

Status of SOLO-II Floats Development

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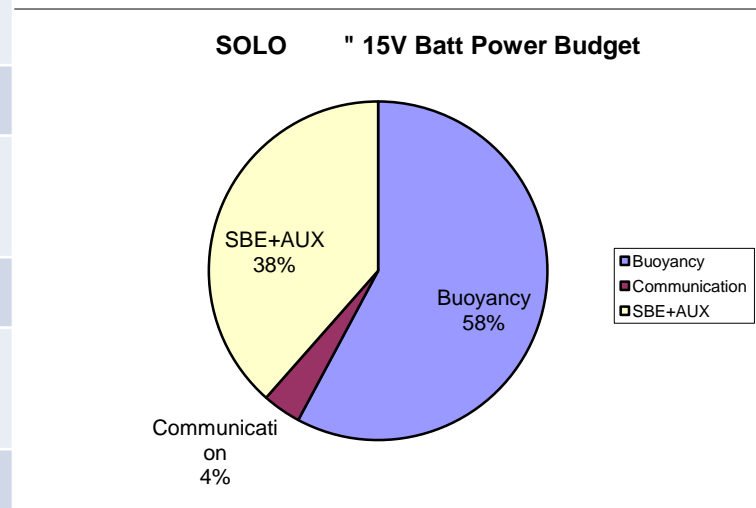
Jim Dufour

MRV, LLP

For AST-13

	SOLO-I	SOLO-II
# of dive cycles	~180	> 300
Energy (kJ)/dive w/SBE-41cp	22.5	10.3
Profile resolution	5 dbar, 0-200 20 dbar, 200-1000 50 dbar, 1000- 2000	1 dbar, 1-20 2 dbar avg, 2000-20
Max depth	2300	2300
Ocean coverage @ Max depth	~50%	100%
Telemetry	ARGOS	Iridium
CTD	SBE 41cp	SBE 41cp
Surface time (hr)	12	0.25
Mass (kg)	30.4	18.6
Main pressure- case length (m)	1.04	0.66
Seek capability	Bidirectional	Bidirectional

SOLO-II prototype is deployed



Commercialization

- Scripps Instrument Development Group has licensed MRV, LLP, to produce SOLO-II floats.
- MRV has provided 20 floats to SIO for deployment on Fall 2011
- 60 SOLO-II floats to WHOI for this year and next year 30 delivered so far.
- MRV has redesigned the internal mechanical assembly, hydraulic system production, and antenna, saving 0.8 kg, increased pump efficiency.
Now adding > 1 kg lead ballast
- Options: 3rd auxiliary battery pack and 2nd CPU pack
(> 450 dives or additional sensors)



SOLO-II Deployments

# of Floats	Date	Type	Deployed	Active	Problems	Solution
15	Apr 2011	IDG	15	11	Torn Bladders	Redesigned Bladders
10	Aug 2011	IDG	10	9, 1 drifter		
30	Aug-Oct 2011	IDG	30	30	Start-up time out, drift issues	Code modified
20	Aug-Oct 2011	MRV	20	17	1 No-show, GPS and Antenna issues	Redesigned
19	Mar 2011	IDG	6	6		Version 1.2 software

WHOI Involvement

- 30 floats delivered to WHOI
- Check-out procedures, ballasting, and shipping to be carried out at WHOI.
- New antenna design, corrected GPS board assembly problem
- Version 1.2 software
- Processing system, similar to Spray glider processing developed. Will provide this system to Argo community
- GUI for command uploads, to be delivered to community
- Close cooperation between SIO, WHOI, and MRV

Software Evolution

- Corrected start-up time out
- Adjust depth during drift
- Added format version in data stream
- Parameters for mission transmitted, processing transmits consistent configuration information
- Cycle number transmitted as 0 for test cycle after launch
- Timing information for phases of cycle included
- Synchronization between IDG and MRV
- Controller emulator for software testing
- Processing software include SBD position estimate when GPS position not available

Upload GUI

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Mission Parameter Upload Confirmation

+/- Abort Parameters
Check to confirm upload of Abort Parameters **Confirmation** ☒ Abort Parameters

I 2600;

+/- Ascent & Descent Timing Parameters
Check to confirm upload of Ascent & Descent Timing Parameters **Confirmation** ☒ Ascent & Descent Timing Parameters

T 0 360 180 0;
T 1 400 500 200;
T 2 400 500 500;

+/- Dives, Target Depths, & Descent Pump Time Parameters
Check to confirm upload of Dives, Target Depths, & Descent Pump Time Parameters **Confirmation** ☒ Dives, Target Depths, & Descent Pump Time Parameters

Z 0 1 1000 1100 253;
Z 1 3 1000 1500 307;
Z 2 999 1000 2000 305;

+/- Drift Parameters
Check to confirm upload of Drift Parameters **Confirmation** ☒ Drift Parameters

D 0 0 0;
D 1 135 4;
D 2 668 20;

+/- Seek Parameters
Check to confirm upload of Seek Parameters **Confirmation** ☒ Seek Parameters

1 120 2440 1560;

+/- Surface Communication Parameters
Check to confirm upload of Surface Communication Parameters **Confirmation** ☒ Surface Communication Parameters

S 600 1200 500;

[Queue Mission Parameters for Upload](#)



WHOI Argo Database
Department of Physical Oceanography
Woods Hole Oceanographic Institution

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Documentation

- Upload data format documentation being maintained by John Gilson.
- C-program, MATLAB code and shell scripts for processing data presently being documented and will be maintained by WHOI. Data for each cycle will be read into similar C and MATLAB structures. Data processed through to AOML .phy file, flat ascii format.
- GUI Documentation being written.
- All code associated with processing will be available on ftp server.
- MRV developing detailed manual for floats.