Photo courtesy of Vanda Grubisic

University of Wyoming
Department of Atmospheric Science
T-REX Field Site

March - April 2006

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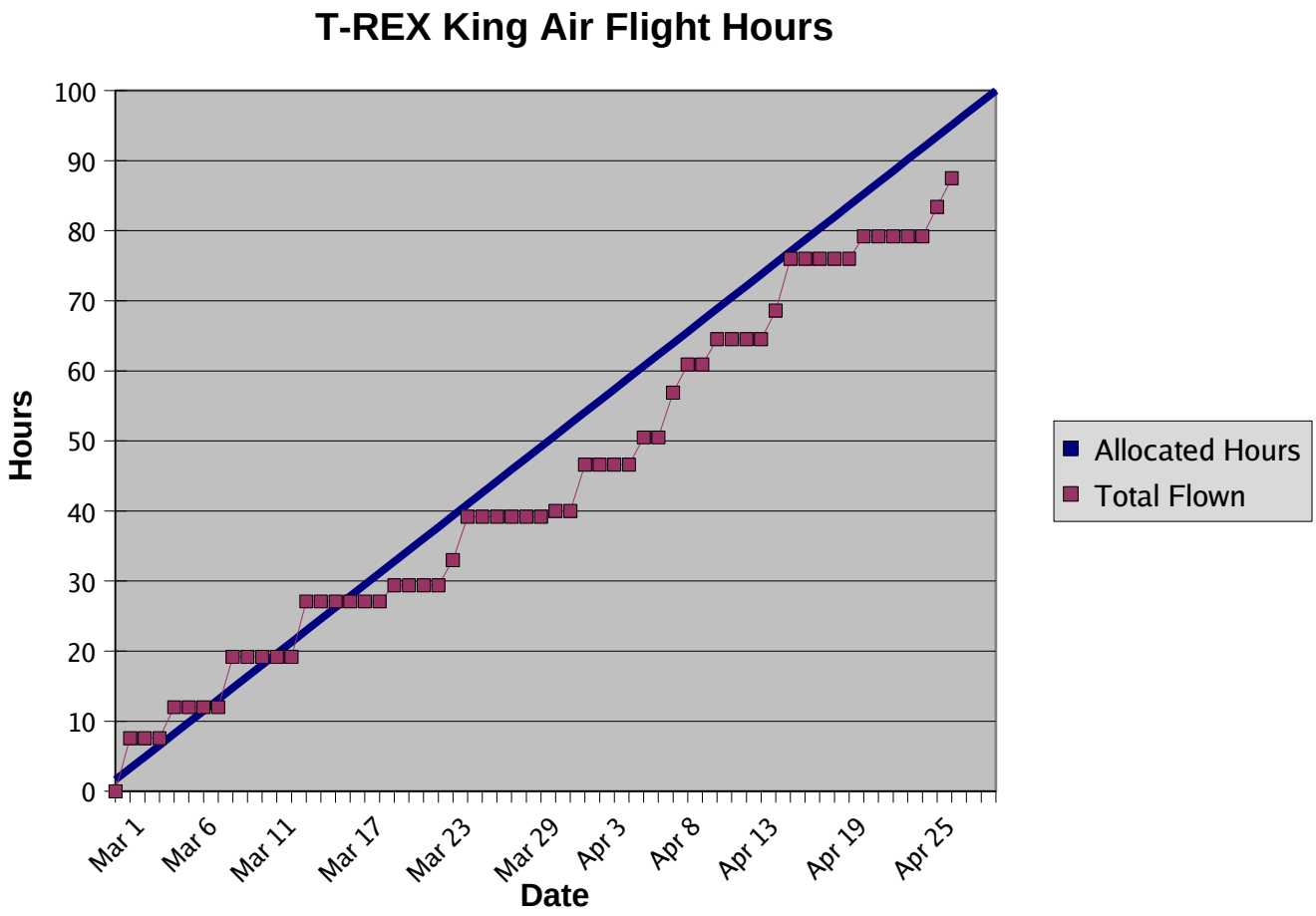
Links

- Contacts
- EOL Site
- Plot of Flight Hours
- Flight Data (contact Larry Oolman for password)
- Radar Quick Looks
- News Release
- King Air photo from Vanda Grubisic on Hiaper

Date	Flight # (*.kml)	Status	Notes	Times (UTC)	Hours
29 May 2007	Re-processed data with quality flag 'trex06_qc3'; Mar02, Mar05, Mar09, Mar14 flights use secondary airspeed measure (bias)				
27 Apr 2006 (Thu)	IOP-15 flt-2	No know problems.		1329-1731	4.1
26 Apr 2006 (Wed)	IOP-15 flt-1	No know problems. Radar ran entire flight.		1438-1844	4.2
21 Apr 2006 (Fri)	IOP-14 flt-1	Radar faulted repeatedly late in flight.		1442-1751	3.2
16 Apr 2006 (Sun)	IOP-13 flt-3	No known problems.		2155-0152	4.1
16 Apr 2006 (Sun)	IOP-13 flt-2	No known problems. Radar run only briefly of Sierra cap cloud.		1555-1910	3.3

15 Apr 2006 (Sat)	IOP-13 flt-1	Radar faulted several times. Few clouds, weak waves.		2129-0129	4.1
11 Apr 2006 (Tues)	IOP-12 flt-1	very weak waves, 2 km thick clouds over Sierras, data system cratered at end of flight	JF notes	1629-2005	3.6
9 Apr 2006 (Sun)	IOP-11 flt-1	well defined rotor cloud, good images with radar, data system craters in flight, two files (20060409; 20060410)	JF notes	2201-2600	4.0
8 Apr 2006 (Sat)	IOP-10 flt-2	Waves at ridgetop and above, no clouds for radar	JF notes	2229-2450	2.5
8 Apr 2006 (Sat)	IOP-10 flt-1	Waves at ridgetop and above, no clouds for radar	JF notes	1401-1748	3.9
6 Apr 2006 (Thurs)	Intercomparison	Intercomparison with BAE146 and Hiaper	JF notes	1642-2024	3.9
2 Apr 2006 (Sun)	IOP-9 flt-2	Radar down, PM flight, weak waves at ridge crest and above	JF notes	1932-2253	3.4
2 Apr 2006 (Sun)	IOP-9 flt-1	Radar down, AM flight, weak waves at ridge crest and above	JF notes	1432-1741	3.3
31 Mar 2006 (Fri)	IOP-8 flt-1	Radar down, flight aborted due to mechanical problems	JF notes	2151-2234	0.6
25 Mar 2006 (Sat)	IOP-6 flt-3	Radar down, flight short due to G-Load exceedance	JF notes	2214-2417	2.2
25 Mar 2006 (Sat)	IOP-6 flt-2	Radar down, Strong waves, rotor circulation in valley	JF notes	1604-2004	4.0
24 Mar 2006 (Fri)	IOP-6 flt-1	Radar down, weak waves above ridge crest	JF notes	2152-2528	3.6
20 Mar 2006 (Mon)	IOP-5 flt-1	Radar down		2102-2315	2.3
19 Mar 2006 (Sun)	Test flight	Radar modulator is leaking oil. Wind calibration maneuvers.		1810-1943	
14 Mar 2006 (Tue)	IOP-4 flt-2	No known problems.		2233-0208	3.7
14 Mar 2006 (Tue)	IOP-4 flt-1	No known problems.		1630-2038	4.2
09 Mar 2006 (Thu)	IOP-3 flt-2 20060309b 20060310a	Data system crashed in turbulence, data split into two files: 20060309b and 20060310a.		2228-0156	3.6
09 Mar 2006 (Thu)	IOP-3 flt-1	No known problems.		1630-2003	3.6

05 Mar 2006 (Sun)	IOP-2 flt-1	No known problems.		2156-0212	4.4
02 Mar 2006 (Thu)	IOP-1 flt-2	No known problems.		2230-0229	4.1
02 Mar 2006 (Thu)	IOP-1 flt-1	Clear, no radar data.		1627-1951	3.5
28 Feb 2006 (Tue)	Test flight			2139-2258	
Total Research Hours		87.5 of 100		12.5 Remain	


T-REX King Air Flight Hours
Hours
100
90
80
70
60
50
40
30
20
10
0
Mar 1
Mar 6
Mar 11
Mar 17
Mar 23
Mar 29
Apr 3
Apr 8
Apr 13
Apr 19
Apr 25
Date
Allocated Hours
Total Flown

Photograph courtesy of Vanda Grubisic, Desert Research Institute

TREX06: 20060411a
IOP-12: Flt-1

Flight notes: System Scientist (3rd seat)

Crew:
Pilot: Don Cooksey
Flt Scientist: Ron Smith
System Scientist: Jeff French
4th Seat: Yanping Li

Pre-flight:
One-half hour delay in takeoff, needed to switchout 4th-seat radio control unit

Cap cloud over mountain, appears being blown into valley??

Weather Conditions at Bishop: scattered, wind: 150 @ 7 gusting 25 kts, T=10C, DewPt=-2C

Flight:
1630: takeoff
up to 1652: sounding, surface to 750 mb, conditionally unstable, relatively dry (dewpt depression ~10-15C), winds out of south at 5-10 m s^{-1}; from 750 to 650 mb, winds turn with height to 240 at 21 m s^{-1}, above 650 mb, direction constant with height, winds ~25 m s^{-1}
1652: begin leg 1, FL250 tracking west, winds 240 at 39 m s^{-1}, weak wave ~1 m s^{-1} amplitude
1653: begin radar file (16-53-15) dualdown500 (longer range)
1710: end leg, turn and descend
1712: begin new file (17-12-57) dualdown250 (shorter range, better resolution)
1715: begin leg 2, FL210, tracking east, primary (no secondary waves) ~3 m s^{-1} down
1725: end leg, turn and descend to FL150
1732: begin box 1, FL150, west side of box constrained by clouds extending over valley
1745: end box 1
1748: begin box 2, repeat of 1 at FL150
1757: end box 2, descend to FL130
1800: begin new radar file (18-00-34) uplooking
1801: begin box 3 at FL130
1804: end box, too many clouds at this level (ice being blown from orographic cloud on Sierras extends halfway across Owens valley), descend to FL080 to get under clouds
1812: begin box 4, FL080
181930: end box 4
1822: begin box 5, repeat of 4 at FL080
1827: end box 5, ascend to FL250 to try to repeat entire pattern
1840: begin new radar file (18-40-47) dualdown500
1842: begin leg 3, FL250, tracking west, very weak vertical motion (<1 m s^{-1})
185830: end leg 3
1900: ????new radar file?????

1901: begin leg 4, FL210 tracking east, no waves apparent
1913: end leg 4, descend to FL150 to setup for box
1915: new radar file (19-15-53) up/dualdown
191830: begin box 6, FL150
1930: end box 6
1932: begin box 7, FL150
1940: end box 7, descend to FL080 (clouds too thick at FL130)
1943: new radar file (19-43-41) uplooking

1948: data system craters, since very near end of mission, decide to RTB
2005: touchdown

Post-flight/impressions

No waves really apparent today, but nice images of cap cloud over Sierras with radar

TREX06: 20060409a & 20060410a
IOP-11: Flt-1

Flight notes: System Scientist (3rd seat)

Crew:
Pilot: Don Cooksey
Flt Scientist: Larry Armi
System Scientist: Jeff French
4th Seat: Ron Smith

Pre-flight:
Expect rapidly changing system, some cu along just downstream of ridge at takeoff time, cap cloud evident

Weather Conditions at Bishop: scattered, wind: 140 @ 7 gusting 15 kts, T=19C, DewPt=-11C

Flight:
2202: takeoff
up to 2220: sounding, surface to 700 mb very well mixed, dry adiabatic; from 700 to 500 (and above) mostly following moist adiabat. Winds in valley out of the south becoming SSW above ridgetop, increasing from 10 to 35 m s^{-1} at FL230
2217 begin radar file (dualdown??) looking at clouds over Sierras(??)
222230: on a line at FL250 over Sierra crest, tracking west(?)
2224: end radar file, scope output looks funny though radar display looks OK, off/on scope, looks OK now
2228: begin new radar file (22-27-56) dualdown, look at clouds over Sierras(?)
2235: begin leg 1, FL250, start from west point, tracking east, waves –1.5/+2.0/-1.8/+1.0 m s^{-1} wavelength ~15 km
2245: end leg and descend to FL200
2248: begin (?) leg 2, FL200, track east, -2.5/+2.4/-2.3 m s^{-1}
2302: end leg, turn and ascend to FL210
2306: on leg 3, FL210, tracking west
2309-2311: (approx.) over rotor/roll cloud, strong echo on the radar!!
2312: turn 180, aim for hole in clouds to duck under rotor/roll cloud
2317: stop radar, switch to uplooking mode, begin new file
2318: under rotor/roll cloud at FL120, radar uplooking, good return
232430: FL110, tracking east cross valley, extend leg to just past crest of Inyos
2332: turn, setup for next leg, tracking west
233320: on track, FL100
2339: end L leg, turn out over valley, descend to FL090
2344: on track, tracking east at FL090
2348: end track on east end, descend
235230: on track, tracking west, FL080

2355: data system crater, reboots itself, restart data collection program, stop radar file

0003:data system back up
001013: begin new radar file, uplooking
0017: hit big bump, G-3.08 according to data system, G-3.2 according to backup (secondary device)
0034: climbing along rotor/roll cloud front, ascend back to FL250, stop radar to load dual down mode
0040: climbing, tracking west to point over Sierras, cap cloud has changed considerably from earlier in flight, 'thinned out' with some weak cumuliform at ridge crest
0043: begin new radar file (uplooking, 00-43-22)
0045: (??) begin leg eastbound, FL250
0052: end leg, descend
005530: begin leg, tracking west, FL210, just above cloud tops
0104: pass over rotor/roll cloud, shows up nicely on radar
0109: end leg, ascend
0110: begin leg, tracking east, FL220
011245: over rotor/roll, shows up on radar, weakening somewhat??
0115:end leg, descend into Owens valley between clouds, setup for x-valley legs
0118: end radarfile
011820: start new radar file, uplooking
0121: FL150, tracking west, cross valley
0131: end track, turn out over valley, descend
0135: on track over Independence, FL120
2536: headed east, descend to FL100

0142: data system craters, mission nearly over, decide to RTB
0200: Touchdown

Post-flight/impressions

Very nice case, good images with radar, case evolved and changed rapidly

TREX06: 20060408b
IOP-10: Flt-2

Flight notes: System Scientist (3rd seat)

Crew:
Pilot: Don Cooksey
Flt Scientist: Larry Armi
System Scientist: Jeff French
4th Seat: Don Lukens

Pre-flight:
Severe clear, radar is working, but no clouds around

Weather Conditions at Bishop: Clear, wind: 150 @ 15 gusting 22 kts, T=20C, DewPt=-4C

Flight:
2249: takeoff
2235: Perform full circle (right wing down) with radar in side/dualdown to test radar by getting ground return
2251: at FL250 at west end of pattern (over Sierras)
2257: begin leg 1, FL250 tracking east, weak wave, +/- 1 m s^{-1}
230830: begin leg 2, FL200 tracking west, weak wave –2.1 m s^{-1}/+1.2 m s^{-1}
232345: begin leg 3, FL180 tracking east, slightly stronger at this level, +2.5/-3 m s^{-1}
2334: begin leg 4, FL160 tracking west, +3/-4 m s^{-1}
2349: begin leg 5, FL140 tracking east, no waves, some light chop over crest of Sierra
2359: begin leg 6, FL120, now in valley, turn at Sierras, no waves
0009: begin leg 7, FL100, tracking east, no waves
0018: begin leg 8, FL080, tracking west, no waves
0025: begin leg 9, FL060, tracking east, no waves
003130: begin leg 10, 500 ft AGL, tracking west
0051: Touchdown

Post-flight/impressions
Weak waves at ridge top and above, no penetration into valley, only single wave (nothing downstream

TREX06: 20060408a
IOP-10: Flt-1

Flight notes: System Scientist (3rd seat)

Crew:
Pilot: Kevin Fagerstrom
Flt Scientist: Jim Doyle
System Scientist: Jeff French
4th Seat: Andreas Wieser

Pre-flight:
Severe clear, radar is working, but no clouds around

Weather Conditions at Bishop: Clear, wind: 270 @ 3 kts, T=3C, DewPt=-4C

Flight:
1400: takeoff
up to 1415: climb to FL205, sounding towards east end point, reasonably stable from surface to ridge crest (~650 mb), wind southerly below 750 mb, northerly from 750 to 700 mb, switching to westerly above 700 mb. Wind speed light from surface to 650 mb, from 650 to 575 mb: wind increasing ~linearly with height from 5 m s^{-1} to 27 m s^{-1}; above 575 mb, wind speed 25 to 30 m s^{-1}.
1417: begin leg 1, FL205, climbing to FL250 on leg (made FL250 over east side of valley, 1423), waves +/- 1.5 m s^{-1}
1440: begin leg 2, FL220, tracking east, waves +/-2 m s^{-1}, ~4 waves, wavelength ~14 km (trof→trof ~100 s @ 140 m s^{-1} ground speed)
1454: begin leg 3, FL 190, tracking west, waves 2.5 m s^{-1}, 3-4 waves, wavelength ~13.8 km
1516: begin leg 4, FL160, tracking east waves +/-3.5 m s^{-1}, completely smooth, 6 waves
1531: begin box 1, FL130, slight chop across valley (in both directions, no distinct waves signature imbedded in the turbulence (that I can tell), in leg along Sierra, relatively smooth with vertical velocity ~1.5 m s^{-1}
1548: end box 1, descend to FL100
1552: begin box 2, FL100, no wave signature apparent, light chop across valley
1602: end box, descend
1605: begin box 3, FL070, smooth throughout valley
1614: end box, ascend to FL220 to repeat high-level legs
1626: begin leg 5, FL220, tracking west, wave amplitude 1-1.5 m s^{-1}
1647: begin leg 6, FL190, tracking east, waves –3.5/+1.5 m s^{-1}, ~4 waves
1658: begin leg 7, FL190, tracking west, waves –3/+1.5 m s^{-1}
1719: begin leg 8, FL180, tracking east, waves –4/+2.5 m s^{-1}
1731: RTB
1749: Touchdown

Post-flight/impressions

Weak to moderate waves at ridge top and above, no penetration into valley, at times signatures of as many as 4 complete oscillations

Data system cratered on taxi way after touchdown, no data lost

TREX06: 20060406a
Intercomparison

Flight notes: System Scientist/Flight Scientist (3rd seat)

Crew:
Pilot: Kevin Fagerstrom
Flt Scientist: Jeff Styles (camera)
System Scientist: Jeff French (also flight scientist)
4th Seat: John Adair

Pre-flight:
Radar down. Repairs on the modulator being done at ProSensing.
No other instrument issues

Weather Conditions at Bishop: Clear, wind: calm, T=8C, DewPt=-8C

Plan to conduct inter-comparison with BAE146 and separately with Hiaper.

Right seat occupied by camera person to get footage of comparison with Hiaper and document TREX for NSF

Flight:
1642: takeoff
up to 1700: climb to FL230 towards west end point for sounding and to meet with BAE146. Through the valley from surface to 700 mb: winds northerly, between 340 & 360 degrees, wind speed increases from surface to 700 mb (0 at sfc; ~ 9 m s^{-1} at 700 mb). Very dry and stable through the depth. Wind remains northerly up to FL170 and increases to 18 m s^{-1}.
1700 BAE146 pass over our position as we pass through FL210

COMPARISON WITH BAE146
1704: begin leg 1, tracking east at FL230
170924: BAE passes off right wing tip (after passing BAE slides out to let us pass, then slides in behind, this is repeated on each of the subsequent legs)
171438: BAE passes off right wing tip
1715: end leg 1, turn south
1722: begin leg 2, tracking west at FL230, encounter a bit of wake turbulence, climb ~200 ft to get out of wake
172526: BAE passes off right wing tip, wind 301 deg at 24 m s^{-1}
173018: BAE passes off right wing tip, wind 302 deg at 22 m s^{-1}
173250: end leg 2, turn north, descend to FL 180
1742: begin leg 3, tracking east at FL180, weak wave over Sierra Crest (+/- 1 m s^{-1})
174339: BAE passes off right wing tip, wind 302 deg at 19.5 m s^{-1}
175013: BAE passes off right wing tip, wind 312 deg at 20 m s^{-1}
175220: end leg 3, turn south
1759: begin leg 4, tracking west at FL180

180423: BAE passes off left wing tip, wind 314 deg at 18 m s^{-1}
180907: BAE passes off left wing tip, wind 306 deg at 18 m s^{-1}
181015 end leg 4

speed upto IAS of 180 kts for formation/photo op with BAE
1814-181545: formation with BAE
1816: break off with BAE146, ascend to FL220 to meet up with Hiaper

COMPARISON WITH HIAPER
182930: begin leg 1, tracking east at FL220, wind 297 deg at 22 m s^{-1}
183100: cross Hiapers wake, very brief
183608: Hiaper off left wing tip, wind 298 deg at 24 m s^{-1}
183838: end leg 1, turn south
184715: begin leg 2, tracking west at FL220, wind 302 deg at 24 m s^{-1}
185247: Hiaper off left wing tip, wind 302 deg at 22 m s^{-1}
190344: end leg 2, turn north, descend to FL180
191200: begin leg 3, tracking east at FL180, wind 307 deg at 16 m s^{-1}
192157: Hiaper off left wing tip, wind 306 deg at 20 m s^{-1}
192430: end leg 3, turn sourth
193200: begin leg 4, tracking west at FL180, wind 305 deg at 18 m s^{-1}
194242: Hiaper off left wing tip, wind 304 deg at 14 m s^{-1}
194930: end leg 4

195255: tracking east, pick up speed to IAS 180 kts
195950: Hiaper passes just off right wing tip for photo op

200000: RTB
202500: on ground

Post-flight/impressions
Wonderful weather for inter-comparison flight. Four very good comparison legs with each aircraft.

Data system cratered on taxi after landing. System rebooted itself. Did not affect data.

TREX06: 20060402c
IOP-9: Flt-2

Flight notes: System Scientist (3rd seat)

Crew:
Pilot: Kevin Fagerstrom
Flt Scientist: Jim Moore
System Scientist: Jeff French
4th Seat: Wolfe Herold

Pre-flight:
Radar down. Repairs on the modulator being done at ProSensing.
No other instrument issues

Limited to ~3 hour mission, fly with Aux tanks empty due to bad 'flapper' valve

Weather Conditions at Bishop: Clear, wind: 310 @ 3 kts, T=1C, DewPt=-6C

Data system cratered on taxi to runway, no apparent reason why, System automatically rebooted and ran fine during flight

D. Lukens found fibers in SatCom connector (at base of phone) between flt 1 & 2, SatCom appeared to work fine throughout this flight

Flight:
1932: takeoff
up to 1946: climb to FL220 towards east end point for sounding, well mixed, dry adiabatic from surface to 800 mb, weak inversion from 800 to 775 mb, wind speed ~ 2-4 m s^{-1} from surface to 650 mb, increasing above that level, wind direction is southerly below 725 mb and switches to westerly above that level. Elevated inversion between 600 and 550 mb (subsidence??) with a peak in wind speed of ~20 m s^{-1}.
1948: FL220, over center of Saline valley, begin leg 1, tracking west, very smooth wave, +1/-2 m s^{-1}, very thin clouds on west end over western Sierras
2008: turn and descend to FL190, begin leg 2, tracking east, -2.9/+1.5 m s^{-1}, located at crest
2020: turn and descend to FL170, begin leg 3, tracking west, +1.7/-2.4 m s^{-1}, very smooth, apparent wavelength ~15 km
2039: turn and descend to FL150, begin leg 4, tracking east, +3.7/-2.8 m s^{-1}, a few cumuli at ridge crest, manage to avoid most, less than in AM flight
2052: on east end, turn and descend to FL130 to begin box, only very weak wave activity apparent, perhaps +/- 1 m s^{-1}, some light chop with vertical velocities of roughly same magnitude
2109: east end of box, descend to FL090, no apparent wave activity
2120: end box, decide to ascend to FL220 and repeat upper level legs
2127: on east end, climbing through FL200 begin box tracking west, continue to climb

212920: make FL220, strongest wave appears slightly east of ridge over west end of Owens Valley, -2/+1.2 m s^{-1}

2143: turn and descend to FL190 begin leg tracking east, waves of magnitude: -2.3/+2.6/-2.7 m s^{-1}

2156: turn/descend to FL170, begin leg tracking west, -2.8/+2(??) m s^{-1}

2215: turn/descend to FL150, begin leg tracking east, -2/+3.4 m s^{-1}, some light turbulence right at ridge crest, clouds at crest have now dissipated

2227: on east end, turn and descend to FL130 to do one more box, a little chop, perhaps weak wave in valley

223920: end box, climb to FL160 to get in smooth air, J French & W Herold switch seat to allow W Herold some film from 3rd seat.

2240: RTB

2253: Touchdown

Post-flight/impressions

Weak waves at ridge top and above, strongest sampled waves at FL150, decaying somewhat at higher altitudes. Waves did not appear to penetrate into valley. Very similar conditions found in AM flight.

TREX06: 20060402a
IOP-9: Flt-1

Flight notes: System Scientist (3rd seat)

Crew:
Pilot: Kevin Fagerstrom
Flt Scientist: Jim Doyle
System Scientist: Jeff French
4th Seat: Honza Rejmanek

Pre-flight:
Radar down. Repairs on the modulator being done at ProSensing.
No other instrument issues

Limited to ~3 hour mission, fly with Aux tanks empty due to bad 'flapper' valve

SatCom not working during flight, message on phone continued to read 'Rotate antenna for Global Star' throughout entire flight.

Weather Conditions at Bishop: Clear, wind: 310 @ 3 kts, T=1C, DewPt=-6C

Flight:
1431: takeoff
up to 1447: climb to FL220 towards east end point for sounding, several inversions within the valley, highest is an isothermal layer between 650 and 600 mb. Winds above 650 to top of sounding, winds are 270 deg with wind speeds of ~ 20 m s^{-1} at 550 mb.
1448: begin leg 1 at FL220, tracking west, weak waves ~ +/-1.5 m s^{-1}, largest amplitude just over ridge (or slightly west of ridge)
1508: 90/270 turn, begin leg 2, at FL190, tracking east, wave a bit stronger, +/- 2 ms^{-1}, stacked vertically, aligned with wave in previous leg
1520: turn and descend to FL170, begin leg 3, tracking west, +/- 2 m s^{-1}, once again stacked with waves at higher altitudes. Wavelength roughly 13 km (actually longer, after flight realize that conversion is slightly off, perhaps wavelength of 16 km???)
1541: turn and descend to FL150, begin leg 4, tracking east, +/- 3 m s^{-1}, waves strongest at this altitude, some cumuliform clouds over ridge, experience +/- 7 m s^{-1}, but this not associated with wave (non-coherent)
1554: turn and descend to FL130, will start box on this run, bit of a chop across valley, perhaps some coherent structure, +/- 1 m s-1, Note turbulence also about the same magnitude.
1607: east end of box, descend to FL110, some light chop coming across valley, less than FL130, no wave structure evident
1622: east end of box, descend to FL090, smooth going across valley, no wave structure evident, a bit of chop on east end over the Inyo's
1636: east end of box, descend to FL070, smooth over entire box
1646: end boxes, climb to FL220 to repeat highest two legs

1657: FL220 e end of valley, begin leg, tracking west, wave magnitude +0.8 m s^{-1}, -1.7 m s^{-1}
1714: turn, descend to FL190 begin leg tracking east, wave –2.5 m s-1, +1.5 m s^{-1}
1725: end leg, RTB
1740: touchdown

Post-flight/impressions

Weak waves at ridge top and above, strongest sampled waves at FL150, decaying somewhat at higher altitudes. Waves did not appear to penetrate into valley.

TREX06: 20060331a
IOP-8: Flt-1

Flight notes: System Scientist (3rd seat)

Crew:
Pilot: Kevin Fagerstrom
Flt Scientist: Vanda Grubisic
System Scientist: Jeff French
4th Seat: Ron Calhoun

Pre-flight:
Radar down. Repairs on the modulator being done at ProSensing.
No other instrument issues

Weather Conditions at Bishop: Clear, wind: 150 @ 22 kts, gusting to 31, T=14C, DewPt=-1C

Flight:
2159: takeoff
upto 2220: climb to FL210 towards east end point for sounding, sounding indicates well mixed fr/ sfc to 750 mb, small cap with sig. drying above. Convectively unstable to 650 mb w/ another inversion at this level, wspd increases at 650 mb and above to 15-20 m s^{-1}.
2223: note fuel coming out of area around filler cap on left (outboard) main, decision is made to RTB to investigate problem.
2234: land at Bishop

Post-flight/impressions
Left main (outboard) tank pressurized at altitude and remained pressurized after landing. Fuel cap apparently well seated. Testing on the ground indicate that left main pressurizes causing fuel to spill when aux tank is not empty.

TREX06: 20060325b
IOP-6: Flt-3

Flight notes: System Scientist (3rd seat)

Crew:
Pilot: Kevin Fagerstrom
Flt Scientist: Larry Armi
System Scientist: Jeff French
4th Seat: Bryan Woods (?)

Pre-flight:
Radar down. Repairs on the modulator being done at ProSensing.
No other instrument issues

Miscommunication at startup/power switch. We briefly lost power to the system, thus the 4th seat computer went down causing realtime to crater, the INS also went down. Decide to reboot data system altogether while INS aligns. Data collection actually starts on roll-out

Miss first ~12 minutes of flight video, because of scramble to reboot etc…forgot to begin recording video, video record begin in middle of ascent sounding

Ridge top winds are very strong, rotor/roll cloud located in center of valley earlier in the day no longer exists, cap cloud looks to begin descending down the slope, winds have picked up somewhat in the north end of the valley, but not terribly strong

Flight:
2214: takeoff (about 15 minutes late due to power oops)
upto 2236: climb to FL210 towards west side of 508 to collect sounding
2236: turn east at FL210 for first leg, -5.8 m s^{-1} down over valley, appears very broader
2242: 90/270 descend to FL190 for second pass (westbound)
2257: begin leg 3, starting just west of crest, descend to FL180
2304: over Inyos, descend to FL160 setup for box, cannot get very close to Sierras because cap cloud
2324: descend to FL140 for 2nd box pass, note the cap cloud appears to be descending rather quickly along the mountains
2342: descend to FL110 for third box try, unable to get under cap cloud
2359: descend to lower level, FL080 (then FL070 to try to get under cap) clouds appear to lower fast, turn north (instead of south) at mountains to cross road with 'weather on wheel' vehicle
Big Bump, registers –1.48 G, RTB, Data system stays up, another bump, roughly minute later, 2nd bump apparently craters system
0017: wheels down

Post-flight/impressions

Patterns were setup along track B, southern end of box on track B, northern end ~12 miles NNW of track B

After looking at some of the data, note that at time of bump, CPC pump craters, comes back online few minutes later.

Data system did not crater, turns out realtime cratered, so have data for entire flight. Ashtech went offline about at time of second bump coinciding with time realtime cratered. After flight, Don checked power supply to network hub and was able to cause power interuptions by moving cables. Cables were secured better to alleviate this problem in future flights.

TREX06: 20060325a
IOP-6: Flt-2

Flight notes: System Scientist (3rd seat)

Crew:
Pilot: Kevin Fagerstrom
Flt Scientist: Vanda Grubisic
System Scientist: Jeff French
4th Seat: Hans (?)

Pre-flight:
Radar down. Repairs on the modulator being done at ProSensing.
No other instrument issues

Expect strong ridge top winds, rotor/roll cloud evident in valley, particularly south of Bishop, Cap cloud on Sierras hanging out near ridge top.

Flight:
1608: takeoff (about 10 minutes late)
1618: sounding out of Bishop, strong inversion between 650 & 590 mb, wind max of 22 m s^{-1} at inversion
1624: setup up first leg at FL220, tracking west (??)
1646: leg 2, begin at FL220, once inside MOA508 ascend to FL230, wave amplitude –4/+3.5 m s^{-1}
1700: setup for leg 3 (tracking west), descend to FL190, end up cutting this leg short because of clouds over the Sierras, wave amplitude –5/+3.5 m s^{-1}
1717: descend to FL170 begin leg 4, tracking east across valley, clip top of rotor/roll cloud (or lenticular cloud on top of rotor??) in center of valley, wave amplitude +/-7 m s^{-1}
1727: descend to FL150 begin leg 5 tracking west
1739: getting into clouds in center of valley, descend to FL130 to try to get under clouds, turn 90/270
1741: setup for leg 6 at FL130, first shot at box in valley
1753: tracking east on 'backside' of box, bumpy, descend to FL110
175930: westbound at FL110
1803: eastbound at FL110, descend to FL080 to get under clouds in center of valley
1815: on east end of box, descend to FL060 to setup for another box
1826: complete box at FL060, ascend to FL080 for box
1838: ascend to FL100 for another box
1853: ascend to FL080 for another box
1904: boxes complete in valley, climb to FL220 to try pass over valley and Sierra Crest
1915: begin leg at FL220 tracking ~west, at west end, turned 90/270 and return pass at FL220 (??)
1947: RTB
2004: wheels down

Post-flight/impressions

Nicely formed waves throughout the valley and above, clouds in valley presented bit of challenge, but in general not too difficult, and did not seem to require large deviations from flight patterns, turbulence weak to weak/moderate

Patterns were setup along track B, southern end of box on track B, northern end ~12 miles NNW of track B

TREX06: 20060324a
IOP-6: Flt-1

Flight notes: System Scientist (3rd seat)

Crew:
Pilot: Kevin Fagerstrom
Flt Scientist: Vanda Grubisic
System Scientist: Jeff French
4th Seat: Jorg (?)

Pre-flight:
Radar down. Repairs on the modulator being done at ProSensing.
No other instrument issues

Weather conditions: mostly cloudy w/ thin alto-stratus deck, sfc winds 130 at 10 knots, clear below 12 kft

Flight:
Wheels up 2200 UTC (all times hereafter are in UTC)
2216: begin first leg FL220 along track B, tracking ~247, +1.5/-2 m s^{-1}, very smooth
2235: 90/270 at west end, descend to FL190 once we return to MOA (@ 2238)
2252: 90/270 at east end, begin west bound leg at FL170
2311: 90/270 begin east bound leg, just above cloud top at FL 150
231330: clip cloud top just over top of ridge
2330: setup for first box in valley, FL110
2348: begin box for FL100
0000: begin box at FL080
0011: begin box at FL060
0020: end box patterns, climb to FL220 to repeat earlier legs (feeling is best waves at these altitutdes)
0033: begin west bound leg at FL220, waves +1.5/-2 m s^{-1}
0054: 90/270, descend to FL190, begin east bound leg, wave amplitude of +/- 3m s^{-1}
0109: finish last leg, RTB

Post-flight/impressions
Weak turbulence in valley, smooth, low amplitude waves above ridge crest

No known instrument problems during flight