

# Hydrographic and Transport variability in the Sicily Strait

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Trieste, Italia

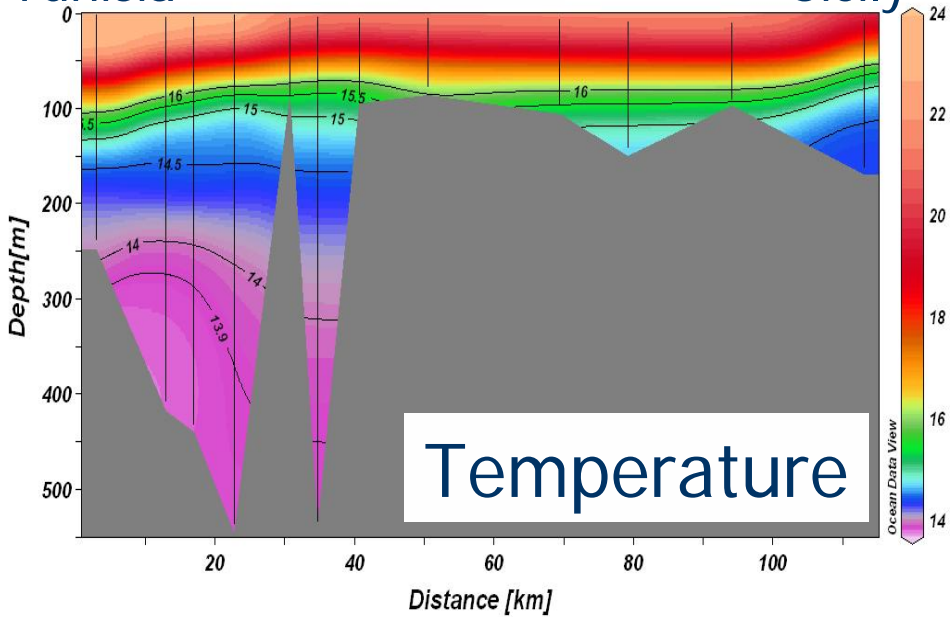


# Outline

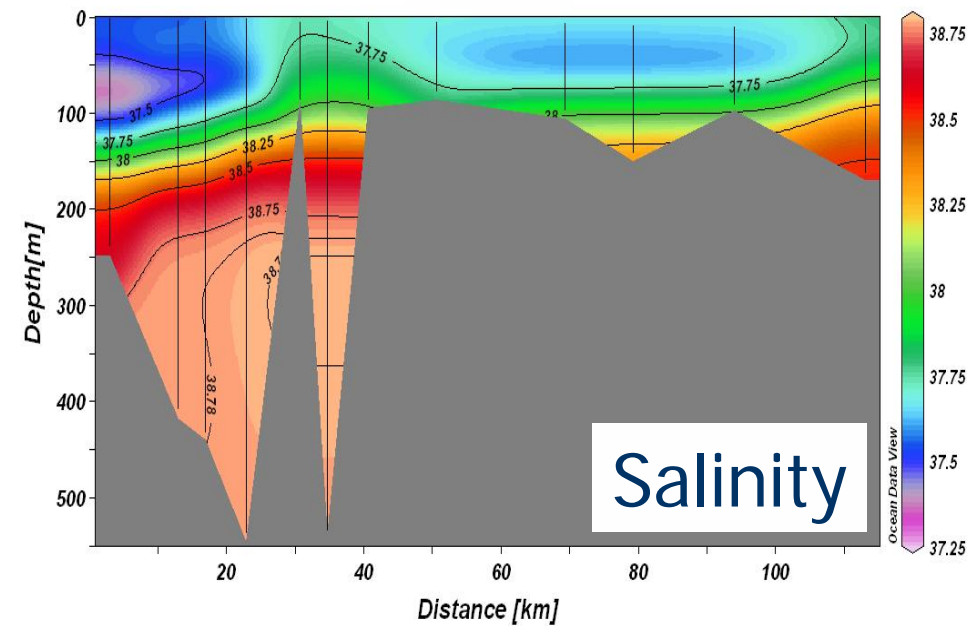
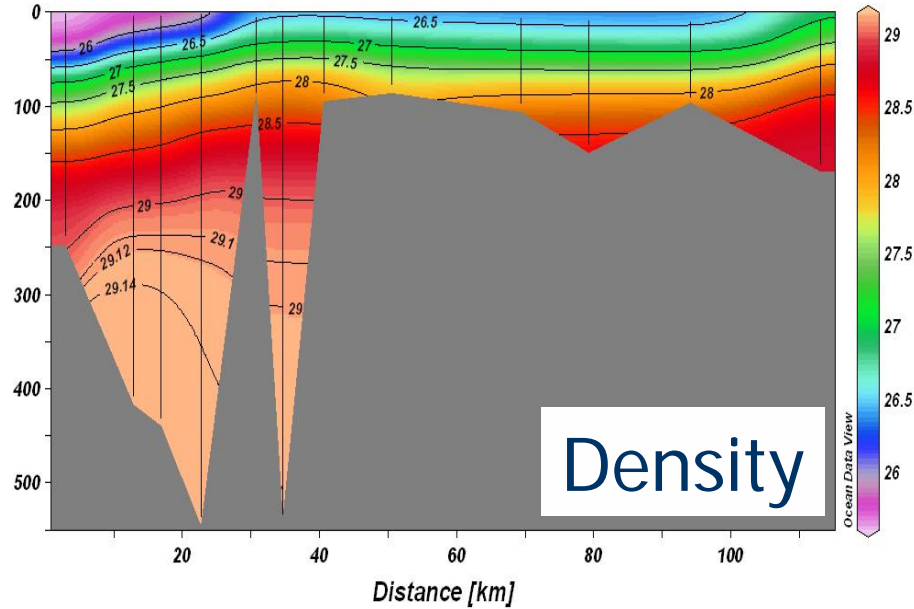
- The EMT signature in the Sicily Strait
- The effects in the Tyrrhenian sea
- LIW transport through the Sicily Strait



# Tunisia

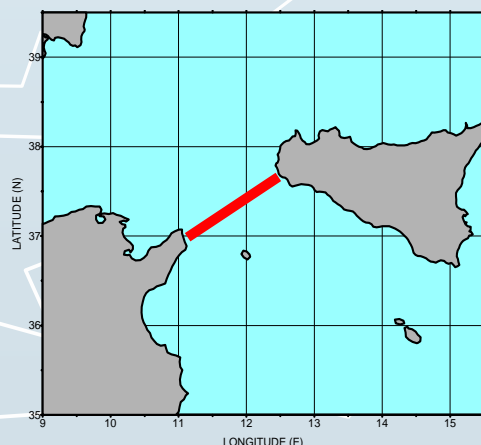


# Sicily



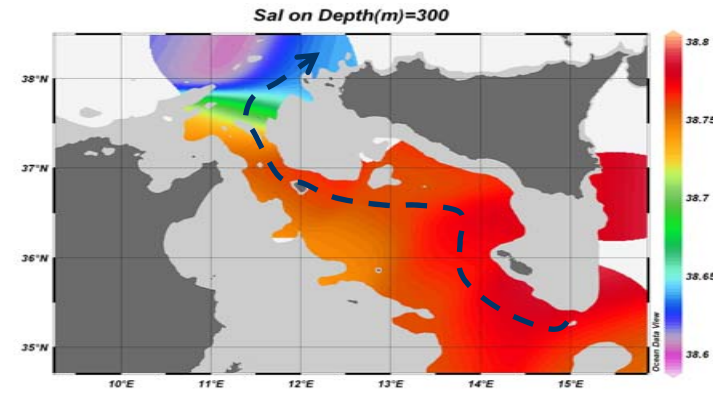
# Sicily Strait

## October 2006



# Sicily Strait

## Time evolution of LIW characteristics



1

2

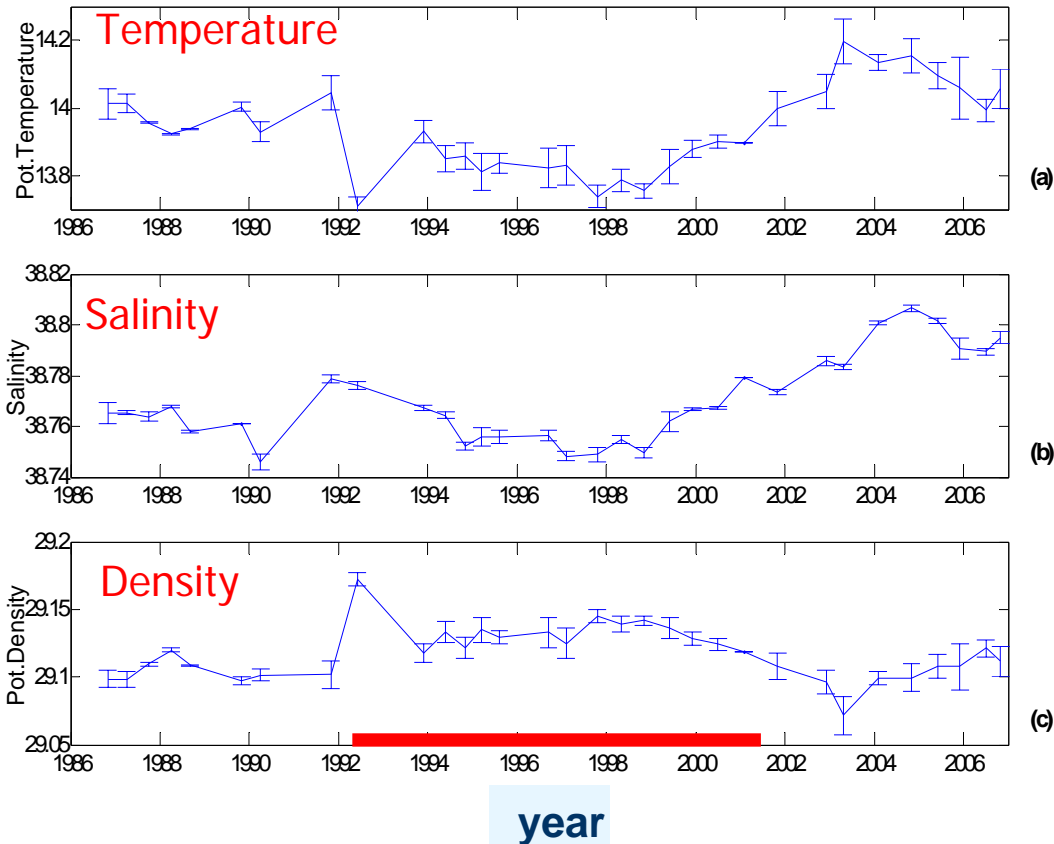
3

1 Until 1991 *pre-EMT period*

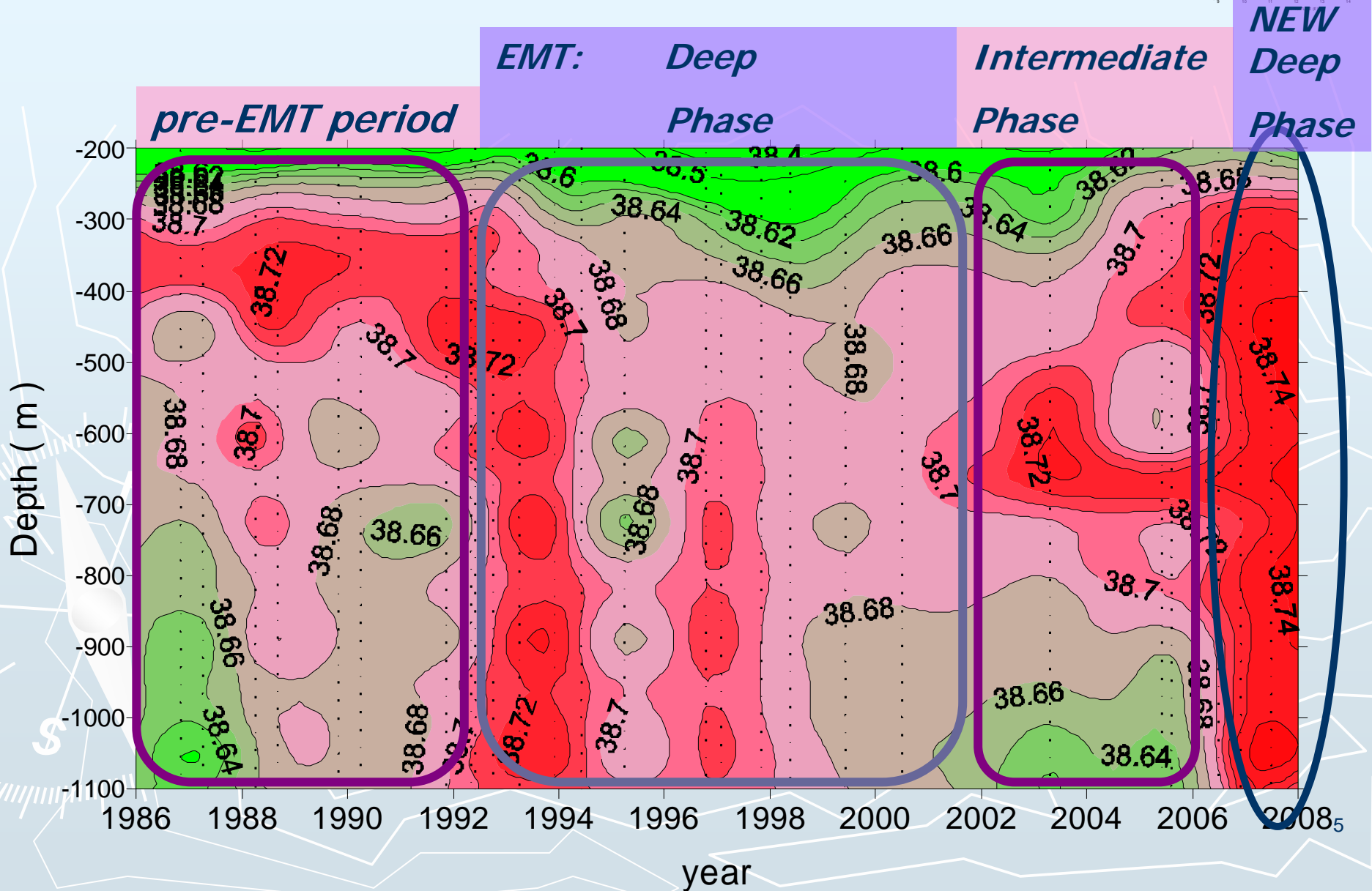
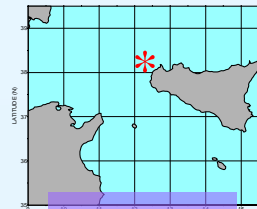
*EMT propagation:*

2 1992-2001 *Deep Phase*

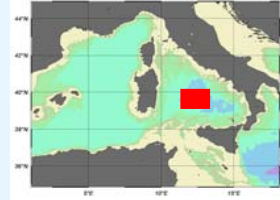
3 2002-2005 *Intermediate Phase*



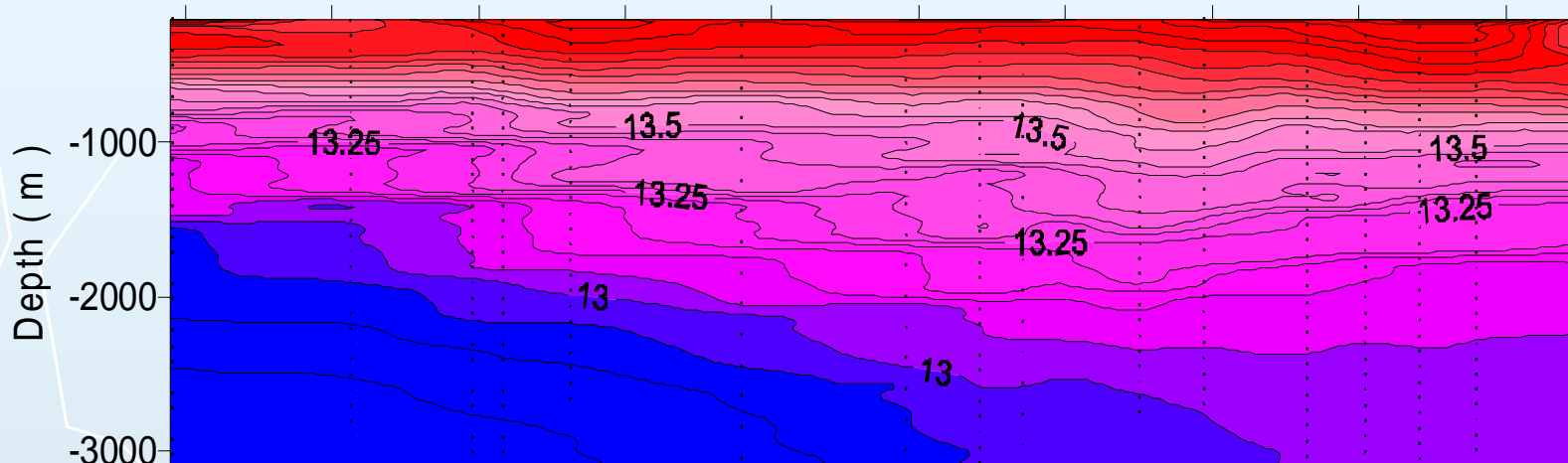
# Tyrrhenian Entrance: Salinity



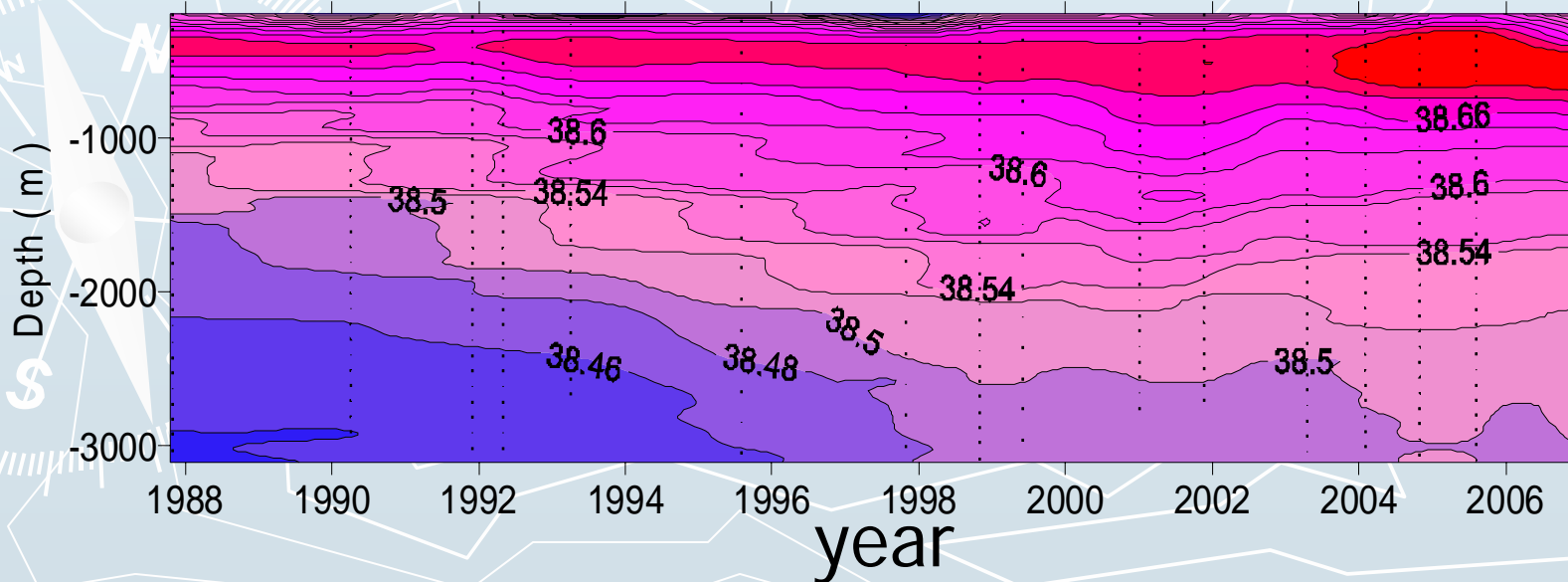
# Deep Tyrrhenian Basin



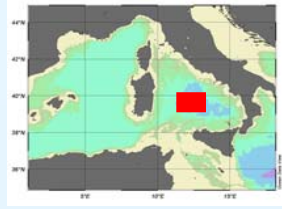
## Temperature



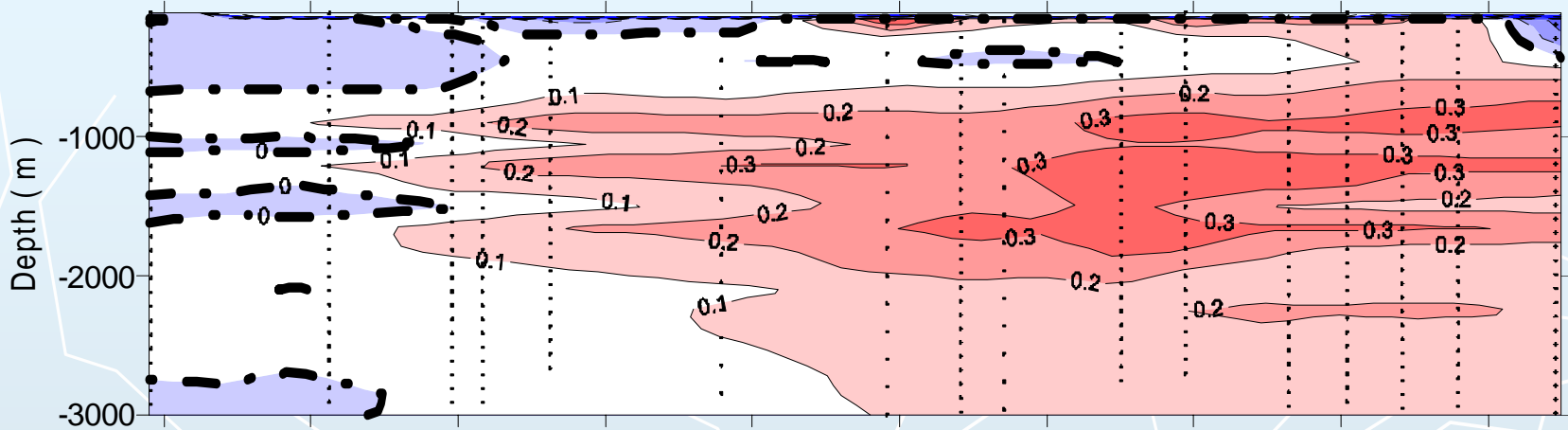
## Salinity



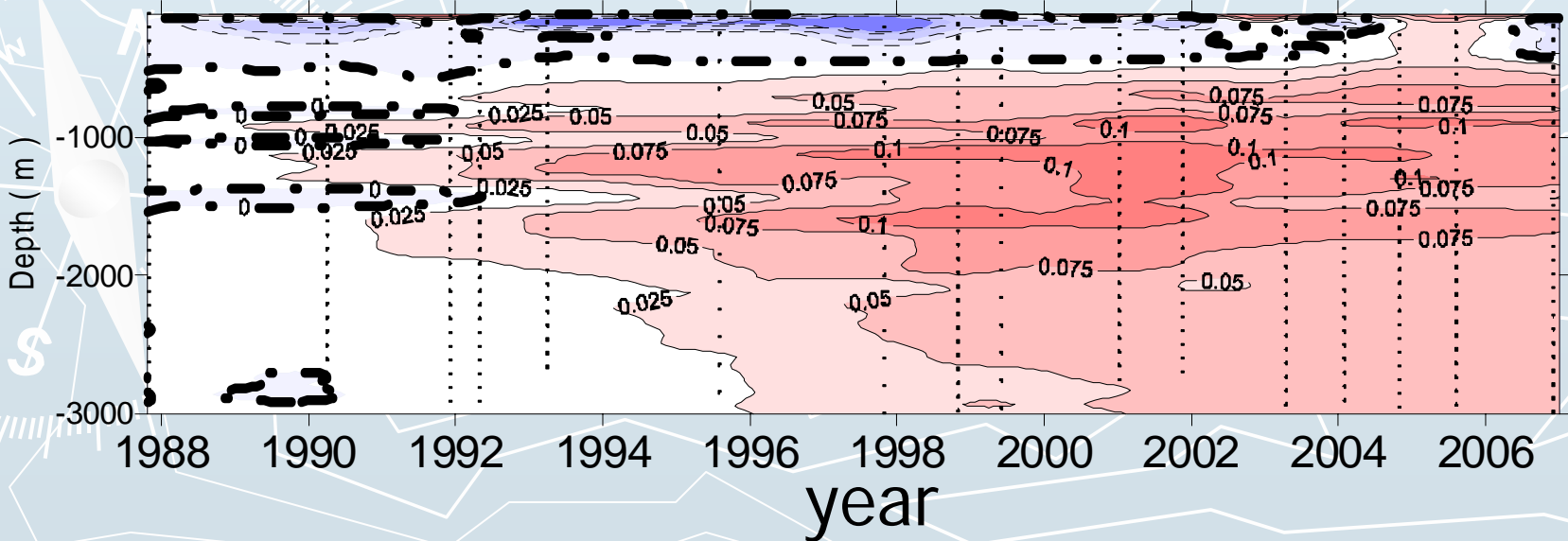
# Deep Tyrrhenian Basin



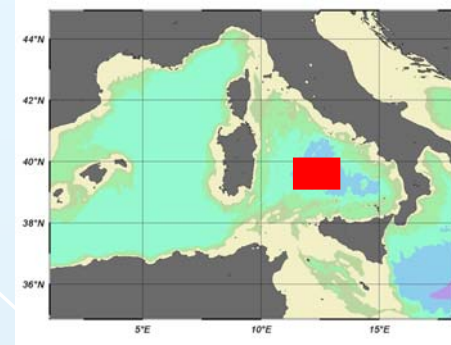
## Temperature anomaly



## Salinity anomaly

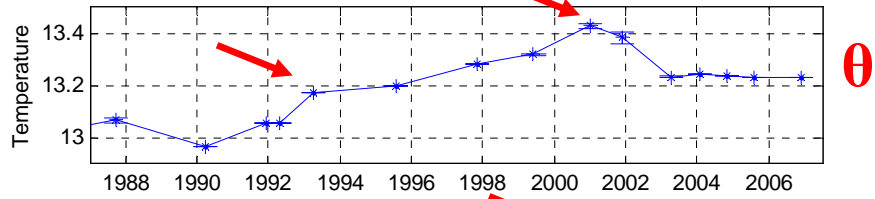


# Deep Tyrrhenian Basin

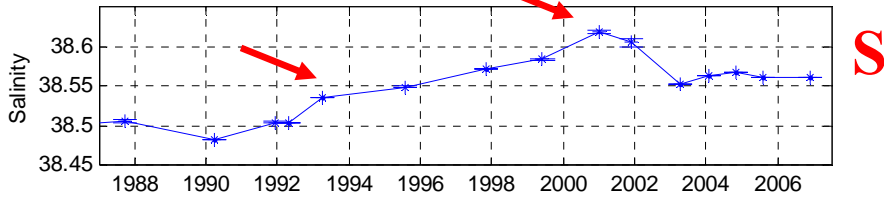


## Deep Layer

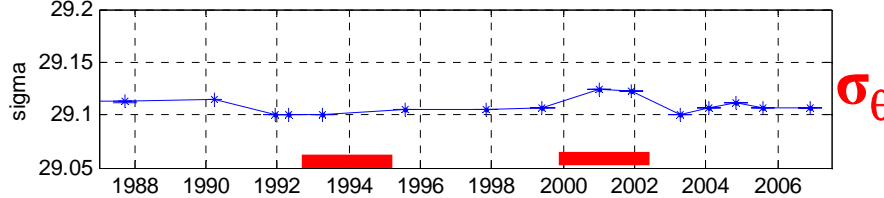
Tyrrhenian Sea (1450-1500m)



$\theta$



$S$

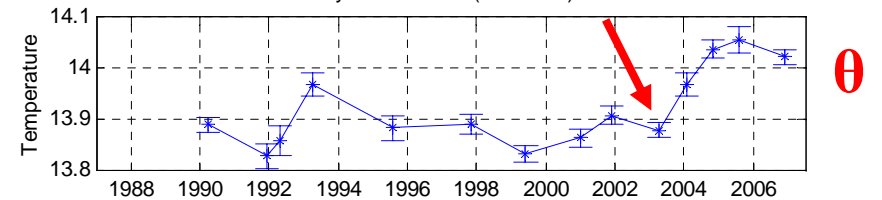


$\sigma_{\theta}$

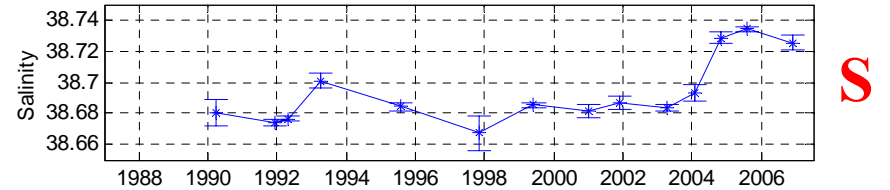
year

## Intermediate Layer

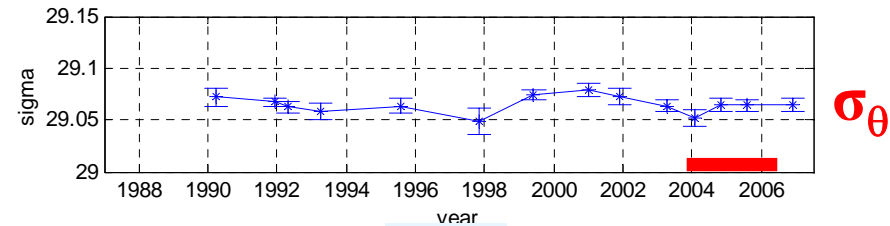
Tyrrhenian Sea (350 - 450)



$\theta$



$S$



$\sigma_{\theta}$

year



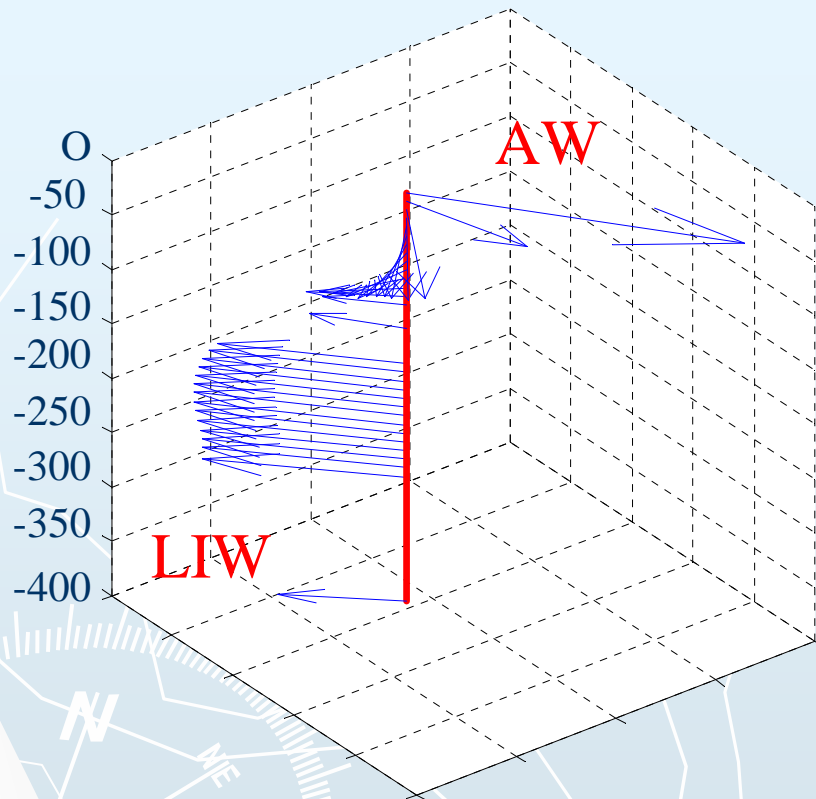


# Western sills monitoring

- Currents + SBE
- Periodical Hydrography



# Vertical structure of the current

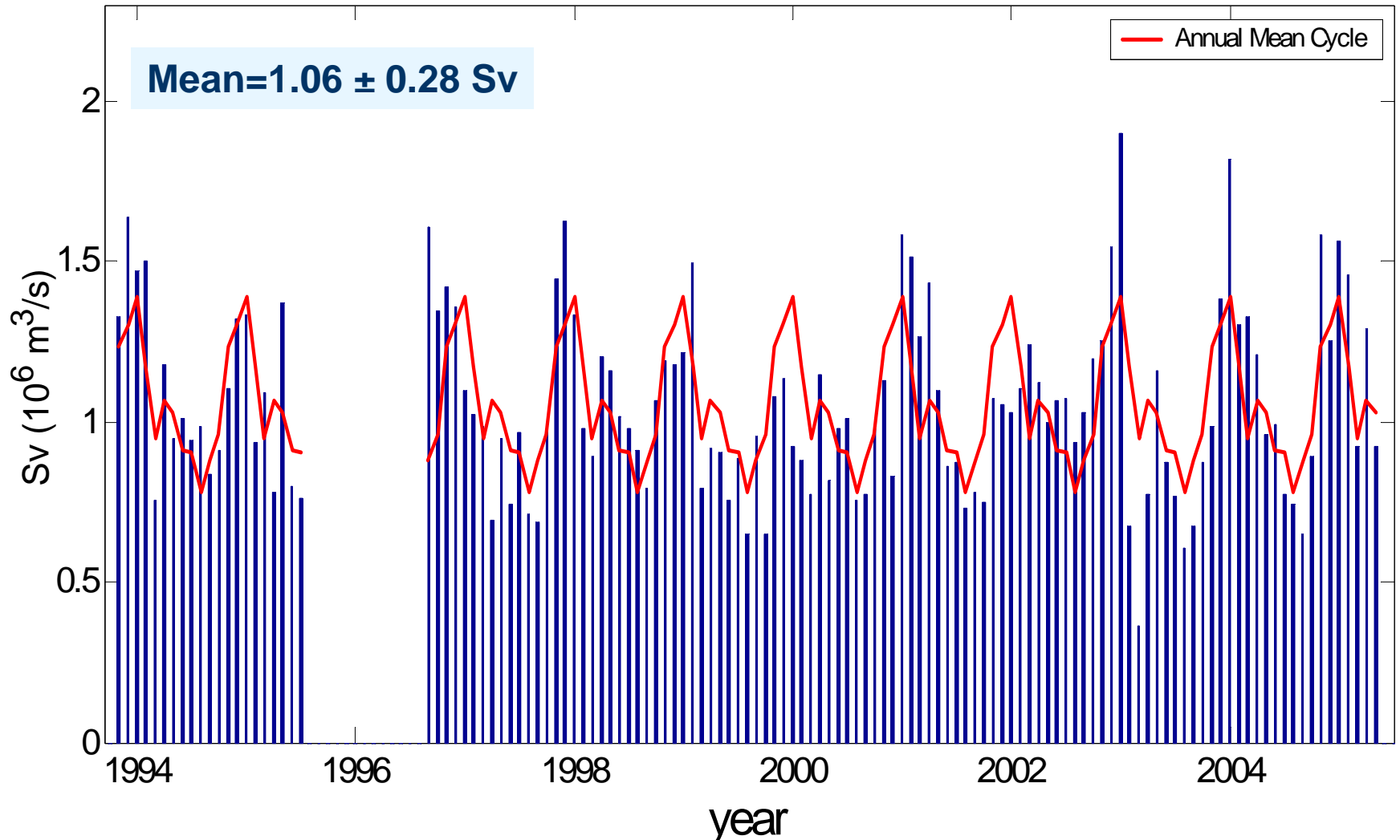


Mean current characteristics  
(April 2003 – January 2004)

The existence of a two layer system is well evident in the current structure. The current rotation occurs in the first 100m of depth.

	u (cm/s)	v (cm/s)
<b>24m</b>	-1.4 ± 41.3	-18.8 ± 45.3
<b>32m</b>	-2.8 ± 20.8	-7.7 ± 33.9
<b>104m</b>	-1.9 ± 5.2	2.9 ± 6.6
<b>150m</b>	0.4 ± 3.0	4.9 ± 5.7
<b>280m</b>	-0.4 ± 1.8	9.5 ± 7.0
<b>400m</b>	-0.7 ± 0.9	5.7 ± 6.1

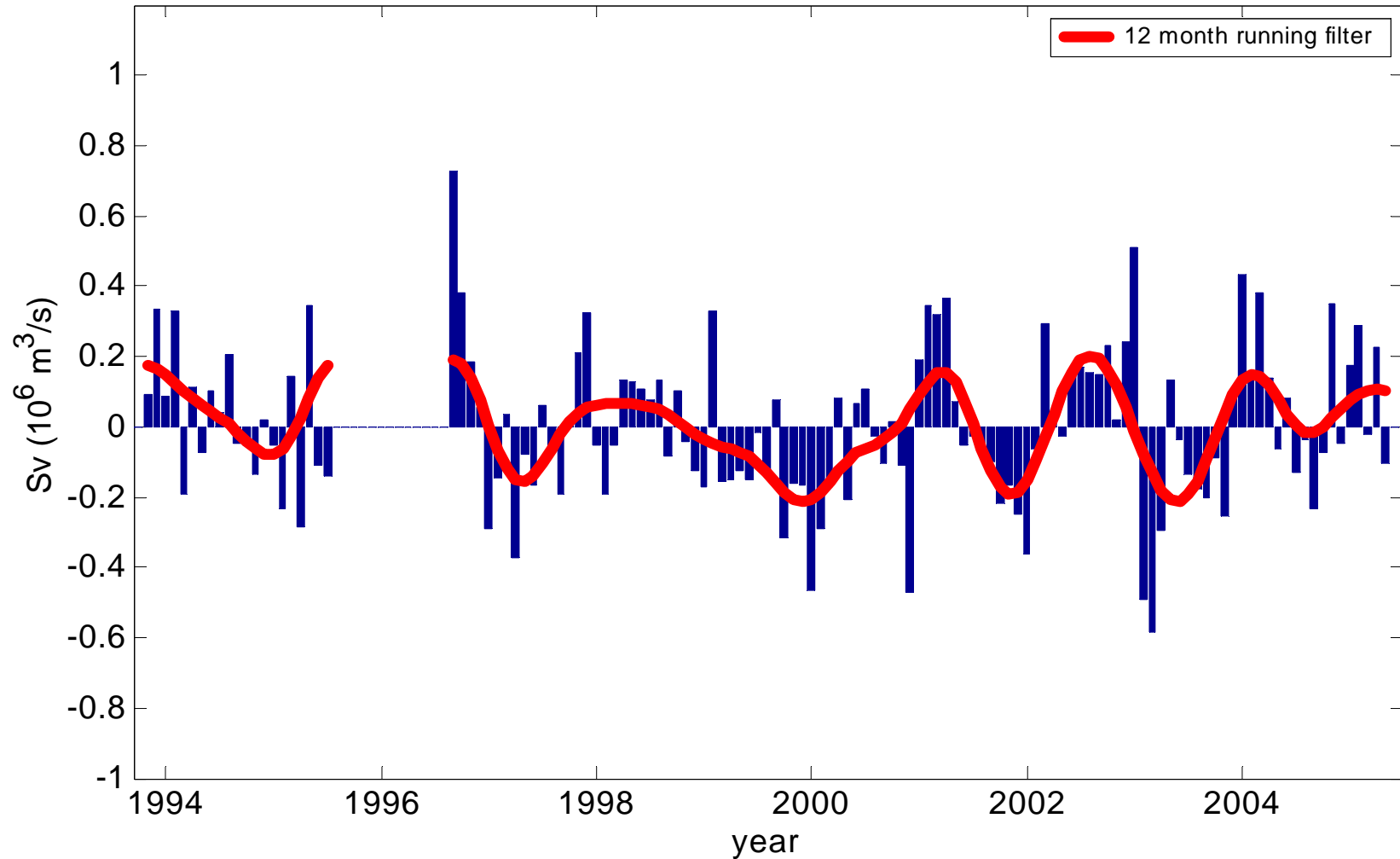
# Monthly LIW Transport



# Monthly LIW Transport



LIW Transport: Monthly Anomaly



# CONCLUSIONS

- ④ Hydrographic conditions of the Sicily Strait are influenced by the EMT, significantly modifying the outflow buoyancy.
- ④ Changes of buoyancy of the eastern outflow deeply modified the intermediate and deep hydrographic characteristics of the Tyrrhenian basin.
- ④ The EMT effects on the eastern Med outflow is still continuing. Starting from 2006 a new deep phase is active.
- ④ The LIW transport through the strait doesn't seem significantly influenced by changes in the hydrographic conditions.