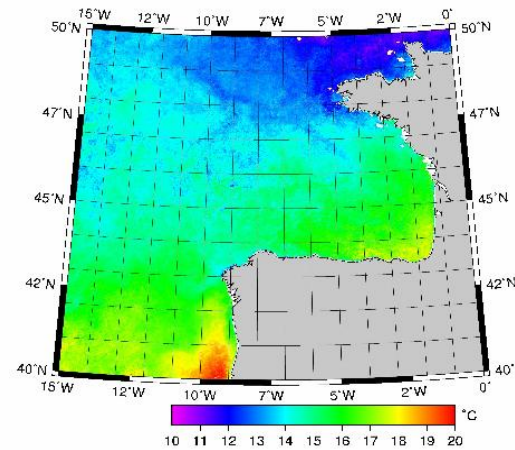
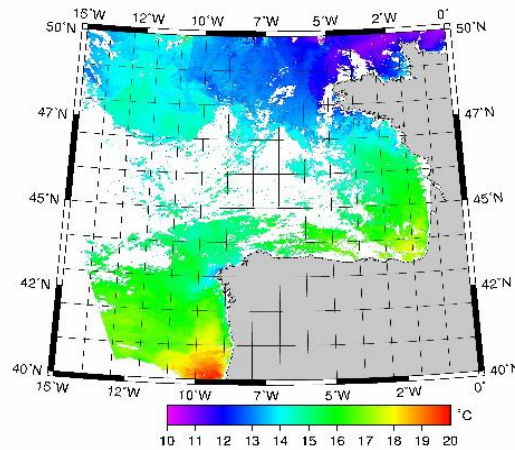


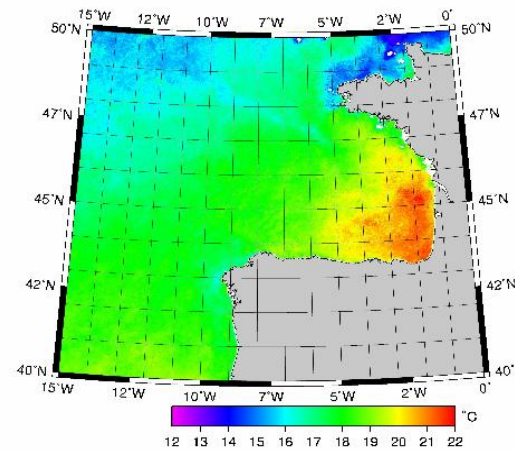
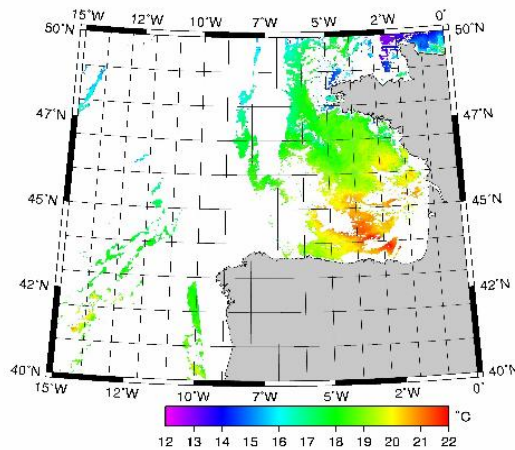
Air-Sea Interaction from DINEOF reconstructed daily satellite SST images

G. Esnaola – P. Lazure – J. Sáenz

05/31/2006 42.17% cloud covered



06/29/2006 82.07% cloud covered



Creation of SST Database for BoB
Reconstruction & Verification



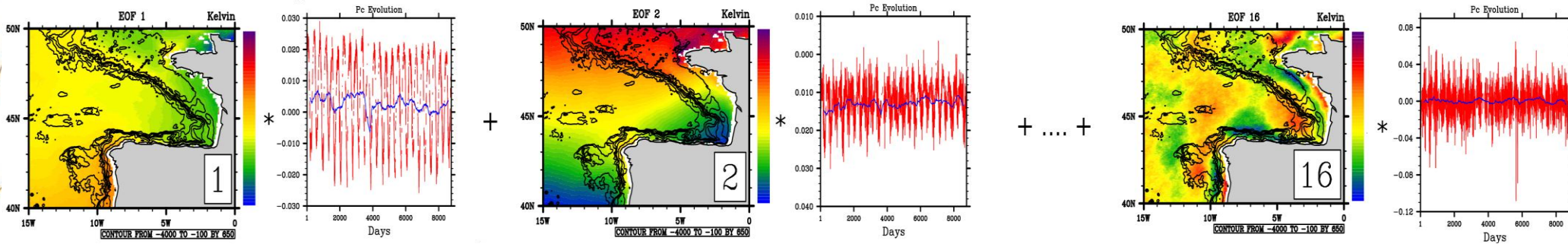
Air-Sea interaction patterns from SST and Heat Fluxes
MCA & Feedback



MCA Spatial Pattern Interpretation
Effects from & into the ocean

Phd

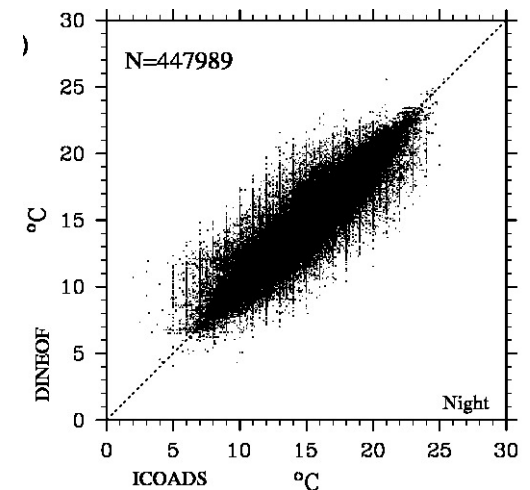
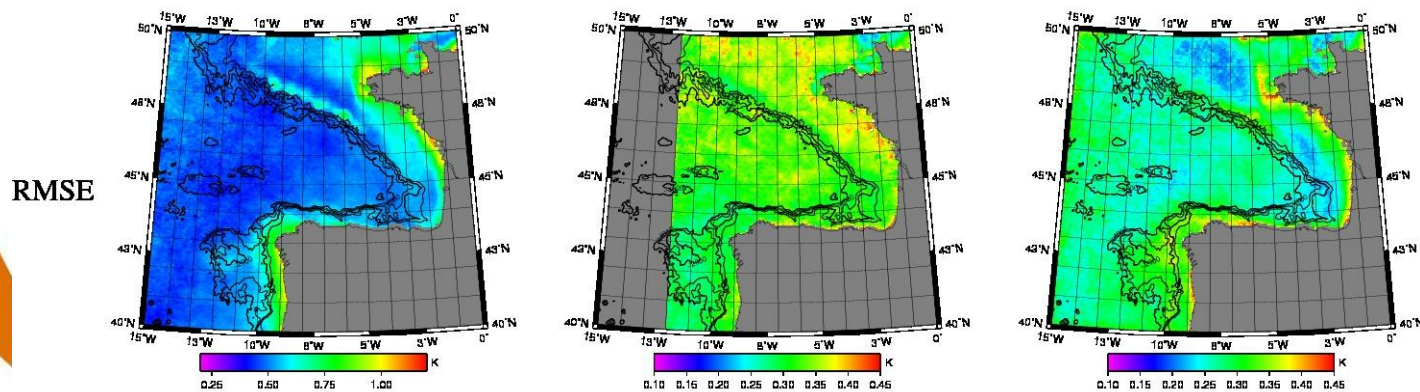
Reconstruction of 1985-2008 SST using DINEOF (Beckers and Rixen, 2003)



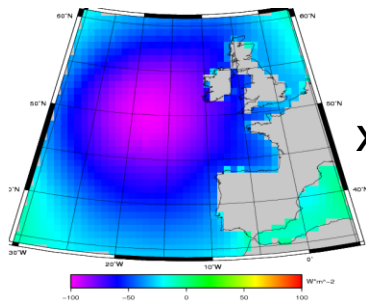
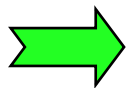
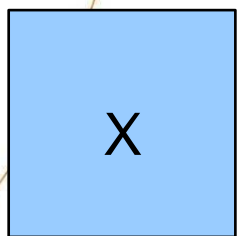
Verification: Vs Original satellite data & Vs *in-situ* ICOADS measurements

Verification: Comparison with other available reconstructions

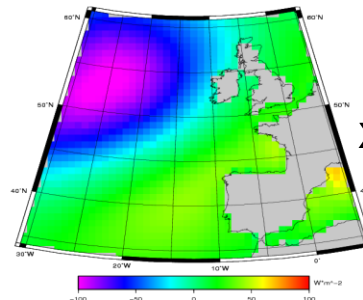
- * Optimun Interpolation (OI) reconstruction by Reynolds et al. (2002 & 2007)
- * Kriging reconstruction by Saulquin and Gohin (2010)



Maximum Covariance Analysis (MCA)

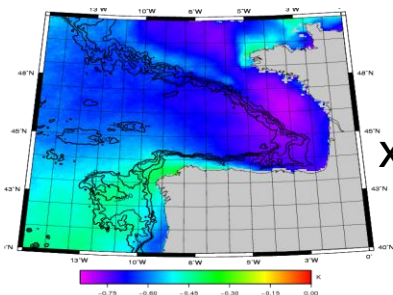
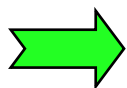
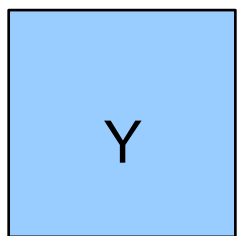


+ +

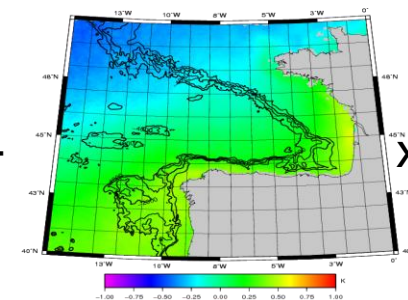


n timesteps

$$C = (1/n) X \cdot Y' = U \cdot \Lambda \cdot V'$$



+ +



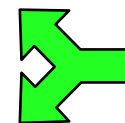
n timesteps

LMCA



Surface heat Fluxes (NET) VS SST

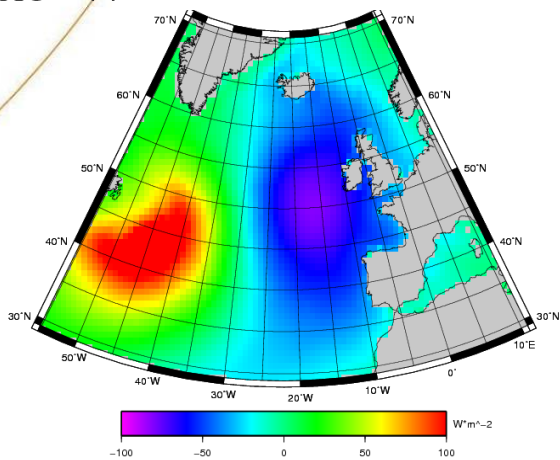
Surface Heat Fluxes (NET) VS dSST/dt



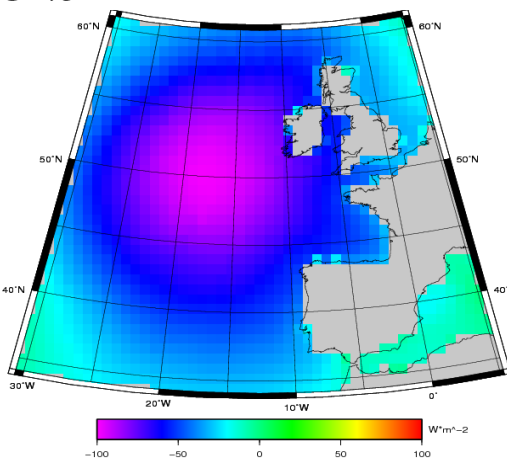
3 SCALES

MCA: SST vs NET surface heat flux

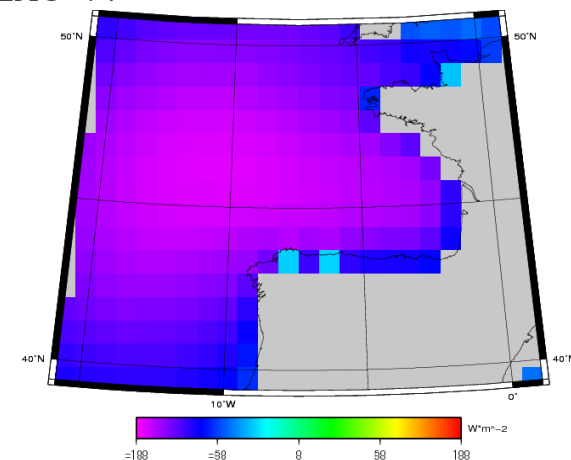
LAG= +4



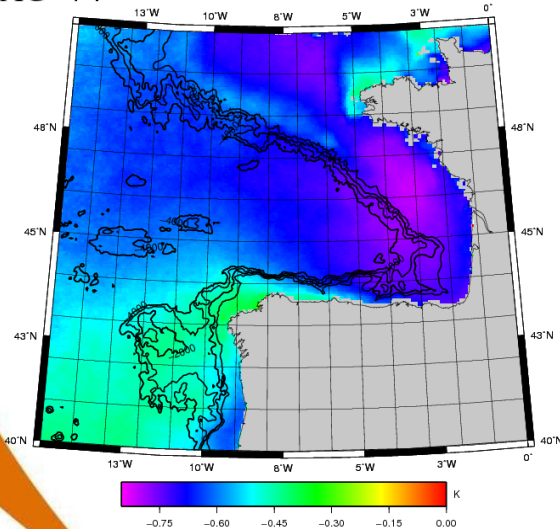
LAG=+3



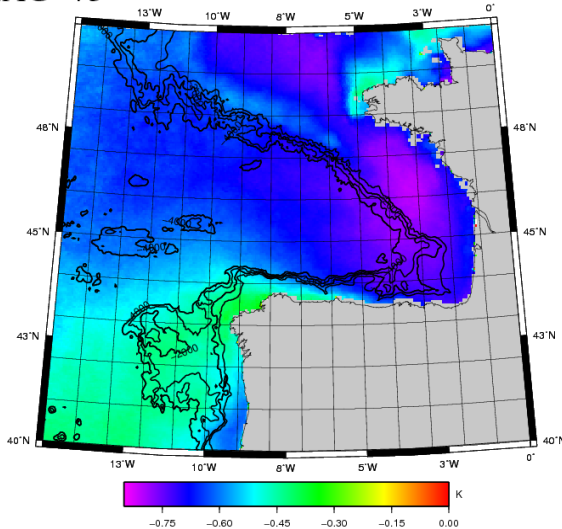
LAG=+4



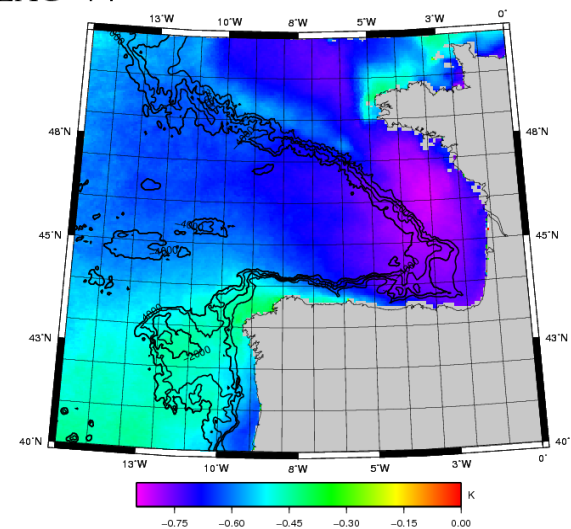
LAG=+4



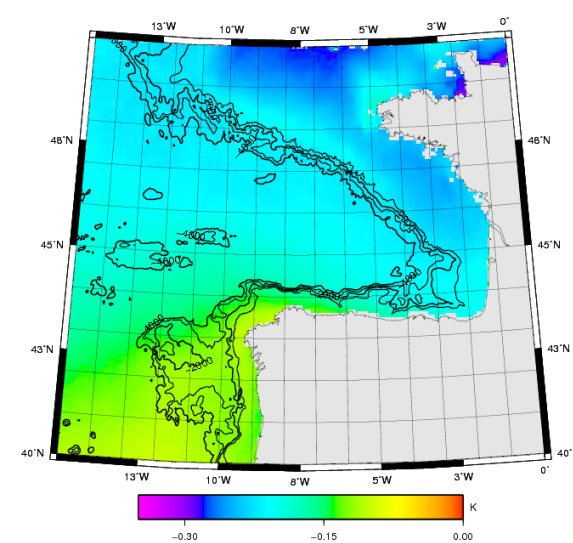
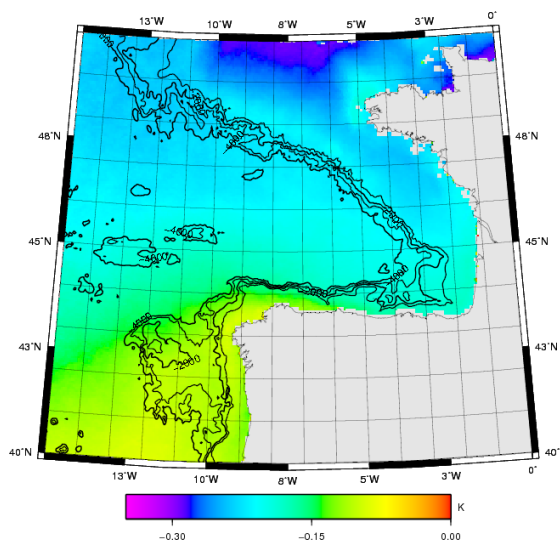
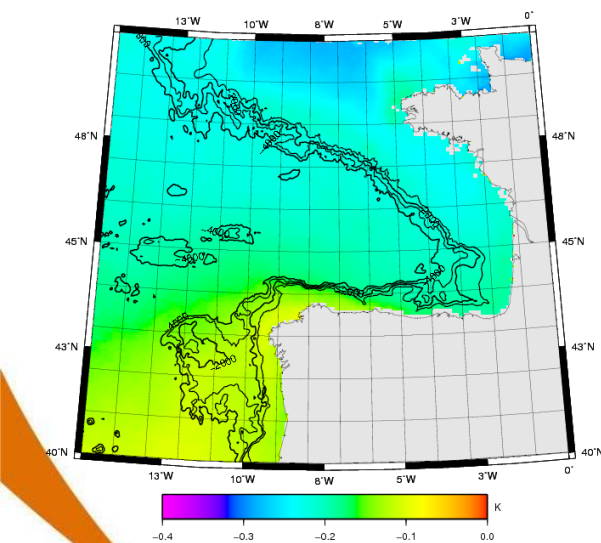
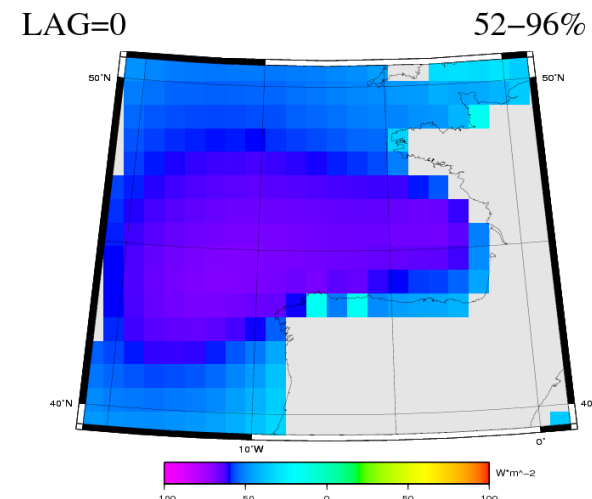
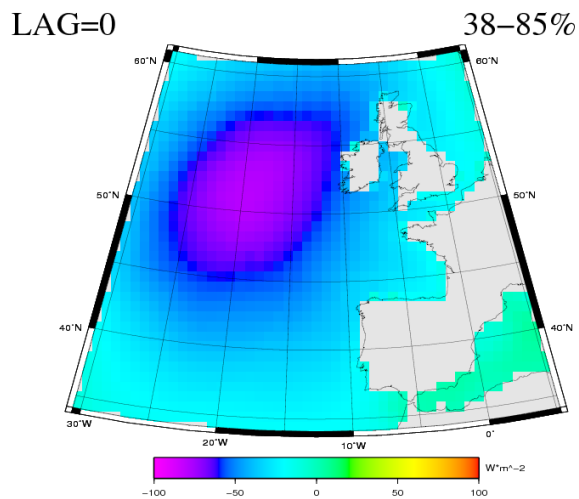
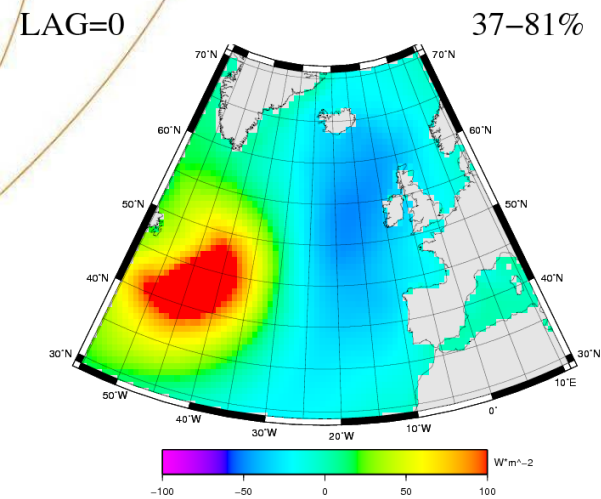
LAG=+3



LAG=+4



Physically: $dSST/dt = Flux$



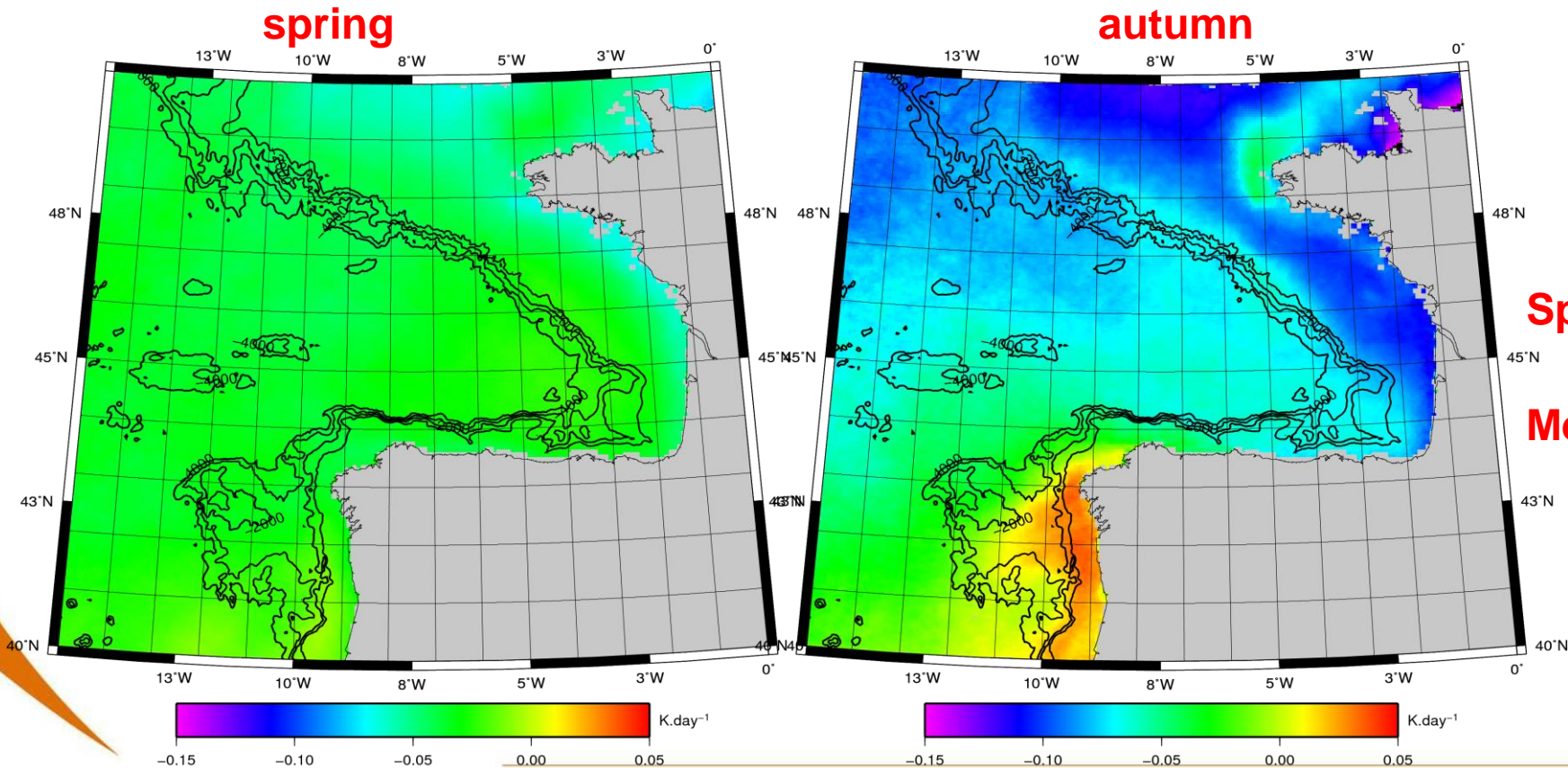
Understanding MCA: SST vs dSST/dt

Physically: $dSST/dt \propto \text{Flux} \Rightarrow$ MCA of $dSST/dt$ (max. cov. for lag = 0 days)

$$v = \left[\frac{dSST}{dt} \right]_{MCA, lag=0} - k \left[\frac{SST}{N} \right]_{MCA, lag=N}$$

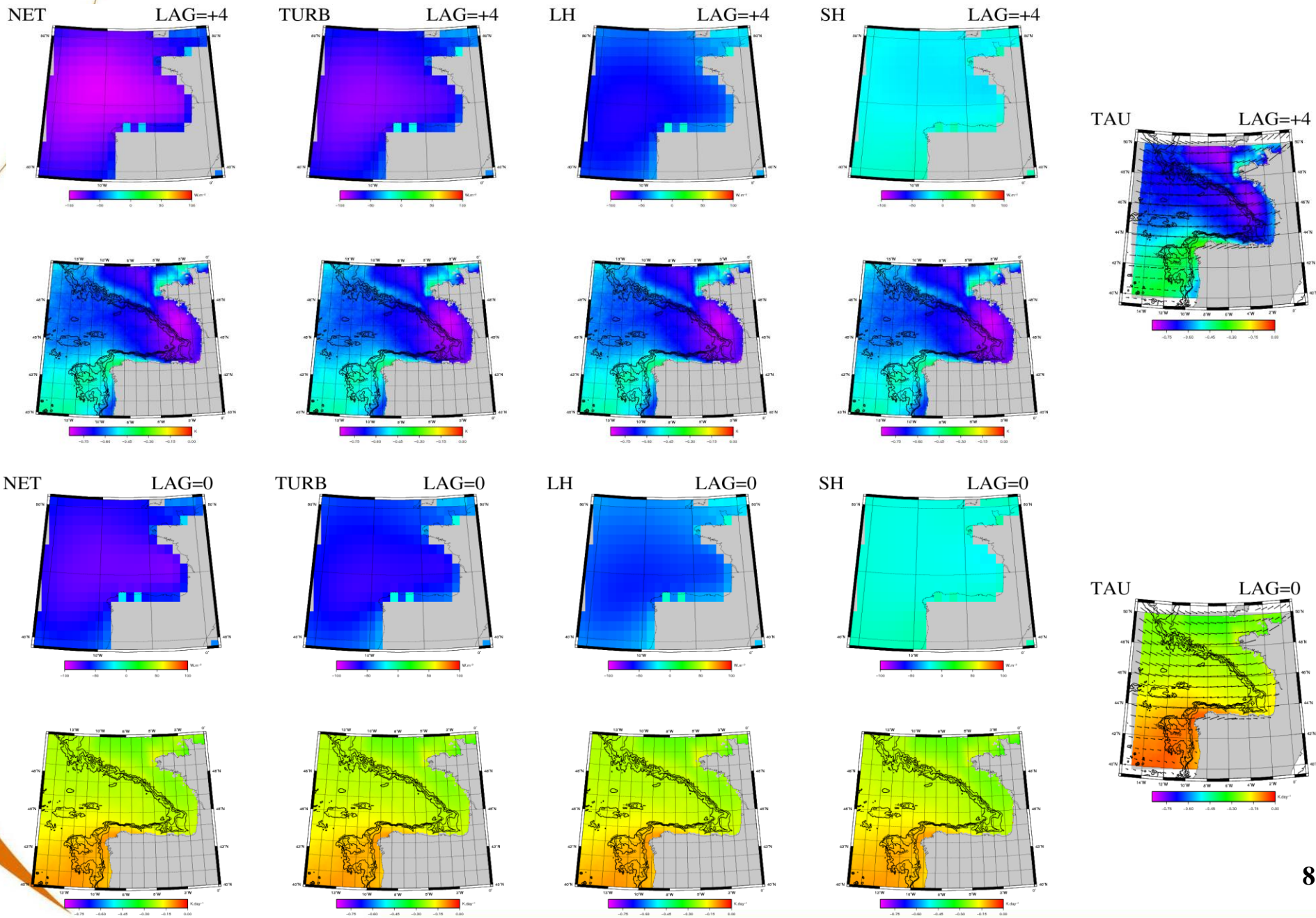
$v > 0$ ----- Heat outgoing
 $v < 0$ ----- Heating going

SST response to $dSST/dt \Rightarrow$ MCA of SST (max. cov. for lag = 3-4 days)



Speculative ??

Meaning ??



- Interpretation and understanding of spatial structure of MCA SST patterns
- All heat fluxes and seasonal analysis
- Identification of specific effects related to oceanic processes

