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Jupiter's polar auroral emissions-signatures of magnetic reconnection.

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The polar auroral emissions at Jupiter can be divided into three regions fixed in magnetic local time: the dawnside dark region, the poleward swirl region and the duskside active region in which flares and arc-like features are observed. Previous studies related the polar emissions to the solar wind driven Dungey cycle and Vasyliunas flow cycle. Based on HST STIS and ACS images we study extensively the time variations of the morphology and brightness of various polar auroral features as well as their duration and reoccurrence. We magnetically map their location in the equatorial plane and we compare their spatial size and time scales with the reconnection events taking place in the Jovian magnetotail. We discuss the possibility that some polar auroral features are signatures of magnetic reconnection.