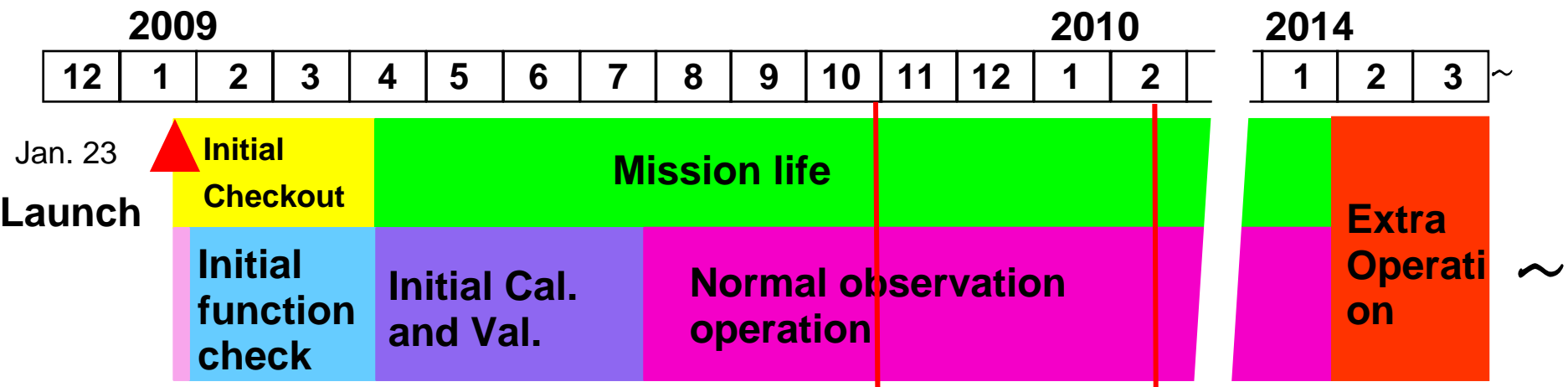


GOSAT mission schedule



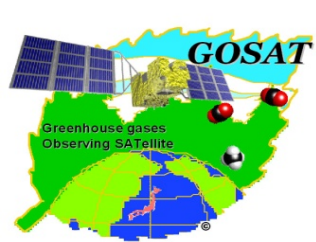
Jan. 23
Launch

Critical phase

Level 1 (Observation spectra) to public

Level 2 (SWIR CO₂ and CH₄ of column averaged dry air mole fraction global distribution) to public

- Nov. 2010 Level 3 (SWIR CO₂ and CH₄ column averaged dry air mole fraction global distribution in monthly mean) to public
- Mar. 2012 Level 2 (TIR CO₂ and CH₄ density profile global distribution) to public
- Dec. 2012 Level 4A (CO₂ flux estimation) and Level 4B (Simulated CO₂ distribution) to public.



Status of GOSAT calibration



(1) TIR radiometric calibration (The latest L1B v160)

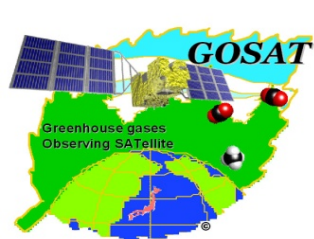
- Blackbody (BB) and Deep Space (DS) views for onboard calibration (2-time in dayside, 4-time in nightside)
- Polarization correction (mirrors, beamsplitter, dichroic filters)
- BB emissivity (EM evaluated by heated halo method at UW-Madison)
- Sensor background temperature estimation

(2) SWIR radiometric calibration (Sensitivity degradation factor)

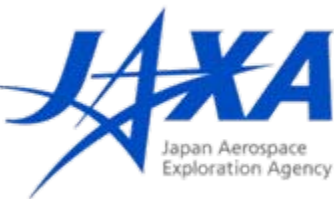
- Onboard solar diffuser monitoring per month
- Vicarious calibration field campaign (with NASA/OCO-2, Ames), Lunar calibration, Sahara desert monitoring

(3) Geometric correction (Estimated geolocation data)

- Pointing offset evaluated by onboard IFOV camera
- Estimated geolocation after correction

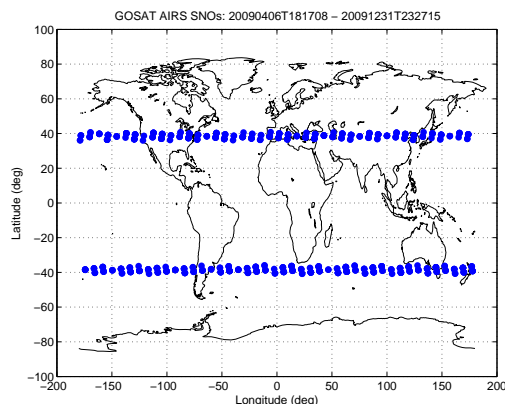


Status of GOSAT intercalibration

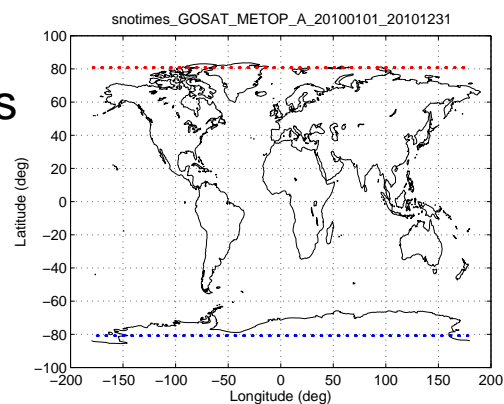


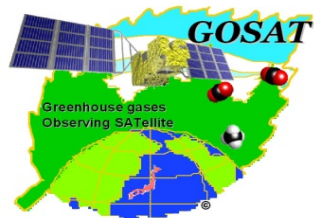
- The GOSAT TIR spectra are compared with Aqua/AIRS and Metop-A/IASI at Simultaneous Nadir Observations (SNOs).
- This work is collaborated with SSEC, Univ. Wisconsin-Madison.
- The coincidences are located at mid-latitudes for AIRS and high-latitudes for IASI.
- SNOs with IR spectrometers are useful for evaluating the spectral radiometric accuracy in the same geometry, surface, and atmospheric conditions.
- We have just compared with GOSAT V150 (and former version). Next, with latest version V160 released in May 2013.

GOSAT - AIRS
SNOs

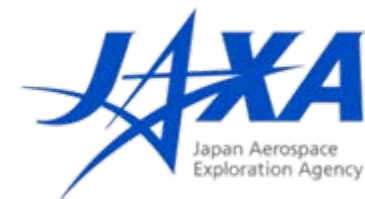


GOSAT - IASI SNOs

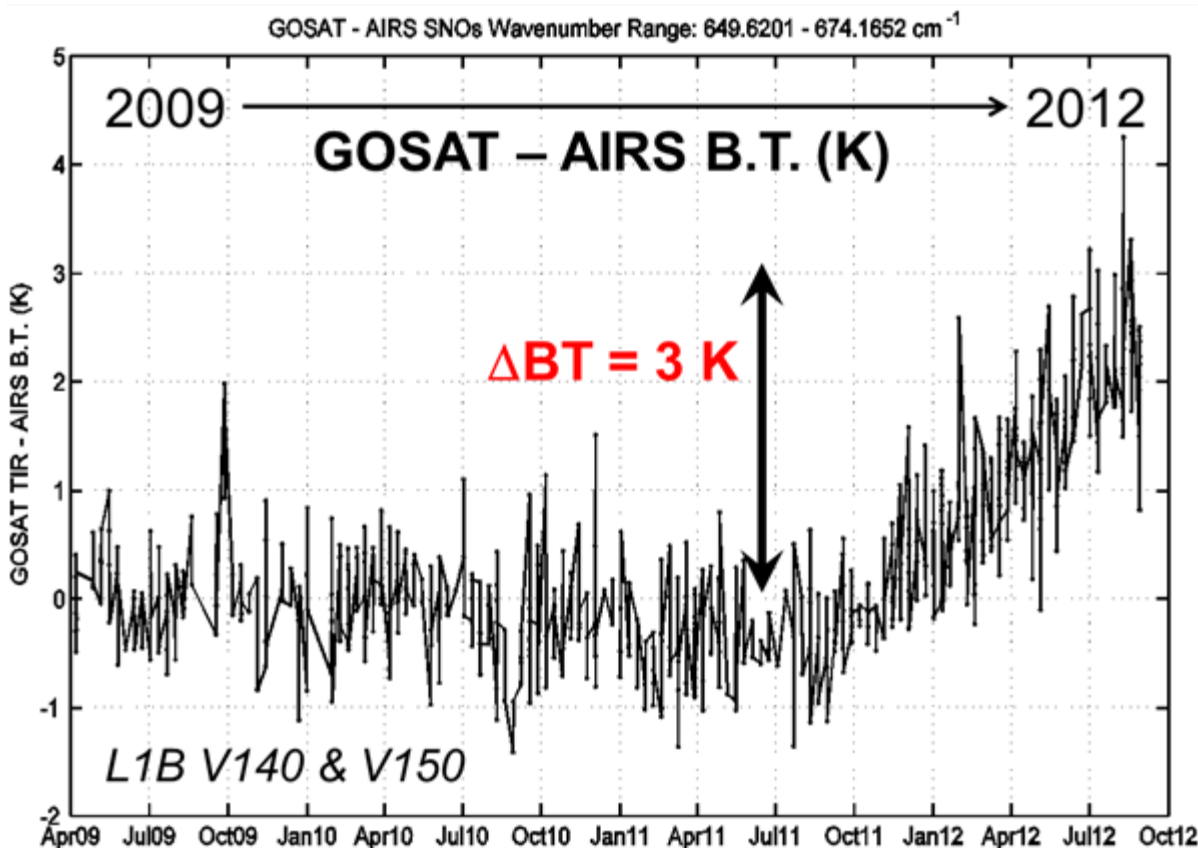




GOSAT V150 - AIRS SNOs

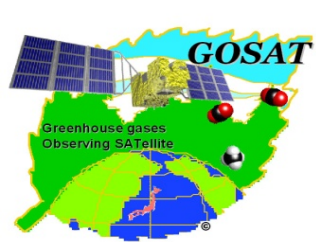


v150.150	Apr.,2012	Bug in estimation of DC offset trend (impact on $\Delta BT \sim 3K$)
v150.151	Jun.,2012	
v150.151(SE)	Nov. 8, 2012	Bug fixed version
v160.160	May, 2013	The latest version

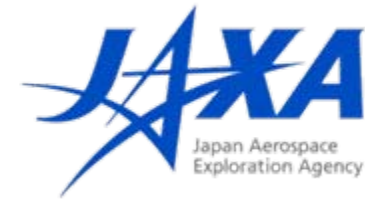


A time dependent bias error was identified in the GOSAT TIR L1B data using a trend analysis performed with the GOSAT-AIRS SNOs matchup dataset which apparently started about October 2011. The source of this error was found and corrected by JAXA leading to a software update (v150151SE) announced Nov. 8, 2012.

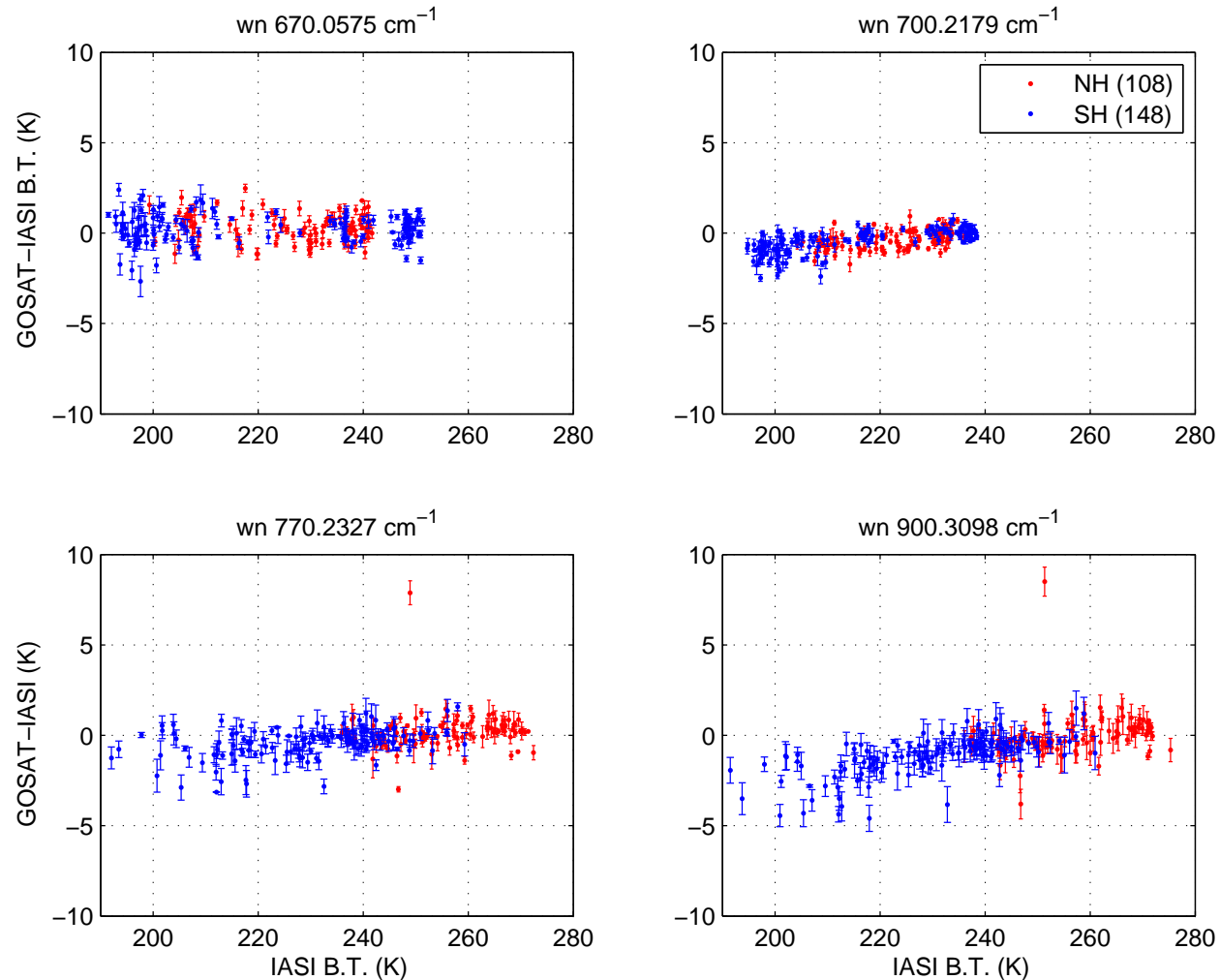
But, GOSAT has long-term stability from 2009 to 2011.

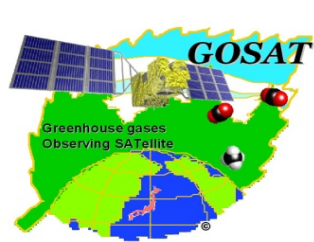


GOSAT V150 - IASI SNOs

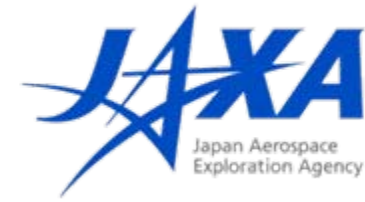


Scatterplot of GOSAT-IASI Brightness Temperatures at selected wavenumbers from the SNOs matchup in April – December 2009 for scenes variability < 1 K.

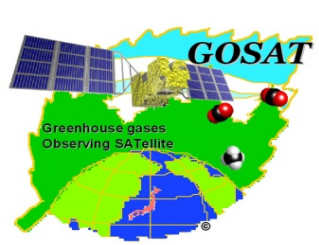




GOSAT summary



- GOSAT is normally operated over 4 years and acquires fine absorption spectra in SWIR to TIR regions with cloud/aerosol imager.
- Radiometric calibration on orbit in 4 years
 - TIR inter-comparison by Simultaneous Nadir Observations (SNOs) with AIRS and IASI
 - SWIR vicarious calibration field campaign with in-situ measurements and aircraft over-flight collaborated with NASA OCO-2 and Ames
 - Continuous operations of lunar calibration and solar diffuser
- Future plan
 - Long-term inter-comparison the latest v160 with IASI and AIRS
 - Simultaneous Off-Nadir Observations (SONOs) for scan angle dependency evaluation



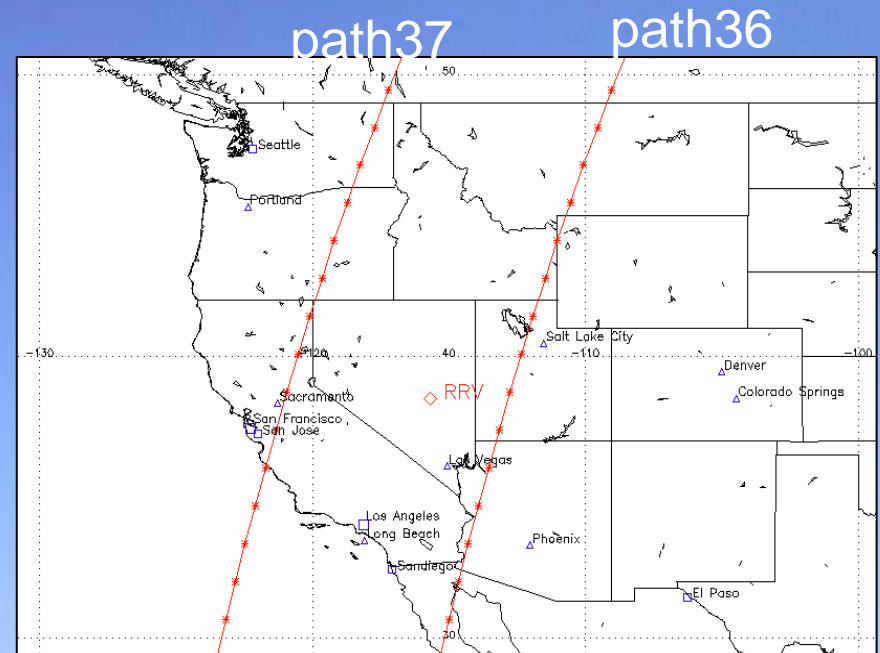
BACKUP

Vicarious calibration at Railroad Valley

- Railroad Valley field
 - Nevada/USA
 - Base-camp: 38.49703 N;
115.69013 W
 - Height : about 1435m



ALOS/AVNIR-2 (R/G/B=3/2/1)



Railroad Valley experiments deployment

