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## Florida Current: four decades of steady state at 27°N

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The Florida Current (FC) provides the majority of the northward volume and heat transports for both the meridional overturning and the horizontal gyre circulations in the subtropical North Atlantic. A unique, sustained observing system in the Florida Straits at about 27°N, consisting of voltage measurements recorded from a submarine telecommunication cable installed between Florida and Grand Bahama Island, paired with regular calibration and validation cruises, was established in 1982. Since then, the recorded cable voltage time series has enabled over 40 years of quasi-continuous, daily estimates of the FC volume transport. The cable data constitutes the longest observational record of any boundary current and a key component of the Atlantic Meridional Overturning Circulation (AMOC) in existence. By this measure, it can be representative of the AMOC weakening, suggested by climate models and proxy-based reconstructions.

Here, we reassess the record-long change in the FC strength by revising the processing of voltages measured on the submarine cable. With the increased length of the cable record, we show that it has become necessary to account for the secular change in the Earth's geomagnetic field, especially when studying processes on decadal and longer time scales. We calculate the corrected estimates of the FC volume transport and show that (i) the FC strength has not declined as reported recently, but has remained remarkably stable since 1982, and (ii) with the corrected FC record, the AMOC at ~26.5°N exhibits a decadal-scale variability rather than a long-term decline.

The results of this study indicate that, if climate models are correct that the AMOC is slowing or will soon slow down, this slowdown has not yet been reflected in the FC, or the observational record is still too short to detect it with confidence. The existing records are just starting to resolve decadal-scale signals relevant to climate variability. Continued observations are thus necessary for detection and mechanistic understanding of climate-related changes and for validating and improving ocean and climate models.