

ARGOS



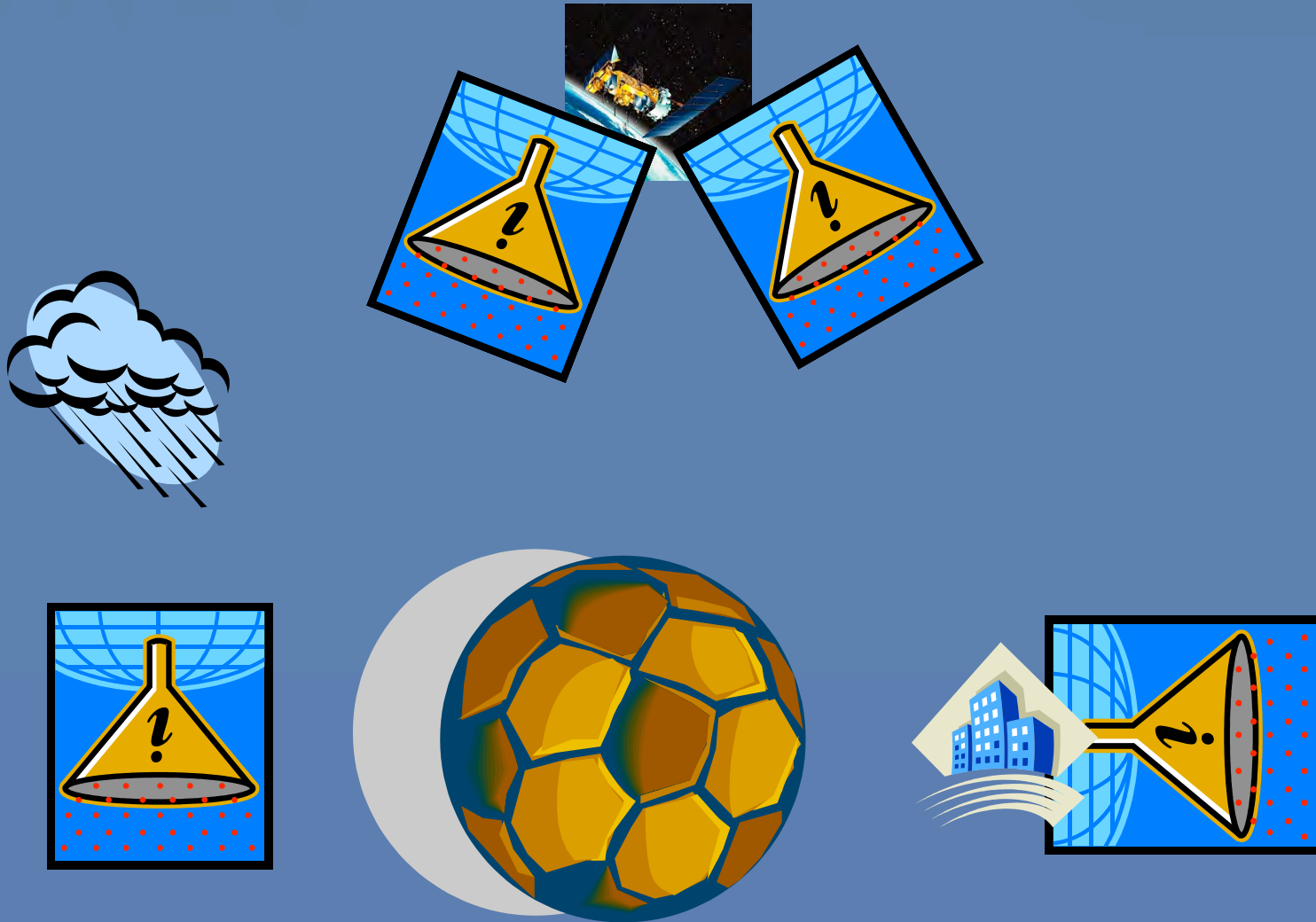
Argos-3 New Capabilities for Euro-Argo Floats

Christian Ortega, CLS

Euro-Argo Workshop, NOC Southampton
24-25 June 08

ARGOS

Argos-3 & Argo: the Funnel Story



The Euro Argo

Menu!

- Argos & Argo
- What's new with Argos-3
- Enhancement Targets for ARGO floats
- Field validation through pilot programs
- Current Status & Next Steps

The Argos System



- **Location & Data Collection**

- 4 NOAA satellites
- 1 MetOp satellite (**A3**)

- 60 regional antennas

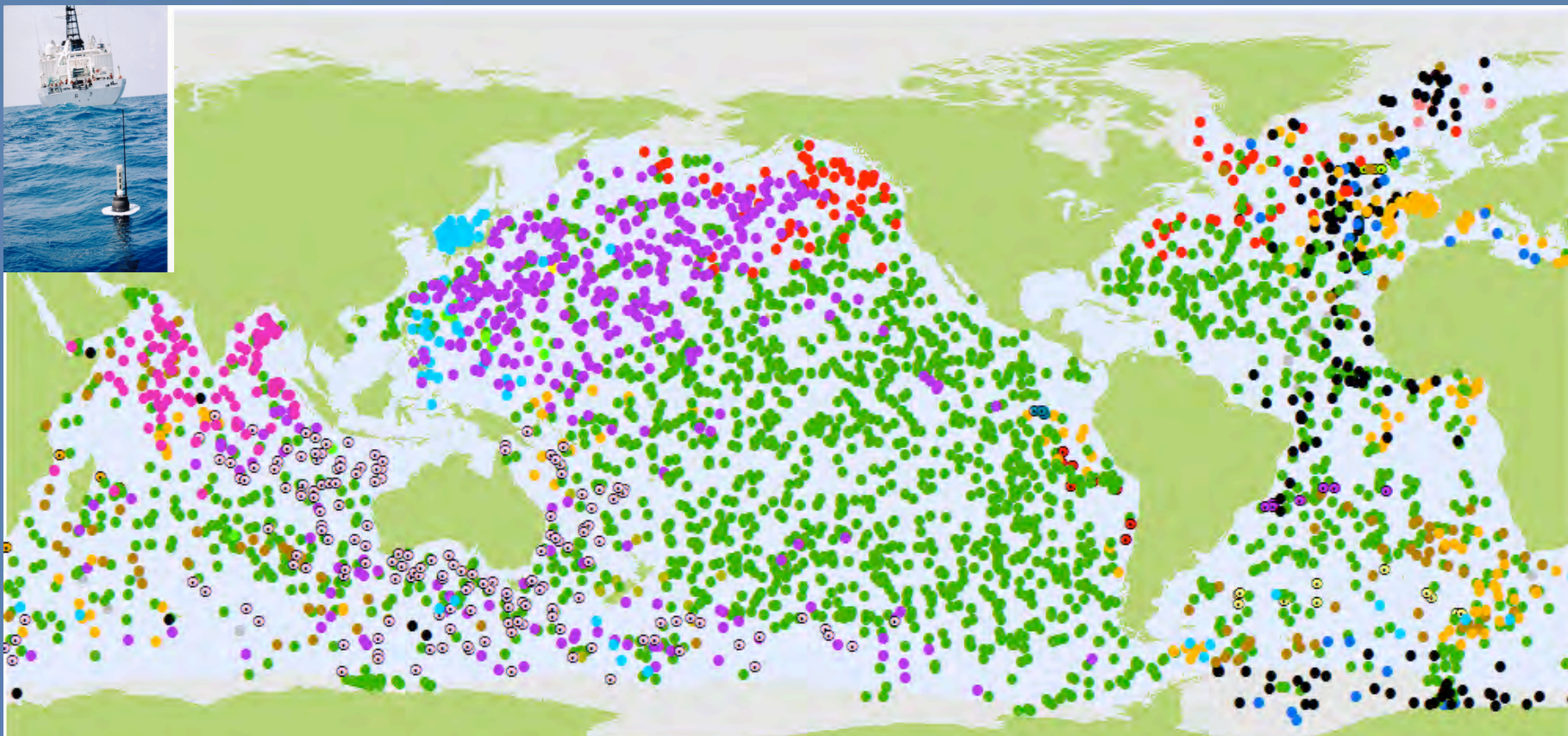
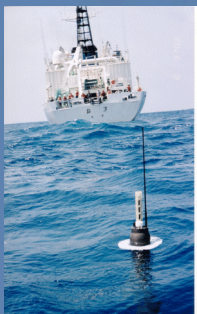
- 2 main processing and data delivery centers

- **Next Argos-3 Sat:**

- NOAA N': Feb 09
- SARAL: Jun 10

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Argo Float network



3159 Argo Floats

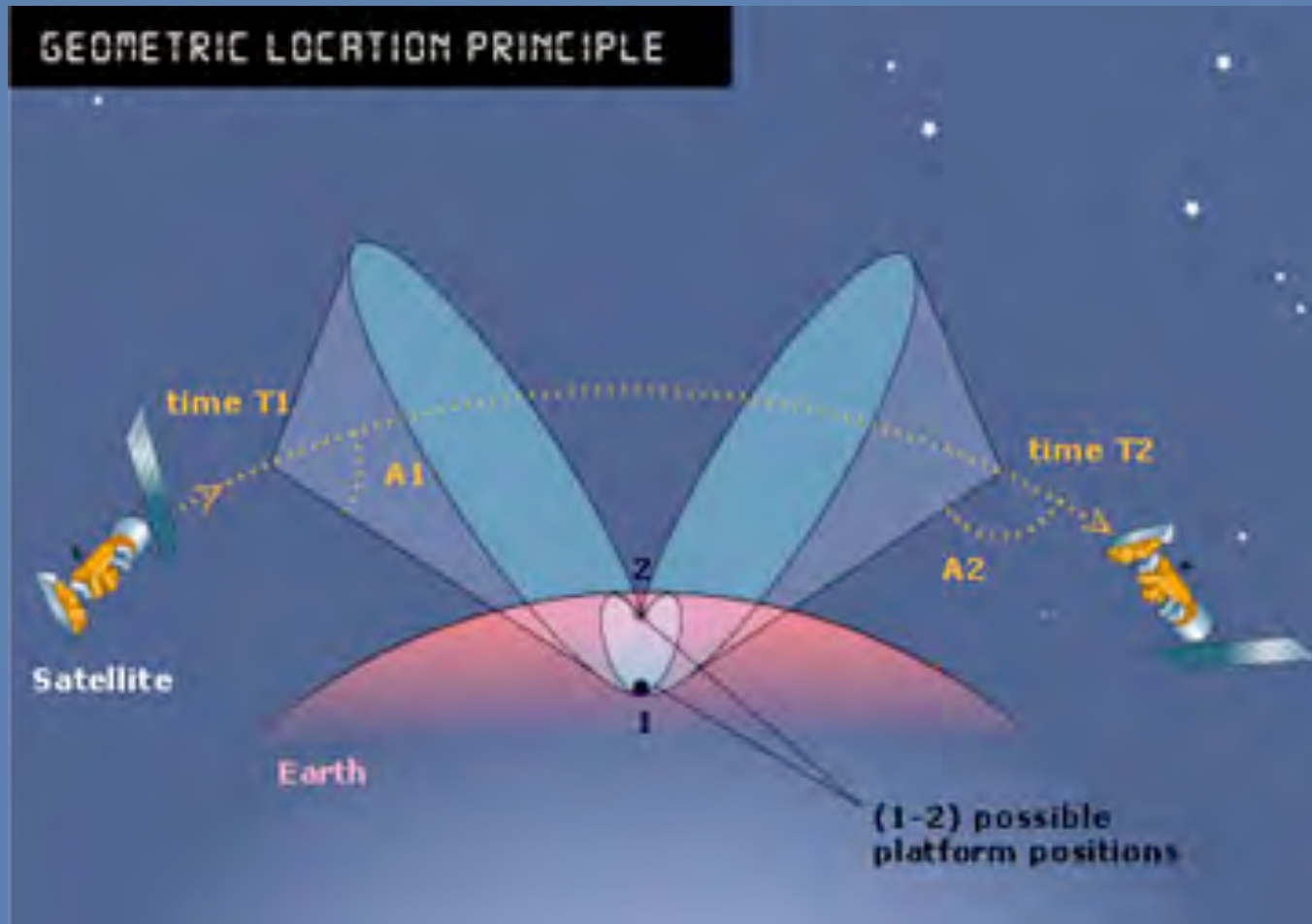
April 2008

○ ARGENTINA (11)	● CHILE (8)	● EUROPEAN UNION (28)	● IRELAND (4)	● MEXICO (0)	● RUSSIAN FEDERATION (1)
○ AUSTRALIA (163)	● CHINA (11)	● FRANCE (152)	● JAPAN (381)	● NETHERLANDS (16)	● SPAIN (2)
● BRAZIL (7)	○ COSTA RICA (0)	● GERMANY (153)	● SOUTH KOREA (99)	● NEW ZEALAND (10)	● UNITED KINGDOM (101)
● CANADA (97)	● ECUADOR (3)	● INDIA (88)	● MAURITIUS (4)	● NORWAY (7)	● UNITED STATES (1813)



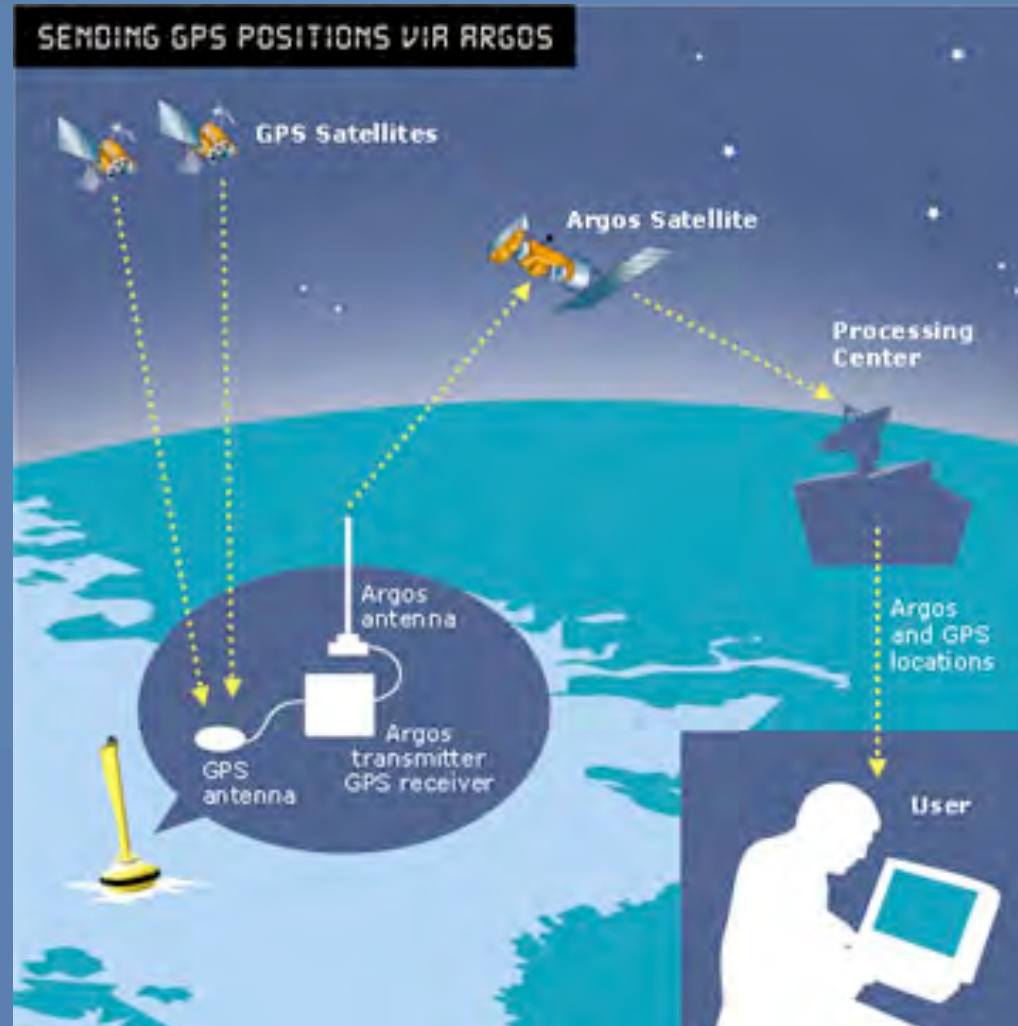
3040 floats ~ 96% Argo floats use Argos transmission

Argos Location



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Argos + GPS Location

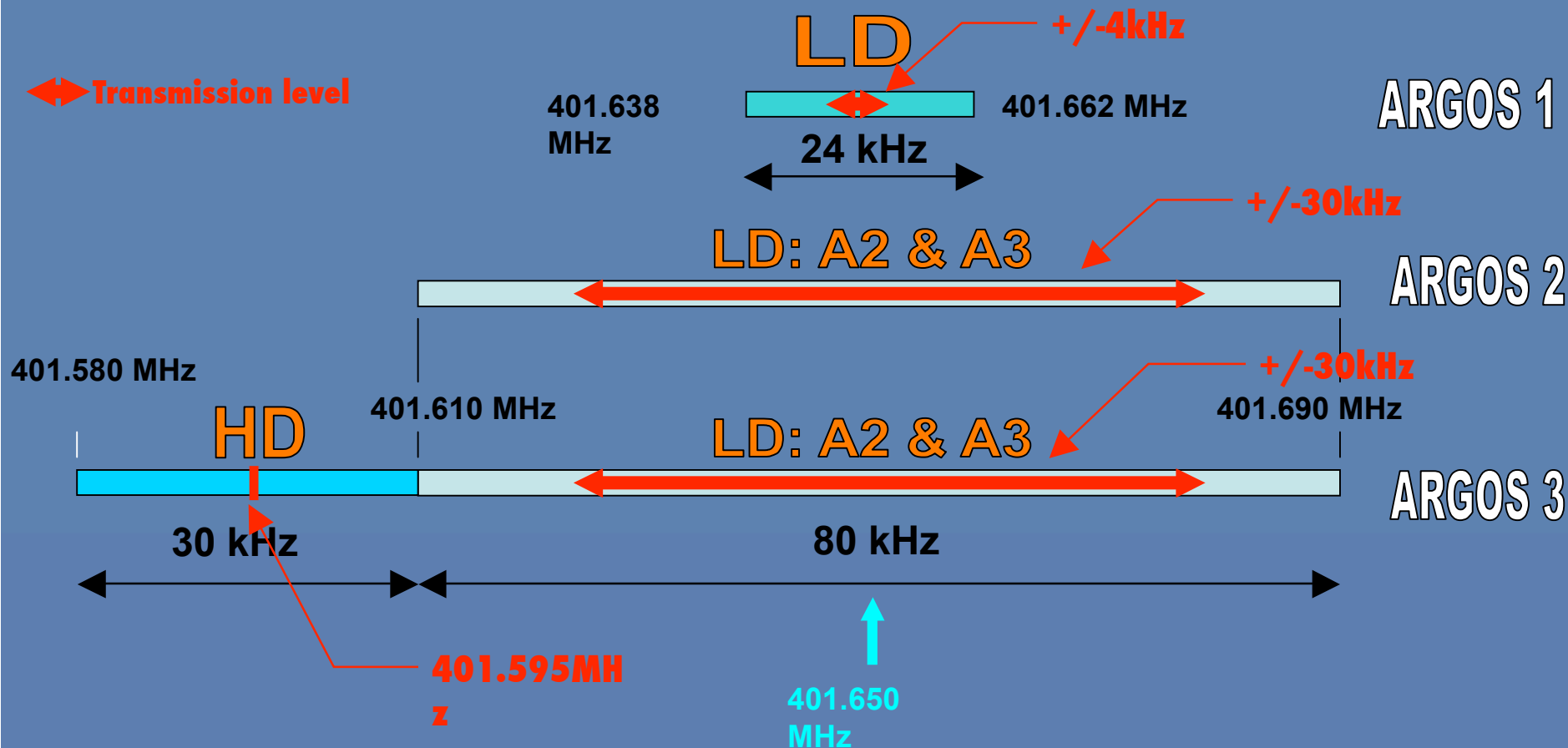


What's New with Argos-3

With Argos-3 we can:

- Send More data
- Send Commands to Platforms
- Improve Transmission Efficiency

Argos-3 Channels & Msgs



A2: PSK (400 bps) / A3: QPSK (bps) / HD: GMSK (4800 bps)

PMT developments



Seimac-Martec

1st Generation -Modular



Elta

2nd Generation –Single board

A single interface: ArgosWeb

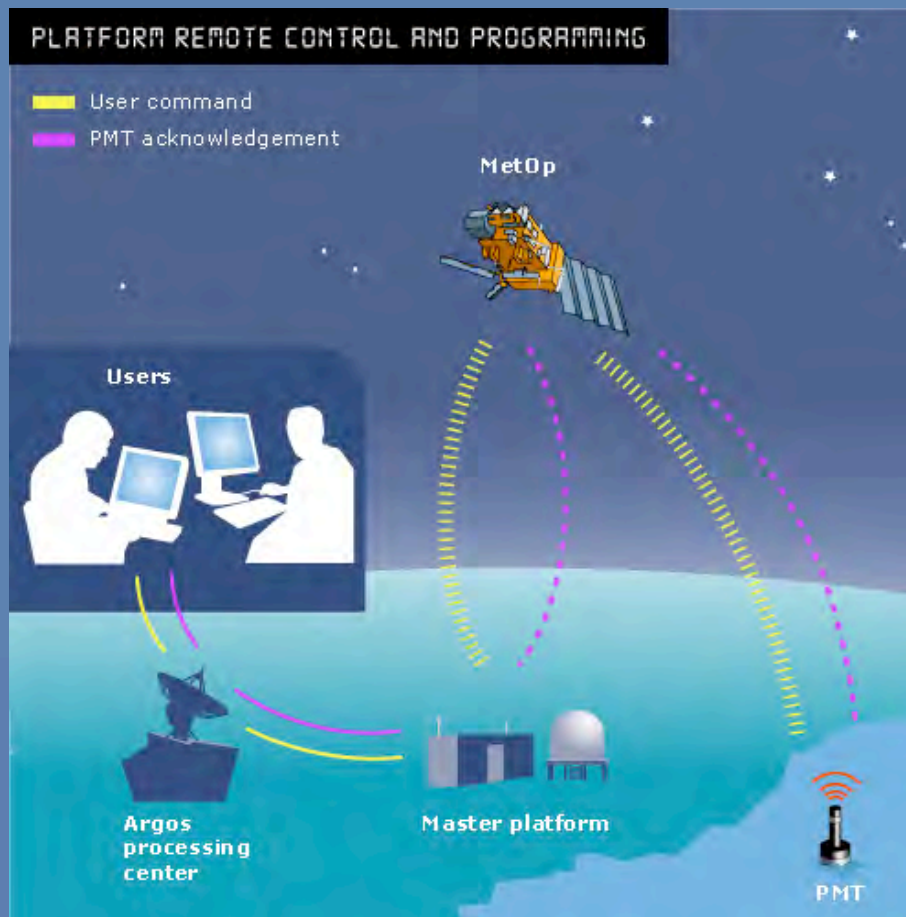
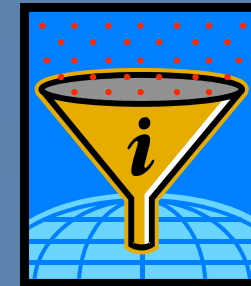
- ArgosWeb: a single **web to:**
 - ✓ **View** your messages & data
 - ✓ **Send commands** to the platforms
- Developer web pages** including documents, FAQ, news, guidelines etc.

The image displays three overlapping screenshots of the ARGOS web interface. The top screenshot shows the 'client access' login page with fields for 'username', 'password', 'time zone' (set to GMT), and 'language' (set to English). It also features a globe and the text 'Worldwide tracking and environmental monitoring by satellite'. The middle screenshot shows a 'Data filter' window with a map of the Pacific region and various search options. The bottom screenshot shows a 'Live data' table with columns for platform ID, status, location, and time, along with a search and filter interface.

Enhancement Targets for (Euro-)Argo floats

- Send More Data
 - ✓ More levels (200 to 800)
 - ✓ More sensors (bio)
- Reduce Surface Time:
 - ✓ Limit drift, fouling, consumption
 - ✓ Increase Lifetime
- Float Performance & Mission
 - ✓ Tuning Transmission strategy
 - ✓ Tuning float mission

Sending More Data

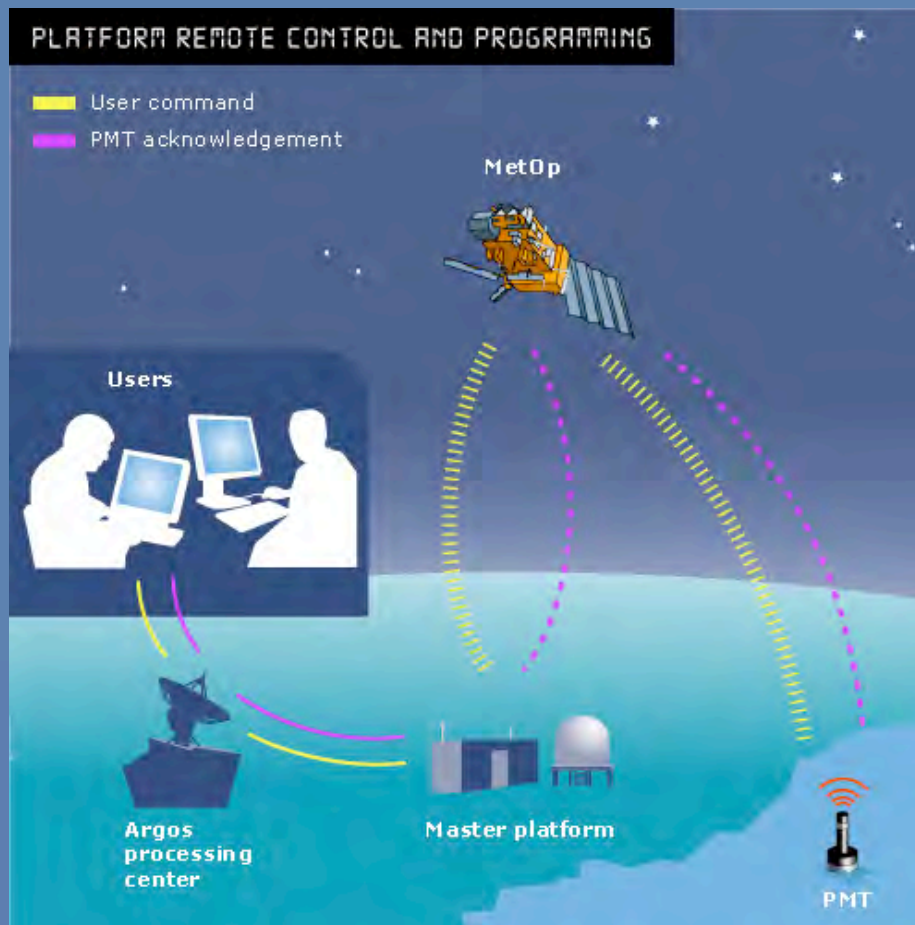
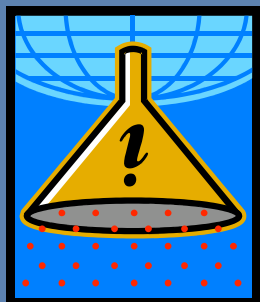


- Transmission Management (sat pass prediction)
- Interactive Data collection (LD & HD)
- 4.8 kbits High Data (HD) rate

For Argo:

- LD rate: 80 PTS levels in one sat pass
- HD rate: 200 PTS levels in one sat pass

Enhancing Transmission Efficiency

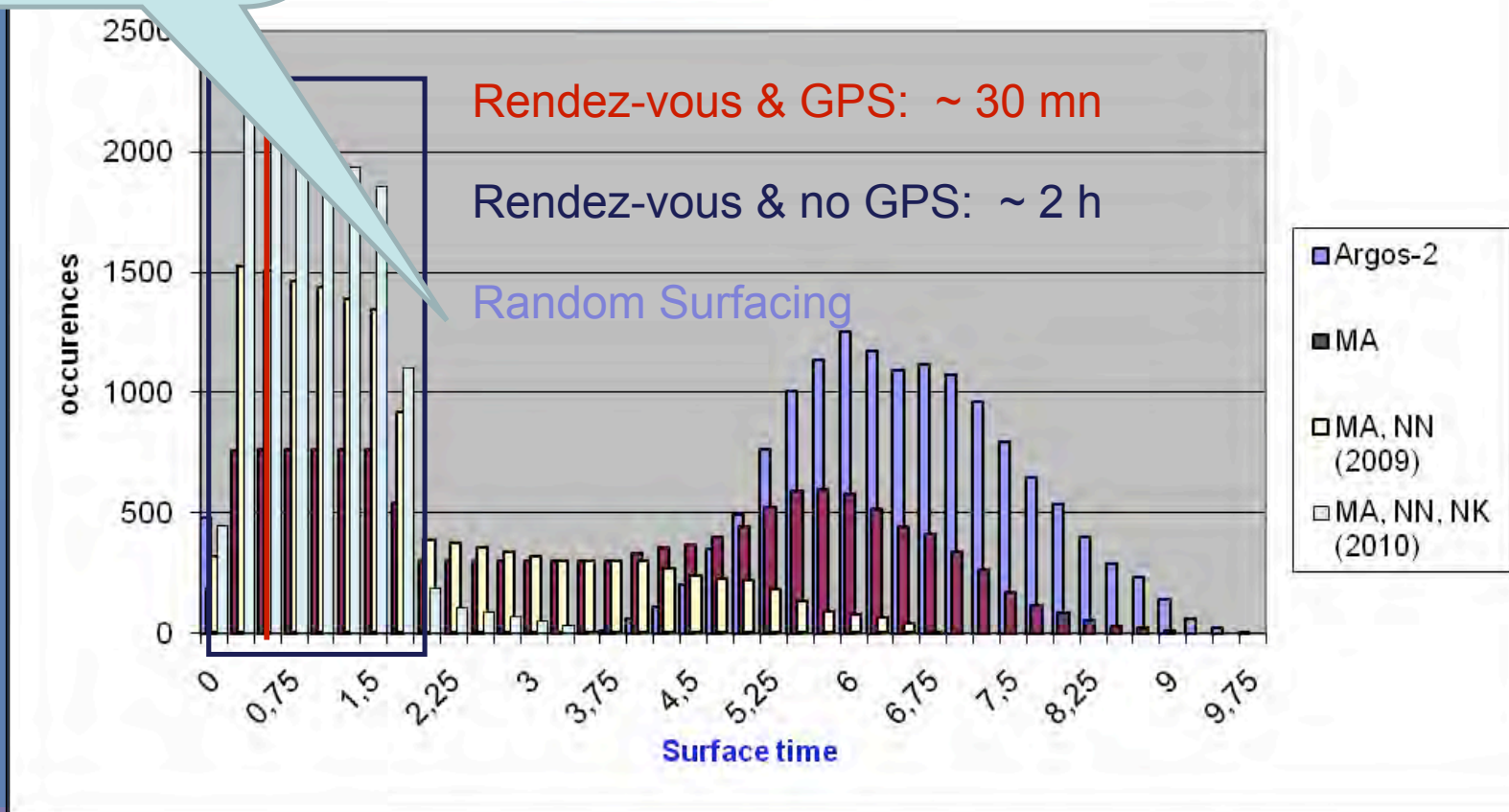


- ✓ Rendez-vous with satellites
- ✓ Transmission during sat pass only: power saving
- ✓ Interactive Data Collection: Both for High or Low Data Rates

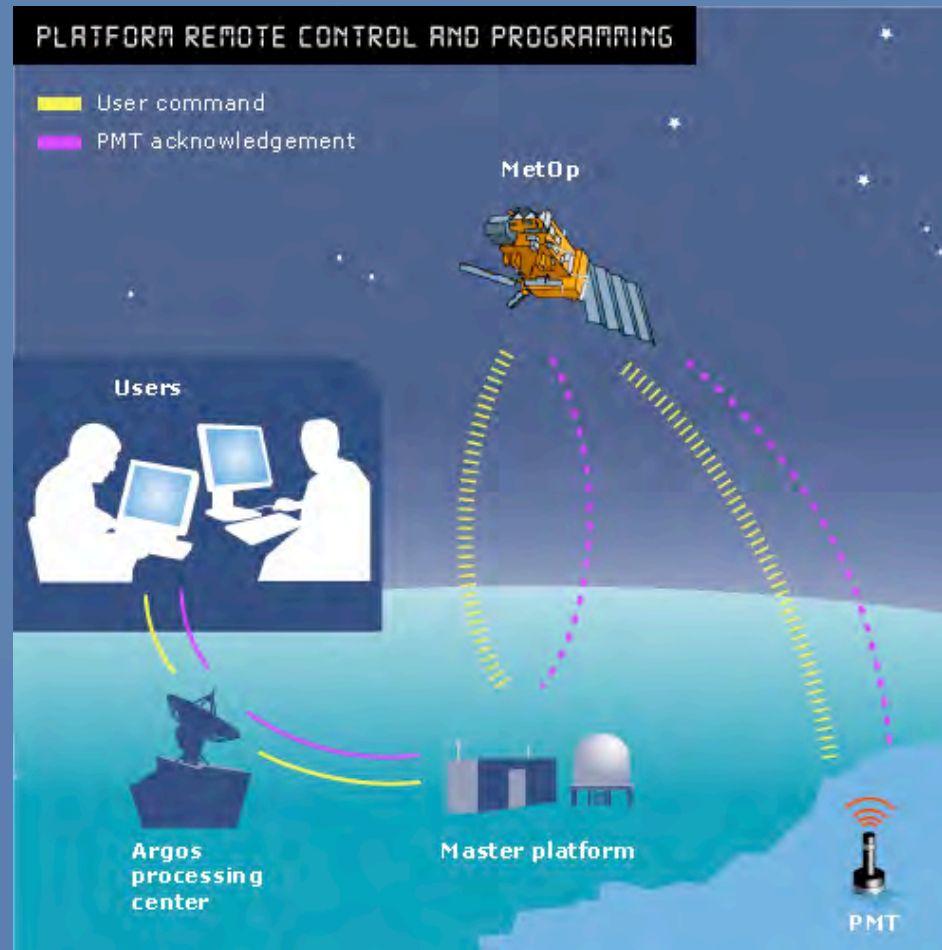
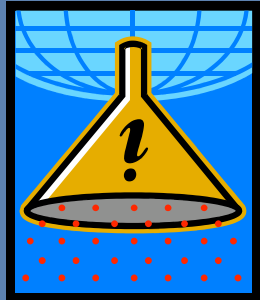
Surface Time – preliminary simulations

Power consumption is divided by 4 at least

Latitude 30 deg



Sending Commands to PMTs



- Posting commands via ArgosWeb
- Loading on Sat.
- Sat Relay to the PMT
- PMT Ack to Sat.
- PMT Ack on ArgosWeb

Float Performance & Mission

- Example 1: Tuning transmission strategy according to float performance or local conditions
 - ✓ Parameters: Tx power, frequency, repetition rate...
- Example 2: Adapting dive parameters according to local conditions (straight,
 - ✓ Parameters: parking/max depth, dive duration...

- Consultation
- Settings
- Satellite pass prediction
- Commands
 - Send
 - Current
 - Archived
 - Periodic
- Preferences
- Help
- Home

Contact: useroffice@cls.fr

Stop simulation

Send commands

Select target PMTs

PMT: By ID Numb.

PMT TYPE: all PMT MODEL: all

List of target PMTs

Selected PMTs - 2 items

PMT ID	PMT name	Program No.	PMT MODEL	PMT TYPE	Last Transmission
76019	ARGO FLOAT 1	30504	PMT RMF K	UNKNOWN	2008/06/20 02:09:06
76018	ARGO FLOAT 2	30504	PMT RMF K	UNKNOWN	2008/06/20 15:05:07

Select a command

Command type: Modify LD Transmitter output power Transmitter output power (0.5 to 3.0)

Command sending mode

Normal Priority Silent PMT

Sending date: 2008/06/24 22

Send the con

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Account: CORTEGA
Simulated: KAMBAYASHI
Date: GMT

- Consultation
- Settings
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Current commands

Criteria: All [More criteria](#)

Period: From (yyyy/MM/dd HH:mm:ss) To (yyyy/MM/dd HH:mm:ss) [Search](#)

List of commands · 13 items

Command ID	PMT ID	PMT Name	Status	Status date	Type of command
18523/1	76019		CHECKED	2008/06/20 15:00:35	Free hexadecimal comn
18522/1	76019		CHECKED	2008/06/20 15:00:35	Free hexadecimal comn
18521/1	76018		ON_BOARD	2008/06/20 14:48:37	Free hexadecimal comn
18520/1	76013		ON_BOARD	2008/06/20 14:48:37	Free hexadecimal comn
18519/1	76013		ON_BOARD	2008/06/20 14:48:37	Free hexadecimal comn
18518/1	76013		ON_BOARD	2008/06/20 13:09:30	Free hexadecimal comn
18517/1	80293		ON_BOARD	2008/06/20 13:09:29	Free hexadecimal comn
18516/1	80296		ON_BOARD	2008/06/20 13:09:29	Free hexadecimal comn
18515/1	76018		ON_BOARD	2008/06/20 09:47:52	Free hexadecimal comn
18505/1	76019		ON_BOARD	2008/06/19 16:50:05	Free hexadecimal comn
18504/1	76019		ON_BOARD	2008/06/19 16:50:05	Free hexadecimal comn
18499/1	80293		ON_BOARD	2008/06/19 11:50:01	Free hexadecimal comn
18498/1	80296		ON_BOARD	2008/06/19 11:50:01	Free hexadecimal comn

- Consultation
- Settings
- Satellite pass prediction
- Commands
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- Home

Characteristics

ID: 18511/1	
Creation date: 2008/06/20 01:02:17	Earliest sending date: 2008/06/20 07:00:00
Status: RECEIVED	Status date: 2008/06/20 09:44:11
Status explanation:	
Cancellation status: NO LONGER POSSIBLE	Cancellation request date: <input type="button" value="Cancel the command"/>
Cancellation reason:	
<input checked="" type="checkbox"/> Periodically Generated	<input type="button" value="See the source"/>
<input type="checkbox"/> Silent PMT	

Command target

Target ID: 76017	Target type: PMT	Target name:
Program Number: 30504	Program name: TEST KENWOOD PMT PROTOTYPES	

Command content

Command type: Send PMT Location

Command parameters - 2 items

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Platform Messaging Transceiver An Easy Modem

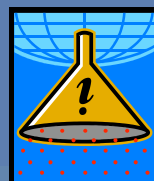
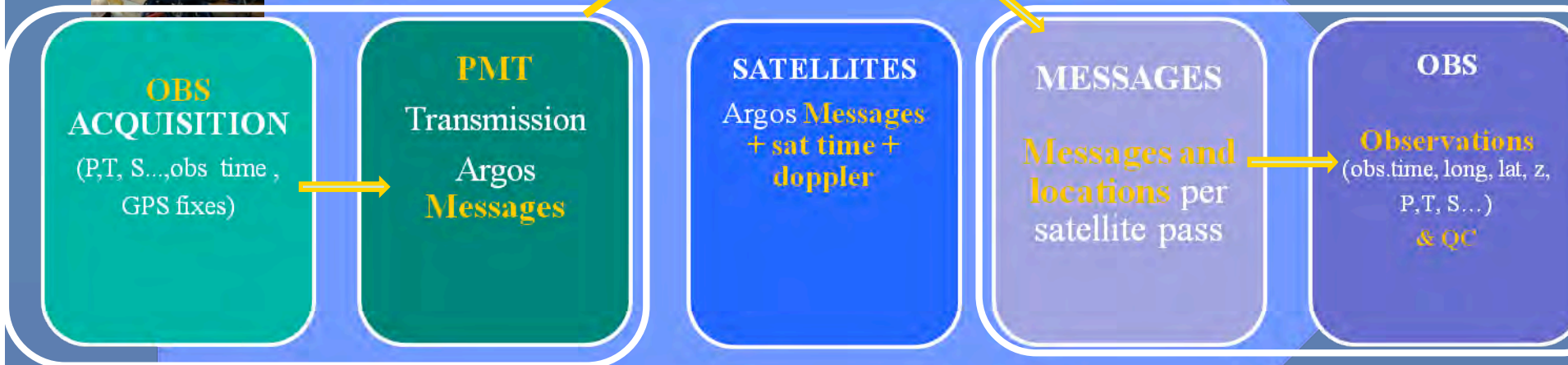
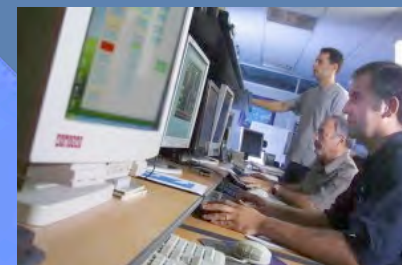
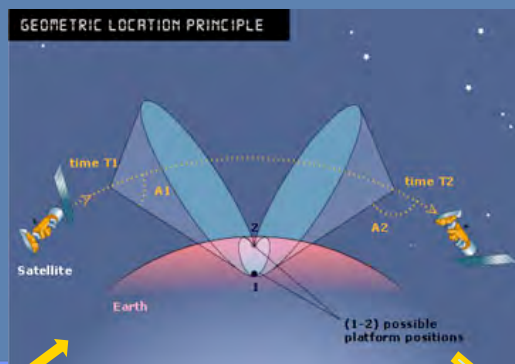
Output Power	HD: 5 W LD: 0.5, 1, 2W
Two-way	Simplex
Size	2.5 x 8 x 6 cm
Weight	160 g
Power supply	7 ~ 14V
GPS	available port
Data link	Serial (0 – 3.3V)
Available	Now!

Developed by CLS & Kenwood



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The data circuit : from platform to user



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ARGO FLOAT

Account: DBCP

Date: GMT

Consultation

- Map
- Data table
- Most recent data
- Data Download
- Download
COM PRV/DIAG
- Observations
- Settings
- Satellite pass prediction
- Preferences
- Help
- Home

Contact:

mfaure@cls.fr afontanaud@cls.fr

Data filter

Platform: by ID numb. (s)

21858,21888

Time frame: For n day(s)

9 day(s)

Search

Data - 108 items

	Platform ID No.	Latitude	Longitude	Level	WT_P	WT_SA	WT_T
<input checked="" type="checkbox"/>	21858	12° 24' 25"S	64° 08' 10"E	0			
<input checked="" type="checkbox"/>	21858	12° 24' 25"S	64° 08' 10"E	-4.5	4.5	34.904	25.825
<input checked="" type="checkbox"/>	21858	12° 24' 25"S	64° 08' 10"E	-8.8	8.9	34.904	25.825
<input checked="" type="checkbox"/>	21858	12° 24' 25"S	64° 08' 10"E	-19.2	19.3	34.904	25.83
<input checked="" type="checkbox"/>	21858	12° 24' 25"S	64° 08' 10"E	-28.9	29.1	34.904	25.831
<input checked="" type="checkbox"/>	21858	12° 24' 25"S	64° 08' 10"E	-39	39.2	34.905	25.833
<input checked="" type="checkbox"/>	21858	12° 24' 25"S	64° 08' 10"E	-49	49.3	34.914	25.819
<input checked="" type="checkbox"/>	21858	12° 24' 25"S	64° 08' 10"E	-59.1	59.5	34.918	25.816
<input checked="" type="checkbox"/>	21858	12° 24' 25"S	64° 08' 10"E	-59.2	59.5	34.918	25.816
<input checked="" type="checkbox"/>	21858	12° 24' 25"S	64° 08' 10"E	-69.1	69.5	34.925	25.815
<input checked="" type="checkbox"/>	21858	12° 24' 25"S	64° 08' 10"E	-78.7	79.2	34.93	25.81
<input checked="" type="checkbox"/>	21858	12° 24' 25"S	64° 08' 10"E	-88.8	89.3	34.932	25.72

Know today, live better tomorrow



Argos- 3 Launch Program

PMT integration
in Platforms w.
Manufacturers

Serie
Production
Drifters &
Floats

Argos-3
Pilot
Programs

In parallel, set-up of a global Monitoring network:
system performance evaluation worldwide

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Monitoring Network

Initial deployment 10 PMT this summer



Manufacturers Contacted

➤ DRIFTERS

- Clearwater, Technocean, Metocean, Pacific Gyre, Marlin Yug, CMR

➤ FLOATS

- WEBB, SCRIPPS, IFREMER-Kannad

➤ MOORED BUOYS

- JAMSTEC, PMEL/NDBC, WHOI, FUGRO

Pilot Projects in view

- DBCP Pilot. Project: ~50 drifters (TBC)
- ARGO Pilot Project: ~15 Floats (TBC) of which
- Euro-Argo: 4 floats

Goals of Argos Euro-Argo Pilot Program

- Evaluate overall float performance with Argos-3, in particular:
 - ✓ Minimum surface time
 - ✓ Data volume transmitted
 - ✓ Power consumption saving
 - ✓ Remote control
- Establish best **operational** scenarios for Euro-Argo floats

Current Status

- Contact made with Ifremer & Manufacturers
- PMT units delivered (Ifremer, WEBB)
- Scenario design:
 - Simulations at CLS to tune scenarios,
 - Coordination to with User & Manufacturers
- Starting work on antenna(s)

Projected Timing - Floats



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Thank you for your attention

