Hyperion On-Orbit Calibration Validation with AVIRIS in Argentina

Rob Green, Tom Chrien, and Betina Pavri

Jet Propulsion Laboratory
California Institute of Technology

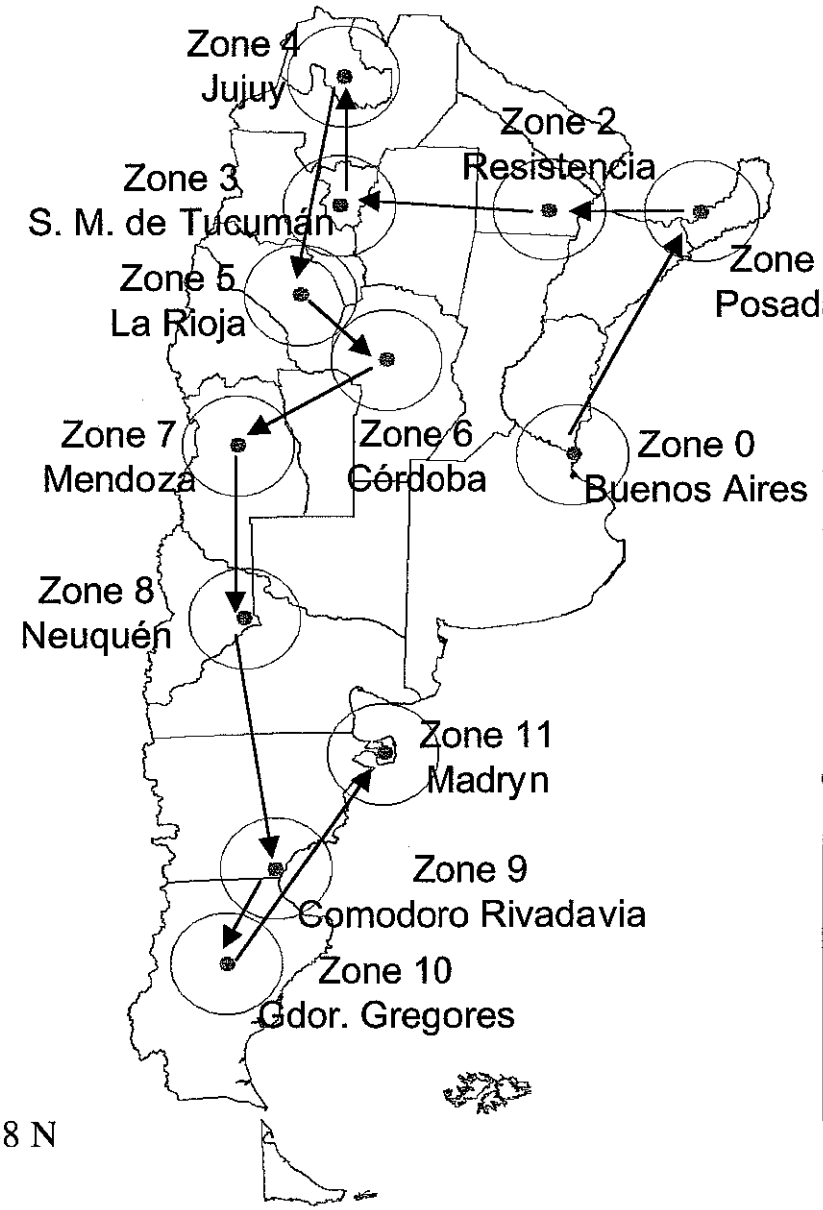
Argentina 2001

- In September/October 2000 it was proposed that AVIRIS deploy to Argentina in January to support EO-1 with summer underflight and validation acquisitions.
- On the 30th of December 2000 the Twin Otter left Las Vegas headed for Buenos Aires at 140 knots
- On the 3rd of January 2001 AVIRIS was shipped to Buenos Aries
- On the 13th of January AVIRIS collected the first image in Argentina onboard the Twin Otter

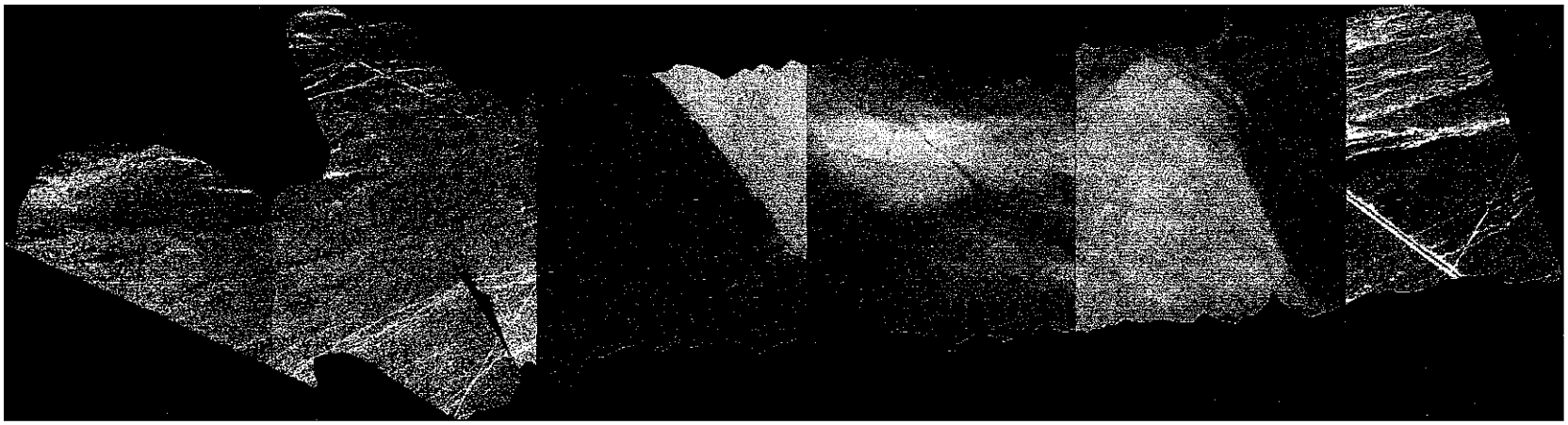
AVIRIS Argentina 2001

- AVIRIS began imaging on the 13 of January
- AVIRIS finished on the 20th of February
- AVIRIS flew 25 days and collected more than 125 flight lines
- More than 216 gigabytes of data
- Two simultaneous under flights of NM EO-1
- Two simultaneous under flights of SAC-C
- ~ 70 Calibrated/georectified data sets delivered to investigators to date

AVIRIS 2001 Argentina Campaign

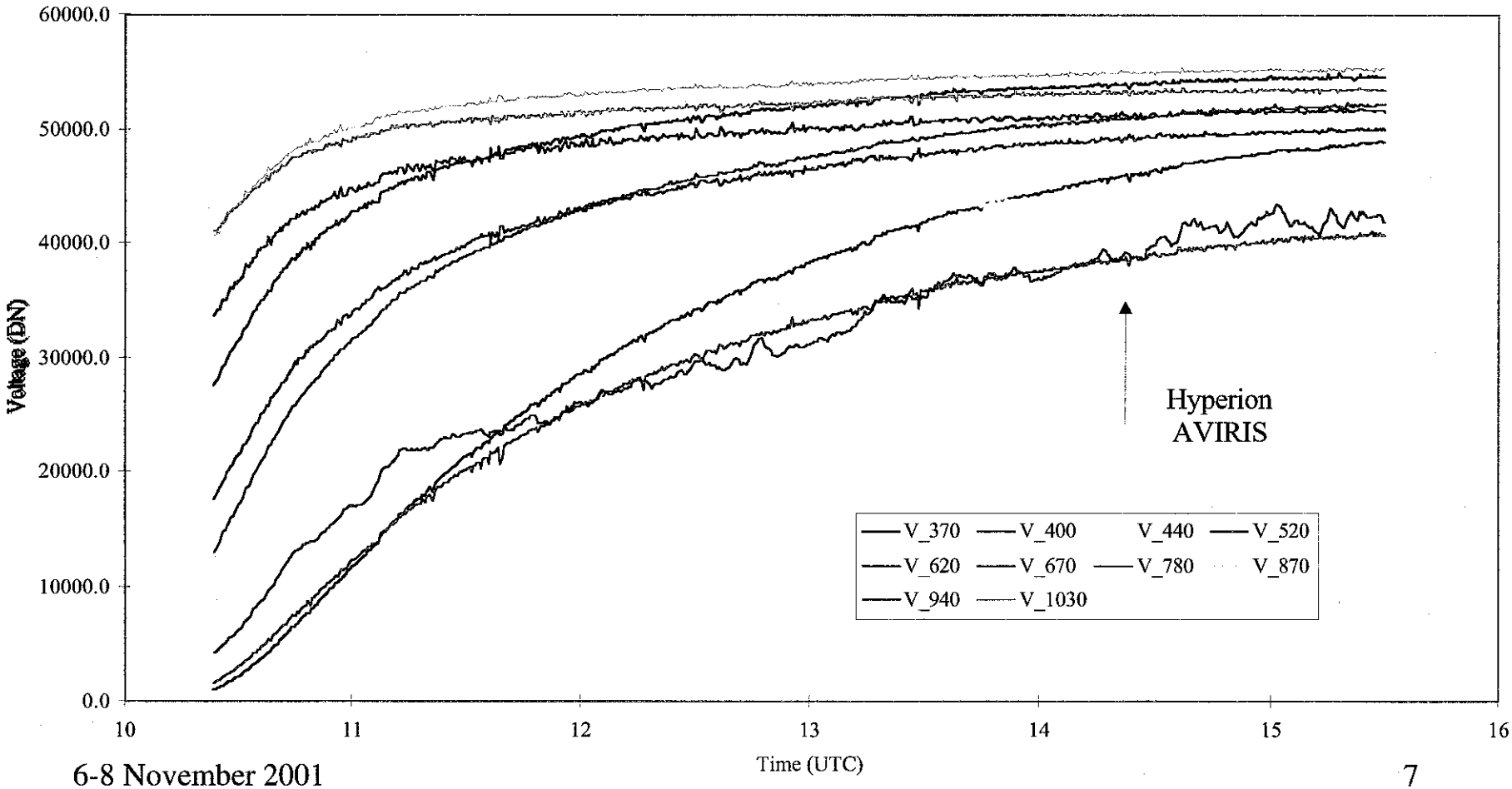


AVIRIS Image Leoncito, Arg 010122



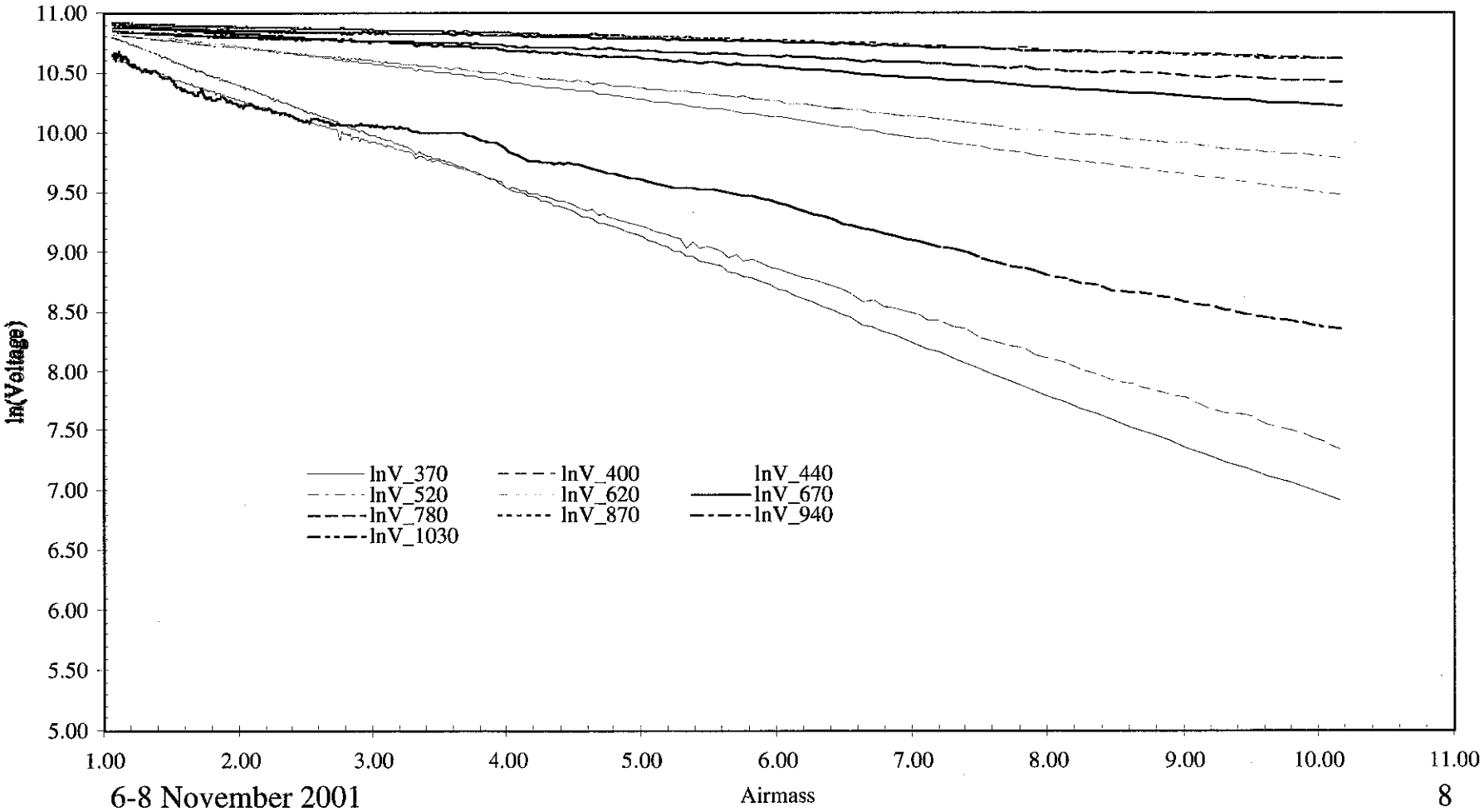
AVIRIS Image Leoncito, Arg 010122

Optical Depth Measurements
Leoncito, Argentina, 010122

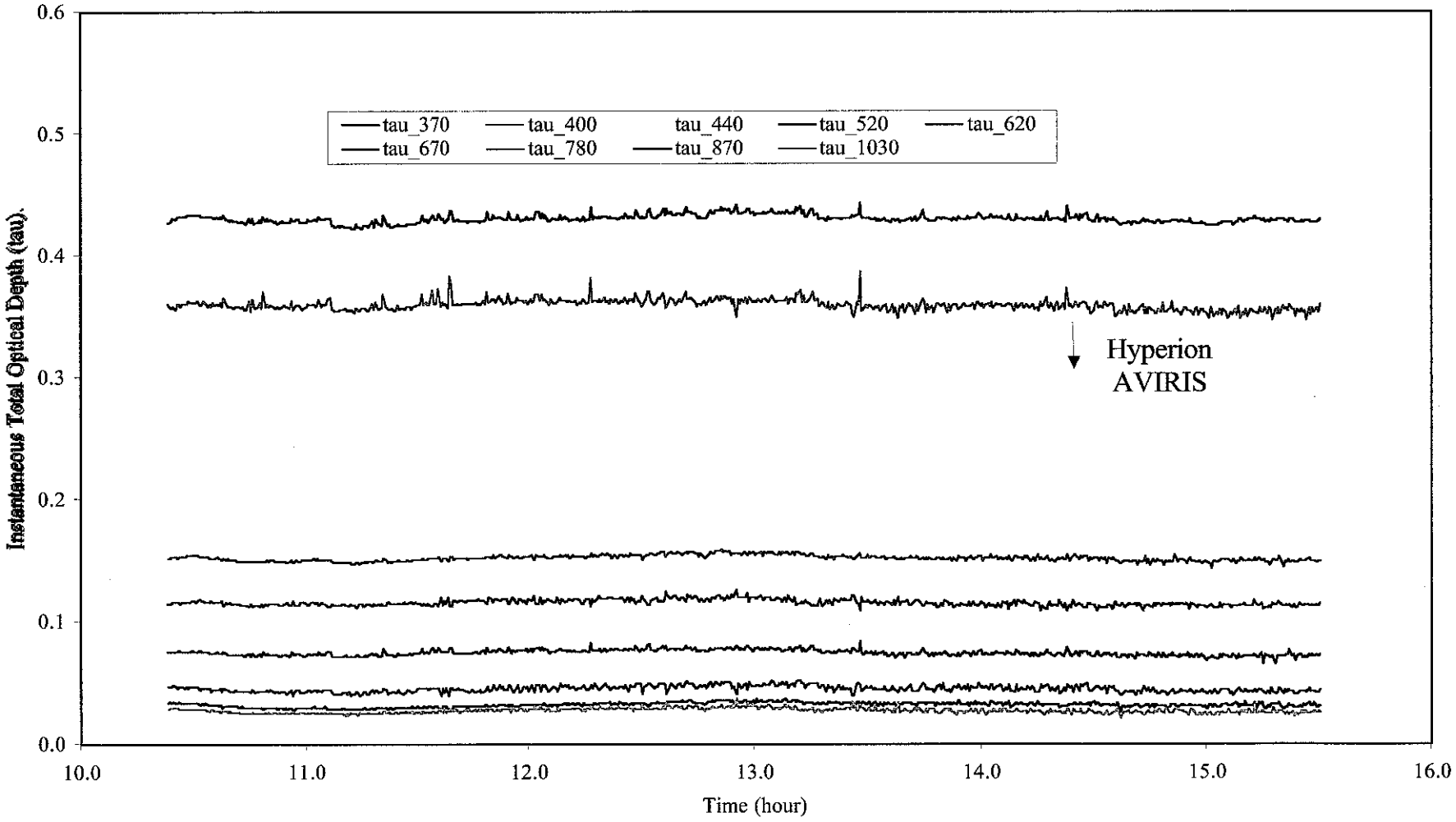


Optical Depth Measurements
Leoncito, Argentina, 010122

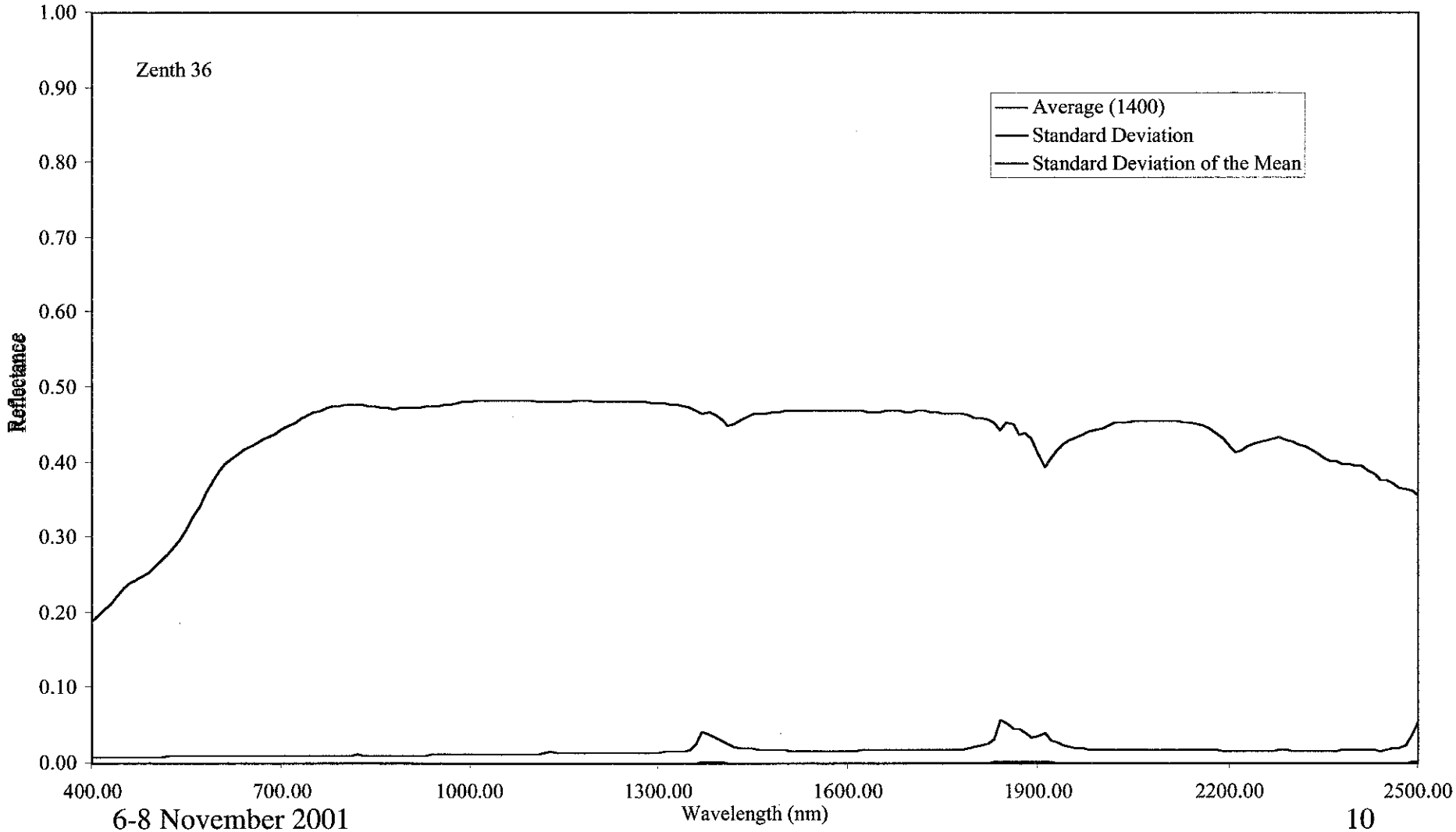
2



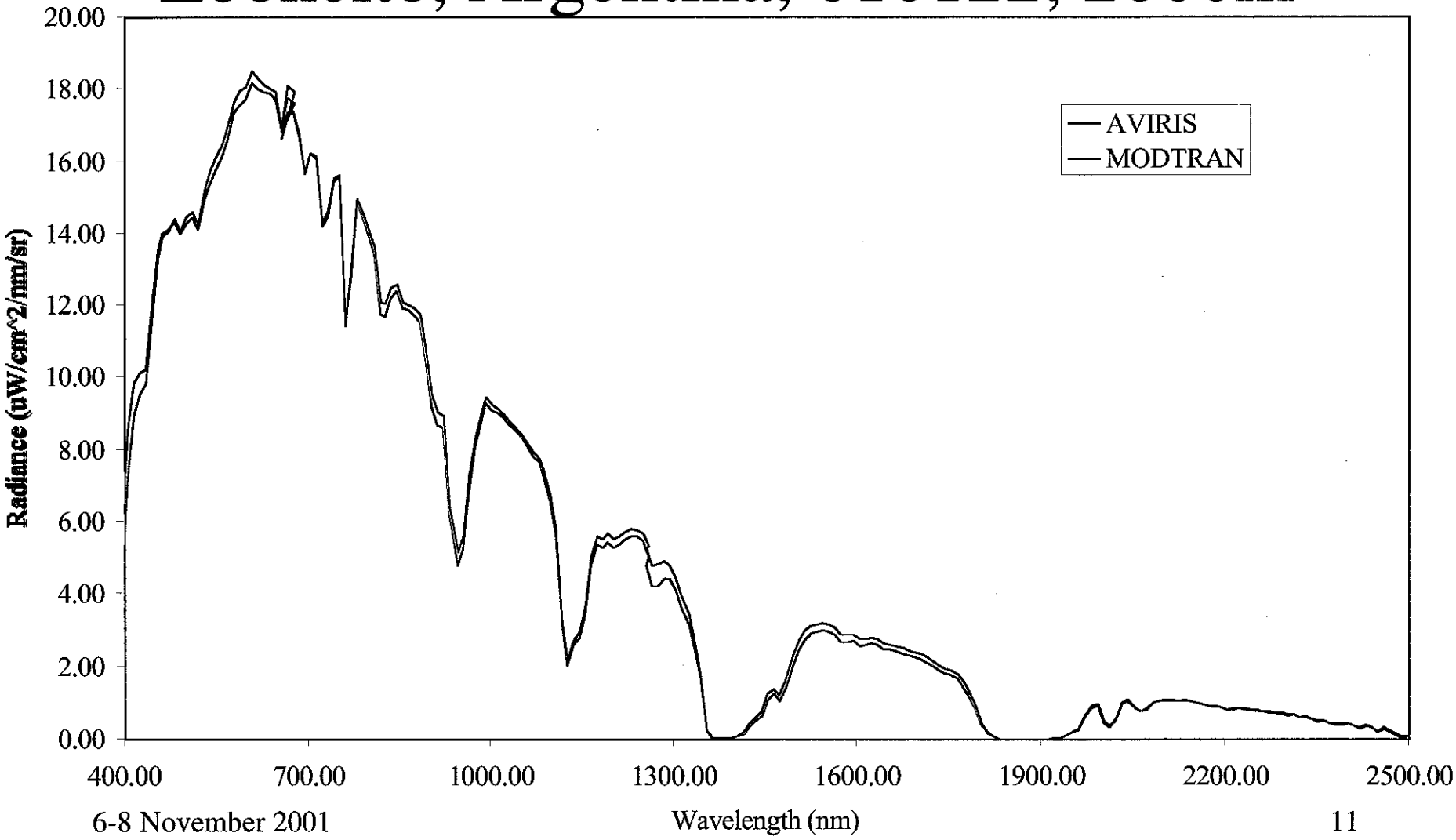
Optical Depth Measurements
Leoncito, Argentina, 010122



Calibration Target
Leoncito, Argentina 010122, 2000m

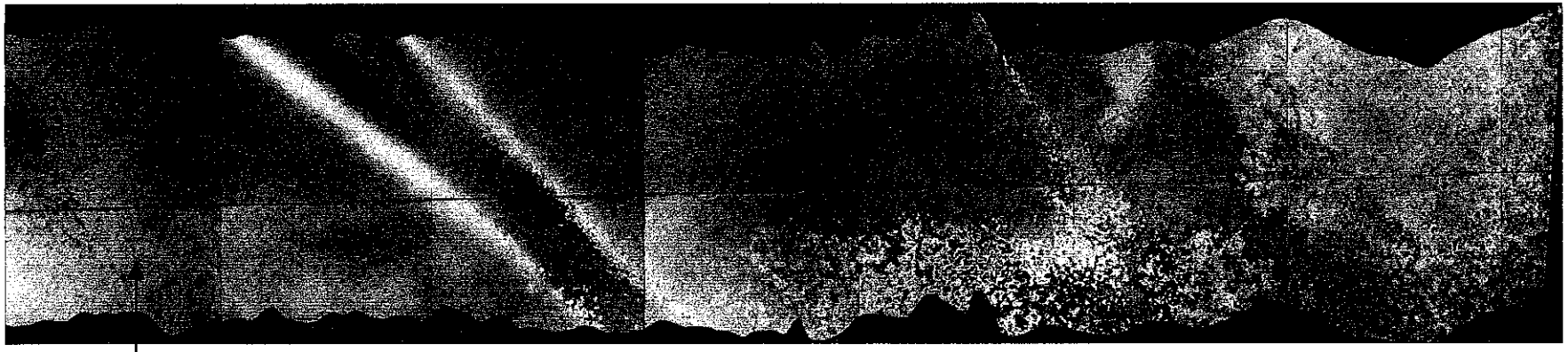


PreliminaryCalibration Experiment Results Leoncito, Argentina, 010122, 2000m



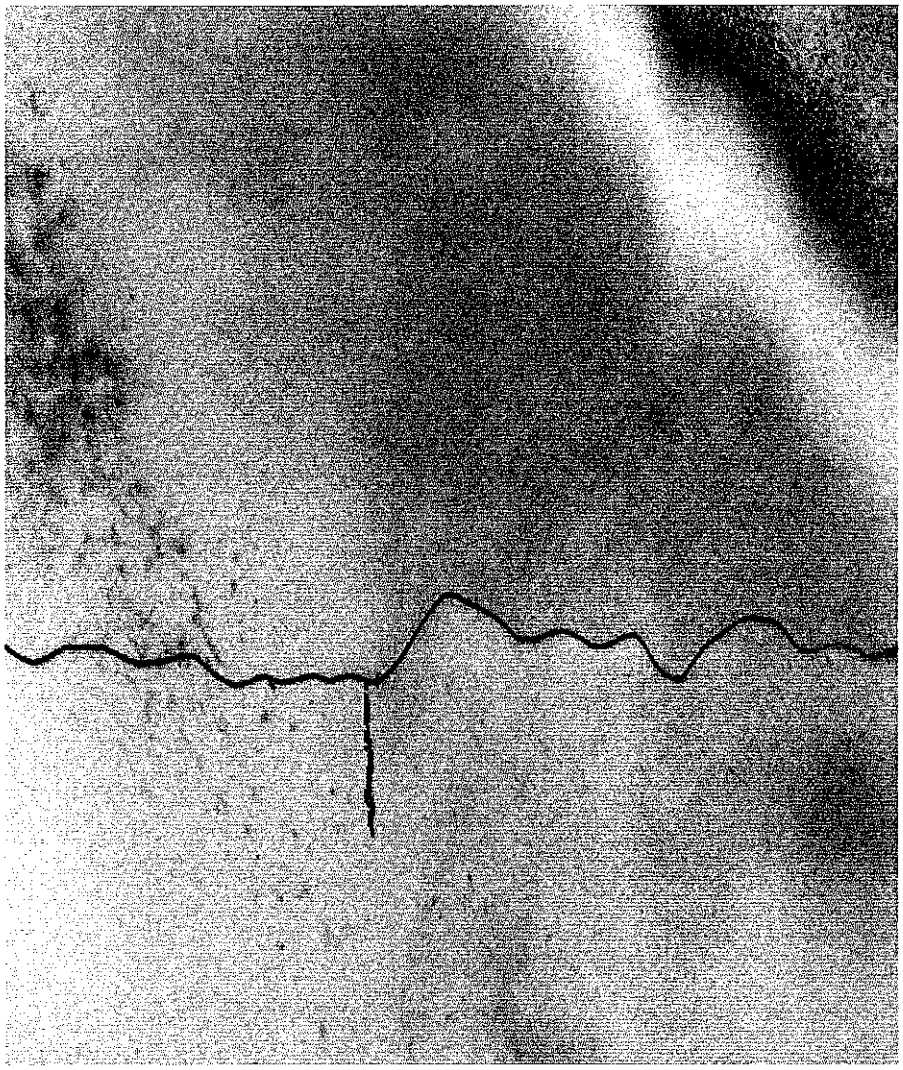
Hyperion Image
Leoncito, Argentina 010122

AVIRIS Image Arizaro, Arg 010207

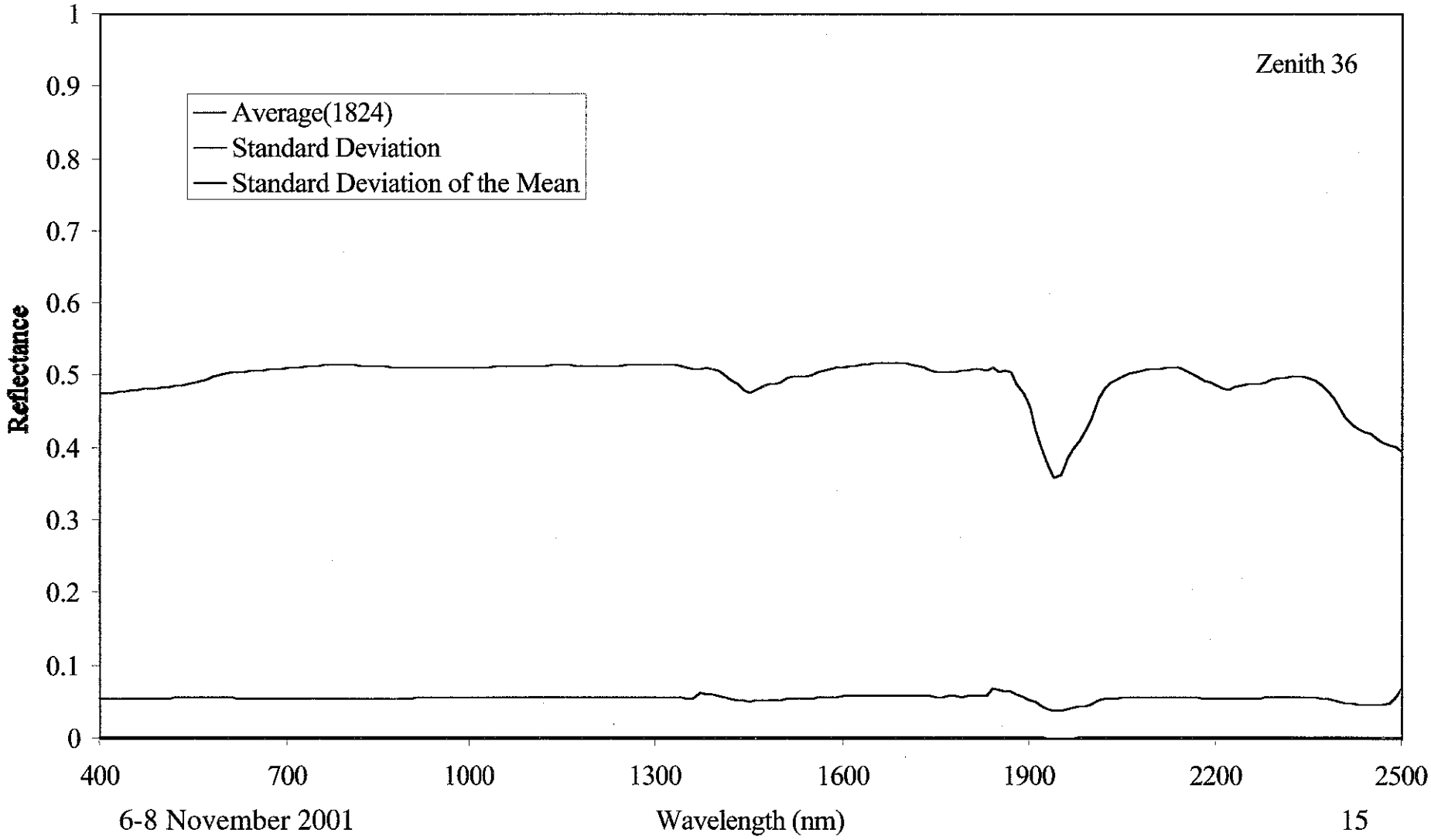


Calibration Target

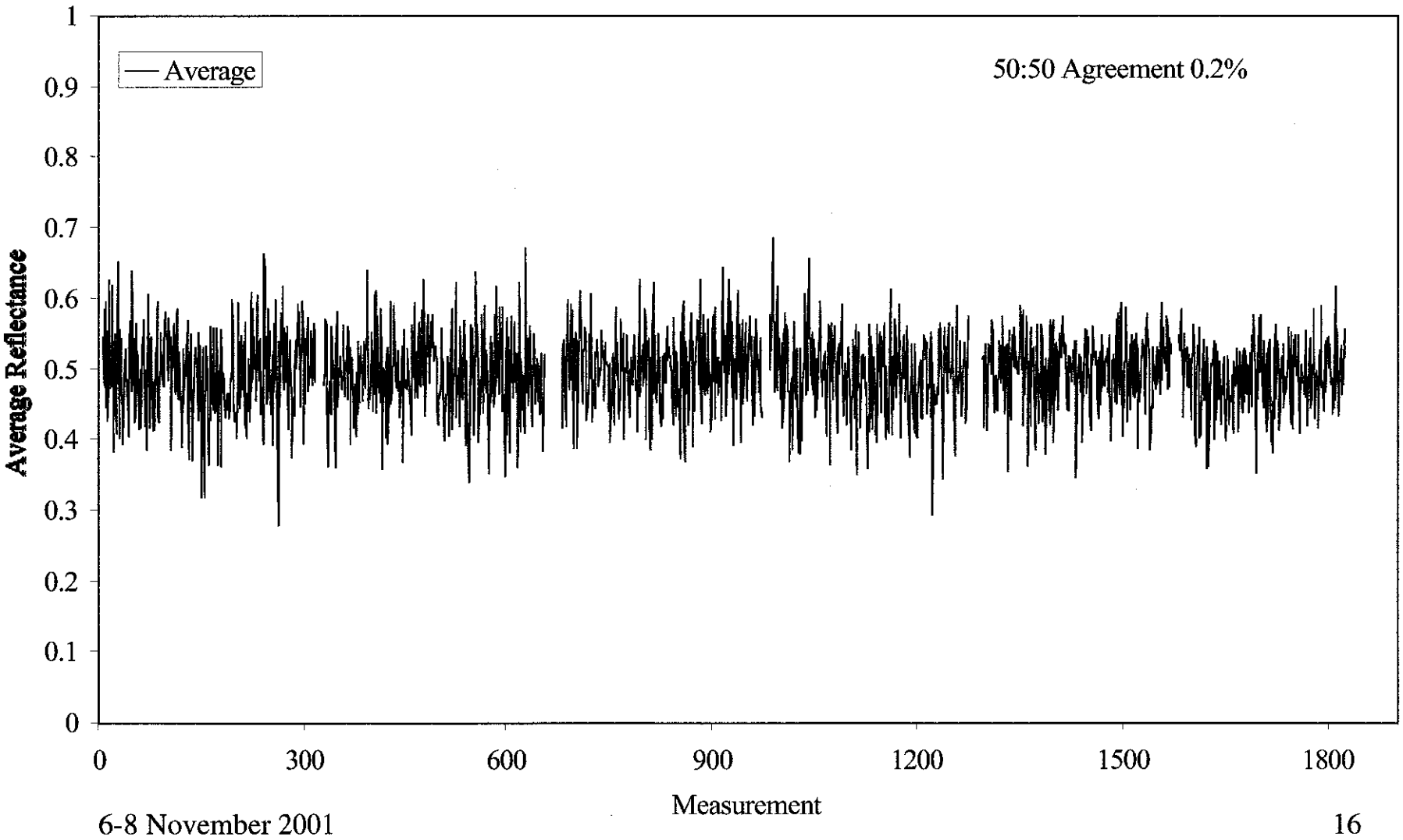
AVIRIS Image Arizaro, Argentina 010207



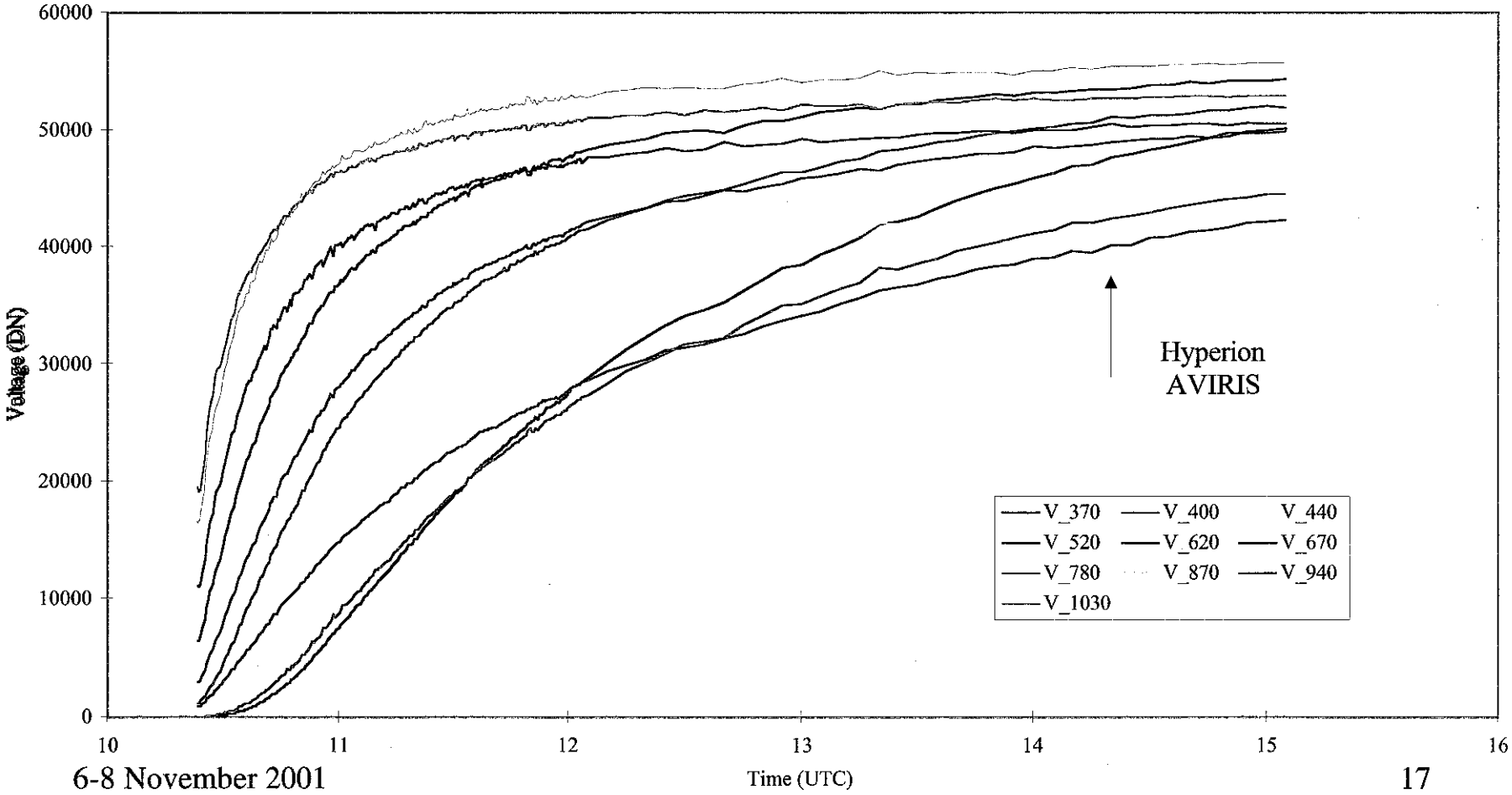
Arizaro Calibration Target Measured Surface Reflectance



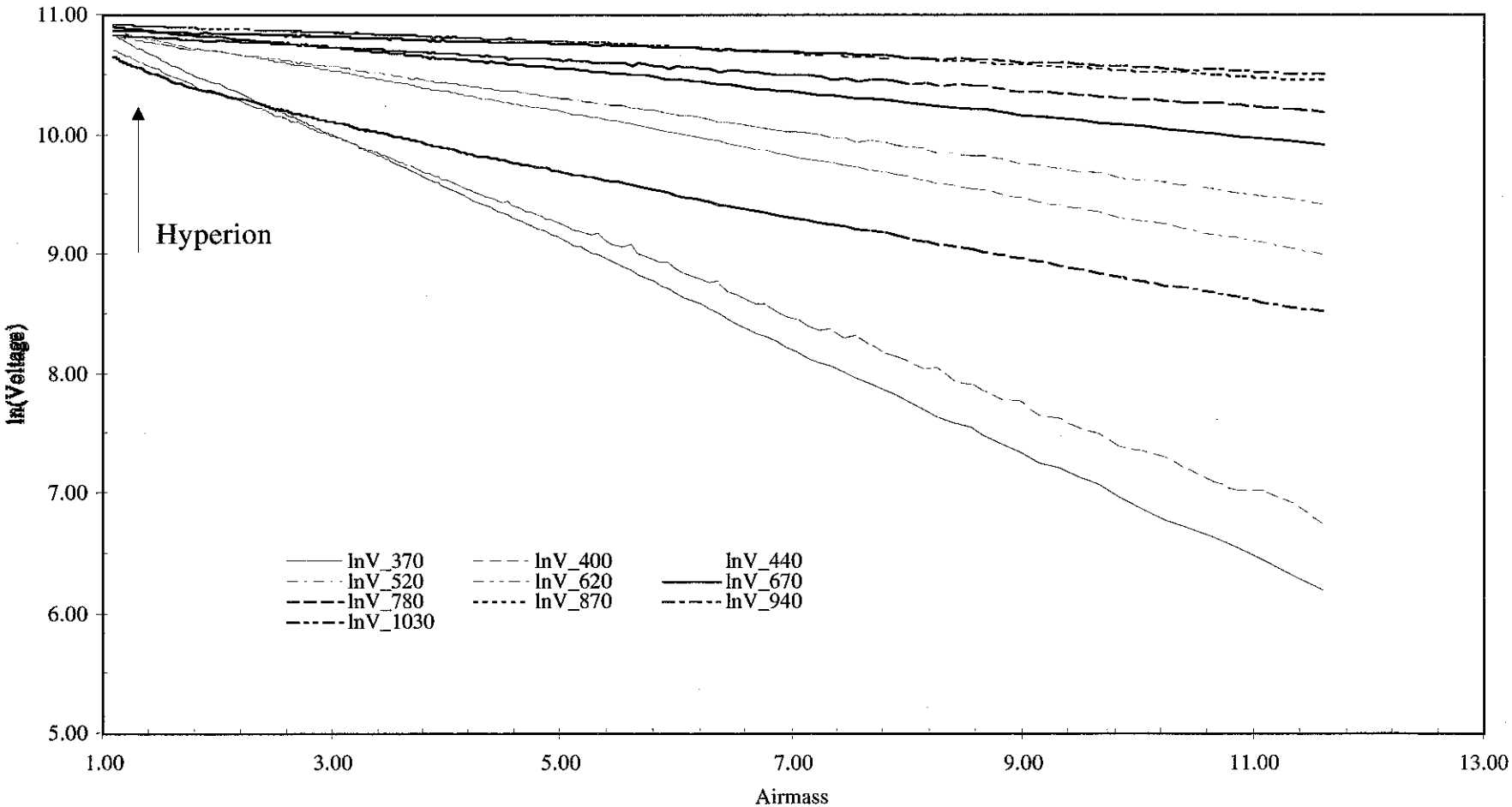
Calibration Target Arizaro, Argentina 010207



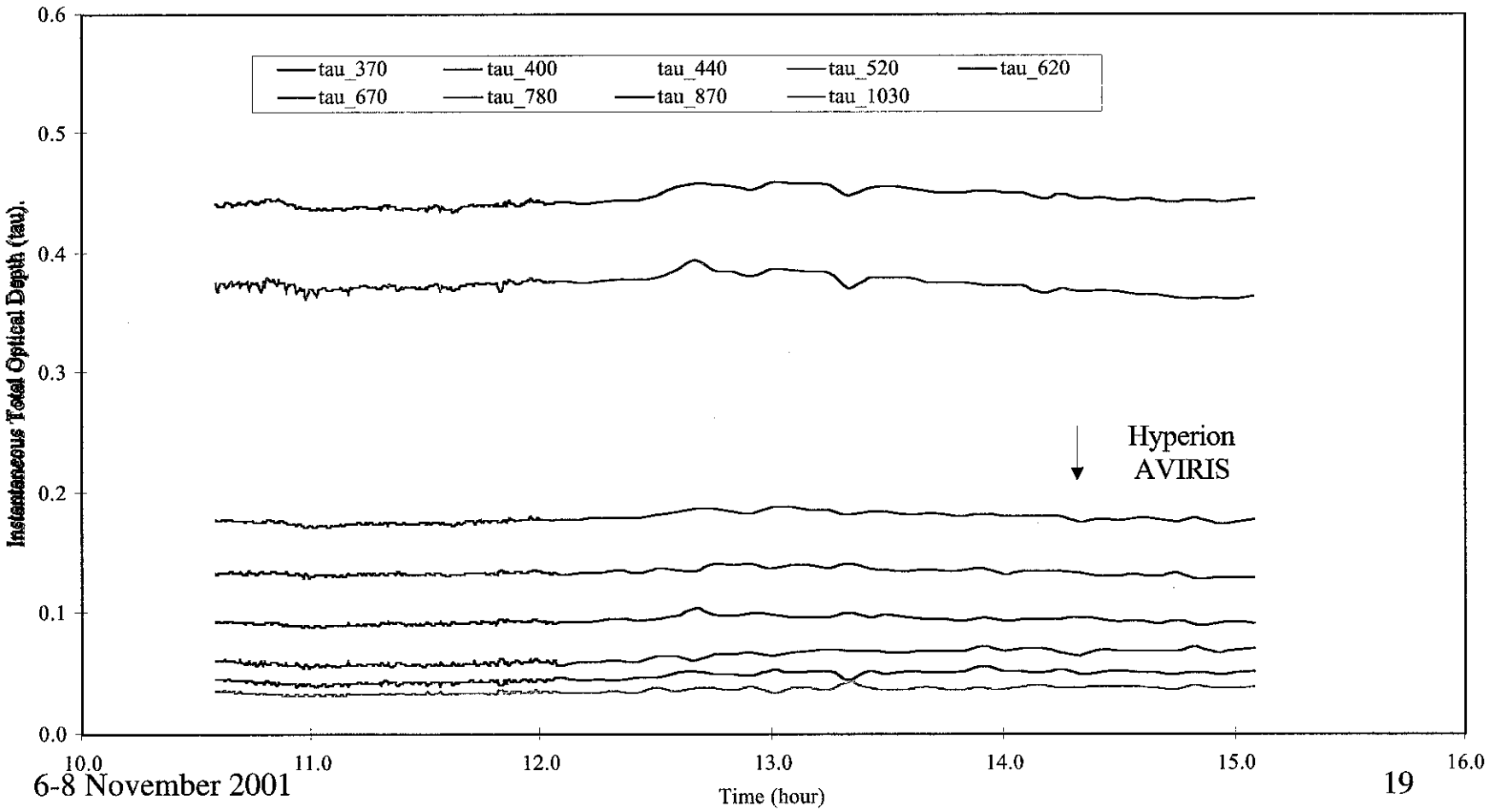
Optical Depth Measurements
Arizaro, Argentina 010207



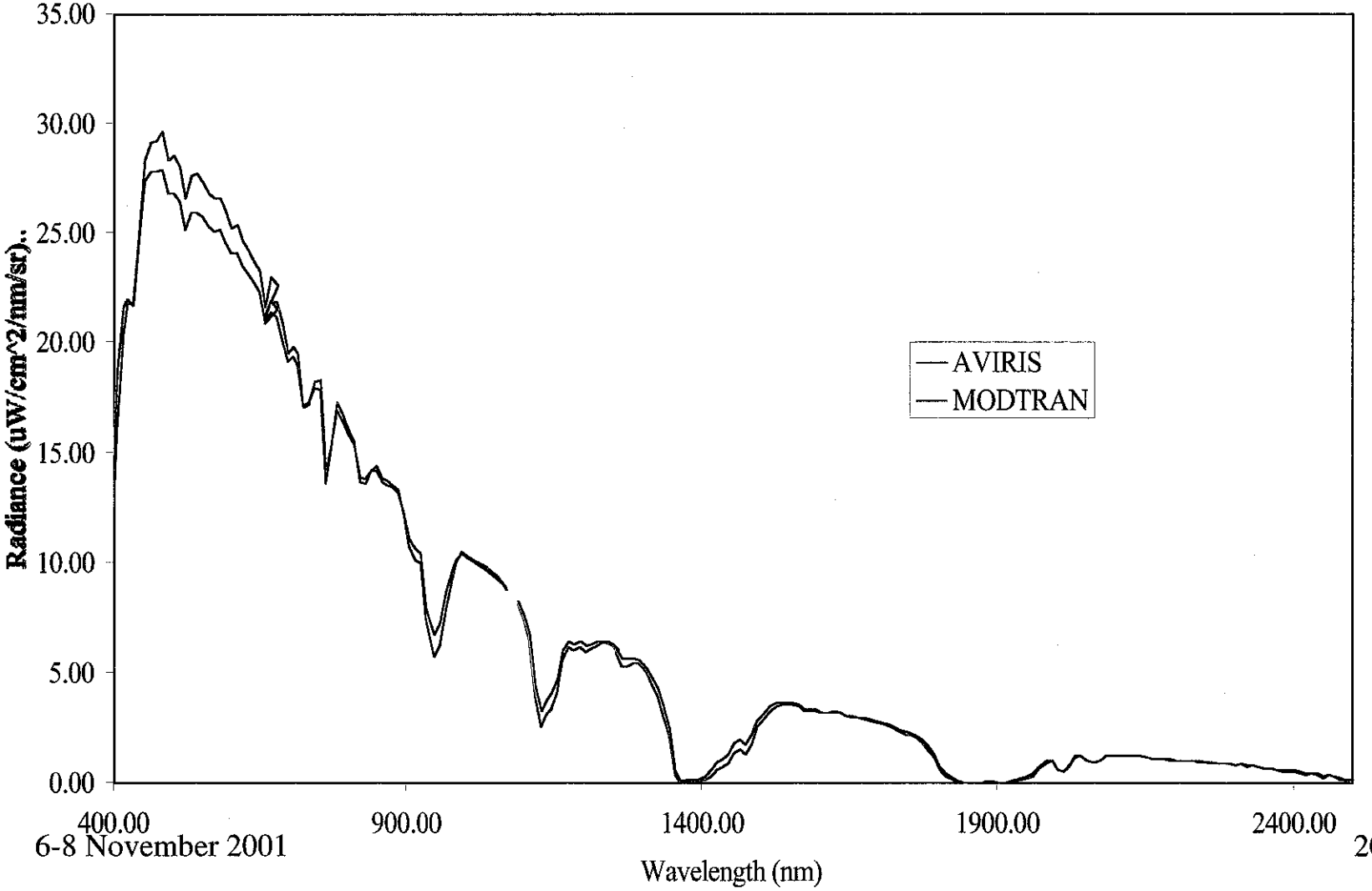
Optical Depth Measurements
Arizaro, Argentina, 010207



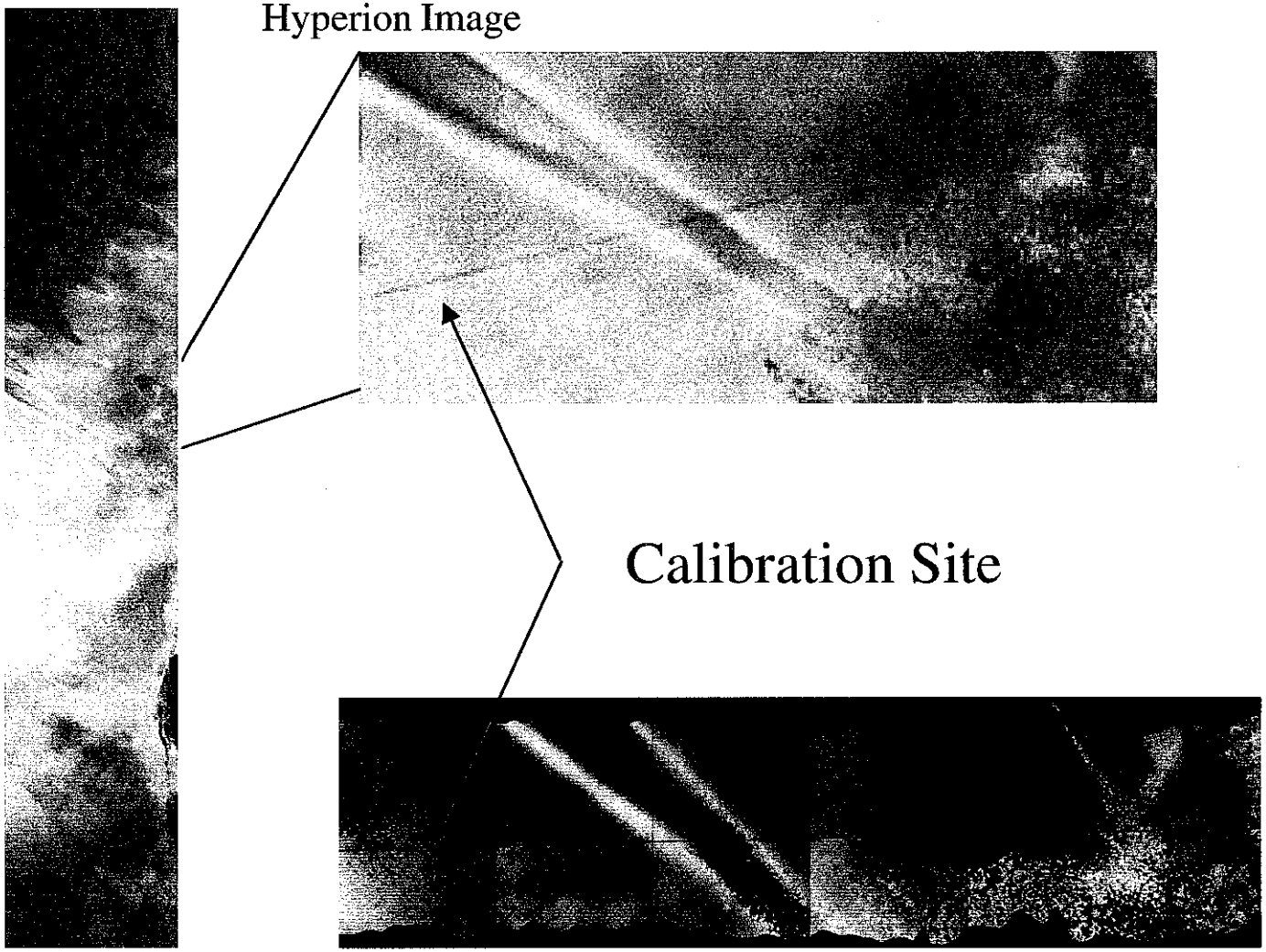
Optical Depth Measurements
Arizaro, Argentina, 010207, 3700m



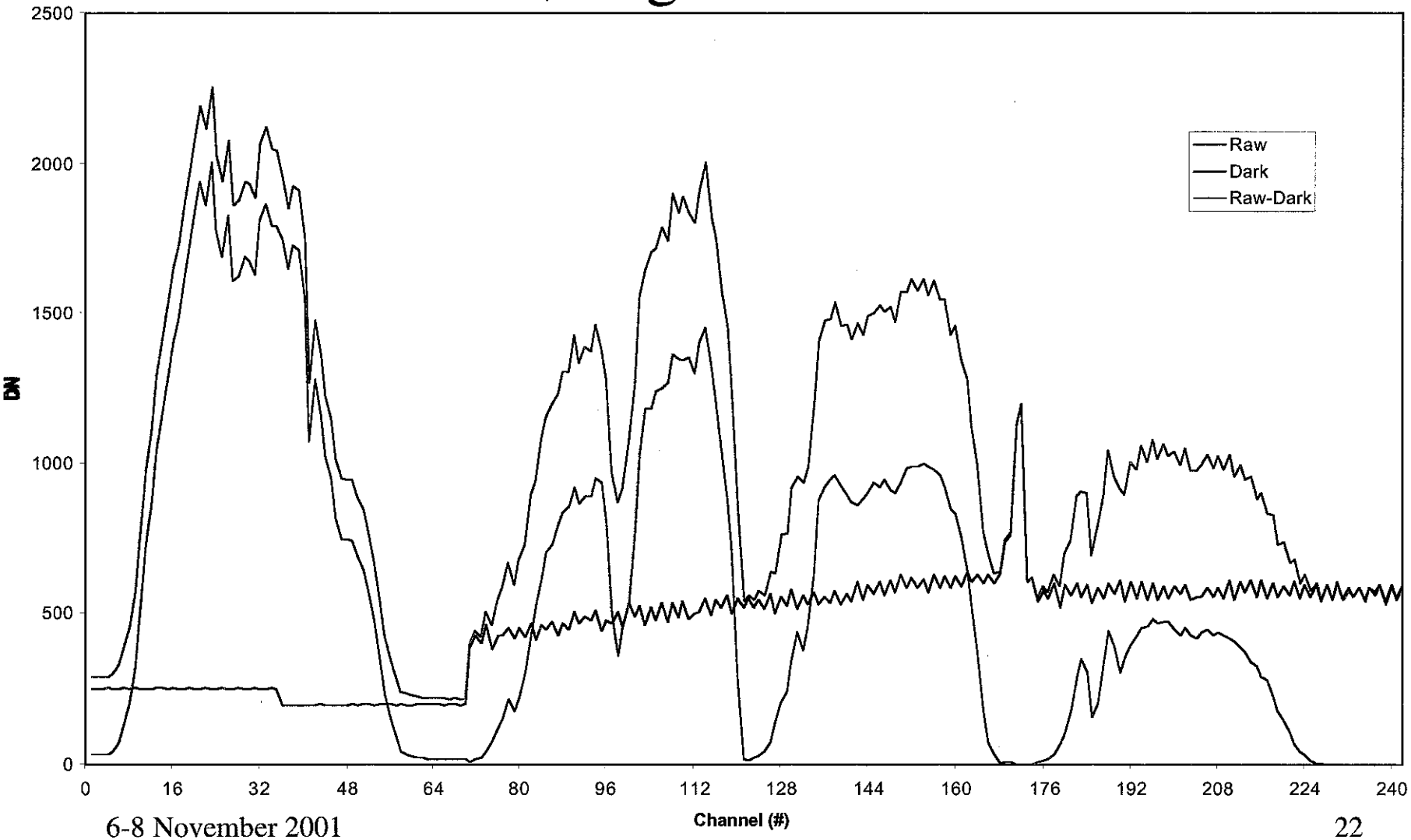
Preliminary Top-of Atmosphere Radiance
Arizaro, Argentina 010207



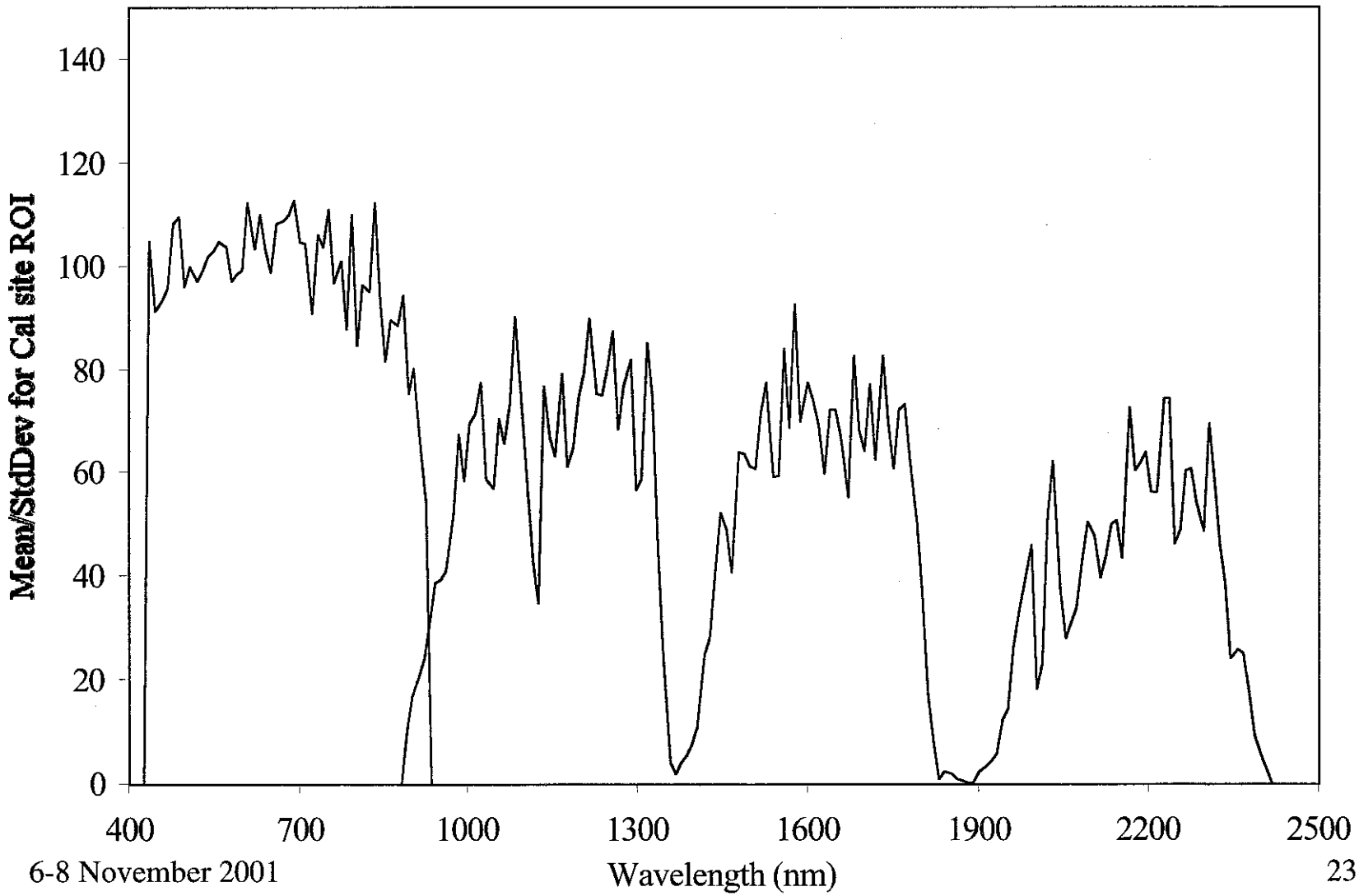
Hyperion Image Arizaro 010207



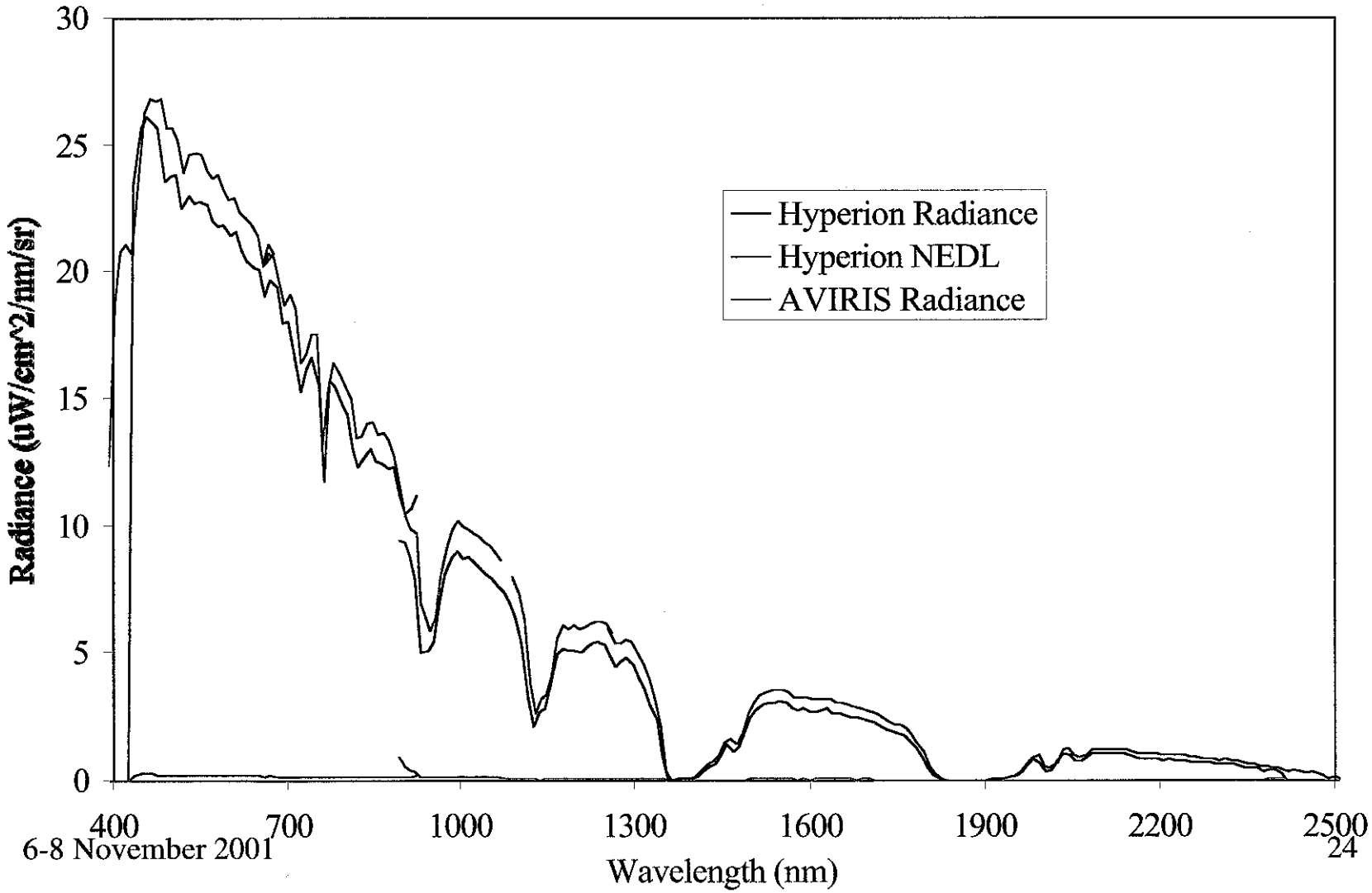
Raw Hyperion Data
Arizaro, Argentina 010207



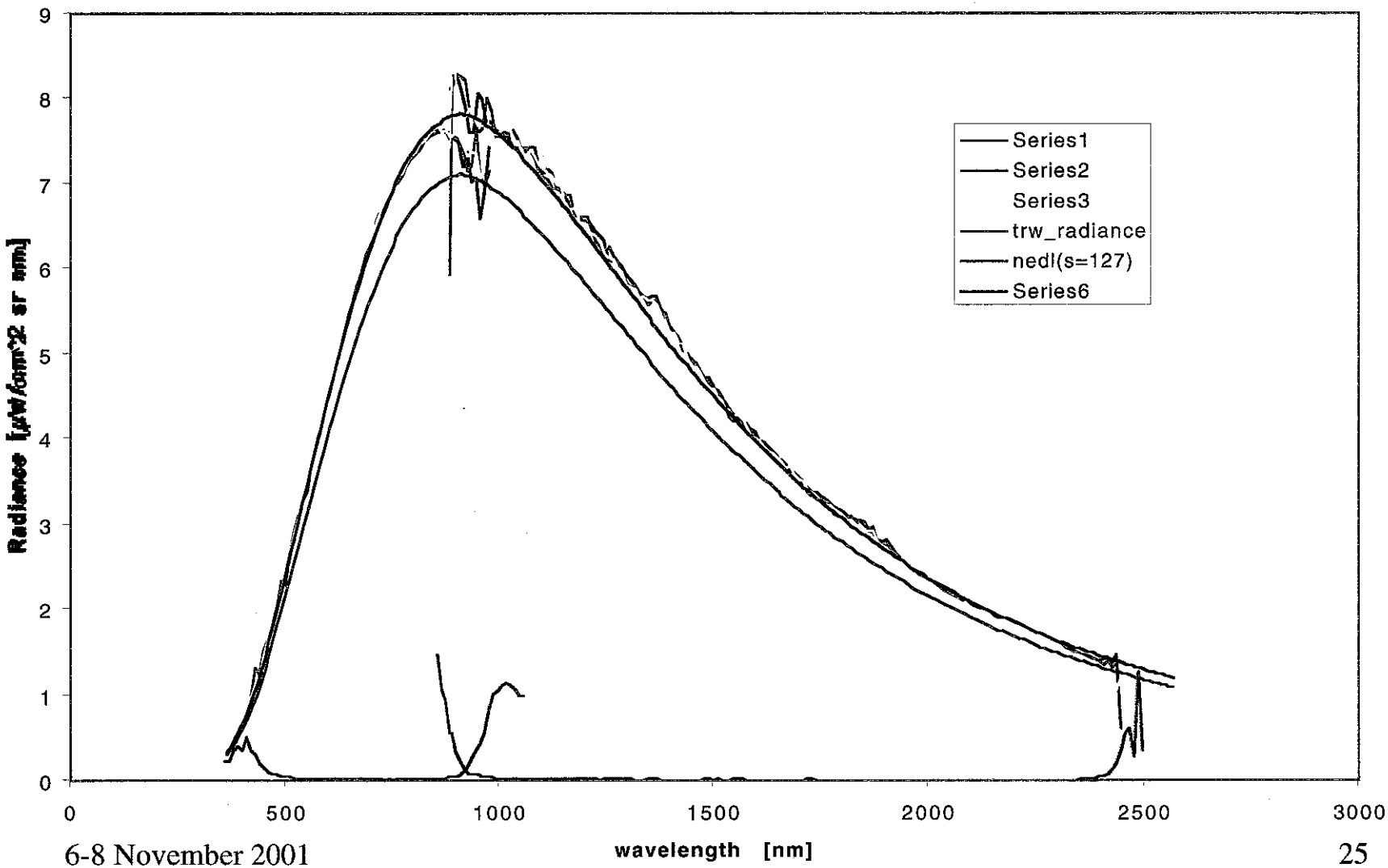
Scene Based Estimate of Hyperion SNR



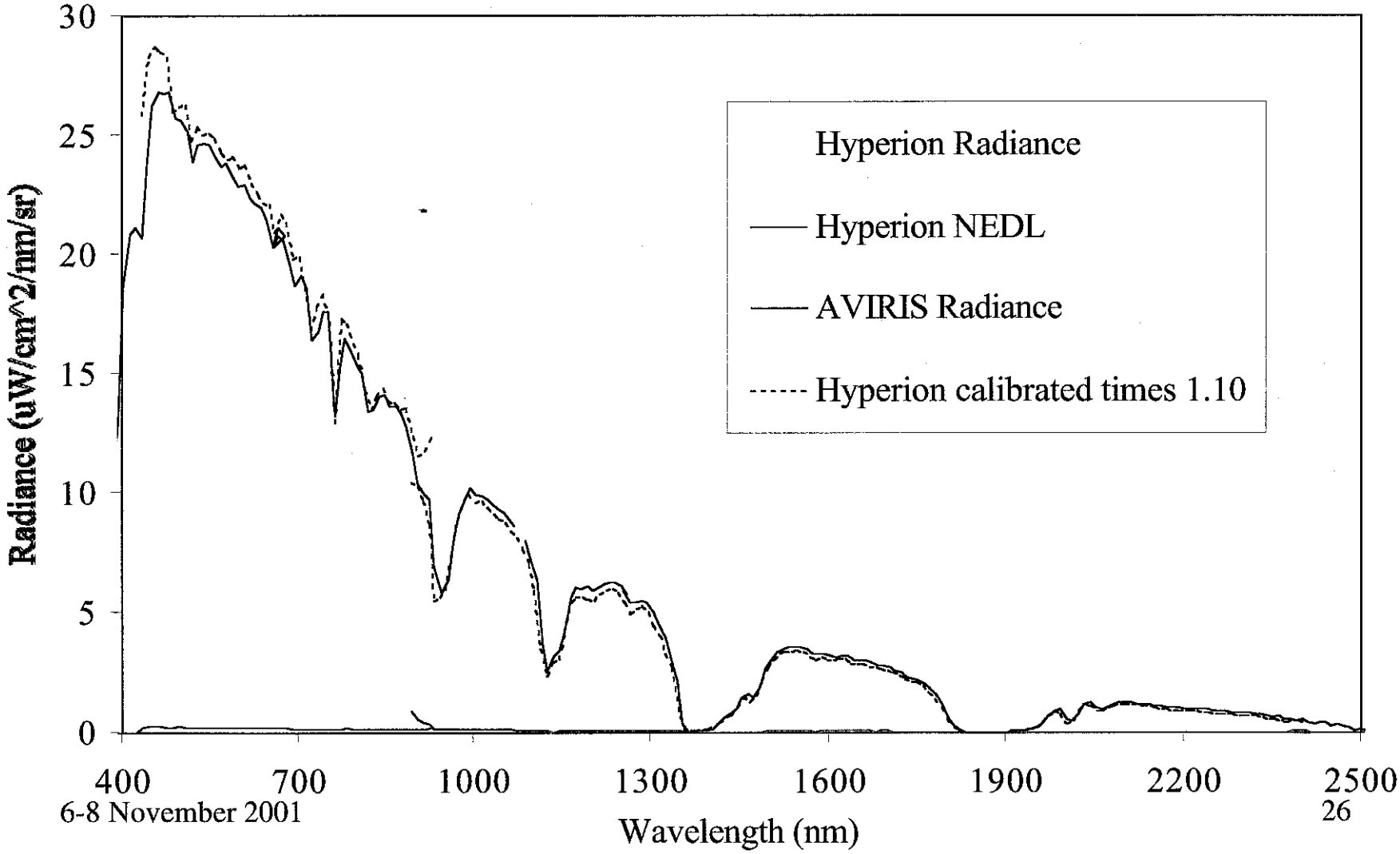
Comparison of AVIRIS and Hyperion Data Calibrated To Radiance



Laboratory Comparison of Radiometric Standards



Adjust Radiometric Scale ?



Summary

Overview of AVIRIS Argentina Campaign

- 125 flight lines collected for EO-1 science validation team and CONAE-funded investigators

Preliminary Results from two vicarious calibration experiments conducted in Argentina

- AVIRIS has been shown to be well calibrated

10% disagreement is radiometric scale inflight is consistent with laboratory comparison