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The active Sun and its implication for the heliosphere
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Origin of flows in coronal loops

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We study dynamics of coronal loops employing spectroscopic and imaging observations. Hot channels of SDO/AIA show apparent upward motion near the footpoints of coronal loops, while cool channels exhibit sporadic downward motion. Doppler shifts determined by Hinode/EIS also indicate hot upflows and cool downflows around the loop footpoints. Based on a linear force-free magnetic field extrapolation into the corona, the observed flows are interpreted as siphon flow along the loop originating in a hot upflow and terminating in a cool downflow. The intermittent nature of cool downflows results from catastrophic cooling at the loop top, while hot upflows are fairly continuous. The results suggest that the heating is localized near the footpoints of coronal loops.