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# The role of the ocean mixed layer on the development of the low-frequency variability at midlatitudes

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The development of the low-frequency variability in the atmosphere at multidecadal timescales is investigated in the context of a low-order coupled ocean-atmosphere model designed to emulate the interaction between the ocean mixed layer and the atmosphere at midlatitudes, both subject to seasonal variations of the Sun's radiative input. When no seasonal dependences are present, a low-frequency variability is emerging from the chaotic background for sufficiently large wind stress forcing. The period of this low-frequency variability is strongly controlled by the depth of the ocean mixed layer, with a shorter period for a deeper layer. In the seasonally dependent case, a similar low-frequency variability is developing that persists throughout the year. Remarkably, its emergence occurs for smaller values of the wind stress forcing coefficient and is strongly related to the small thickness of the ocean mixed layer in Summer. Potential implications for real-world dynamics are discussed.