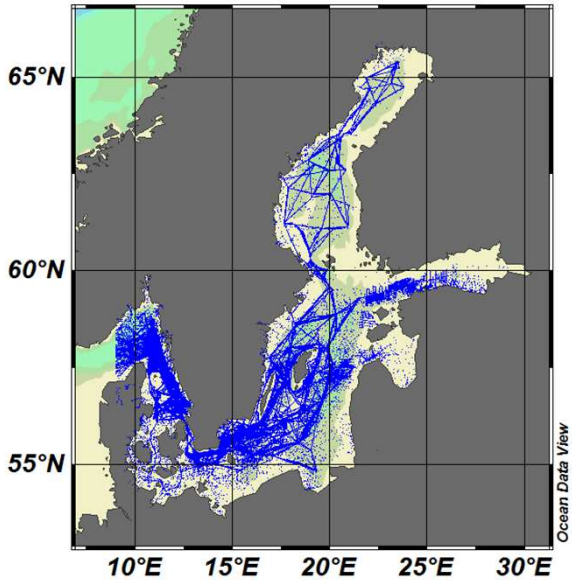
SeaDataNet

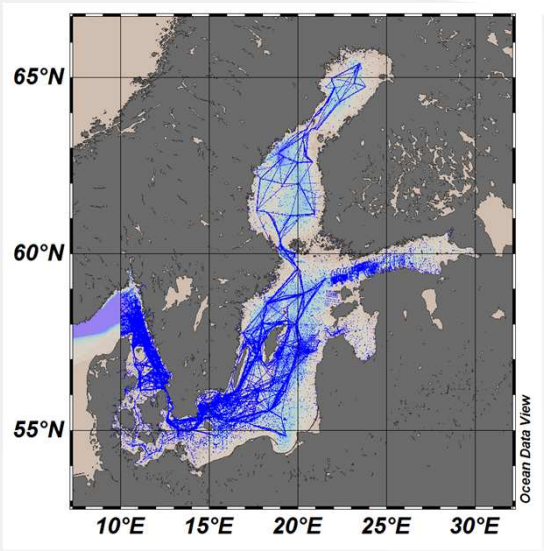
PAN-EUROPEAN INFRASTRUCTURE
FOR OCEAN & MARINE DATA
MANAGEMENT

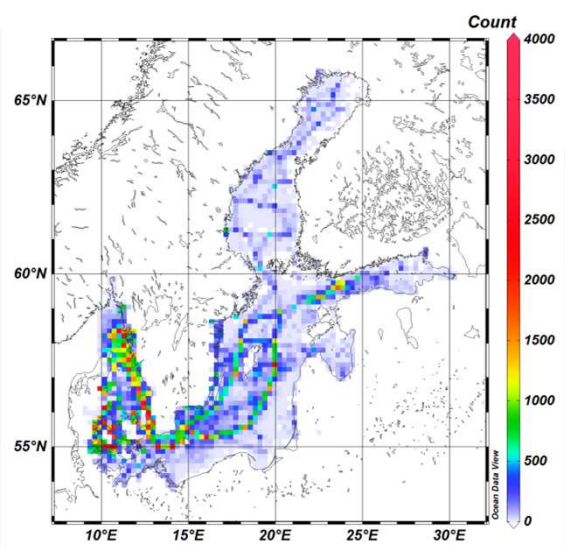
WP10 Aggregated data set and climatology The Baltic Sea



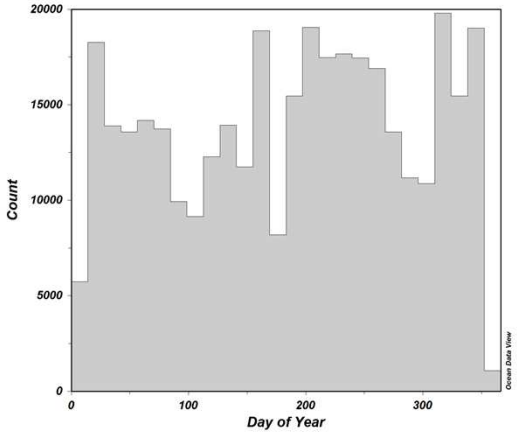
Örjan Bäck, SMHI, Swedish meteorological and hydrological institute

Aggregated data set v2

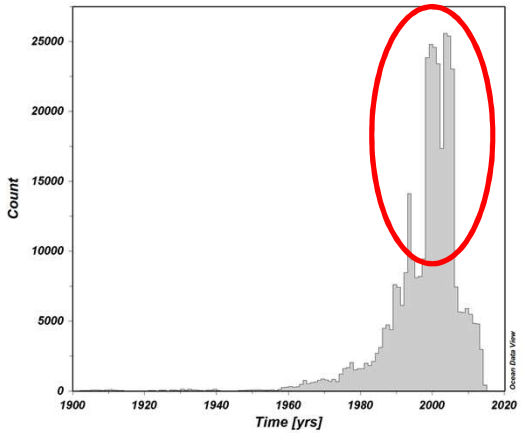




Seasonal distribution



Annual distribution



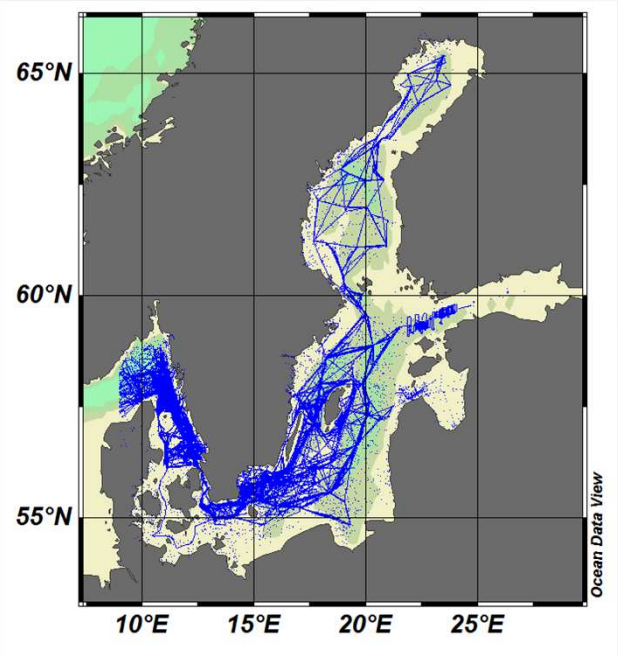
Very high numbers are from ferry box trajectories, which contain many data points from only one depth and with a short timespan, typically a week.

Geographical distribution map also shows the dominating ferry box data.

Amount of data in the aggregated data collection

V1 2013

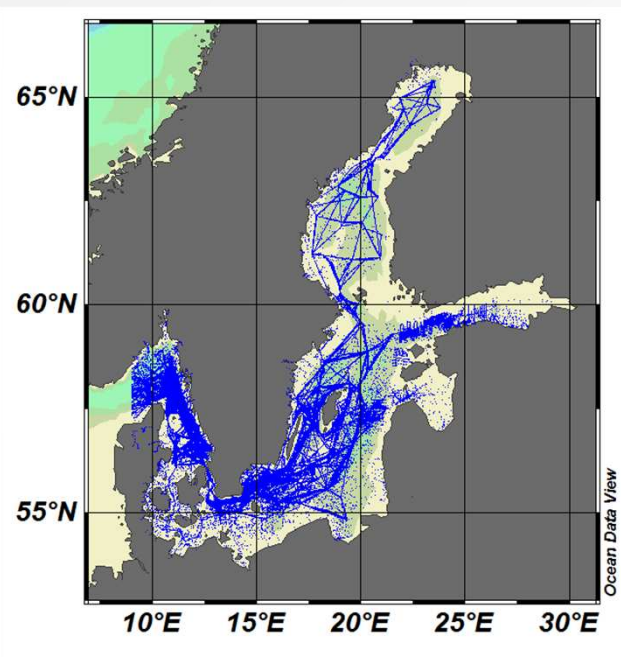
175 357 CDIs



~8 900 000 data points

V1.1 2014

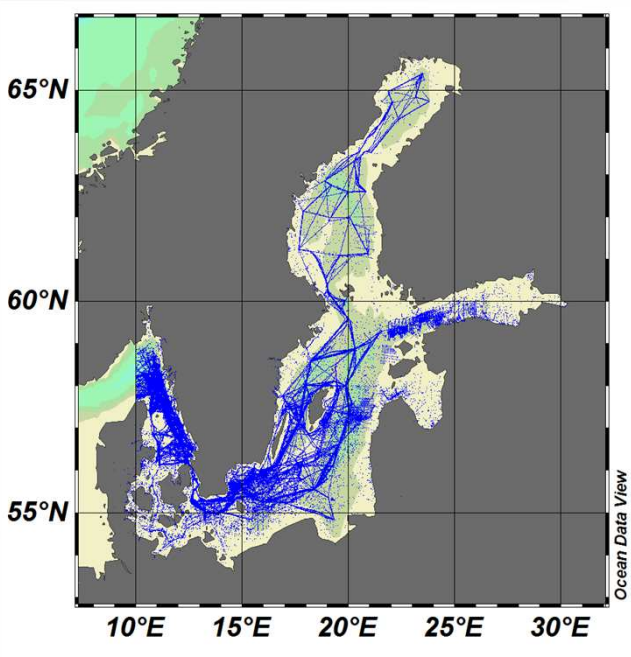
209 395 CDIs



~11 700 000 data points

V2 2015

211 741 CDIs



~12 600 000 data points

V1.1 compared to V2

- ~2500 more CDIs
- Almost 1 000 000 more data points per parameter

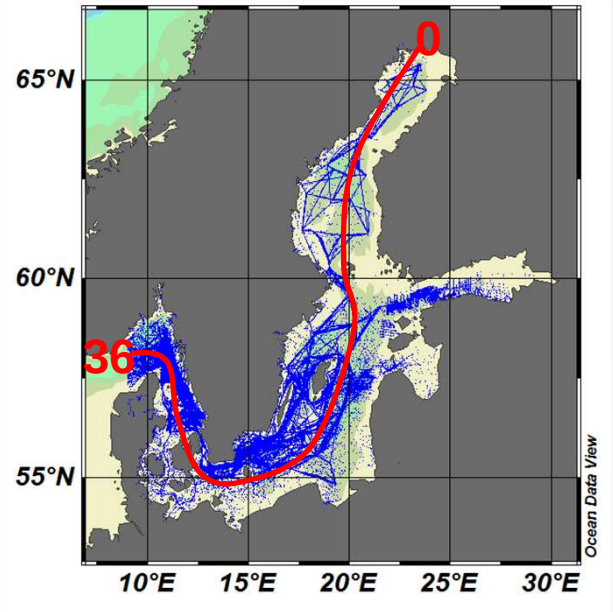
- ~850 000 values ”lost” to the North Sea between 9 and 10 degrees east (looks to be about 18 000 CDIs)

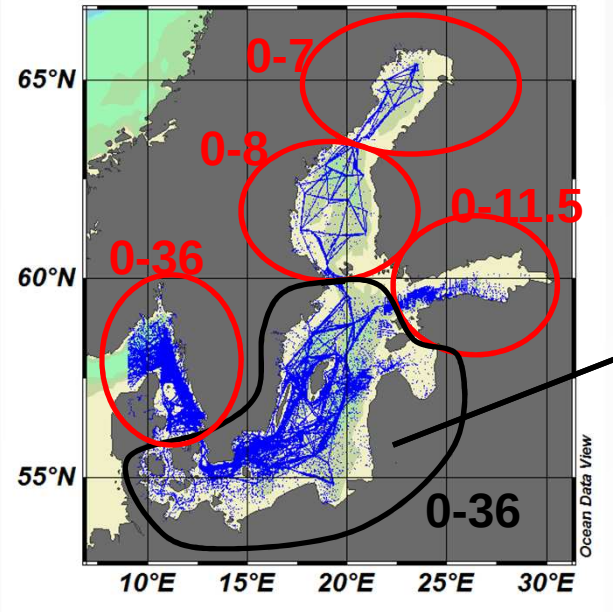
- Probably more correct: ~1 850 000 values and ~20 000 CDIs

QC Salinity

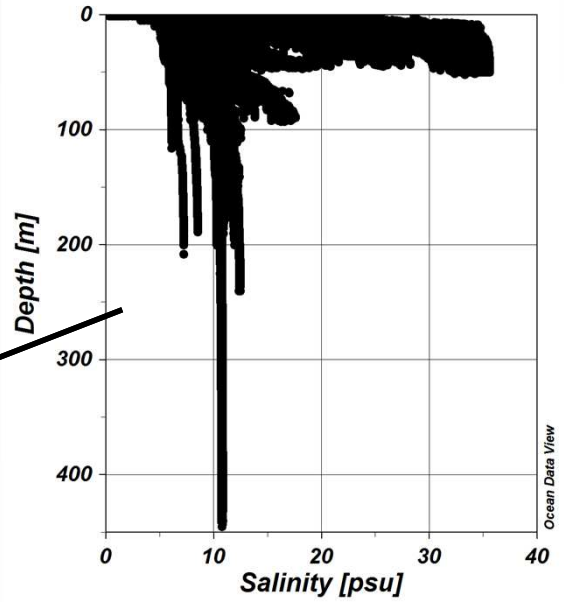
- Salinity ~ 0-36, large geographic variation -> QC on subregions
- visual inspection to detect spikes and unstable density profiles.
- Even with subregions there are large amounts of data which sometimes makes visual inspection hard, especially in the top layers with large variation. Filtering out a few years at a time makes inspection easier.

Subsets mainly by geographical region





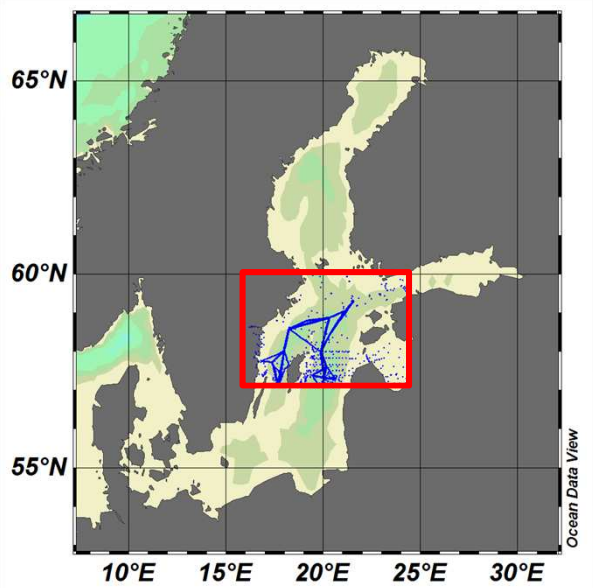
Baltic Proper 2010



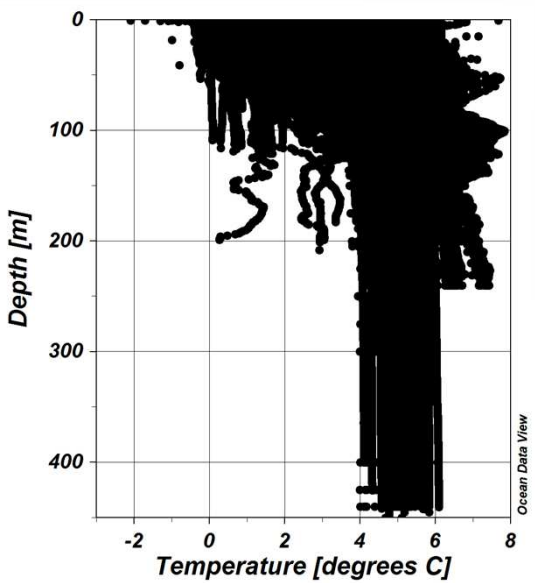
QC Temperature

- Temperature, large seasonal variation, from below 0°C in the winter to above 20°C in the summer, ~ -2 – 25 -> ”monthly” QC
- Data was checked for 1-2 month(s) at a time, and because of the large data amounts we used even smaller subregions, se example below.
- Visual inspection by scrolling through the subset of profiles in ODV to detect spikes and outliers (and unstable density profiles).
- A quick look at ”deep” water (>100m) temperatures

Subsets mainly by seasons/month(s) but also by regions



January-February



- **Temperature**
- 12 774 230 values
- 12 640 302 values after QC (Qflag 0,1,2,5,6,7,8,9)

- **Salinity**
- 12 559 969 values
- 12 425 875 values after QC (Qflag 0,1,2,5,6,7,8,9)

- ~ 130 000 salinity and temp values flagged in v2 (Qflag 3,4,A)

Most where found in v1.1 but was not corrected until v2.

Only about 40 CDIs where found to contain suspicious data in the v2 QC.

Complete profiles where flagged instead of single values for CDIs that was not updated since v1.1 QC

Country	Edmo	Name	QC v1.1	Status V2
Denmark	729	Aarhus Unive	754 suspicious samples 2509 "empty" samples	Corrected empty samples, hard to do anything about supicious CTD data. Data supplier are responible for flagging, can only inform data supplier.
N/A	730	ICES	1 suspicious sample	Removed from SDN
Russia	924	RSHU	13 suspicious samples	Response that some were beyond rescue and some could be corrected. Can't find these CDIs on SDN or in my collection now, removed?
Russia	681	RIHMI-WDC	4 suspicious samples	Response with corrected values, but 3/4 don't seem to have been updated on SDN.
Estonia	713	MSI	44 suspicious samples	Corrected or removed from SDN
France	540	SHOM	3 suspicious samples	Corrected or removed. However one corrected sample is not present in collection but is present in SDN portal.
Lithuania	2108	EPA	1 suspicious sample	Feedback that it was fixed, but the ODV still have wrong position in collection (CDI position ok)
N/A	3234	Pangea	5 suspicious samples 1 "empty" sample	NO response. 5 suspicious samples still in collection, however the empty sample is removed
Poland	195	IO PAN	1 suspicious sample	Confirmed error, to be updated at Seadatanet.
Poland	193	IMGW	2 suspicious samples	removed from SDN
Finland	1725	FMI	7 suspicious samples	Got response with corrections, but still present in v2 collection
Norway	612	IMR	4 suspicious samples	Outside region, v1.1 covered skagerrak to 9 degrees E, v2 is 10 degrees E
Germany	1574	TI-OF	1 suspicious sample	probably removed from SDN, can't find it any longer
Germany	100	IOW	55 suspicious samples	Corrected. But a bunch of CDIs containing two (or more) profiles in v2 collection. Under investigation... Hopefully corrected before next eventual harvest
Sweden	545	SMHI	746 suspicious samples 6 "empty" stations	Most corrected, some came in during the harvest and was not included in v2 collection Some have been removed and not re-added due to problems with local_cdi_id and changes of IDs in local database

This information and the results from this years quality control will be delivered to partners later this month

Climatologies

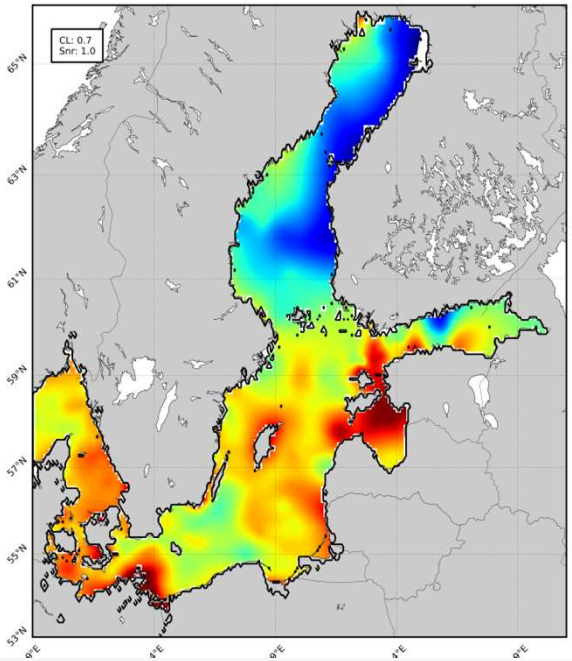
- Monthly climatologies
- Seasonal climatologies used as reference fields

param.par in DIVA

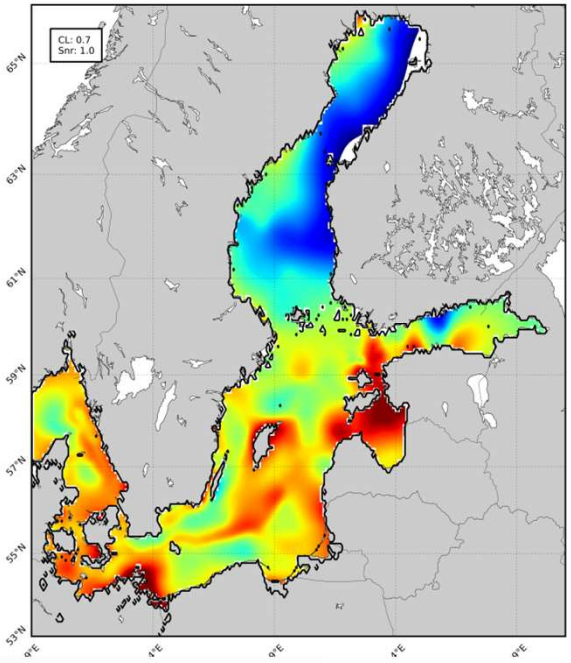
correlation length	0.7
icoordchange	1
ispec	111
ireg	0
xori	9
yori	53
dx	0.11
dy	0.065
nx	200
ny	200
valex	-9999.0
signal-to-noise ratio	1.0
varbak	1.0

- Excluding of ferry box
- Temperature in July

Without



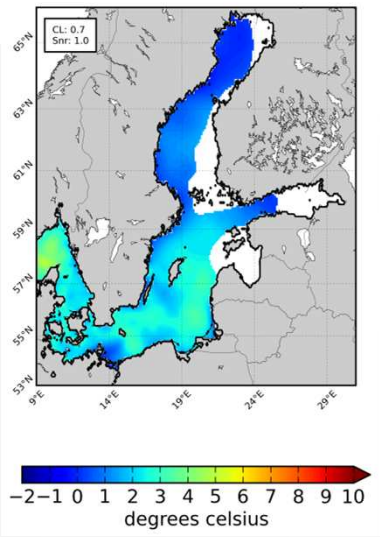
with

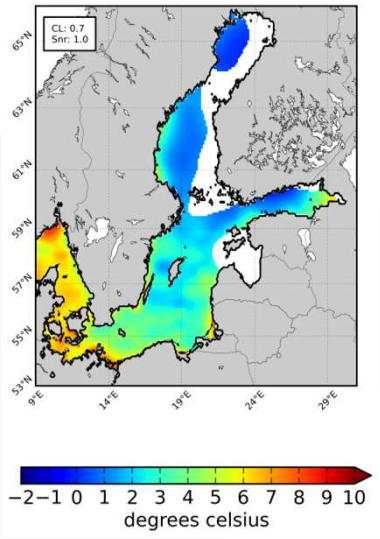


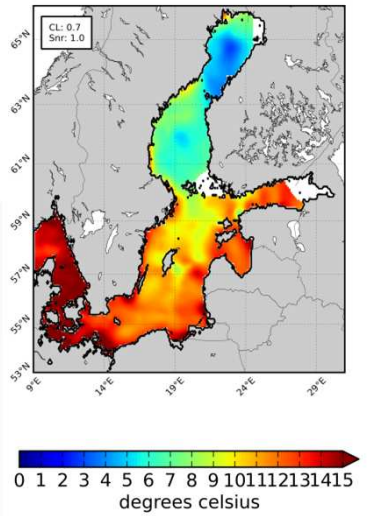
Temperature at 0m

Masked where error > 50%

Month 2, 4 and 6

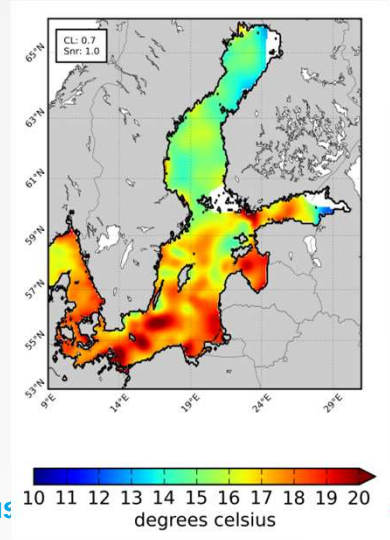


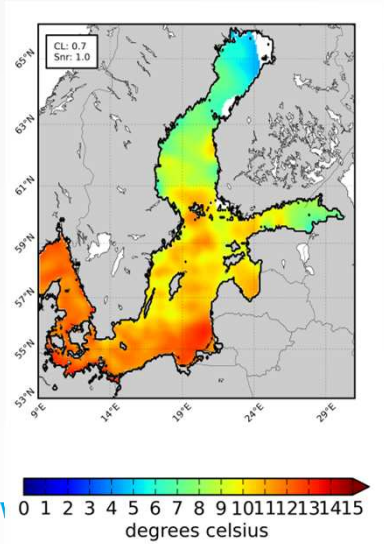


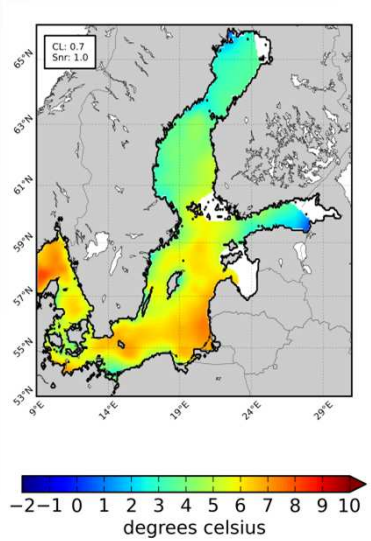


Month 8, 10 and 12

(different scales)



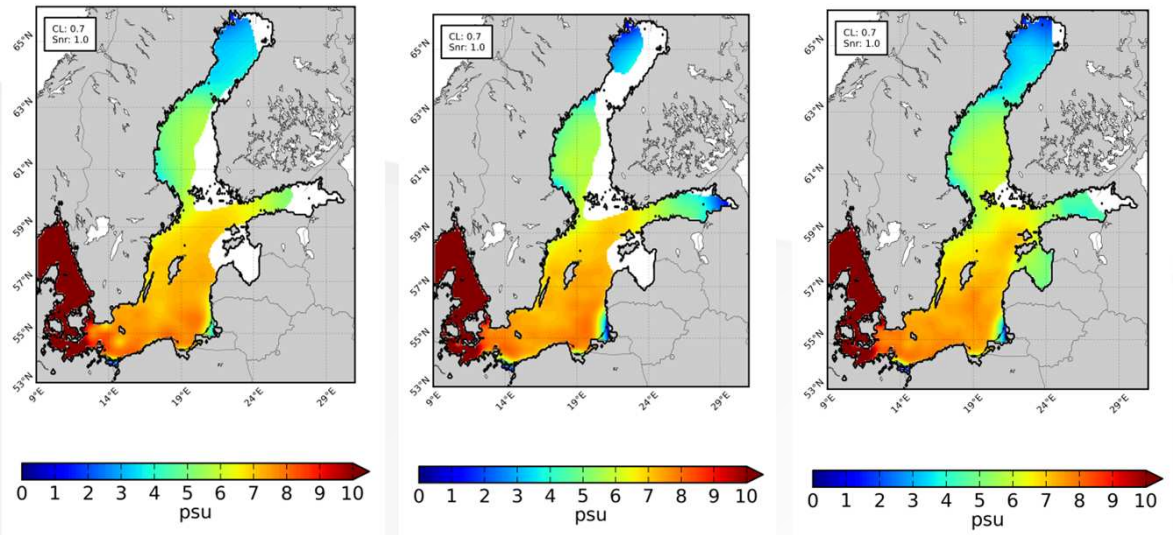




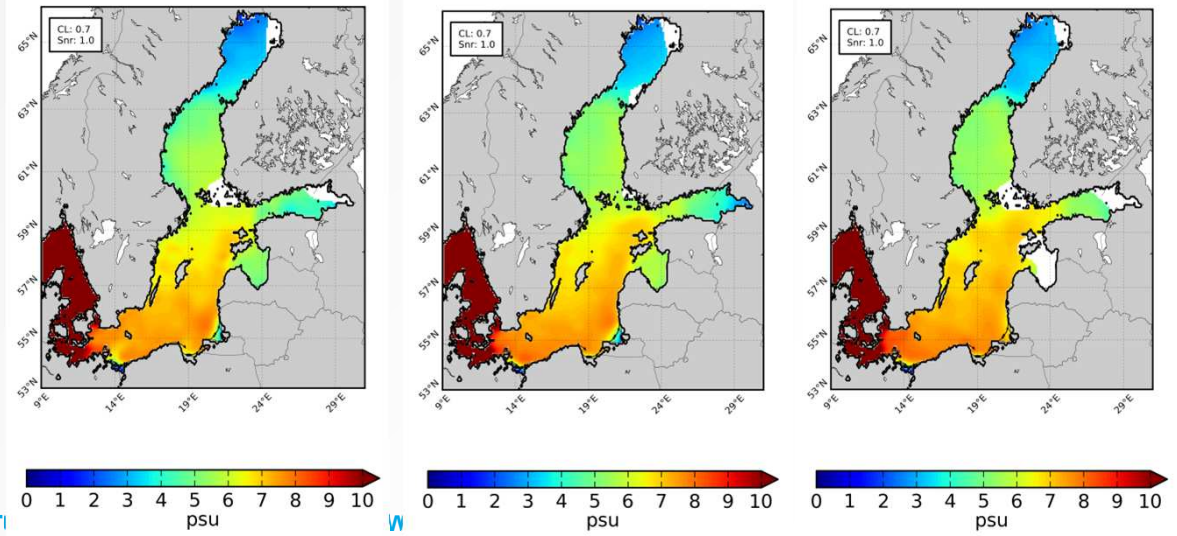
Salinity at 0m

Masked where error > 50%

Month 2, 4 and 6



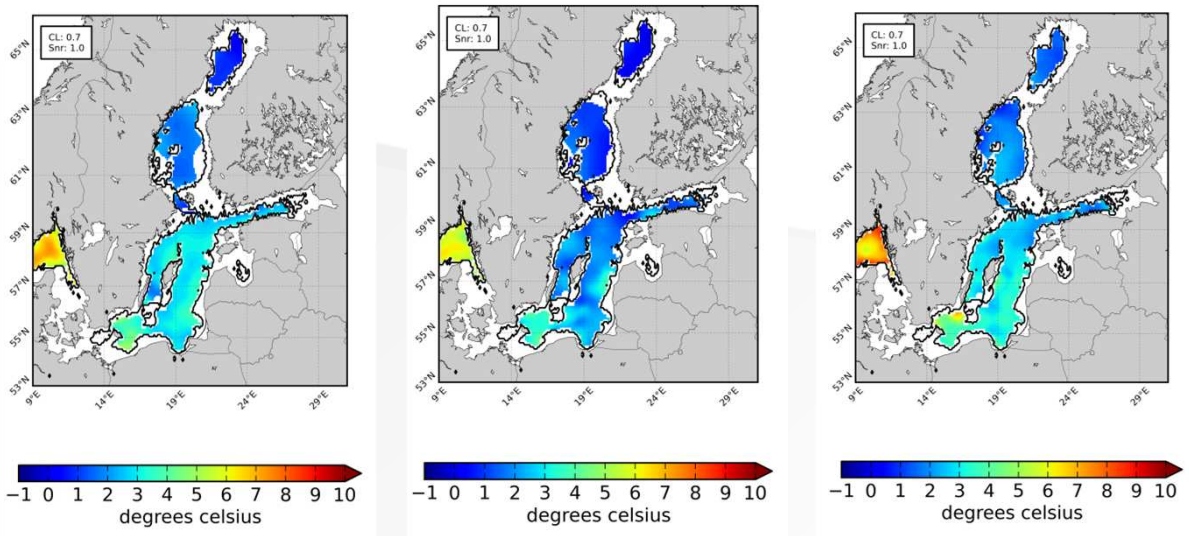
Month 8, 10 and 12



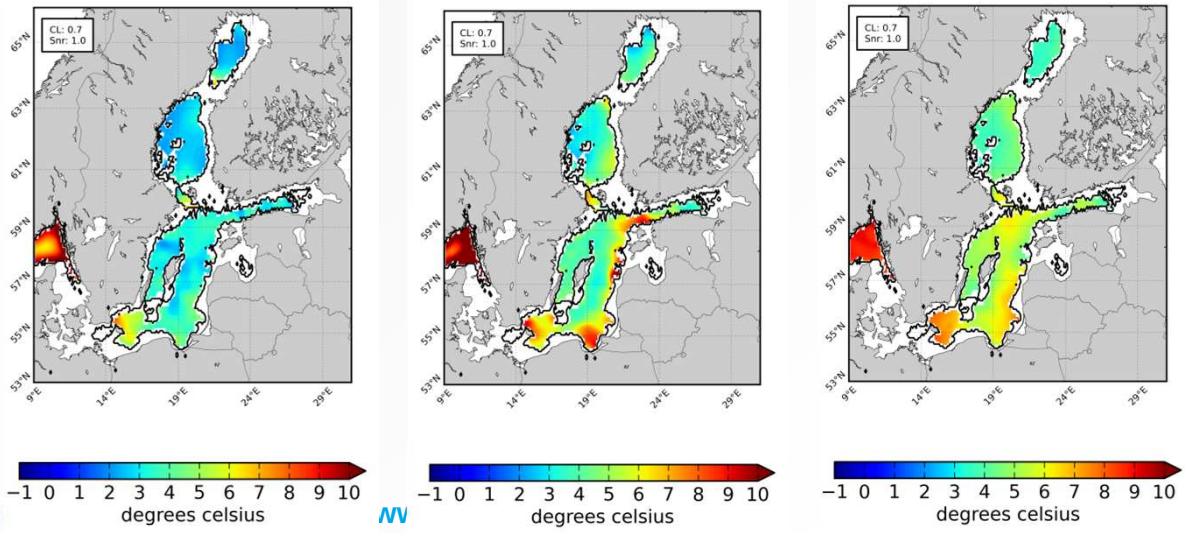
Temperature at 50m

Masked where error > 50%

Month 2, 4 and 6



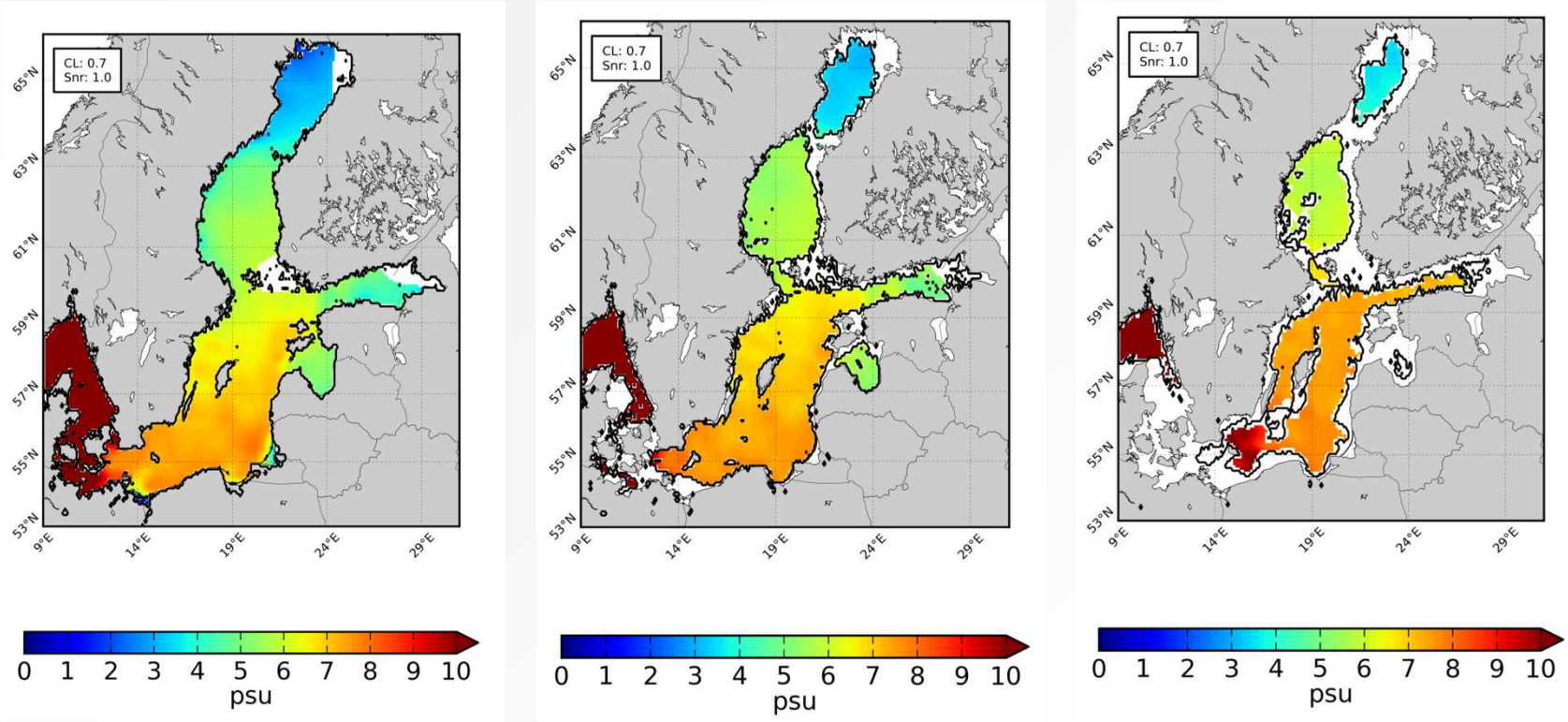
Month 8, 10 and 12



Salinity at 0, 20 and 50m

Masked where error > 50%

Month 8



Todo:

- Send feedback to partners from v2 QC
- Climatology consistency check, compare to WOA13 and possibly any other..

Future: change period for climatology in the Baltic Sea?