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## Causes and consequences of Southern Ocean change: the IPCC SROCC assessment

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Climate change in the polar regions exerts a profound influence both locally and over all of our planet. Physical and ecosystem changes influence societies and economies, via factors that include food provision, transport and access to non-renewable resources. Sea level, global climate and potentially mid-latitude weather are influenced by the changing polar regions, through coupled feedback processes, sea ice changes and the melting of snow and land-based ice sheets and glaciers.

Reflecting this importance, the IPCC Special Report on the Ocean and Cryosphere in a Changing Climate (SROCC) features a chapter highlighting past, ongoing and future change in the polar regions, the impacts of these changes, and the possible options for response. The role of the polar oceans, both in determining the changes and impacts in the polar regions and in structuring the global influence, is an important component of this chapter.

With emphasis on the Southern Ocean and through comparison with the Arctic, this talk will outline key findings from the polar regions chapter of SROCC. It will synthesise the latest

information on the rates, patterns and causes of changes in sea ice, ocean circulation and properties. It will assess cryospheric driving of ocean change from ice sheets, ice shelves and glaciers, and the role of the oceans in determining the past and future evolutions of polar land-based ice. The implications of these changes for climate, ecosystems, sea level and the global system will be outlined.

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