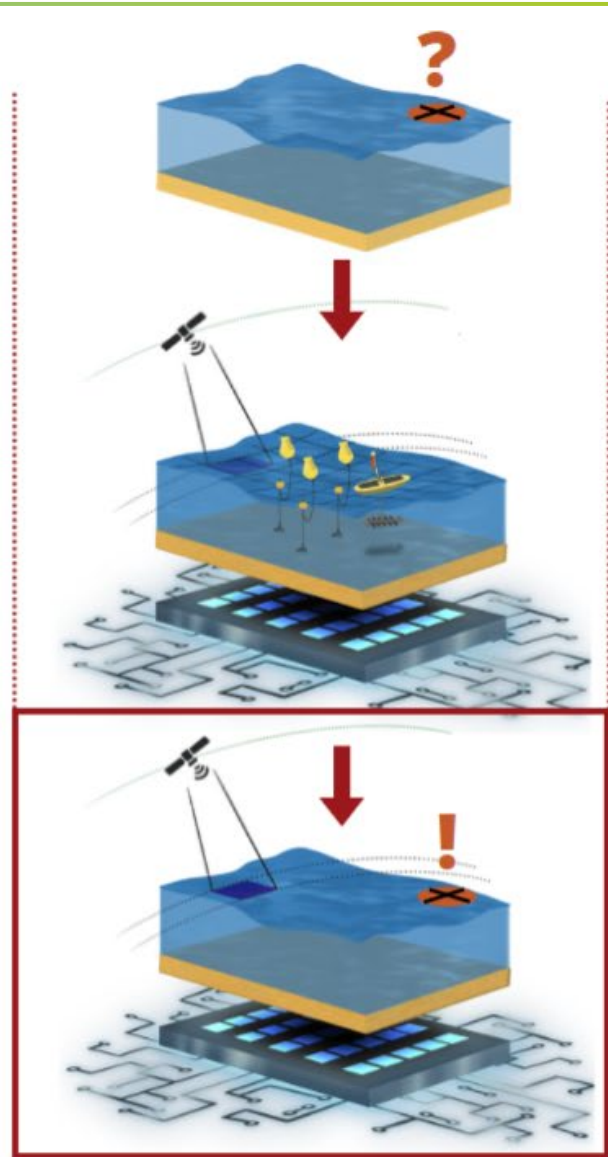
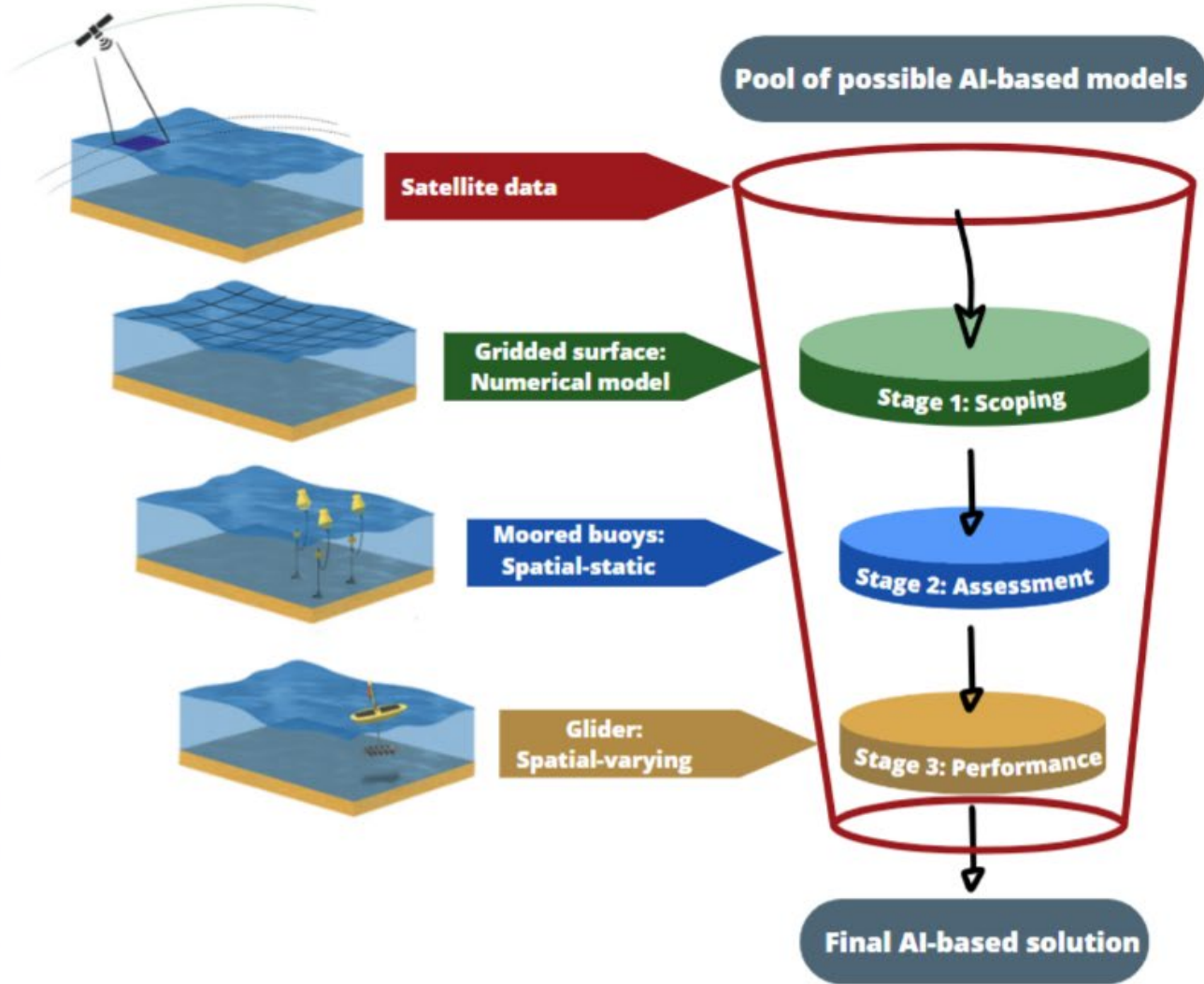
WAVE_GLO_PHY_SWH_L3_NRT_014_001 is currently used in MESPAC AI algorithms





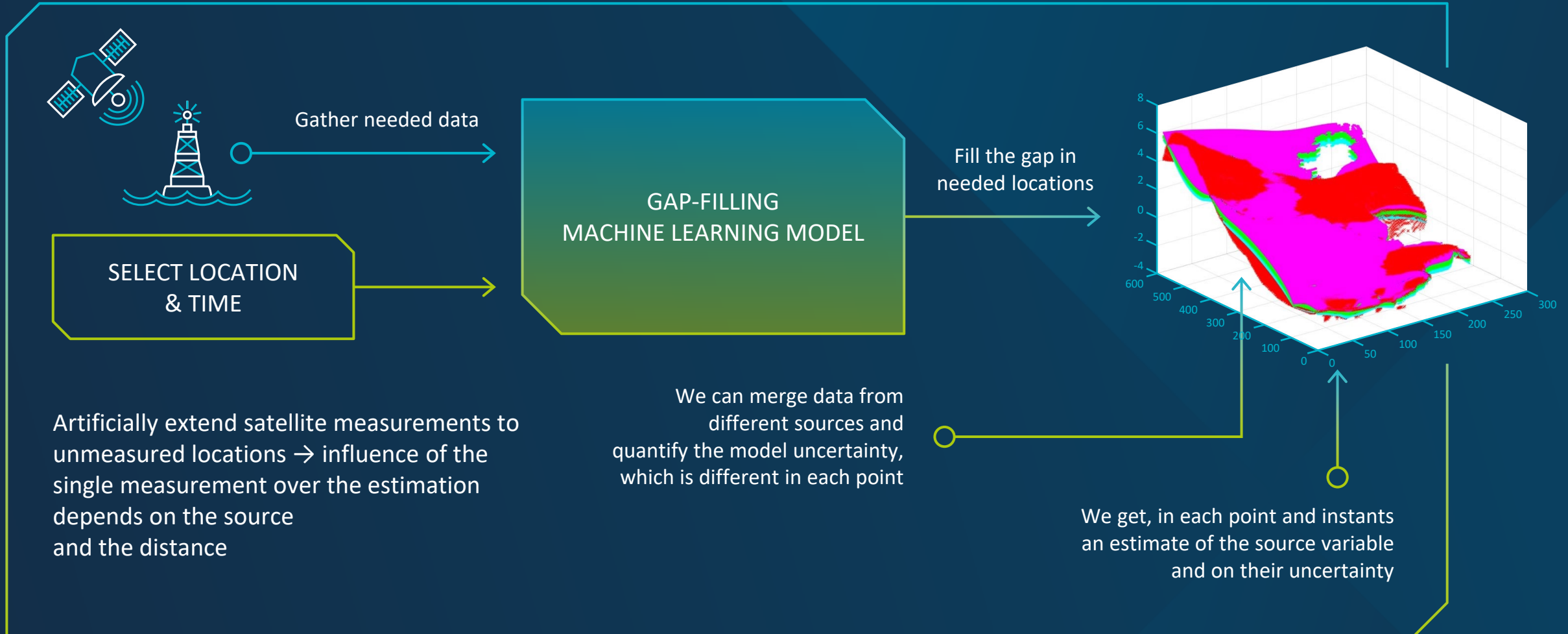
INSITU_GLO_WAV_DISCRETE_MY_013_045





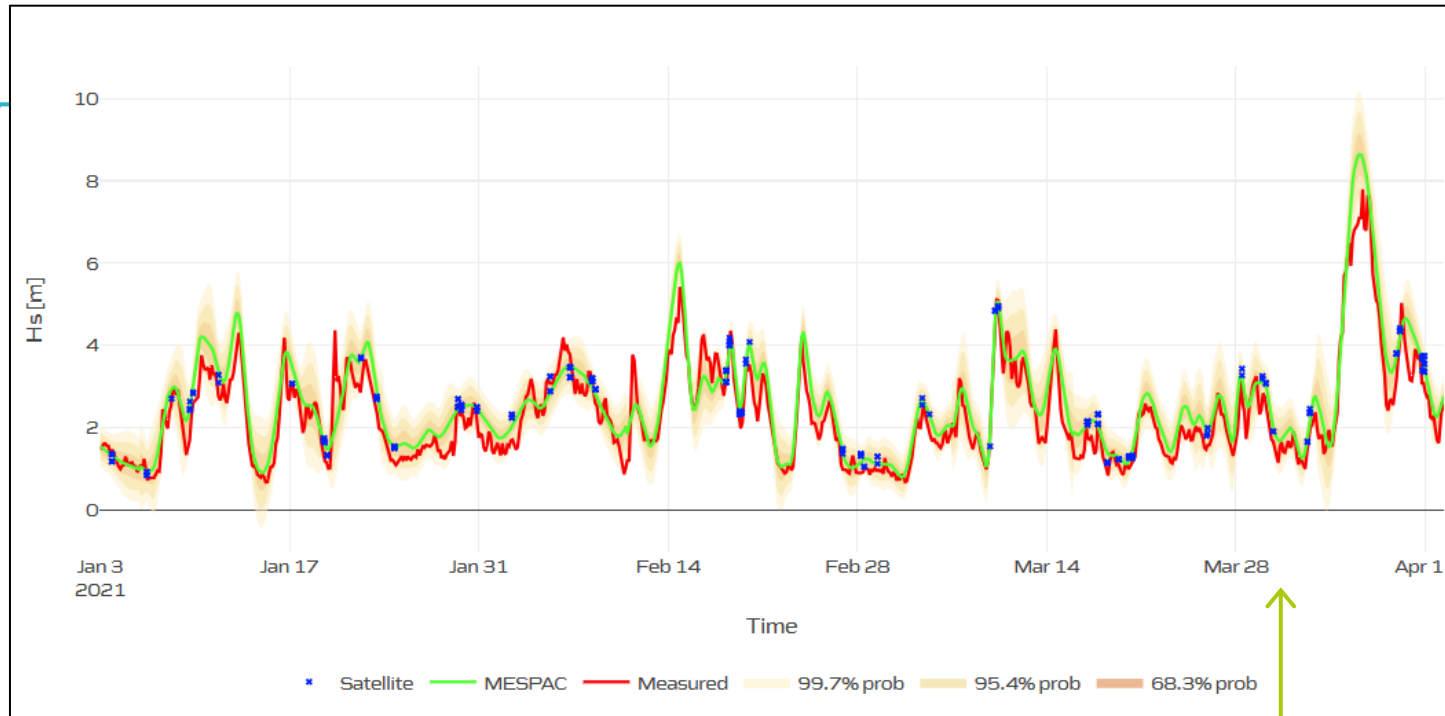


Algorithms development and testing





Time series comparison



A comparison between real values and estimated values in 5 different locations (whenever at least one satellite crossed the area) has been made

Most recent implementations further reduce the error, by improving the learning algorithm and including additional data from satellites and in-situ buoys

With this model version, we reached an average NRMSE value of 8% in those locations



MESPAC

THANK YOU

OFFSHORE IN-SITU ANALYSIS FROM SPACE
UNLOCKING THE DATA YOU NEED

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