STREAM Project Launch and Stakeholder meeting, 15th February 2023

The data sharing platform as a tool for the Baltic Sea monitoring - *SatBałtyk System*

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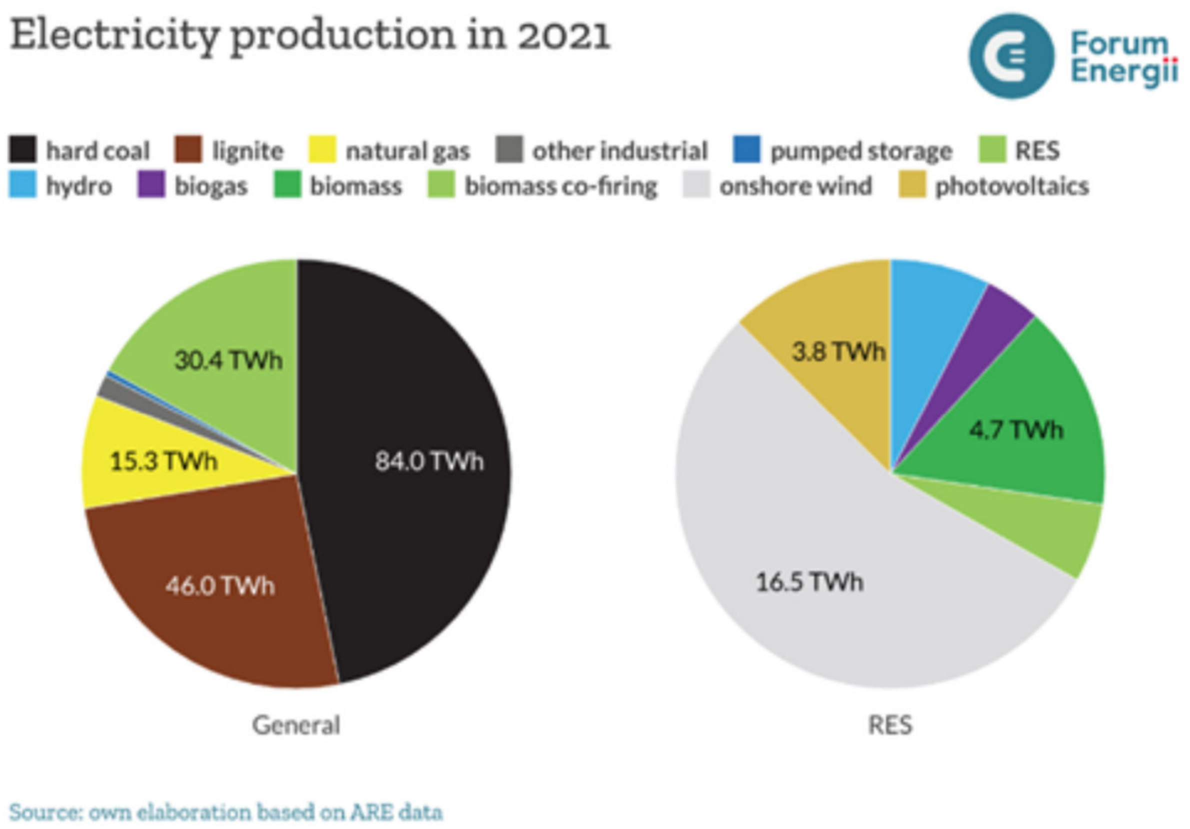
Scientific Consortium SatBałtyk:

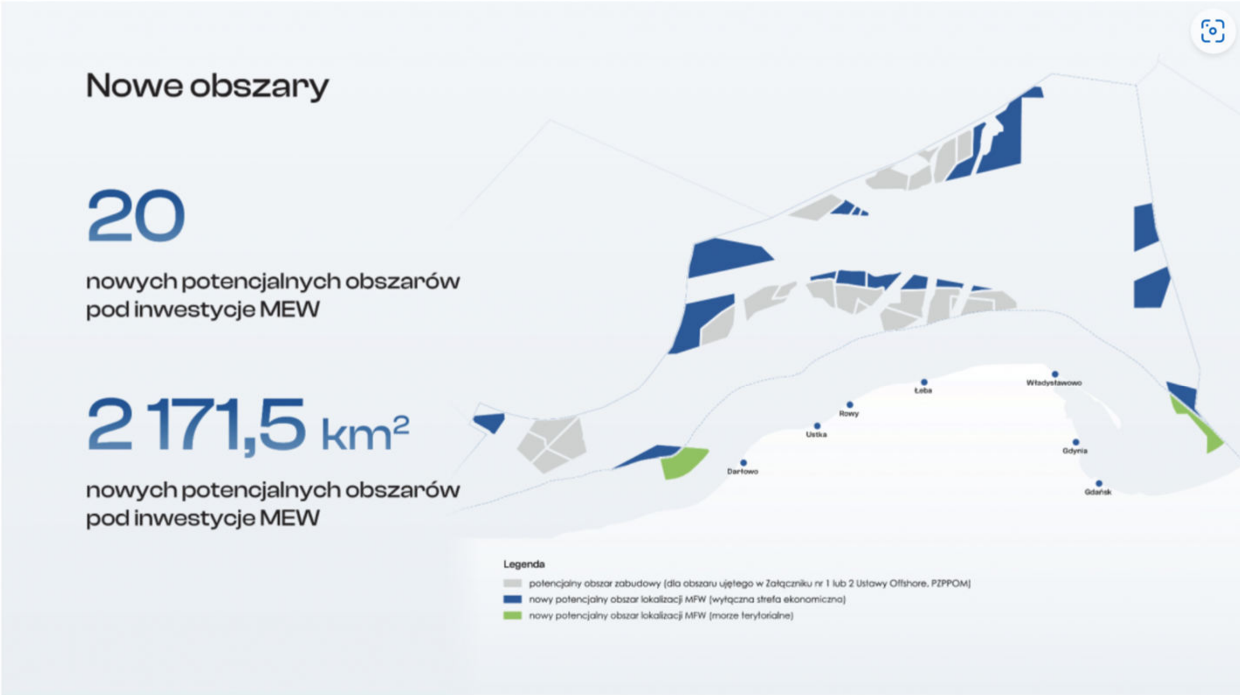
1. Institute of Oceanology Polish Academy of Sciences
2. Institute of Oceanography at the University of Gdańsk
3. Institute of Physics at the Pomeranian Academy in Słupsk
4. Institute of Marine Sciences at the University of Szczecin

European Funds Digital Poland
Republic of Poland
eCUDO.pl
European Union European Regional Development Fund


information about the Baltic Sea environment is needed in Poland more than ever before
mostly for purpose of energy production



ENERGY SECURITY *in the context of Russian war against Ukraine is the issue no 1. This leads to next key issues – the need to strengthen* ***PERMITTING****,* ***SUPPLY CHAINS****.*



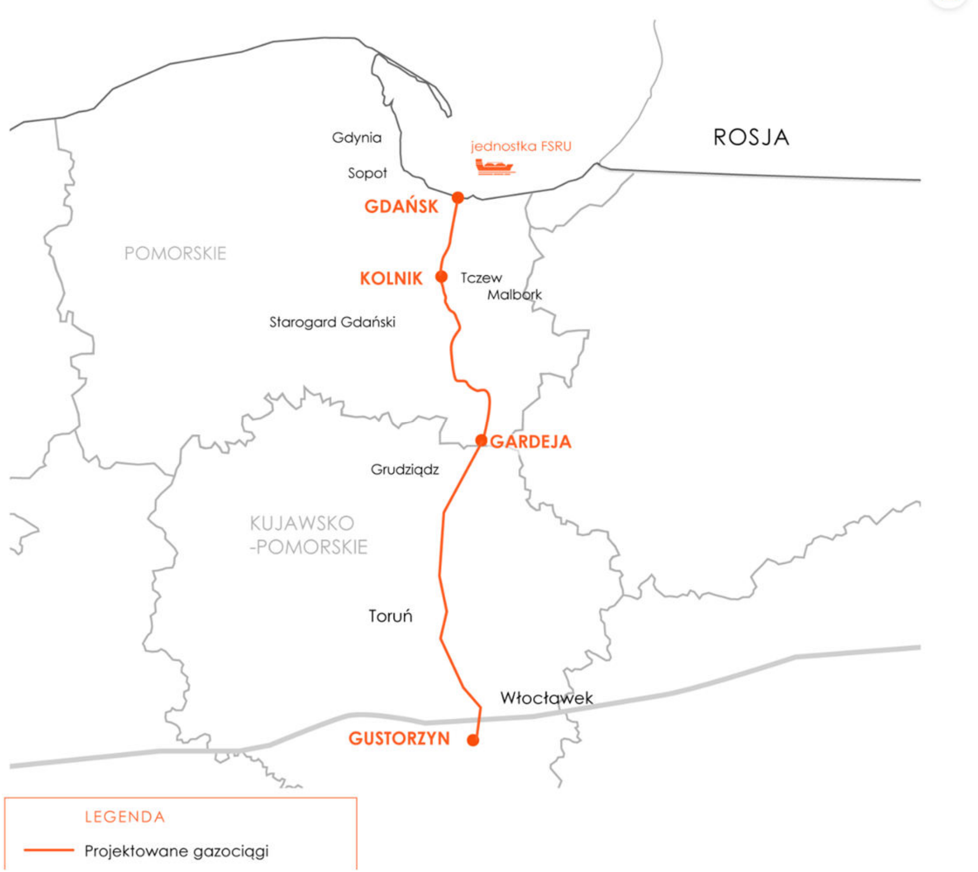
Źródło: PSEW

PSEW: potencjał Polski na Bałtyku to 33 GW

All identified areas in the Polish part of the Baltic Sea for wind farms:
33 GW of capacity, capable of producing 130 TWh (Terawatt-hour) **of electricity annually**
according to the Polish Wind Energy Association (~90% of Poland energy consumption)
5,9 GW (2030) i 11 GW (2040)

Floating Storage Regasification Unit (2026)

an infrastructure that will enable the off-take of additional volumes of liquefied natural gas delivered by sea



past & present

- system SatBałtyk provides about 70 different characteristics of BS ecosystem (maps, figures and graphs, since 2015)

- one of **the very few sources** of information about the marine environment of Baltic Sea

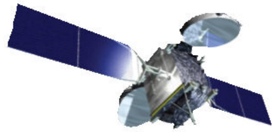
- in the past - information used mostly by scientists, **now – blue economy**

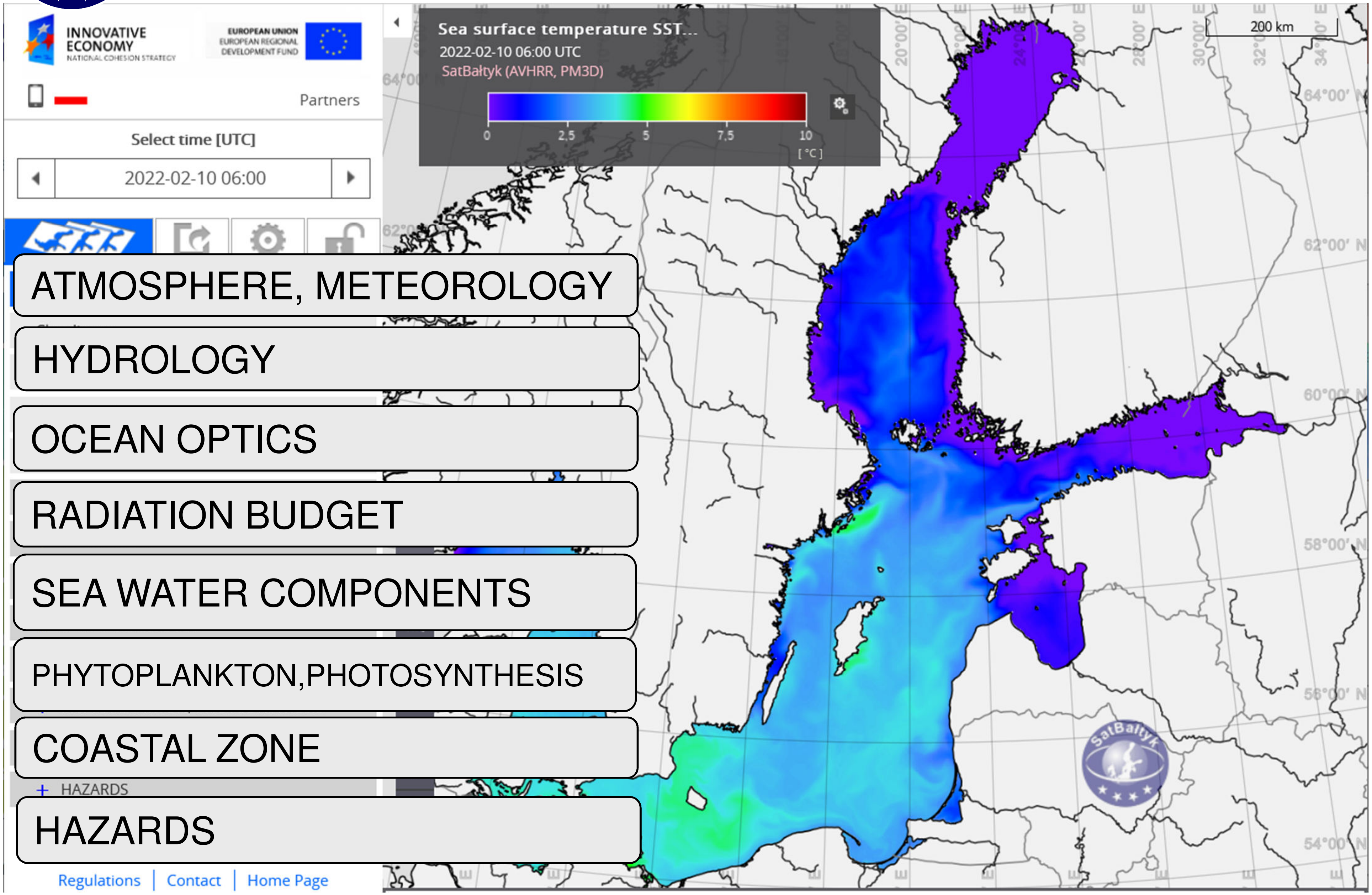
- few long-term measurement data, unique wave buoys operating for a limited time, practically no permanent measurements of currents in the coastal zone

present

- the current investment boom has resulted in a **measurement campaign on an unprecedented scale**
- measuring devices are placed in each of investment location for a period of at least one year
- also bathymetric, sonar and magnetometric measurements

www.satbaltyk.pl





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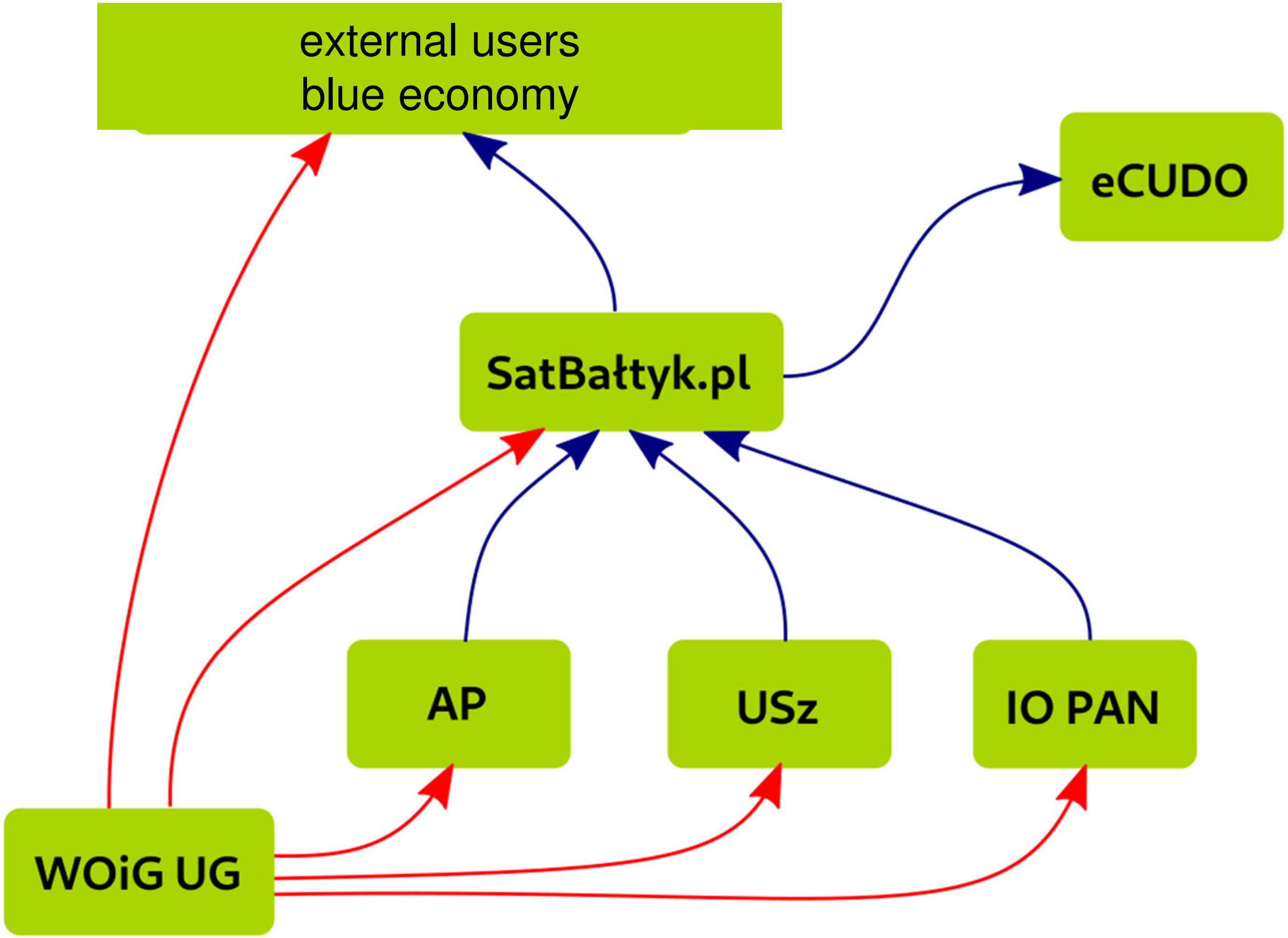
distributed system: infrastructure, algorithms, data



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Parameters

SatBałtyk

Provided by University of Gdańsk:

1. Satellite products:
    - SST (AVHRR form NOAA and METOP)
    - Clouds (SEVIRI/Meteosat)

    under work:
    - SST from SLSTR/Sentinel-3
2. Diagnostic models based on satellite products
    - Shortwave / lonwave solar radiation on sea level
3. Prognostic models with assimilation of satellite products
    - PM3D model: temperature, salinity, sea level, currents, sea ice

Future of SatBaltic

- increased resolution of models in polish sea areas/coastal zone
- calibration and validation of models based on measurement data
- new products
    - sediment transport in the coastal zone
    - wind
    - waves
    - upwelling
    - freshwater discharge
- impovement of algorithms – cloud detection
- **delivery of data on request (with customized spatial/temporal resolution)**

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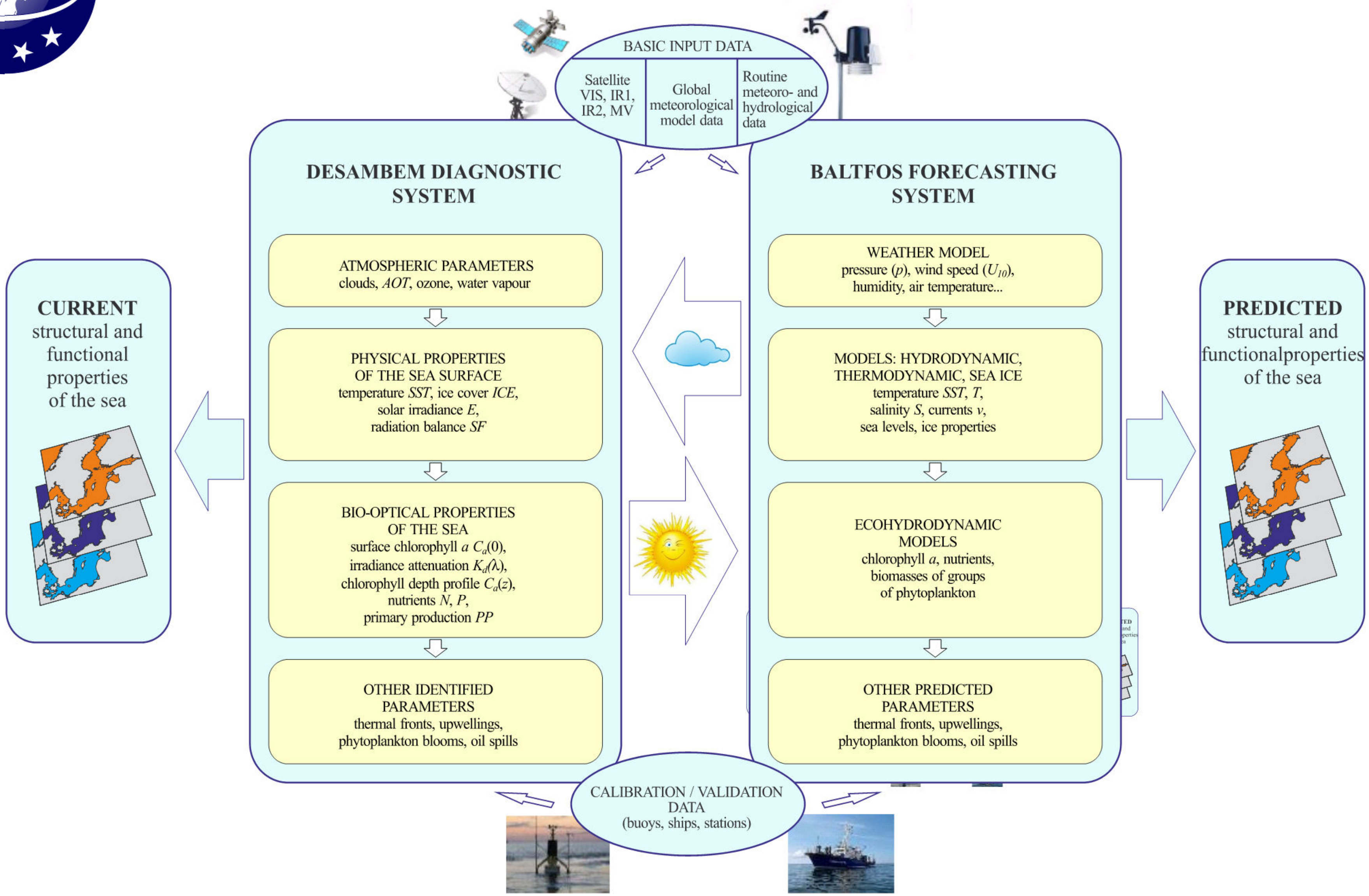
Scientific works

Based on satellite data:

1. Frazil ice streaks in the polynya
   – optical and SAR data classification
   – spatial features
2. Hot spots and heat waves based on SST
3. Water quality, phytoplankton blooms from optical sensors

SatBałtyk System - information streams



Satellite Monitoring of the Baltic Sea Environment – SatBaltyk founded by European Union through European Regional Development Fund (POIG 01.01.02-22-011/09)

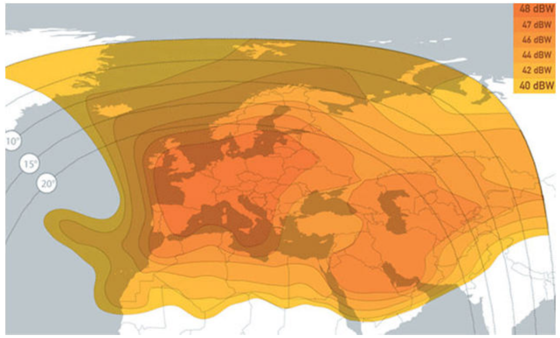
UG satellite data aquisition

Aquisition system:

- EumetCast: 2 antennas, 3 receivers
- 25 servers to store and proces data
- Mellowbox – software for data processing tools integration

Raw data resources:

Source	availability	spatial resolution	since	Ilość dzienna		
				scenes per day	parameters	capacity RAW [MB]
SEVIRI (Meteosat 8-11)	**online**	**7-13 km**	**2006-12-06**	**96**	**12**	**600**
AVHRR (NOAA, MetOp)	**online**	**1 km**	**2001-01-01**	**~10**	**5**	**500**
GHRSST (DMI)	**online**	**0.5 deg**	**2007-06-04**	**1**	**2**	**4**
AOT (NOAA)	**online**	**~100 km**	**2000-01-07**	**~0.1**	**1**	**1**
SBUV/2, TOVS (NOAA)	**online**	**~50 km**	**2010 -**	**1**	**1**	**~**
MODIS (Aqua)	online	1 km	2011 -	~4	30	300
ASAR (ENVISAT)	arch.	250 m	2012	~0.2	1	300
SLSTR (Sentinel-3)	online	1 km	2022 -			




EumetCAST (2010 –)


HRPT (2001 – 2012)