MODIS Geolocation Status

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MODIS Science Team Meeting

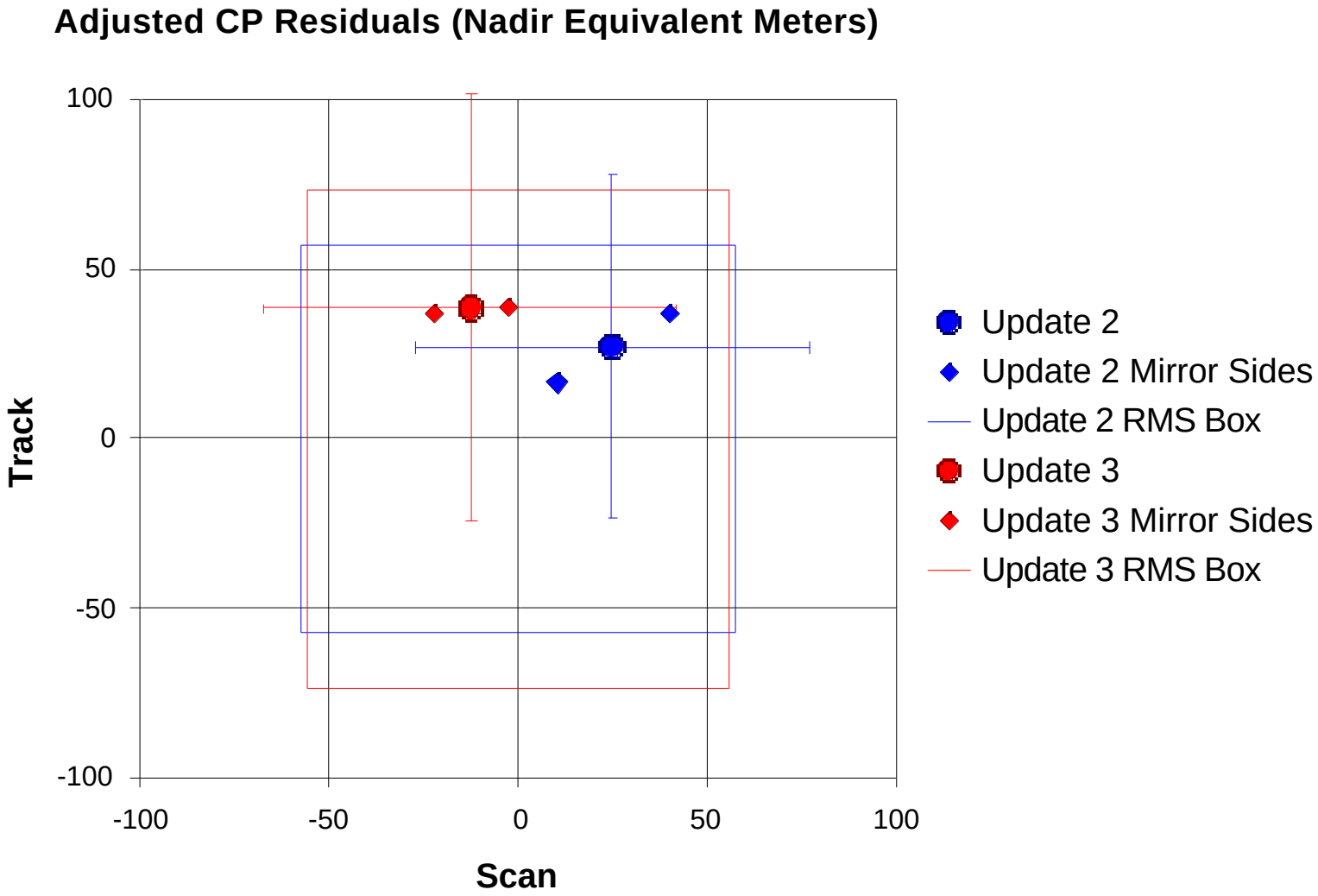
December 19, 2001

Measured RMS error

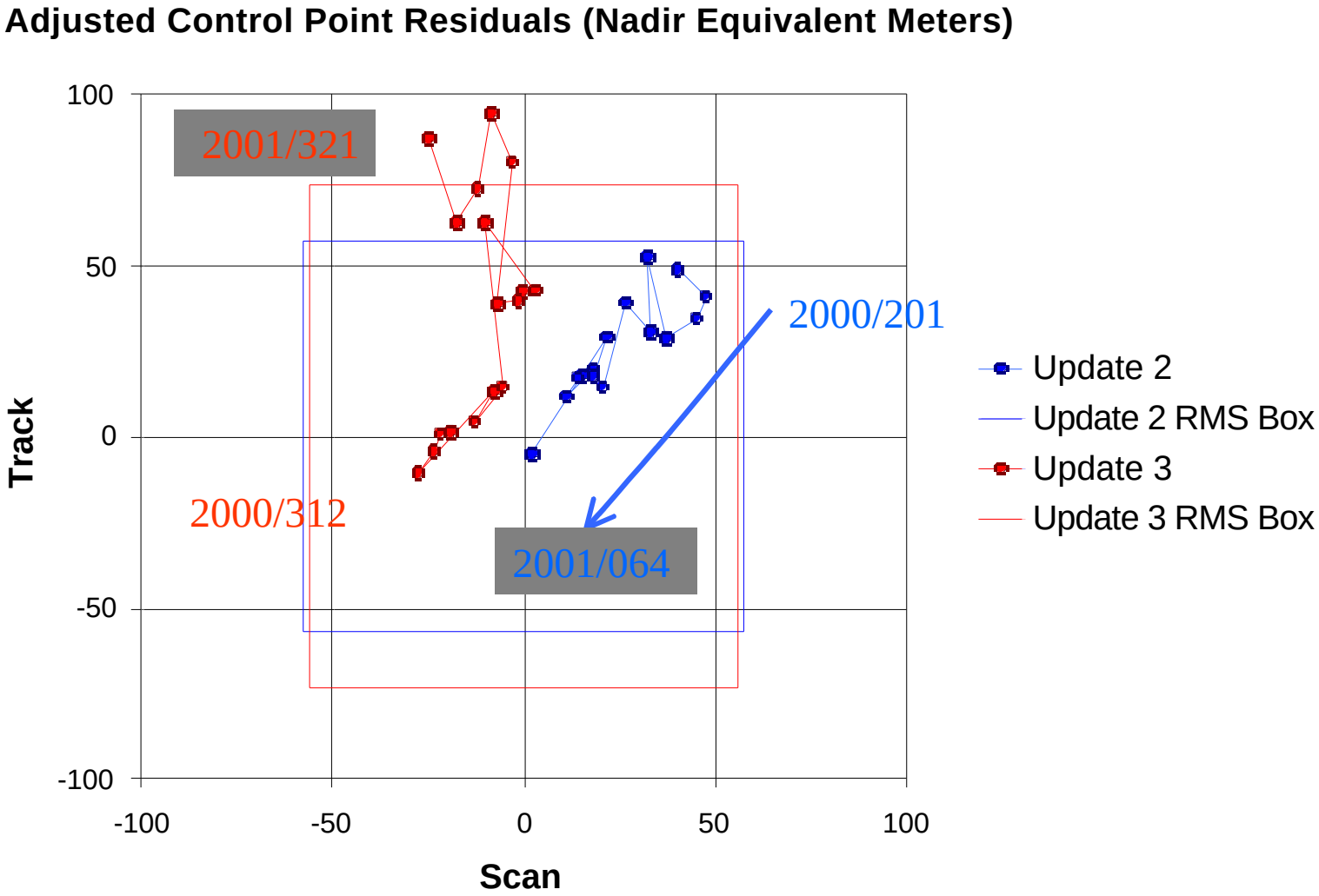
	Update 2 – June '00 (Collection 1)	Update 3 – Feb. '01 (Collection 3)
Along Scan	58 m	56 m
Along Track	57 m	74 m
# Days	196	214
Match-ups/day	77	82

- Three Geolocation LUT updates since launch
- Nadir equivalent meters
- Update 3 vs. 2:
  - Scan direction error better
  - Track direction error worst

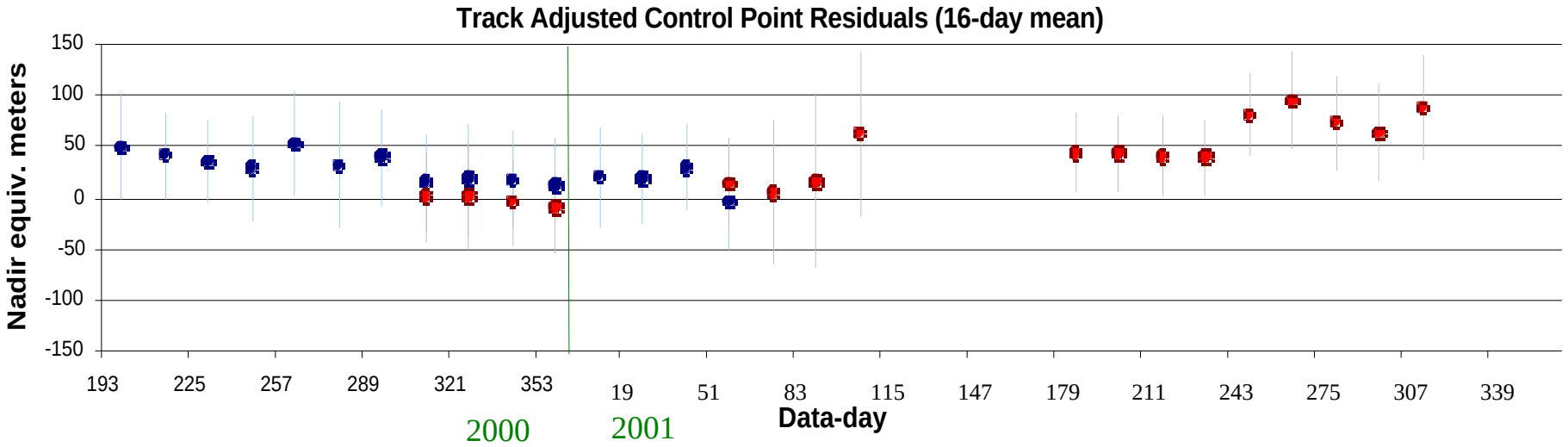
Update 2 vs. 3

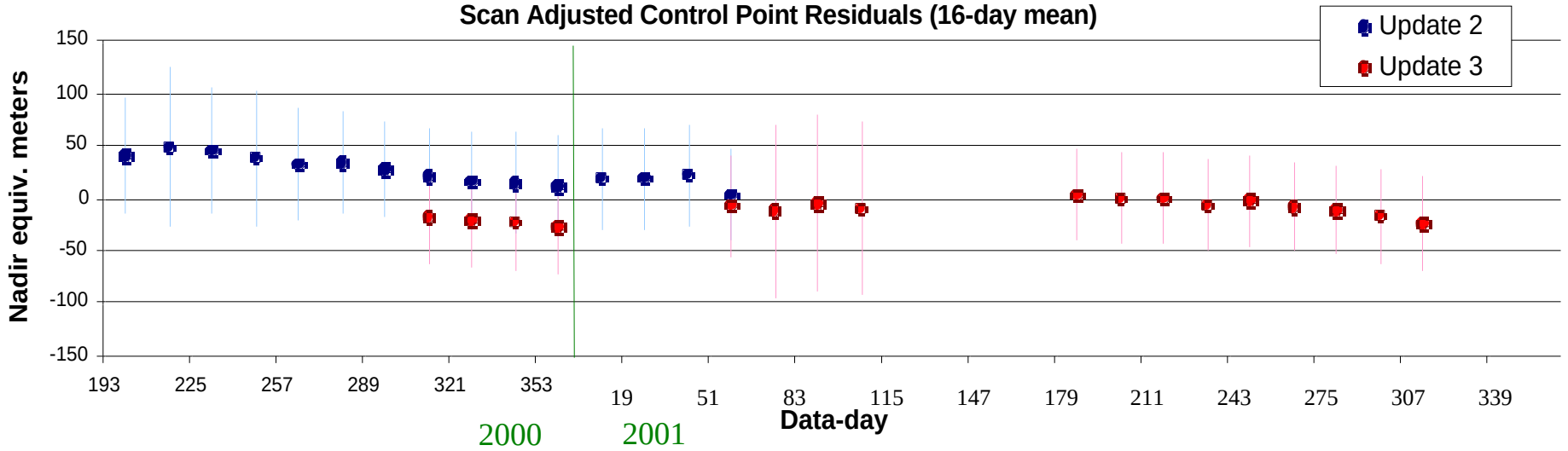

Adjusted CP Residuals (Nadir Equivalent Meters)
Track
Scan
100
50
0
-50
-100
-100
-50
0
50
100
Update 2
Update 2 Mirror Sides
Update 2 RMS Box
Update 3
Update 3 Mirror Sides
Update 3 RMS Box

16-day mean residuals time line

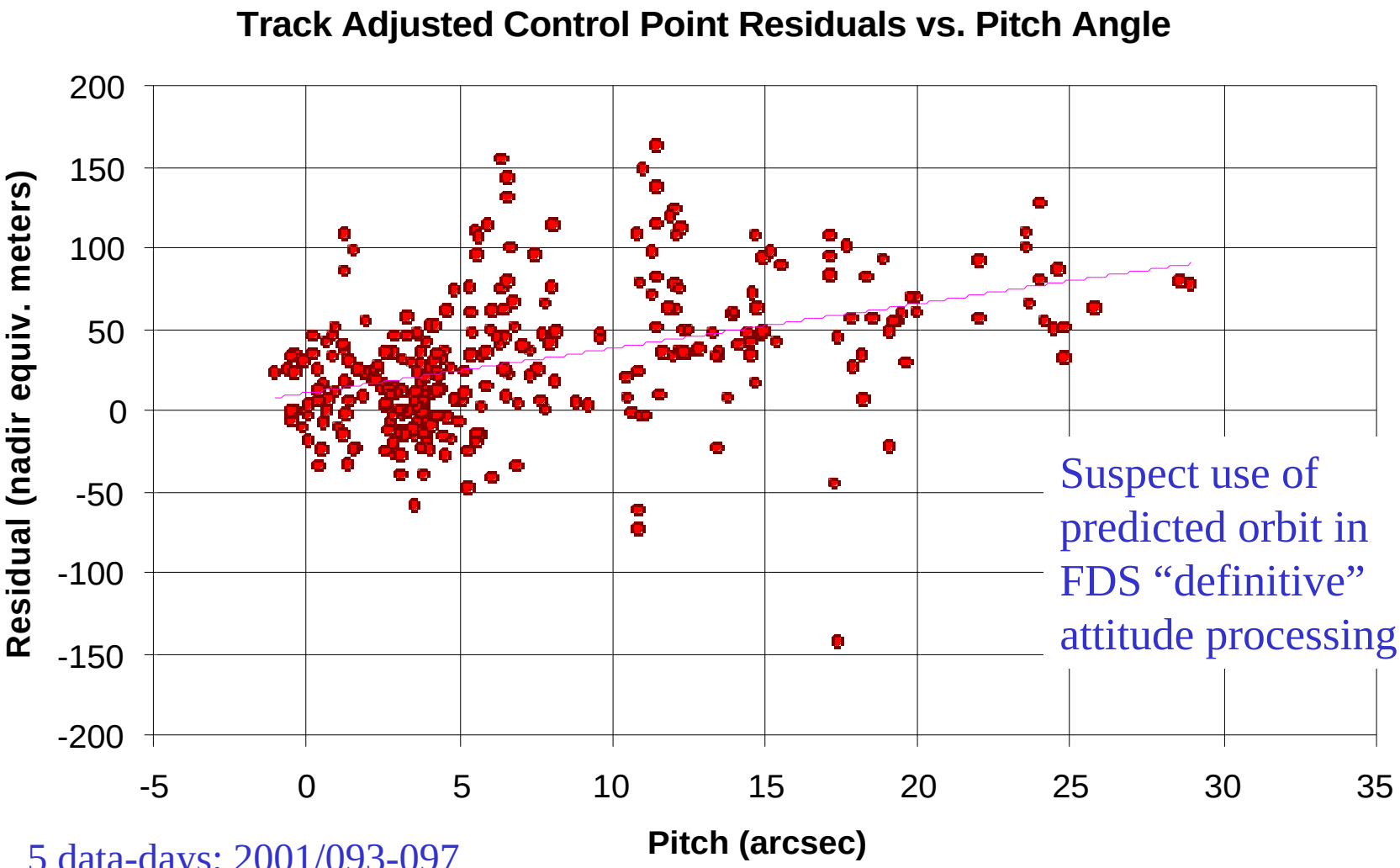


CP match-up residual time series





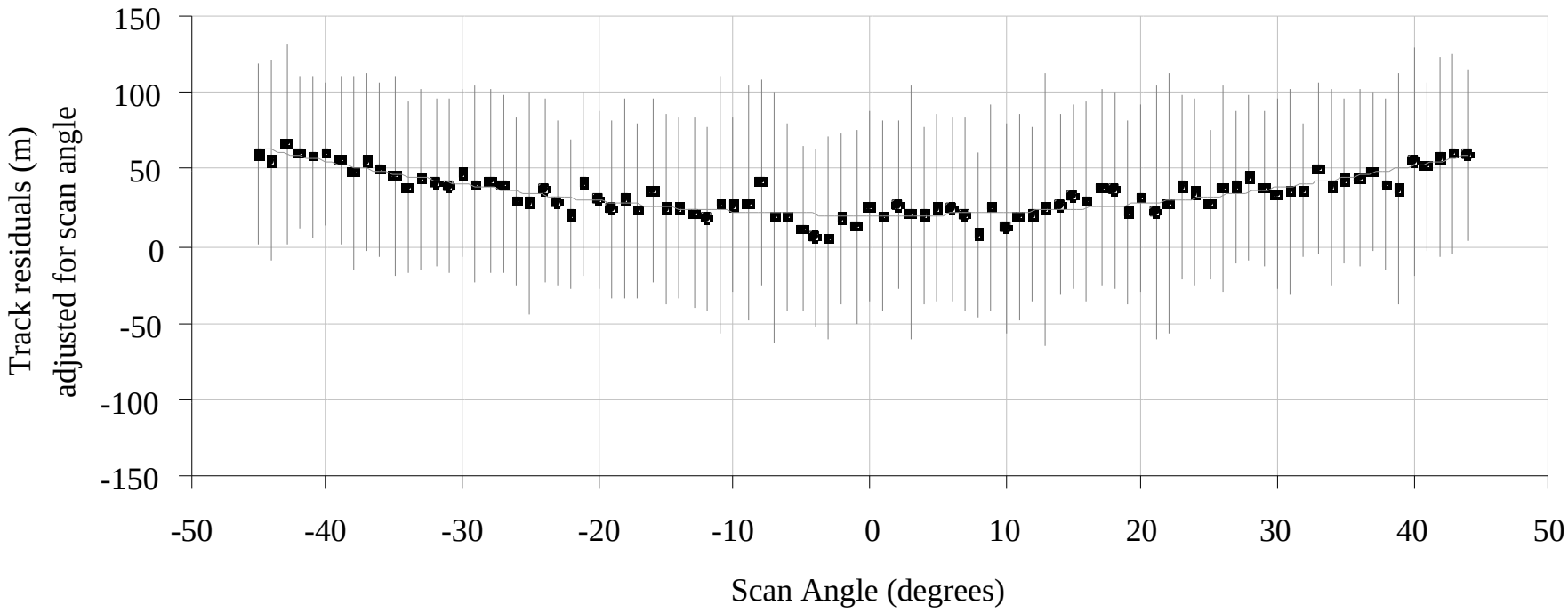
Possible correlation of along-track error with spacecraft pitch



Suspect use of predicted orbit in FDS "definitive" attitude processing

5 data-days; 2001/093-097

Along track error vs. scan angle



This error is modeled by tilting mirror axis and performing a corresponding pitch correction.

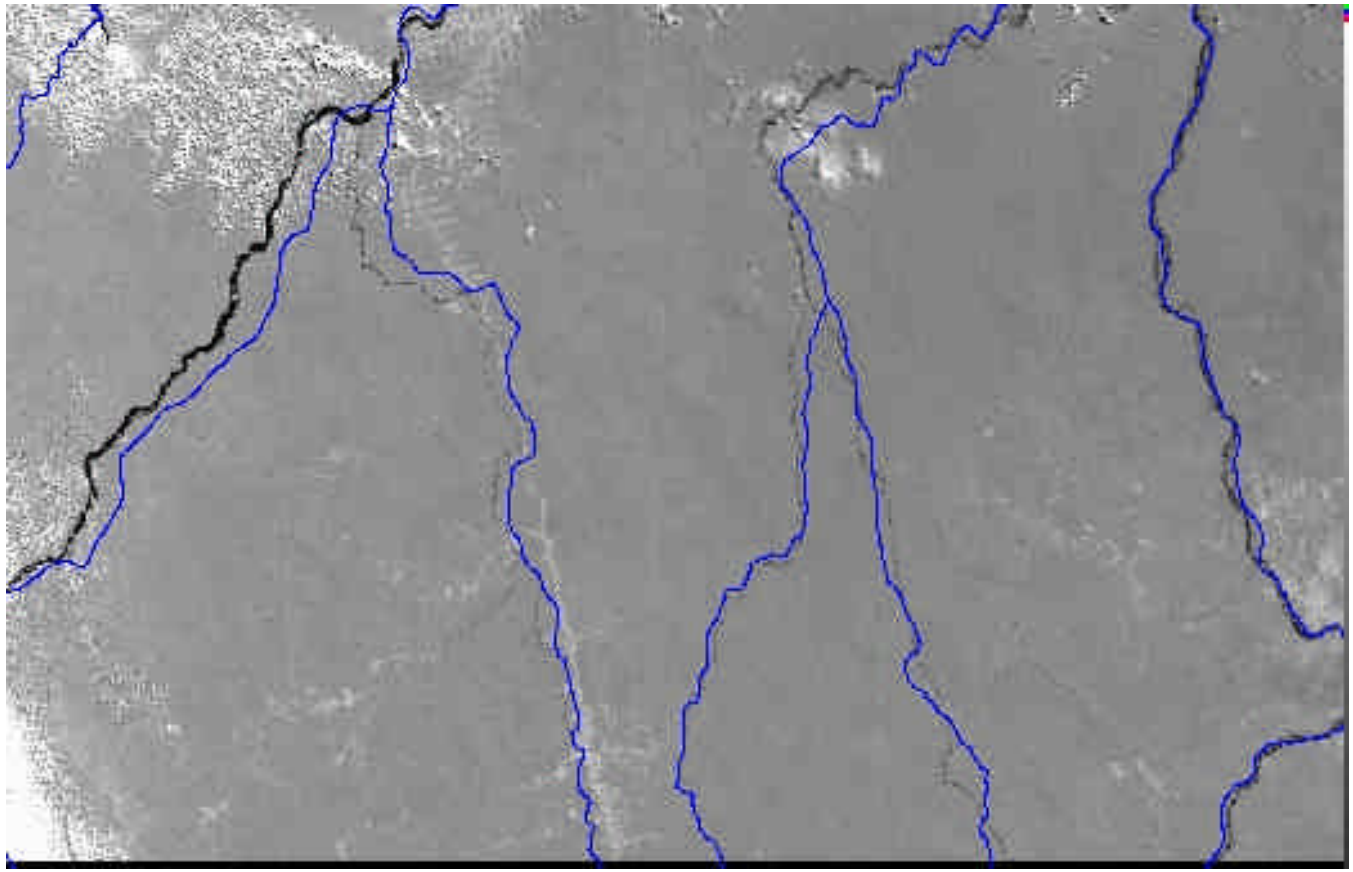
Planed geolocation LUT updates

- Update 4 planned for late January 2002 (after consistent year)
  - Tilt vs. pitch bias correction (40 m in track direction at large scan angles)
  - Remove +/- 10 m mirror side difference in scan direction
  - Remove small 13 m roll bias (along scan)
  - Pitch? – multiple LUTs may be needed (until time-dependent s/w available)
- Update 5 will be ready for next reprocessing
  - Correct for annual cycle in scan direction (+/- 15m)
  - Possible correction for pitch trend (step function?)

S/W plans

- Next Terra geolocation code delivery
  - expected in late April 2001
  - Piecewise linear LUT
  - Other minor improvements
- Aqua
  - At-launch geolocation code ready since January 2001
  - Participating in End-to-end testing (MT2, MOSS-n)
  - Band-to-band registration a concern
- CP matching
  - Started using hierarchal searching algorithm in Collection 3 reprocessing (reduced CPU usage by 90%)
  - Island matching will be in operations in February 2002

Land-sea mask



•South America inland water

•From EOS DEM SWG – best available sources

Ancillary data update

- Attitude
  - FDS Definitive (using predicted orbit!) vs. real-time spacecraft
  - Only have to use FDS near maneuvers
- Land-sea mask
  - Inland water class particularly problematic in central South America
  - Should be updated with MODIS Land Cover product
- Terrain data
  - Should be updated with SRTM data
  - 500 m and 250 m DEM possible (is this needed?)
  - Reconvene EOS DEM SWG?
- Refresh CP library
  - All current CPs from L4/5
  - Landsat 7?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