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Decadal prediction for Ireland and Irish Fisheries

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Fishery sector is of vast importance to the Irish economy. In 2019 it has generated €577 million and employed 16 thousand. The ability to predict changes in the future stock will support adaptation and fish stock management. In decadal climate prediction, initialized predictions have demonstrated improved prediction skill for the North Atlantic. The different stages of fish development are dependent on oceanic variables like temperature and variability and so decadal prediction skill for those variables would allow to make statements on potential changes in fish stock.

Our aim is to improve decadal prediction skill in the Northeast Atlantic. For this we apply ensemble subsampling, a process that selects those ensemble members for creating a subsampled ensemble mean, which perform best under evaluation by physically-based statistical predictors. Climate modes, like Subpolar Gyre (SPG) and the Atlantic Multidecadal Variability (AMV), interact with our region of interest and therefore we will use those to inform us about our subsampling decisions. Applying this methodology on seasonal scales has demonstrated improved prediction skill for other climate modes.

For this contribution we will investigate the application of subsampling on decadal scales for the Northeastern Atlantic on variables like temperature and salinity for different depth levels. The analysis will show how decadal prediction skill will change when wider oceanographic basin information, like SPG and AMV, are considered in the decadal predictions. We will discuss potential implications for a selection of species for the Irish fisheries sector, and with it the possibility for improving the current fish stock management systems in Ireland.