

STS-120 Post-Mission Summary



Space shuttle [Discovery](#) launched on time from [Kennedy Space Center](#) (KSC) Launch Pad 39A on October 23, 2007 at 10:38 AM CDT and after 6.25 million miles and 15 days, landed safely at the [shuttle landing facility](#) (SLF) at KSC on November 7, 2007 at 12:02 PM CST. During the record stay at the [International Space Station](#), Discovery delivered the Harmony Node and moved the port 6 truss segment and its accompanying solar arrays to its permanent home at the end of the stations truss. The crew also repaired damage done to the solar array as it was being redeployed.

The weather forecasts were challenging for both launch and landing. Several days prior to the launch, computer models were having a difficult time forecasting the movement of a deep upper level low over the southern plains which effected the movement and location of a surface cold front approaching Florida. Differences between the various models along with run-to-run differences between individual models were extreme.

On launch day the cold front remained west of Florida in the Gulf and was not a factor in the KSC weather. With southeast low-level flow the main concerns at the SLF for Return-to-launch-site (RTLS) were showers within 20NM and low ceilings with the developing mid morning sea breeze. Early in the morning showers were scattered offshore east and southeast of KSC. These showers were moving northwest and appeared to be enhanced by a land breeze. As launch time approached the threat of a low ceiling was removed from the RTLS forecast as the sea breeze was slower to develop. Showers continued offshore within 20NM but began to weaken. The last shower dissipated about 25 minutes before launch time, allowing the RTLS forecast update to "GO". Showers did begin to develop just southwest of the SLF about 30 minutes after RTLS landing time.

On landing day a dry cold front had pushed through the KSC area about ten hours prior to touchdown. With northerly winds forecast down the runway, the only concern was for low clouds behind the front over the Atlantic spreading into the SLF area at landing time. No updates to the "GO" forecast were made through the landing countdown; however a wind shift boundary with broken low clouds behind it was noted about four hours before touchdown north-northeast of KSC spreading southwest toward the SLF. Timing of the boundary placed it about 10 miles north of the SLF at touchdown. Due to the length of the forecast and potential non-linear movement of the boundary, the forecast was briefed as a low confidence "GO". The boundary remained northeast at touchdown, however low clouds did begin to develop ahead of the boundary around the SLF prior to touchdown. The official landing observation reported 2/8 coverage of low clouds over the SLF at touchdown.

The SMG ascent/entry team for STS-120 consisted of meteorologists Rich Lafosse, Tim Oram, Kurt Van Speybroeck and Steve Early.

Submitted by: Rich Lafosse STS-120 Lead Meteorologist