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Jupiter's main auroral oval: what main oval?

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The morphology of Jupiter's auroral emissions is usually described as a combination of three components: a main auroral oval, satellite footprints, and polar emissions. This general view suggests that Jupiter's main oval is somewhat similar to the Earth's one and forms a narrow ring of emission almost closing around the magnetic pole. The major difference is that Jupiter's oval co-rotates with the planetary magnetic field while the Earth's remains fixed relative to the Sun.

A comprehensive study of ultraviolet and visible auroral images of Jupiter's North Pole, obtained with HST-ACS and Galileo-SSI shows that:

1.- the narrow structured portion of the 'main oval' represents a relatively small fraction of the main oval emission;

2.- the main oval structure is more dependent on local time than previously thought;

3.- the persistent satellite auroral footprints location suggest that a magnetic anomaly significantly influences the whole auroral morphology.