



Atlantic overturning sea level patterns

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Sea surface elevation patterns are closely linked to geostrophic circulation in the upper ocean layers. In the Atlantic, these are significantly influenced by the Atlantic meridional overturning circulation. It has been shown that a collapse of the overturning may alter regional sea level by up to 1m along Atlantic coast lines. Here we pose the question whether the cause of a collapse matters for the resulting sea level pattern. Using an oceanic general circulation model we apply changes in surface wind stress and surface freshwater flux at different locations to reduce the overturning strength and investigate associated sea surface elevation patterns on decadal to multi-centennial timescales. The results are relevant for future sea level projections as well as for potential monitoring systems that employ changes in sea surface patterns.