

STS-123 Post-Mission Summary



Space Shuttle *Endeavour* lifted off from Kennedy Space Center (KSC) launch pad 39A on March 11, 2008 at 1:28 AM CDT (06:28 UTC). Launch was on time. An [eclipse](#) of the GOES-East weather satellite prevented using any satellite imagery in the hour prior to launch. Fortunately the low clouds remained well behaved as skies were cloudy but above the [range safety and Return-To-Launch-Site \(RTLS\) cloud ceiling limits](#). Weather at the Transoceanic Abort Landing (TAL) sites was trickier as showers were monitored near Zaragoza, Spain and Istres, France during the launch countdown. Post cold front low level wind flow from the northwest brought showers to the windward sides of the Pyrenees and central French mountains. These showers dissipated as they crossed the high terrain. At KSC the overcast clouds at 6500 feet provided a spectacular image for photographers as the clouds glowed from the *Endeavour's* exhaust (Figure 1).



Figure 1. STS-123 launch into clouds at 06:28 UTC March 11, 2008. Photo courtesy NASA.

Low clouds delayed the STS-123 landing by one orbit. Deep easterly flow around a [surface high pressure center located off the Carolinas](#) brought an area of stratocumulus clouds to the Kennedy Space Center. A broken cloud ceiling of 5000 to 6000 feet was observed during much of the afternoon of March 26 at the NASA Space Shuttle Landing Facility. This area of cloudiness continued through the first landing opportunity scheduled for 6:04PM CDT (23:04 UTC). Astronaut reports from the Shuttle Training Aircraft began to report improving conditions upstream and in the vicinity of the Kennedy Space Center shortly after the first landing opportunity. As sunset approached observing the cloud patterns in the visible channel became difficult. The lower spatial resolution of infrared versus visible imagery makes for reduced capability to monitor and track low clouds for small scale forecasts. Contrast stretching of the visible digital satellite imagery was invaluable in providing a quality picture of the cloud conditions before complete darkness set in at the Kennedy Space Center (see Figures 2 and 3). Just minutes from the final deorbit decision time these last few contrast-stretched GOES visible satellite images showed the low clouds beginning to slowly dissipate and move in a direction away from Kennedy Space Center. By 6:20 PM CDT (23:20 UTC) clouds had sufficiently thinned to be observed GO by ground weather observers. The combination of short term satellite trends, observed weather and weather aircraft reports provided the necessary guidance to give a forecast of acceptable cloud conditions for a few hours around landing time. NASA flight controllers gave the GO for de-orbit and *Endeavour* glided to a landing at 7:39 PM CDT (00:39 UTC March 27) with only a few low clouds reported.

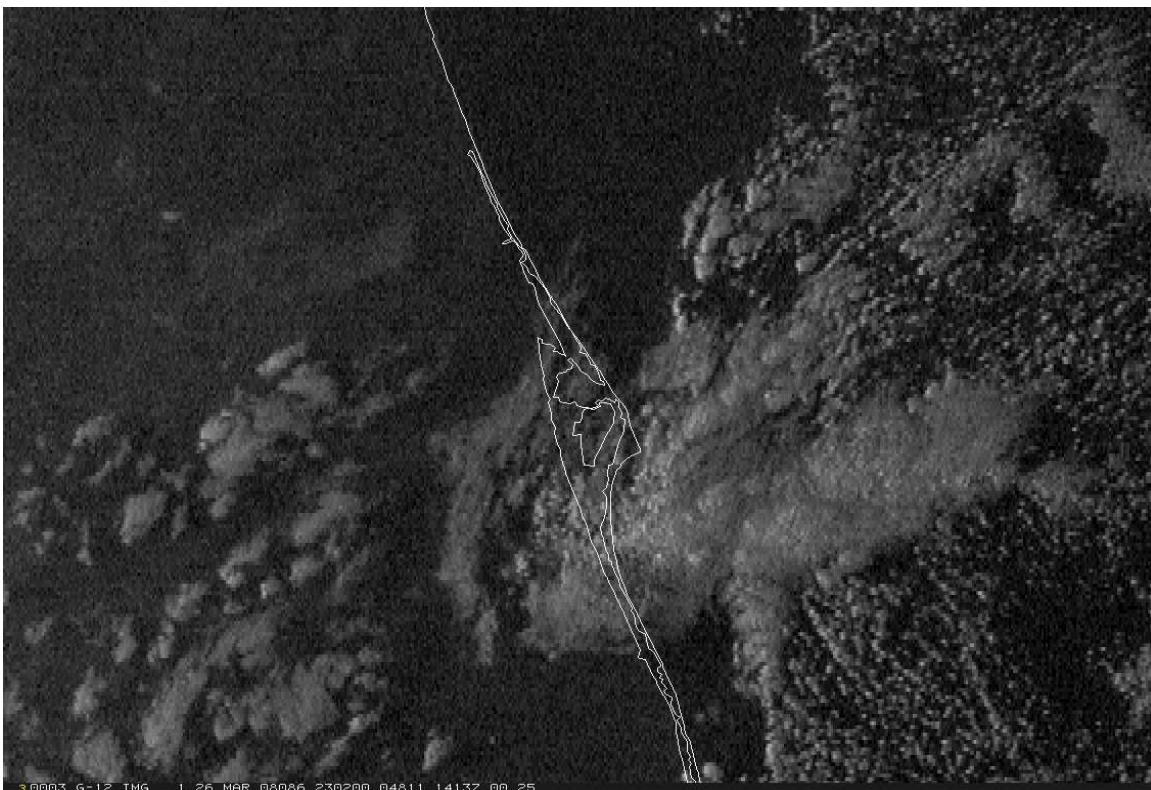


Figure 2. GOES-East visible satellite image at 23:02 UTC (two minutes prior to first scheduled landing time).



Figure 3. GOES-East image at 23:15 UTC with contrast stretching to lighten the image near sunset. Note that clouds are beginning to slowly dissipate. The NASA Space Shuttle Landing Facility became observed GO shortly after this image.

The [Spaceflight Meteorology Group](#) mission lead forecast for STS-123 was Tim Garner. Mark Wiley was the assistant lead / TAL site forecaster. Richard Lafosse was mentoring Mark Wiley. Brian Hoeth was the lead Techniques Development Unit meteorologist. The next Space Shuttle mission, STS-124, is currently scheduled for May 31, 2008.

Table 1. Launch, RTLS, TAL and Landing Observations

Launch

KTTS 110628Z 05002KT 10SM OVC065 61/57 A3020 RMK DA +28FT (RWY15)

Return-To-Launch Site abort (RTLS)

KTTS 110653Z 01602P02KT 10SM OVC070 61/57 A3019 RMK DA +28FT (RWY15)

TAL

ZZA 110703Z 26005P09KT 7SM FEW075 BKN150 46/41 A2993 RMK DA +306 FT

MRN 110703Z 26005P06KT 7SM SCT040 SCT200 52/50 A3010 RMK DA -153 FT

FMI 110703Z 27013P16KT 7SM FEW025 SCT060 50/36 A2972 RMK DA -182 FT

End-of-Mission (EOM) 1st Landing Opportunity

KTTS 262304Z 01004KT 10SM BKN060 63/55 A3027 RMK SLP251 7SC /3/ N0203/04 C0102/04
S0103/05 (1st

End-of-Mission (EOM)

KTTS 270039Z 01002KT 10SM FEW060 55/54 A3027 RMK SLP251 1SC /1/ N0102/03 C0103/03
S0204/06 (RWY15)

Notes: Temperatures in Fahrenheit. ZZA = Zaragoza, Spain; MRN = Moron, Spain; FMI = Istres, France;
KTTS = NASA Space Shuttle Landing Facility, Florida.