Overview of HST observations of Jupiter’s ultraviolet aurora during Juno orbits 3 to 7.
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Grodent et al., submitted to JGR - Space Physics
124 HST visits - 8 months

~70% = North

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Juno trajectory in magnetic coordinates
15 Mar 2017 - 02 Apr 2017

Mag. field line (Cowley et al., 2008, Connerney et al., 1981)

5R_J-thick current sheet

Perijove

HST visit North
HST visit South

Juno-UVS

Juno-orbit 5

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HST Campaign

HST-Juno synergistic approach of Jupiter’s magnetosphere and UV auroras

Video Channel: Denis Grodent

Preview movies available on:

www.lpap.uliege.be

Or:

Youtube Channel: Denis Grodent

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Auroral subregions

**ME** = Main Emission

*inner* aurora = distant magnetosphere (> 30 R_J)

*outer* aurora = close magnetosphere (< 30 R_J)

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Corrected tower [W] & Area/3 E8 [kr^1]

1 - 3 TW

DOY of 2017

ME < Inner < Outer
All North
Juno orbits 3 to 7
80 movies

How do we deal with this complex morphology?
« C » family

Enhanced IM activity
compression region

« A » family

Reduced IM activity
low SW pressure

« D » family

Strong plasma injections
« C » family

Enhanced IM activity
compression region

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Strong plasma injections
Enhanced IM activity compression region

Reduced IM activity
low SW pressure

Strong plasma injections
IM perturbation

Injections

« Regular »

Quiet

20 days
Injections

« Regular »

Quiet

IM perturbation

≠

20 days
Juno orbit 6

IM perturbation

Injections

« Regular »

Quiet

1d
Conclusions

Jupiter’s aurora - is highly variable (power, morphology) (compare in situ)
- is not limited to its main « oval »,
  other components are often stronger (outer)

Possible to define auroral families
• Auroral morphology evolved differently around PJ3, 4, 5, 6 and PJ7
• Global magnetosphere was probably different during these periods
• One view of Jupiter’s aurora is usually representative of less than one Jovian rotation
• Auroral family transitions are not equivalent (predictions)

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