



# Argos Processing & Services

Christian Ortega

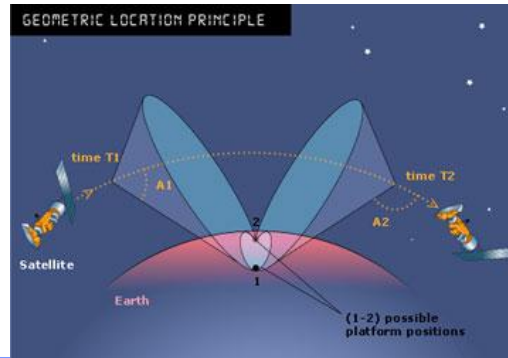


**Zoology & Satellite Seminar**  
**IPEE ASR, Moscou**  
**25-26 February 2009**

- The Data Circuit
- Data Decoding & Processing
- Some Useful Services

# The data circuit

From your Platform in the Field to your Computer



**Platform**  
**Observation**  
acquisition  
(P,T, S..., GPS  
fixes)

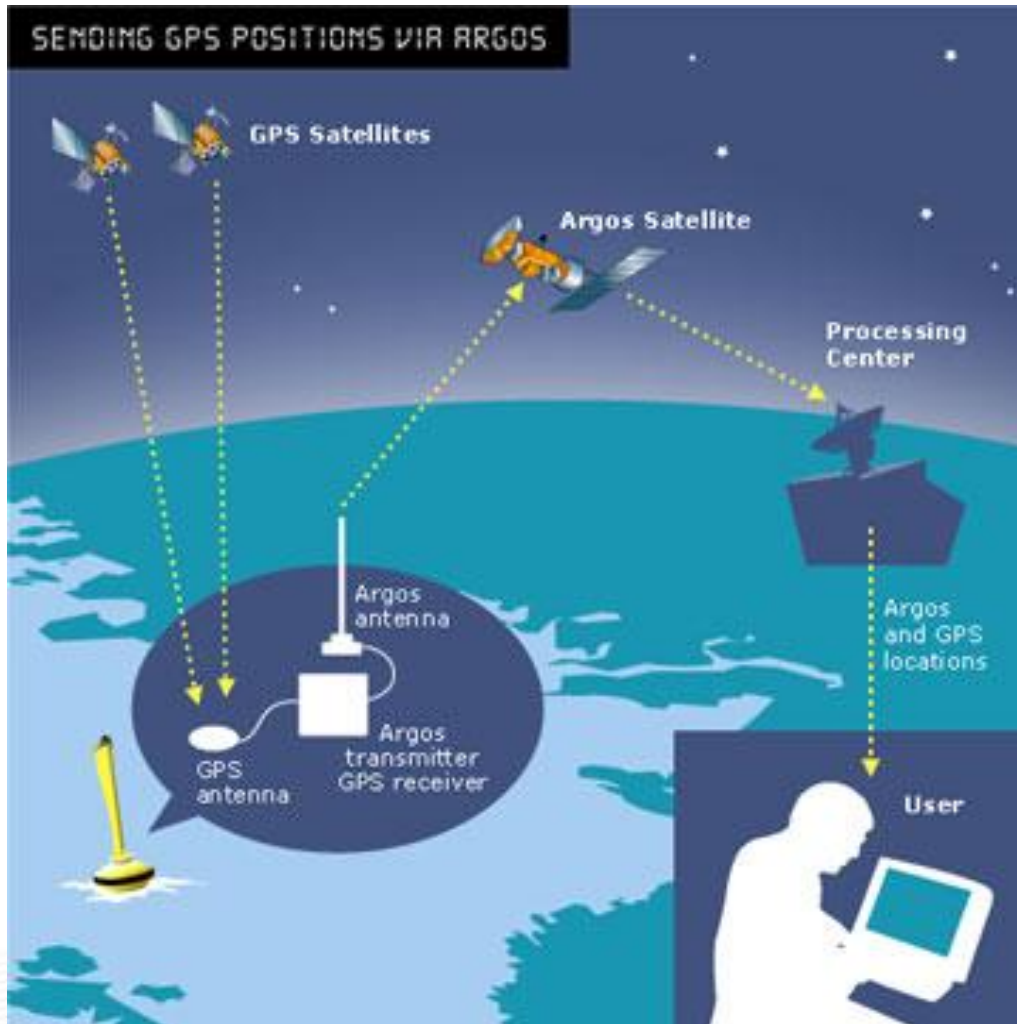
**PTT-PMT**  
Transmission  
of Argos  
**Messages**

**Satellites**  
**Messages +**  
**doppler + time**

**Argos**  
**database**  
**Messages and**  
**locations** per  
satellite pass

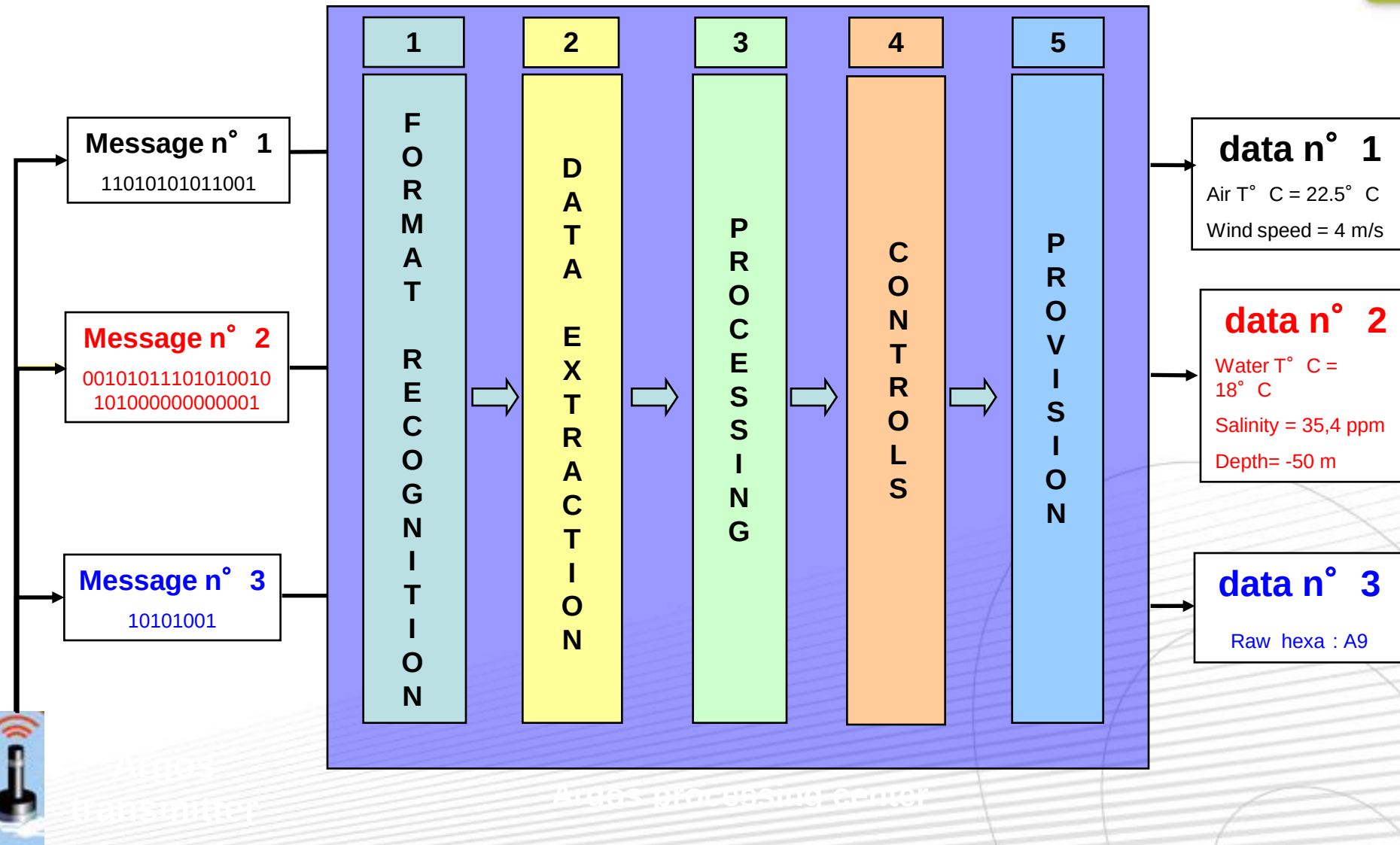
**Argos**  
**database**  
**QC Geolocated**  
**Observations**  
(time, long, lat,  
z, P,T, S...)

# Example with GPS Positions

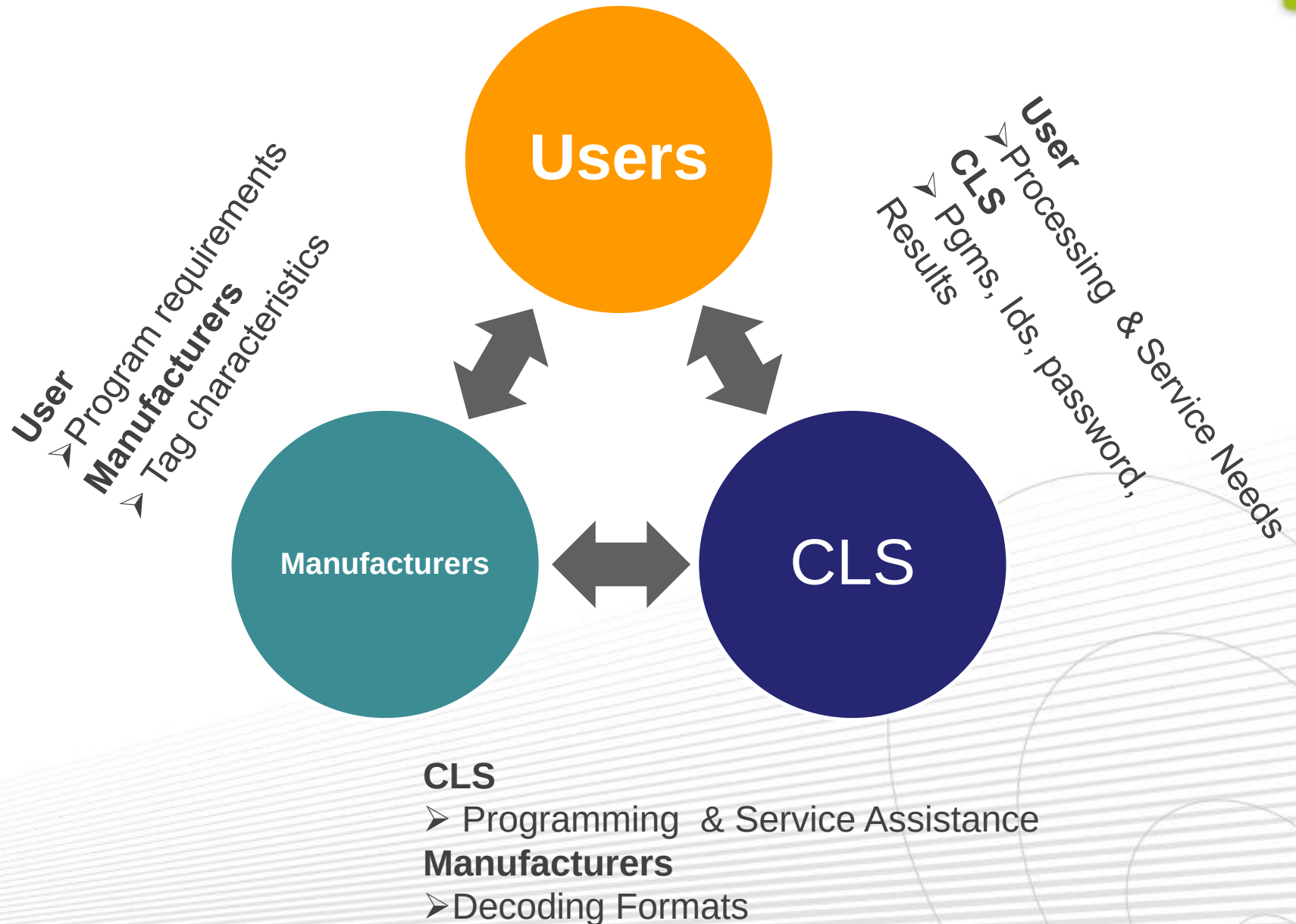


- GPS position acquisitions
- Coding in Argos Messages
- Messages collection by satellites
- Messages relay to CLS
- GPS position decoding
- Distributed & displayed

# Data Processing





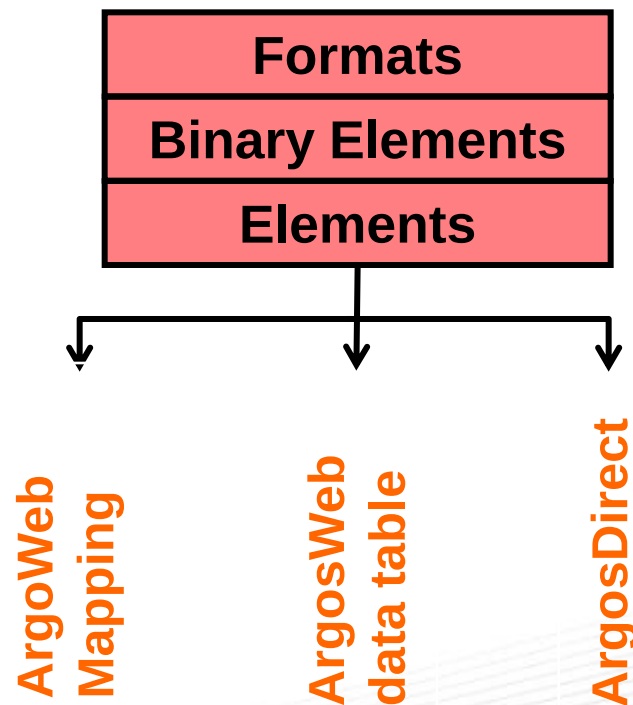


# Platform Template at Argos



Template = Message formats + Decoding Formula

## Example(s)



| Formats                           |
|-----------------------------------|
| 010111101001100101011101000110    |
| Temperature, Activity, Long, Lat, |
| Calculation Formula               |

# Characteristics of the New Processing System

- Templates ➡ processing settings tied to Manufacturer Platform models
- Formats ➡ message structures
- Binary element ➡ a set of bits or bytes
- Element ➡ a processed data element
- Blocks ➡ grouped data elts , ex. (P, T, S)



# Linking a template to a platform model

ARGOS

Account: YBERNARD  
Simulated: SUKMOONSIK  
Date: GMT

Consultation

Settings

Programs

**Platforms**

User parameters

Preferences

Global Help

Home

Select platforms

Platform:

Platform type:  Platform model:  Search

List of platforms - 97 items

| ID Numb. | Name | Platform type | Model | Program number | Person in charge | Template       |
|----------|------|---------------|-------|----------------|------------------|----------------|
| 4252     |      | ARGO FLOAT    |       | 2096           | SUK              | Webb Apex - 04 |
| 4659     |      | ARGO FLOAT    |       | 2096           | SUK              | Webb Apex - 04 |
| 4661     |      | ARGO FLOAT    |       | 2096           | SUK              | Webb Apex - 04 |
| 4662     |      | ARGO FLOAT    |       | 2096           | SUK              | Webb Apex - 04 |
| 4663     |      | ARGO FLOAT    |       | 2096           | SUK              | Webb Apex - 04 |
| 4664     |      | ARGO FLOAT    |       | 2096           | SUK              | Webb Apex - 04 |
| 4665     |      | ARGO FLOAT    |       | 2096           | SUK              | Webb Apex - 04 |
| 4666     |      | ARGO FLOAT    |       | 2096           | SUK              | Webb Apex - 04 |
| 4670     |      | ARGO FLOAT    |       | 2096           | SUK              | Webb Apex - 04 |
| 4684     |      | ARGO FLOAT    |       | 2096           | SUK              | Webb Apex - 04 |

Click on !

# A Template can address different Message Formats

Template name : Webb Apex - 04

| Format number | Recognition mode | Length (bits) | Number of binary elements | Name         |
|---------------|------------------|---------------|---------------------------|--------------|
| 1             | Header           | 256           | 17                        | Techno. data |
| 2             | Header           | 256           | 3                         | P,T,S data   |

Click on !

# Download by Binary Elements

Format number : 2

| Binary element number | Type     | First bit position | Number of bits | Repetition (for block only) | Algorithm name (for checksum only) |
|-----------------------|----------|--------------------|----------------|-----------------------------|------------------------------------|
| 1                     | Checksum | 0                  | 8              |                             | Webb                               |
| 2                     | Regular  | 8                  | 8              |                             |                                    |
| 3                     | Block    | 16                 | 48             | 5                           |                                    |
| 3.1                   | Regular  | 0                  | 16             |                             | (raw temperature)                  |
| 3.2                   | Regular  | 16                 | 16             |                             | (raw salinity)                     |
| 3.3                   | Regular  | 32                 | 16             |                             | (raw pressure)                     |

Click on !

# Several Processings can be applied to a Binary Element

## Binary element number : 3.1

| Element name | Input format                  | Calibration curve | Binary element associated | Output format | GTS Sensor kind | Units | Distribution |
|--------------|-------------------------------|-------------------|---------------------------|---------------|-----------------|-------|--------------|
| Temperature  | Pure binary in two-complement | $Y = -0.1 * X$    |                           | Real          | WT_T            | °C    | Argos / GTS  |
| Raw data     | Pure binary in two-complement | $Y = X$           |                           | Hexa          |                 |       | Argos        |

# Raw data on ArgosWeb

ArgosWeb - Windows Internet Explorer

https://argos-system.cls.fr/cwi/Consult/MsgData.do

Fichier Edition Affichage Favoris Outils ?

ArgosWeb

**ARGOS**

Account: YBERNARD  
Simulated: GTS  
Date: GMT

**Consultation**

- Map
- Data table**
- Most recent data
- Data Download
- Download COM/PRV/DIAG
- Observations

**Settings**

- Satellite pass prediction
- Preferences
- Help
- Home

Contact:  
[useroffice@cls.fr](mailto:useroffice@cls.fr)

Stop simulation

**Data filter**

Platform: All

Time frame: For n day(s)

Location class: ☐

All messages received

Search

**Data - 109 items**

|                                     | Platform        | Latitude     | Longitude    | Loc. date           | Sat. | Msg Date            | SENSOR #01 | SENSOR #02 | SENSOR #03 | SENSOR #04 |
|-------------------------------------|-----------------|--------------|--------------|---------------------|------|---------------------|------------|------------|------------|------------|
| <input checked="" type="checkbox"/> | 30003401263807I | 14° 33' 05"S | 77° 50' 44"E | 2008/10/06 00:01:22 | IR   | 2008/10/06 00:01:23 | 6D         | 14         | 18         | E/         |
| <input checked="" type="checkbox"/> | 30003401263807I | 14° 32' 52"S | 77° 46' 23"E | 2008/10/06 01:01:24 | IR   | 2008/10/06 01:01:24 | 6D         | 14         | 99         | 0          |
| <input checked="" type="checkbox"/> | 30003401263807I | 14° 35' 04"S | 77° 48' 34"E | 2008/10/06 02:01:24 | IR   | 2008/10/06 02:01:24 | 6D         | 15         | 19         | 1          |
| <input checked="" type="checkbox"/> | 30003401263807I | 14° 33' 05"S | 77° 50' 44"E | 2008/10/06 03:01:22 | IR   | 2008/10/06 03:01:23 | 6D         | 15         | 99         | 3          |
| <input checked="" type="checkbox"/> | 30003401263807I | 14° 35' 11"S | 77° 50' 44"E | 2008/10/06 04:01:23 | IR   | 2008/10/06 04:01:23 | 6D         | 16         | 19         | 2          |
| <input checked="" type="checkbox"/> | 30003401263807I | 14° 35' 29"S | 77° 45' 55"E | 2008/10/06 05:01:21 | IR   | 2008/10/06 05:01:22 | 6D         | 16         | 99         | 3          |
| <input checked="" type="checkbox"/> | 30003401263807I | 14° 32' 58"S | 77° 48' 34"E | 2008/10/06 06:01:22 | IR   | 2008/10/06 06:01:23 | 6D         | 17         | 19         | 2          |
| <input checked="" type="checkbox"/> | 30003401263807I | 14° 32' 52"S | 77° 46' 23"E | 2008/10/06 07:01:22 | IR   | 2008/10/06 07:01:22 | 6D         | 17         | 99         | 1          |
| <input checked="" type="checkbox"/> | 30003401263807I | 14° 37' 35"S | 77° 45' 55"E | 2008/10/06 08:01:24 | IR   | 2008/10/06 08:01:24 | 6D         | 18         | 19         | 0          |
| <input checked="" type="checkbox"/> | 30003401263807I | 14° 37' 28"S | 77° 43' 44"E | 2008/10/06 09:01:21 | IR   | 2008/10/06 09:01:22 | 6D         | 18         | 98         | E/         |
| <input checked="" type="checkbox"/> | 30003401263807I | 14° 35' 29"S | 77° 45' 55"E | 2008/10/06 10:01:23 | IR   | 2008/10/06 10:01:23 | 6D         | 19         | 18         | E/         |
| <input checked="" type="checkbox"/> | 30003401263807I | 14° 35' 16"S | 77° 41' 34"E | 2008/10/06 11:01:24 | IR   | 2008/10/06 11:01:24 | 6D         | 19         | 98         | E/         |
| <input checked="" type="checkbox"/> | 30003401263807I | 14° 37' 28"S | 77° 43' 44"E | 2008/10/06 12:01:21 | IR   | 2008/10/06 12:01:21 | 6D         | 1A         | 18         | F/         |
| <input checked="" type="checkbox"/> | 30003401263807I | 14° 35' 23"S | 77° 43' 44"E | 2008/10/06 13:01:34 | IR   | 2008/10/06 13:01:34 | 6D         | 1A         | 99         | 0          |
| <input checked="" type="checkbox"/> | 30003401263807I | 14° 37' 28"S | 77° 43' 44"E | 2008/10/06 14:01:25 | IR   | 2008/10/06 14:01:25 | 6D         | 1B         | 19         | 1          |
| <input checked="" type="checkbox"/> | 30003401263807I | 14° 37' 21"S | 77° 41' 34"E | 2008/10/06 15:01:21 | IR   | 2008/10/06 15:01:21 | 6D         | 1B         | 99         | 3          |
| <input checked="" type="checkbox"/> | 30003401263807I | 14° 39' 34"S | 77° 43' 44"E | 2008/10/06 16:02:30 | IR   | 2008/10/06 16:02:30 | 6D         | 1C         | 19         | 4          |
| <input checked="" type="checkbox"/> | 30003401263807I | 14° 39' 34"S | 77° 43' 44"E | 2008/10/06 17:01:25 | IR   | 2008/10/06 17:01:25 | 6D         | 1C         | 99         | 4          |
| <input checked="" type="checkbox"/> | 30003401263807I | 14° 37' 28"S | 77° 43' 44"E | 2008/10/06 18:01:21 | IR   | 2008/10/06 18:01:22 | 6D         | 1D         | 19         | 4          |
| <input checked="" type="checkbox"/> | 30003401263807I | 14° 37' 14"S | 77° 39' 23"E | 2008/10/06 19:01:31 | IR   | 2008/10/06 19:01:32 | 6D         | 1D         | 99         | 1          |
| <input checked="" type="checkbox"/> | 30003401263807I | 14° 39' 60"S | 77° 41' 05"E | 2008/10/06 20:01:25 | IR   | 2008/10/06 20:01:25 | 6D         | 1E         | 19         | 0          |
| <input checked="" type="checkbox"/> | 30003401263807I | 14° 39' 52"S | 77° 38' 54"E | 2008/10/06 21:01:22 | IR   | 2008/10/06 21:01:22 | 6D         | 1E         | 98         | F/         |
| <input checked="" type="checkbox"/> | 30003401263807I | 14° 37' 21"S | 77° 41' 34"E | 2008/10/06 22:01:22 | IR   | 2008/10/06 22:01:22 | 6D         | 1F         | 18         | E/         |

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Terminé

Intranet local

100%



# ARGOS

## PROCESSED DATA ARGO FLOAT

Account: DBCP

Date: GMT

### Consultation

Map

Data table

Most recent data

Data Download

Download  
COMPRV/DIAG**Observations**

Settings

Satellite pass  
prediction

Preferences

Help

Home

Contact:

[mfaure@cls.fr](mailto:mfaure@cls.fr), [afontanaud@cls.fr](mailto: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  |

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C:\WINDOWS\systeme...

ArgosWeb - Microsoft...

FR



12:33

## GEO ArgosMonitor.

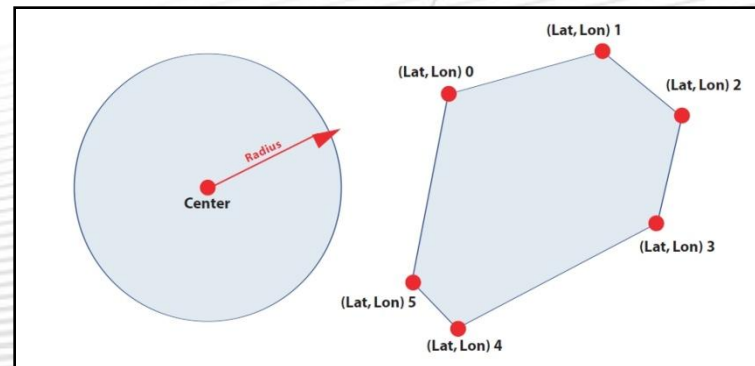


*Has the animal I am tracking entered a wintering zone? returned to its nest? crossed a border?*

*Has my platform entered/left an area of interest?*



→ GEO ArgosMonitor sends you an alarm message when a platform enters or leaves a defined zone.



## Sensor ArgosMonitor.

*Is the animal still alive (are heart rate, temperature measurements normal)?*

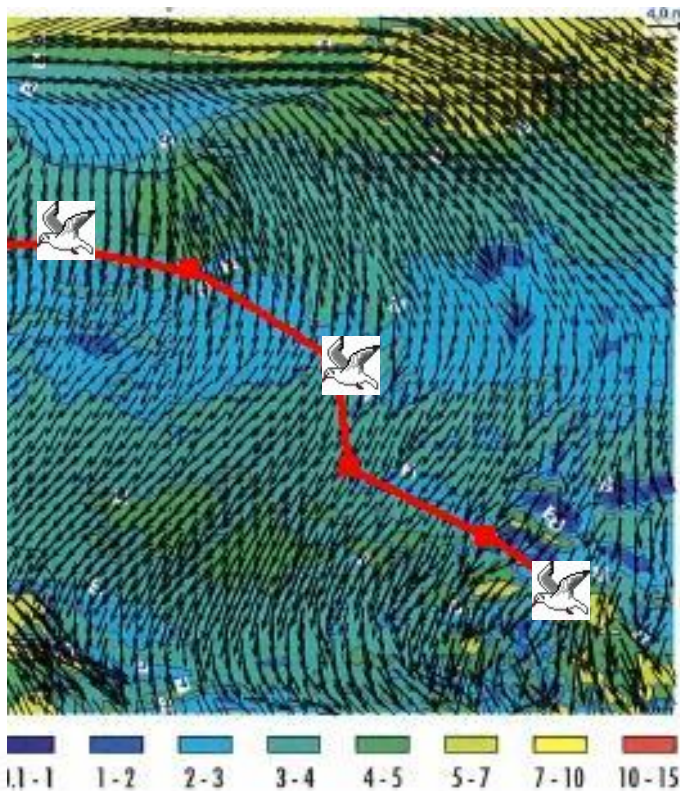
*How is my platform performing (battery level, light sensor, etc.)?*

→ Sensor ArgosMonitor can alert users when an unusal/critical value for a particular sensor is reported.





## METEOROLOGICAL & OCEAN DATA MIXED WITH ARGOS DATA ?



CLS is thinking of Providing:

- Environmental Data in real time (winds, ocean currents, SST, Sea color...)
- Mixed Data Bank & Data Server
- Data Viewer on web on local Software
- Requires Standard Exchange formats

# Thank You for Your Attention

