

IMPROVE II

Flight #1 011128H

<u>Sensor or system</u>	<u>Number or Name</u>
INE	2
Accelerometer	2
Temperature Probe	1
Dew Point Probe	1 (Gen. Eastern))
Altitude (for vertical wind)	Pressure Alt.
Static Pressure	Rosemount Fuselage
Dynamic Pressure	Rosemount Fuselage
Time Source	Micro 99
Constants File	CO2013.CON

Notes:

There were no time/data gaps.

The dynamic attack pressure, DAP, iced-up during the period 2340Z - 2344Z. The erroneous data was removed and replaced via statistical analysis using values from the fuselage dynamic pressure, PQF1, as a reference.

The dynamic slip pressure, DBP, iced-up during the period 212131Z - 010243Z. The erroneous data was removed and replaced with values from the fuselage dynamic pressure, PQF1, using the following equation:

$$DBP = PQF1 + 7.25$$

During the same time, the differential slip pressure, BP, was behaving erratically. However no corrections were done to its values because there was no comparable instrument available.

The data from these two sources could have some impact on the horizontal and vertical wind derivations.

The General Eastern dewpoint probe was balanced from 2017Z - 2022Z. The spike generated by this action was removed and patched over using DW3, the Buck Research dewpoint probe, as a reference.

There were numerous instances where the General Eastern dewpoint probe, DW1, was measuring too warm compared to ambient temperature. The following modifications to the data were done to minimize this occurrence. For the following time frames, DW1 was set equal to DW3, the Buck Research dewpoint probe: 204149Z - 2204350Z, 2215407Z - 215605Z, 234104Z - 2235220Z, 000004Z - 000235Z and 003636Z - 004040Z.

For the following time frames, DW1 was modified with respect to DW3, the Buck Research dewpoint probe using statistical analysis: 2106Z - 2108Z, 2132Z - 2137Z, 2318Z - 2323Z, 2329Z - 2341Z, 2353Z - 0000Z, 0005Z - 0008Z, 0018Z - 0020Z, 0021Z - 0024Z and 0027Z - 0030Z.

There were other instances of this phenomena occurring where it was decided that no modification of the data could not be done.

The Johnson-Williams Liquid Water probe appeared to be iced-up from 2013Z - 2043Z.

All other instruments worked optimally during the flight.

	<u>Takeoff</u>	<u>Landing</u>
Aircraft static pressure	965.5mb	966.0mb
Corrected tower pressure	964.8mb	964.8mb

The aircraft INE positions were renavigated with respect to GPS.

SPECIAL NOTE!!! Locations 80, 81 and 82 of record five on the standard tape contain vertical ground, vertical air and vertical speeds, respectively, computed using Dave Jorgensen's vertical wind algorithm.
It is recommended that these values be used for vertical wind analysis.

Flight Director: A. Barry Damiano, (813) 828-3310 ext. 3073

U.S. Dept. of Commerce/NOAA Aircraft Operations Center

AOCWF1

Flt ID: <u>H011128</u>	From: <u>KPAE</u>	To: <u>KPAE</u>
Flt No.: <u>02-10</u>	Blk In: <u>0122Z</u>	ATA: <u>0115Z</u>
ETD: <u>1600Z</u>	Blk Out: <u>1944Z</u>	ATD: <u>1955Z</u>
ETE:	Blk Time: <u>5:38 (5.6)</u>	Flt Time: <u>5:20 (5.3)</u>
Sponsor Org: <u>OAR</u>	Program: <u>IMPROVE II</u>	Purpose: <u>TOP #1 Box pattern only</u>

AOC Personnel

AC: <u>TALLART</u> ✓	Sys Eng: <u>ROLES</u> ✓
CP: <u>TENNESEN</u> ✓ <u>HALVERSON</u>	Data Sys: <u>McMILLAN</u> ✓
Nav: <u>ADLER</u> ✓	Radar:
FE: <u>FLOYD</u> ✓	GPS/BT:
Avionics: <u>ROGERS</u>	Cld Phys:
FD: <u>DAMIANO</u> ✓	

Participating Scientists/Visitors/AOC

Name (Last, First)	Activity on Aircraft	Affiliation
<u>BOND, N</u> ✓	<u>PI</u>	<u>PMEL / UW</u>
<u>SMULL, B</u> ✓	<u>RADAR</u>	<u>NSSL</u>
<u>STEED, R</u> ✓	<u>DBS</u>	

Proposed/Actual Mission/Remarks (Recco, Fixes, Storm, PENET, NHOP #) prop

7/0 delayed due to snowy conditions at airport
1955Z 130/10
015 BK
2 29.16
Chalk w/ 2041Z
ice on JW 7225Z
Bal DW1 2019Z
Bal DW2 2021Z
DW3 2045Z
DBP med up
2200Z 2320Z
2220Z
DAP med up
2340Z
PT. K → PT. G
@ 13K PA
#2 device failed
went to 16k for
I → D leg

986.8
22
964.8

U.S. Dept. of Commerce/NOAA/Aircraft Operations Center					AOCWF2
Flt ID: H011128		Time Off: 1955Z		Time On: 0115Z	
	A/C (Take Off)	Wx Stn (Take Off)	A/C (Land)	Wx Stn (Land)	
Pressure	965.5	29.14 (964.8)	966.0	29.14 (964.8)	
	Number	Data Disposition/Date/Quality			
Slow/Fast Flt Lvl Tapes	2				
Radar Tapes	1				
Cloud Physics Tapes	1				
Video Tapes	1				
AXBT					
AXCP					
AXCTD					
Dropsondes					
Video					
	Forward	Left Side	Right Side	Down	Remarks
Time On					
Time Off					
Rate					
Remarks					
8-14K <i>ICING mod - 5% v Prime</i> 00582 <i>100/15</i> <i>10 km</i> <i>21100</i> <i>500</i> <i>3</i> <i>2</i> 29.4					

Time	Lat	Long	Trk	Hdg	Wind Dir	Wind Spd	T _a	T _c	Press. Alt.	Geo. Alt.	Sfc Press.	Press. Sfc	Dyn. Press	Remarks
201500	4703	12304	206	211	224	50	-18.7	-19.6	4801	4504	970.6	554.9	75.3	TOP of CLD
202500	4626	12308	180	190	221	68	-18.1	-40.1	4772	4087	933.6	556.8	72.0	ABV CLD
203800	4540	12303	173	187	230	70	-17.6	-34.1	4775	4488	982.6	556.9	74.1	ABV CLD
204853	4501	12302	181	191	229	50	-7.4	-3	2021	1790	986.4	792.6	73.5	PT A IN CLD
210000	4423	12302	182	192	233	47	-1	-0.8	1992	1719	986.8	795.7	75.7	INTN CLD
211020	4349	12302	161	172	237	44	0.3	1.2	2042	1680	971.0	775.7	74.2	PT F IN CLD
211425	4346	12237	66	68	235	61	-2.2	-2.2	2600	1575	894.5	737.4	64.5	PT G IN CLD
212300	4423	12234	0	349	237	61	-3.4	-4.5	2609	2227	963.5	736.9	83.6	IN CLD
213033	4458	12234	17	13	229	47	-3.5	-5.7	2723	2208	949.6	721.4	67.4	PT B BTW CLD
213455	4501	12208	110	120	235	71	-9.3	-9.2	3513	2474	904.7	656.3	71.9	PT C THN CLD
214500	4424	12205	180	192	243	57	-8.7	-8.3	3518	1729	813.3	656.3	78.8	IN CLD
215530	4348	12205	135	170	234	69	-7.5	-6.0	3561	1934	821.3	647.5	71.8	PT H INCLD
215945	4346	12137	102	112	244	87	-12.9	-12.6	4691	3247	848.4	582.0	55.3	PT I INCLD
221300	4437	12137	359	346	229	70	-15.7	-21.3	5042	3402	832.1	537.3	78.5	BTW THN CLD
221705	4459	12137	4	354	222	76	-16.4	-20.4	5007	3742	870.3	545.6	74.0	PT D OUT OF CLD
222100	4503	12111	98	100	238	71	-6.6	-8.4	3210	2046	881.1	682.9	77.2	PT E
223200	4423	12108	181	193	251	70	-5.9	-6.0	3207	2169	894.4	682.6	78.3	INTN CLD
224215	4346	12108	174	189	244	88	-3.7	-6.5	3208	1242	797.7	682.8	69.4	PT J
224700	4357	12109	323	308	242	73	-2.6	-8.5	3207	1841	857.3	682.7	82.2	IN CLR
225405	4419	12132	326	316	243	60	-7.0	-7.1	3302	1878	884.6	682.7	70.3	PT K IN CLD
230700	4407	12156	234	236	237	56	-12.9	-12.8	4132	2554	842.5	606.0	75.2	PRECIP (RAZ)
231740	4348	12237	235	236	254	81	-12.2	-11.2	4128	2671	842.5	607.1	55.6	PT G
233300	4431	12234	357	351	230	73	-5.1	-4.7	2616	1740	920.9	735.9	74.1	INTN CLD
233940	4500	12234	2	356	236	72	-3.7	-15.4	2628	2143	952.9	730.3	72.1	PT B NO CLD
234542	4501	12205	179	188	234	49	-10.8	-10.2	3533	2668	916.5	654.7	69.3	PT C
235600	4423	12205	181	194	257	77	-10.3	-21.7	3531	2079	848.5	654.8	75.3	IN CLD
000605	4348	12203	170	184	239	61	-9.4	-10.3	3615	1795	809.2	654.7	73.2	PT H
001043	4346	12137	359	349	241	55	-12.6	-13.6	4127	2597	837.5	606.2	76.7	PT I
001800	4421	12137	1	348	239	71	-13.8	-37.0	4127	2674	849.3	606.3	82.2	BTW CLD
002610	4501	12137	358	350	243	59	-14.4	-38.4	4181	2526	828.0	598.3	74.7	PT D
010200	4741	12234	354	350	203	40	1.3	-1.3	1446	1165	986.1	852.7	75.4	BTW CLD

100/12 5sm -RA 32 29.16
1900 SKW
3000

10K 32 29.14
13K

2048
2245

NOAA • AOC • SED Flight Performance Log

Aircraft : N42RF

Project : IMPROVE 01

Mission : IMPROVE 01 - 1SED Crew: Roles, Rogers, McMillanFlight ID : 0111284Pre-Flight: 1330zTake-Off: 1955Landing: 0116

System			Pre-Flight	In-Flight	Post-Flight		
NAV	INE #1	Aligned to :	STM				
	INE #2	Aligned to :	STM				
	GPS		STM		Lat	Long	GS
RADAR	Nose		STM				
	L/F	R/T SN :	STM				Mod Switch Off ? ☒
	Tail	R&T SN : /	STM				Mod Switch Off ? ☒
	MARS Data System	DA ②	STM	Start: 2005 Stop: 0108			# DATs : 1
PMS	2DG-C	Ch 1/64: /	STM				
	2DG-P	Ch 1/64: /	STM				
	FSSP	Ref VDC:	STM				
	SEA Data System		STM	Start: 2044 Stop: 0100			# DATs :
TEMP		Cal High	Cal Low			Cal High	Cal Low
	Temp #2	+30.4	-30.3	STM/MER		20.2	+30.9
	Temp #1			STM/MER			
	Dewpoint #1			①			
	Dewpoint #2			STM/MER			
PRES	Attack Angle (AP/DAP)		STM/MER				
	Slip Angle (BP/DBP)		STM/MER				
	Differential (PQ1/PQ2/PQ3/PQ4)		STM/MER				
	Absolute (PS1/PS2)		STM/MER				
	Radome Transducers Plugs ②		JR				
	Cabin Transducer (Station 5)		STM/MER				
FLTLVL	Apn-159	SN: CN-1	STM				Off ? : ☒
	Apn-232	SN: 1797	STM				Off ? : ☒
	King Liquid Water		JR				
	J&W Liquid Water		JR				
	Down PRT-5 (SST)		STM				
	Side PRT-5 (CO ²)		STM				
	Up PRT-5 Shutter?		STM				Shutter? ☒
	RAMS Data System	DA ② CPU: A ②	STM	Start: 1941 Stop: 0122			Errors 8: 9: # DATs :
	F/D Laptop		STM				
	C.I. Printer			Start: 1939 Stop: 0122			
ASDL Mission#		NA	Freq Time: Blk Time:				
MISC	Exterior Walk Around		STM				
	Video	④ ① ② ③ ④	MER	Start: 1944 Stop: 0108			VHS / S-VHS 2 / ②
	FCU	- A - B - C -	STM				UPS Off : ?
USER							Accelerometers
							#1 (2 G):
							#2 (2.5 G):
							#3 (3 G):

clip 14 2123 top of front.
 16 2139 top of front
 2208 request

Please Note any Discrepancies

[illegible]

SN 18069 new head
52354 ok

0/00

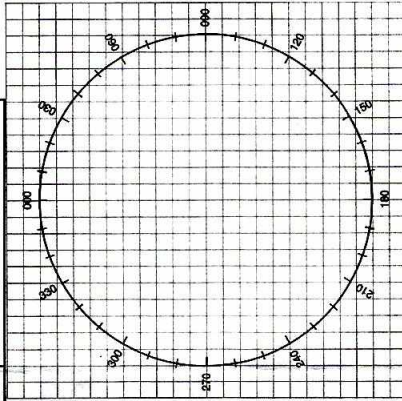
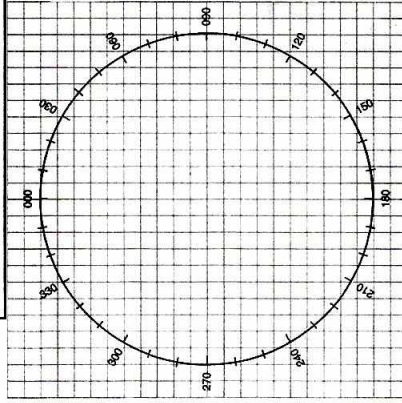
2040

D1 2m 287--142

CLEARANCES			
FREQ	ALT	HDG	OTHER
			16K
			R210° 73K
			R230
			R210° 79K
			711K
			715K
			L190°
			7L R

TIME	FIX TYPE	POSITION	INS 1 POSITION	K ERR	INS 2 POS
1936	2N6				
1941	2N1				
1944	Black				
1955	740				
2001	XV	47 43.7 122 53.7	47 44.0 122 33.6	-1.3 +1.1	47.4 122
2032	Δ	46 00.9 123 05.7	46 01.8 123 03.2	-1.9 +2.5	46 123.0
2132	Δ	45 01.1 122 21.3	45 03.1 122 21.3	-2.0 +0	45 122.2
2210	Δ^+	44 21.4 121 37.1	44 23.2 121 33.3	+1.8 +3.8	44.2 121.3
2310	Δ^1	44 00.7 122 07.8	44 04.0 122 05.2	-3.3 +2.6	43.5 122
0018	Δ^1	44 20.6 121 30.5	44 24.9 121 32.7	-4.3 +2.8	44.1 121.3
0115	A 1	LAND FAE			
		47 54.4 122 17.1	47 58.0 122 16.1	-3.6 +6.9	47 122

MISSION LOG	PAGE ____ OF ____
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POSITION REPORT

- 1. POSITION**
- 2. TIME**
- 3. ALTITUDE**
- 4. NEXT POSITION**
- 5. ETA**
- 6. NEXT POSITION**

EMERGENCY MESSAGE

TRANSMIT THE FOLLOWING MESSAGE TO ANY AGENCY ON THE AIR-GROUND FREQUENCY IN USE. IF UNABLE TO ESTABLISH COMMS, ATTEMPT CONTACT ON ANY OF THE FOLLOWING EMERGENCY FREQUENCIES:

UHF/VOICE	VHF/VOICE	MF/VOICE	HF/CW	MF/CW
243.0	121.5	2182 KHZ	8364 KHZ	500 KHZ

**MAYDAY, MAYDAY, MAYDAY
THIS IS NOAA . NOAA**

- POSITION _____ N/S _____ E/W AT _____ Z _____

- HEADING _____ TRUE/MAG _____
- AT _____ KTS TRUE/INDICATED _____

- FLIGHT LEVEL OR ALTITUDE _____
- WE ARE A P-3 AIRCRAFT WITH _____

- NATURE OF EMERGENCY
- ASSISTANCE DESIRED

- PILOT INTENTIONS

- WE HAVE _____ ENDURANCE REMAINING

[illegible]