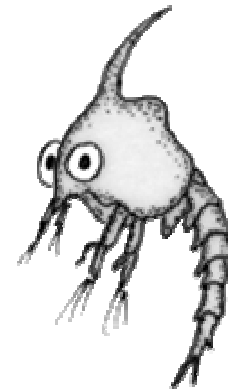




Modelling the transport and dispersion of *Carcinus maenas* (L.) larvae over the continental shelf/slope off Northern Portugal in May 2002



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with

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Introduction:

- Newly hatched larvae inside estuaries are exported out to the shelf where they develop in four zoeal stages and one megalopa
- This development takes about 3 to 6 weeks
- Once in the shelf, larvae are dispersed by shelf currents
- Larvae exhibits diel vertical migration
- After this period megalopa reenters the estuary

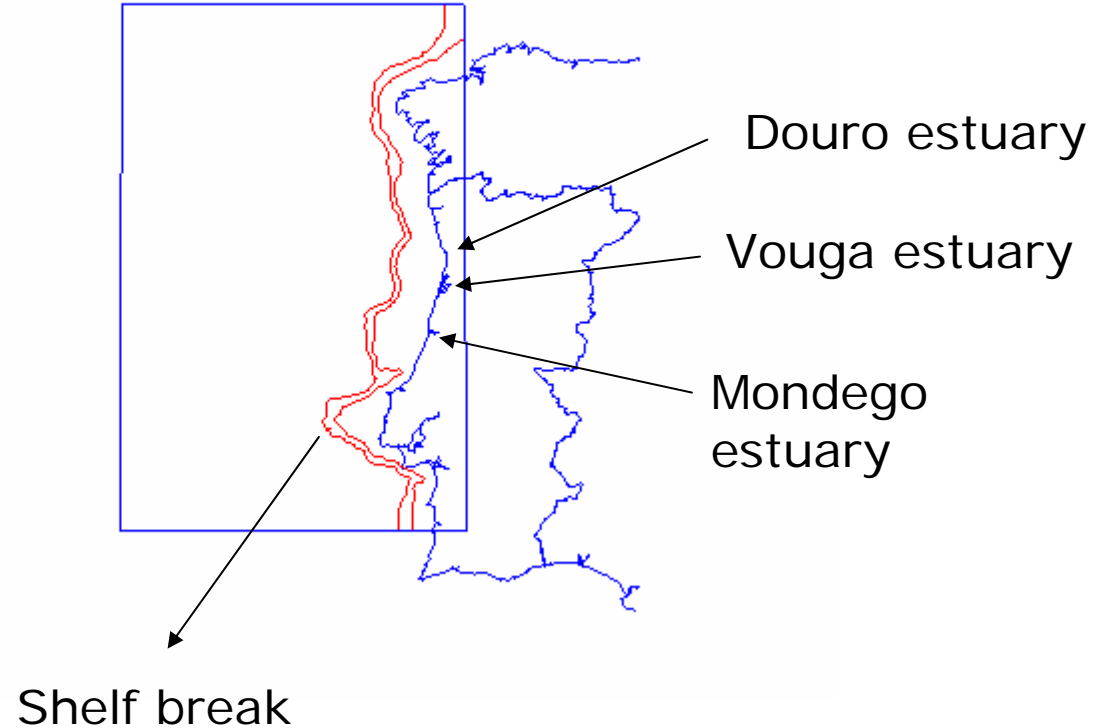


Objective:

Understand the larvae horizontal dispersion pattern

Studied region:

North Portuguese shelf and the main estuaries





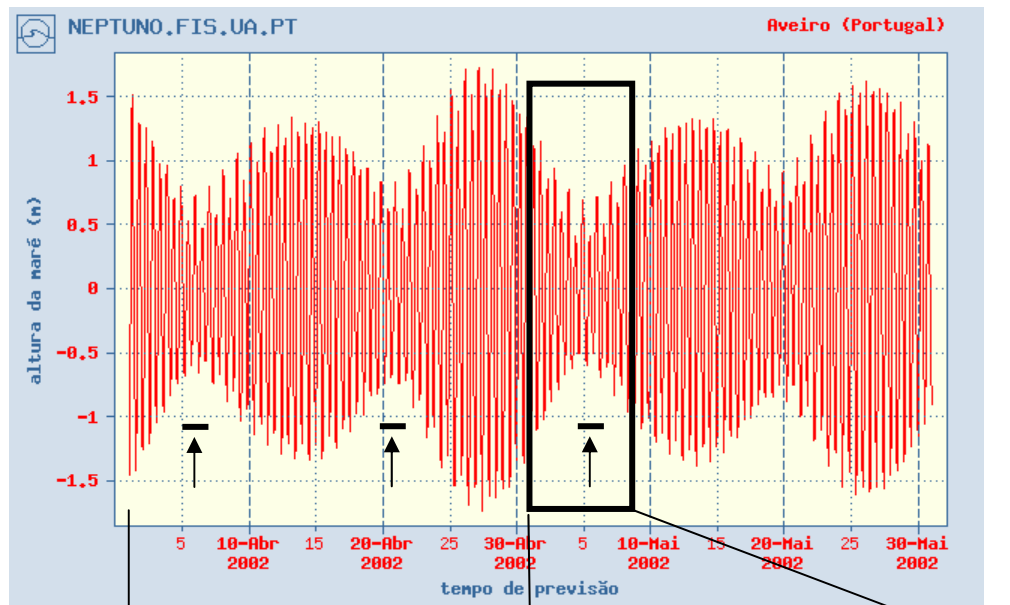
Method:

- ROMS model forced by air-ocean bulk fluxes and realistic stratification
- Use of floats with diel vertical migration
- Validation based on data from the ProRecruit cruise, May 2002
- Simulation period: April and May 2002



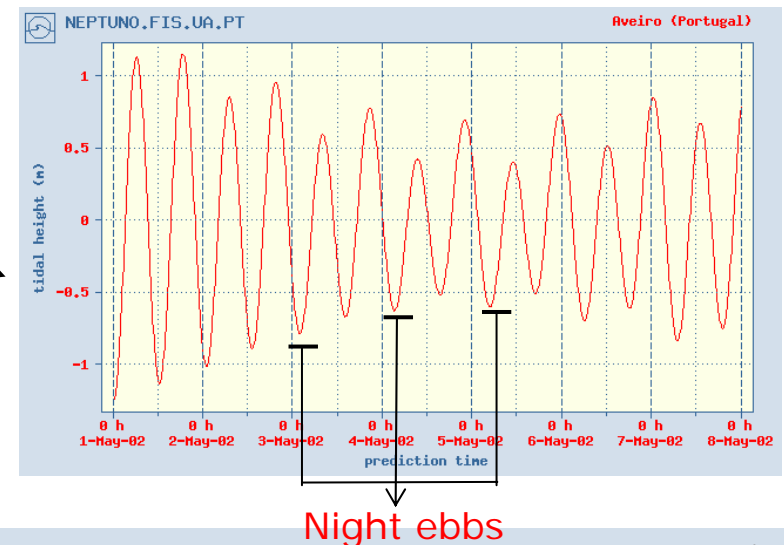
Floata release time:

Larvae in estuaries are released in night ebbs during neap tides



Tidal height prediction
for Aveiro Coast
April and May

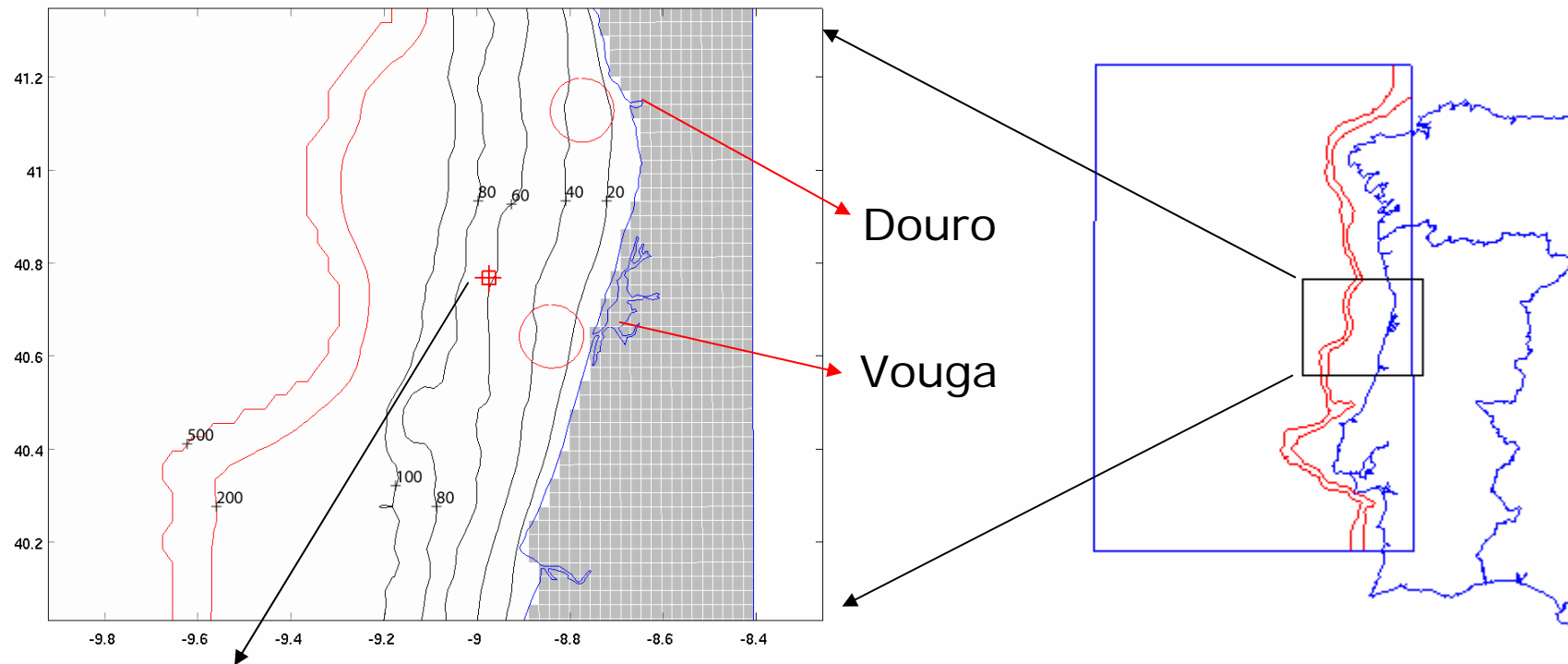
(1-May, 7-May-2002)





Floats release location:

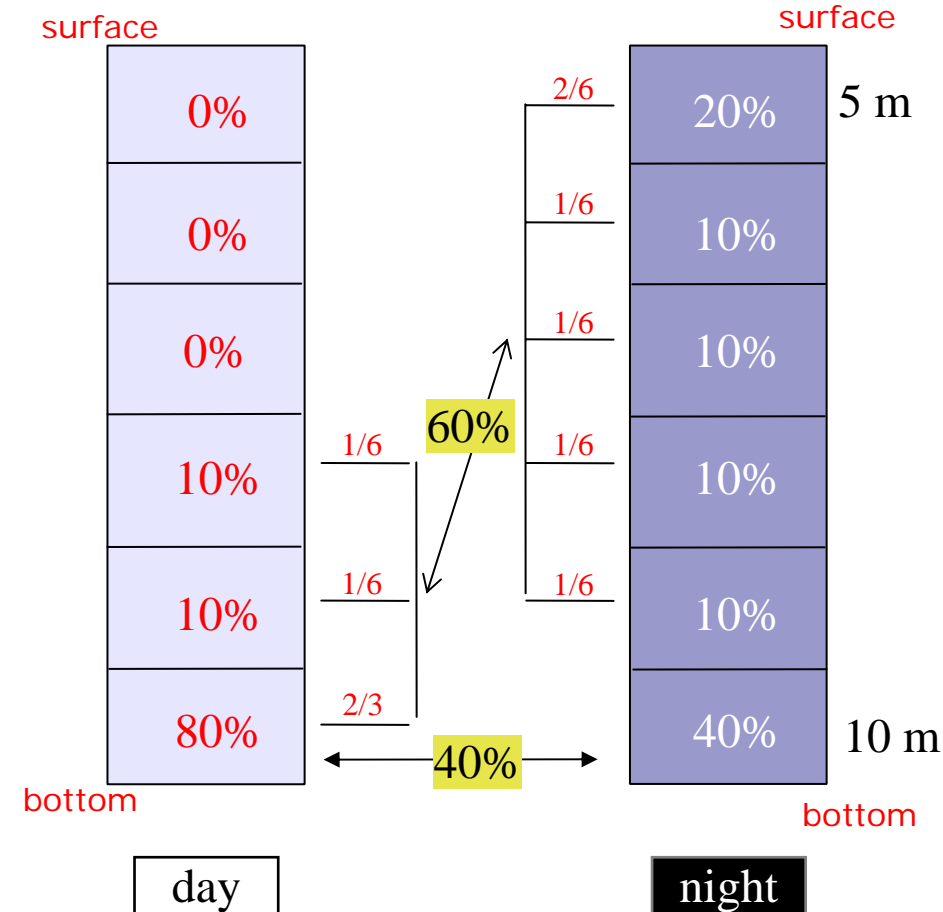
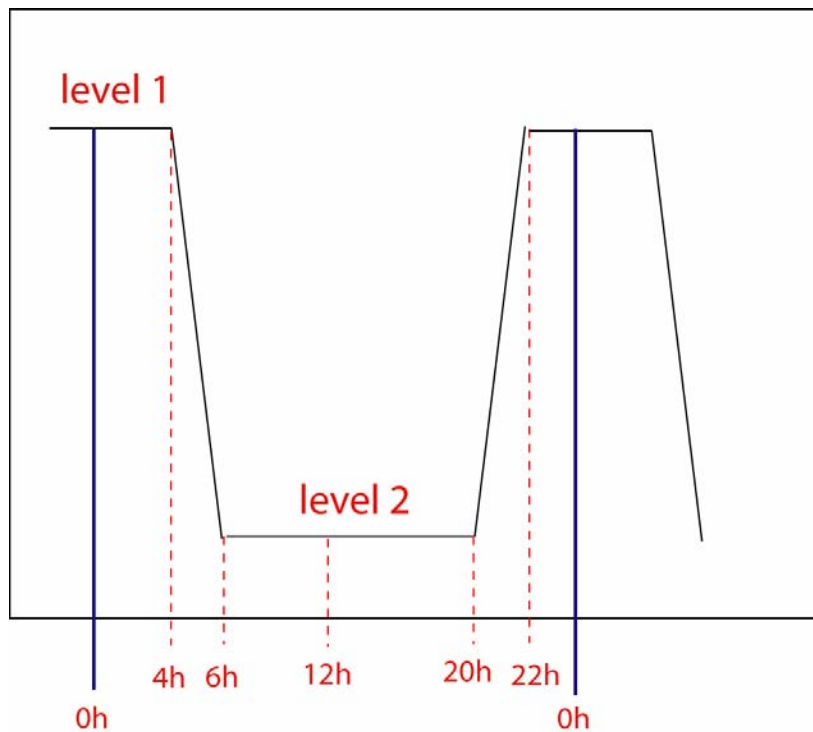
North Portugal estuaries, Douro and Vouga



Data site: ProRecruit
cruise, May-2002



Floats vertical distribution/diel migration:





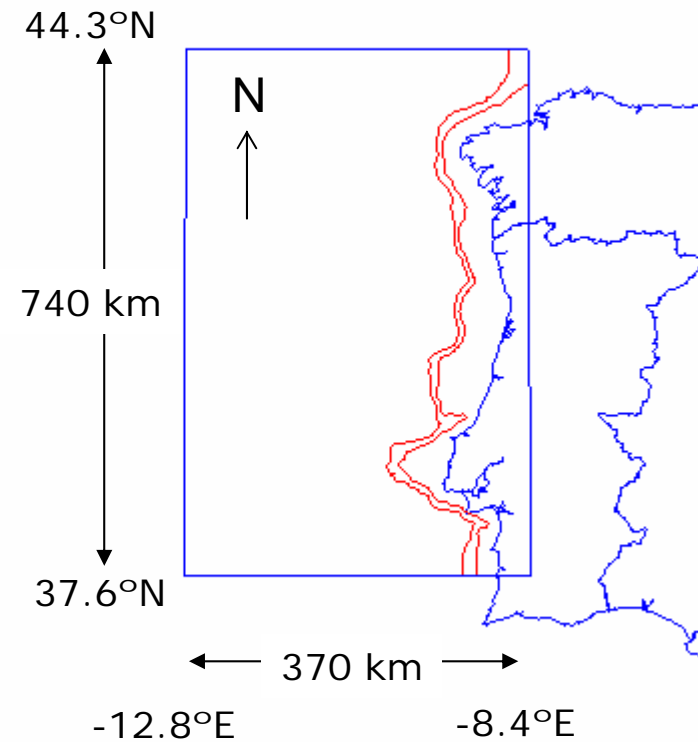
Simulation description:

grid:

size 370 x 740 km
resol. W-E = 6 \rightarrow 2 km
resol. S-N = 3.3 km
25 s-levels
500m max depth

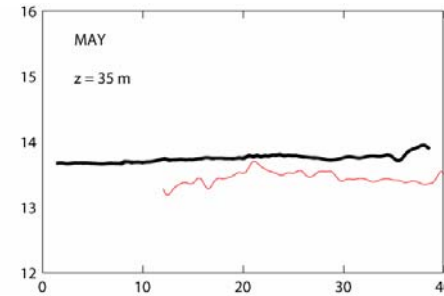
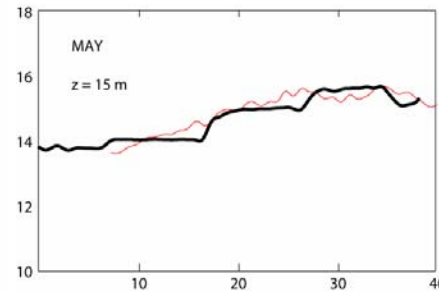
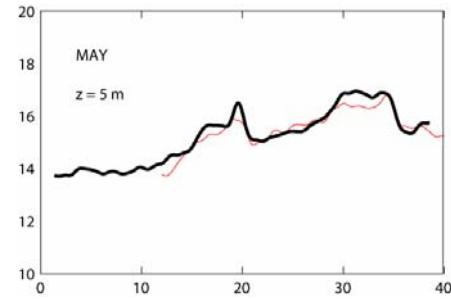
forcings:

bulk fluxes (NCEP reanalysis)
initial realistic stratification

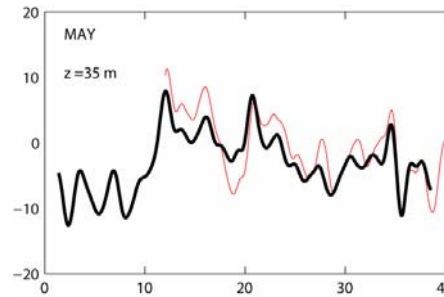
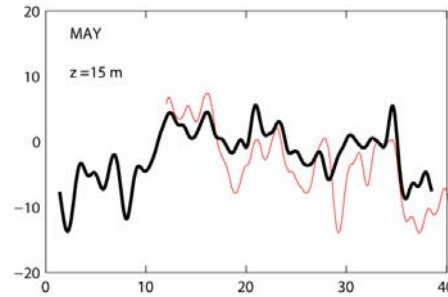
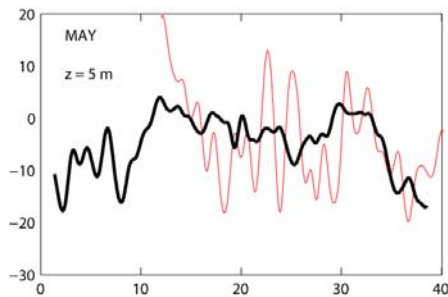




Model validation:



temperature



V

depth = 5 m

15 m

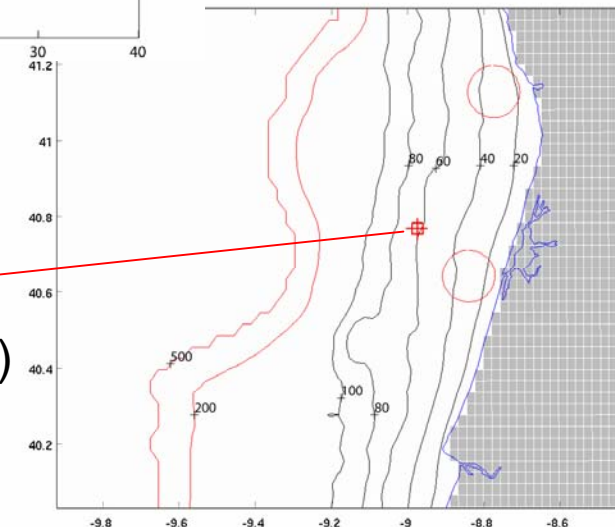
35 m

— simulated

— observed

ProRecruit cruise, May 2002

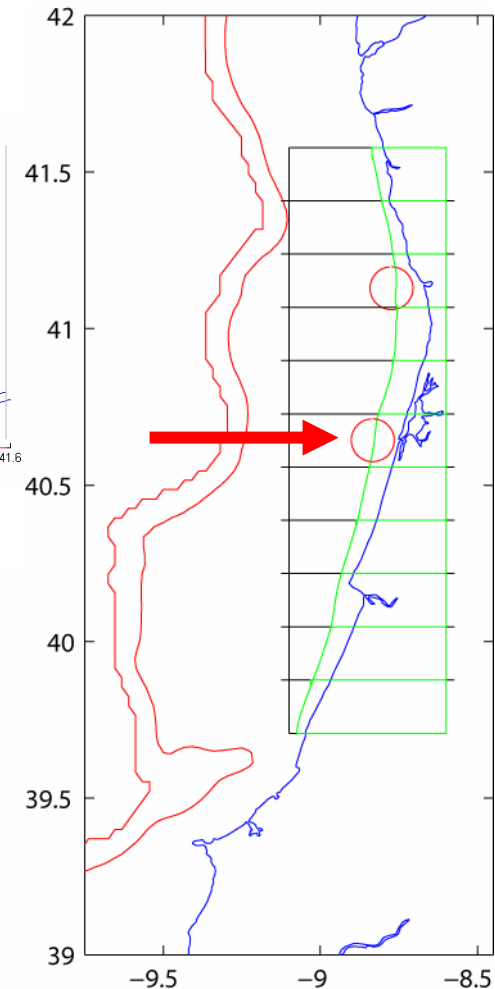
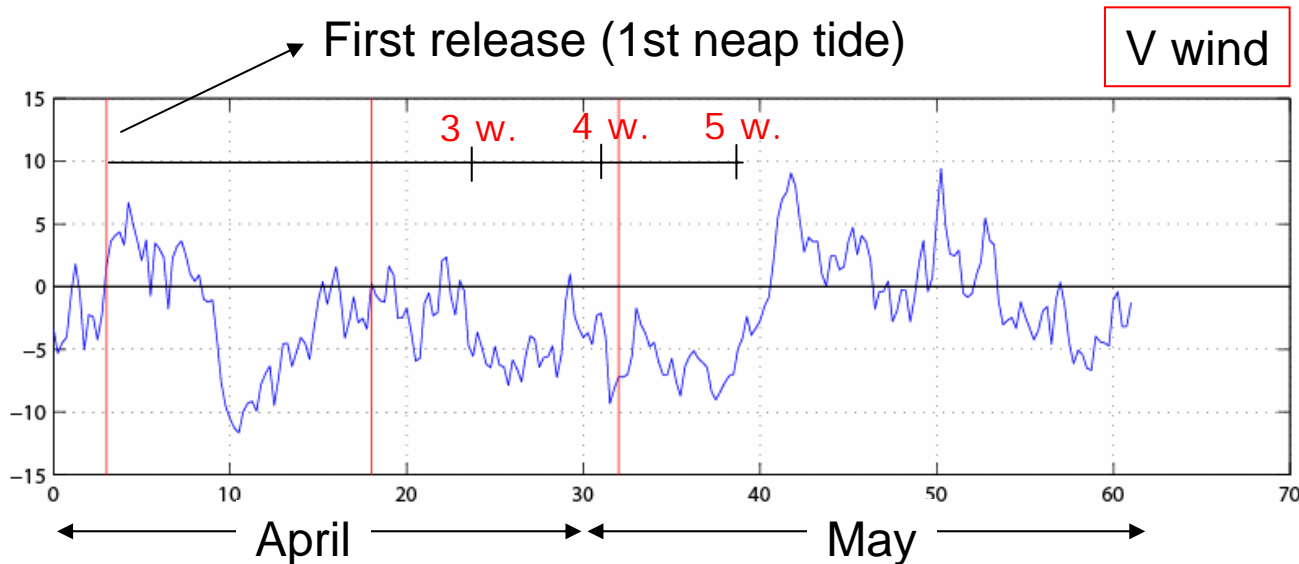
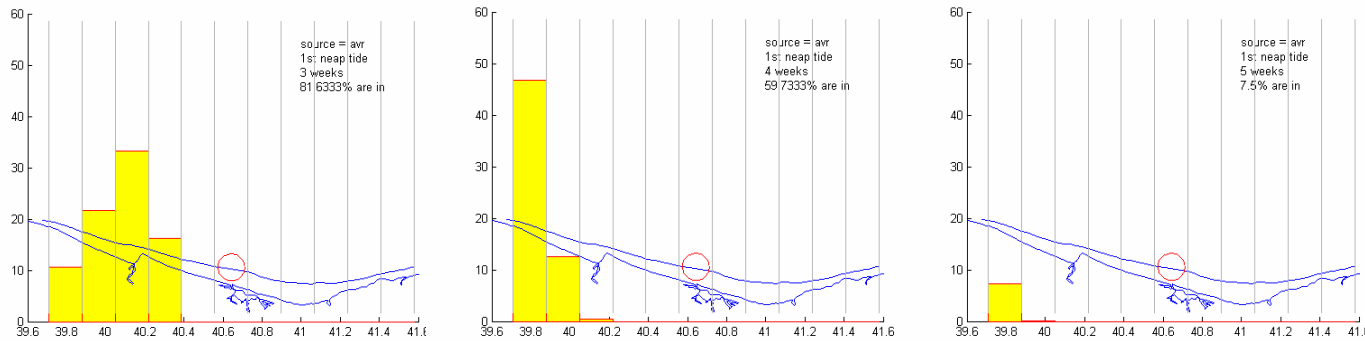
data site
(depth = 64 m)





Some results:

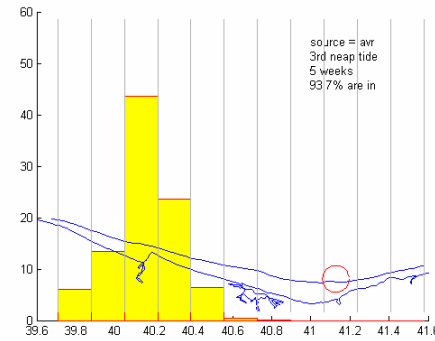
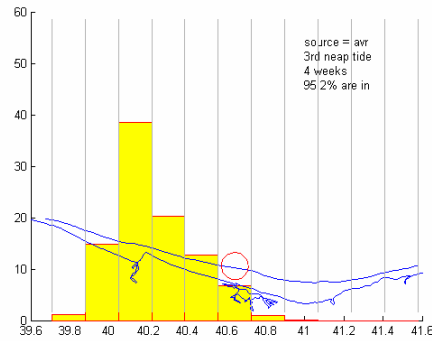
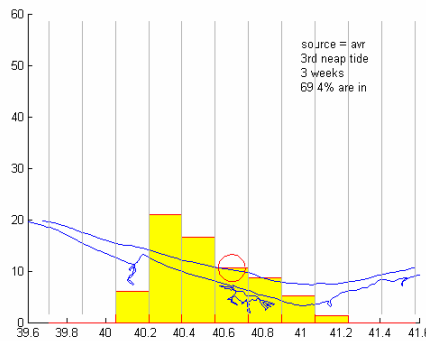
floats onshore isobath 30 m 3, 4 and 5 weeks after release (4-April, first neap tide) from Vouga



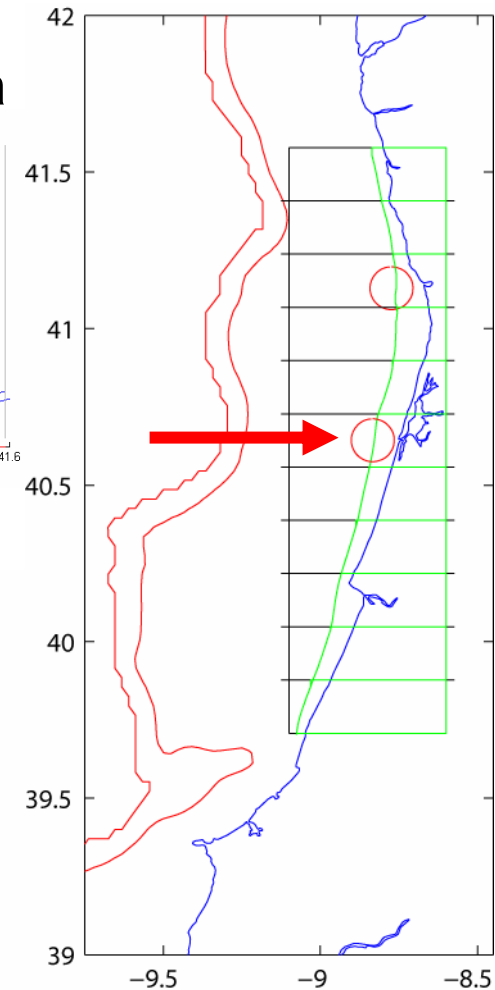
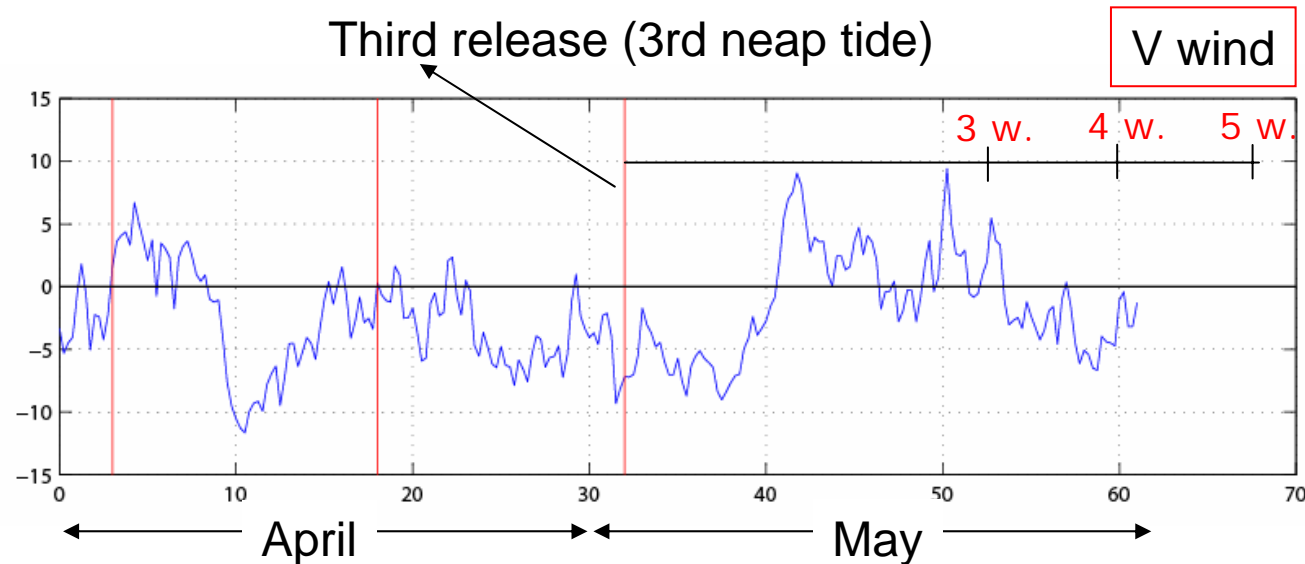


Some results:

floats onshore isobath 30 m 3, 4 and 5 weeks after release (3-May, third neap tide) from Vouga



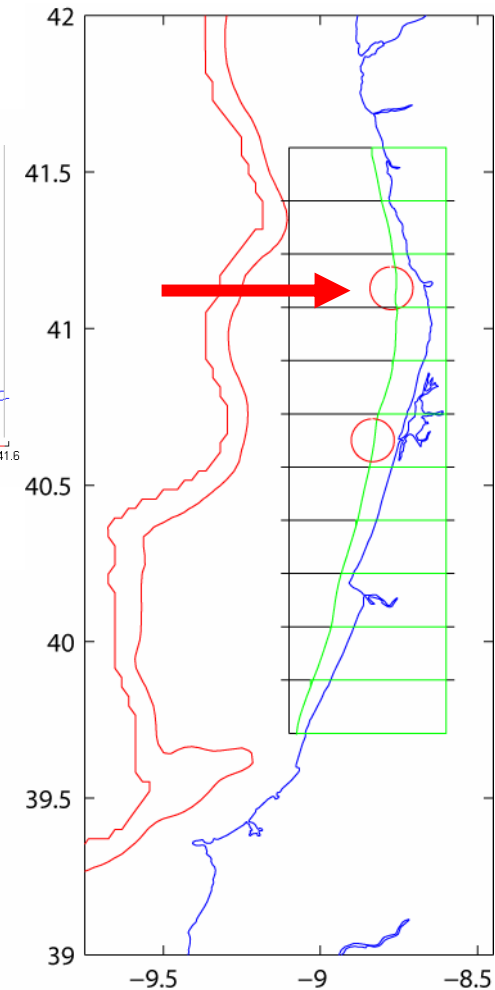
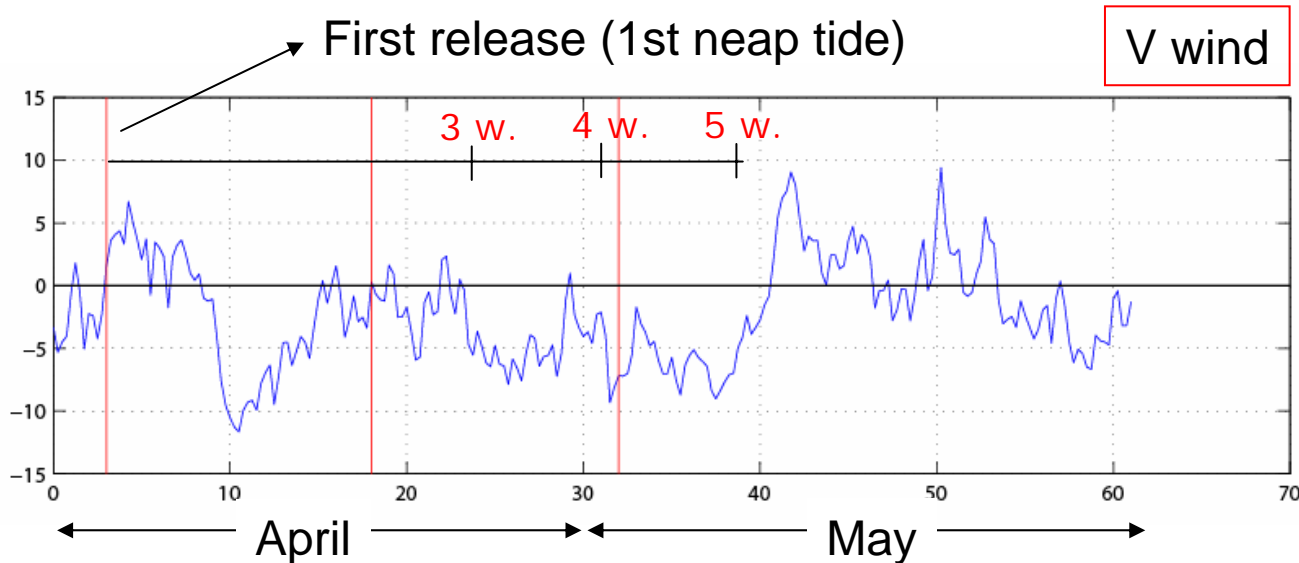
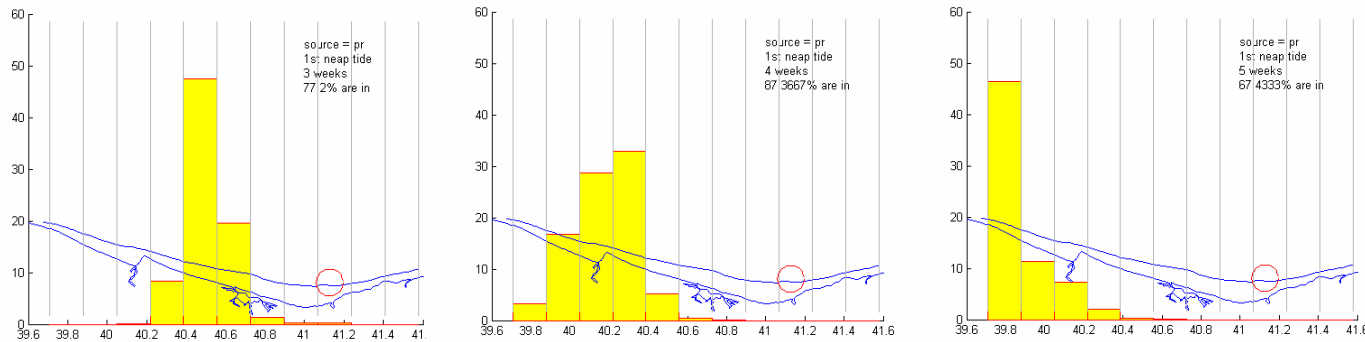
Third release (3rd neap tide)





Some results:

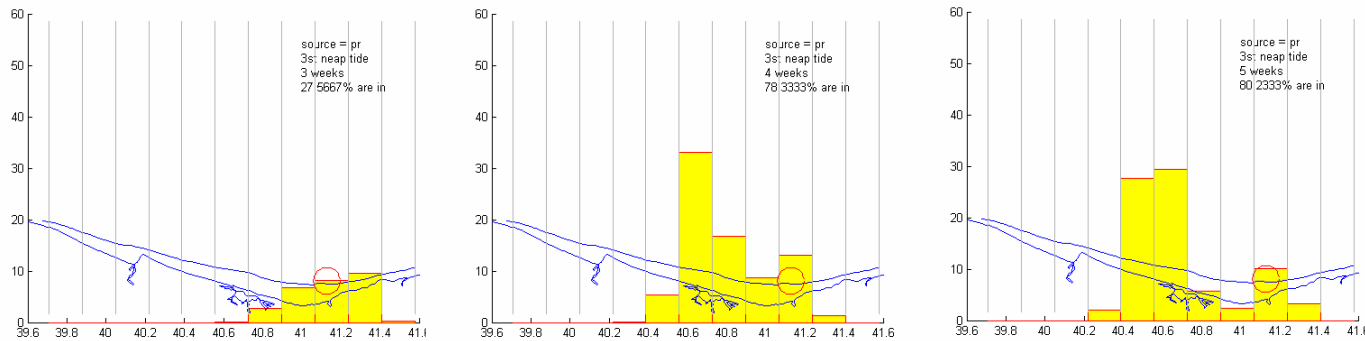
floats onshore isobath 30 m 3, 4 and 5 weeks after release (4-April, first neap tide) from Douro



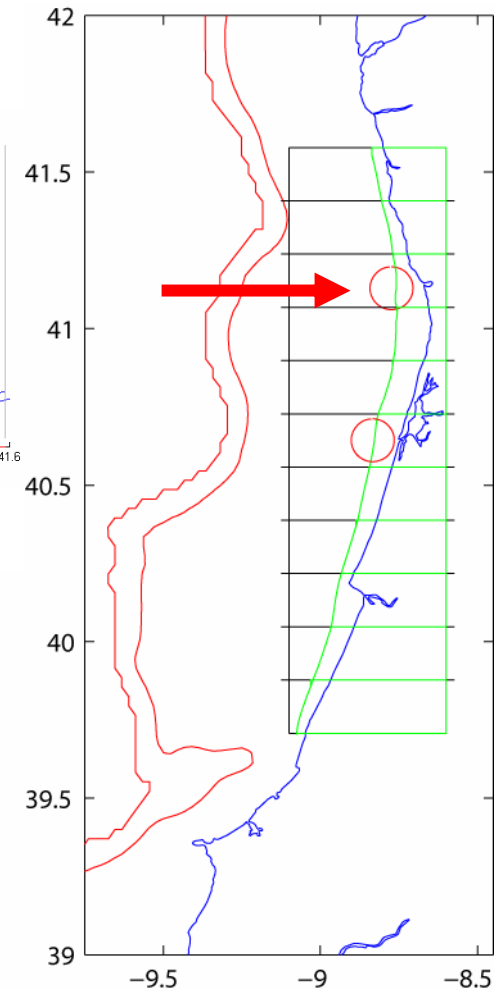
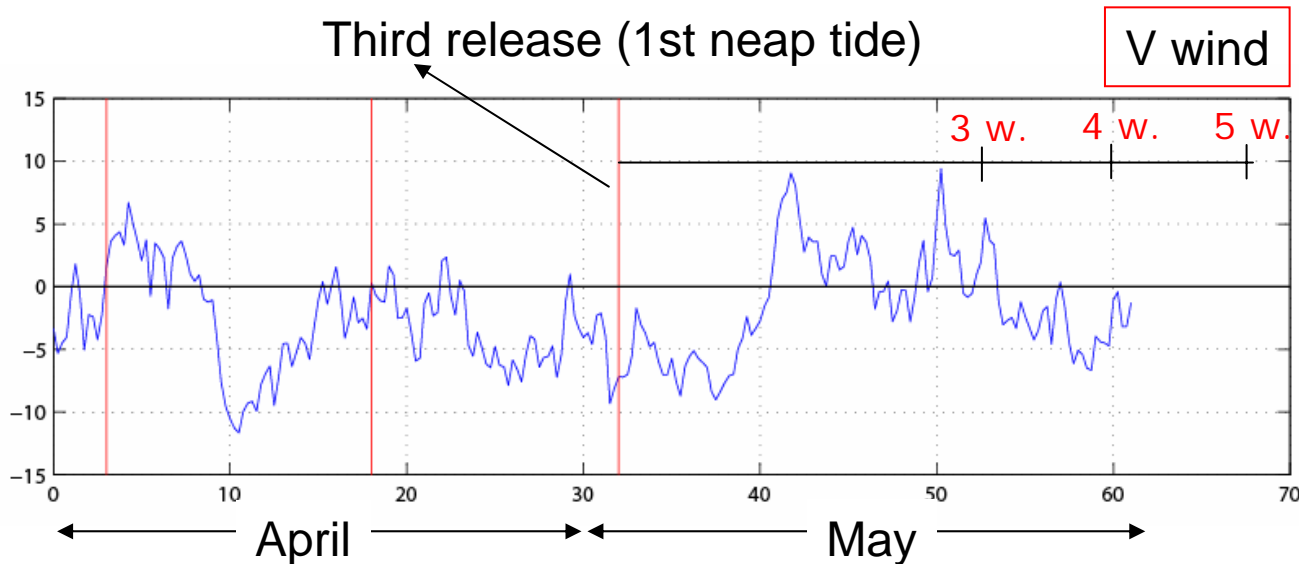


Some results:

floats onshore isobath 30 m 3, 4 and 5 weeks after release (3-May, third neap tide) from Douro



Third release (1st neap tide)





Final remarks:

Same simulation without vertical diel migration was done with very different results.

The vertical migration scheme used may not be the most correct

Other experiments are dependent on the spatial and vertical distribution of larvae collected during the cruise and not yet fully analyzed

