Team meeting 09.25.03 – MIT
(Tom Herring, An Nguyen)

• Investigate spatial interpolators based on surface slopes, RMS, time-separations and angle-separations at X-overs
• Analyze releases 11-12 of GLA06 elevation product over Antarctica
• Initial results for Linear interpolation, Cubic interpolation and 4-point Kriging
X-overs

- Within each cycle for cycles 2-5
- Later_time - earlier_time
- Restricted to four contiguous points (two on each track)
- Approximately 3000 to 5000 x-overs per cycle (~ 8000 possible/cycle)
- Release 12: missing 1/3 of cycle 2, most of cycle 3 and 4 data (as of 09.22.03)
X-over residuals – Releases 11&12
Binning X-over residuals

- Time-difference between two tracks
- Angle-separation between two tracks
- 20-point differential surface slope between two tracks
- 20-point RMS deviation from slopes
Time-separation binning $t = t_2 - t_1$
Angle-separation (A) binning
Slope-difference binning $\Delta_{\text{slope}} = m_2 - m_1$
Surface RMS binning
Summary: Comparison between Release 11 and 12:

- Over smooth regions: x-over STD ~ 79cm (Release 11), ~ 64cm (Release 12)
- Binning with $\Delta t$:
  - At $\Delta t < 4$ orbits, x-over residual STD is smallest, residual Mean ~ 0
- Binning with separation angle:
  - Small x-over residual STD at large separation angle (high absolute latitude)
- Binning with $\Delta$ slope:
  - Slope in x-over residual Mean and STD as a function of separation angle: consistent with pointing bias
  - at $\Delta$ slope ~ 0: X-over residual Mean ~ 0, STD smallest
Summary (cont.)

• Binning with surface RMS
  – Min surface RMS ~ 2.5cm
  – Large number of x-over residuals at low RMS \(\rightarrow\) low instrument noise
  – Over smoothest regions with RMS < 20cm:
    x-over residual STD ~ 40cm (Release 12)