Supplemental Material

Reference Instrument(s)	FOV @87km	OH Band /Branch	Transition Probabilities	Years (Coincidences)	SABER version Acceptance Range	Weighting Profile	OH-SABER Bias±σ
Oberheide et al (2006)							
GRIPS Wuppertal (51.3°N, 7.2°E)	29x41km	OH(3-1) P	Mies 1974	2003-2005	v1.06	G_87km 8.7km FWHM	7.5±7.5K
				(643 nights)	within 600km 30min	1.6um VER	6.2K
Lopez-Gonzalez et al (2007)							
SATI Sierra Nevada Observatory (37°N, 3°W)	49x14km	OH (6-2) P Q	French et al 2000	2002-03,2005-06	v1.06	87km Spot sample	6.8±9K
				(79 profiles)	±5lat ±5long	G_87km 10km FWHM	5.7±7K
Mulligan and Lowe (2008)							
Bomem FTIR Maynooth (53.2°N, 6.4°W)	Dia2.8km	OH(3-1) P	Mies 1974	1993-1994 OH	v1.06	1.6um VER	8.6±0.8K
GRIPS Wuppertal (51.3°N, 7.2°E)	29x41km	OH(3-1) P	Mies 1974	(1018 profiles 0405)	±2.5lat ±5long	1.6um VER	4.5±0.5K
Smith et al (2009)							
Spectrograph Millstone Hill (42.6°N)	60x0.3km	OH(6-2) P	Goldman et al 1998	2005-2007	v1.07	1.6um VER	1.7±9.5K
				(61 nights)	within 500km		
Remsberg et al (2008)							
SATI Sierra Nevada Observatory (37°N, 3°W)	49x14km	OH (6-2) P Q	French et al 2000	2002-03,2005-06	v1.07	2.0 and 1.6um VER	-1.9±7K
				(79 profiles)	±3lat ±5long 1.5hrs		
MTM Hawaii (20.8°N, 203.8°E)	Dia180km	OH(6-2) P	Goldm an et al 1998	2003	v1.07	VER	5.8±8.9K
				(2300 profiles)	±10°lat ±20°long 12min		
French & Mulligan (this work)							
Czerny-Turner Spectrometer Davis	8x8km	OH(6-2)	Langhoff et al 1986	2002-2009	v1.07	T_Alt	-1.2±11K
				(2060 profiles)	within 500km 8hrs	T_SL	1.1±9K
				(847 nights)		T_G87 8km FWHM	0.2±8K
						T_VER	-1.2±8K
						T_GFIT	-1.3±8K
						T_VERm	-0.5±7K

Supplemental Table 2. A summary of other studies comparing SABER profiles with OH measurements.

Miss	Points		T_Alt(K)	T_SL(K)	T_G87	T_VER	T_GFIT	T_VERm
Distance								
<500km	2060	Bias	0.37	-2.09	-1.01	0.42	0.41	-0.20
<400km	1322		0.33	-1.90	-0.87	0.50	0.53	-0.06
<300km	731		0.11	-2.15	-1.06	0.30	0.43	-0.26
<200km	317		-0.13	-2.17	-1.06	0.08	0.15	-0.37
<100km	84		0.63	-1.79	-0.60	0.17	0.47	-0.07
<500km	2060	Std	0.34	0.27	0.27	0.27	0.28	0.25
<400km	1322	Error	0.43	0.34	0.34	0.34	0.35	0.32
<300km	731		0.59	0.45	0.46	0.45	0.47	0.42
<200km	317		0.90	0.70	0.69	0.67	0.69	0.63
<100km	84		1.77	1.38	1.39	1.38	1.46	1.28
<500km	2060	R^2	0.18	0.20	0.29	0.31	0.34	0.32
<400km	1322		0.17	0.19	0.28	0.30	0.33	0.31
<300km	731		0.17	0.20	0.29	0.30	0.33	0.32
<200km	317		0.12	0.15	0.24	0.25	0.30	0.27
<100km	84		0.09	0.19	0.26	0.29	0.29	0.30

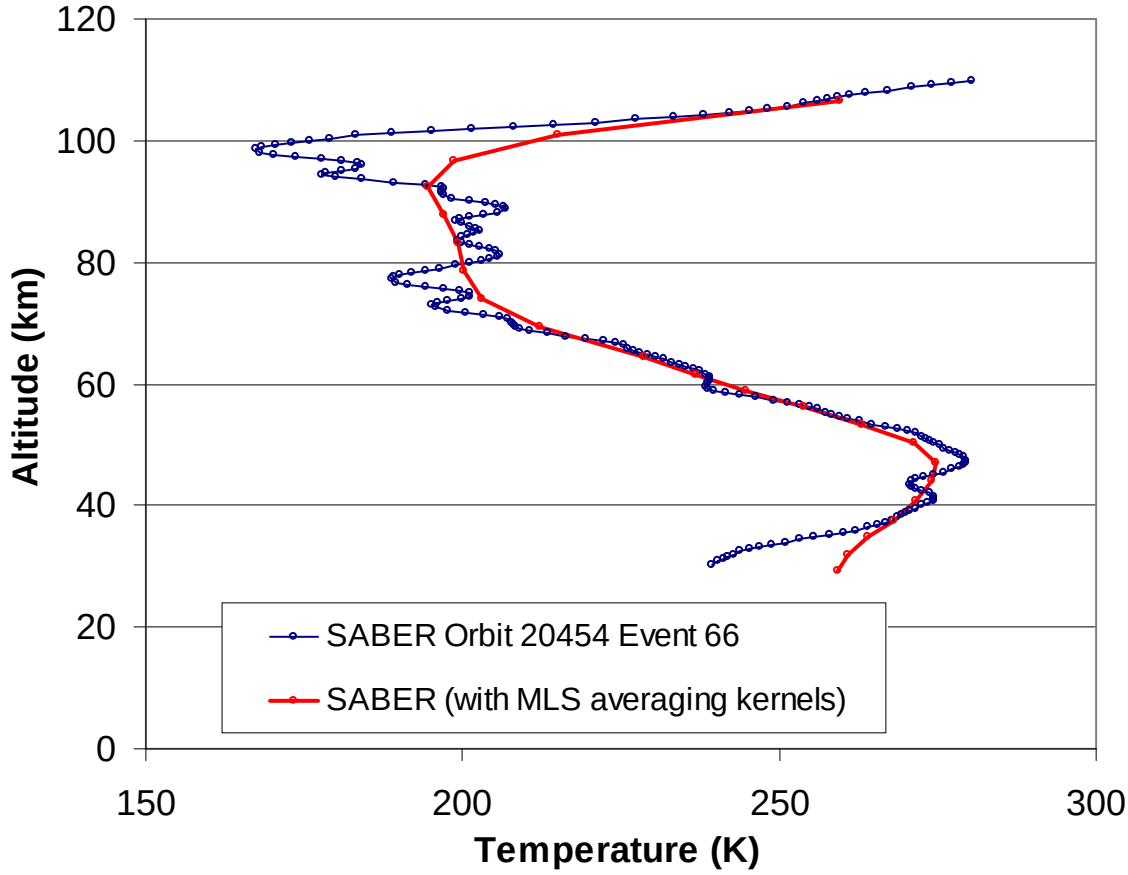
Colour scales SABER – OH Bias Error & R^2

Supplemental Table 3. Restrictions on miss distance criteria compared for each weighting function. Values are Bias±Standard Error (R^2) for each acceptance range.

Miss Time	Points		T_Alt(K)	T_SL(K)	T_G87	T_VER	T_GFIT	T_VERm
<8 hrs	1901	Bias	0.51	-2.03	-0.92	0.52	0.52	-0.15
<6 hrs	1893		0.52	-2.04	-0.93	0.51	0.52	-0.15
<4 hrs	1881		0.49	-2.09	-0.98	0.46	0.46	-0.21
<2 hrs	1845		0.51	-2.09	-0.97	0.46	0.48	-0.20
<1 hr	1779		0.85	-1.84	-0.70	0.73	0.74	0.07
< 30 min	1682		0.88	-1.85	-0.69	0.70	0.74	0.06
<15 min	1578		0.84	-1.92	-0.77	0.57	0.64	-0.02
<8 hrs	1901	Std	0.36	0.29	0.29	0.28	0.29	0.27
<6 hrs	1893	Error	0.36	0.29	0.29	0.29	0.30	0.27
<4 hrs	1881		0.36	0.29	0.29	0.29	0.30	0.27
<2 hrs	1845		0.37	0.30	0.30	0.30	0.31	0.28
<1 hr	1779		0.39	0.32	0.32	0.32	0.33	0.30
< 30 min	1682		0.41	0.34	0.34	0.34	0.35	0.32
<15 min	1578		0.43	0.36	0.36	0.36	0.37	0.34
<8 hrs	1901	R^2	0.20	0.23	0.32	0.34	0.38	0.36
<6 hrs	1893		0.18	0.22	0.31	0.33	0.36	0.34
<4 hrs	1881		0.19	0.22	0.31	0.33	0.36	0.36
<2 hrs	1845		0.23	0.25	0.35	0.36	0.39	0.37
<1 hr	1779		0.26	0.27	0.38	0.39	0.42	0.39
< 30 min	1682		0.23	0.25	0.34	0.35	0.39	0.36
<15 min	1578		0.20	0.24	0.32	0.33	0.36	0.34

Colour scales  SABER – OH Bias  Error & R^2

Supplemental Table 4. Restrictions on miss time criteria compared for each weighting function. Values are Bias±Standard Error (R^2) for each acceptance range.



Supplemental Figure 4. An example of a SABER temperature profile and its lower resolution MLS-like equivalent. The latter was obtained by convolving the SABER profile with the Aura-MLS averaging kernels specified in Schwartz et al. (2008).