

# Autonomous current observations using ADCPs

## What is an ADCP?

An acoustic Doppler current profiler (ADCP) is a hydroacoustic current meter, used to measure horizontal currents in ocean over a depth range.

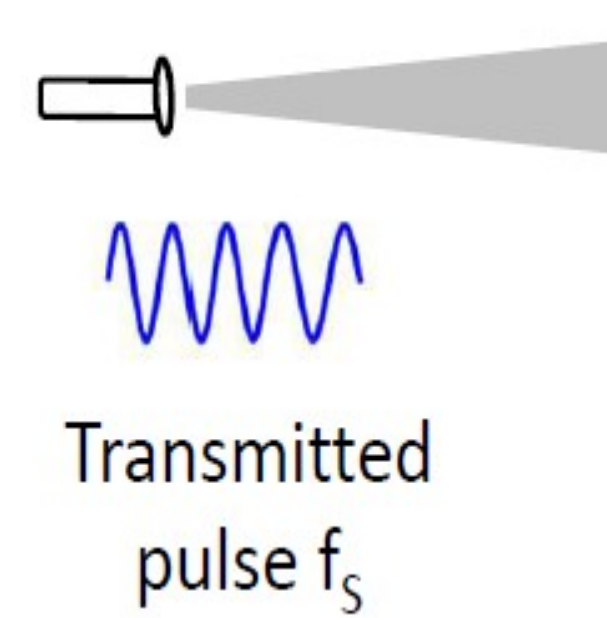
## Working principle

The ADCP measures water currents, using the **Doppler effect**. A sound wave has a higher frequency when it moves towards the source.

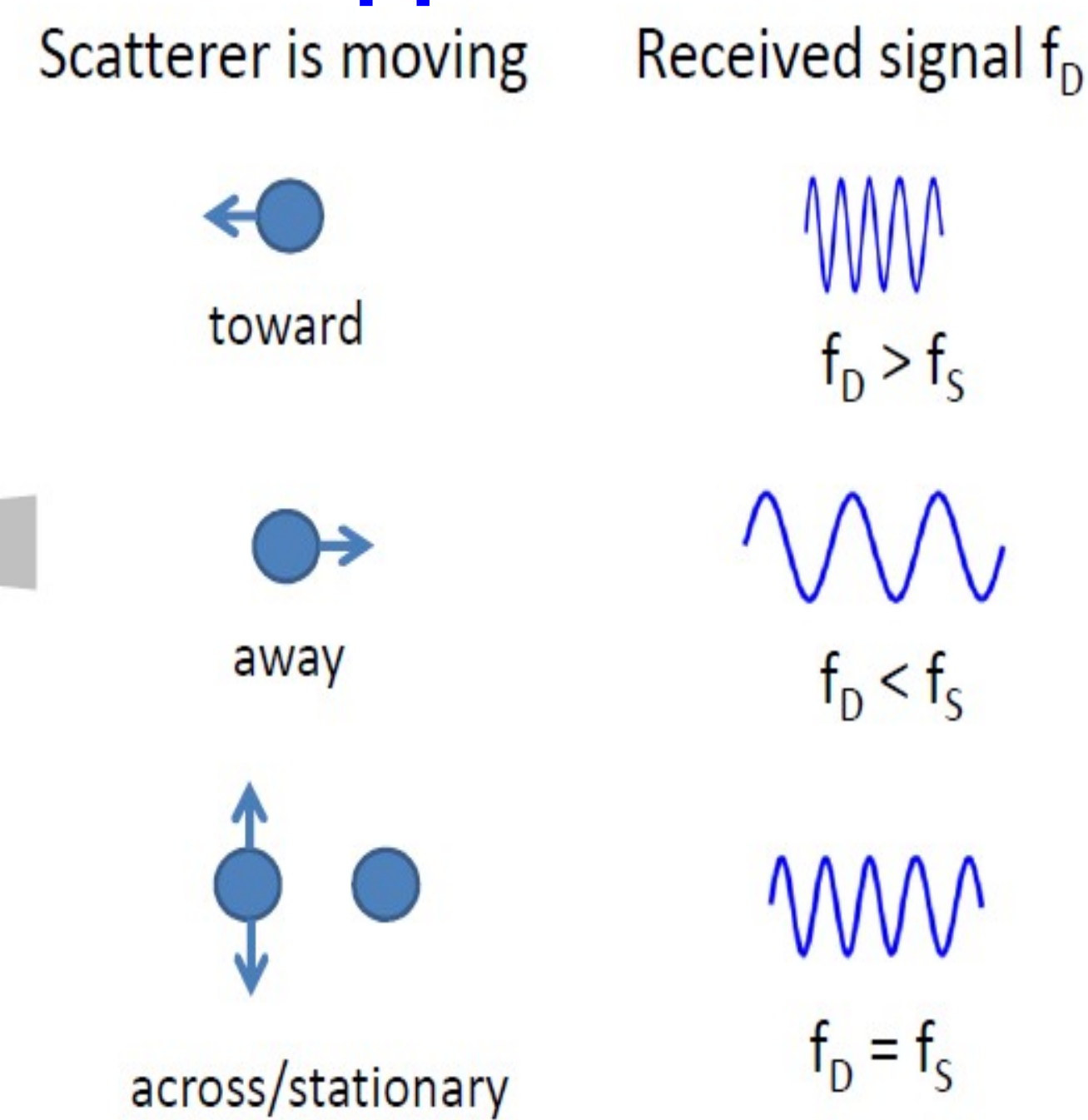
The frequency difference between the transmitted and received signals is used to estimate the horizontal currents.

An underlying assumption is that the particles or scatterers move with the same speed as that of the water.

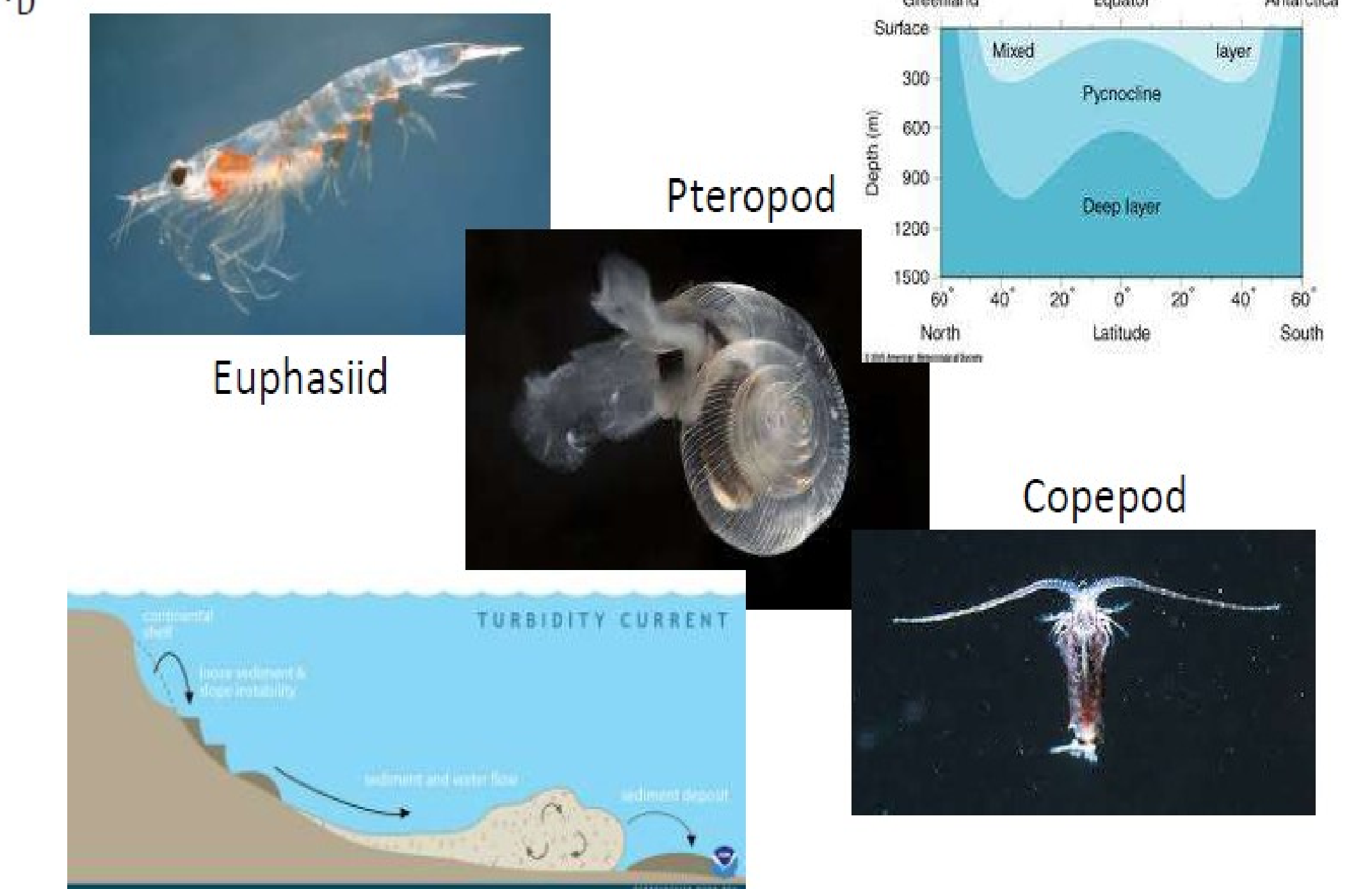
The strength of the backscattered signal can provide estimates of biological biomass.



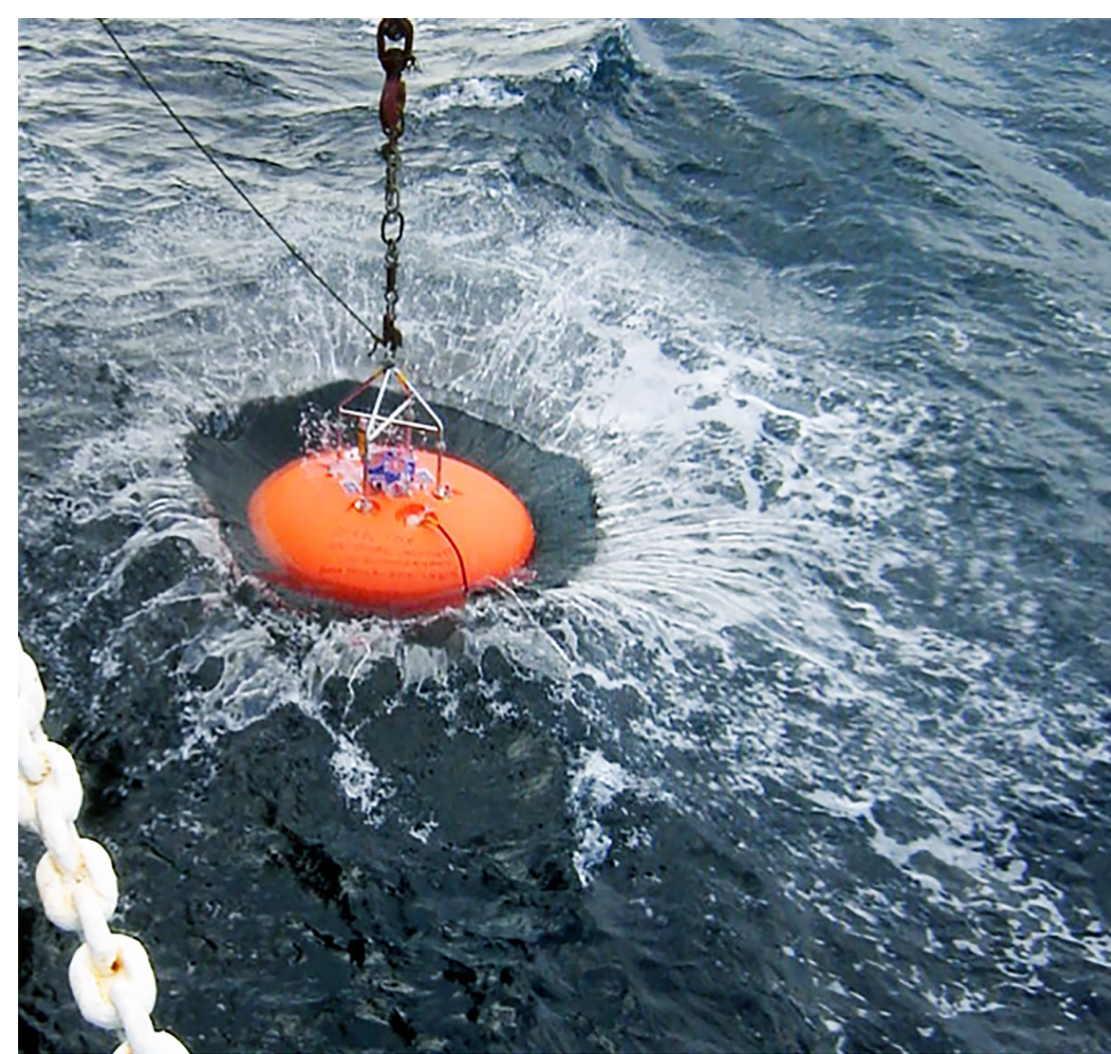
## Doppler shift



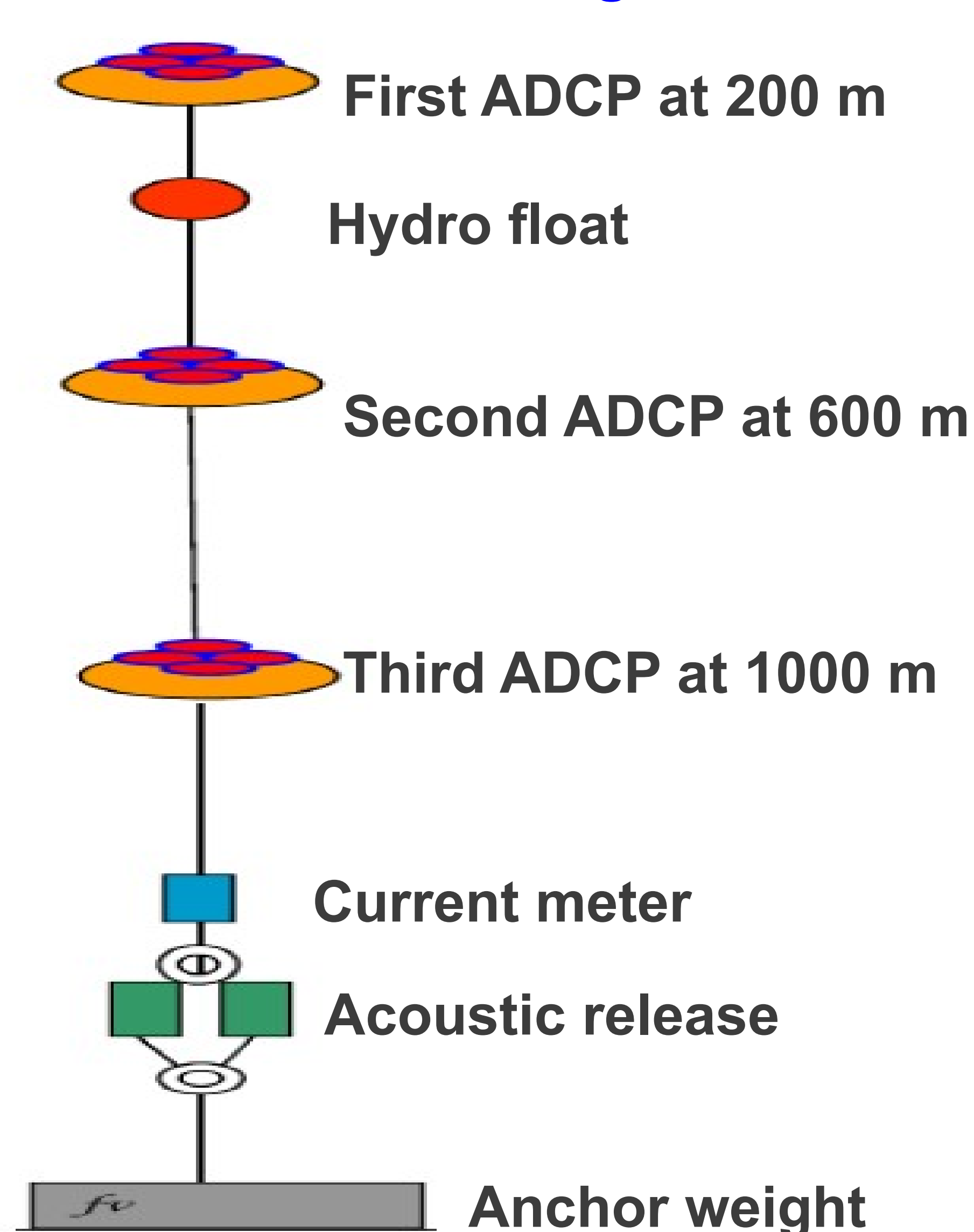
## Signal scatterers



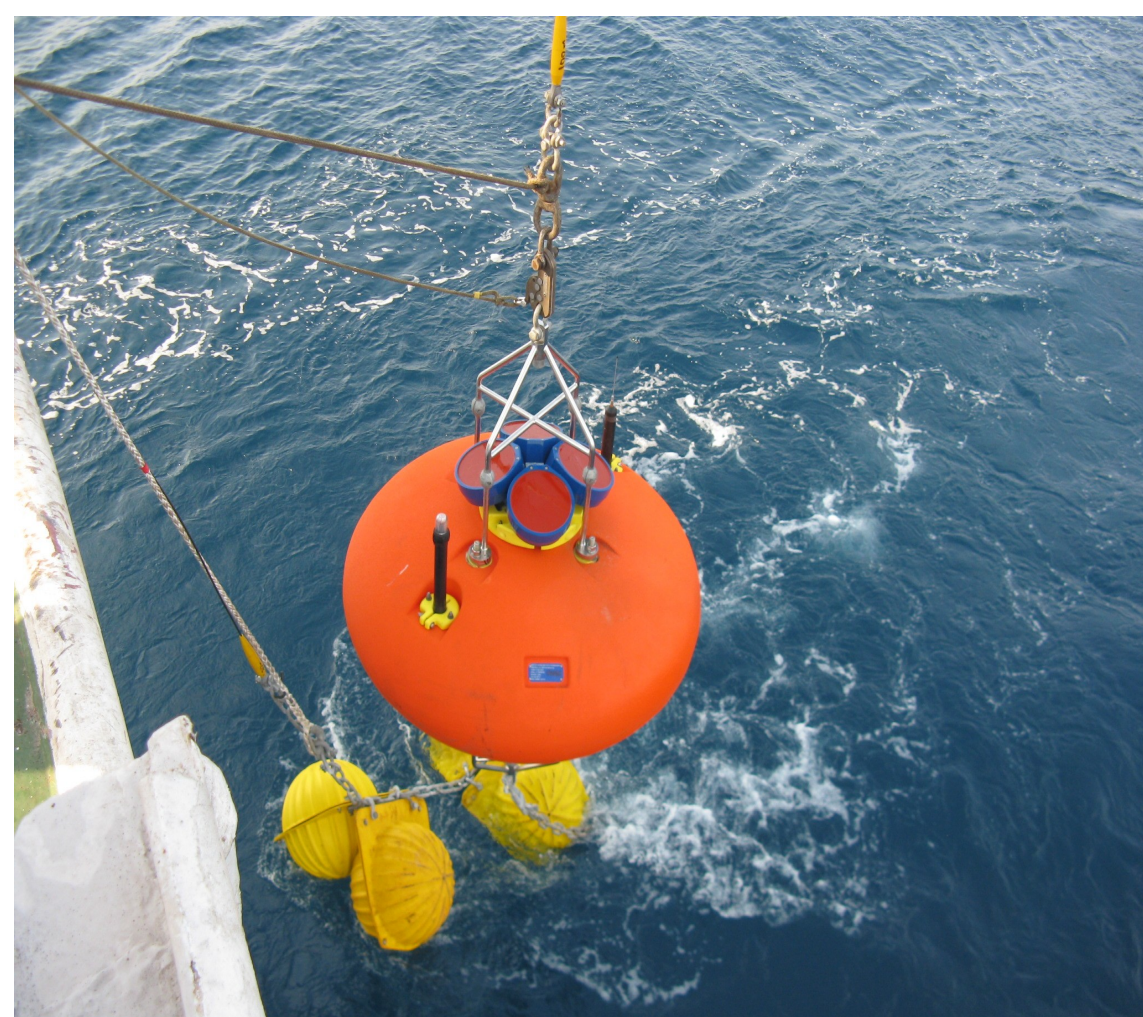
## ADCP deployment



## ADCP mooring line



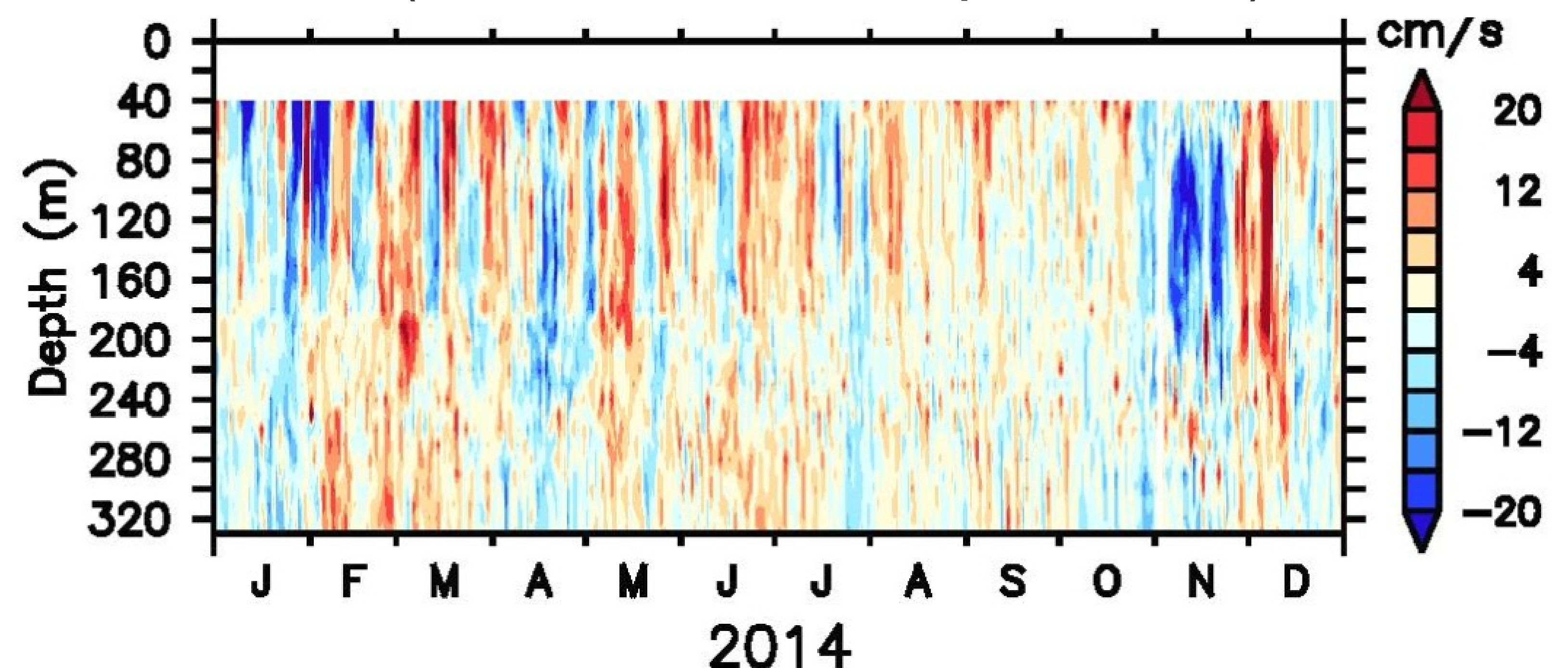
## ADCP retrieval



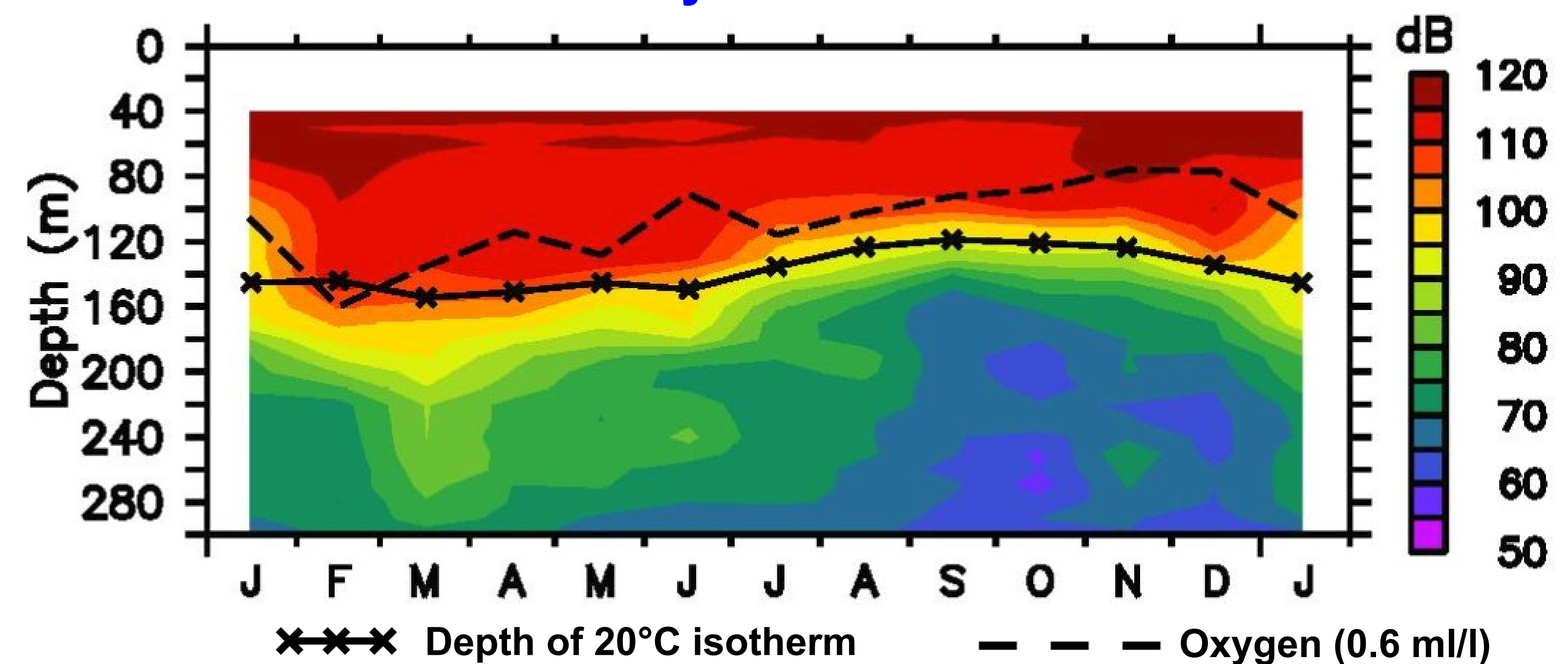
## ADCP data at 20°N

### Alongshore current

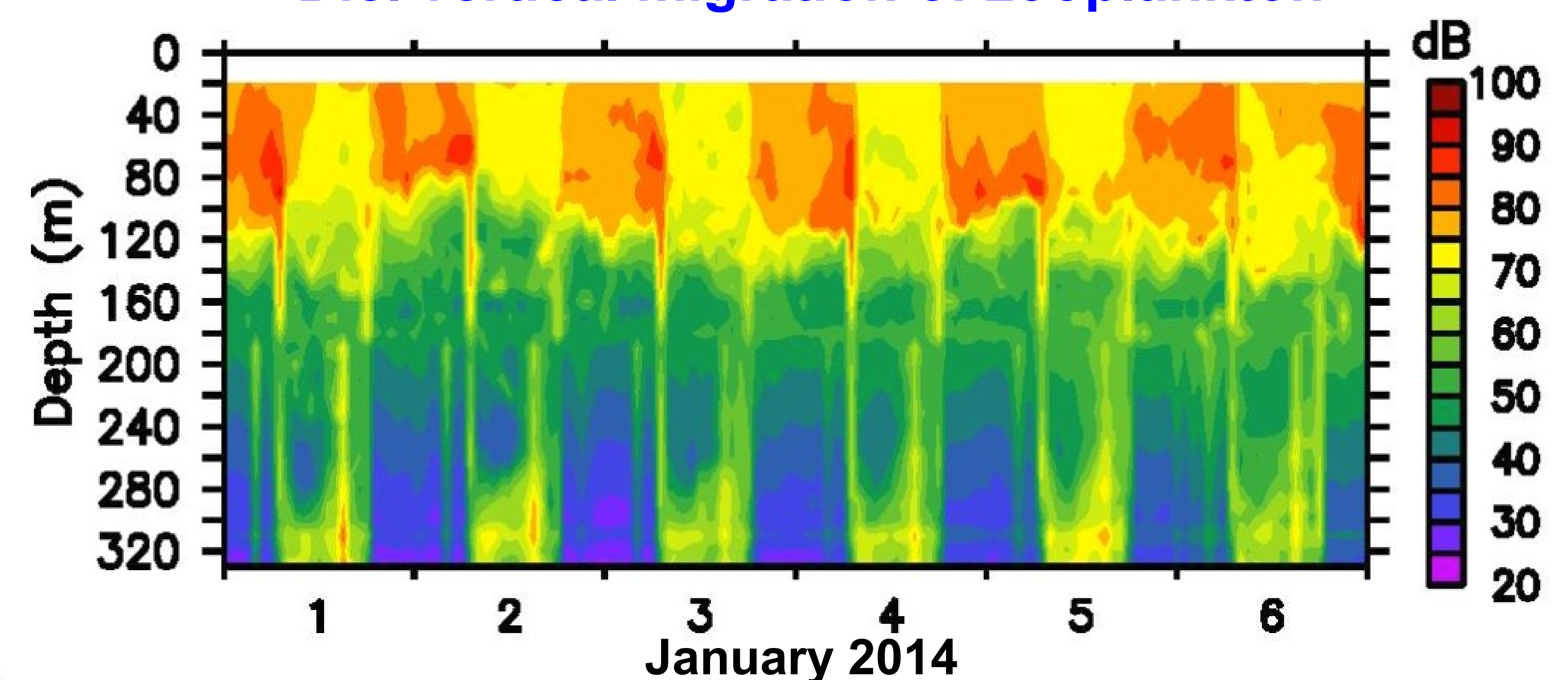
(Positive current indicates poleward flow)



### Seasonal cycle of backscatter



### Diel vertical migration of zooplankton



## ADCP mooring locations as on 30 June 2017

