

Solar FTS deployment for Brazil 2014

1. Regional (10-100km) scale carbon/water cycles
2. OCO-2 Validation
3. Radiation Transfer Model/Aerosol Optical Props.

Dubey, Wennberg, Martin et al

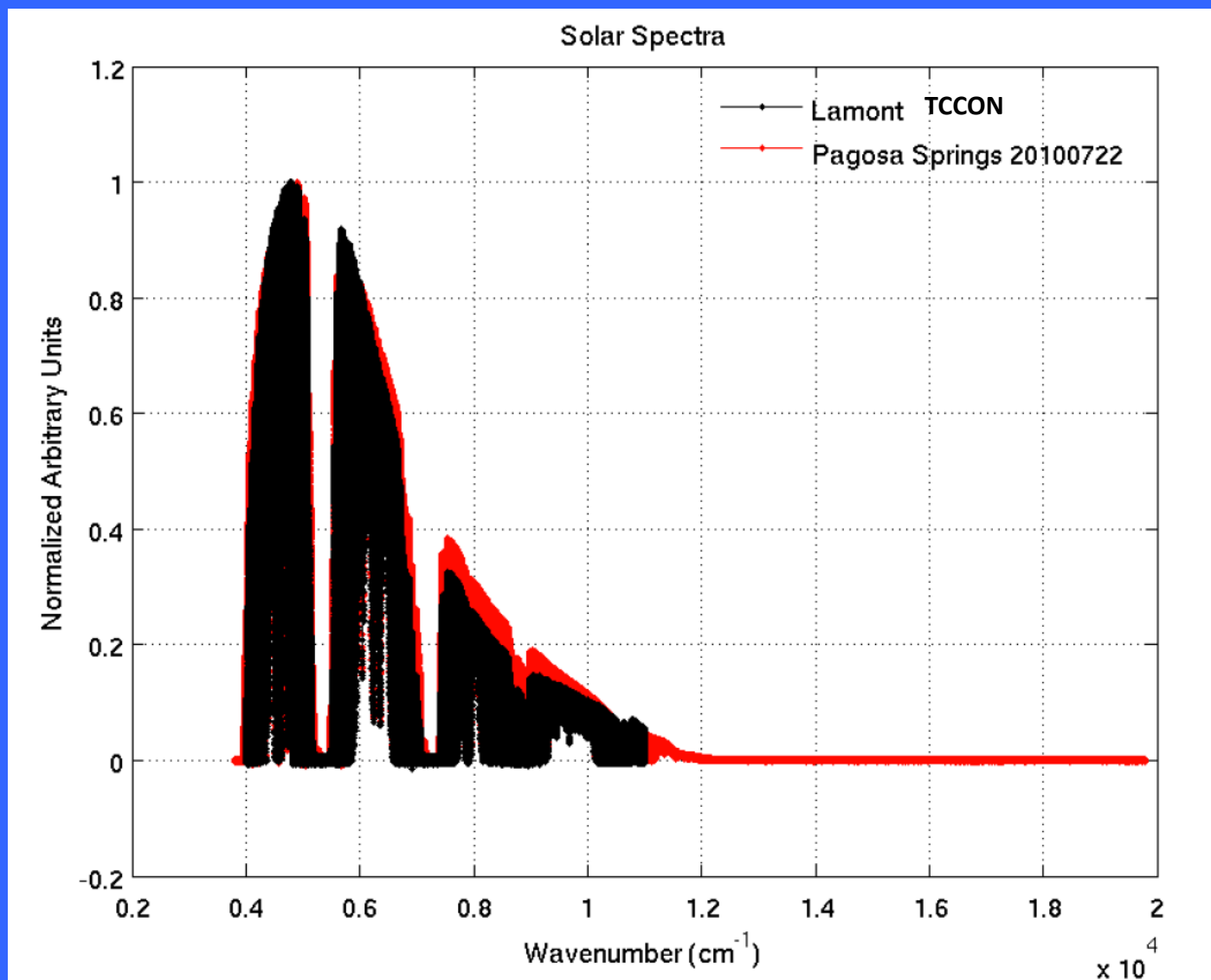
LANL Solar Tracking Fourier Transform Spectrometer (Vis-UV-NIR-MIR) for CO₂ and *signature scaling



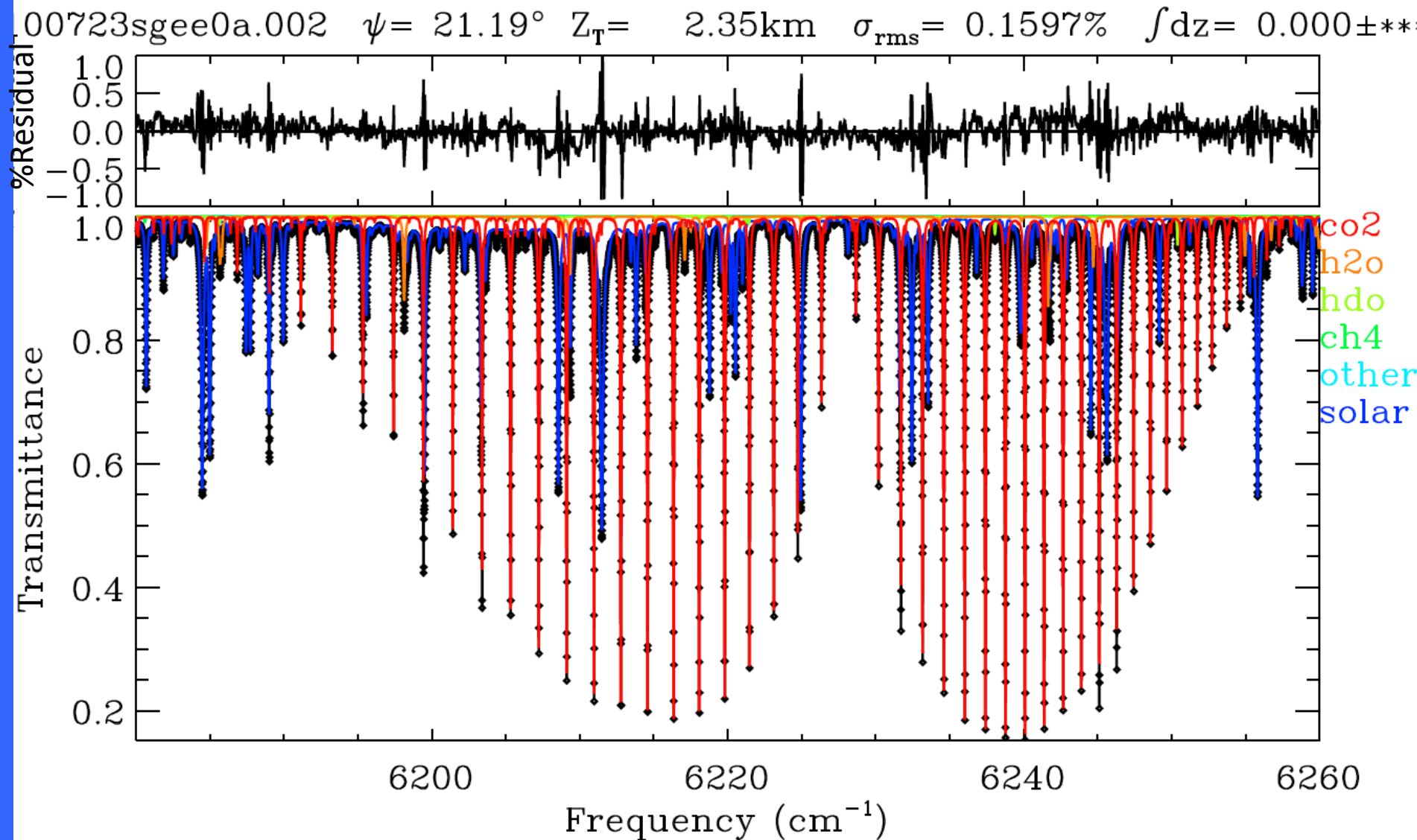
AUTOMATED REMOTE SOLAR OBSERVATORY

Bruker 125HR FT spectrometer

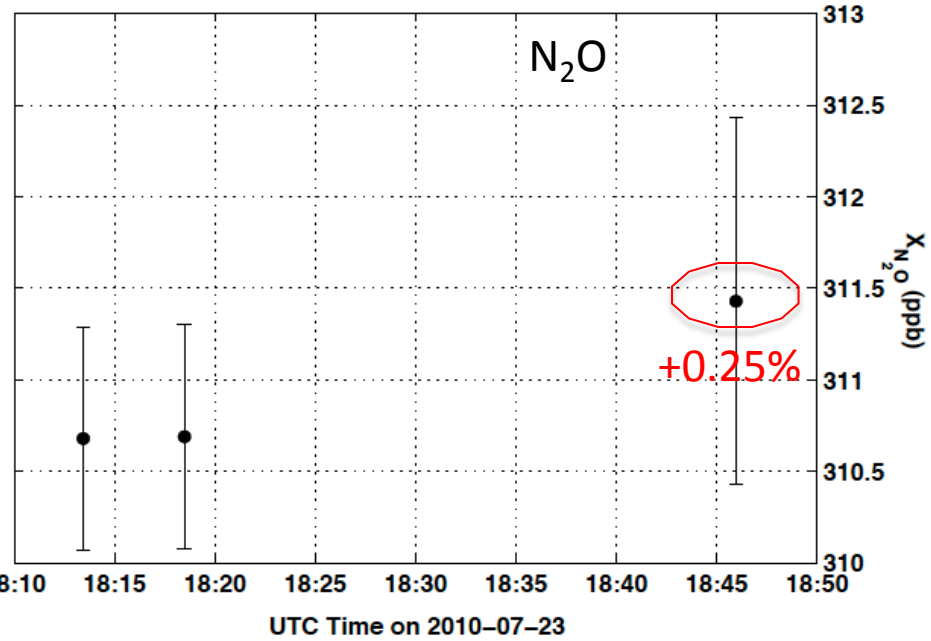
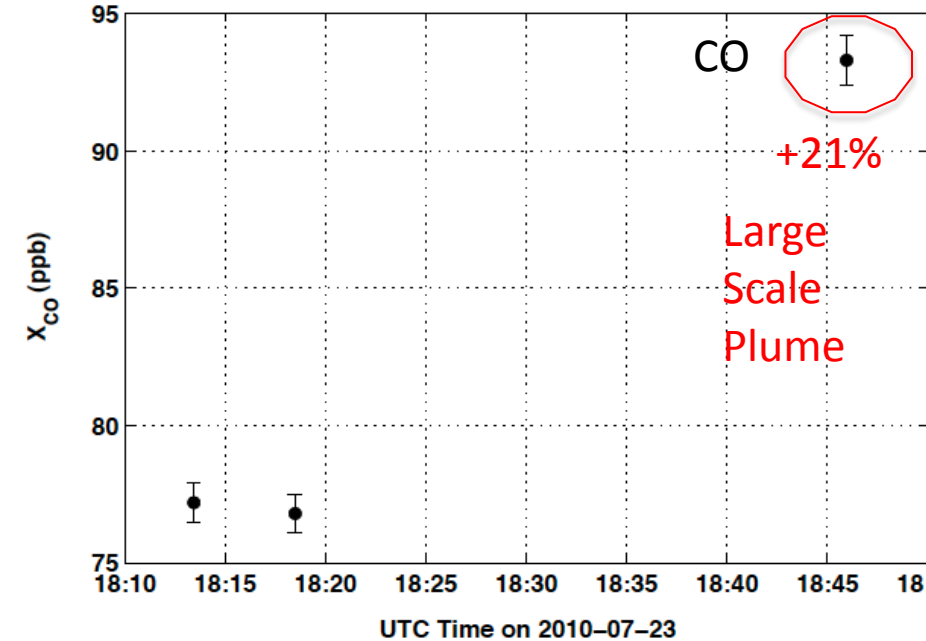
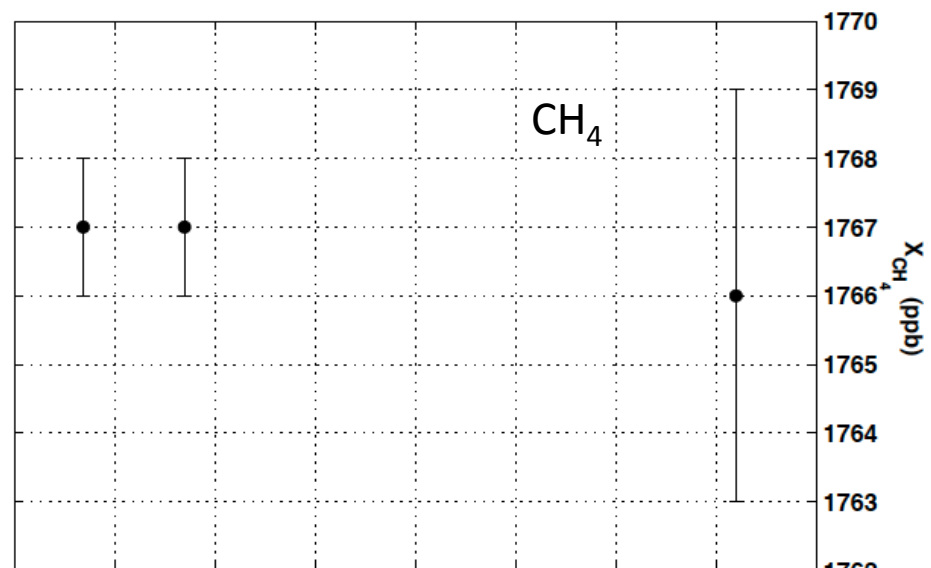
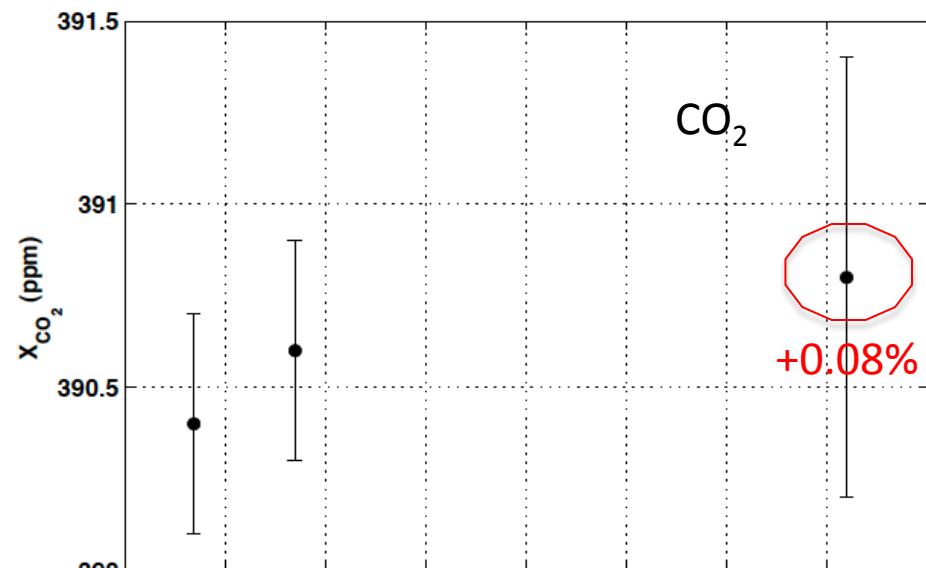
Solar Spectra (2 scans, 4 minutes)



Solar Spectra Fit to Retrieve CO₂ and other gases



Column CO₂, CO, CH₄, N₂O at Pagosa Springs, 7/23/10



First Solar FTS to Monitor Power Plant Operational San Juan NM

Goal: Separate CO₂ contributions from high NO_x and low NO_x PPs using FTS data



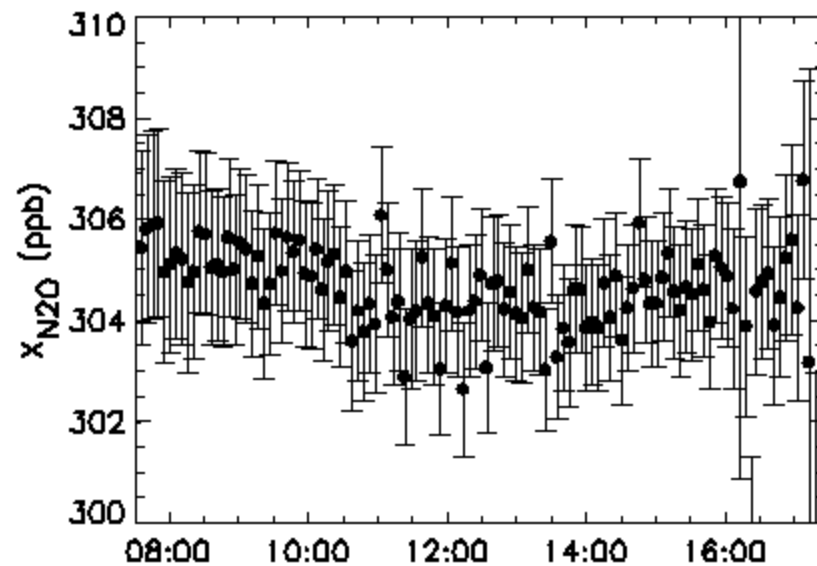
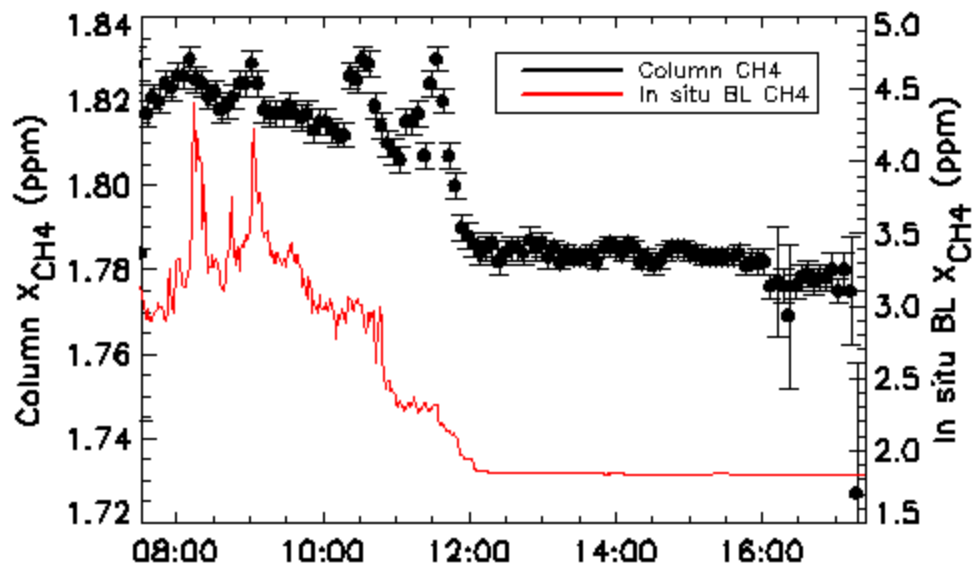
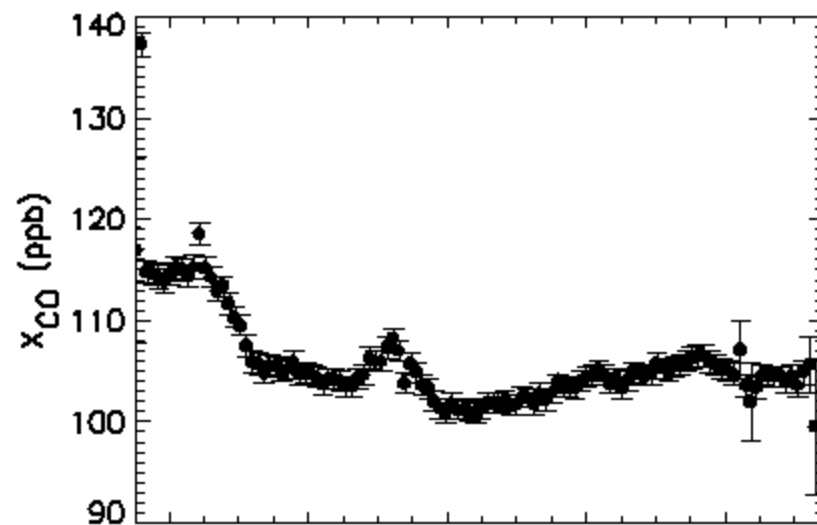
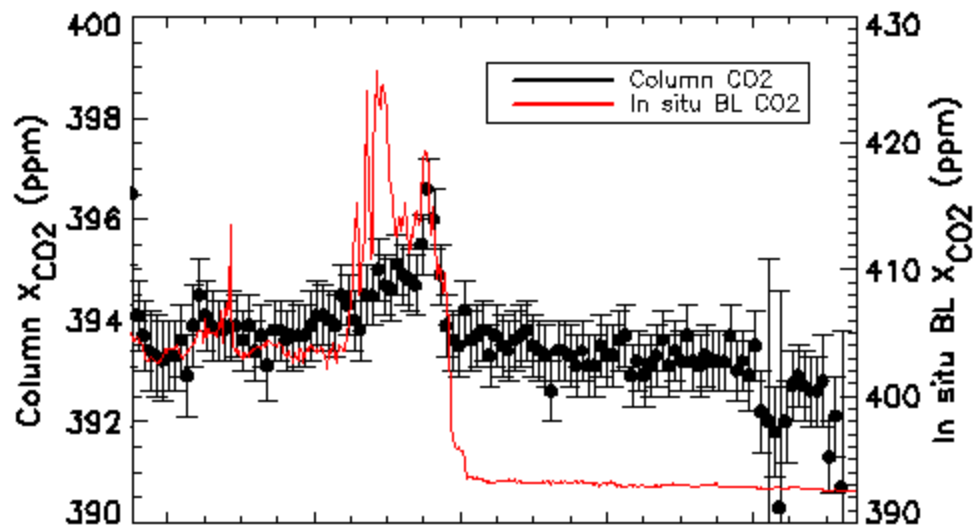
<https://tcon-wiki.caltech.edu/Sites/FourCorners>

Four Corners PP
High NO_x/CO₂

San Juan PP
Low NO_x/CO₂

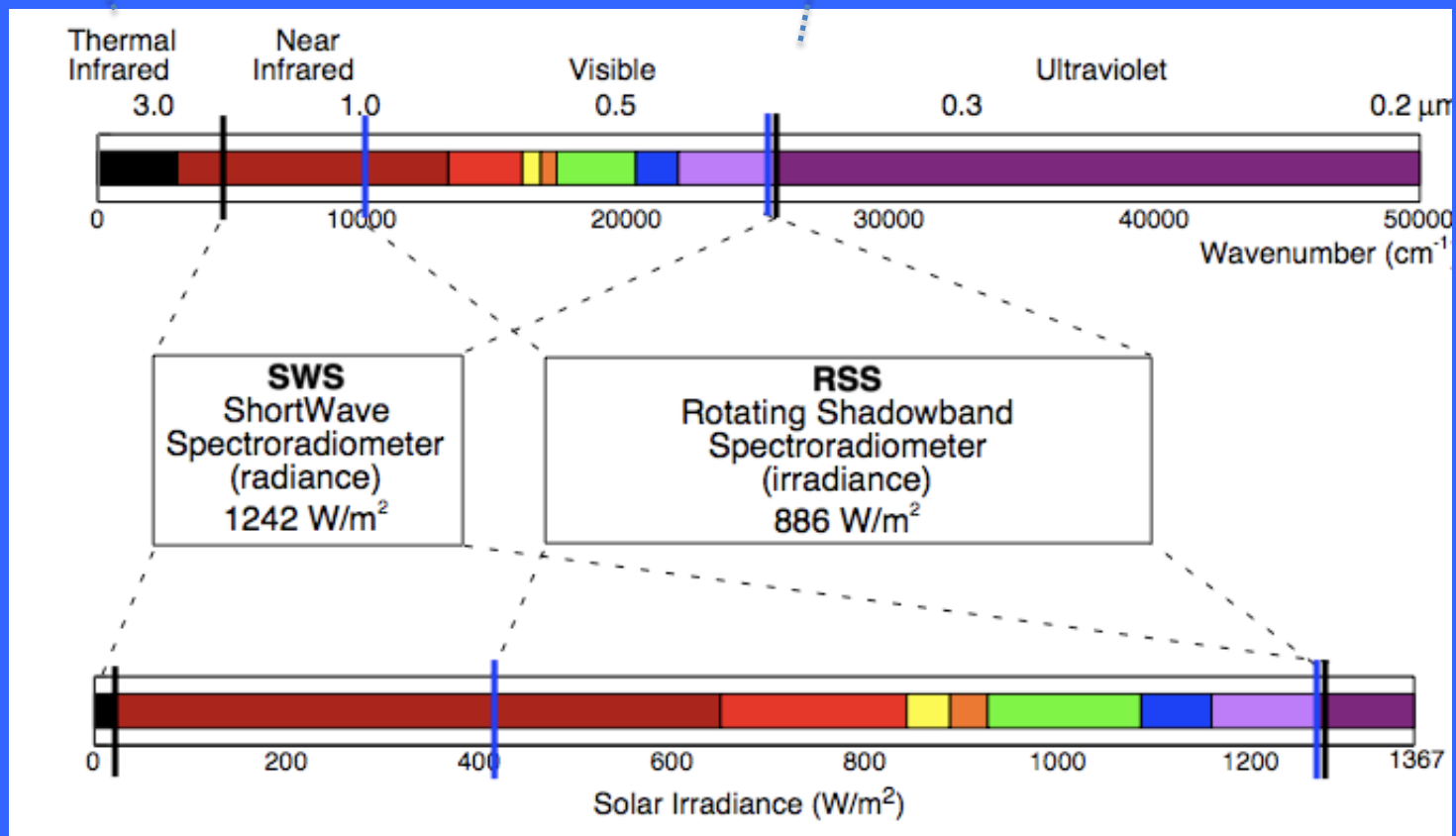


System operational starting 3/11/11 and data being downloaded. First analysis of GHGs and CO for 3/12/11



Advanced ARM High Resolution Continuous Long Term Radiation Monitoring Capability

LANL-FTS (Aluminium), 0.02 cm^{-1} res.
(2 minute), No absolute calibration,
LBL-RT, Rad., CO_2 , $\text{H}_2\text{O}/\text{HOD}$,
Seasonality & Trends



Deriving H₂O Direct Beam Transmittance (T)

(Eli Mlawer, Joe Michalsky)

RSS Irradiance Measurement

Derive T(Gases, Rayl, Aerosol) using V_0

LBLRTM/CHARTS

Input MergedSonde

Compute T(Gases, Rayl)

Compute T(Gases w/o H₂O, Rayl)

T(Aerosol, H₂O)

T(H₂O)

T(H₂O)

