



Near-surface salinity from ARGO floats

Gilles Reverdin,
Claire Hénocq, Jacqueline Boutin, Nicolas Martin

LOCEAN, Paris





SMOS-Aquarius 1cm SSS estimates

- Can Argo floats be used to calibrate the data
- Currently, ARGO not over 5m
(and often first (T, S) value corresponds to
Average 5m-10m, or even 5m-15m)

What do we miss in salinity?





focus on 30°N-30°S

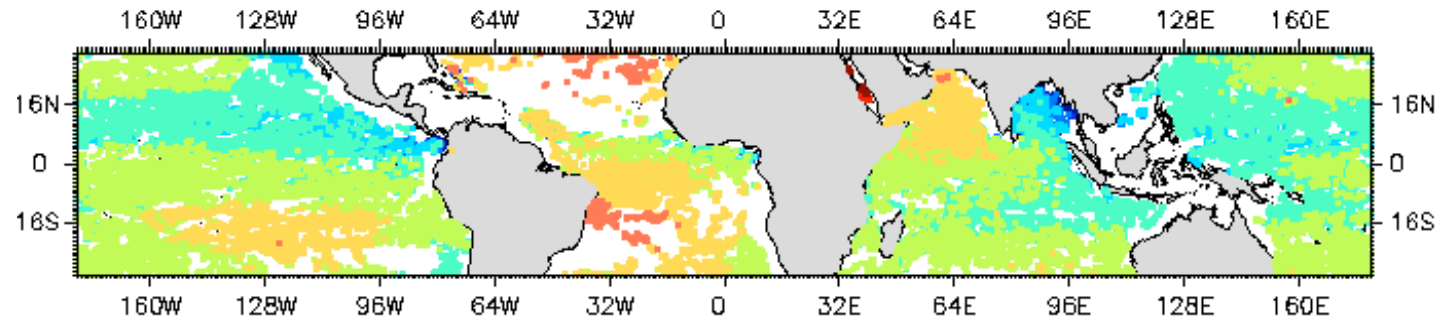
- Data to investigate upper-ocean gradients

Type de données	Provenance	Caractéristiques temporelles et position verticale des mesures valides
float	- ARGO (CORIOLIS)	2000-2006
TSG	- TSG Polarstern -TAO/PIRATA	-5m and 11m 1993-2006 -1, 5 et 10m 2000-2006
CTD – XCTD	World Ocean Database 2005 + SISMER - XCTDs from ARAMIS	4m-10m (1m resolution) 2000-2006



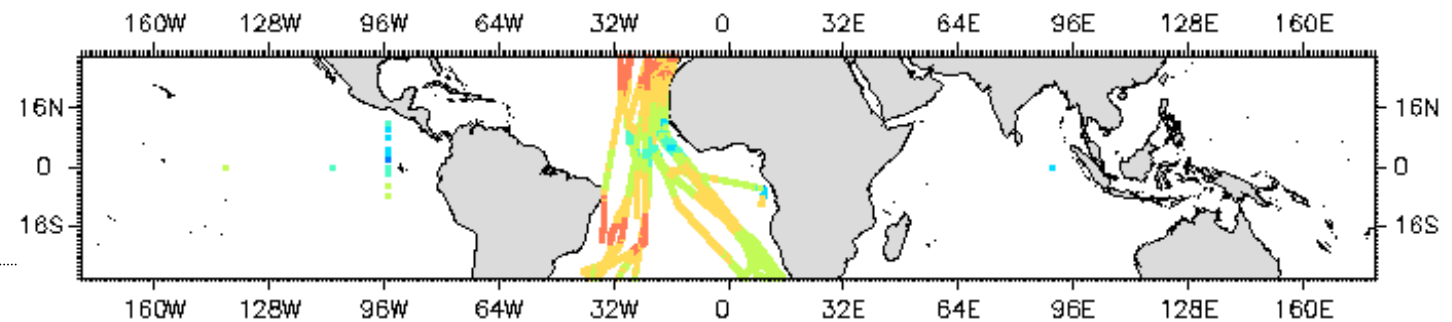


Position of measurements by floats

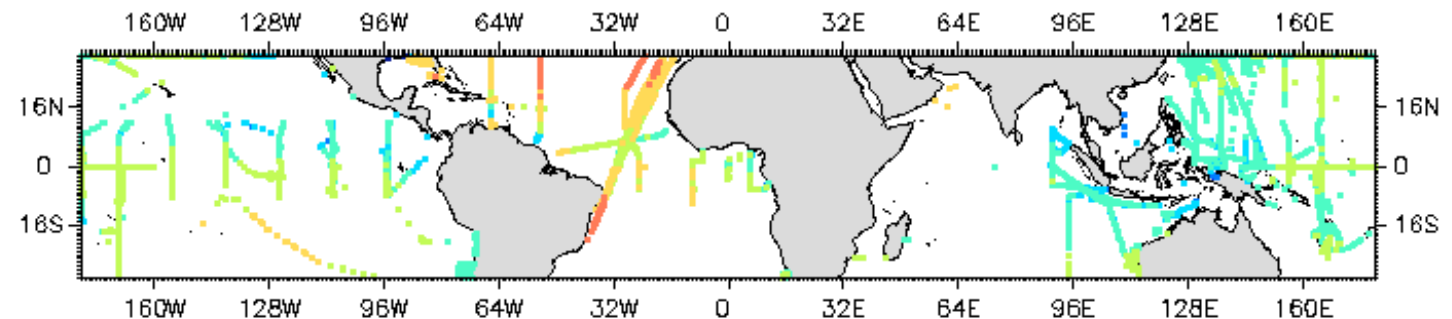


Colour for
'upper' salinity

Position of measurements by TSG on boats or moorings



Position of measurements by CTD or XCTD



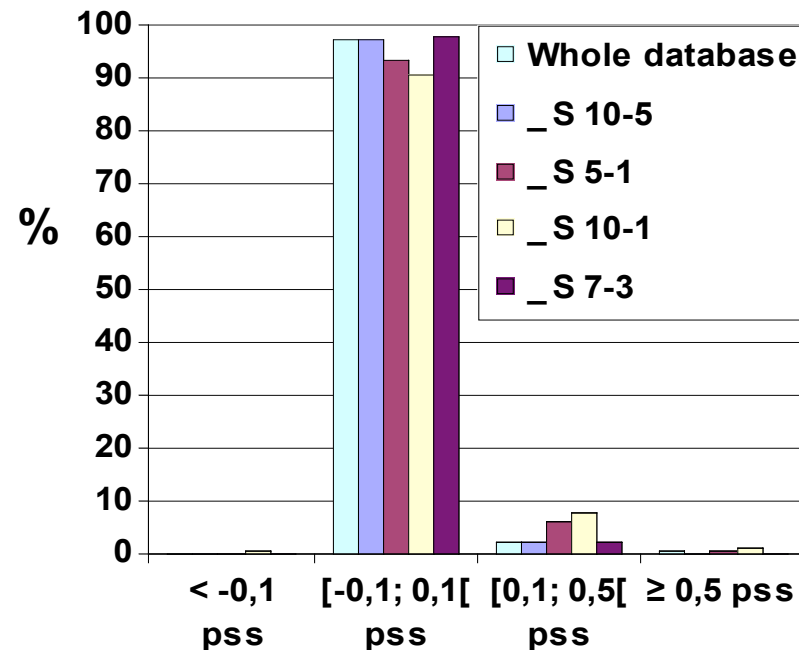
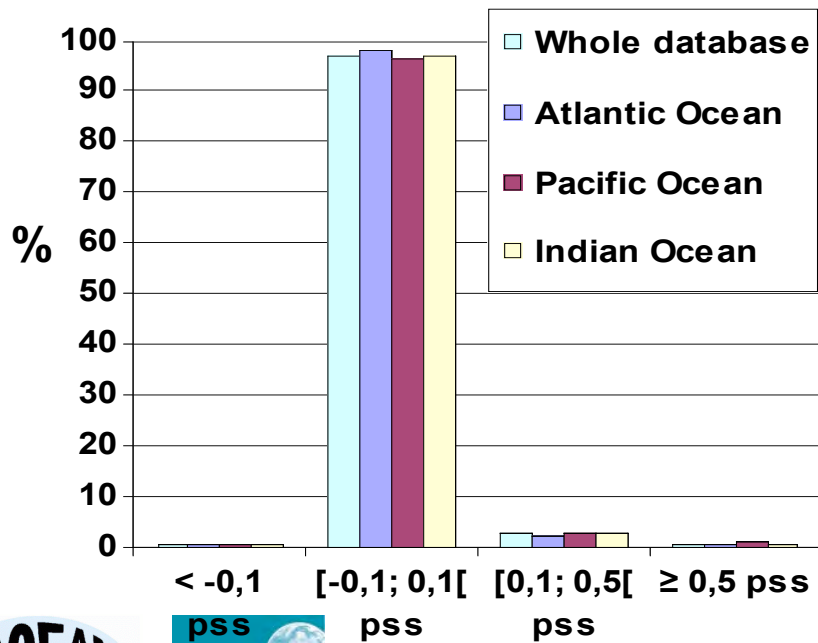
SSS (pss)

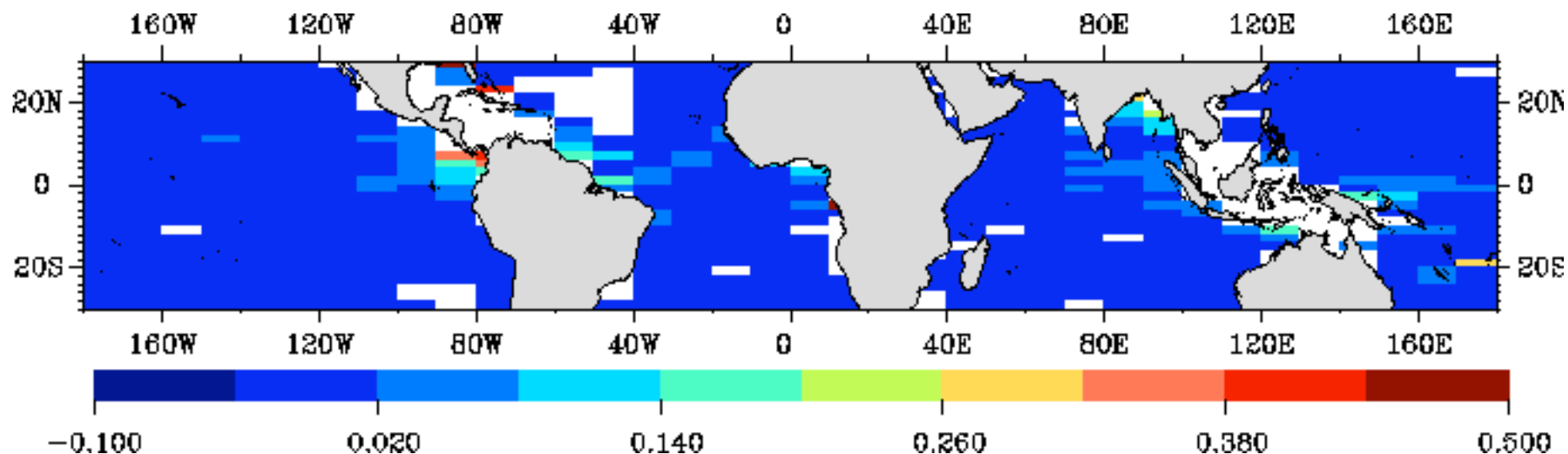
Vie Scientifique 14/05/08





- Everything pulled together:
 - 0.16 % des gradients inférieurs à -0.1 ps
 - 97,10 % des gradients compris entre -0.1 et 0.1 pss
 - 2,30 % de gradients compris entre 0.1 et 0.5 pss
 - 0.44 % des gradients supérieurs à 0.5 pss
- more large gradients when comparing ΔS_{5-1} than ΔS_{10-1} .



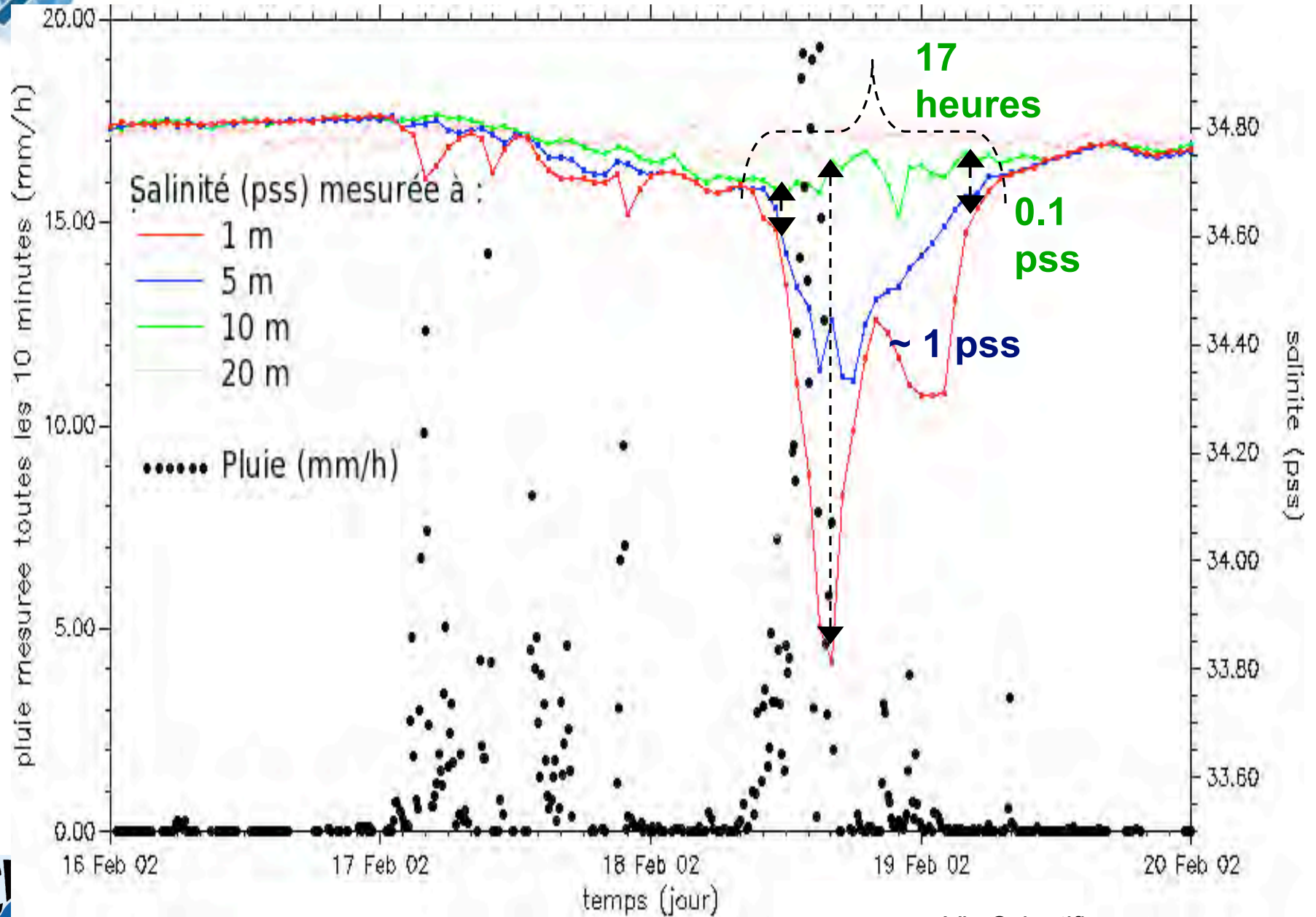


Moyenne de ΔS (pss) dans des boîtes de $2^\circ * 10^\circ$ (période 2000-2006)

	Moyenne des gradients de salinité	Ecart type des gradients de salinité
Base de données globale	0.0103	0.0885
Atlantique	0.0047	0.1072
Pacifique	0.0142	0.0802
Indien	0.0101	0.067
ΔS 10-5	0.009	0.0895
ΔS 5-1	0.0227	0.079
ΔS 10-1	0.0337	0.0903
ΔS 7-3	0.01	0.0426



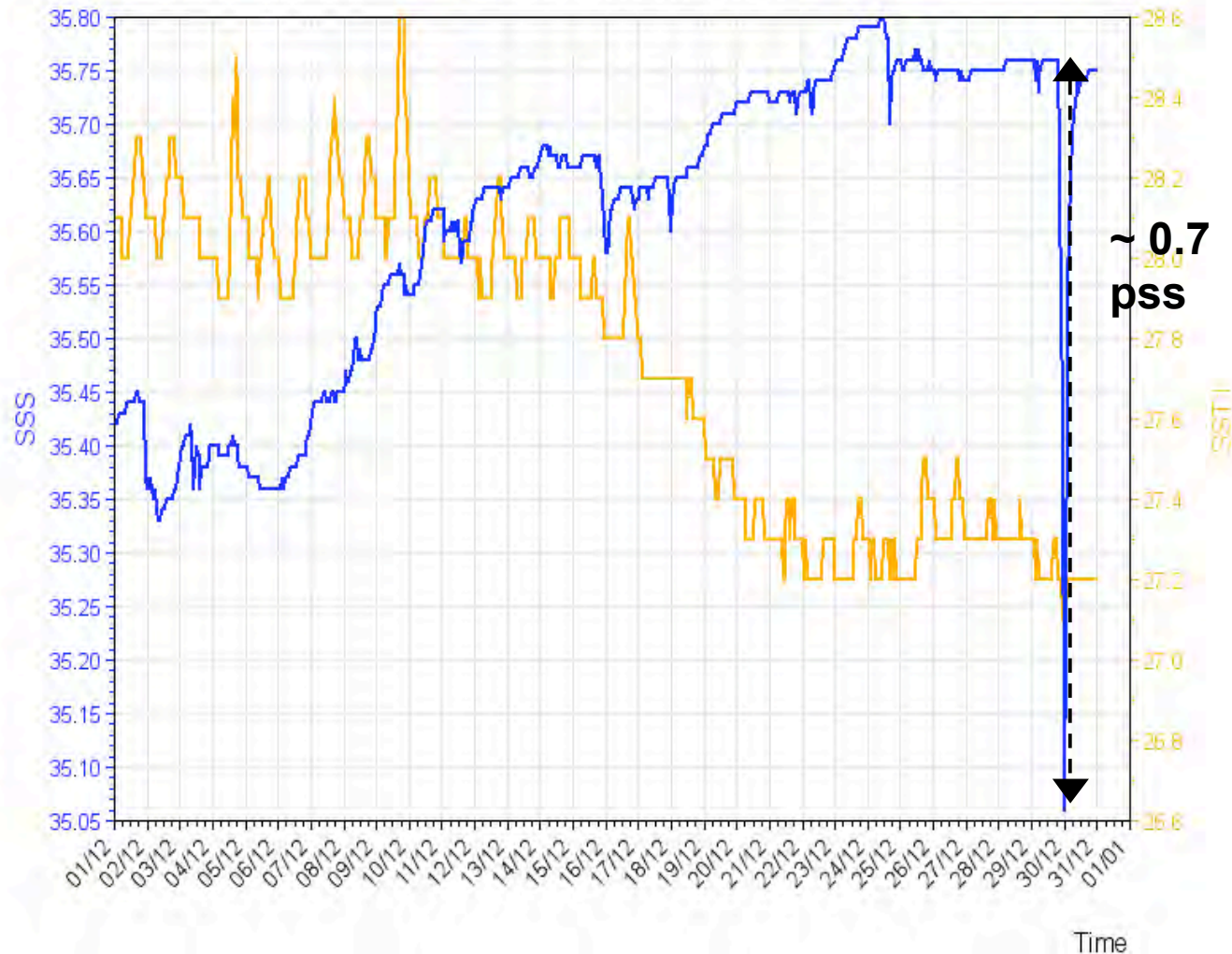
Influence of rainfall on large surface freshening 06ç(w)





Salinity drifter in north-west Atlantic (measurement near 35 cm)

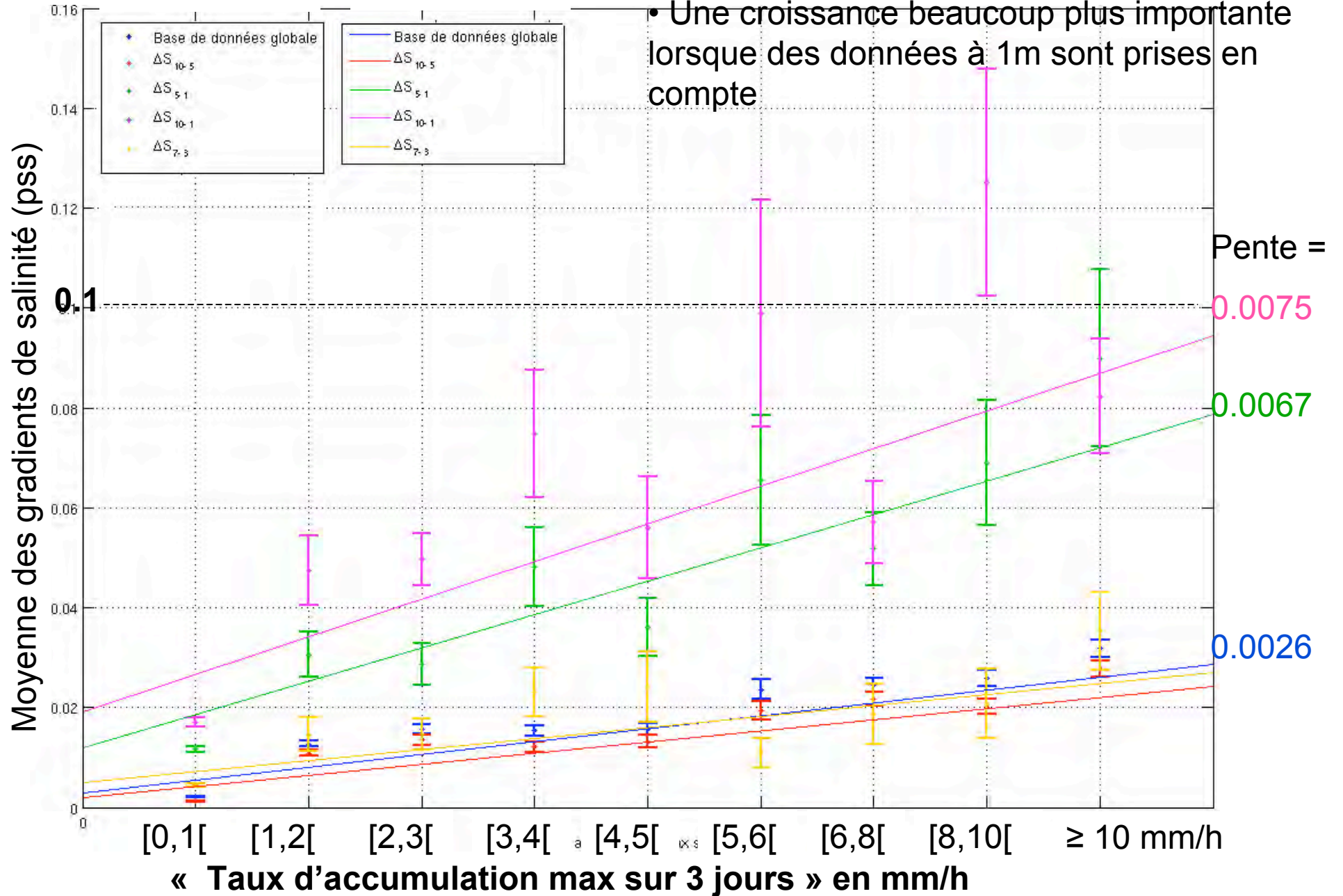
Amandes - Metocean 73224



Moyennes des gradients de salinité

Courbe de tendance linéaire

- Tendence croissante attendue
- Une croissance beaucoup plus importante lorsque des données à 1m sont prises en compte





what can we do

- Test implementation of an upper ocean salinity measurement with the same sensor (at 0 added cost).

Wish: measurement near 1m or 2m depth

Issues: one wants to avoid pumping surface water (sensor contamination); pressure estimate accuracy

Out of 30 PROVOR recent CTS3 floats, none would have had an issue with a last measurement at 1m depth

Alternatives:

- measurements closer to the surface from dedicated drifters, other instruments (drifters; high-resolution profilers during cruises;



deployment on moorings)
and a TD on ARGO float (Riser et al.)



● Inspection



● After re-deployment

