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Tipping Points in Antarctic Climate Components (TiPACCs)

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Recently, several of the West Antarctic ice shelves have experienced thinning driven by ocean-induced basal melting. The consequent reduction in buttressing of the Antarctic ice sheet causes an increase in the discharge of the grounded ice into the ocean.

In our new Horizon 2020 project “Tipping Points in Antarctic Climate Components” (TiPACCs) we address these processes by assessing the possible switch from “cold” to “warm” Antarctic continental shelf seas (tipping point 1) and the possible shift in the stability regime of the Antarctic ice sheet from a stable to an unstable configuration (tipping point 2). Investigating the coupled ocean-ice system, the tipping points and their feedbacks, will provide insight into the threat of abrupt and large sea-level rise. In TiPACCs we use a suite of state-of-the-art ocean circulation and ice sheet models, in stand-alone and coupled set-up. The proximity of the simulated tipping points will be determined by existing remote sensing and in-situ observations. The possibility that the tipping points were crossed during the Last Interglacial will be investigated and allow for a better understanding of how the ocean-ice system works during warmer than present-day conditions.

This EGU contribution will present the ideas, the planned work, and the consortium of TiPACCs.