Heidi B. Hammel
Planetary Astronomer

Vice President for Science, AURA
Association of Universities for Research in Astronomy

Email: hbhammel@aura-astronomy.org
twitter: hbhammel
Why use **HUBBLE** to look at Solar System objects?!?

Source: Pop Chart https://popchart.co/products/the-chart-of-cosmic-exploration
Hubble provides global context for *in situ* missions.
Mars • Global Dust Storm

June 26, 2001

Hubble Space Telescope • WFPC2

September 4, 2001

NASA, J. Bell (Cornell), M. Wolff (SSI), and the Hubble Heritage Team (STScI/AURA) • STScI-PRC01-31
Hubble **complements** orbiting space missions

Saturn’s aurora imaged by Hubble in the ultraviolet

NASA artist’s concept of Cassini spacecraft about to dive between Saturn and its rings

**Cassini spacecraft** - orbited Saturn for nearly 18 years
Hubble **complements** orbiting space missions

**Juno spacecraft** - currently in orbit around Jupiter

Illustration of Juno at Jupiter (courtesy NASA)

Jupiter’s aurorae imaged by Hubble in the ultraviolet
Hubble enhances space missions

New Horizons spacecraft - studied Pluto and its moons discovered by Hubble

Illustration of Pluto's moon dances (courtesy NASA)
Hubble found a new target in 2014, YEARS after New Horizons was launched!

New Horizons spacecraft – went on to encounter object discovered by Hubble

Arrokoth (2014 MU69) from New Horizons (courtesy NASA)

Hubble enables space missions
Hubble spectroscopy yields rich results

Hubble spectra yield insights into chemistry of Europa's plumes

Far-ultraviolet spectroscopy of recent comets with Cosmic Origins Spectrograph on Hubble Space Telescope
Hubble enables a WEALTH of Solar System science

Interstellar Comet 2I/Borisov
Hubble Space Telescope

Uranus Dark Spot
Hubble Space Telescope • ACS

Europa Plumes and Ganymede Aurorae
Hubble Space Telescope

Comet Shoemaker-levy 9 Impacts on Jupiter
Hubble Space Telescope
Provide mission context
Complement, enhance, enable
Prepare for new missions
Examine multiple objects
Conduct multi-decadal studies
Superb Solar System explorer
Hubble