



Juno Project

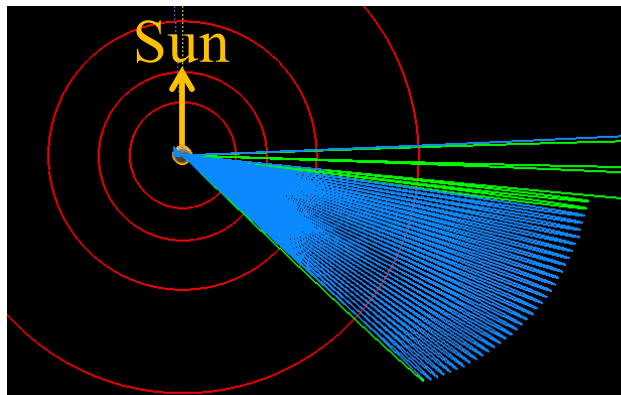
SPWG Orbit Study

UVS

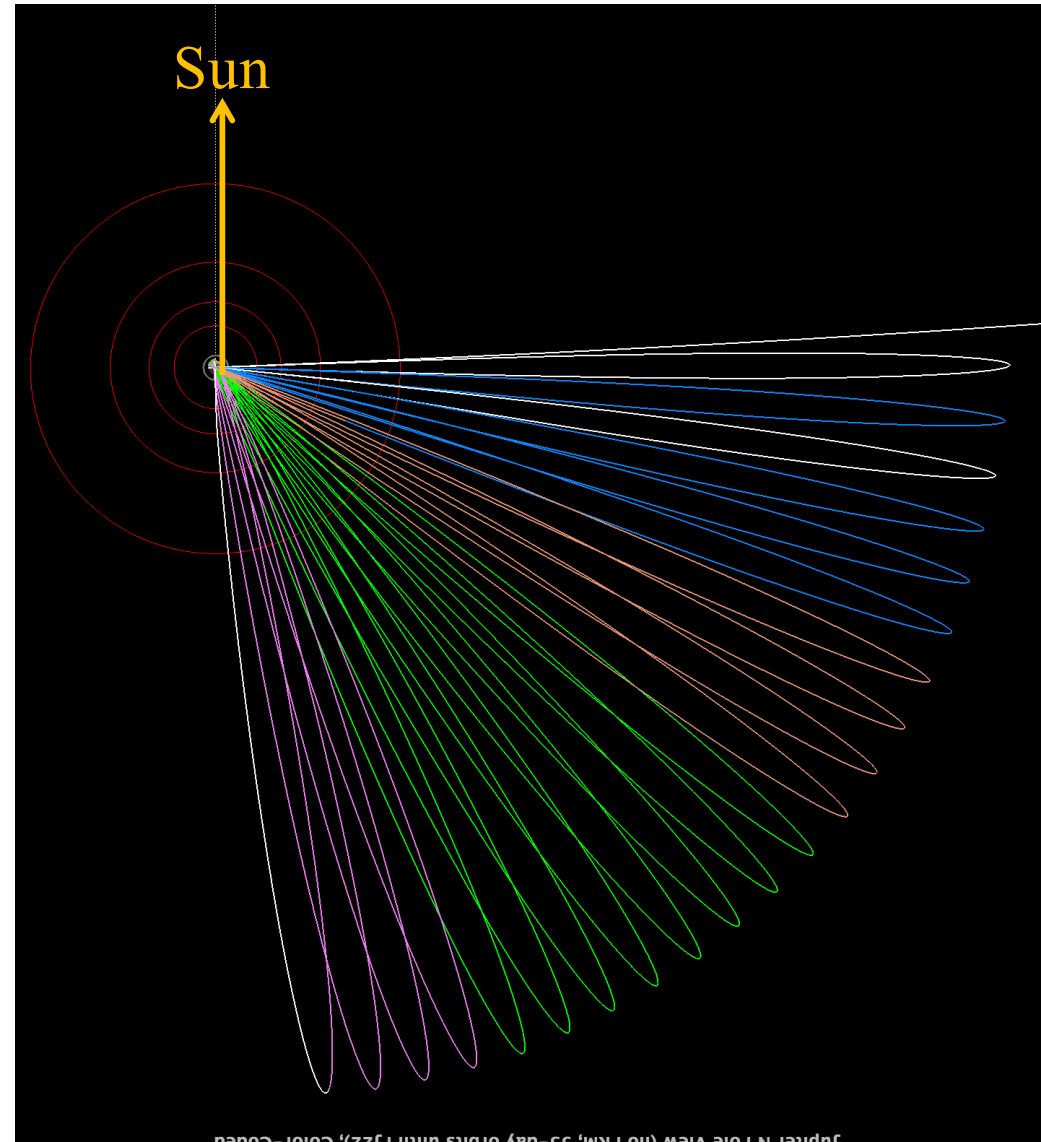
11/16/2016

Effect of Longer Duration Mission

- Jupiter orbits the Sun in 11.86 years, so in 1 year it moves $\sim 30^\circ$
- For GRAV orbits, Juno's spin axis is pointed within 11° of the Sun
- UVS can look $\pm 30^\circ$ from Juno's spin plane
- At >1 year, UVS no longer sees the northern auroral oval much, and the effect gets worse with time



14-day orbit mission

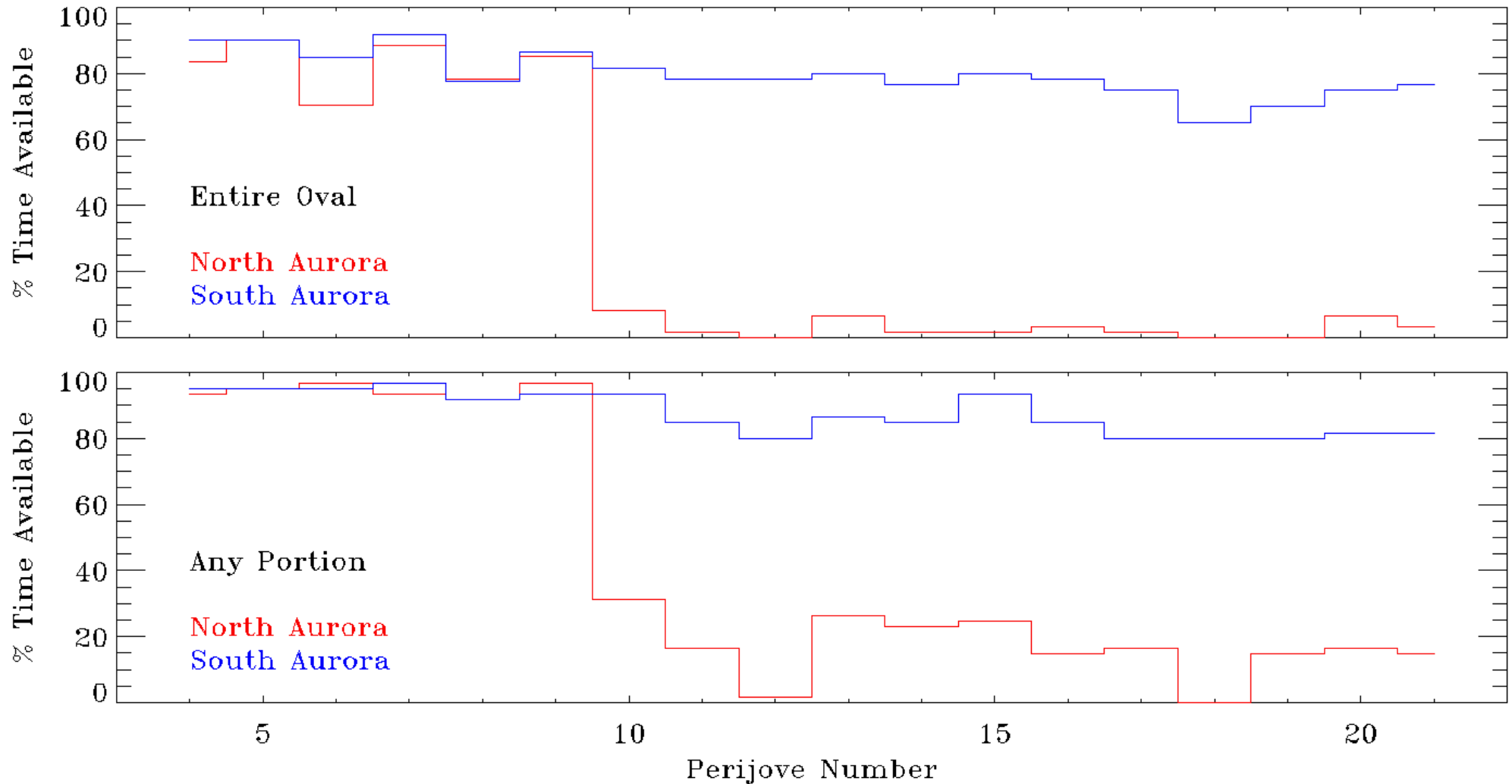


53-day orbit mission



UVS Auroral Visibility

Juno-UVS Auroral Visibility During Perijove ± 5 Hours



• Bottom line: UVS view of northern aurora is very poor after PJ9!



Summary

- Once the mission goes past November 2017 (~PJ9), UVS will have a worse and worse view of the northern auroral oval, and will often be unable to provide context imaging for the in situ instruments
- On the plus side, the view of the southern auroral oval is very good throughout the mission (and has much lower radiation)
- Assuming the later (i.e., >PJ9) orbits are GRAV orbits (i.e., spin axis within 11° of the Sun), then there are no Sun-related issues for UVS
- If any MWR orientations are used in the later orbits, then there will be substantial Sun-related issues for UVS
- In any MWR cross track orientation (with S/C +Z pointed at JNP, as proposed for orbits 12 and/or 18) the Sun will go directly into the UVS aperture on each and every spin - *we didn't design UVS for this!*
 - Although UVS would autonomously protect itself, we consider this a poor use of the instrument and would likely shut down for the duration of any planned MWR cross track orientations

