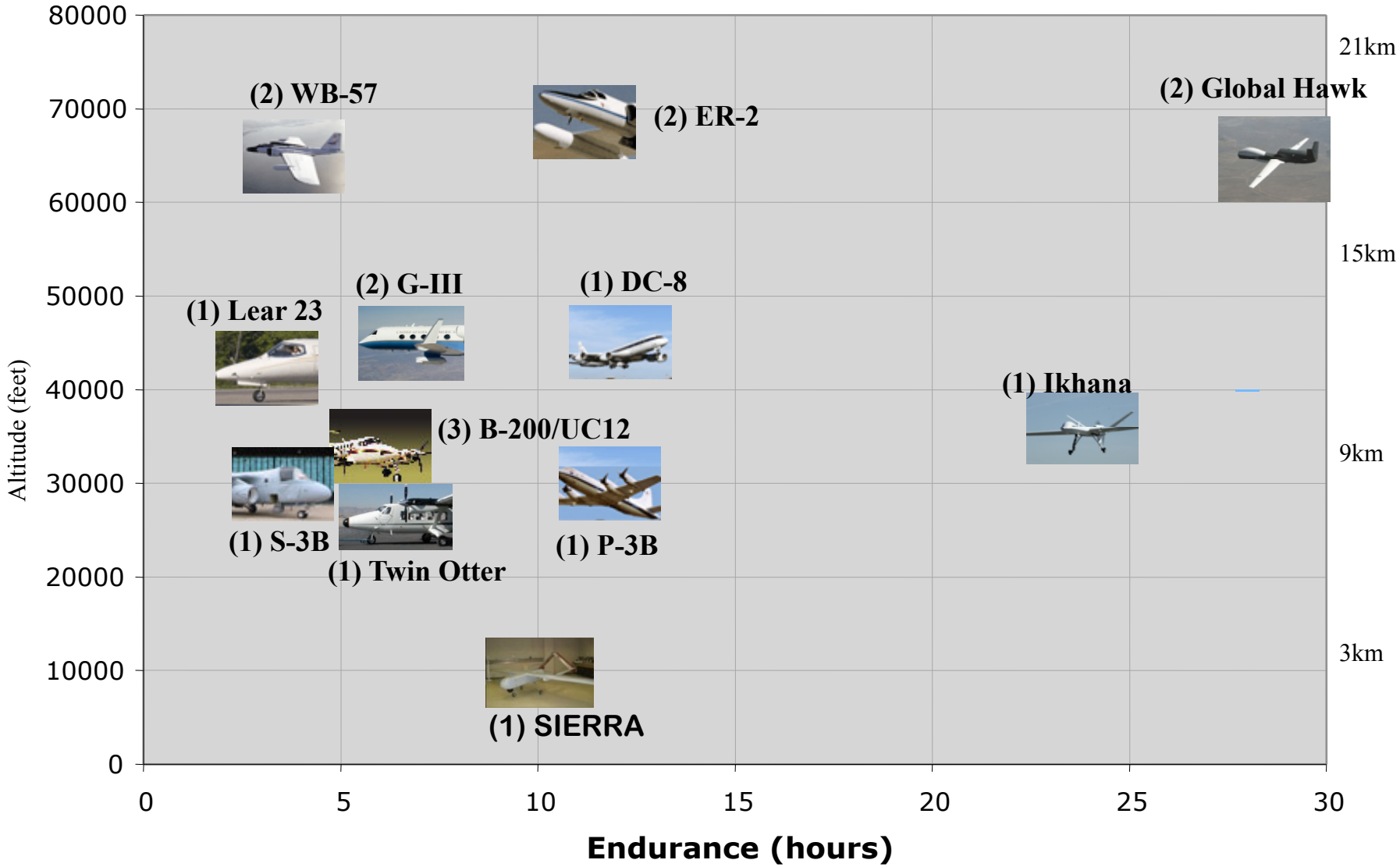
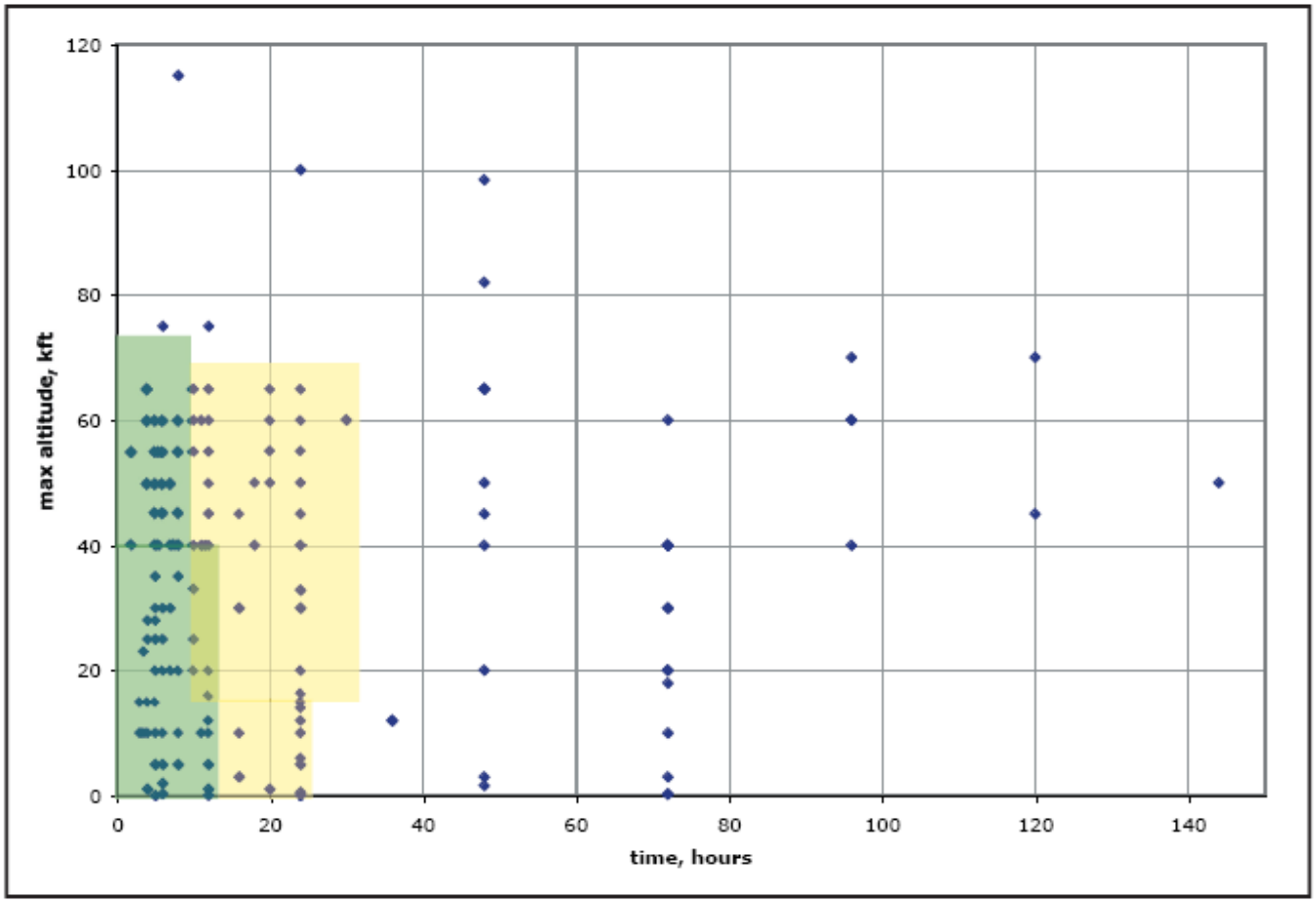
NASA ASP Current Capabilities



Aircraft Support of Required Measurements



Core aircraft (manned) UAS in development

Summary of the National Science Objectives, established by the six focus areas, for sustained suborbital Earth Science observation requirements, 50% covered by Manned aircraft another 30% covered by our Unmanned vehicle and 20% still uncovered until new vehicles become operational

Suborbital Science at NASA

NASA Suborbital Research Program FY2011 (Core Asset Summary Schedule)

	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11
Airborne Science Campaigns												
DC-8	OIB Ant.		SAR				IIP		SARP	ASCENDS,DawnAir		
ER-2					CATS,CPL,HiWRAP,CoSSIR,AMPR							
ER-2	AVIRIS, MABEL							LAC				
G-III	UAVSAR					UAVSAR						
Global Hawk												
Global Hawk												HS3
P-3B						OIB Arctic			EV-1 D-AQ		ECO	
WB-57						MACPEX						
Scientific Balloon Campaigns												
Antarctica		CREAM,BLAST,BARREL,SPB										
Australia						HERO						
Sweden								LEE,AESOP, HIWIND				
Palestine							Cajun Pr					
Ft. Sumner, NM											8 Missions	
Sounding Rocket Campaigns												
San Nicolas Is, CA												
Andoya, Norway			RENU									
White Sands, NM			TRaiNED			SDO/EVE						Picture
Poker Flats, AK				Polar, FIRE			BBIX					
Wallops Island, VA									6 Missions			

= NASA Mission Operations

= Maintenance, modifications, Payload integration, Technology Development,

= Reimbursable Mission Operations

FY2011 Airborne Science Missions

Mission	Aircraft	Discipline	Institution(s)	Campaign	Flights	Flt. Hrs	Under grad	Grad	Mission Description
OIB	DC-8, BT-67	Cryosphere/ Climate	GSFC, Kansas, JPL, Alaska, ARC	Chile, Antarctica	Oct-Nov 2010	213	5	8	Operation Ice Bridge: Laser Altimetry and radar soundings for ICESat data continuity
AVIRIS	Twin Otter	Carbon cycle & Ecosystems	JPL, NOAA, USGS, NPS, UCSB, UNH, UCD	CONUS	Apr-Jul 2011	130	0	5	Process studies, HyspIRI simulation and risk reduction
AVIRIS + MASTER	ER-2	Carbon cycle & Ecosystem	JPL, ARC	CONUS	Oct-Dec 2010	197	0	5	Hyperspectral simulation and algorithm development
UAVSAR	G-III	Earth Surface	JPL	CONUS; CR; Caribean	Oct 2010 – Sep 2011	397	1	11	Fault morphology and dynamics; vegetation structure; DESDynI simulation and risk mitigation
SWEEPSAR	DC-8	Earth Surface	GSFC	CONUS	Dec 2010	4	0	0	Instrument testbed; DESDynI simulation and risk mitigation
OIB	P-3B, Otter B200	Cryosphere/ Climate	GSFC, Kansas, JPL, Alaska, ARC	Arctic	Feb-May 2011	395	1	1	Operation Ice Bridge: Laser Altimetry and radar soundings for ICESat data continuity
MC3E	ER-2	Weather	GSFC, JPL, DFRC	CONUS	June 2011	50	0	0	Precipitation measurements in support of GPM using microwave radiometer and radar.
MACPEX	WB-57	Atmospheric Chemistry	JPL, LaRC, NOAA, Utah, ARC, JSC	CONUS	Apr 2011	80	5	9	Process Study on Cirrus clouds and radiative impacts
SARP	DC-8	Education Flight Project	UND, DFRC, ARC	So. Cal	Jun 2011	11	27	3	Student training opportunity using the DC-8 flying laboratory
ASCENDS-II	DC-8, B-200	Atmospheric Chemistry	LaRC, JPL, GSFC	CONUS	Jul 2011	47	0	1	Measure CO2 columns over variety of topographic targets & Atmospheric cond' ns
Dawn-Air	DC-8	Weather	LaRC, DFRC	CONUS	Aug 2011	24	0	0	Doppler Radar Technology Development
HS3	Global Hawk	Weather	GSFC, DFRC,MSFC, JPL, NOAA, Utah,Wisc.	CONUS	Sep 2011	48	1	3	Process Study on hurricane formation and intensification
WISPAR	Global Hawk	Weather	NOAA	Eastern Pacific	Jan-Mar 2011	80			Dropsonde technology demonstration, winter storms and atmospheric rivers

FY2011 Airborne Science Missions

Mission	Aircraft	Discipline	Institution(s)	Campaign	Flights	Flt. Hrs	Under grad	Grad	Mission Description
Discover AQ	P-3B, B-200	Atmospheric Chemistry	LaRC	CONUS	Jun-Jul 2011	200	0	0	**ESSP EV-1 Mission**. Investigation is to improve the interpretation of satellite air quality observations to enable diagnosis of near-surface conditions
LAC	ER-2	Space Science	JSC, DFRC	Pacific Ocean	May-Jun 2011	18	0	12	High altitude atmospheric particulate collection
ECO-3D	P-3B,	Carbon cycle & ecosystems	GSFC	CONUS	Aug-Sep 2011	62	0	3	LIDAR/RADAR Intercomparisons
CARVE	B-200	Carbon cycle & ecosystems	JPL	Alaska	Apr-Jun 2011	90	0	3	**ESSP EV-1 Mission**. Measurements of surface properties and trace gas data that will provide insights into Arctic carbon cycle response to warming,
Glith/ AMIGA	Cessna 206	Carbon cycle & ecosystems	GSFC, LARC	New England	Aug-Sep 2011	106	0	0	Tech Development - LIDAR for assessing foliage
CH4 Sounder	DC-8	Atmospheric Composition	GSFC, DFRC	CONUS	Aug 2011	7	0	1	Tech Development; methane lidar sounder
GOSAT/ OCO2	SIERRA	Atmospheric Chemistry	JPL, ARC, JAXA	Nevada		12	1	1	Ground and airborne in-situ cal/valof GOSAT; OCO2 risk reduction
					Total	**~2226**	**56**	**76**	

Airborne Science Core A/C Status

Aircraft	Current Status	Current Location
DC-8	Sweep SAR Local Flights (ends 09/16/11)	Local
ER-2	*Inactive* (Starting 09/19/11: LAC Download)	DFRC
ER-2	809 Phase Inspection (ends 05/25/12)	Palmdale DAOF
G-III	Hush Kit Installation and General Maintenance (ends 09/13/11)	DFRC
Global Hawk	Reimbursable mods (ends 09/30/11)	DFRC
Global Hawk	HS3 (ends 09/15/11)	DFRC
P-3 Orion	Eco-3D (ends 09/16/11)	Homestead, FL
WB-57	Reimbursable Flight Missions (ends 10/06/11)	JSC
WB-57	Maintenance (ends 10/25/11)	JSC

ASP Status & schedules are updated weekly and can be found online at:
http://airbornescience.nasa.gov/program/schedules.html

Legend

- a/c ready to go
- a/c partially mission capable with restrictions noted
- a/c unable to perform missions at this time

Tagg

Additional Aircraft

- G-III based at JSC for AirMOSS EV-1 mission
  - Base funded for through 2014
- Acquiring Falcon jet at LaRC
- P-3C at GSFC/WFF for spare parts
- ACTD GH for spare parts (DFRC)
- 2 Block 10 GH for spare parts (DFRC)
- Looking to acquire C-130 for mission support (WFF)
- 3rd WB-57 being developed (JSC)
- C-206, Lear jet, Twin Otter, 3 B200/C-12 (various)

Current Activities

- Fielding COMPASS and re-invigorating web presence
- Fielding NASDATs and Experiment Interface Panels
- Mobile GHOC & GHOC East
- Missions
  - Operation IceBridge
  - EV-1: CARVE, HS3, ATTREX, DISCOVER-AQ & AirMOSS
  - SEAC4RS
  - UAVSAR
  - A.40: 3 UAS Enabled Earth Science missions
  - DOD related: KQ-X, WB-57, ER-2…

Issue

- Budget strong: ~$50M/yr
- But, insufficient reserve for major maintenance (scheduled or unscheduled), upgrades and modifications
- Seriously re-evaluating portfolio and activities
  - Conference sponsorship/participation
  - FAA UAPO Liaison & UAS in the NAS
  - Non-competitive grants
  - Catalog (at least BPA portion)
  - Consolidating cross-cutting portfolio to ARC