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Examining the weakening of the AMOC using a Bermudan Stalagmite

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While the Atlantic Meridional Overturning Circulation (AMOC) is understood to be weakening as a consequence of anthropogenic climate change, the precise onset of this decline remains subject of debate. There are two principal hypotheses surrounding the initiation of the slowdown: (a) it began in the mid-twentieth century in response to escalating atmospheric carbon dioxide concentrations, and (b) the trend started in the mid-nineteenth century, resulting from the increased freshwater fluxes associated with the end of the Little Ice Age (LIA). Here, we present a monthly resolved record of magnesium concentration extending back to 1456 derived from a Bermudan stalagmite. We use this proxy record to reconstruct sea surface temperature (SST) by calibrating the data to a previously published SST record, and with it derive an AMOC fingerprint spanning more than 550 years. From this we aim to decipher an estimate for the initiation of the observed AMOC decline within the context of its subsequent manifestations.