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Balearic Islands
Coastal Observing
and Forecasting
System

The quiet revolution: Continuous glider monitoring at ocean 'choke' points as a key component of new cross-platform ocean observing systems

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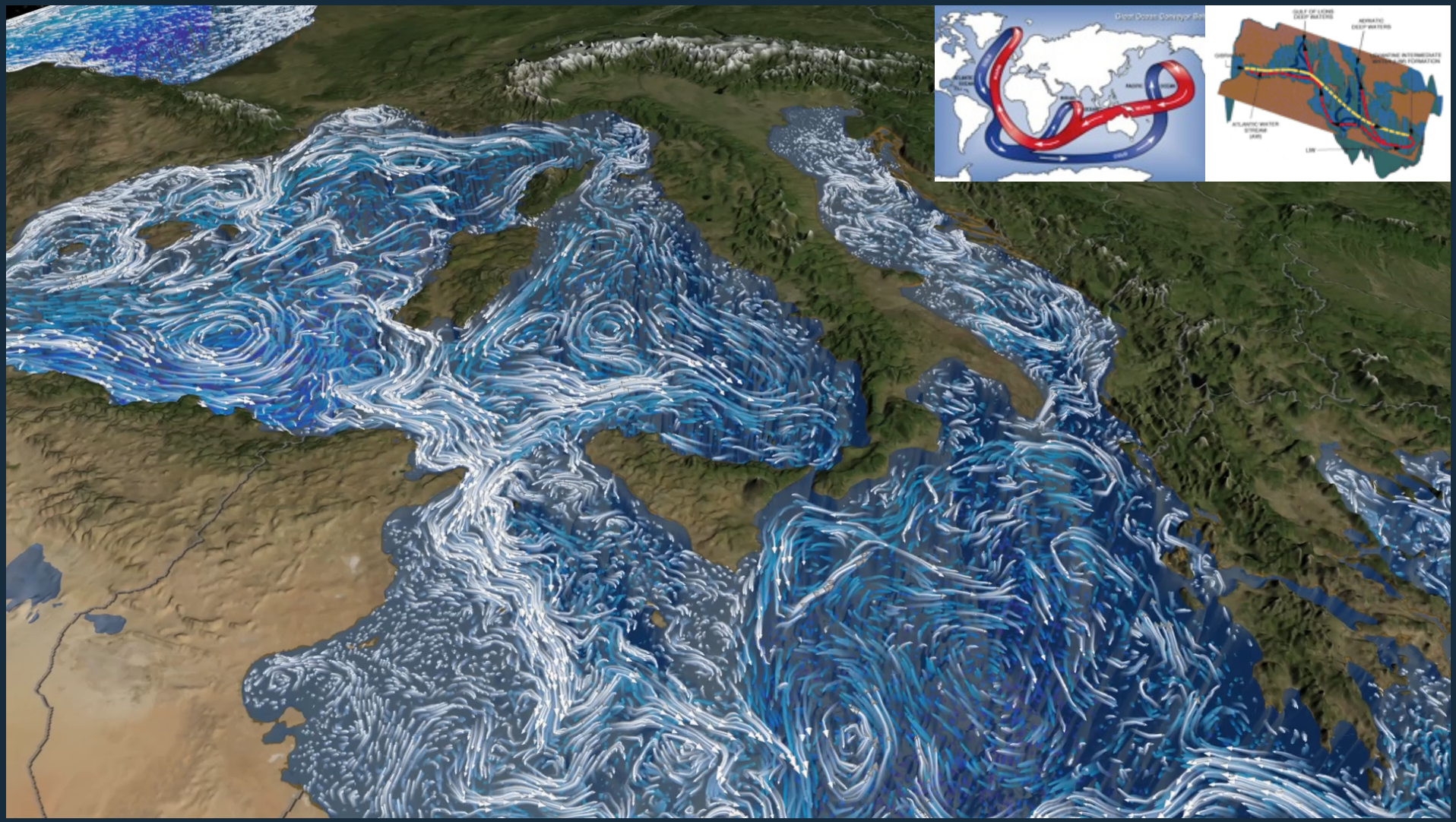
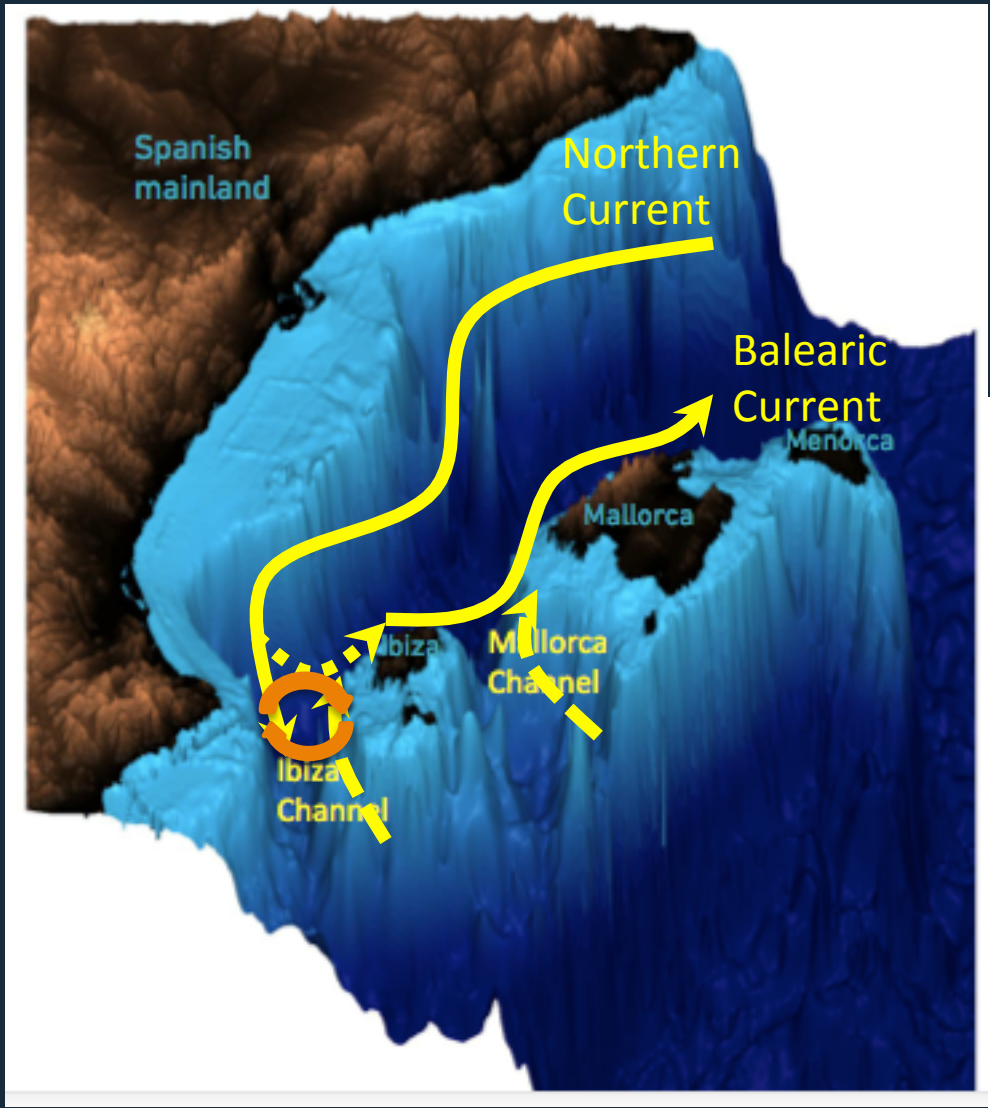
Mediterranean – small scale global ocean

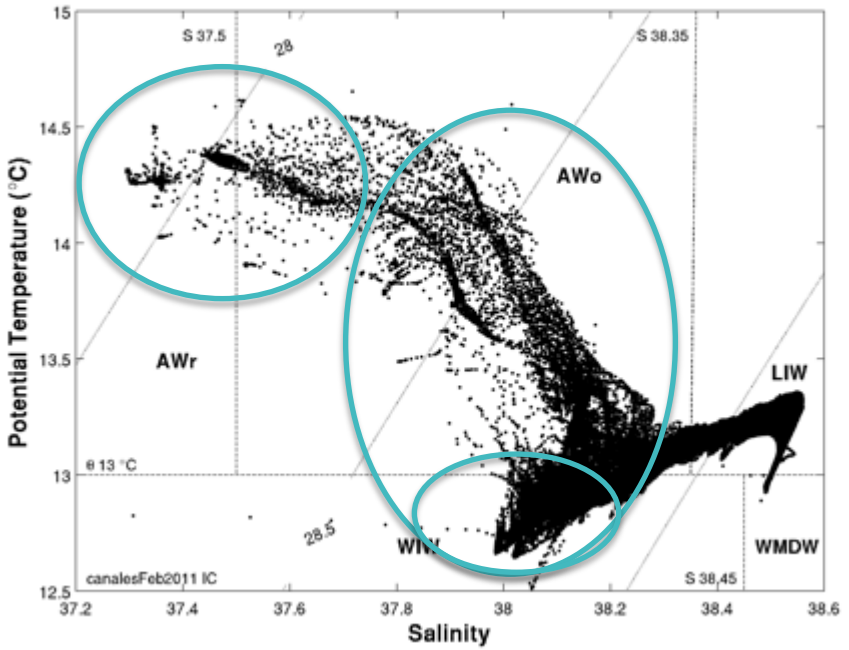


NASA. Ocean current flows in the Mediterranean (16 Feb 2005 through 16 January 2006). http://svs.gsfc.nasa.gov/goto?3820

Balearic Basin: Ibiza Channel ‘choke point’



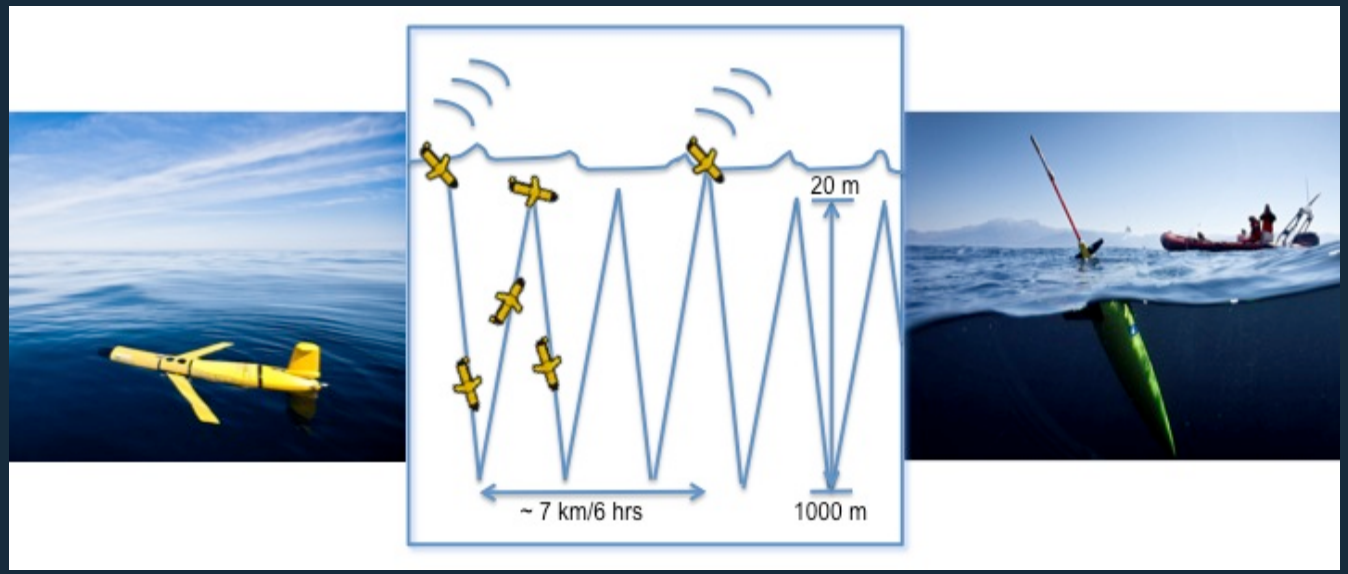
- Narrow channel with sill
- Northern Current – south
- Inflows Atlantic Water (AW) - north
- ‘Blocking’ eddies (WIW)
- Governs important N/S exchange
- Impact spawning grounds Atlantic bluefin tuna



Understanding of variability

Reference	Date	Survey	South (Sv)		North (Sv)		Net (Sv)	
Ibiza Channel			Winter	Summer	Winter	Summer	South	North
Font, Salat and Tintoré, (1988)	historical data	Ships CTD	-1.00	-0.50				
Castellon et al., (1990)	May - June 1989	Ships ADCP		-0.24				
Lopéz-Jurado and del Rio, (1994)	Nov 1990 - May 1991	Ships CTD	-0.65	-0.56	+1.08	+0.51		
Pinot et al., (1995)	May - June 1991	Ships CTD		-0.20		+0.50		
Pinot and Ganachaud, (1999)	June 1993	Ships CTD		-0.55		+0.55		
Pinot et al., (2002)	Mar 1996 – Jun 1998	Ships CTD	-1.20	-0.30	+0.20	+0.70	-1.05	+0.35
Mallorca Channel								
Pinot et al., (2002)	Mar 1996 – Jun 1998	Ships CTD					-0.30	+0.05

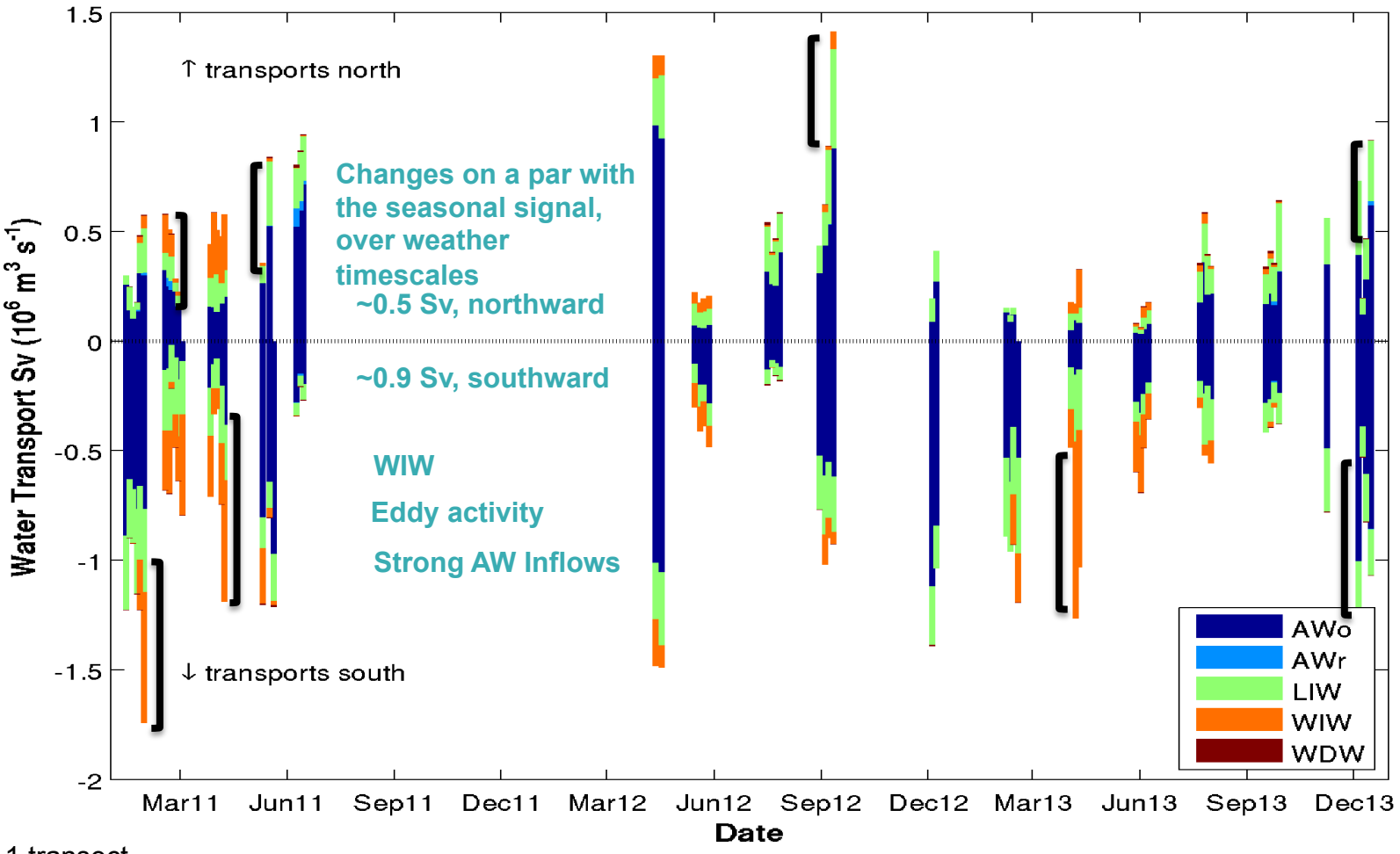
- Seasonality in NC
- 'large cruise-to-cruise variability in transport'
- A seasonal max and min. (Pinot et al 2002)



Gliders:

- quasi continuous monitoring
- 66 transects in 3 years

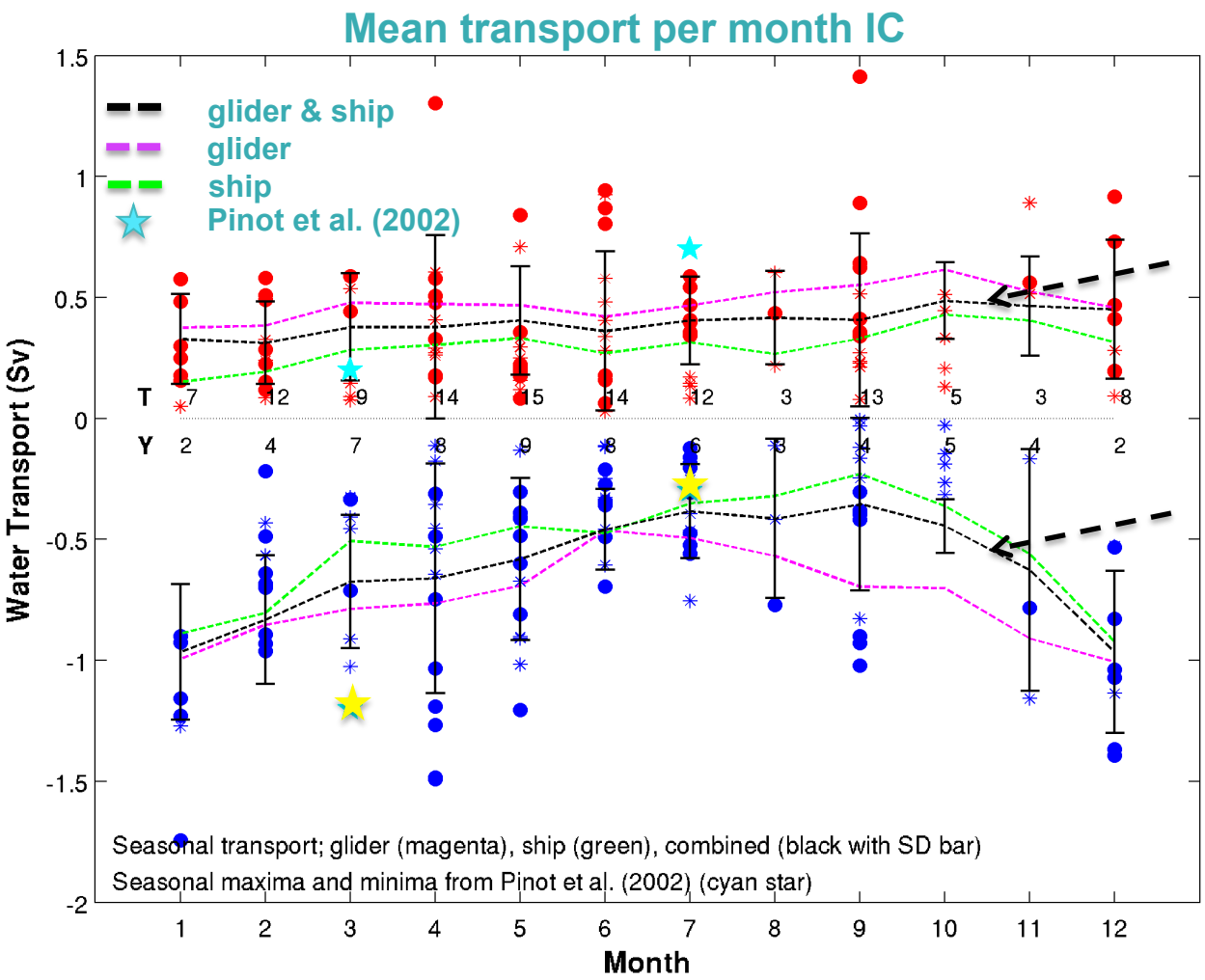
1: High sub seasonal variability



1 bar = 1 transect

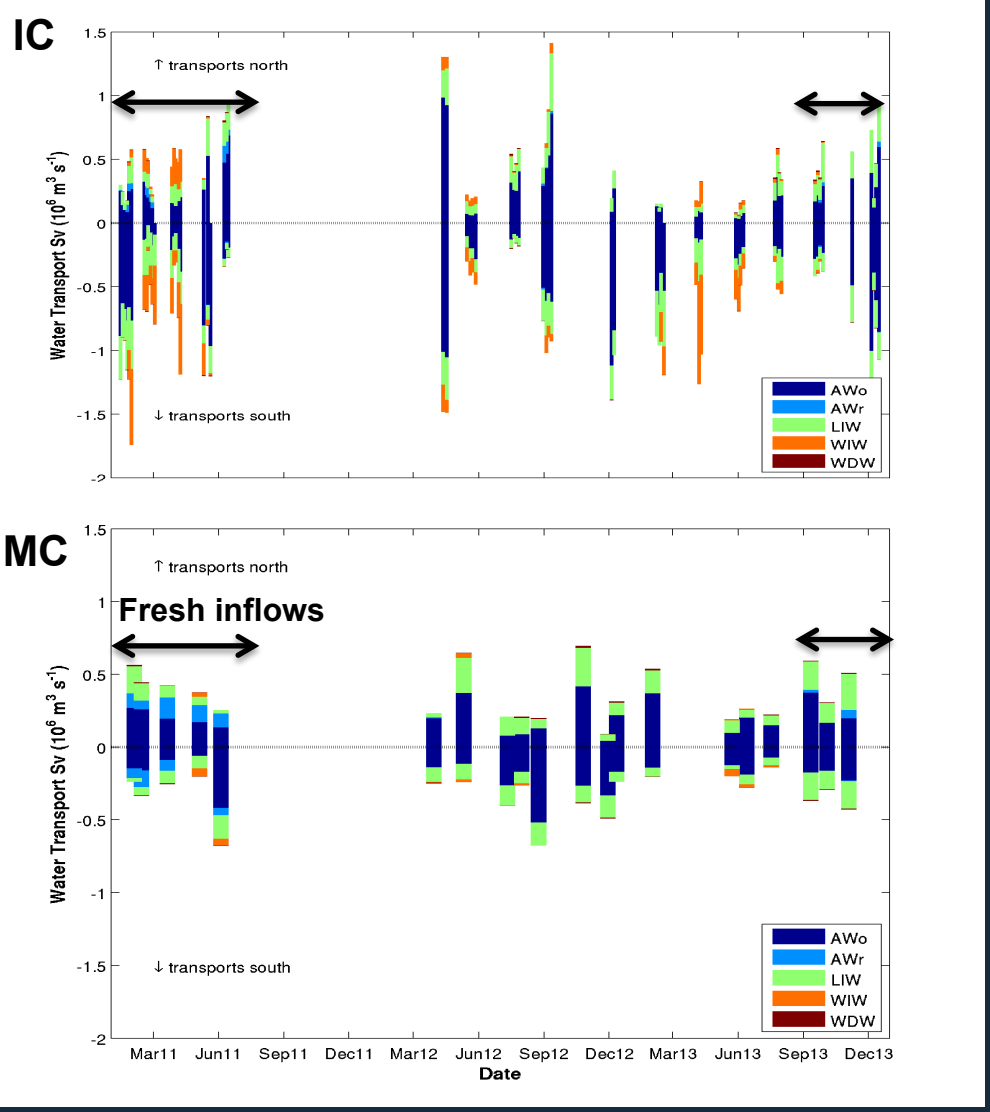
Geostrophic transport through Ibiza Channel 'choke point'

2. Seasonal variability

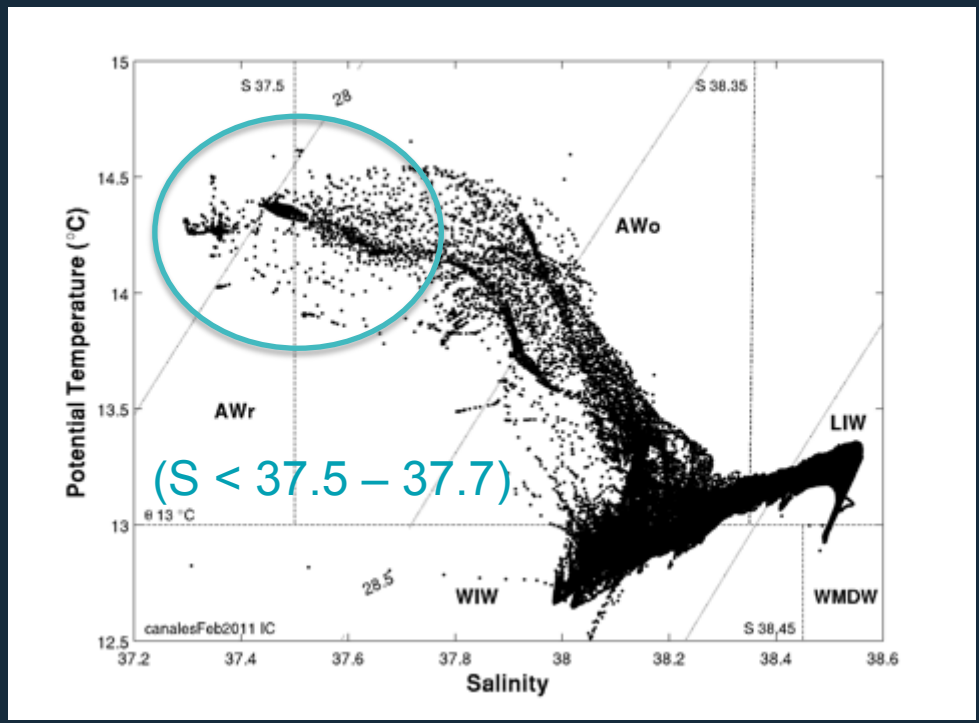


- Combine glider with ship data (54 transects / 18 years)
- Seasonal cycle in southward flow
- No seasonal cycle in northward flow
- Changes our view of the exchange

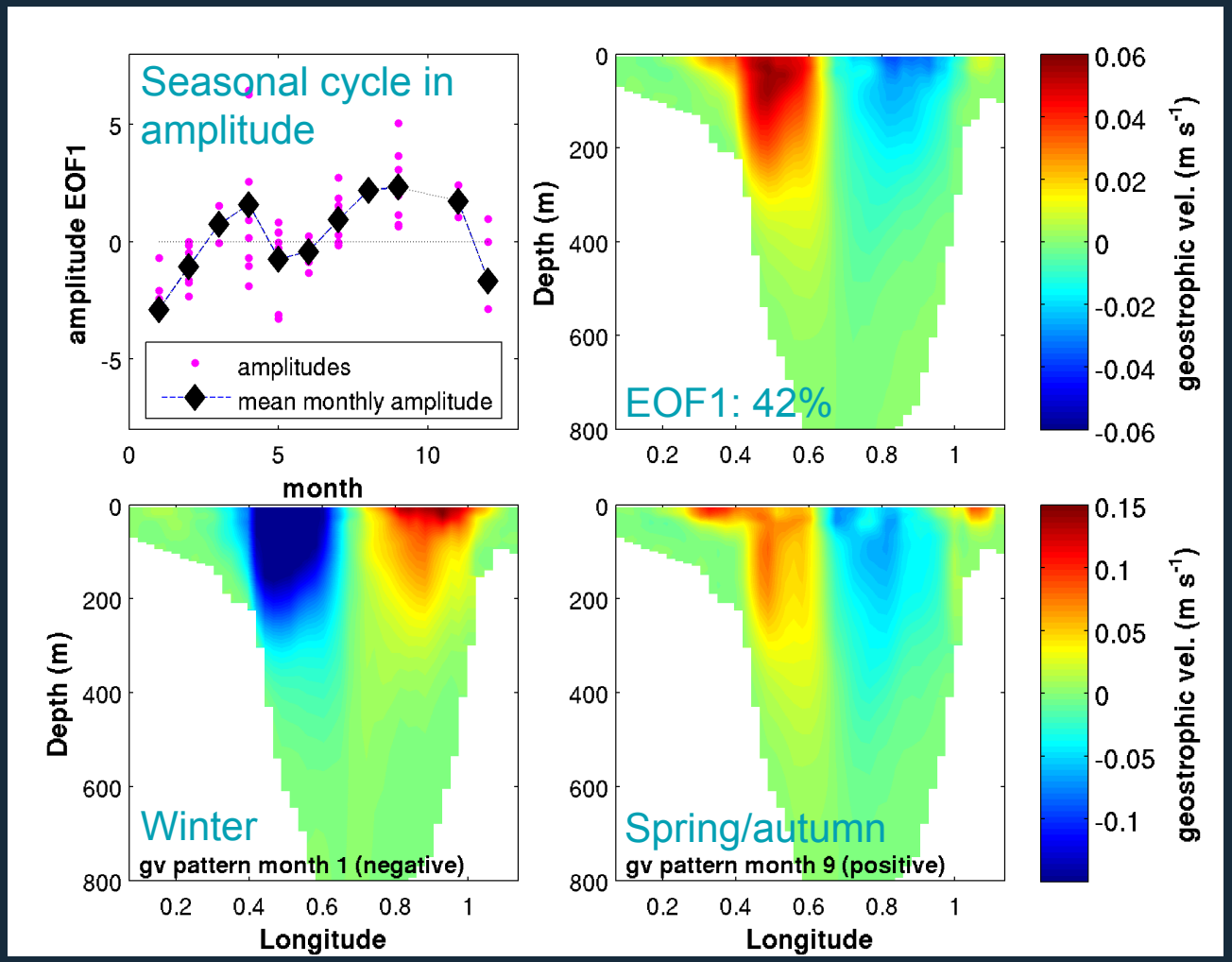
2. Inflows fresher AW

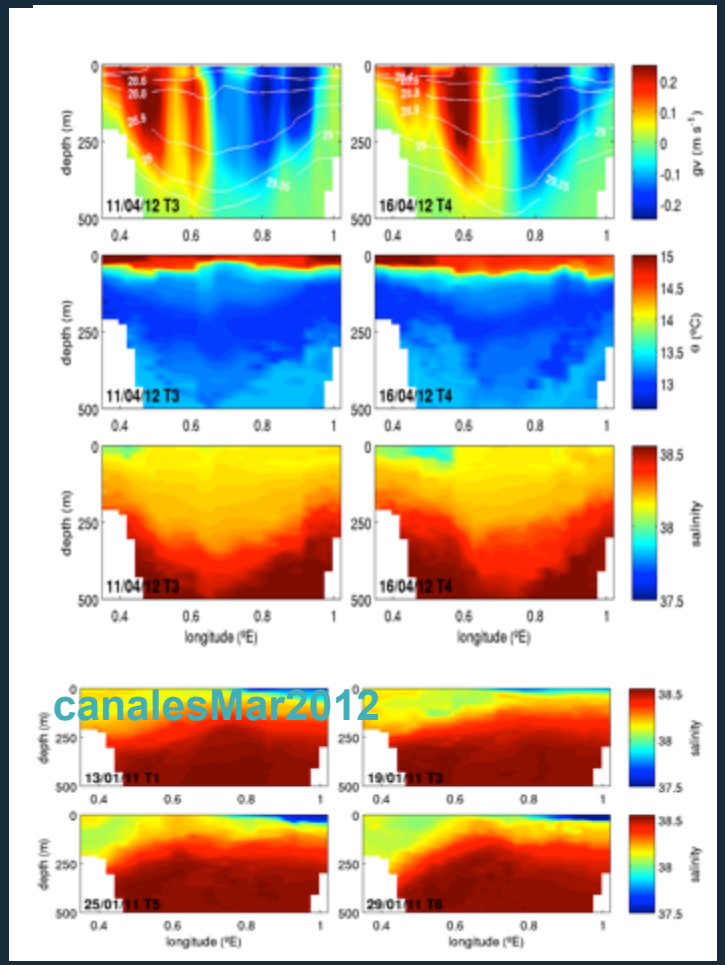


- Occur through Ibiza & Mallorca Channels
- Episodic events
- Last several months



3. Seasonal pattern in mesoscale activity





EOF of geostrophic velocity in the Ibiza Channel

Conclusions:

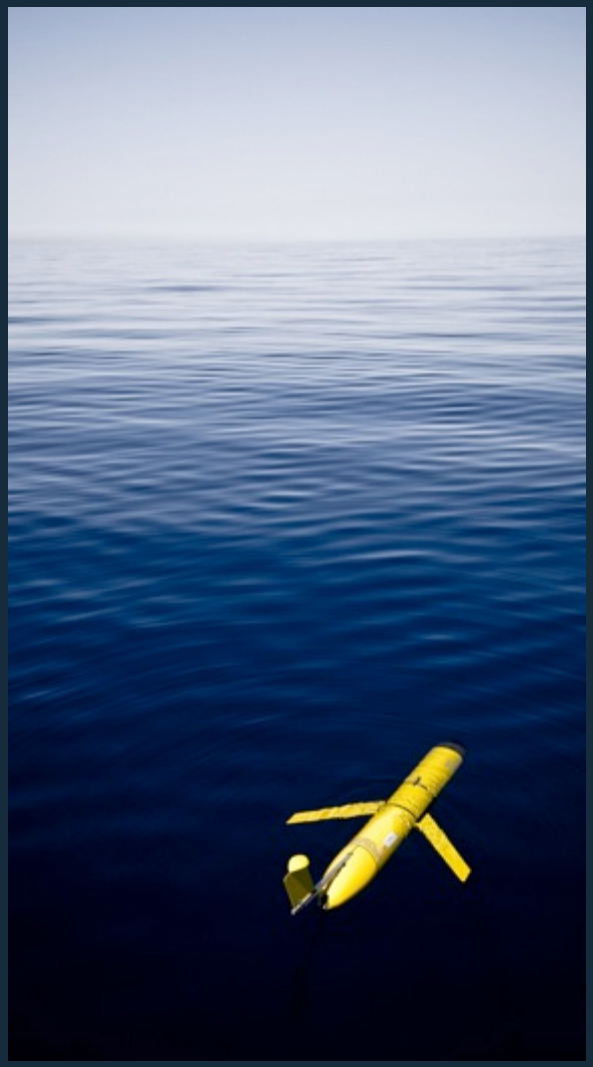
Unravel components of the variability:

- High sub seasonal variability - 3 causes
- Seasonal components are identified - NC and blocking eddies
- Non seasonal nature of inflows

Impact:

- Changes our view of the exchange
- Better constrain regional models
- Impact on fisheries
- Implications for basin scale circulation
- Place historical observations in context

>> a quiet revolution



SOCIB multi platform monitoring

- All data available
- Glider Toolbox available

Questions, comments and ideas…..