Gael
Alory
LEGOS, Toulouse, France
Casimir Da-Allada, UNSTIM, Abomey, Benin
Sandrine Djakouré, LASMES, Abidjan, Ivory Coast
Isabelle Dadou, LEGOS, Toulouse, France
Julien Jouanno, LEGOS, Toulouse, France
Dorelle Loemba, ICMPA, Cotonou, Benin
Oral
Wind-driven coastal upwelling can be compensated by onshore geostrophic flow, and river plumes are associated with such flow. We investigate possible limitation of the north-east Gulf of Guinea upwelling by the Niger River plume, using regional ocean model simulations with or without river and dynamical upwelling indices. Here, the upwelling is weakened by 50% due to an onshore geostrophic flow equally controlled by alongshore thermosteric and halosteric sea level changes. The river contributes to only 20% of this flow, as its plume is shallow while upwelling affects coastal temperature and salinity over a larger depth. Moreover, the river-induced mixed layer thinning compensates the current increase, with no net effect on upwelling. The geostrophic compensation is due to an abrupt change in coastline orientation that creates the upwelling cross-shore front. The river nonetheless warms the upwelling tongue by 1°C, probably due to induced changes in horizontal advection and/or stratification.
Presentation file
alory-presentation.pdf
Download to PDF