Long-term variability of the water flow characteristics in the Venice Lagoon inlets and construction works

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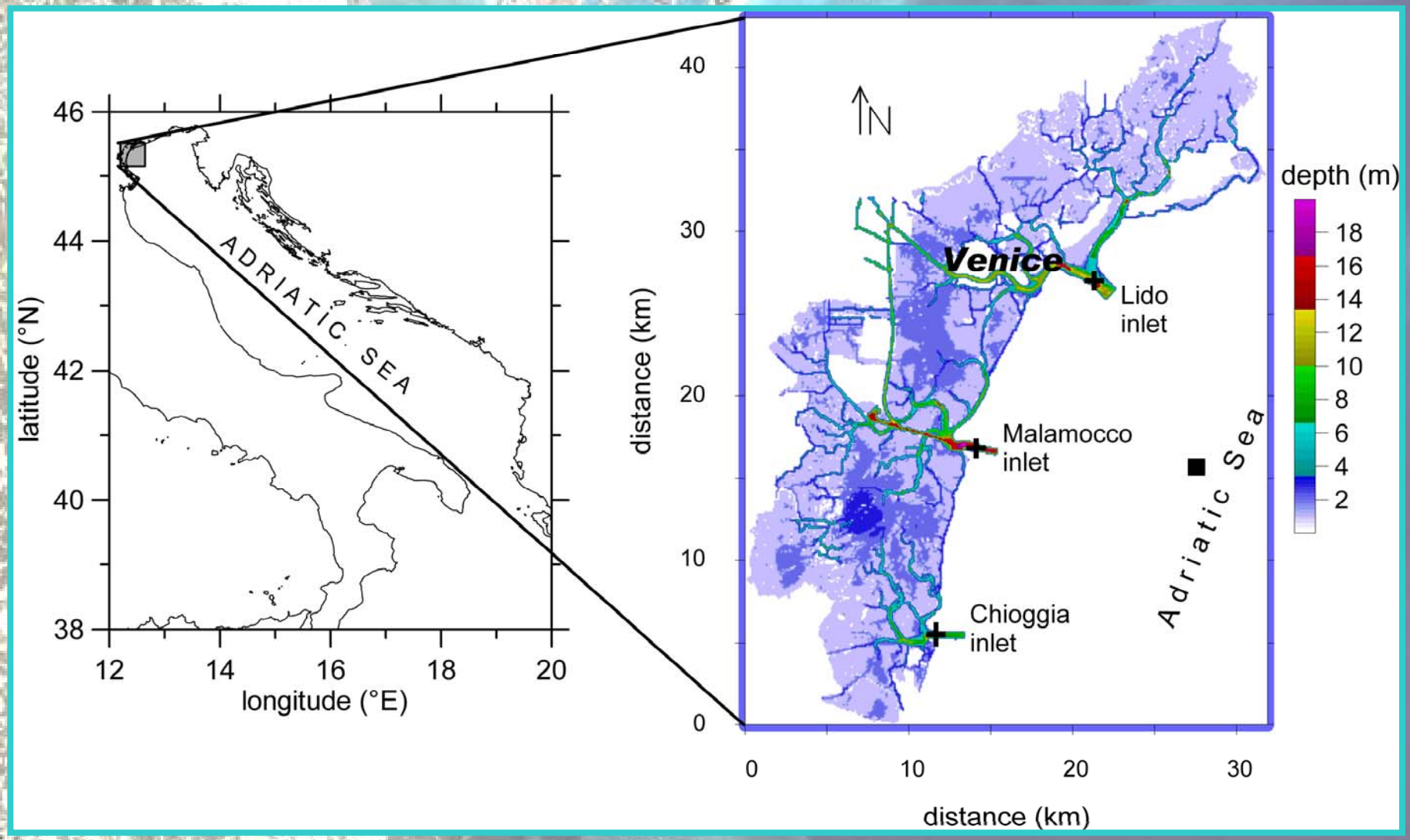
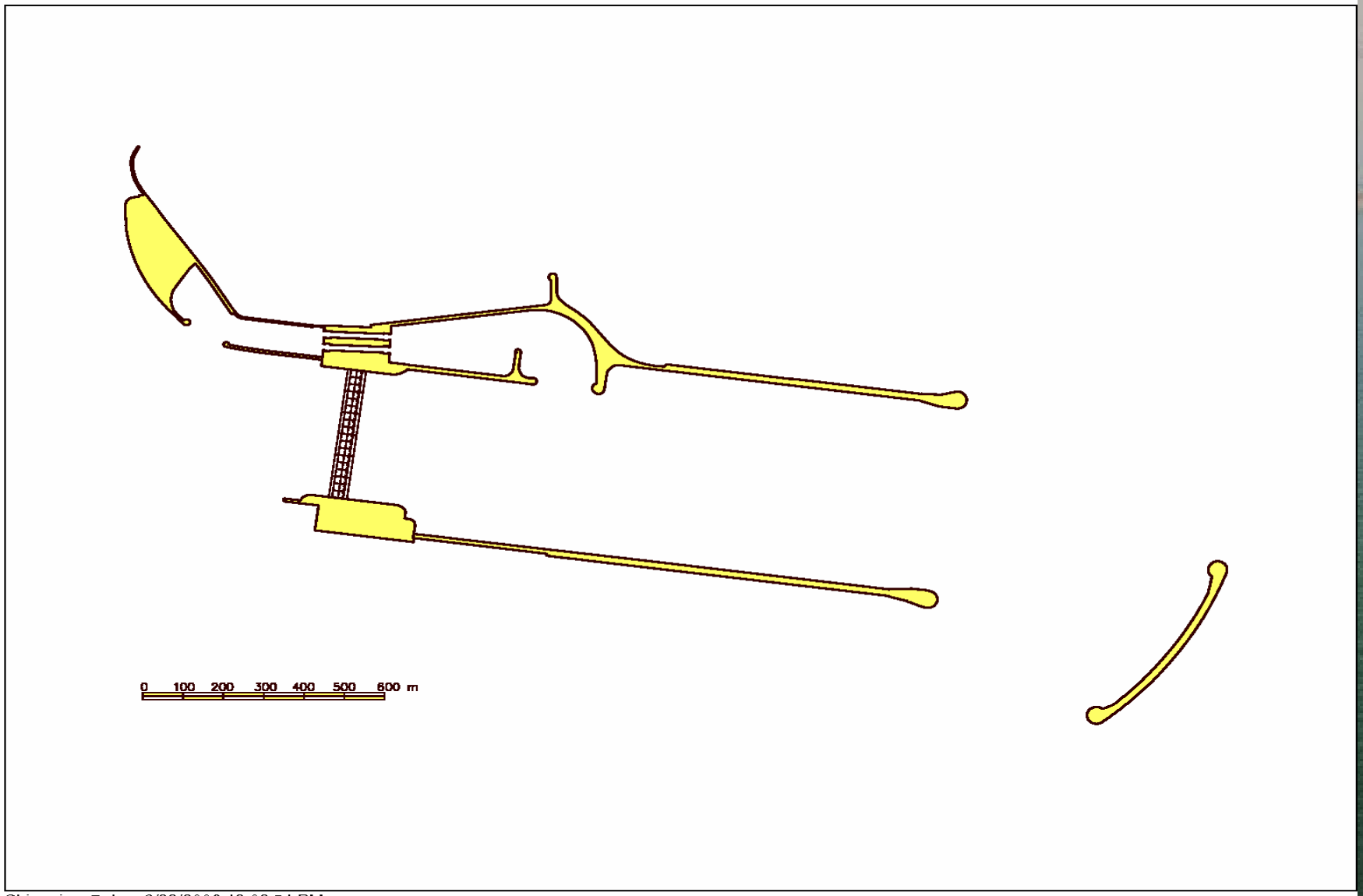

46
44
42
40
38
latitude (°N)
12
14
16
18
20
longitude (°E)
ADRIATIC SEA
40
30
20
10
0
distance (km)
N
Venice
Lido
inlet
Malamocco
inlet
Chioggia
inlet
Adriatic Sea
0
10
20
30
distance (km)
depth (m)
18
16
14
12
10
8
6
4
2

Chioggia Inlet with the Open-Sea Barrier

Chioggia Inlet with the Open-Sea Barrier



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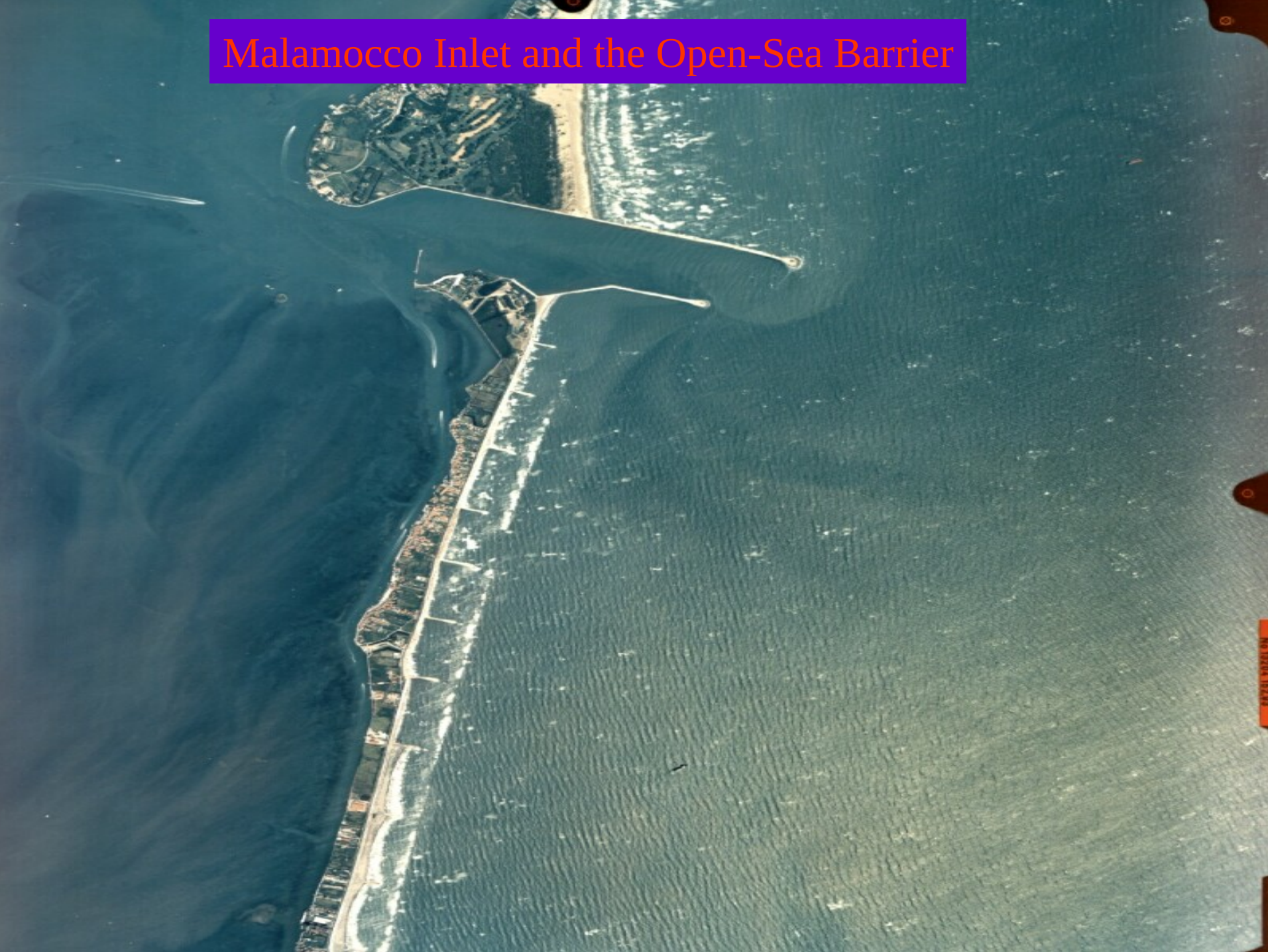
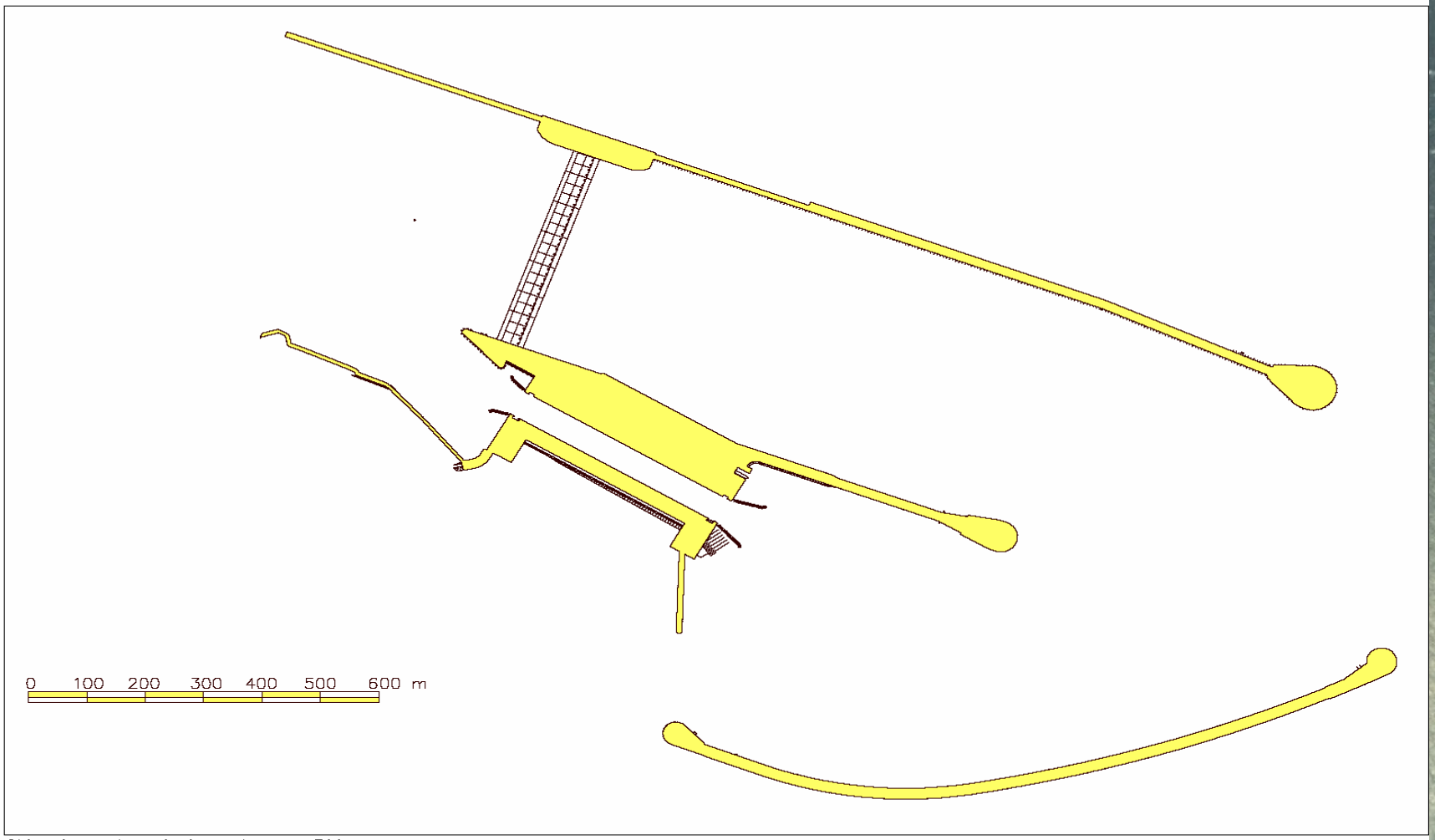
Malamocco Inlet and the Open-Sea Barrier



Malamocco Inlet and the Open-Sea Barrier



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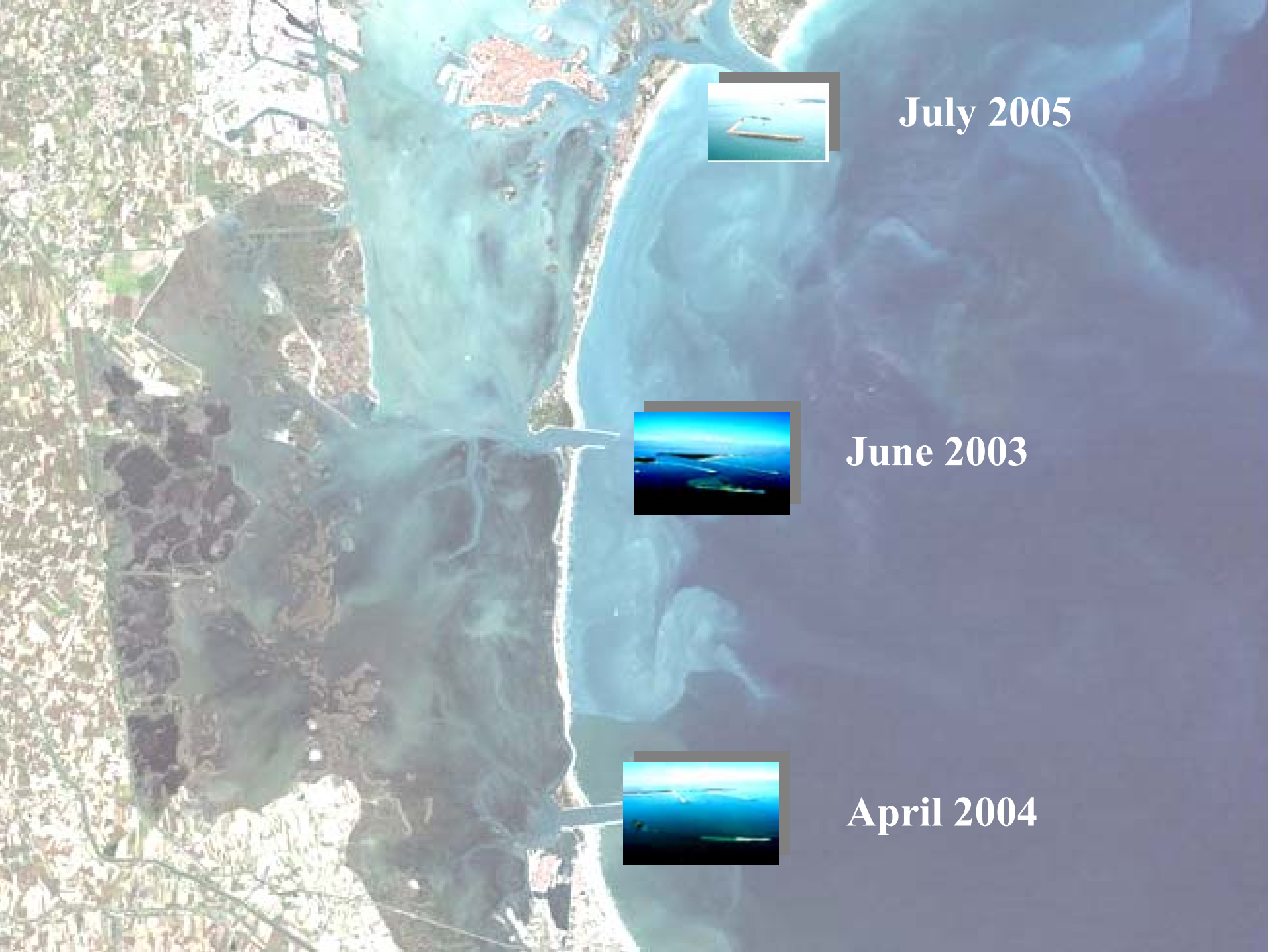
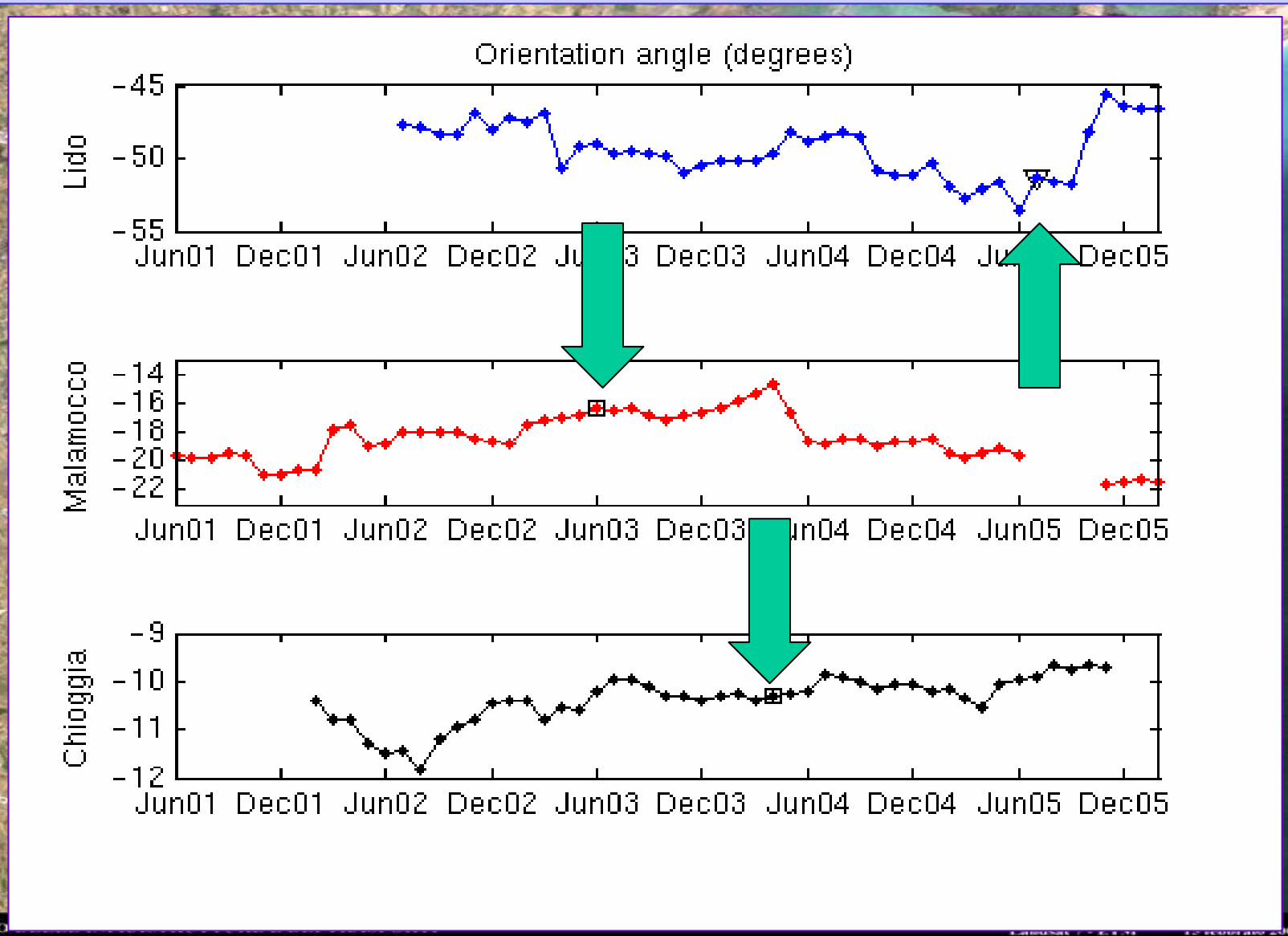
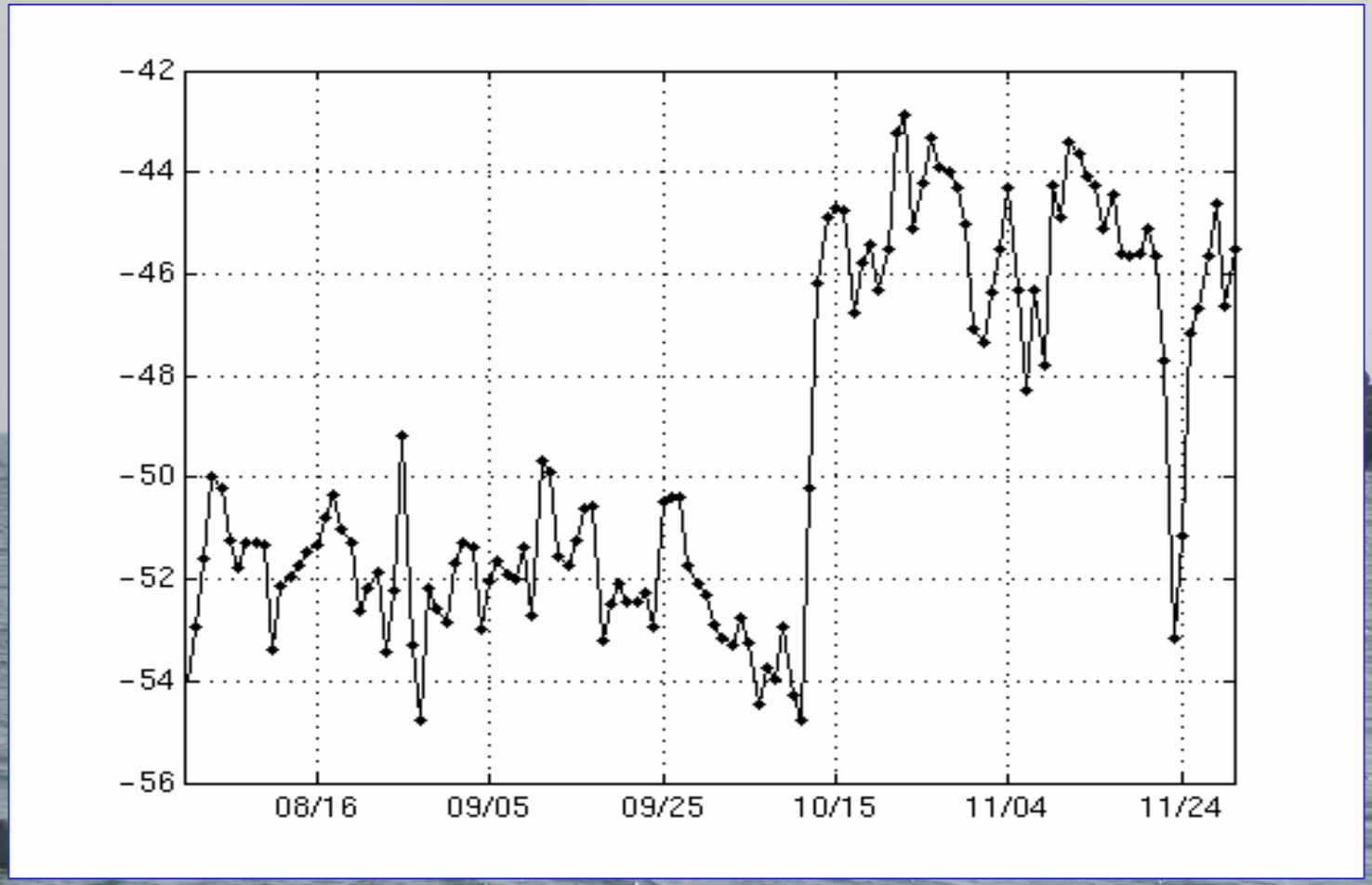

July 2005
June 2003
April 2004

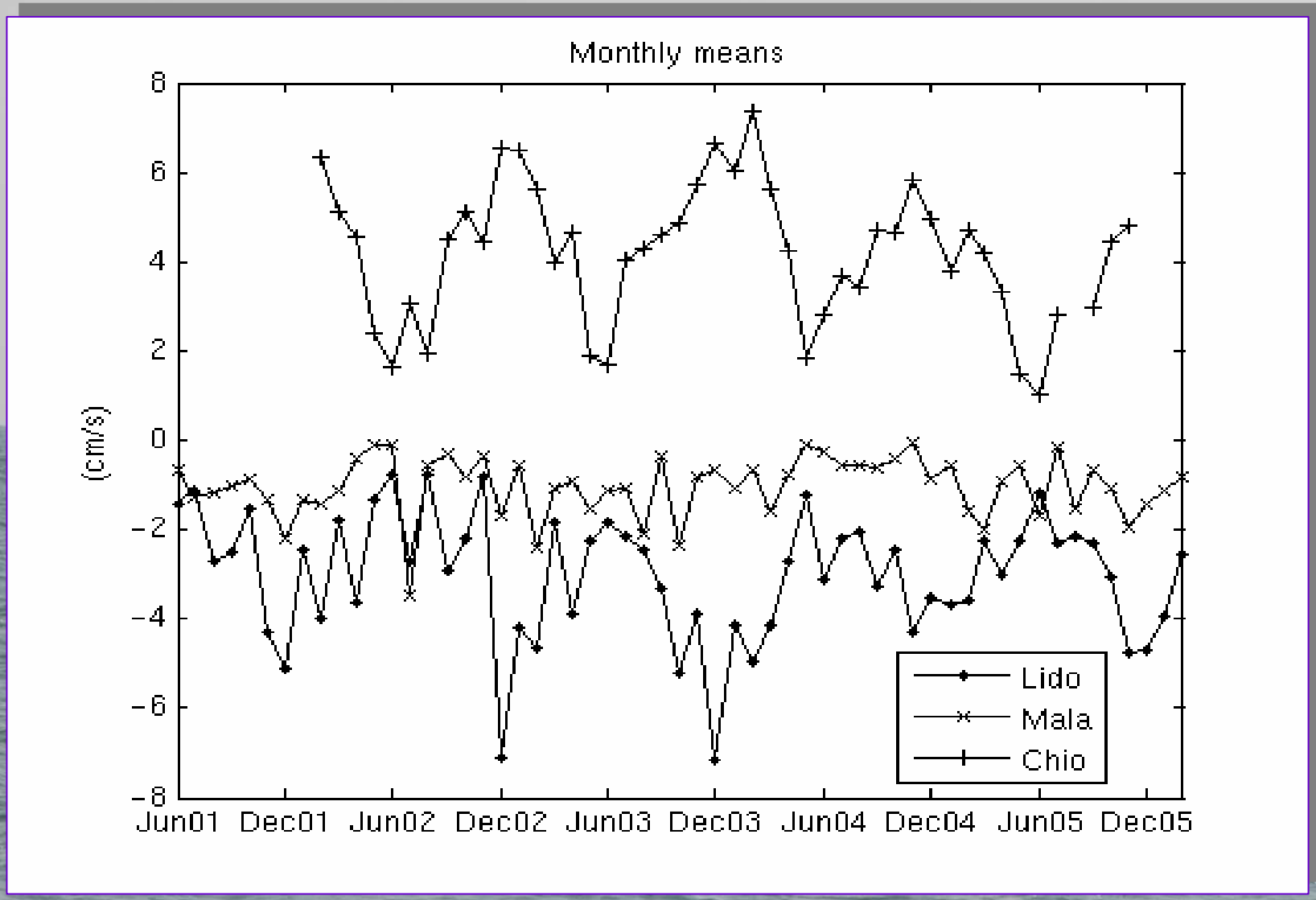
Orientation angle of the major variance axes (in degrees clockwise from east): monthly values



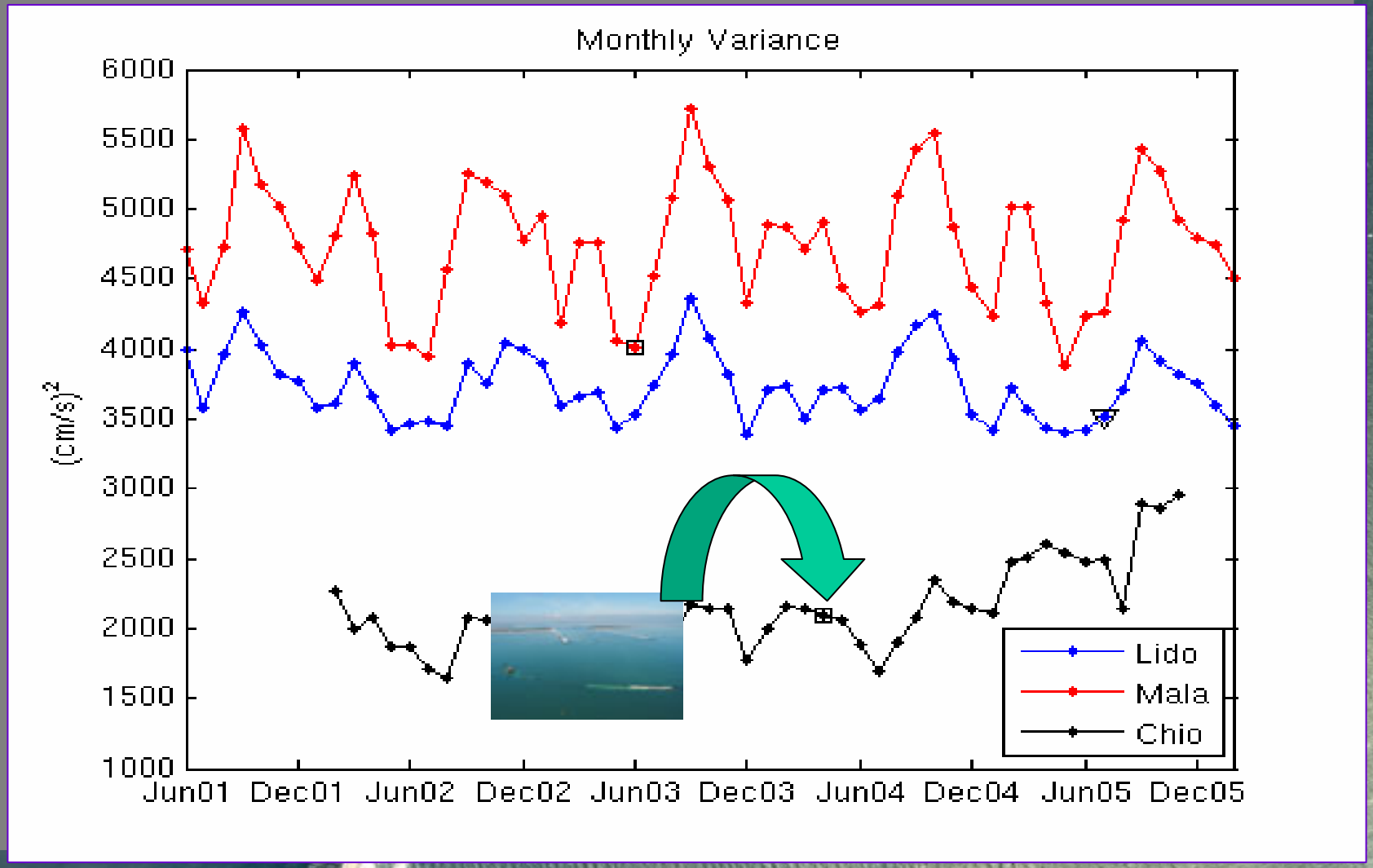
Orientation angle of the major variance axes (in degrees clockwise from east): daily values



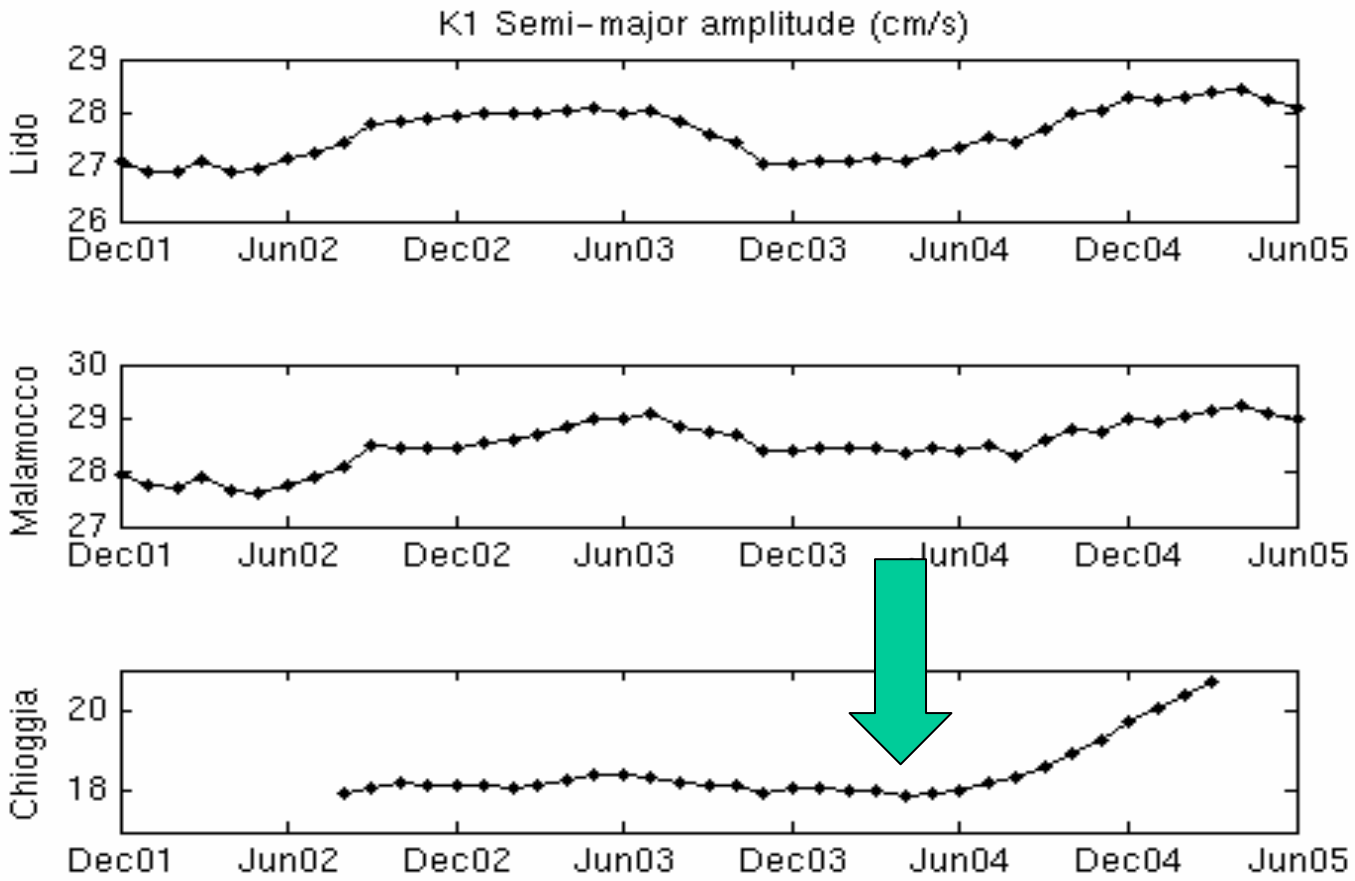
Monthly mean inflowing currents (negative – inflow, positive – outflow)



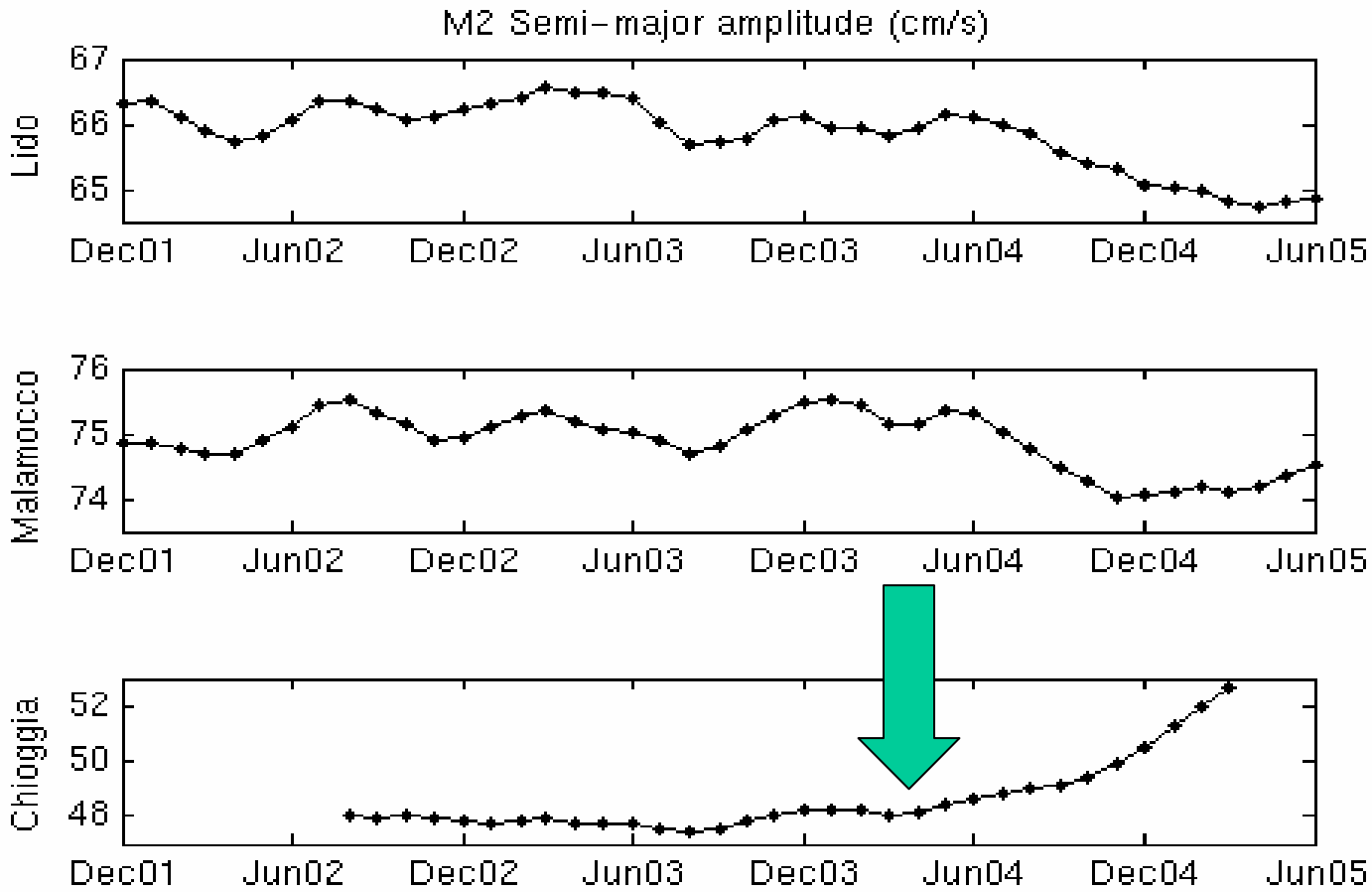
Time-series of the monthly current variance (fluctuational kinetic energy of the flow)



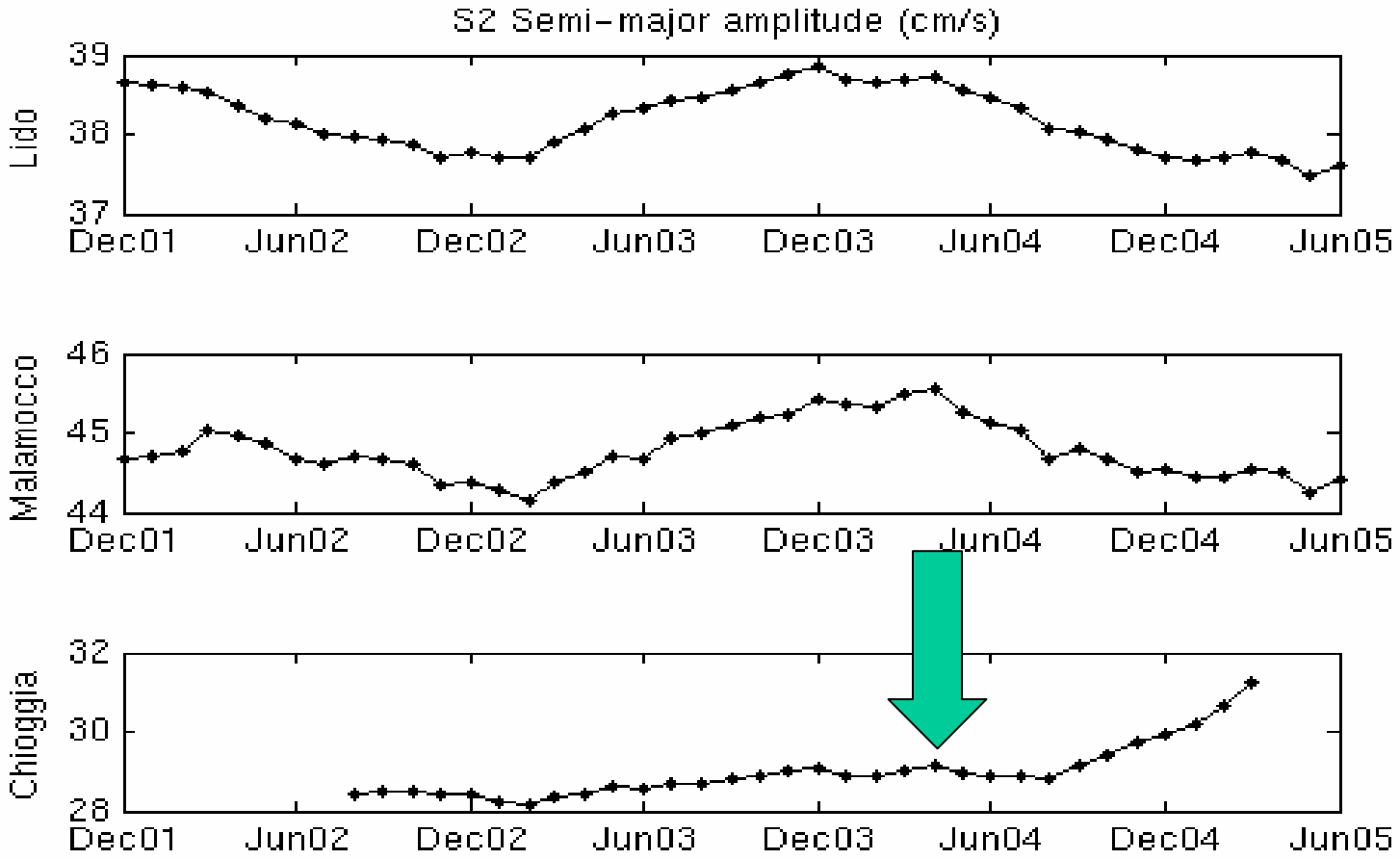
Diurnal tidal constituent amplitude



Semidiurnal tidal constituent



Semidiurnal tidal constituent



Conclusions

Bottom-mounted ADCP current measurements in three lagoon inlets started in 2001enabled us to study long-term flow variability and seek for the possible relationship with the construction work that has been carried out since 2003.

-No changes in the average flow has been noted;

-A trend of increase in the flow fluctuational kinetic energy is observed in the Chioggia Inlet starting from the barrier completion;

-Harmonic analysis on a 13-month moving interval shows that the kinetic energy increase is due to the increase in amplitude of the most important semi-diurnal and diurnal tidal constituents (M2, S2 and K1);

-No changes in the flow characteristics were evidenced in the Malamocco Inlet;

-No changes in the flow characteristics within the limits of the measurement error were observed in the

Thanks a lot for your patience

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