

5th International SedNet Conference 2008

DEFINITION OF THE NATURAL SEDIMENT DYNAMICS BEFORE THE DREDGING OF THE PORT OF GENOA (ITALY)

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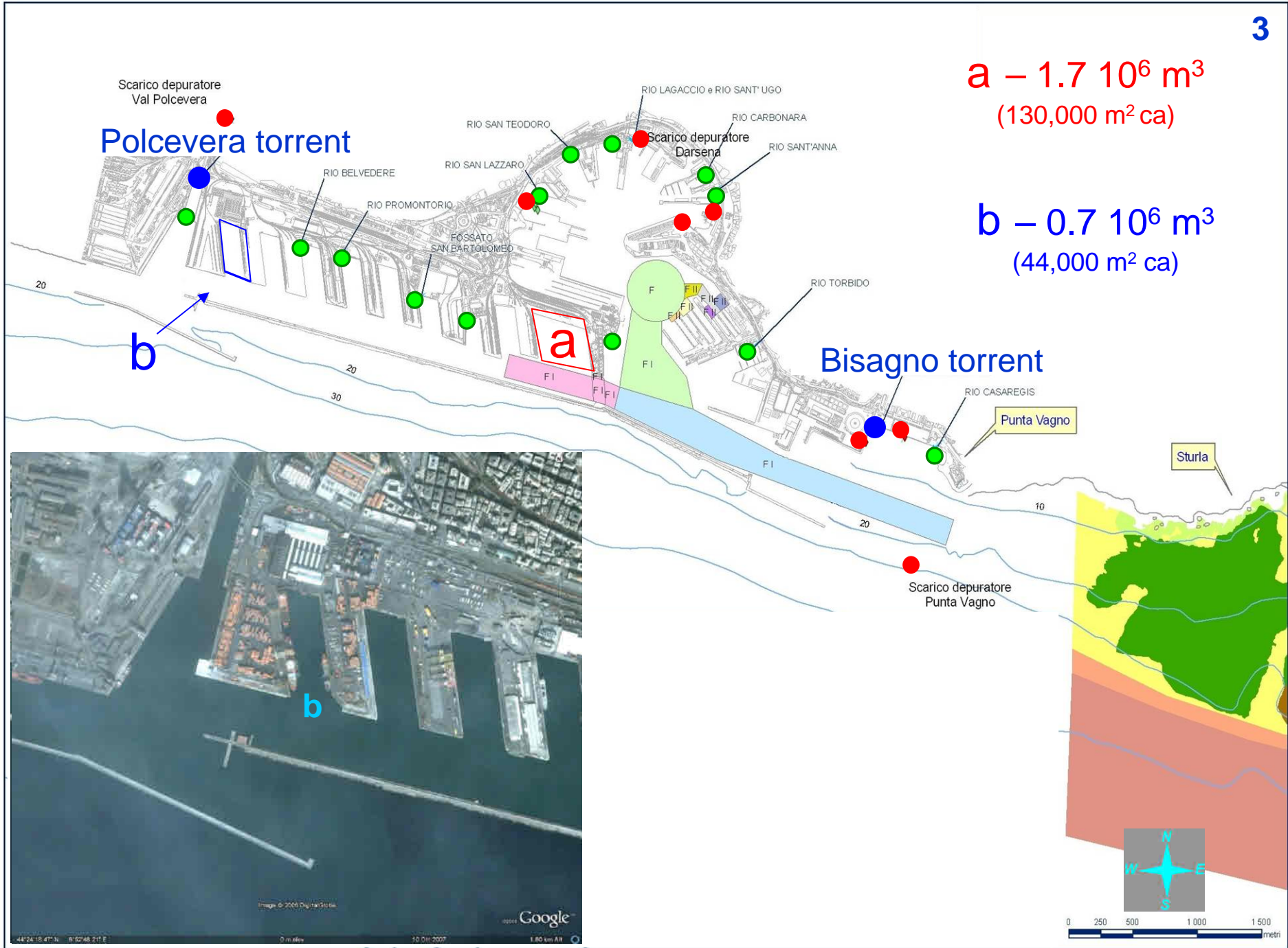
⁴ N.U.R.C, La Spezia (Italy)



Oslo, 27th-29th May 2008







ANALYSES CARRIED OUT IN THE WATER COLUMN

(5 campaigns)

Suspended particulate matter
(Total, Organic and Inorganic Particulate matter)

Dimensional analyses of the TPM

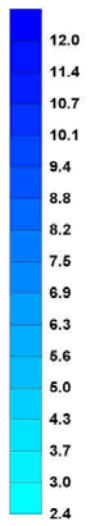
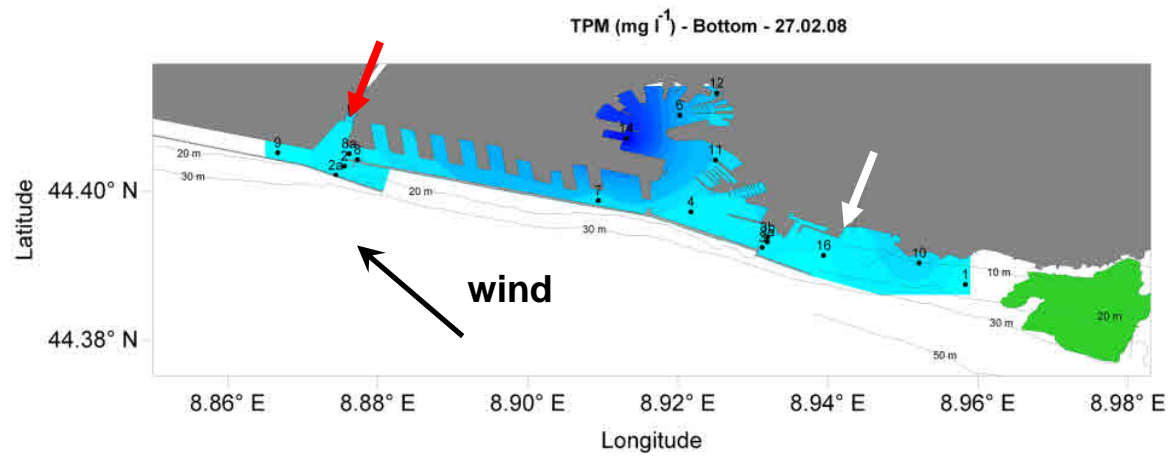
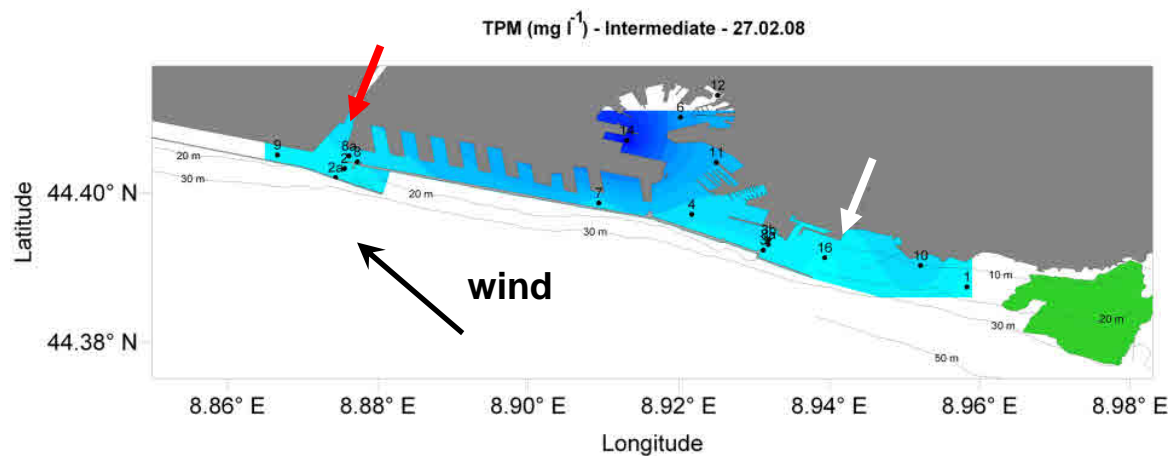
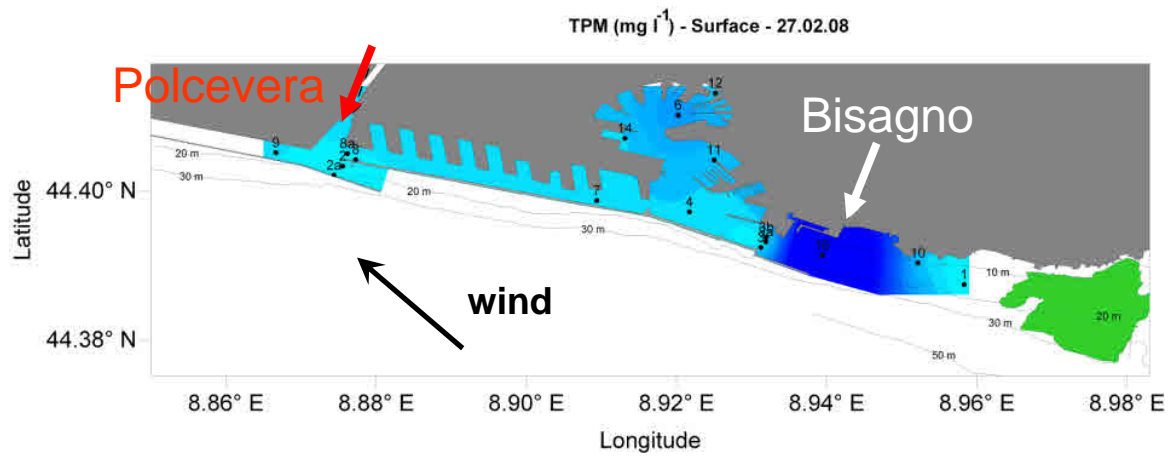
Physical data and turbidity

Measures of current with the V-ADCP

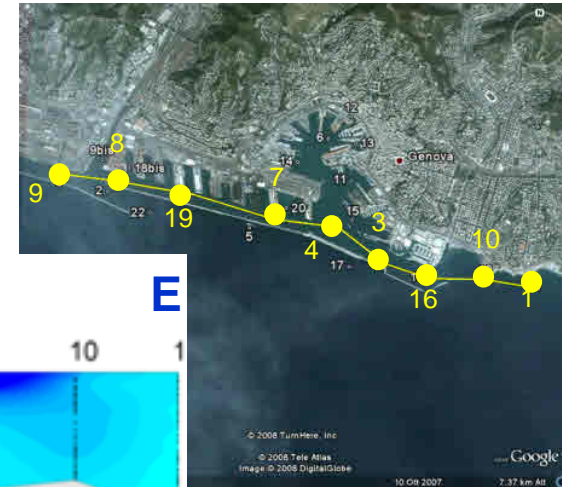
Calibration “TPM vs turbidity” data for the ADCP

Evaluation of the TPM with the V-ADCP and SediView

**Horizontal distribution
of the TPM (mg l⁻¹)
(27.02.2008)**



Vertical distribution of the TPM inside the Port (transect 9-1)

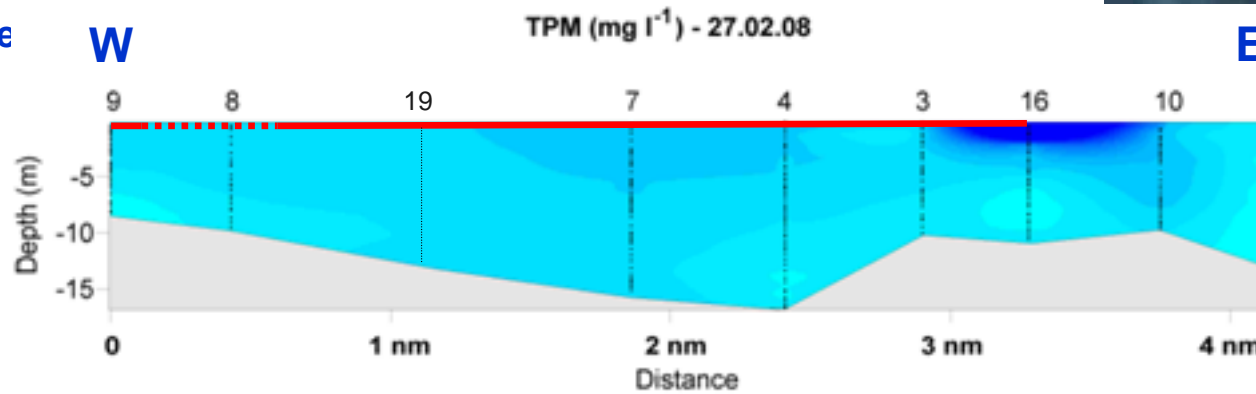


direction of the wind

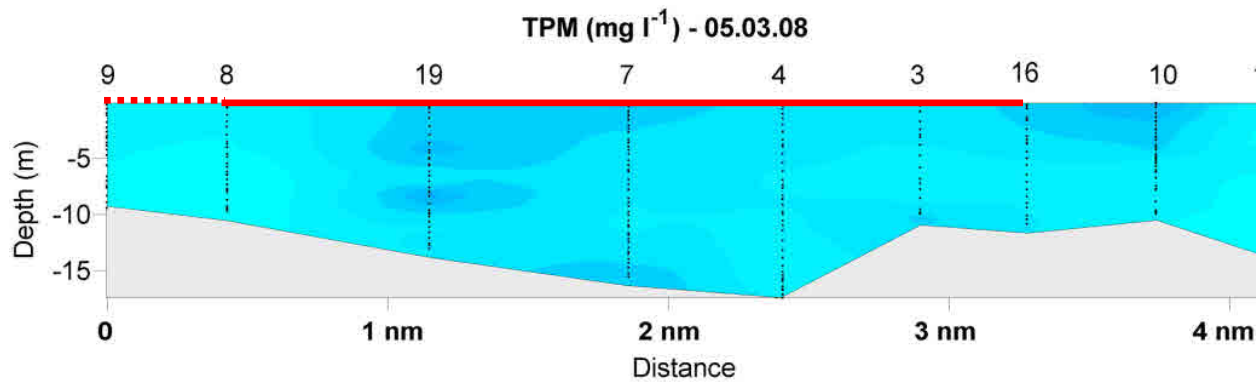
W

E

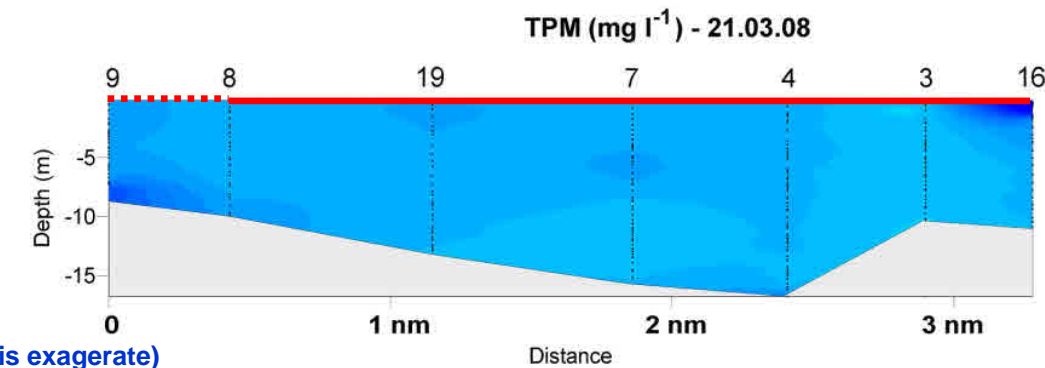
SW <- SE



N <- NE

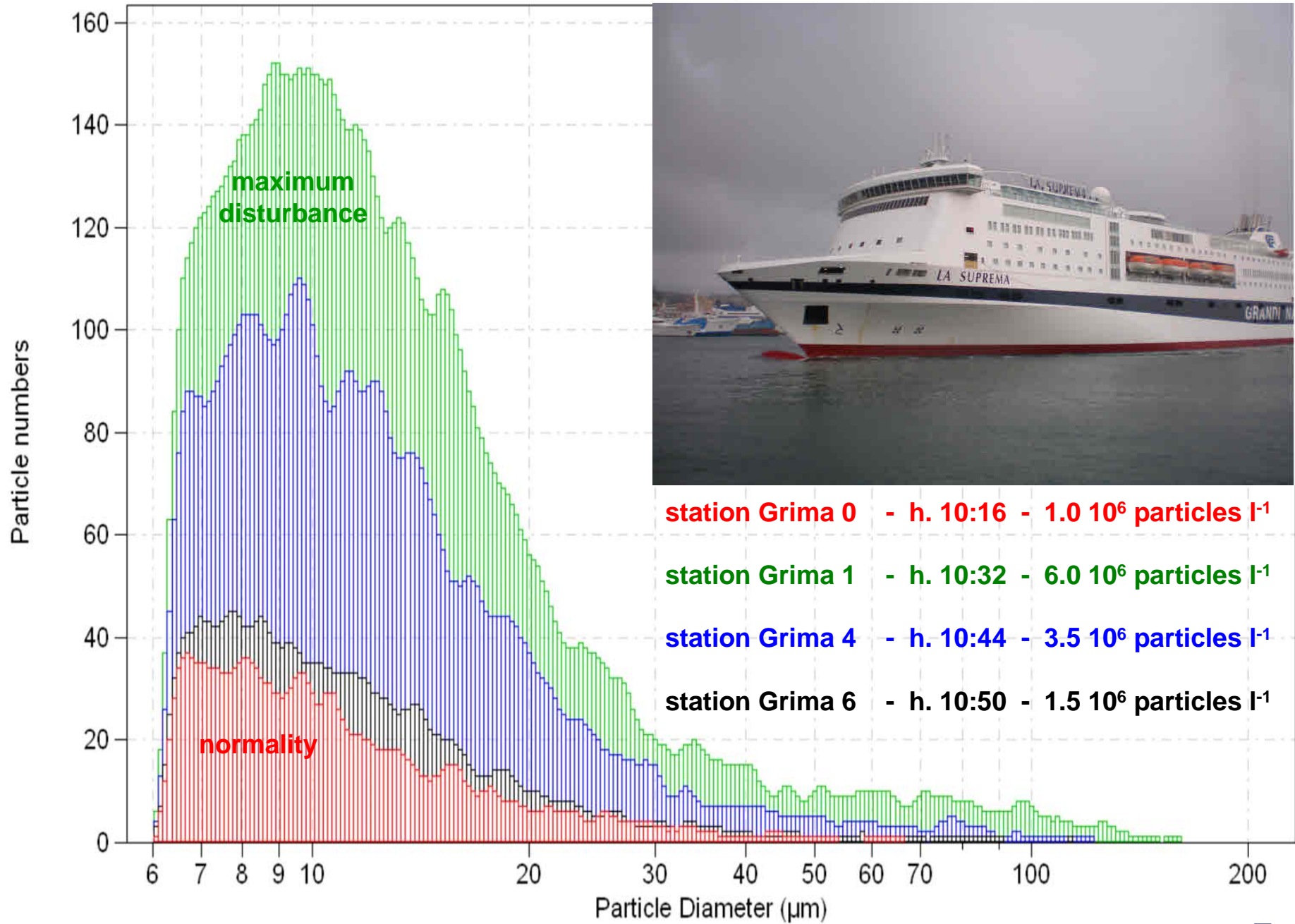


SE



(the vertical scale is exaggerate)

"Grimaldi" experiment

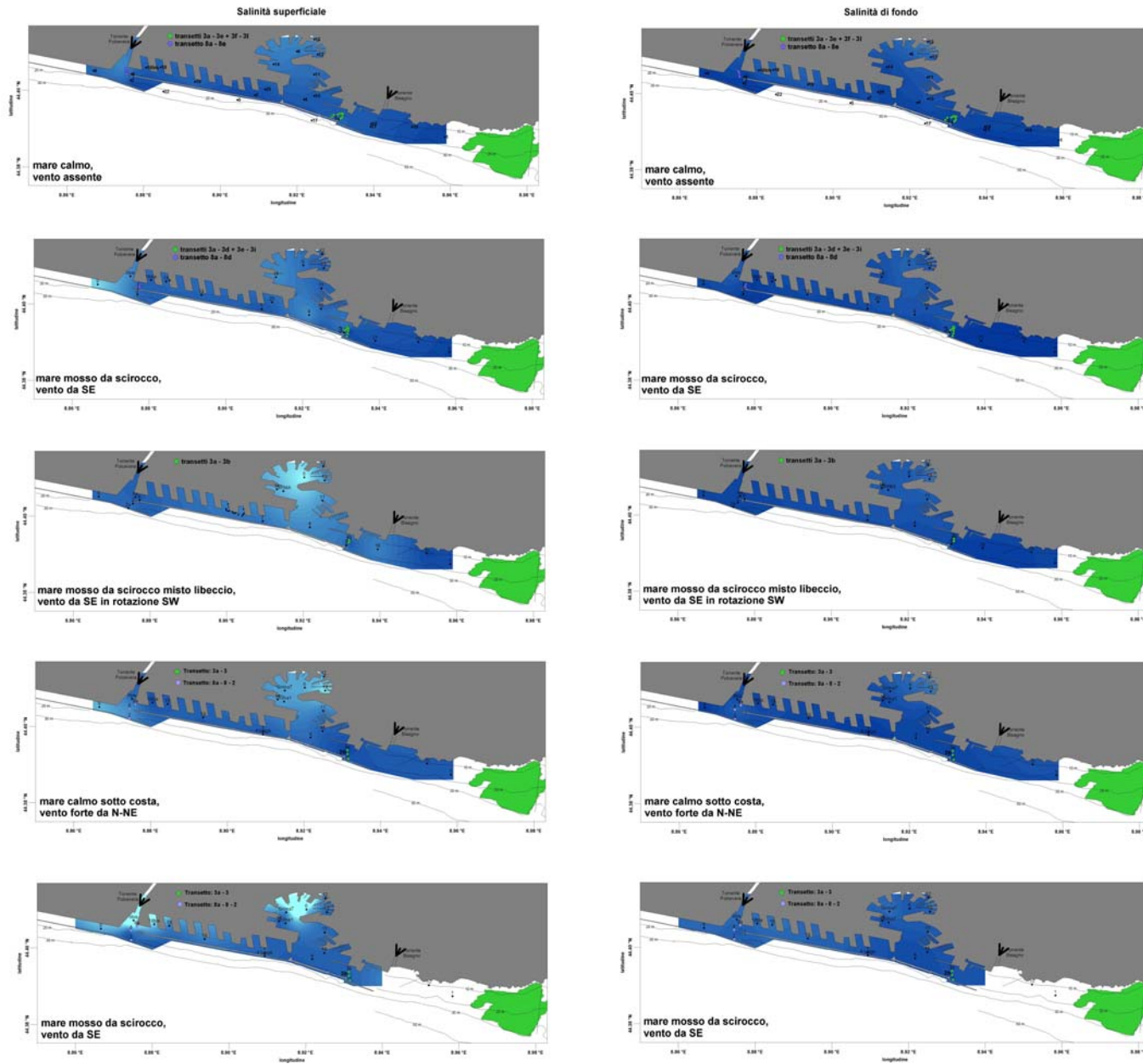


Physical parameters

Surface

Bottom

T
U
R
B
I
D
I
T
Y
(FTU)



wind swinging from SE to SW - Depth: 2.0 m



44°24'11.83" N 8°54'35.97" E

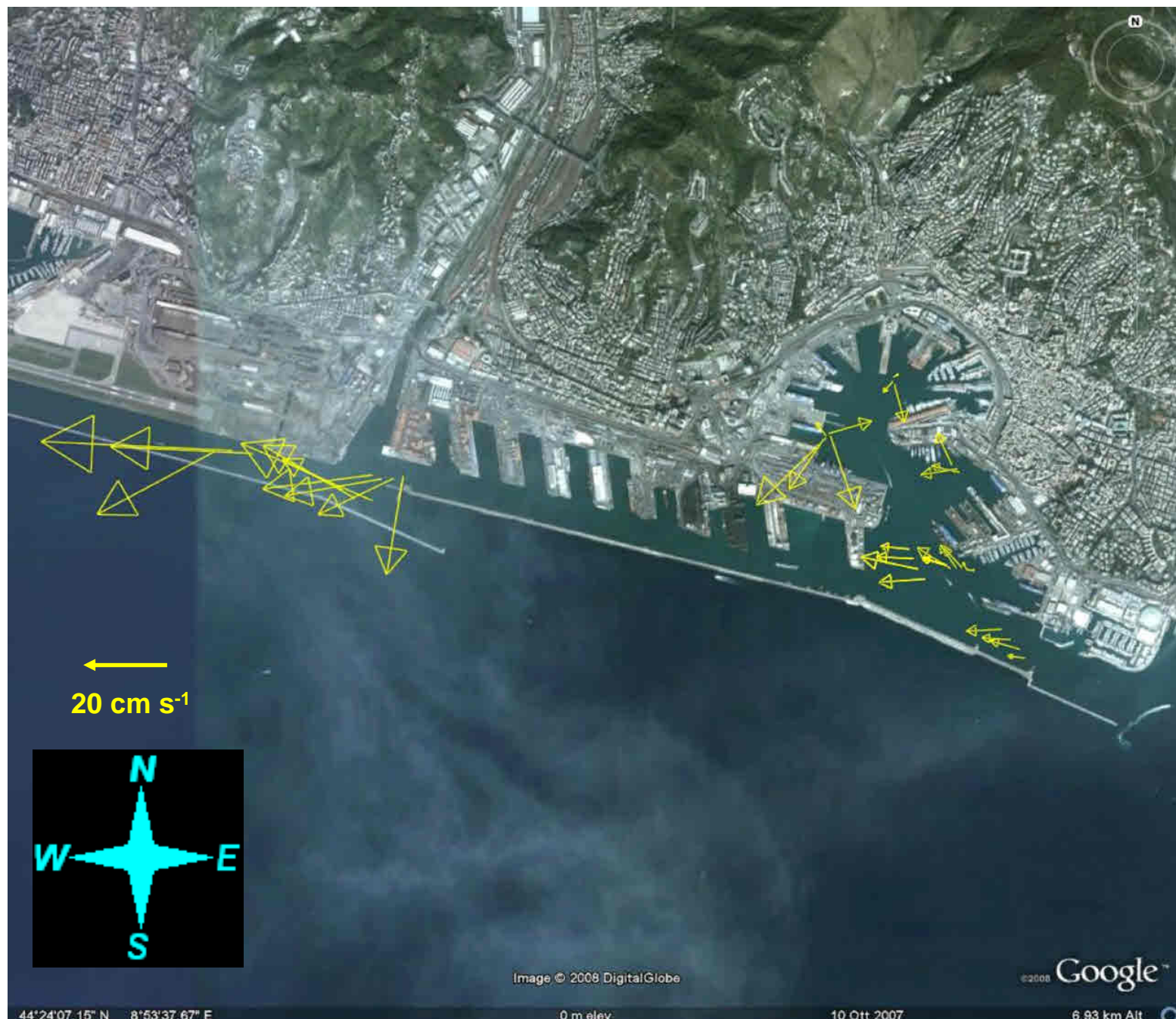
10 Ott 2007

7.27 km Alt

wind swinging from NE to N - Depth 2.0 m

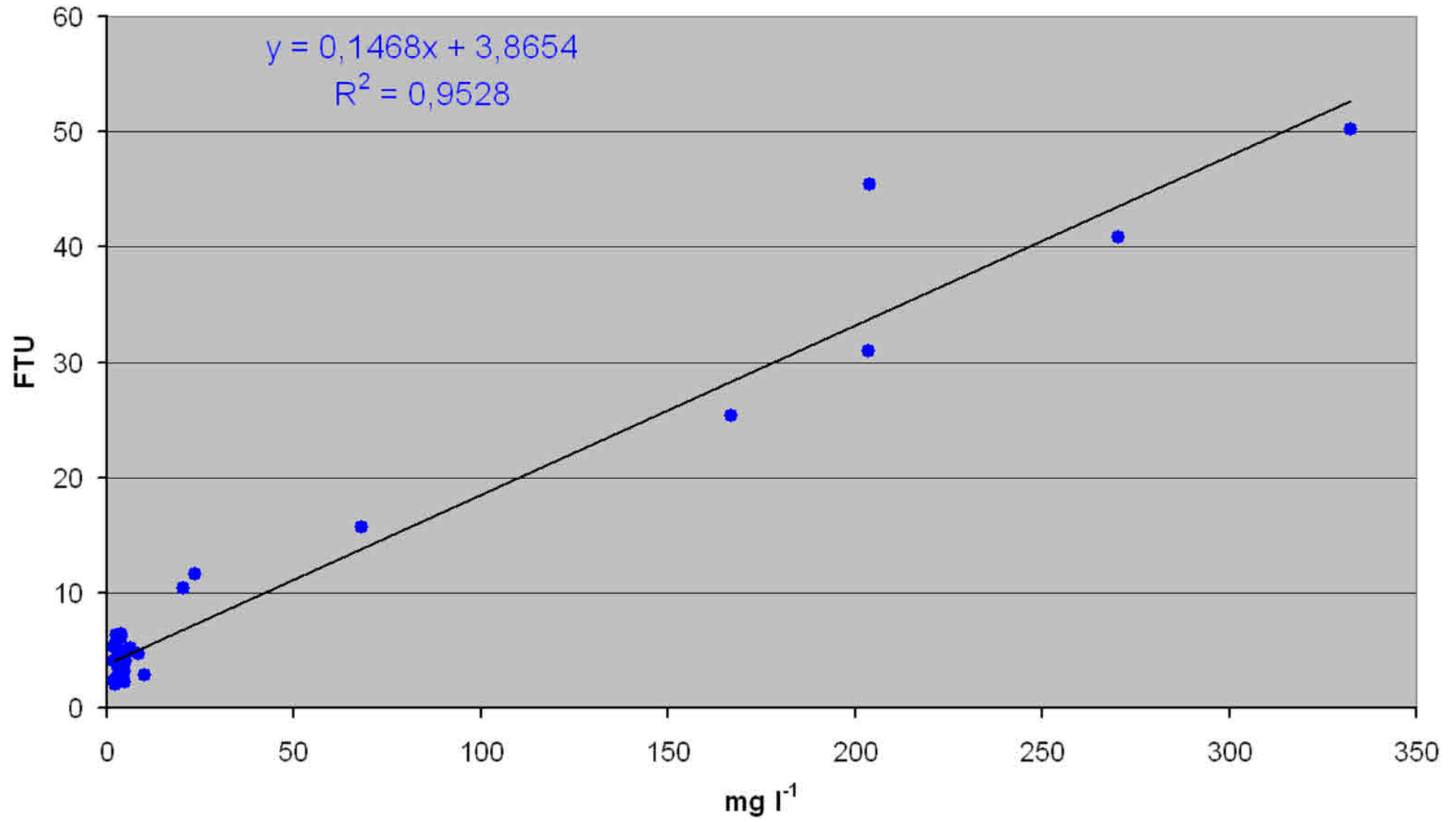


wind from SE - Depth 2.0 m



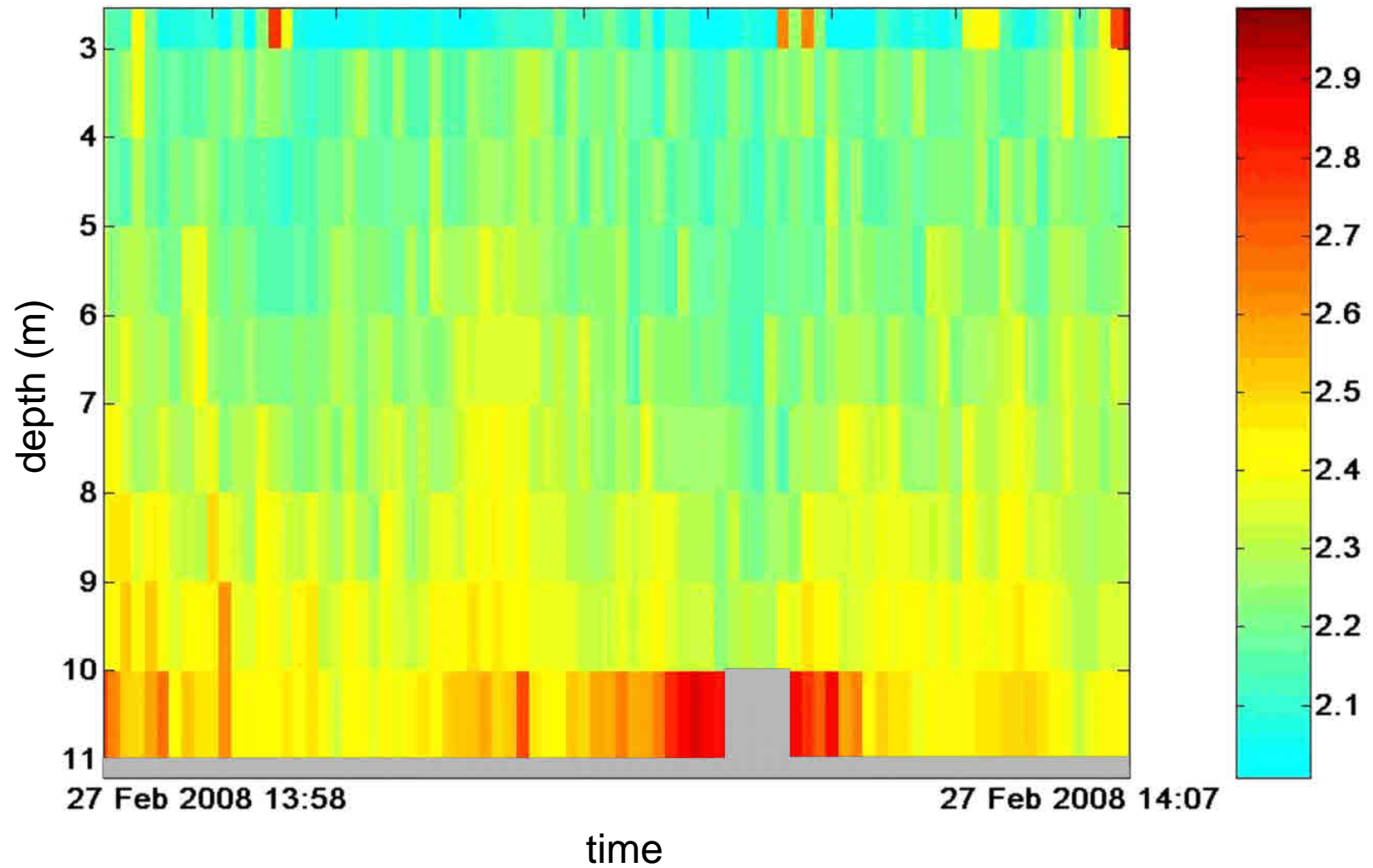
Calibration of the turbidimeter

turbidity (FTU) vs TPM (mg l^{-1})

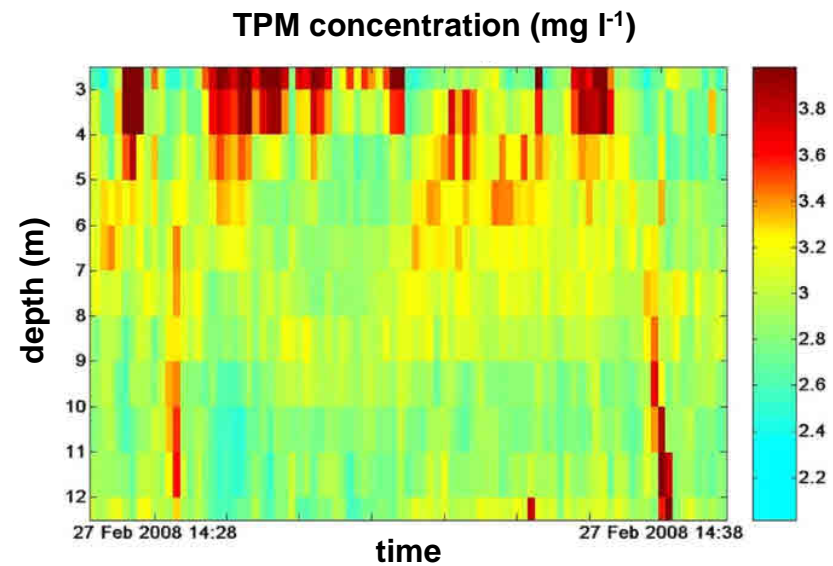
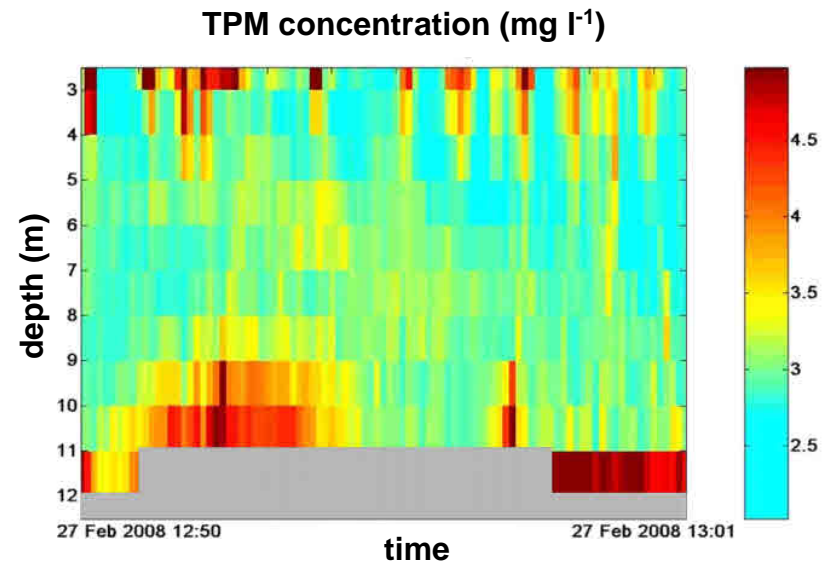
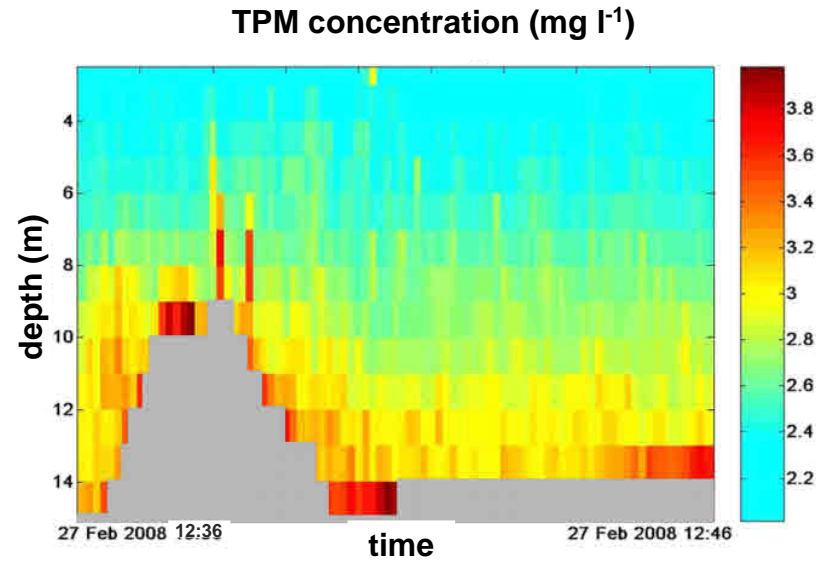


27.02.08 - Station 1, near the *Posidonia o.* meadows
(wind swinging from SE to SW)

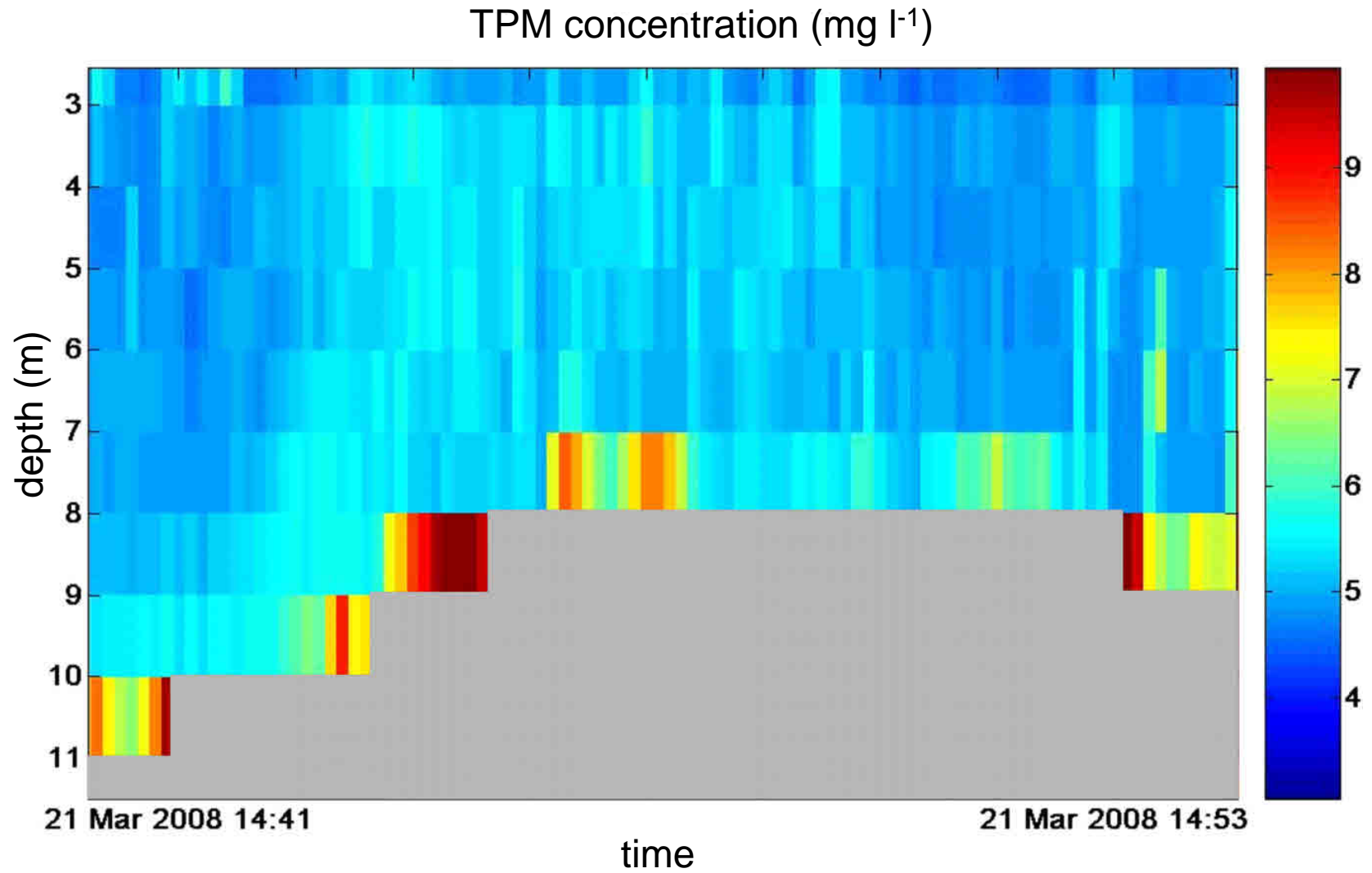
TPM concentration (mg l^{-1})



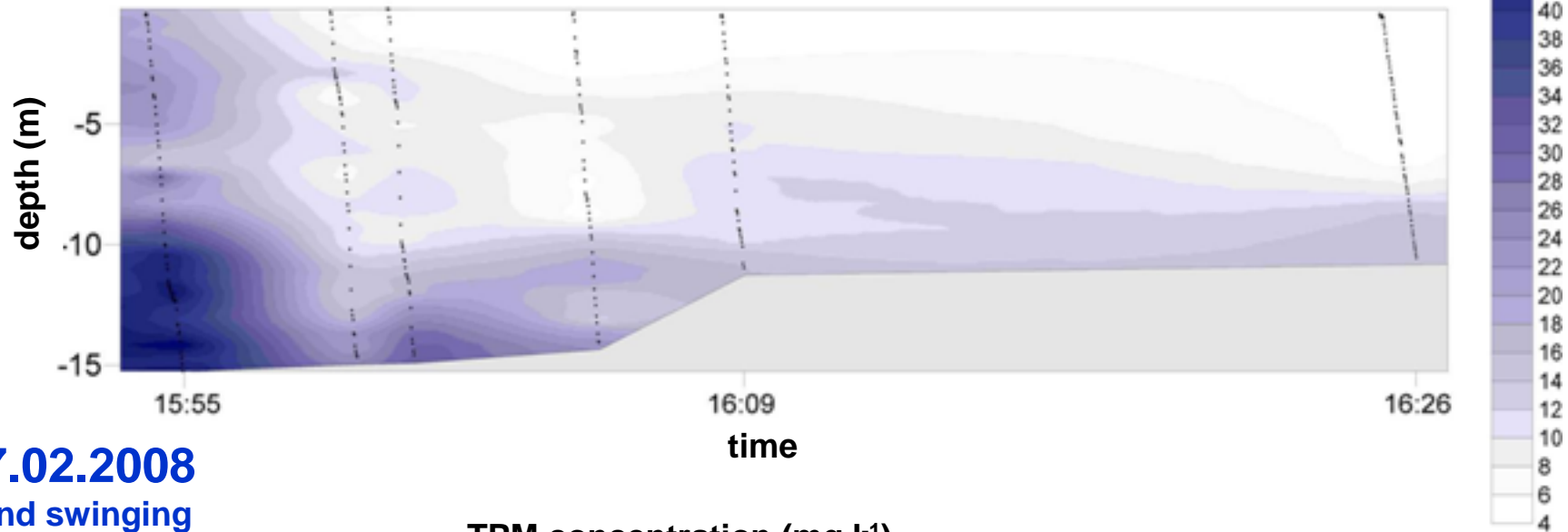
27.02.2008 - Station 3, eastern entrance to the port (wind swinging from SE to SW)



21.03.2008 - Station 8, western entrance to the port
(wind from SE)

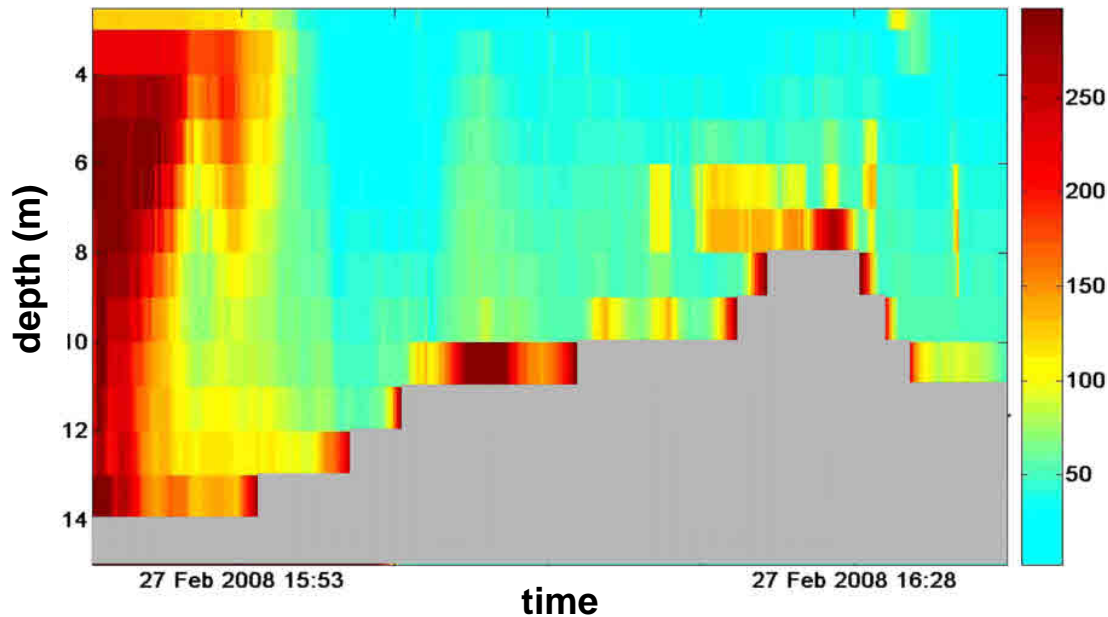


“Grimaldi” experiment - turbidity (FTU)



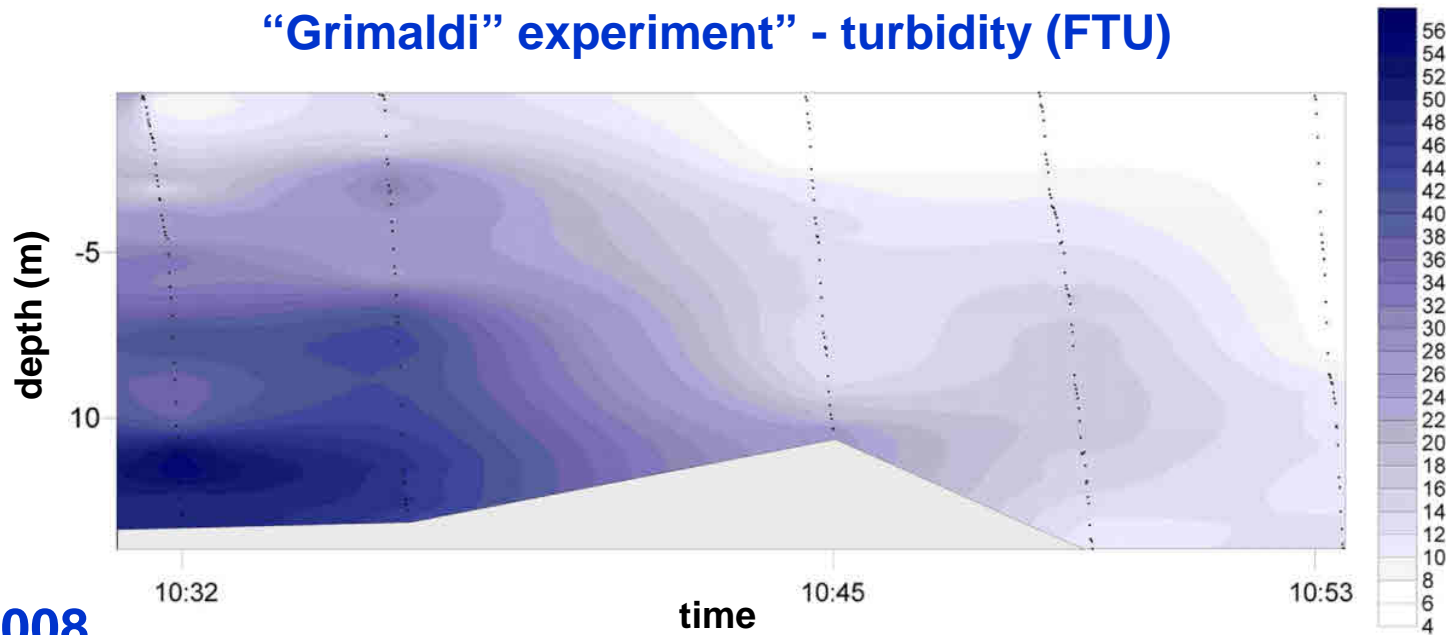
27.02.2008
(wind swinging
from SE to SW)

TPM concentration (mg l^{-1})



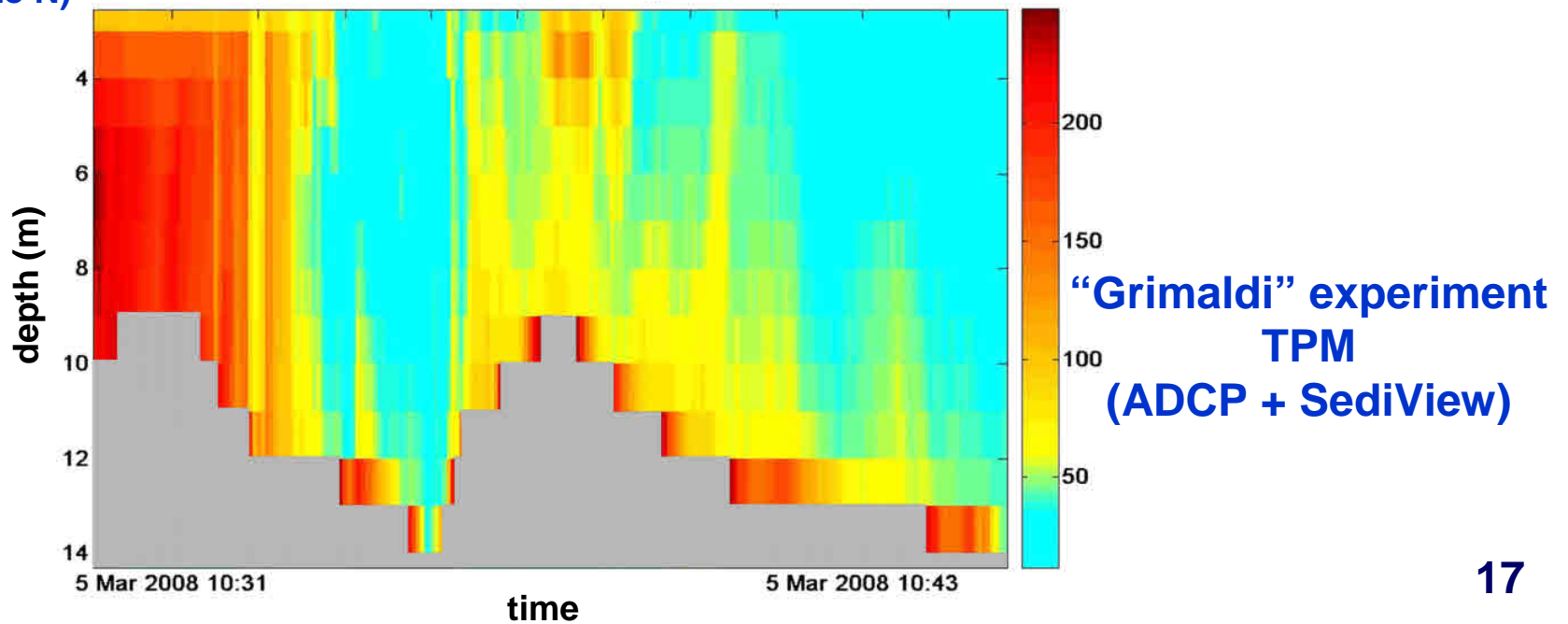
“Grimaldi” experiment
TPM
(ADCP + SediView)

“Grimaldi” experiment” - turbidity (FTU)



05.03.2008
(wind swinging
from NE to N)

TPM concentration (mg l⁻¹)



**“Grimaldi” experiment
TPM
(ADCP + SediView)**

In brief...

“Normal” conditions:
(higher limits)

Turbidity – 10 FTU

TPM – 6-8 mg l⁻¹

Particles – 1.0 million l⁻¹

“Disturbed” conditions:
(maximum limits)

Turbidity – 60 FTU

TPM – 600 mg l⁻¹

Particles – 6.5 million l⁻¹

Residence time – 45-60'

Winds from SE, SW and NE

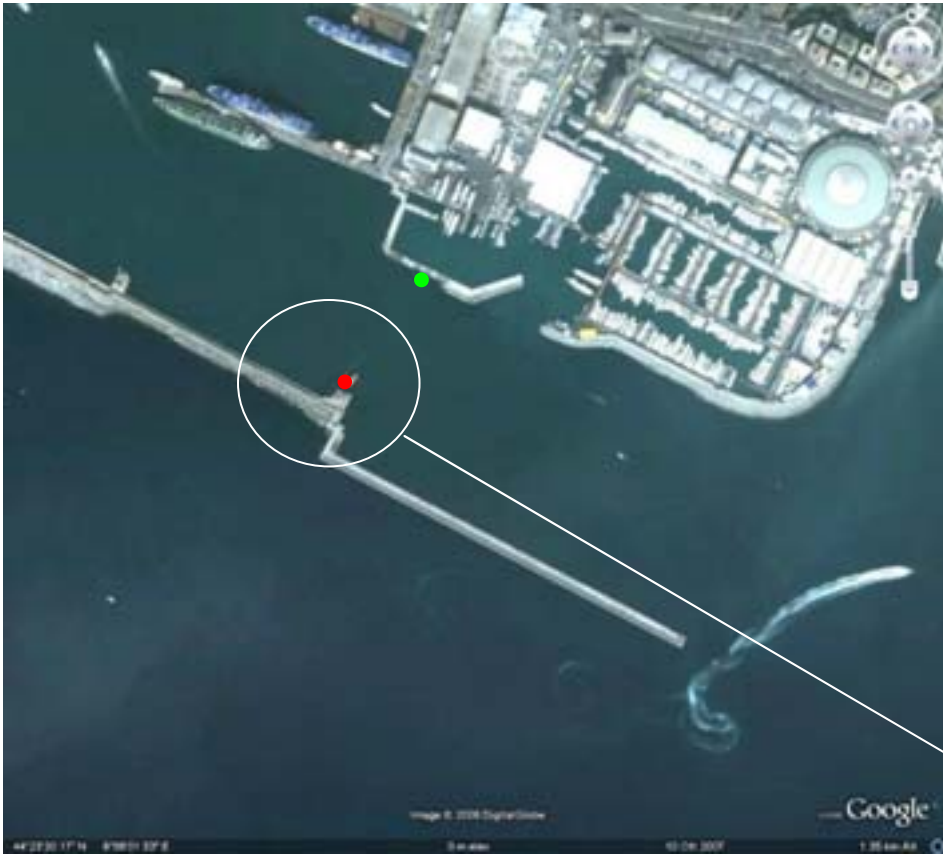
↓
V

sediments -> inside the port area

Wind from N

↓
V

sediments -> outside the port area



Eastern entrance to the Port

Position of the instruments
(red circle, up, and red line, on the right)



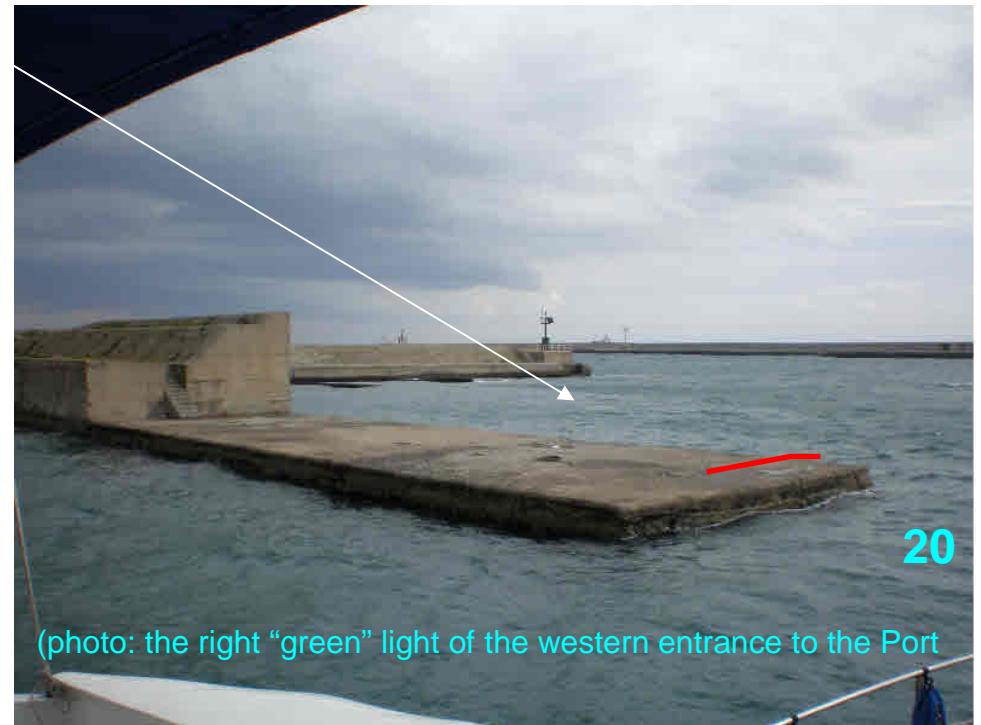
19

(photo: the left "red" light of the eastern entrance to the Port)

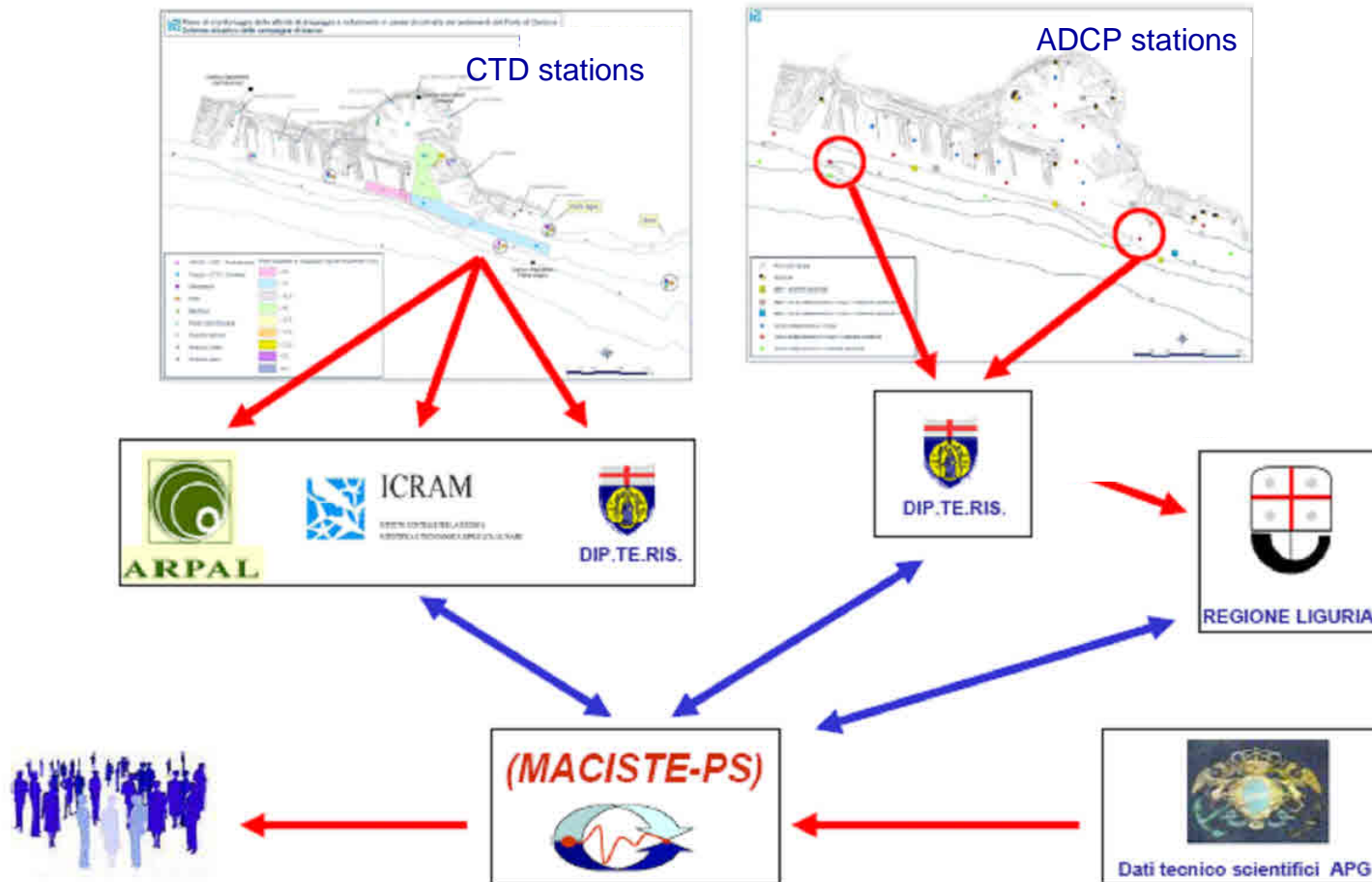


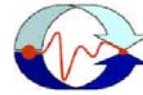
Western entrance to the Port

Position of the instruments
(sky-blu circle, up, and red line, on the right)



Monitoring of Sediment Release during the Dredging





MARine Coastal Information SysTEM (MACISTE)

Port Section

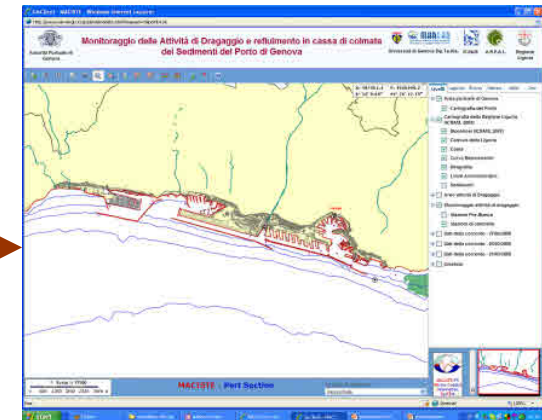
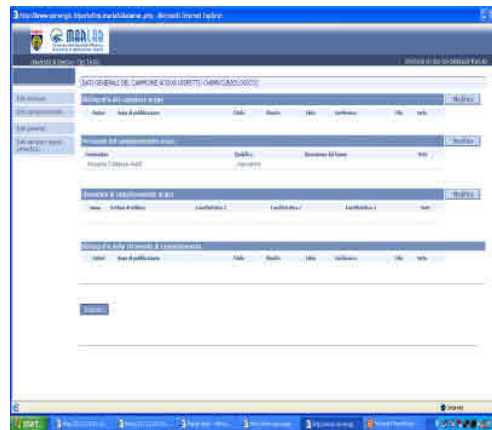
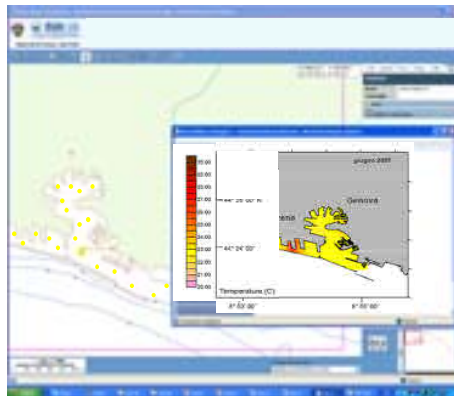
MAPSERVER



Geo Database
PostgreSQL/Postgis



GIS Client



...thank you!!!

