

# HELCOM EUTRO-OPER

Making HELCOM Eutrophication  
Assessments Operational

Hjalte Parner, ICES Data Centre

Acknowledgement - HELCOM IN-EUTROPHICATION Group



Science for sustainable seas



# Acknowledgement



- **HELCOM IN-EUTROPHICATION Group**

- Creators
- Users
- Drivers

- **ICES Data Centre**

- Facilitators
- Data Centre

# In context



- **HELCOM EUTRO-OPER 2014-2015**

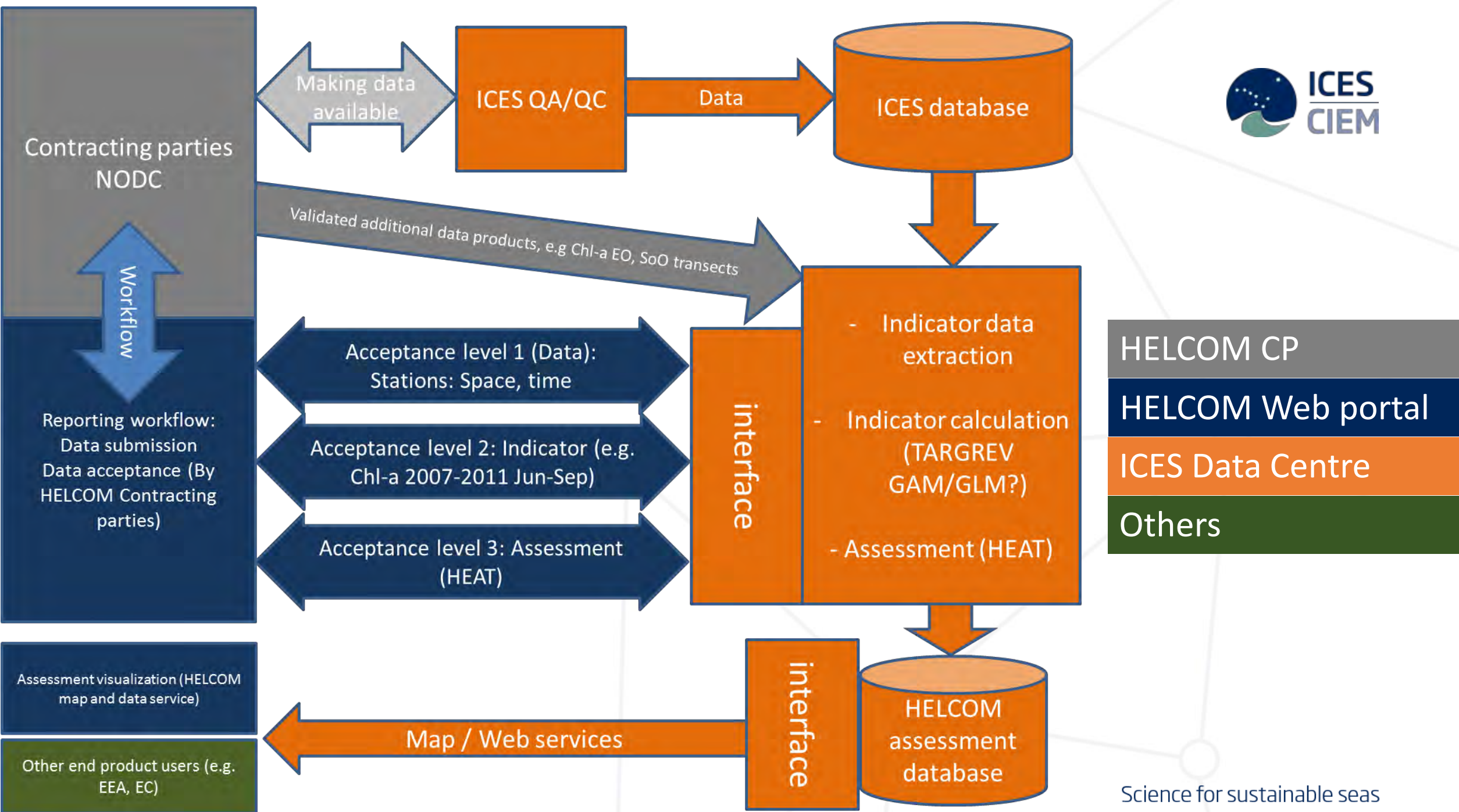
- Making the HELCOM Eutrophication Assessment Tool (HEAT) operational
- HEAT Assessment 2007-2011 for Test

- **HELCOM EUTRO-OPER Extended 2016**

- Implementation of additional indicators

- **HELCOM IN-EUTROPHICATION 2017**

- HEAT Assessment 2011-2016 for Real



# Indicators

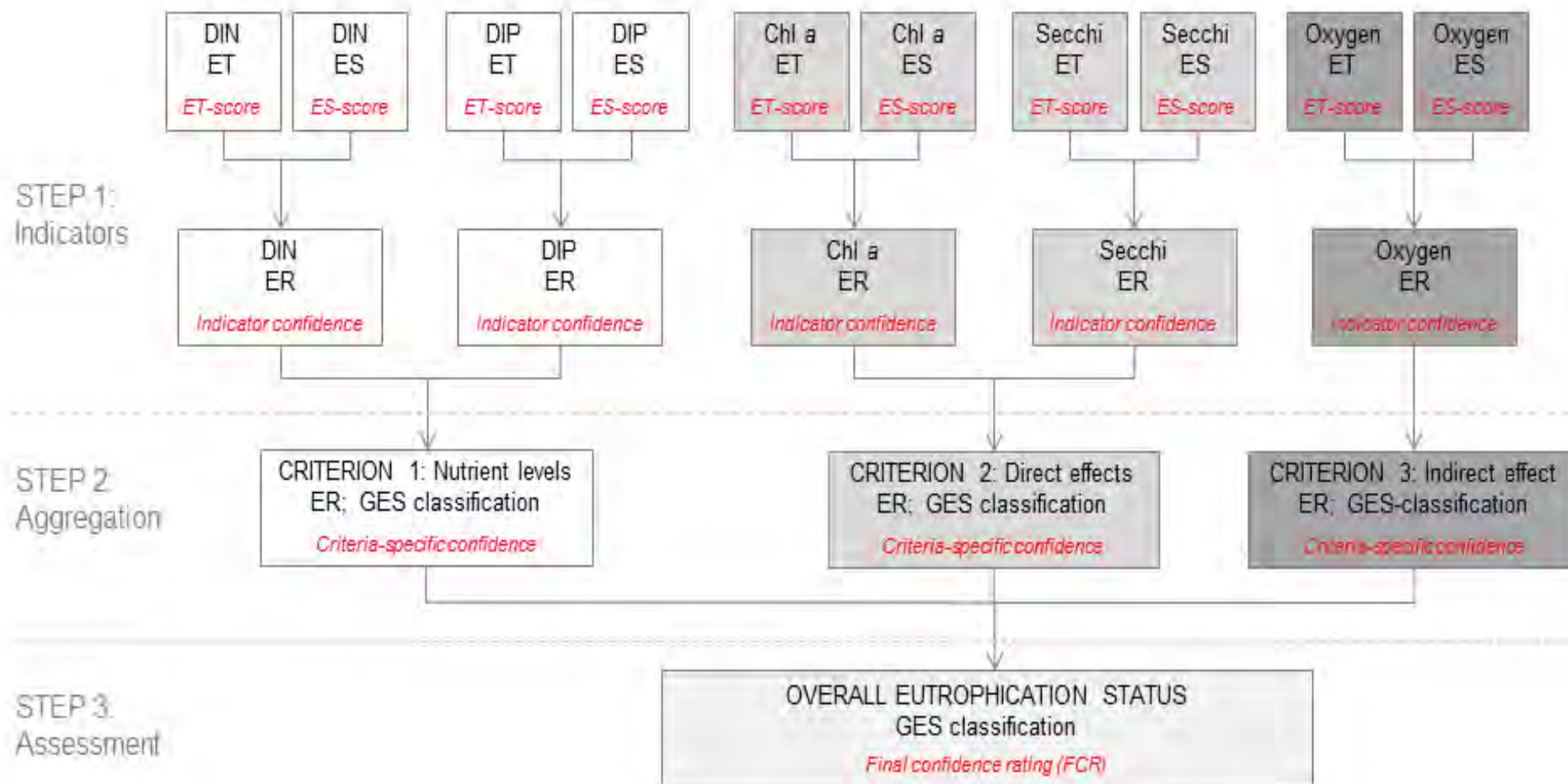
## • Open Sea - core

- Nutrient levels
  - DIN
  - DIP
- Direct effects
  - Chlorophyll a
  - Secchi Depth
- Indirect effects
  - Oxygen Debt

## • Coastal - national

- Nutrient levels
  - DIN, total N
  - DIP, total P
- Direct effects
  - Chlorophyll a
  - Secchi depth
  - Phytoplankton biovolume
  - Percentage of perennial species
- Indirect effects
  - Oxygen concentration
  - Macrophytes
  - Macrovegetation
  - Zoobenthos
  - BQI
  - ZKI
  - EDI

# HELCOM Eutrophication Assessment Tool (HEAT 3.0)



# DIN indicator - Factsheet

<b>Indicator</b>	<b>DIN</b>
<b>Response to eutrophication</b>	positive
<b>Parameters</b>	DIN = NO <sub>2</sub> + NO <sub>3</sub> + NH <sub>4</sub> concentration (μM)
<b>Assessment period</b>	December 2006 – February 2011
<b>Assessment season</b>	Winter = December + January + February
<b>Depth</b>	Surface = average in the 0 – 10 m layer
<b>Removing outliers</b>	[to be agreed...]
<b>Removing close observations</b>	For example [to be agreed]: If two observations are made in the same day within 0.01 degrees of latitude or longitude distance from each other, the later observation is removed.
<b>Indicator level</b>	average of yearly average values
<b>Eutrophication ratio (ER)</b>	ER = ES / ET
<b>Status confidence (ES-Score)</b>	LOW (=0%), if no more than 5 annual status observations are found during one or more years. MODERATE (=50%), if more than 5 but no more than 15 status observations are found per year. HIGH (=100%), if more than 15 spatially non-biased [to be specified what this means...] status observations are found each year.
<b>Indicator confidence (I-Score)</b>	Confidence (%) = average of ES-Score and ET-Score

# DIN indicator - Target

DIN	INDICATOR TARGET (ET)	TARGET CONFIDENCE (ET-SCORE)	INDICATOR WEIGHT (IW)
SEA-001 The Kattegat	5.00	M	50
SEA-001 Great Belt	5.00	M	50
SEA-003 The Sound	3.30	M	50
SEA-004 Kiel Bay	5.50	M	50
SEA-005 Bay of Mecklenburg	4.30	M	50
SEA-006 Arkona Basin	2.90	M	50
SEA-007 Bornholm Basin	2.50	M	50
SEA-008 Eastern Gotland Basin	2.60	M	50
SEA-009 Gdansk Basin	4.20	M	50
SEA-010 Western Gotland Basin	2.00	M	50
SEA-011 Northern Baltic Proper	2.90	M	50
SEA-012 Gulf of Riga	5.20	M	33
SEA-013 Gulf of Finland	3.80	M	50
SEA-014 Åland Sea	2.70	M	50
SEA-015 Bothnian Sea	2.80	M	50
SEA-016 The Quark	3.70	M	50
SEA-017 Bothnian Bay	5.20	M	33



# HEAT Assessment - Factsheet



<b>Assessment</b>	<b>Overall eutrophication</b>
<b>Assessment unit</b>	SEA-011 Northern Baltic Proper
<b>Core indicators</b>	DIN, DIP, chl <sub>a</sub> , SDT, O <sub>2</sub>
<b>Assessment period</b>	2007 (for DIN&DIP, Dec 2006) – 2011
<b>Criterion 1 weight (C1_W)</b>	33.33%
<b>Criterion 2 weight (C2_W)</b>	33.33%
<b>Criterion 3 weight (C3_W)</b>	33.33%
<b>Step 1, indicators</b>	[for each core indicator, see indicator specifications]
<b>Step 2, Criterion status</b>	For each criterion, use indicators from figure 1. Status is the sum of ER × IW of all indicators within criterion (=weighted average). If criterion has no indicators, the value is na. [for ER and IW, see indicator specifications]
<b>Step 2, Criterion status classification</b>	GES, if status ≤ 1: SubGES, if status > 1
<b>Step 2, Criterion confidence</b>	For each criterion, use indicators from figure 1. Confidence is the sum of I-Score × IW of all indicators within criterion (=weighted average). If criteria consists of only one indicator, the confidence is reduced by 25%. [for I-Score and IW, see indicator specifications]
<b>Step 2, Criterion confidence classification</b>	low, if confidence <50% moderate, if confidence 50-74% high, if confidence 75-100%
<b>Step 3, overall status classification</b>	The lowest criterion status classification is chosen as overall status classification (one-out-all-out principle) Criteria receiving status = na are ignored.
<b>Step 3, overall confidence</b>	Overall confidence is the sum of Criterion confidence × Criterion weight for all three criteria. If for 2 criteria, status = na, than reduce the result by 50%
<b>Step 3, final confidence rating (FCR)</b>	low, if confidence <50% - moderate, if confidence 50-74% - high, if confidence 75-100%

# HELCOM Workspace - Accessions



Search this site



HELCOM Meeting Portal

## Dataview

- EUTRO-OPER Data reporting workspace
- Eutrophication Manual
- Dataview
- National data check-up
  - DE
  - DK
  - EE
  - FI
  - LV
  - LT
  - PL
  - RU
  - SE
- Core indicators
- HEAT

Page Viewer

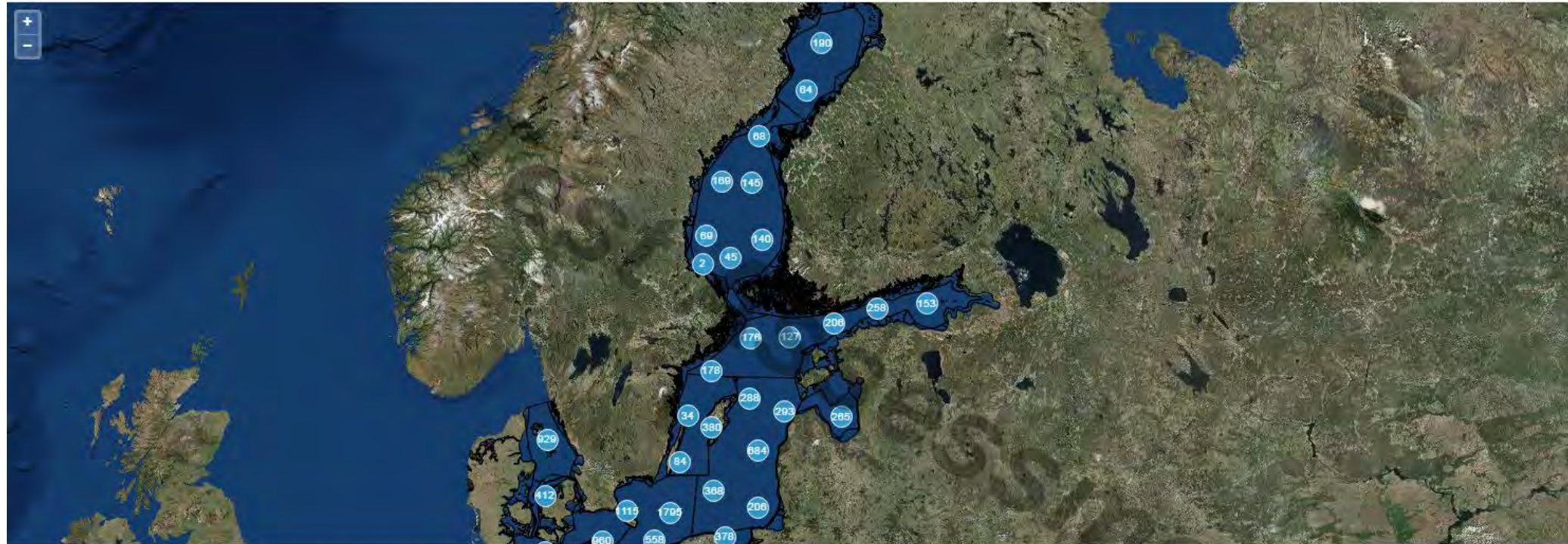
Accessions						
Country	Description	DatasetID	AccessionID	Status	Submitted	Completed
Please Choose						
Germany	2010 BFGG nutrients, chloro...	envCWBFGG2010 ENQ...	20162297	Completed	2016-10-10	2016-09-29
Germany	2011 BFGG contaminants in ...	envCWBFGG2011 ENQ...	20162298	Completed	2016-10-10	2016-10-01
Germany	2012 BFGG contaminants in ...	envCWBFGG2012 ENQ...	20162299	Completed	2016-10-07	2016-10-08
Germany	2009 BFGG nutrients, chloro...	envCWBFGG2009 ENQ...	20162296	Completed	2016-10-07	2016-10-07
Ireland	2013 MICG contaminants in ...	envCWMICG2013 ENQ...	20140552	Completed	2016-10-07	2016-10-08
Ireland	2015 MICG contaminants in ...	envCWMICG2015 ENQ...	20160902	Completed	2016-10-07	2016-10-08
Germany	2013 BSH CTD data of the C...	ENQ710az	20162355	Completed	2016-09-29	2016-09-29
United States	1900-1940 WOD Bottle Data	ENQ2024	20162364	Pending ICES	2016-09-29	
Germany	2016 TI-SF oceanographic d...	ENQ710aw	20162354	Completed	2016-09-28	2016-09-29
Germany	2015 BFGG contaminants an...	envCWBFGG2015 ENQ...	20162258	Completed	2016-09-21	2016-09-29

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# HELCOM Workspace – Stations

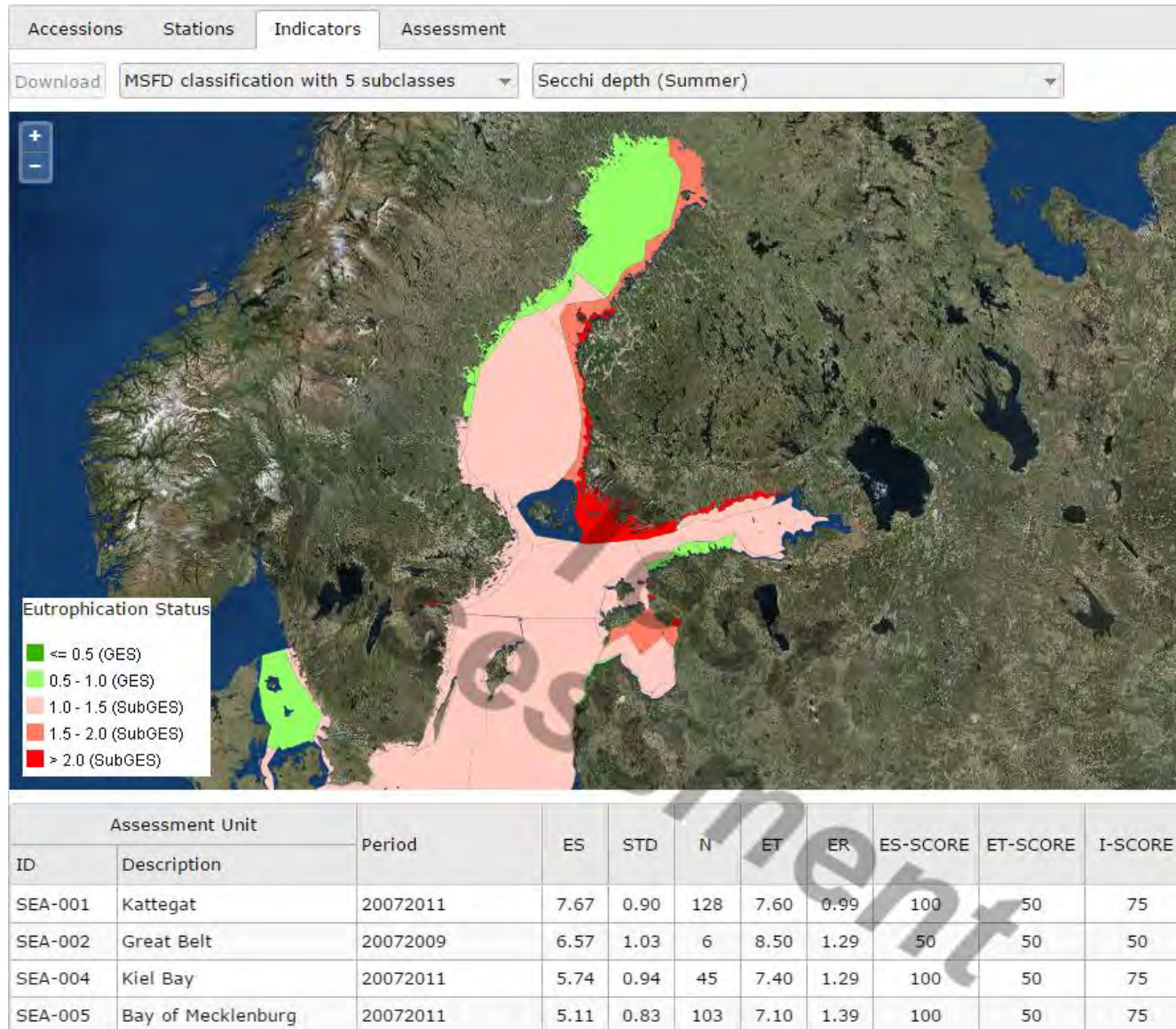
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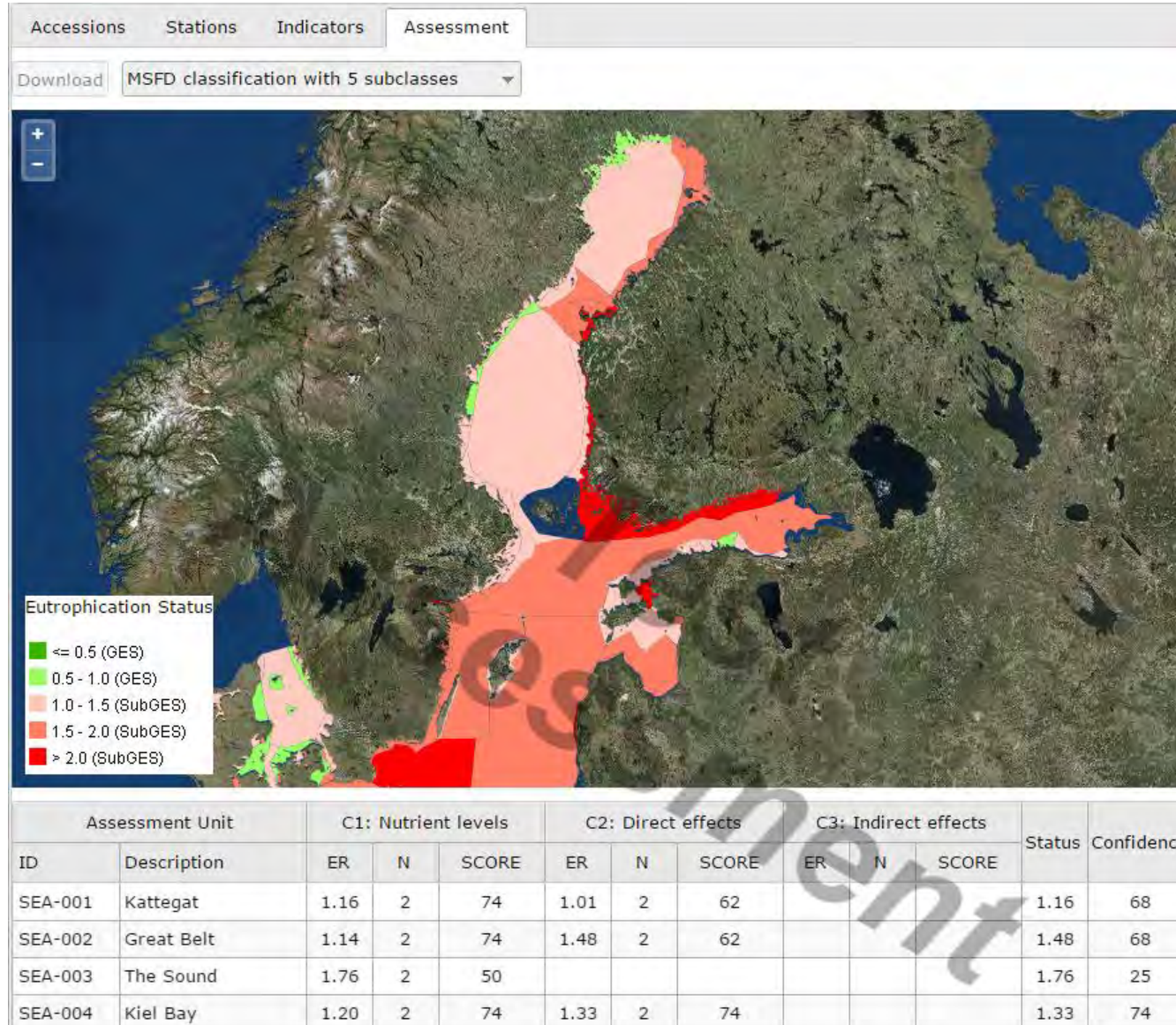


Assessment Unit		Platform	Year	Month	Day	Hour	Minute	Latitude	Longitude	Sounding	Secchi	DEPH	TEMP	PSAL	DOXY	PHOS	TPHS	SLCA	NTRA	NTRI	AMON	NTOT	CPHL
ID	Description											1.97	2.752	7.424	9.02	0.57	12.4	1.3	0.1				
SEA-006	Arkona Basin	07PE	2009	3	25	14	8	55.0683	13.8127	54		10.95	2.869	7.421	8.88	0.58		12.4	1.4	0.12			
SEA-006	Arkona Basin	07PE	2009	3	25	15	16	55.1542	13.9398	47		21.11	2.9	7.503	8.8	0.59		12.3	1.5	0.13			
SEA-006	Arkona Basin	07PE	2009	3	25	16	17	55.0623	13.9867	48		31.2	2.977	7.527	8.89	0.59		12.2	1.6	0.14			
SEA-006	Arkona Basin	07PE	2009	3	25	17	9	55.0003	14.0778	49		41.45	3.087	8.006	8.37	0.67		11.3	3.3	0.18			

# HELCOM Workspace - Indicators



# HELCOM Workspace - Assessment



# Want to know more?



Please follow the link

<http://www.helcom.fi/helcom-at-work/projects/eutro-oper>

to find out how HEAT have been made operational, how assessment are being carried out in details including the assessment manual and a demo of the test HEAT Assessment for 2007-2011

# Thank you for your attention

## Questions?



**ICES**  
**CIEM**

Science for sustainable seas