Influence of sea ice variation in the deep water masses formation in the Ross Sea

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It has been known for a long time that the ocean plays the most important role on heat storage on Earth, what turns it into a major component of the global climate system. Therefore, many studies have been made to assess whether climate processes features are changing and how may climate itself be impacted by this processes changes. Once sea ice is rapidly affected by climate changes and is directly linked to the oceanic overturning circulation, which is responsible for the heat exchange and storage, this work intended to look at the influence of sea ice variation in the deep water masses formation in the Southern Ocean. For that, the IPCC class model CCSM3/NCAR was used on a simulation from 1870 to 2100 considering the A1b scenario. Using the Optimum Multiparameter Analysis (OMP) to separate water masses, we have focused on the Ross Sea Ice Shelf Water (ISW) spacial variation along the whole simulation period. Much closely to what have been seen on previous observational data, model results have also shown an important ice coverage increasing trend on the Ross Sea. Following this sea ice increase, ISW is formed in each time deeper regions and occupies a wider layer while it flows towards higher latitudes, what may eventually change the heat transport on the Southern Ocean.