

Ames Airborne Sunphotometer (AATS-14) Operations aboard the UW CV-580 during SAFARI-2000

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Date (2000)	Flt#	Engine On/Off ¹⁾	AATS-14 Unpark/Park	Operator	Raw Data File	Location	General comments	Notes	Potential comparisons with other platforms
10-Aug	1810				AATS-14 not on airplane				
14-Aug	1811	10:26 11:32	10:40 11:27	Schmid	R14Aug00.AF	Pietersburg, to Lanseria, transit flight, no research manoeuvres	AOD ²⁾ <0.01 at cruising altitude. Only partial profile (loss of tracking) during descent into Lanseria where AOD~0.25 (clouds?)	Window cleaning not possible; No Nav Data Feed first 2 min and, 2 min missing around 11:13; Heading valid only at end of flight	
14-Aug	1812	12:16 15:05	12:24 15:04	Schmid	R14Aug00.AG	80 nm NW of center of Johannesburg	Vertical profile (not continuous because loss of tracking, also clouds) near Lanseria AOD=0.35 (clouds) to 0.01 AOD =0.17 at 200 ft Vertical profile (not continuous because loss of tracking, also clouds?) near Lanseria AOD=0.17	Window cleaning not possible; No Nav Data Feed around 14:15 and 14:45	
14-Aug	1813	15:51 16:49		Schmid	AATS-14 not operated (no Sun)	Lanseria to Pietersburg			
15-Aug	1814	6:55 11:15	7:08 11:05	Russell	R15Aug00.AC	Pietersburg to Skukuza (in Kruger National Park), South Africa. Then to about 30 miles west of Skukuza. Return to Pietersburg.	Mostly under clouds. Parked several times. Measurements en route in free troposphere AOD<0.02 (at 9,000 ft). 100 ft runs beneath TERRA overpass (at 0823 UTC) at Skukuza. AOD 0.06? (thru holes in clouds)	Window cleaning not possible	Pietersburg Cimel (but cloudy); 2 Skukuza Cimeles; Skukuza Lidar not operational
17-Aug	1815	7:01 12:13	7:06 12:10	UW	R17Aug00.AB	Pietersburg to south and central Kruger National Park, South Africa. Return to Pietersburg.	Continuous vertical profile after take off. AOD=0.15 to 0.01. Measurements en route at 10,000 ft. AOD =0.01 Vertical profile from 10,000 ft to 100 ft in Kruger National park AOD=0.01 to 0.1. Several gaps due to loss of tracking Physical and chemical measurements at 4,000 ft. Measurements in two smoke plumes (flaming and smoldering combustion). Probably picked up by AATS-14, but need exact times. Measurements on return to Pietersburg. AOD=0.02 at 10000ft. Vertical profile during landing. AOD=0.23 at Pietersburg Several opportunities to derive Layer AODs for closure studies	Window cleaned before sunset Aug-16. From now on regular cleaning	Pietersburg Cimel; Skukuza Lidar operational after 14:30
18-Aug	1816	8:02 13:39	8:14 13:35	UW	R18Aug00.AC	Pietersburg to Medikwe Game Reserve on border of South Africa and Botswana, and return.	Measurements en route. AOD=0.02 at 10000ft. Physical and chemical measurements of smoke from prescribed fire in Medikwe Game Reserve. Plumes probably picked up by AATS-14, but need exact times. Outside plumes AOD=0.2		
20-Aug	1817	6:57 7:05		UW		Flight cancelled on Pietersburg runway			

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20-Aug	1818	7:13 8:19	7:31 8:19	UW	R20Aug00.AB	Pietersburg toward South Africa-Botswana border and return. (Flight terminated prematurely due to radio communication problem with ATC.)	Cruising altitude 2.8 km AOD=0.08 to 0.12 (Gradient). Maybe good case to compare with flux-radiometers	Window cleaned after this flight (not dirty)	
20-Aug	1819	11:24 15:41	11:30 15:36	UW	R20Aug00.AD	Pietersburg to Medikwe Game Reserve on border of South Africa and Botswana, and return.	Physical and chemical measurements in smoke from prescribed fire in Medikwe. Measurements of ambient smoke and haze near Botswana/South Africa border Plumes probably picked up by AATS-14, but need exact times. Outside plumes AOD=0.3.		
22-Aug	1820	6:58 12:35	7:05 12:30	UW	R22Aug00.AD	Pietersburg to Skukuza (in Kruger National Park), South Africa, and return to Pietersburg via Phalaborwa.	Detailed continuous vertical profile (11 horizontal legs between 12500ft asl and near ground;UT: 8:07-10:07) over Skukuza. ER-2 and Terra overpass. AOD near ground =0.4	Window cleaned after this flight (some dirt)	Pietersburg Cimel; Skukuza Cimel; Skukuza Lidar (no data after 9:10), ER-2 lidar, Terra;
23-Aug	1821	11:38 14:48	12:21 14:38	UW	R23Aug00.AD	In vicinity of Pietersburg.	Intercomparisons of aerosol and state parameters with South African Aerocommanders and with rawinsonde launched from Pietersburg Gateway Airport. AOD=0.015 at 4.5 km, 0.5 at landing in Pietersburg. Vertical profile has a gap (loss of tracking)	Instrument started 43 min after engine on. Instrument parked between 1:56 and 2:00	Pietersburg Cimel
24-Aug	1822	6:38 11:30	6:44 10:07	UW	R24Aug00.AB	Pietersburg, South Africa, to Inhaca Island Mozambique.	Profile during ascent from Pietersburg AOD=0.33 to 0.05 (with gaps). Transit to Inhaca Island at 11700 ft asl (7 to 8 UT) passes over Skukuza. AOD=0.06. Climb to 4km, fast descent (8:10 to 8:25) over Inhaca Island: AOD=0.33 . Terra overpass 8:16 UTC. Detailed vertical profile (6 levels, 8:48 to 10:04) over Inhaca Island, Mozambique, with Terra and ER-2 overpasses. Generator failure, no data after 10:04.		Pietersburg Cimel, Skukuza Lidar, ER-2, Inhaca Island Cimel, TERRA
29-Aug	1823	8:22 11:14	8:41 11:08	UW	R29Aug00.AA	Pietersburg to border between South Africa and Zimbabwe, and return.	Profile 10:30-10:48 UT	Instrument started 21 min after engine on. Parked between 10:57-10:59. No data last 10 min. Window cleaned after flight (wasn't bad)	Instrument not started at Terra overpass (8:34 UT), CV-580 was not near ground. TOMS (9:30 UT) CV-580 at 2.7 km therefore no comparison possible
29-Aug	1824	12:45 15:40	1:03 14:27	UW	R29Aug00.AB	Pietersburg to Skukusa, Kruger National Park, South Africa, and return.	AATS-14 not turned on during climb to 11,400 feet. Transit to Skukuza, descend to 900 m (AOD=0.05-0.2) for BRDF circles, 4 passes thru smoke from small smoldering fire (min altitude 625 m)	Many of nav data feed drop outs. AATS-14 stopped 1 hr 13 min before end of flight because operator was instructed to avoid over-heating.	Skukuza Lidar, CV-580 not close enough to ground for comparison with Cimel or Tower instruments.

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31-Aug	1825	8:42 14:21	9:26 14:14	UW	R31Aug00.AC	Pietersburg, South Africa, to central Mozambique coast. North along Mozambique coastline to west of Beria. Return to Pietersburg.	Continuous vertical profile after 12:29-12:44 (heading back to Pietersburg). Profile into Pietersburg (AOD decrease because of spatial inhomogeneity or clouds?)	AATS-14 started 44 min after engine on. Parked 10:56-10:59. No nav data feed until 12.28 UT. Need to get from UW	Pietersburg Cimel
1-Sep	1826	5:32 11:08	5:53 11:04	UW	R01Sep00.AB	Pietersburg, South Africa, to Kaoma, Zambia, to Kasane, Botswana.	Measurements en route to Kaoma. Detailed measurements on prescribed Miombo burn near Kaoma, Zambia. Profile out of Kaoma, Measurements en route from Kaoma to Kasane. Good AOD measurements throughout. Profile during descent into Kasane	AATS-14 not operated during ascent out of Pietersburg	Terra 9:02 UT; Kaoma Cimel
1-Sep	1827	12:29 12:41		UW		Did not take off from Kasane, Botswana, due to recall by ATC.	AATS-14 not turned on		
1-Sep	1828	13:29 15:51		UW		Kasane-Pietersburg	AATS-14 not turned on due to incorrect assumption that Sun would be too low.		
2-Sep	1829	7:36 13:34	7:40 13:26	Schmid	R02Sep00.AB	Pietersburg, South Africa, to Maun, Botswana, and return to Pietersburg.	Good measurements throughout. Variable AOD during constant altitude transit to Maun. Spiral into Maun under TOMS (profile not continuous due to loss of tracking). Total column AOD 0.42. BRDF circles centered on Maun tower. Vertical profile with 5 legs ascending from Maun. Transit to Pietersburg. Profile into Pietersburg	Tansvector not working until 7:46	Maun Cimel not operated; TOMS 9:48 UT
3-Sep	1830	7:02 12:38	7:08 12:22	Russell	R03Sep00.AB	Pietersburg, South Africa, to Sua Pan, Botswana, and return.	Good meas. throughout. Variable AOD during constant altitude transit to Sua Pan. Climb to 15'100 feet. Spiral into Sua Pan under Terra (profile almost continuous). Total column AOD=0.93. 9-10 UT BRDF Circles, then descend near ground AOD now around 0.7; did vertical profile with 3 horizontal legs. Back to Pietersburg		Sua Pan Cimel, Terra 8:52 UT
5-Sep	1831	8:38 14:13	8:48 14:09	Schmid	R05Sep00.AA	Pietersburg, South Africa, to Kaoma, Zambia, to Kasane, Botswana, via Senanga, Zambia.	Clouds above A/C for most of the flight. But Kaoma and Senanga Cimel overpasses should be cloud free. Kaoma AOD=2 (prescribed fire), Senanga AOD=1.5		Kaoma Cimel; Senanga Cimel
6-Sep	1832	7:00 10:58	7:07 10:56	Schmid	R06Sep00.AB	Kasane, Botswana to about 20 miles north of Mongu, Zambia. Return to Kasane.	Good measurements throughout. Very high AODs. Golden Day. Low-level run (500 ft agl) Senanga to Mongu. 100ft run north of Mongu. BRDF measurements over Mongu Tower. ER-2 overhead. 2 vertical profiles over Mongu Lidar, Climb to 17000 ft msl on leaving Mongu airport and still in haze layer!	AATS-14 window cleaned. Was not dirty. Nav data after 7:14	Senanga Cimel; 2 Mongu Cimals, Mongu Lidar was not saving data between 6 and 16 UTC; ER-2
6-Sep	1833	11:33 13:54	11:40 13:51	Schmid	R06Sep00.AC	Kasane, Botswana, to Pietersburg, South Africa.	Transit at altitudes between 7800 ft and 12600 ft asl. Always in BL. Clouds above A/C for some portion of flight.	Parked twice when Sun blocked by clouds for extended time	Pietersburg Cimel
7-Sep	1834	7:55 12:20	8:09 12:17	UW	R07Sep00.all	Pietersburg to Timbavati Game Reserve, near Kruger National Park, South Africa, to Phalaborwa, and return to Pietersburg.	Extensive measurements on large prescribed fire at Timbavati, South Africa, with TERRA and ER-2 overflights. Continuous profile 11:35-11:45 near Kruger heading back to Pietersburg.	No data between 9:06 and 9:19.	Terra, ER-2, Skukuza Cimals and Lidar

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10-Sep	1835				AATS-14 not operated	Transit flight Pietersburg, South Africa to Walvis Bay, Namibia			
11-Sep	1836	8:35 12:22	8:40 11:05	Redemann	R11Sep00.AA	Off central Namibia coast	Purpose of flight: TERRA cloud validation.09:30 – 11:00: cloud studies, AATS-14 parked frequently, no tracking through clouds;11:05: AATS-14 not tracking for rest of flight;	No nav data feed 9:39-9:51; Window in front of longest two wavelengths probably dirty at end of flight. Window cleaning not possible	TERRA 9:42, ER-2, Walvis Bay Cimel down
13-Sep	1837	8:26 14:16	8:40 14:08	Redemann	R13Sep00.AA	Off Namibia coast	Purpose of flight: TERRA and ER-2 underflight for stratus studies; 08:40: after penetration of stratus deck at Walvis Bay AOD: ~0.65; 8:53: AATS-14 parked for cloud in situ studies; 8:53 – 11:13: AATS-14 frequently parked and unparked for attempts of tracking through clouds and at the top of stratus deck (AOD above stratus: ~0.6-0.7); 11:13 – 11:35: spiral ascent above stratus deck - AOD: ~0.6 to 0.1 at 16800ft; 12:25: BRDF measurements with AOD ~0.55; 13:53: AATS-14 tracking through cloud;	No Nav Data Feed 8:48-9:37. Window cleaning not possible. Post-flight analysis shows contamination problem in longest two channels (see Duane's pictures)	TERRA 9:30, ER-2
14-Sep	1838	8:00 12:32	8:13 12:21	Redemann	R14Sep00.AA	Off Namibia and Western South Africa coast, South of Walvis Bay	Purpose of flight: ship plume studies; 08:14: AATS-14 unparked – plan is to keep AATS-14 parked for cloud penetrations because of moisture/dirt collection; 09:02: AATS-14 tracking in post-frontal air, during horizontal leg AOD: ~0.12 to 0.05; 09:50 – 11:25: ship plume studies with AATS-14 tracking; 11:28: short spiral ascent at the edge of high alto-cu deck - AOD: ~0.17 to 0.07;	Window cleaned before and after flight. Window contaminated during flight for 380 nm channel?	Walvis Bay Cimel
16-Sep	1839	7:09 12:45	7:26 12:44	Redemann	R16Sep00.all	Walvis Bay Namibia to Etosha National Park, Namibia and back to Walvis Bay	Purpose of flight: BRDF's over Etosha Pan; 07:26: AATS-14 unparked; 07:45: loss of power for all instruments; 08:07: AATS-14 running again; 08:21: horizontal aerosol gradient, AOD: ~0.3 to ~0.22 08:41: spirale descent over Etosha Pan - AOD: ~0.15 to 0.41 09:16 – 10:43: BRDF studies and spirale ascent over Cimel SP site - AOD: ~0.33 to 0.15 – considerable AATS-14 tracking problems	No data between 7:46 and 8:07. Window dirty after flight. Confirmed by post-mission measurements on Mauna Loa	Walvis Bay Cimel; Etosha Pan Cimel
18-Sep	1840				AATS-14 not operated	Transit flight Walvis Bay, Namibia to Pietersburg, South Africa			

Notes:

1) All times are in UTC

2) All AODs are stated at 500 nm