Hubble Mission to Create Spectacular Sky-Show for the Last Time
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Astronomy buffs have plenty to be excited about with the mission of STS-125, planned (at press time) for early October. It will help the Hubble Space Telescope continue to see things that the human eye has never detected before, satisfying (but never quenching) our curiosity about our universe.

But the shuttle mission might, just might, present an entirely different 'seeing experience' for thousands of skywatchers in the southern United States. It may be the last time in their lifetimes to watch a human spaceship fireballing overhead, a manmade meteor returning to Earth.

A concatenation of coincidences makes this apparition possible. With the landing site in Florida, and the orbit at an inclination that provides a nearly straight west-to-east approach, the shuttle's landing track crosses the southern states. Its descent through the atmosphere creates the brightest fireball at a range to touchdown that runs across New Mexico, Texas, and Louisiana.

These criteria are not satisfied for any landings in California (the fireball is out over the Pacific) or for landings from high-inclination missions such as space station visits (the approach to Florida is from the southwest, across the region of the Yucatan Peninsula). Fireball sightings from these missions have been very rare.

The most important criterion is a dark sky – the overflight must occur at night. Attempts to see known overflights with the sun in the sky have largely been failures (the trails of Columbia's fragments were visible over Texas in 2003 only because of special circumstances). So this factor alone eliminates 60% or so of candidate missions.

But this particular mission may be in luck, since flight planning predicts that the overflight for a mid-October landing will be late evening, soon after sunset. This will change if launch dates change (and the steady shifting of Hubble's orbital plane results in different shuttle launch times), but it could change for the better as easily as changing for the worse.

Once the mission is launched, and the actual flight paths to the landing site are calculated, observers will have better clues as to where they must be to observe the golden-yellow fireball and its persistent milky trail that

lingers for minutes after its passage. From my own experience watching half a dozen such events from my home near Galveston, I can only advise you to get yourself to somewhere within range. **There may never, ever again be a chance to see this.**

Even at the last moment, there's always the chance the landing will be postponed, and follow a different track a thousand miles away from the planned one. And there's always a chance of bad weather, although my most memorable sighting was of the STS-11 fireball passing between lightning-streaked thunderclouds. Those were the days I woke my kids up in the middle of starry nights to stand under the human-ridden fireballs and then wait, many minutes later, for the dull 'thud' of the sonic boom. Other observers – I never was that lucky – experienced the 'electrophonic sound' phenomenon long controversial in the history of bolide studies – but thoroughly documented for shuttle fireballs.

It will be chancy, no doubt about it. Launch schedule changes in the final months may completely eliminate any possibility of the phenomenon being seen. But this can't be put off any more, **if you ever want to see it, because this may well be literally the last chance of a lifetime.**