

# LRO Prediction Comparison

C. Clarke, Honeywell Technology Solutions Inc.

R. Ricklefs, University of Texas, Center for Space  
Research

D. Rowlands, NASA/Goddard Space Flight Center

J. McGarry, NASA/Goddard Space Flight Center

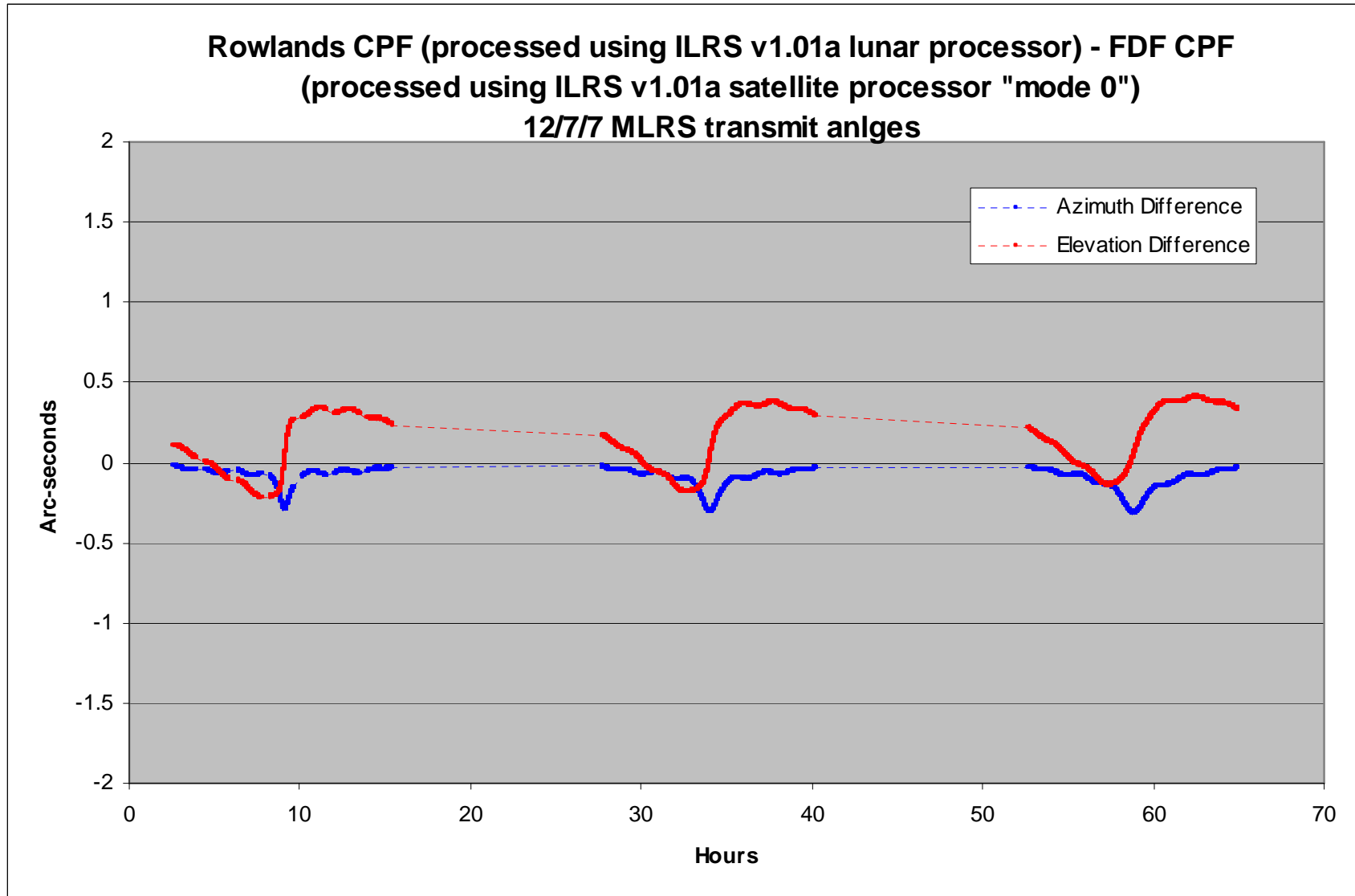
# Comparison of CPF predicts in “satellite” and “lunar” type formats.

- Operationally NASA Flight Dynamics Facility (FDF) will be providing CPF predicts in the “satellite” format
- NASA Flight Dynamics Facility (FDF) “satellite format” CPF predictions
  - Geocentric Reference System
  - Positions at “bounce” time
- Dave Rowlands (GSFC) “lunar format” CPF predictions
  - Solar System Barycenter Reference System
  - Stellar aberration corrections

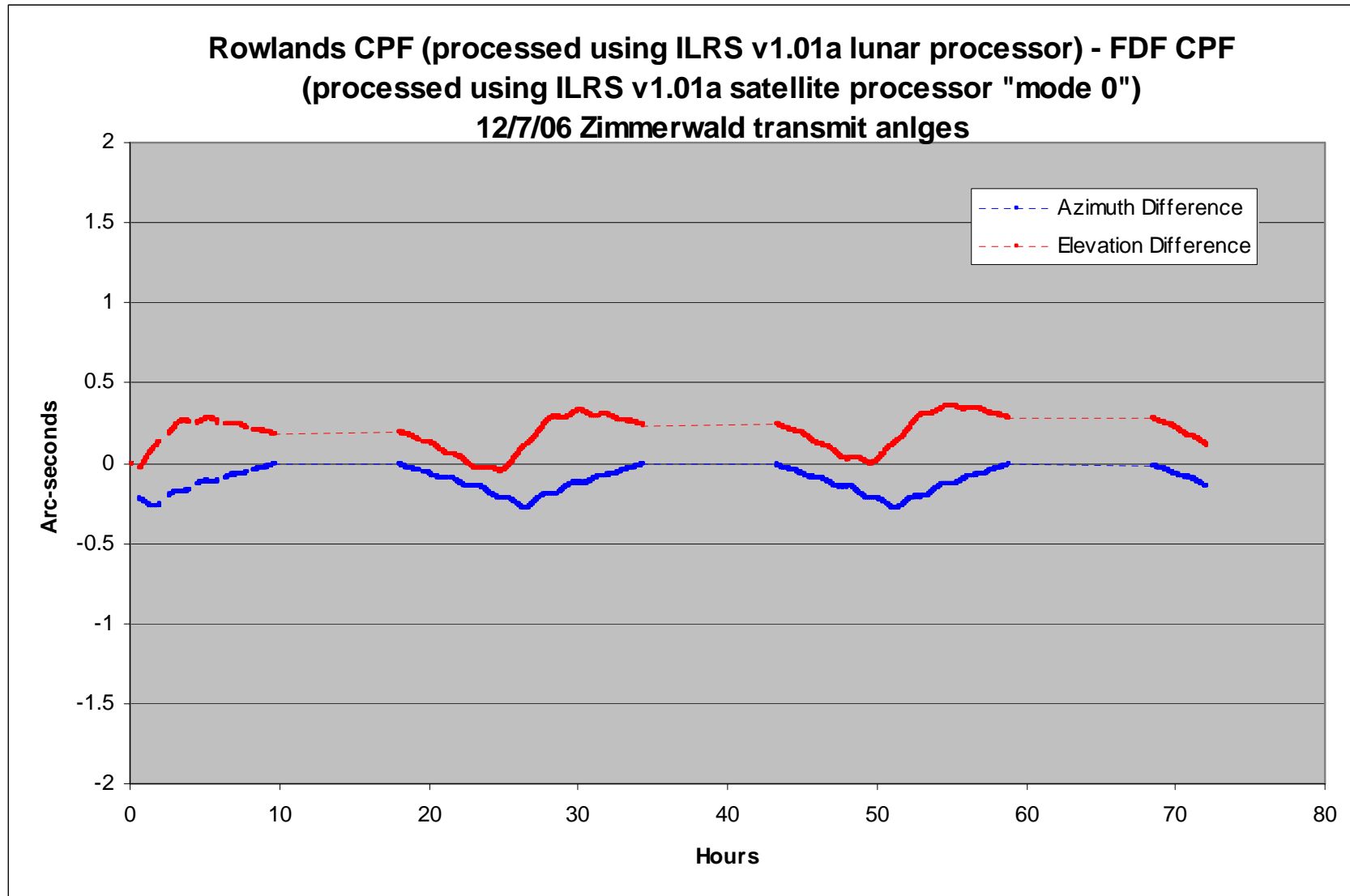
# Comparison Test

- ILRS v1.01a SLR test program (cpf\_pgm)
  - Mode “0” used because CPF predicts are at “bounce” time
- ILRS v1.01a Lunar test program (cpf\_pred)
  - Transmit angles
- Three days of CPF predicts from the same simulated orbit are compared.
- Two sites – MLRS, Zimmerwald

# MLRS Comparison Results



# Zimmerwald Comparison Results



# Conclusions

- Pointing angles generated using the the lunar and satellite technique agree to  $\pm 0.5$  arcseconds
- LRO can be accurately tracked using the same software and CPF format as an earth-orbiting satellite.