ICCAGRA FALL 2011 MEETING

28 September 2011

Jim McFadden

Chief, AOC Programs

Agenda

- **Recent Aircraft Activity and FY12 Allocations**
  - **Light Aircraft**
  - **Heavy Aircraft**
- **Instrumentation Update and FY12 Plans**
- **Lockheed-Martin P-3 Service Life Assessment Program Results**
- **Analysis of Alternatives Study**
- **Future Plans – The Road Ahead**

FY11 Base Funded Flight Hour Re-allocation

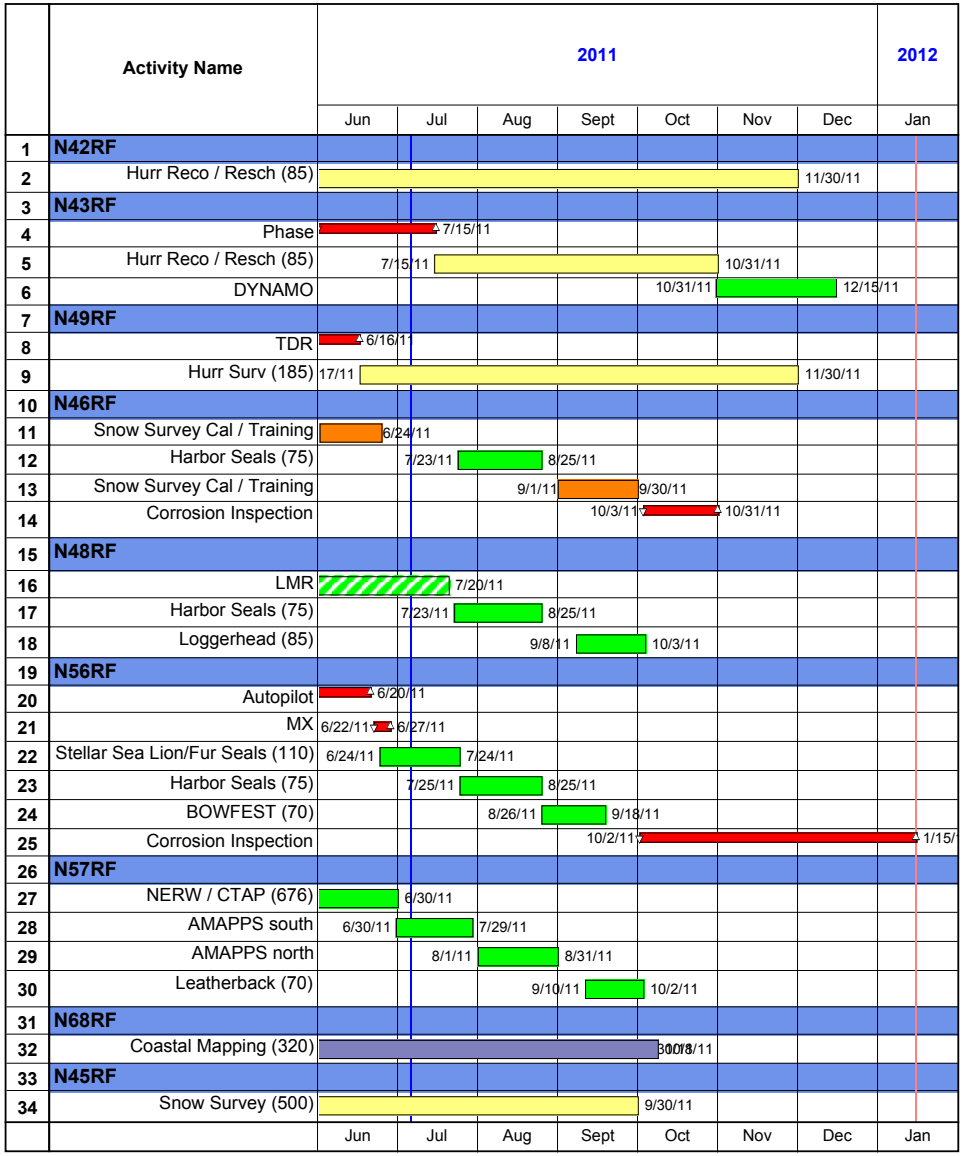
Line	Program	Original Allocation		Revised Allocation		
		Hours*	Total Cost	% Change	Hours	Total Cost
NWS	Hur Surv, TDR Ops (G-IV)	230	$0.57 M	-20%	185	$0.46 M
NWS/ OAR	Hur Rsch/Reco, TDR Ops (P-3)	280	$1.04 M	-41%	165	$0.61 M
NWS	Winter Storms (G-IV)	300	$0.91 M	-	300	$0.91 M
NWS	Snow Survey (Jet Prop)	550	$0.34 M	-9%	500	$0.31 M
NWS	Snow Survey (Shrike)	400	$0.15 M	-25%	300	$0.12 M
NESDIS	Ocean Winds Winter (P-3)	90	$0.43 M	-11%	80	$0.39 M
OAR/ OMAO	N-44 Test & Eval (P-3)	60	$0.22 M	-100%	0	$0.00 M
NOS	Coastal Mapping / Emergency Response (King Air)	400 / 0	$0.34 M	-	350 / 50	$0.34 M
	TOTAL	2310	$4.0 M	-16.5%	1930	$3.2 M

* Flight Hour Allocation based on historical request and usage trends.

FY11 Program & Reimbursable Flight Hour Re-allocation

Line	Program	Original Hours	% Change	Revised Hours
NMFS	Northeast Right Whale/AMAPPS (Otter)	996	-21%	786
NMFS	Southeast Right Whale (Otter)	300	-	300
NMFS	Harbor Seals (Otter & Shrike)	300	-25%	225
NMFS	Steller Sea Lion (Otter)	110	-	110
NMFS	Leatherback Turtles (Otter)	70	-	70
NMFS	Loggerhead Turtles (Otter)	60	+42%	85
NMFS	Gray Whales (Otter)	55	-100%	0
NMFS	BOWFEST (Otter)	70	-	70 (R)
NMFS	BWASP (Otter)	0	+100%	50 (R)
NMFS	DWH NRDA Gulf of Mexico (Otter)	0	+100%	150 (R)
NOS	DWH Aerial Imagery (King Air)	90	-	90 (R)
NOS	Airport Surveys (King Air)	20	-	20 (R)
NOS	Living Marine Resources (Otter)	265	-50%	130
NOS	GRAV-D (P-3)	0	+100%	200
OAR	Bering Sea (Otter)	60	-100%	0
OAR	CSD LIDAR (Otter)	50	-100%	0
NWS	Alaska Snow Survey (Jet Prop)	107	-100%	0
	TOTAL	2553	- 10.5%	2286

FY11 ACFT ACTIVITY



Hurricane Irene P3 coverage (Aug. 23-27, 2011)

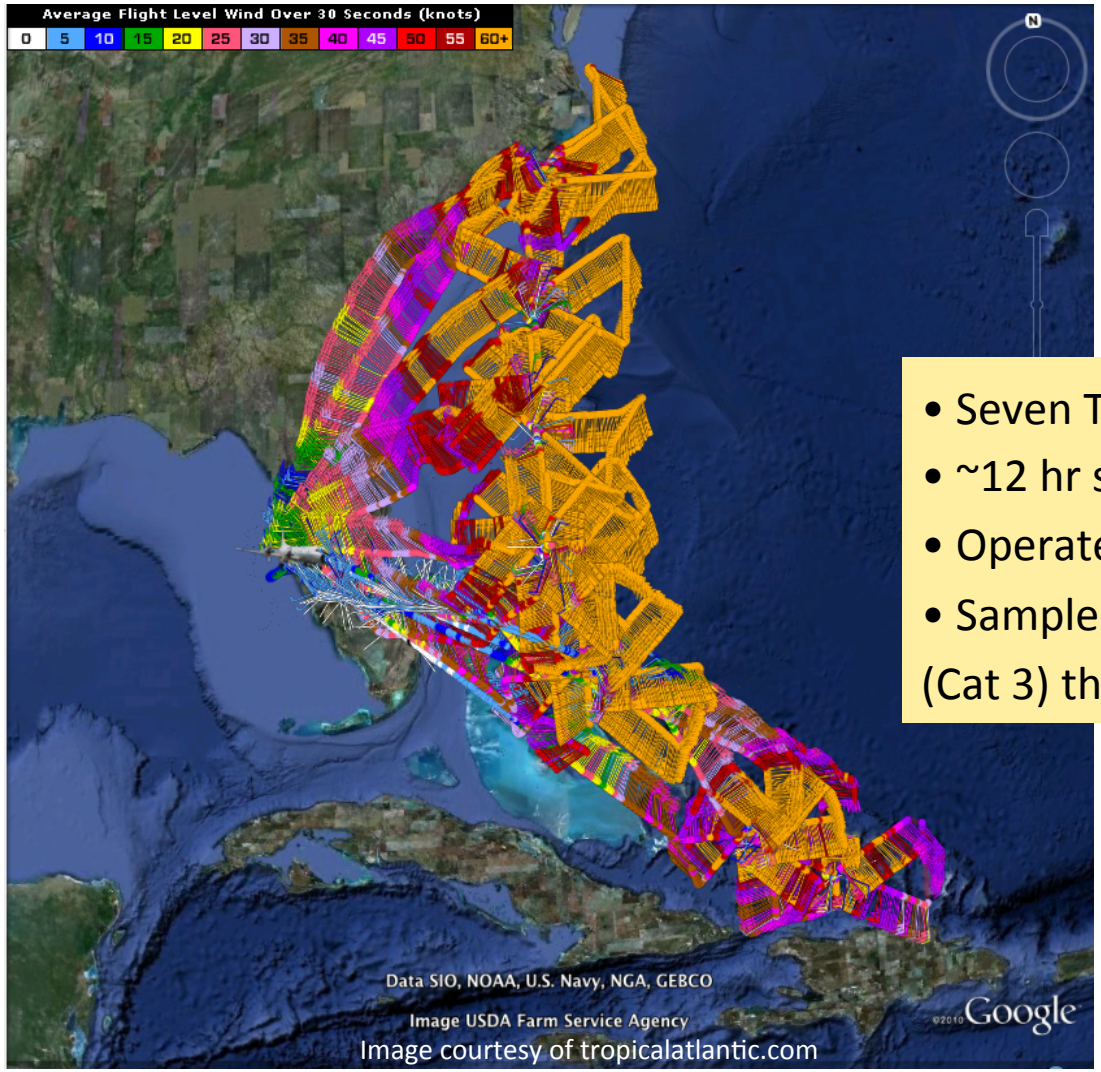
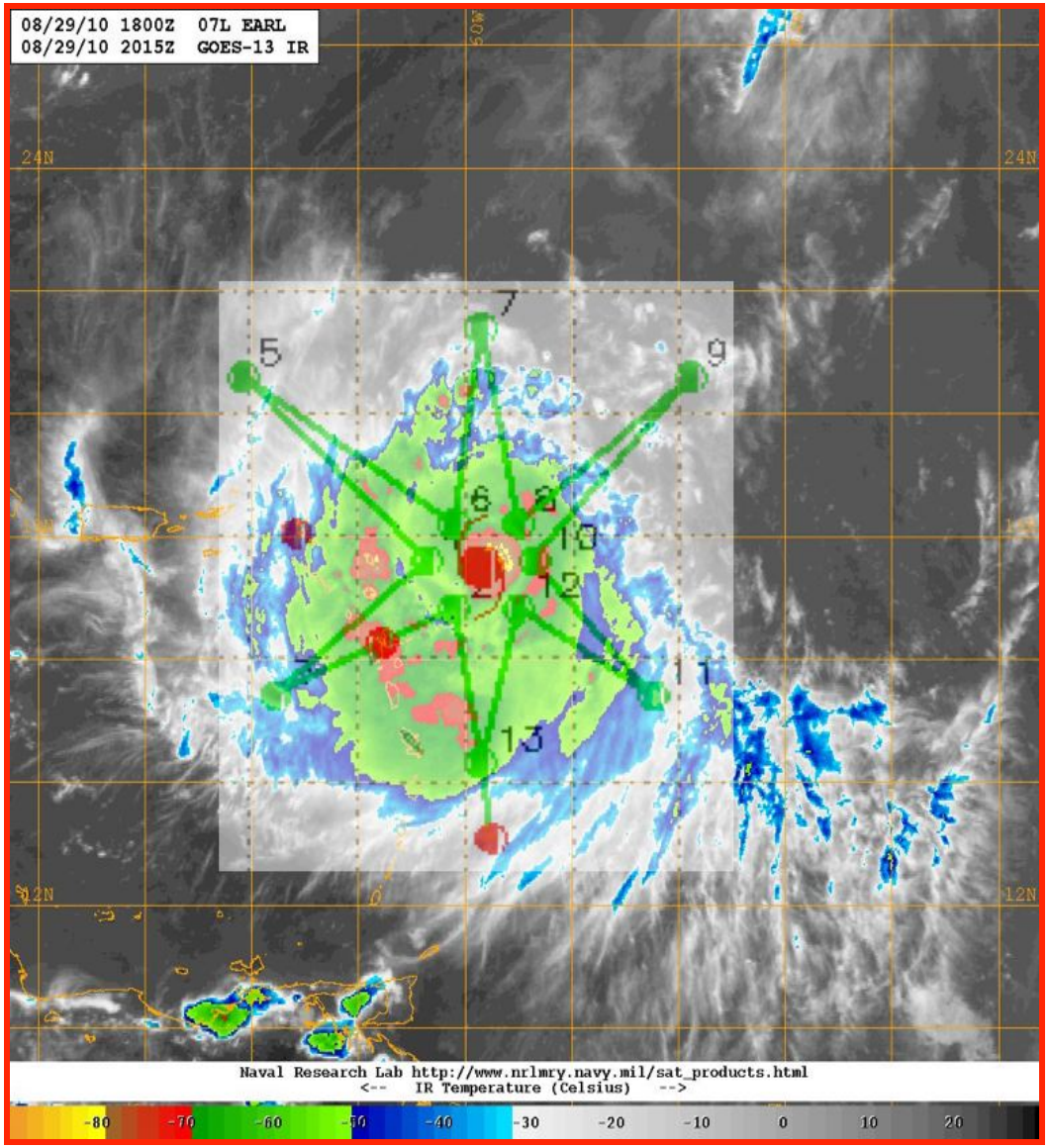


Image courtesy of tropicalatlantic.com

- Seven TDR flights (1 aborted)
- ~12 hr sampling cycle
- Operated out of MacDill AFB
- Sampled Irene as a major hurricane (Cat 3) through landfall (Cat 1)

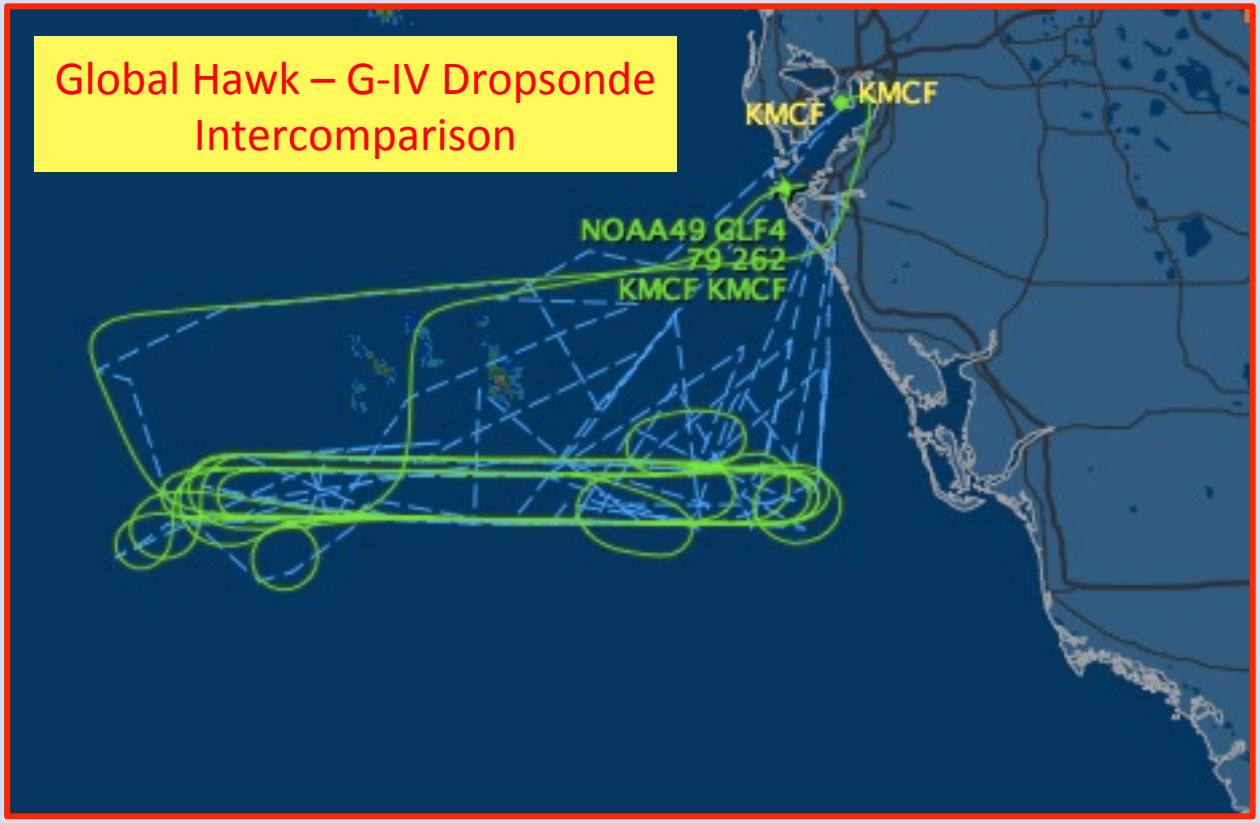


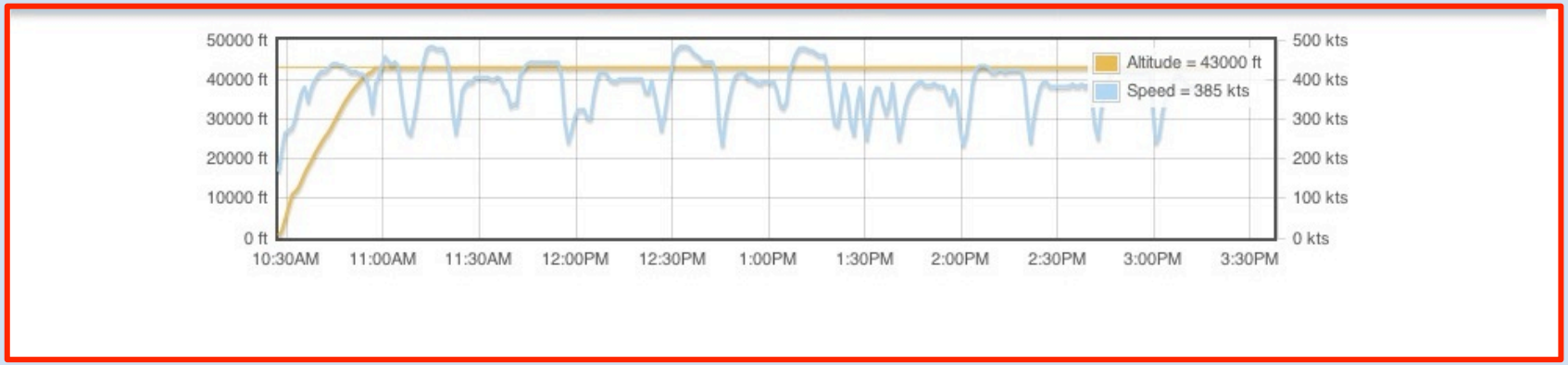
G-IV SALEX Mission

Hurricane Katia

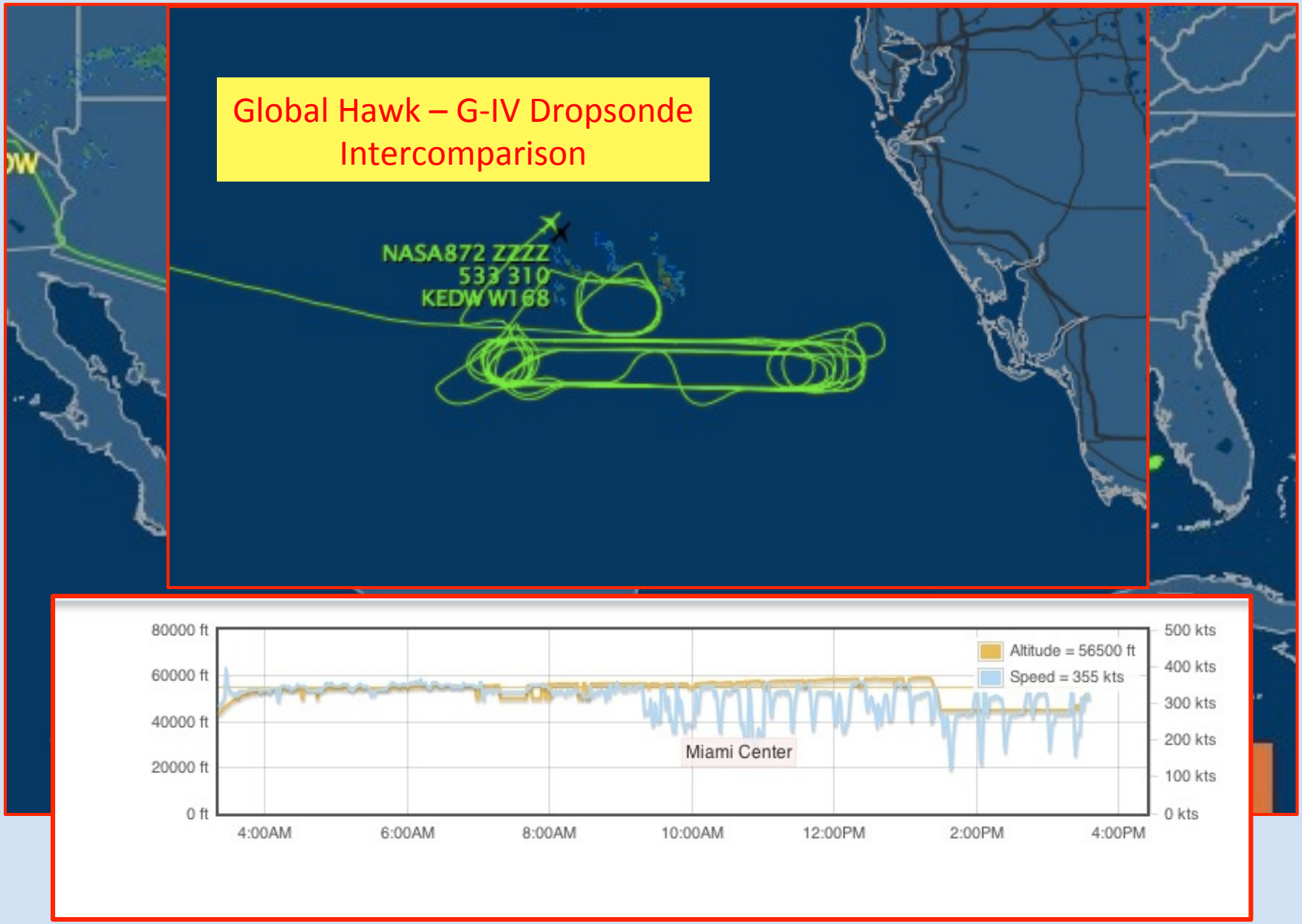
2011

Global Hawk – G-IV Dropsonde Intercomparison





Global Hawk – G-IV Dropsonde Intercomparison



Global Hawk pics from NOAA G-IV during dropsonde intercomparison 9/14/11

Courtesy LCDR Kristie Twining, NOAA

FY12 Base Funded Flight Hour Requests

Line	Program	Hours	Total Cost
NWS	Hurr Surv, TDR Ops (G-IV)	400	$1,321,536
NWS/OAR	Hurr Rsch/Reco, TDR Ops (P-3)	700	$3,744,370
NWS	Winter Storms (G-IV)	400	$1,764,136
NWS	Water Resources (Turbo Cmdr)	675	$468,848
NWS	Water Resources (Twin Otter/Shrike)	500	$305,790
NESDIS	Ocean Winds Winter (P-3)	90	$627,874
NESDIS	Ocean Winds Summer (P-3)	60	$320,946
NOS	Coastal Mapping (King Air)	400	$417,152
	TOTAL	3,225	$8,970,652

FY12 Proposed Base Funded Allocation

Line	Program	Hours*	Total Cost
NWS	Hurr Surv, TDR Ops (G-IV)	195	$644,249
NWS/OAR	Hurr Rsch/Reco, TDR Ops (P-3)	150	$802,365
NWS	Winter Storms (G-IV)	250	$1,102,585
NWS	Water Resources (Turbo Cmdr)	500	$347,295
NWS	Water Resources (Twin Otter/Shrike)	300	$183,474
NESDIS	Ocean Winds Winter (P-3)	55	$383,701
NESDIS	Ocean Winds Summer (P-3)	Piggy-back	$0
NOS	Coastal Mapping (King Air)	350	$365,008
	TOTAL	1,800	$3,828,677

* Flight Hour Allocation based on historical request and usage trends.

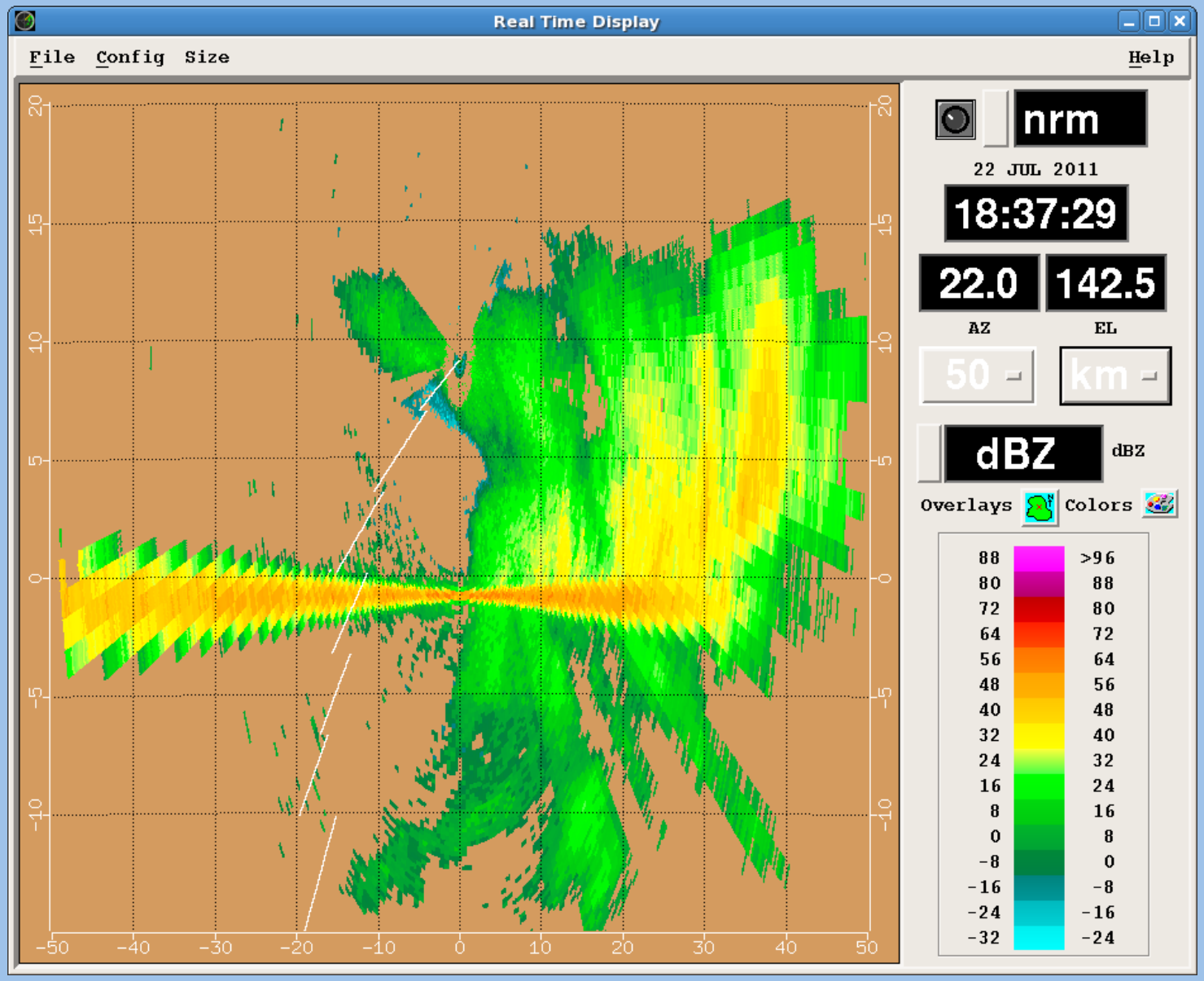
FY12 Proposed Program Funded Allocation

Line	Program	Hours
NMFS	AK Harbor Seals (Twin Otter)	195
NMFS	AK LOSI Ice Seals (Twin Otter)	250
NMFS	AK Steller Sea Lion (Twin Otter)	100
NMFS	Gray Whales (Twin Otter)	60
NMFS	Leatherback Turtles (Twin Otter)	70
NMFS	Loggerhead Turtles (Twin Otter)	95
NMFS	Northeast AMAPPS (Twin Otter)	110
NMFS	Northeast Right Whales (Twin Otter)	495
NMFS	Southeast Right Whales (Twin Otter)	340
NMFS	Southeast AMAPPS (Twin Otter)	120
NMFS	DWH NRDA – Fall and Winter (Twin Otter)	320 (R)
NMFS	WA/OR Harbor Porpoise (Twin Otter)	70
NOS	West Coast Living Marine Resources (Twin Otter)	90
OAR	DYNAMO (P-3)	175
N/A	Riverhead Foundation (Twin Otter)	258 (R)
	TOTAL	2,748

FY11-12 Priorities and Plans

1. G-IV Tail Doppler Radar

NOAA
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
U.S. DEPARTMENT OF COMMERCE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FY11-12 Priorities and Plans

1. G-IV Tail Doppler Radar

2. P-3 Radar Upgrade

NOAA
N42RF

FY11-12 Priorities and Plans

1. G-IV Tail Doppler Radar

2. P-3 Radar Upgrade

3. P-3 Data System Upgrade (AAMPS)

4. Installation of Doppler Wind LIDAR and WSRA.

noaa
N42RF

FREE FALL CHUTE

FY11-12 Priorities and Plans

5. New AXBT Receivers

LOCKHEED MARTIN
MK 21/USB
Sippican
Marion, MA USA
LOCKHEED MARTIN
MK 21/USB
Sippican
Marion, MA USA
LOCKHEED MARTIN
MK 21/USB
Sippican
Marion, MA USA

FY11-12 Priorities and Plans

5. New AXBT Receivers

6. P-3 Service Life Assessment Program (SLAP)

7. Analysis of Alternatives – The Road Ahead

LM Service Life Assessment Program (SLAP) Results

- **TLI / DTA Results:** Total Life Index = 1.75 service life is expended and part replacement is required
  - N42 – TLI = .65
  - N43 – TLI = .72
  - N44 – TLI = 1.86 (End of Service Life)

- **Service Life Impacts if NOAA implements LM Maintenance Recommendations:**
  - N42 – 6,100 flight hours or 10 years (EOSL 2020)
  - N43 - 5,100 flight hours or 9 years (EOSL 2019)
  - N44 – Not Applicable. TLI exceeded / End of Service Life

- **LM Recommendations:**

  At minimum, conduct Special Structural Inspections (SSI) per SLAP Report

  Re-wing aircraft rather than piece part replacement (Includes some SSI's)

Alternatives for Meeting NOAA's Research and Reconnaissance Requirements

- Option One – Status Quo
- Option Two – Special Structural Inspections
- Option Three – Service Life Extension
  - Re-winging, new engines and avionics upgrades
- Concurrent Activity – Replacement Platform/Technology

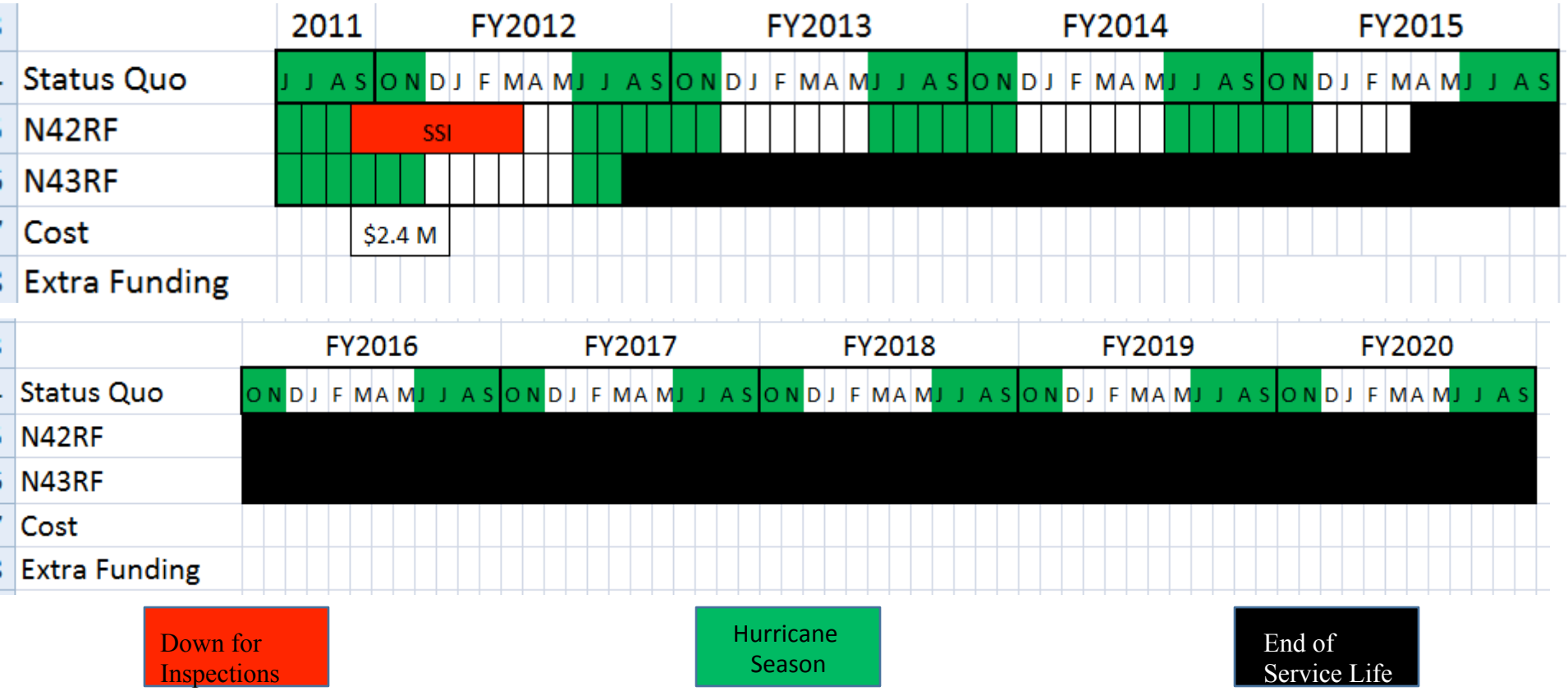
Option 1 – Status Quo

- Status Quo – No additional funding – regular PDM schedule only with no special inspections conducted.

- Pros: No additional funding required

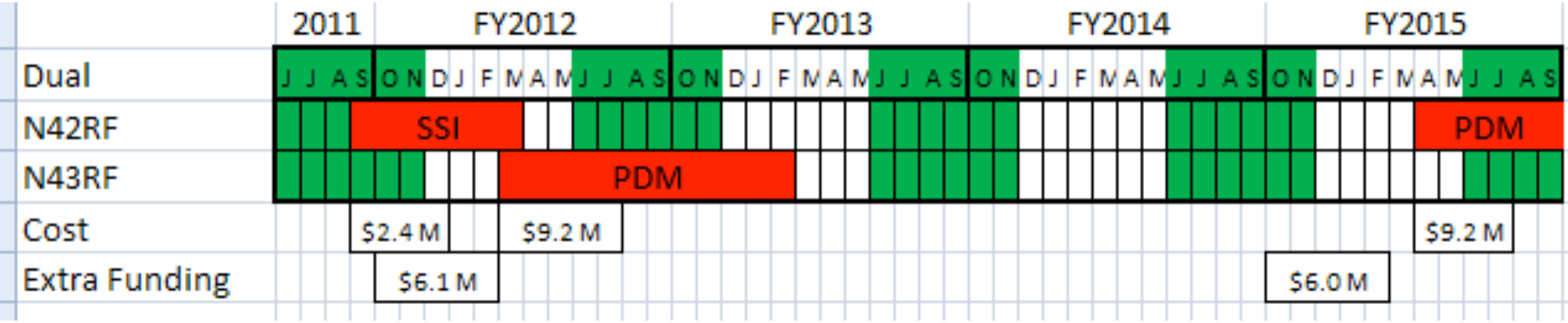
- Cons: Under current budget conditions and based on the SLAP results NOAA will:
  - Lose N43RF in July 2012
  - Lose N42RF in March 2015

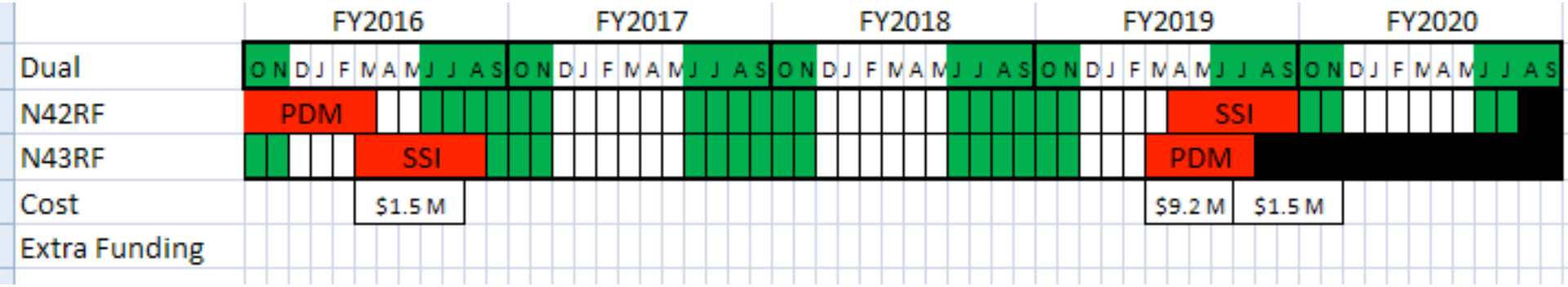
Option 1
Status Quo



- N43 End of Service Life 2012
- N42 End of Service Life 2015

Option 2 - WP-3D SSI/PDM Timeline
Current Plan with Navy FRCSE





Down for Inspections

Hurricane Season

End of Service Life

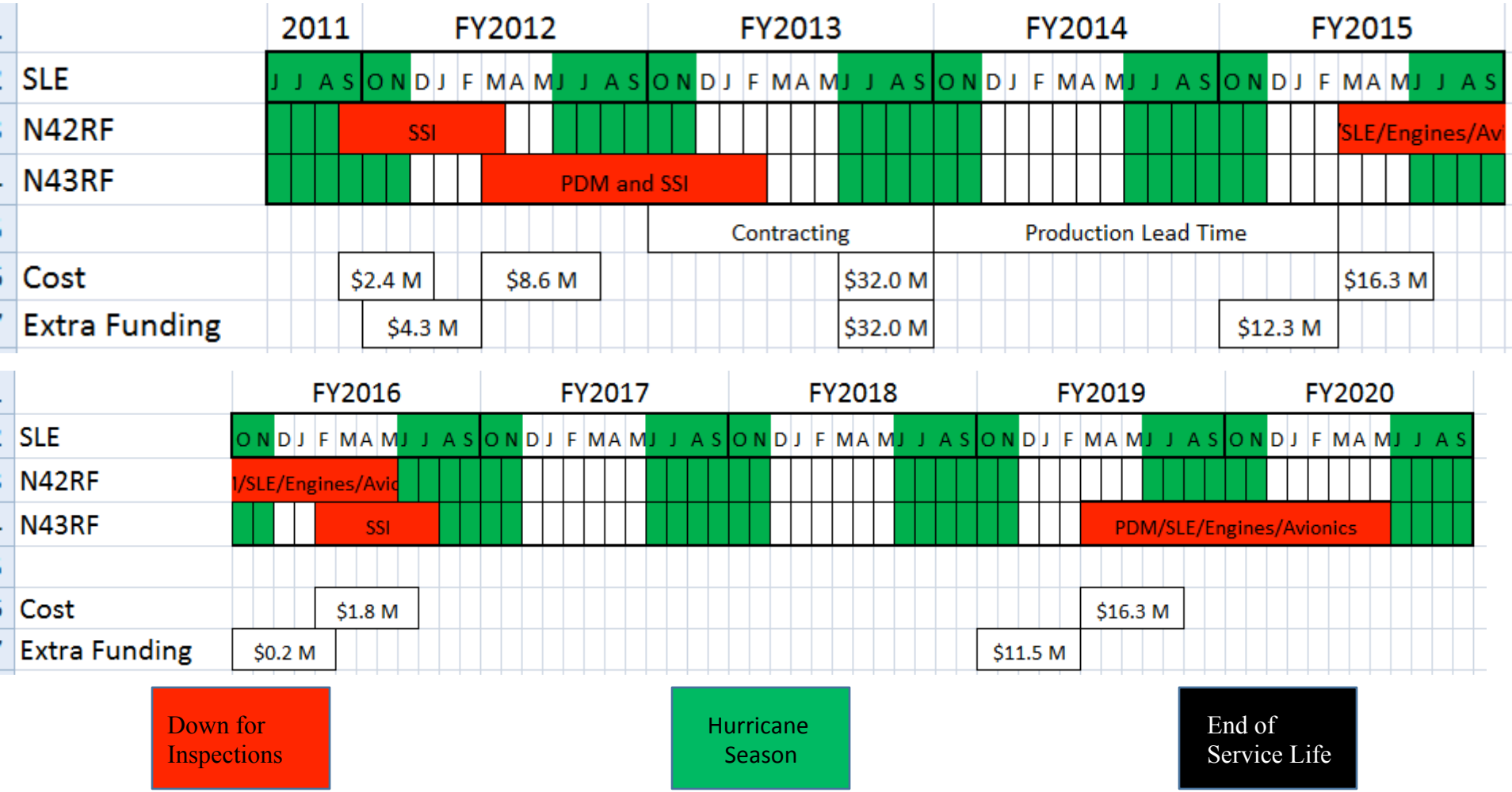
WP-3D SSI/PDM Schedule
Current Plan with Navy FRCSE

Fiscal Year	Aircraft	Event	Cost	Additional Funding Needed
2011	N42RF	SSI	$2.4 M	$0.0M
2012	N43RF	PDM/SSI	$9.2 M	$6.1 M
2013	None	None	$0	$0
2014	None	None	$0	$0
2015	N42RF	PDM /SSI	$9.2 M	$6.0 M
2016	N43RF	SSI	$1.5 M	$0.0 M
2017	None	None	$0	$0
2018	None	None	$0	$0
2019	N42RF	SSI	$1.5 M	$0.0 M
	N43RF	End Of Service Life (EOSL)	------	------
2020	N42RF	EOSL	------	------
TOTALS			**$23.8 M**	**$12.1 M**

Note: 2019 N43RF PDM/SSI ($9.2M) not included because EOSL will be reached while in PDM/SSI.

2019 N42RF SSI ($1.5 M) gains only 10 months of service life before EOSL.

Option 3
Long Term Sustainment/SLE



- Long Term Sustainment includes SLE, engine replacement and avionics upgrades

ANALYSIS OF ALTERNATIVES

Background and Purpose

- The LM Service Life Assessment (SLA) determined WP-3D remaining service life is:
  - N42RF – July, 2020
  - N43RF – July, 2019
  - N44RF – 50 hours
- Explore alternative platforms for acquiring the data and meeting NOAA's future requirements currently achieved by NOAA's WP-3D.
- Select a course of action

Methodology

- Requirements definition
- Alternative evaluation
  - 25 year life cycle requirement/cost basis
  - Acquisition cost, science installation, and upgrades were included in year one.
  - LCC included recurring maintenance, non-recurring maintenance, fuel, training, and maintenance labor costs.
  - All estimates are current year dollars.
- Risk analysis
- Cost-benefit analysis conducted

Alternative Platforms

- Alternative aircraft (C-130J, AMARC P-3, P-8/737)
- Unmanned Aerial Systems (UAS)
- Satellites
- WP-3Ds' with SLE (re-winging)

Note: All estimates are Rough Order of Magnitude (ROM, +/-50%). In depth research is required for estimates suitable for budgetary purposes.

Mission Requirements Rating

RATED REQUIREMENTS/PLATFORM MATRIX AND WEIGHTED RANK

L.O. Ranking	PROGRAM	MISSION ACTIVITY DATA REQUIREMENT	Avg. Rating Value	C-130J	P-3 (AMARC)	UAS	P-8/737	Satellite	WP-3D w/o SLE	WP-3D w/ SLE
1	Weather and Water	Hurricane Reconnaissance Missions (TDR)	7.4	X	X				X	X
1	Weather and Water	Hurricane Reconnaissance Missions (non-TDR)	7.4	X	X				X	X
3	Ecosystems	Sanctuary Management (Incident Response) Photo	6.6	X	X	X	X	X	X	X
3	Weather and Water	Hurricane Reconnaissance Missions - future requirements	6.6							
3	Weather and Water	Hurricane High Density Core Missions	6.6	X	X		X		X	X
:	:	:	:							
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29	Climate	Arctic Oceanography	3.0	X	X		X		X	X
29	Climate	Arctic Ocean Observing System Support	3.0	X	X	X	X	X	X	X
33	Weather and Water	Hurricane Reconnaissance Missions - future requirements	2.6	X	X	X	X	X	X	X
34	Weather and Water	Hurricane Reconnaissance Missions - future requirements	1.8							
		% Requirements met by each platform		94.1	94.1	38.2	82.4	17.6	94.1	94.1
		Weighted ranking for each platform*		150	150	58	130	30	150	150

*Weighted Ranking = Sum of L.O. Rating for each Mission/Data Requirement.

Requirements rating scale: 9 = critical, 5 = essential, 3 = enhancing, 1 = marginal

Summary of AoA Findings

	Program LCC	Risk
WP-3D (with SLE)	$212.1M	Low - med
AMARC P-3	$315.0M	Med - high
C-130J	$684.5M	Med - high
P-8/737	$705.4M	High
UAS	$346.5M	High
Satellite	$1,432.9M	High

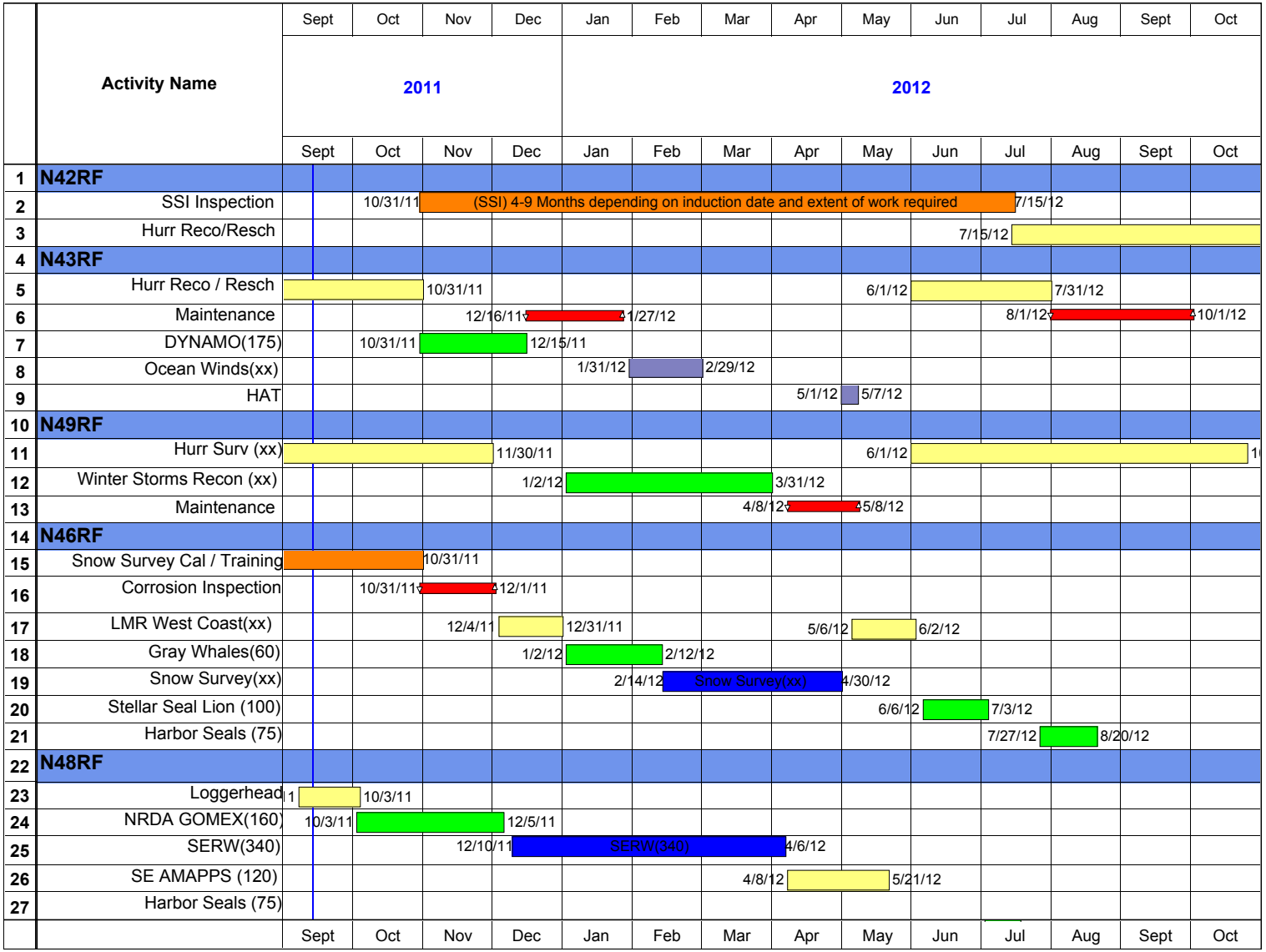
$64.0M must be added to all alternatives (except WP-3D with SLE) for WP-3D sustainment until FOC of replacement alternative

FINAL WORDS

- Under current budget conditions and based on the SLAP results NOAA will:
  - Lose N43RF in July 2012
  - Lose N42RF in March 2015
- The Road Ahead: Explore alternatives for meeting NOAA's hurricane research and reconnaissance requirements currently achieved by NOAA's WP-3D beyond 2015. Recommend a course of action.

ICCAGRA Spring 2011

QUESTIONS?



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