

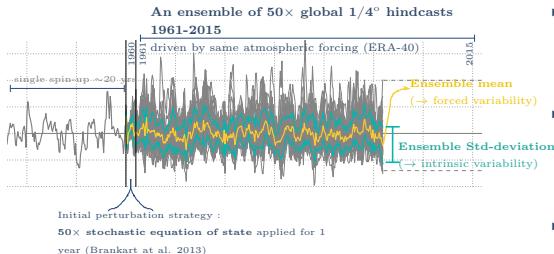
# Stochastic vs forced AMOC variability at interannual-to-decadal timescales

## – insights from a large ensemble of $1/4^{\circ}$ ocean-sea-ice hindcasts –

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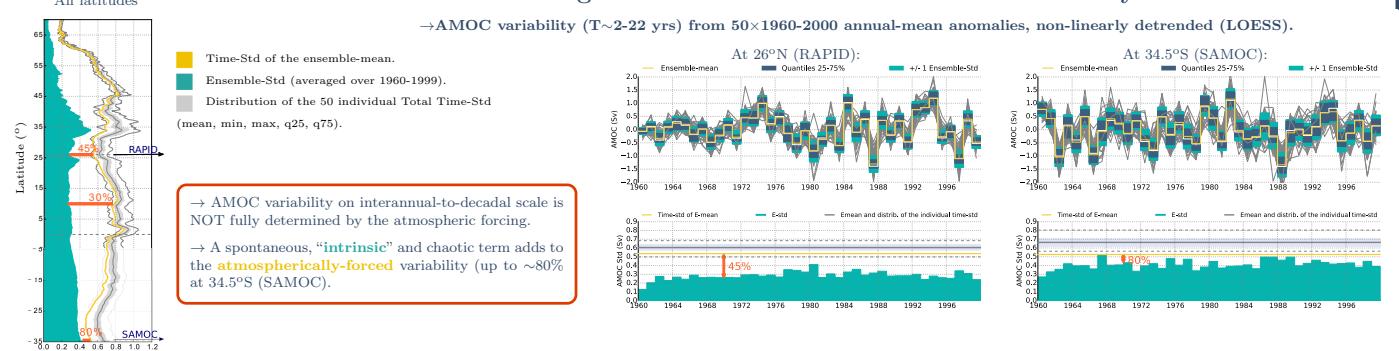
### The OCCIPUT project:



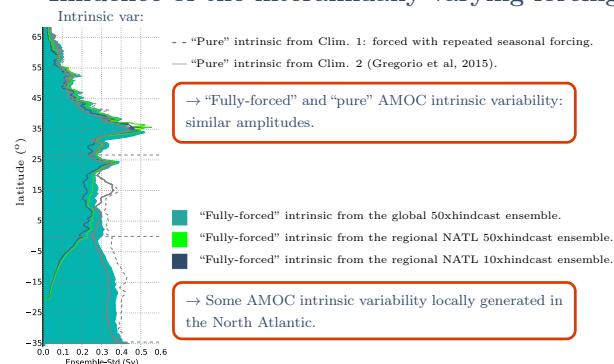
- Motivation:** In eddying ocean global models under climatological atmospheric forcing (i.e. identically repeated from year to year), a substantial amount of intrinsic/chaotic variability spontaneously emerges and cascades up to multi-decadal and basin scales (Penduff 2014, Serazin 2015, Gregorio 2015).
- Objectives:** Extract and study the **intrinsic** and **forced** components of the ocean variability at interannual-to-decadal scales when forced by a realistically-varying atmosphere. Examine to what extent the forced variability may possibly influence the intrinsic modes (e.g., modulate, damp, pace?).
- Focus on ocean quantities with a potential impact on the climate system, such as the SST, Meridional Overturning Circulation (MOC), Ocean Heat Content (OHC) in 0-700m, etc

OCCIPUT ensembles:	
OCCITENS	NATL
Domain:	Global
Ens. size:	50 mbs $\times$ 55 yrs
Period:	(1960-2014) (1993-2012)
Resolution:	0.25° $\times$ L75
Model:	NEM3.5 BETA and XIOS
Forcing:	DF55.2 (ERA-interim)
CPU:	$\sim 10^6$ hours (PRACE allocation)
Status:	Ongoing Achieved

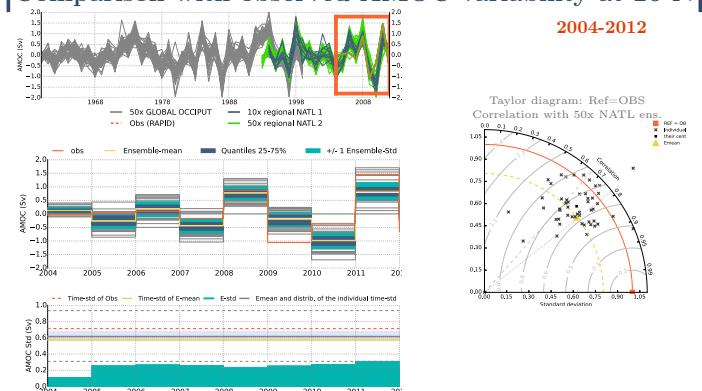
### Interannual AMOC: how significant is the **intrinsic** vs **forced** variability ?



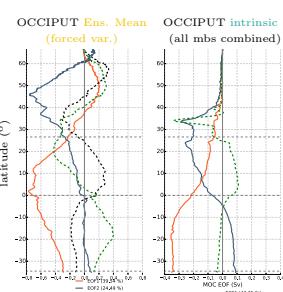
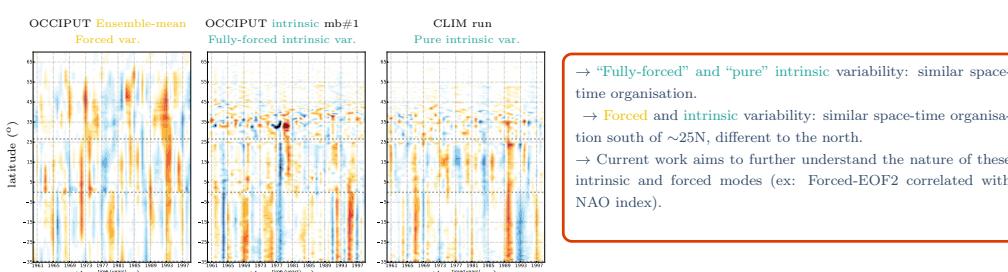
### Influence of the interannually-varying forcing?



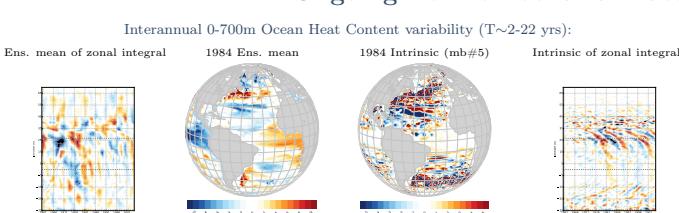
### Comparison with observed AMOC variability at 26°N



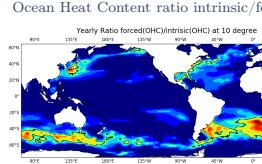
### How coherent are interannual AMOC intrinsic variations in lat/time?



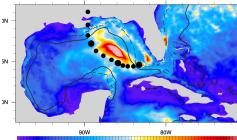
### Ongoing work on other climate/atmosphere-related quantities...



#### Ocean Heat Content ratio intrinsic/forced :



Inter-member spread of SST-drop before/after hurricane Katrina (2005):



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