

**Regional Product Elaboration: Quality Check based on SDN1 experience (part1)** 

SeaDataNet



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# **Objective:** production of gridded climatologies

- The quality of the data have an impact on the gridded climatologies
- Examples of the QC procedures with ODV

Conclusion



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## **Example of gridded climatological field** with unrealistic structure



Unrealistic salinity profile in the Ionian sea: bubble of low salinity



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## **ODV QC: row data set downloaded from CDI**

File Collection View Import Export Tools Help



20°E

10°E

30°E



Measurements with wrong value

10°W

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## **ODV: Domain selection**





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## **ODV: Dataset after domain selection**



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#### SeaDataNet ODV: Quality Flag selection



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## **ODV: Data range selection**

	Range Quality	◆ Statem ID; 1 Cruse 2xC5_SIZ220000004 Staten 00101 (C) Peters Arr 4, 0010 (C) Peters Arr 4, 0010 (C) Time 17:31 Depth Range [m] (0.99 + 17.67] LOCAL_COL_ID 5519 Bet. Cepth [m] 100
	- Variable Temperature [°⊂]	Sample: 1 / 10           Depth [m]         0.99           Temperature (*c]         16.09           Satirity (PSU)         36.42           Issuinty (PSU)           Uorgbudo         -4.755           Lättude         37.022           Time (*r)         2000.174
50°N 4000 50°N 4000	Acceptable Range 4 - 30	i line (r) 1 2000.14 Dov of hear Interpretations (Å*C] @ Depth (m)≠ 16.07 Selnity (dimensionless) @ Depth ( 36.42
30°N 30°N 10°W 0 10°E 20°E 30°E 5000 0 5000 0 0	Relax this range filter       Relax all range filters         0 out of 3 variables range filtering       All 3 variables quality filtering	DofaaMew*
sdn-use	Help OK Cancel	

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# SeaDataNet ODV: Check for duplicates



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## **ODV: Spike detection**





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## **ODV: Visual QC**





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## **ODV: dataset ready for DIVA**



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# ODV: dataset extraction for DIVA (ODV spreadsheet)

c		0			1	Station ID Cruise Station Position Date Time	* 33942 Moni 0C0 15.8 30 5 13:1 (m] [0.0	nitoring-2006 09 (B) .882°E / 43.737°N September 2006 :10:00.000 .00 - 35.00]
1000		-		Spreadsheet File	Properties	×	µD 2006 700 n] 39	1
2000 [W]		1000 —		Missing value string:	(empty field)		6	
Depti		2000 -		Longitude range:	[-180 180] °E	~	[°C] ] Values	0.00 1 21.57 1 18.55 1
5000	0 	th [m]	- Me -	Metadata date format:	yyyy-mm-ddThh:mm:ss.sss	~	[°C] @ Depth [m ensionless] @ Dept'	43.737 2006.747 273 m]=f 22.47 xth [ 37.82
	15 20 25 30 35 40 Salinity [PSU]	de 3000 -		Data date format:		~		
50°N		4000		Data filter:	Apply current range and quality filters	~		
40°N		5000		Use compact output	t format			
30°N				Export data quality	flags Jaity flags			
1	10°W 0° 10°E 20°E 30°E	U	10 Temj		Jancy Hago			
Ready		sdr	1-userdesk@sea		OK Cance			



**Regional Product Elaboration: Quality Check based on SDN1 experience (part2)** 

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## **Discontinuities due to data gaps**

- Low number of data
- Specific topographic structures
- Backgroud computation methodologies

 $\rightarrow$  unrealistic values in the gridded fields



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## Discontinuities due to data gaps: an example





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Temperature METEOR TRANSECT SDN<sub>v</sub>3



METEOR TRANSECT S SDN<sub>v</sub>2a



Salinity METEOR TRANSECT SDN<sub>v</sub>3



METEOR TRANSECT T SDN, 2a



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### SeaDataNet SDN\_V2a and V2aa January : T and S maps and data distribution

#### SURFACE

Temperature V2aa 1/8° Depth = 1.4721 Zlev = 72

46°N 44°N 42°N 40°N 38°N 36°N 38°N 32°N 9°W 5°W 1°W 3°E 7°E 11°E 15°E 19°E 23°E 27°E 31°E 35°E 135m



Salinity V2aa 1/8° Depth = 135.4665 Zlev = 52

#### 661m







38.

Temperature V2aa 1/8° Depth = 661.1166 Zlev = 32



T&S observations in January are more abundant and better distributed in the western basin, while in the eastern basin are very sparse and totally absent in many regions. Initialization procedure in this case takes into account the background fields (T seasonal - S annual).

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## SeaDataNet Procedure applied to the Med Sea: an example to solve discontinuities due to data gaps

- 1. Range Check: 2<T<31 ; 15<S<40
- 2. Duplicates values along the profiles identification and elimination
- 3. Bottom Check: compute the difference between model bathymetry and the last observation depth at observation location ( $\Delta B$ )
- 4. Observations were linearly interpolated on the 72 NEMO model z levels
- 5. Extrapolation at the surface (tuned for January conditions)



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#### 6. Extrapolation on the bottom (tuned for January conditions)

Divide the water column in 5 layers and apply different criteria to extrapolate the bottom value

50-100m	100-200m	200-500m	500-1500m	>1500m
If ΔB<20m	If ΔB<100m	If ΔB<100m	If ΔB<200m	Always bring
bring the last	bring the last	bring the last	bring the last	the last
value down	value down	value down	value down	value down

Data written in the DIVA input format



# AFEIREORASTRRANSECT

MANAGEMENT

METEOR TRANSECT T SDN, 2a



#### **Results after pre-processing procedure**



METEOR transect confirms the improvement of the IC estimation avoiding discontinuities in the bottom layereadatanet.org - www.seadatanet.org



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# V2a (no vertical correction) and V2aa (yes vertical correction)Jan Climatology: mean profiles



The averaged profiles for the W and E Mediterranean show that the initialization procedure substantially improves the deep field estimate sdn-userdesk@seadatanet.org - www.seadatanet.org



Regional Product Elaboration: ideas for climatological gridded fields production in SDN2

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39

38.975

38.95

38.925

38.875

38.85

38.825

38.775

38.75

38.725

38.675

38.65

38.625

38.6

38.7

38.8

38.9



Why we compu





matolog

### METEOR TRANSECT Obs Jan/Feb 1995

## **January salinity**

adatanet.org - www.seadatanet.o(from Tonani et al, EGU 2009

Twos different climatologies have been produced to take into account the changement due to the EMT:

vvny we compute a pre-EIVII climatology?

- SDN V1a: data up to December 1987
- SDN V1b: data from January 1990 to December 2008



Januar

→ At depth V1a has less salt then V1b, no influence of the data of the Meteor 95
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#### PAN-EUROPOI AVER RUCTURE MEDATLAS OCEAN MARINE DATA

39

38.975

38.95

38.925

38.9

38.875

38.85

38.825

38.8

38.775

38.75

38.725

38.675

38.65

38.625

38.6

39

38.975

38.95

38.925

38.875

38.85

38.825

38.8

38.775

38.75

38.725

38.675

38.65

38.6

38.7

38.9

38.7





2

### **METEOR Sep87**





SDN V1a 1900-1987





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## Conclusion

- It's important to take into account:
  - the characteristics of each regional seas
  - the numeber of observations available and their spatial and temporal distribution
  - the user needs (do we know who are the users?)