ARGOS

Improvements and future of the constellation

GTMF 16/11/2018

CLS

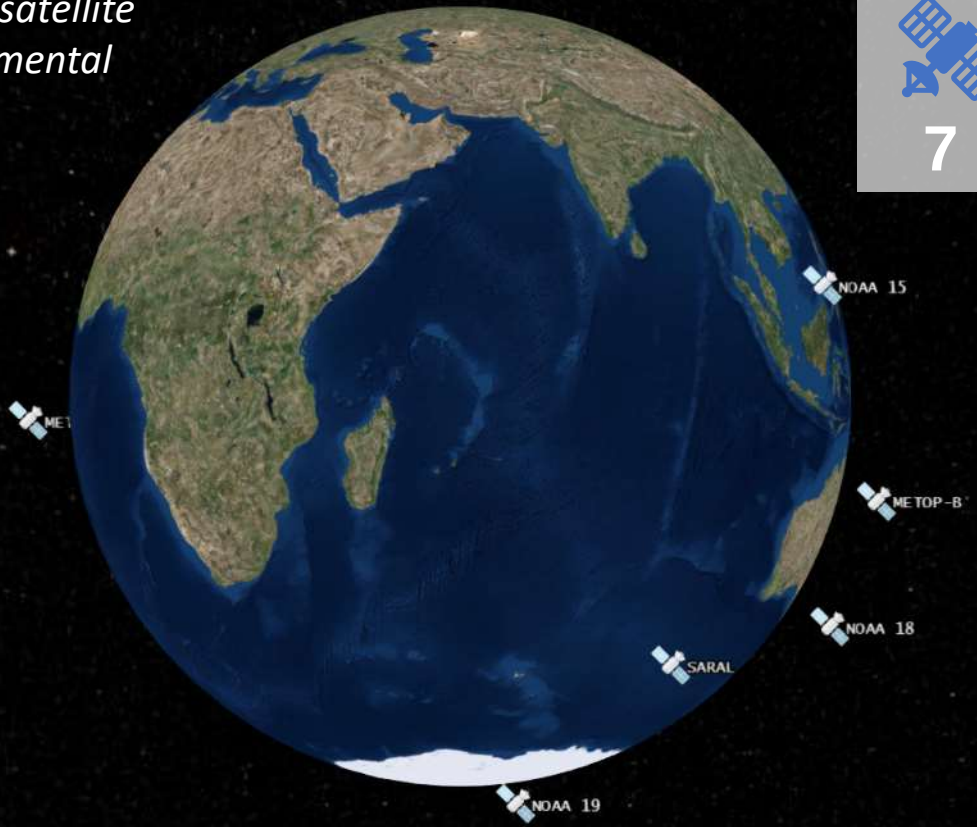
Sophie Baudel
Yann Bernard
Stéphan Lauriol

Argos system today – 7 Argos satellites in orbit

ARGOS : *an International governmental collaboration satellite system dedicated to environmental monitoring*

Main advantages:

- ✓ Dedicated frequency
- ✓ Doppler positioning (GPS free)
- ✓ Low powers (0,1 to 2 watts)
- ✓ *Data collection (GPS, T°C, etc.)*



7

Argos usage

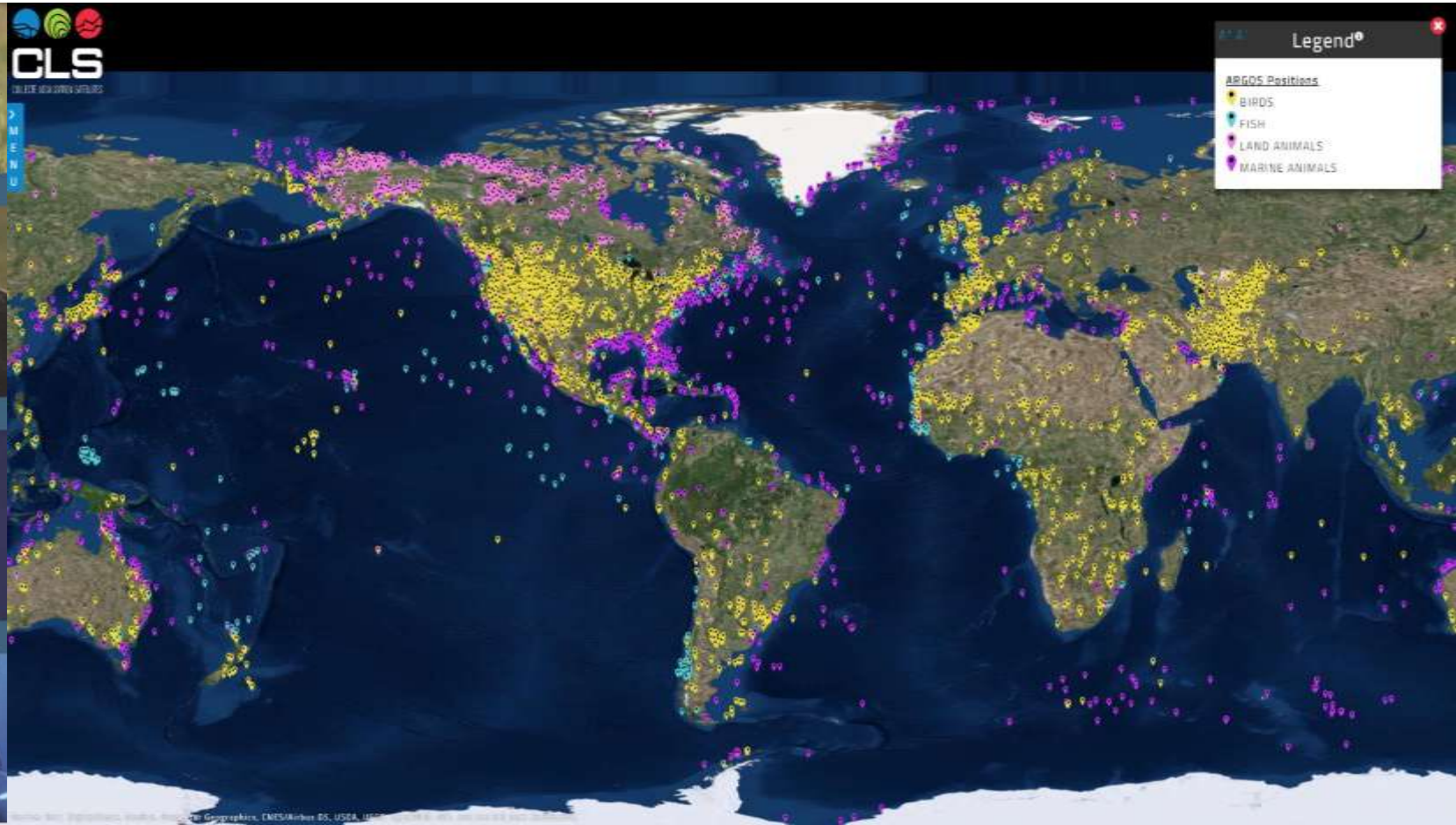
16 000 active transmitters

4 000 fishing vessels

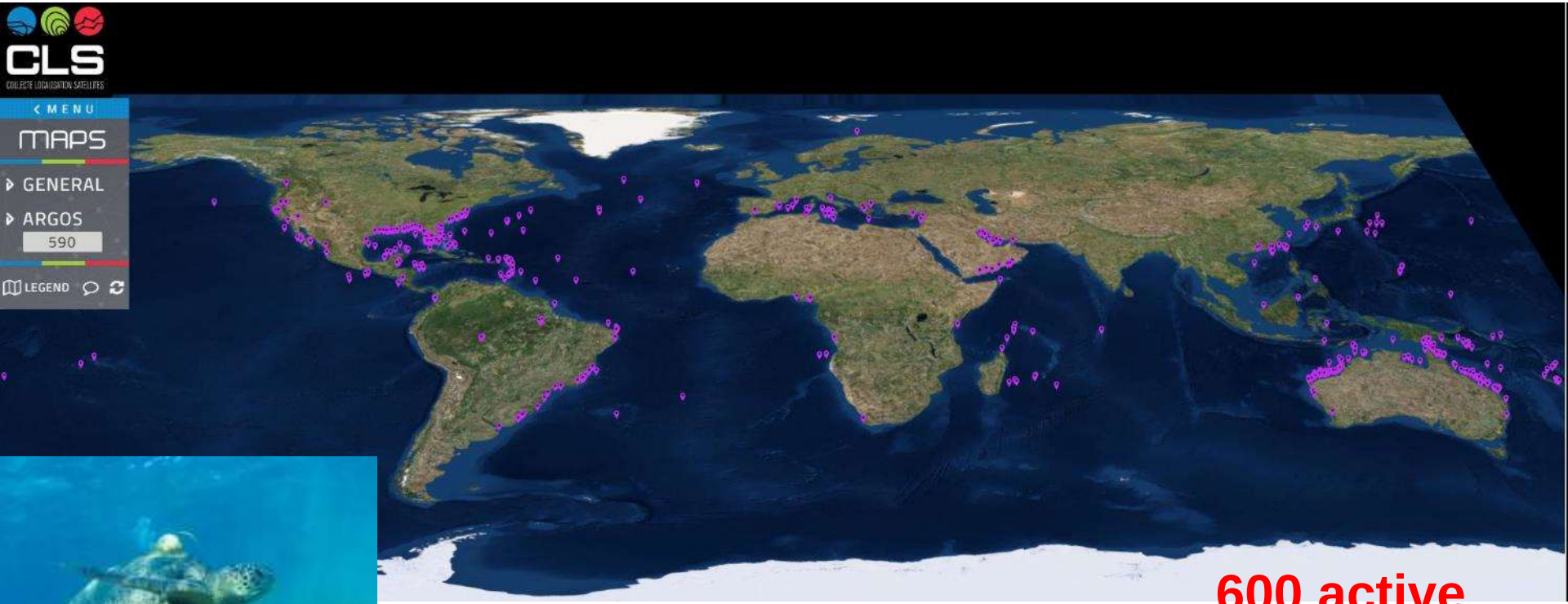
1 000 ships & other use

11 000 scientific platforms

8167 animals tracked last month



Argos & sea turtles



600 active transmitters last month

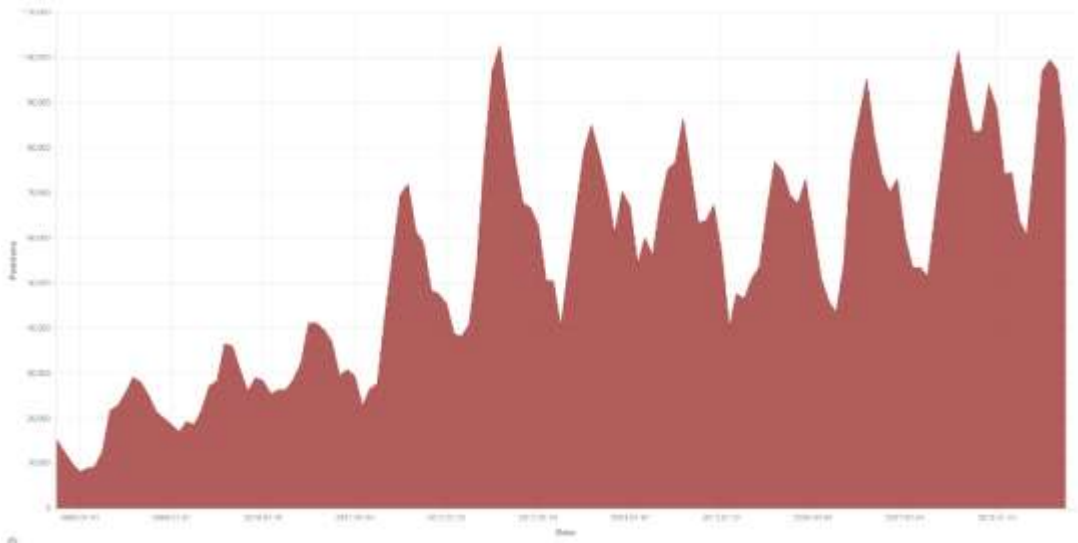
Argos & sea turtles (11 years of data)

 # Positions
7 200 000

 # Platforms
8 100

 # Programs
440

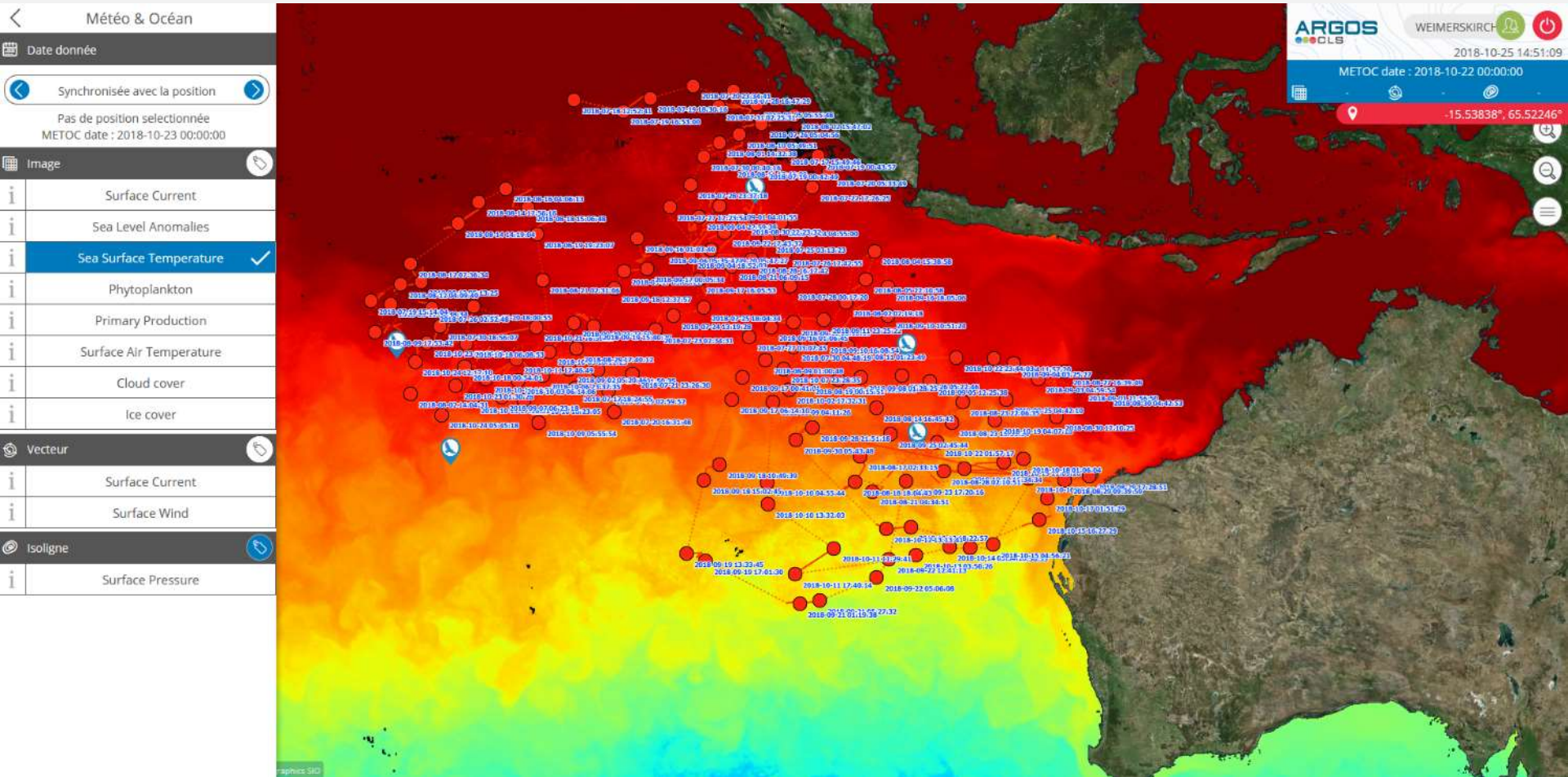
Copyright: Miquel Gomila, SOCIB



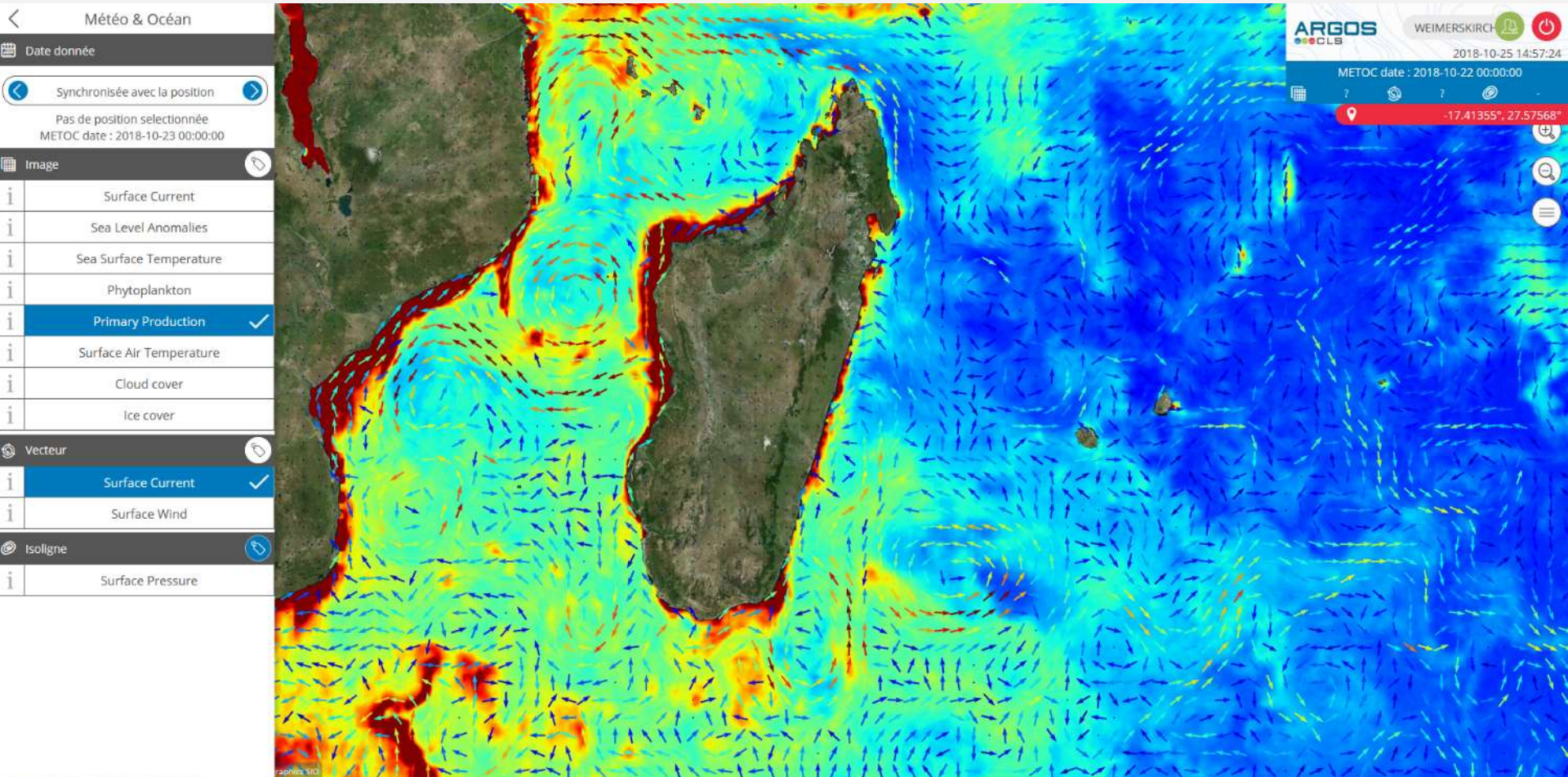
Argos services: Highlights

- ✓ New price since 1/1/2018: max 63€ / month / platform
- ✓ One year online: visualization & download with oceanographic data
- ✓ Kalman smoother reprocessing

Surface temperature & Argos tracks



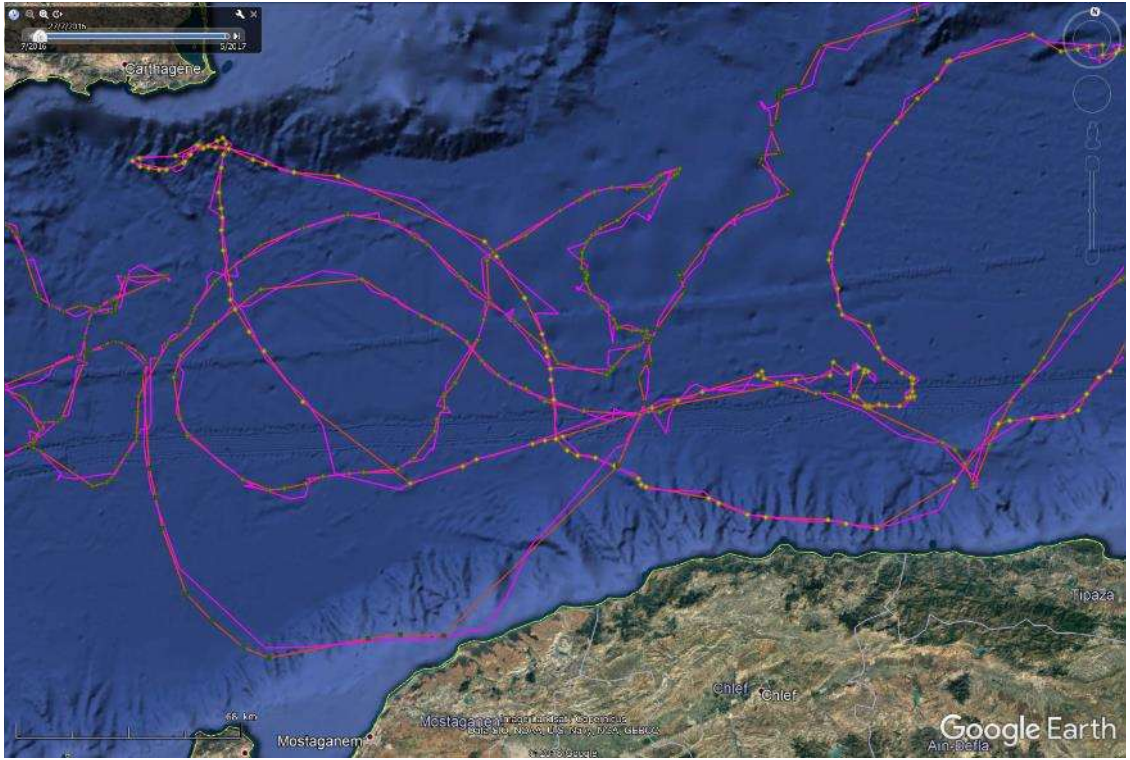
Primary productivity



Kalman smoother

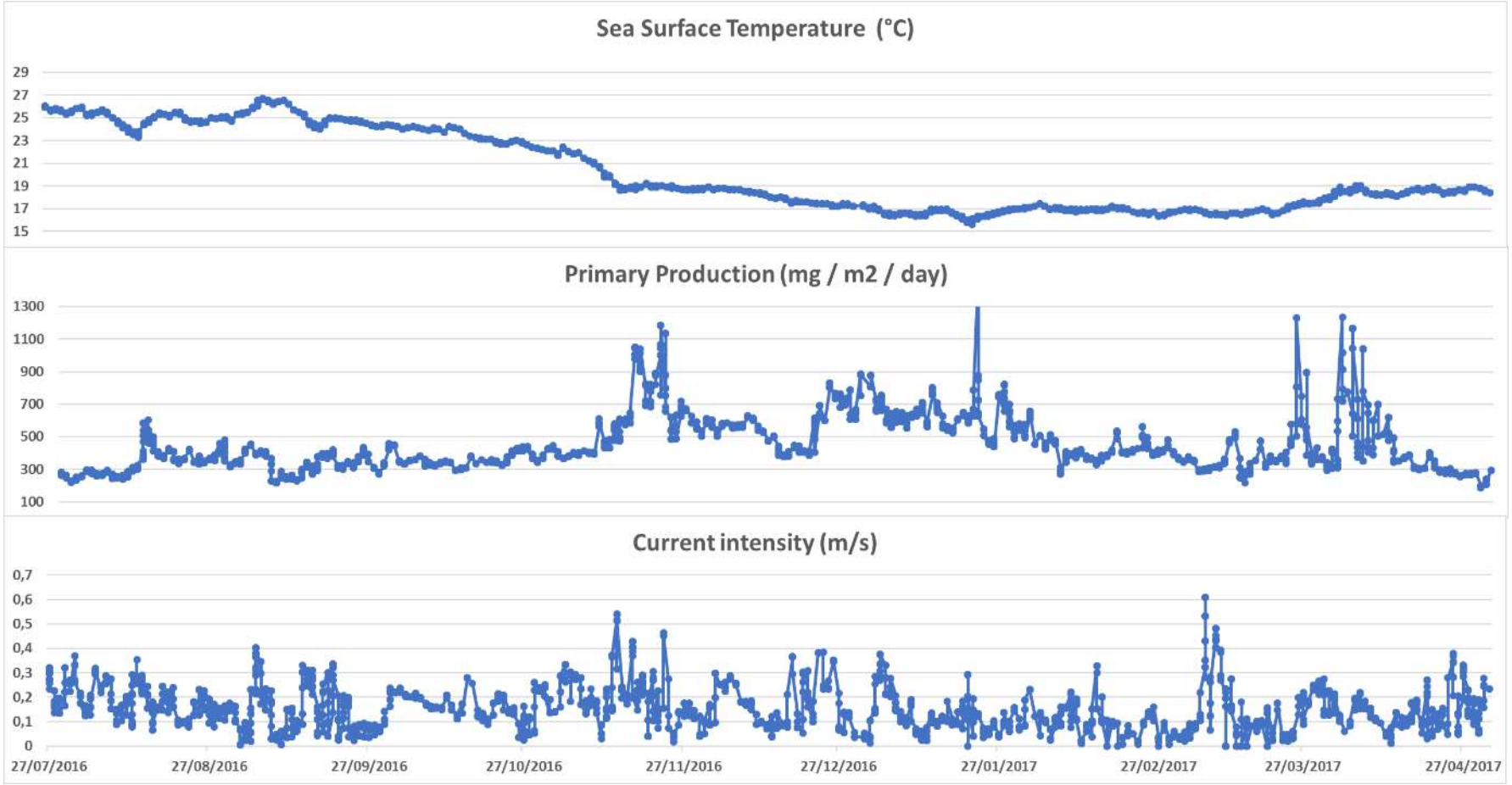
Reprocess online Argos Doppler locations (from 01/01/2008)

- GPS
- Kalman Filtering RT
- Kalman Filtering Smoother



Data Courtesy of: David March, SOCIB, Oceanographic Turtles Project (March et al., unpubl.).

Oceano data along track



Let’s talk about the FUTURE

ARGOS

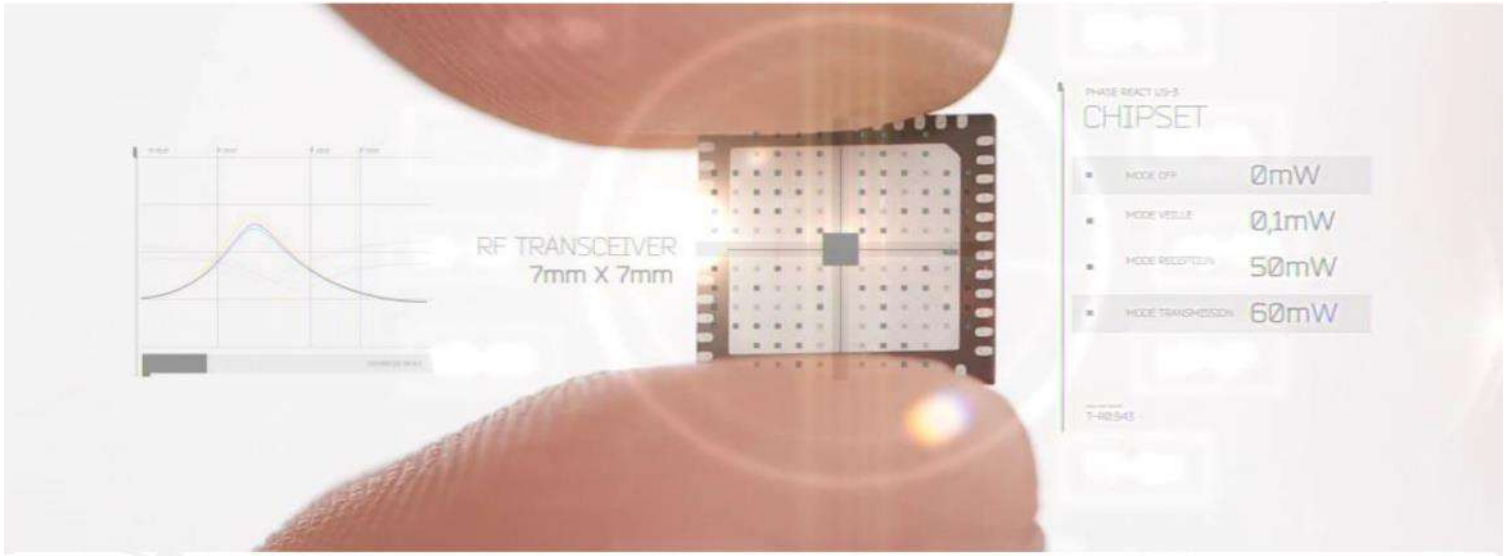
2022 – Argos for next generations

- Operational in 2022
- Target is **20 operational nano-satellites**
- With an improved revisit time: **10 to 30 minutes max** between 2 satellite passes

Argos-4 for next generations

- Transmitter output power:
  - **down to 100 mWatt** (animal tracking)
- High data rate performance
- New downlink capability
  - transmit only over satellite passes
  - Send data with Acknowledgement
  - Manage remotely by commands
- Much bigger system capacity:
  - **More than 50 000 beacons** processed (16 000 today)

Argos 4 chipset



- CHEAPER AND SMALLER
- NEW APPLICATIONS (epidemiology, herd monitoring, …)
- HYBRID TERMINALS : /ARGOS, /GSM, /Sigfox, /LORA

With Kinéis, ARGOS becomes IoT Everywhere

20
NANOSATELLITES
INTEGRATED PROPULSION

25
GROUND STATIONS

3
STRATEGIC PARTNERS

cnes NEXEYA ThalesAlenia Space

2021
PUT INTO ORBIT

2022
OPERATIONAL SYTEM

European Users Conference on Argos Wildlife

http://www.argos-system.org/EUCAW/

Join us for two days of scientific and technical sessions with the Argos satellite tracking community!

The EUCAW 2018 – European Users Conference on Argos Wildlife – hosted by CLS will take place on the **21st and 22nd of November at the auditorium of CLS headquarters, Ramonville St-Agne, near Toulouse, France.**

View agenda

Enjoy the **passionate research** of your peers, **exchange best practices** and interdisciplinary approaches...

Who should attend: biologists, manufacturers, research agencies, NGOs, and Argos experts...

Program highlights

ARGOS
CONNECTED. PROTECTED.

Speakers include:

- *Mads Peter Heide-Jørgensen, Greenland Institute of Natural Resources*
- *Christophe Guinet, CEBC/CNRS*
- *Alexandre Salman, ES-PAS*
- *Francisco Alemany, ICCAT*
- *Allan Mee, Norwegian Institute for Nature Research*
- *Armelle Jung, DRDH (Des requins et des hommes)*
- *Brendan Godley, University of Exeter*

Conference organizer:

Lotek Syrlinks WILDLIFE COMPUTERS XERIUS Think, design &

sbaudel@cls.fr

useroffice@cls.fr

Lepidochelys olivacea copyright TAMIR-ICM

Sea turtles (11 years of data)

Positions (metric)

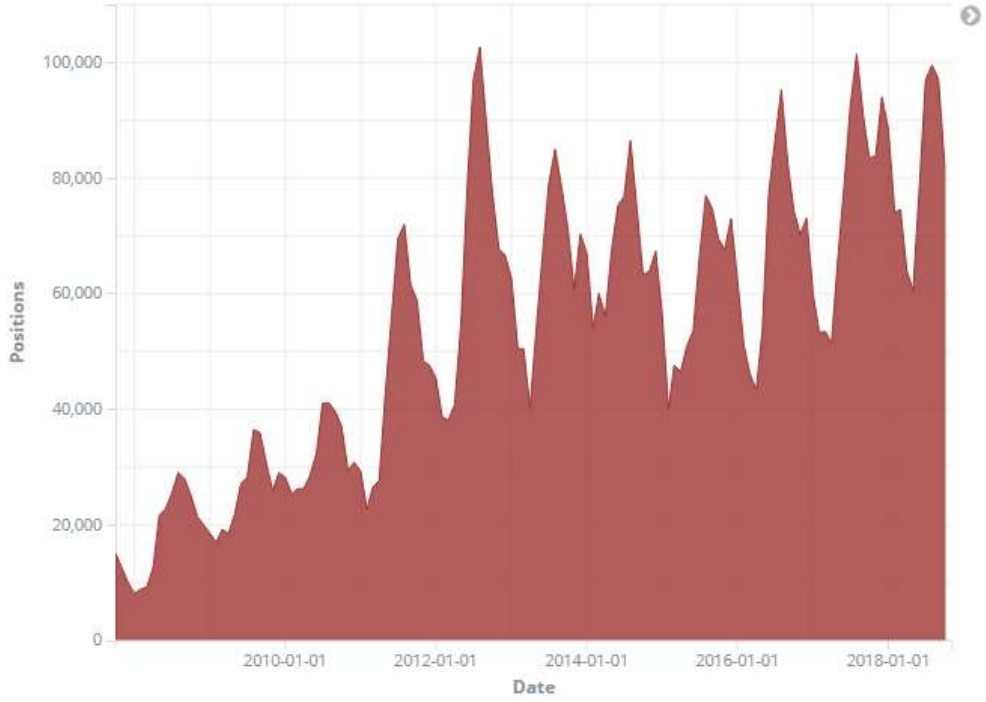
7,171,181
Positions

Platforms (metric)

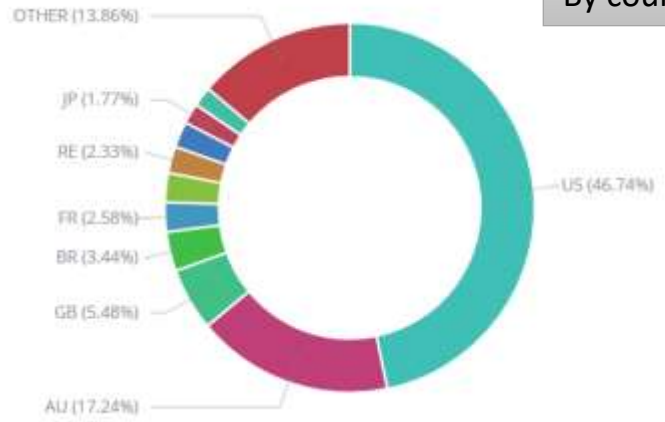
8,101
Platforms

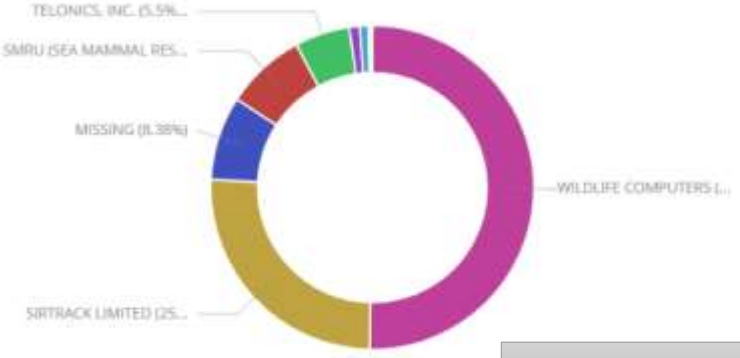
Programs (metric)

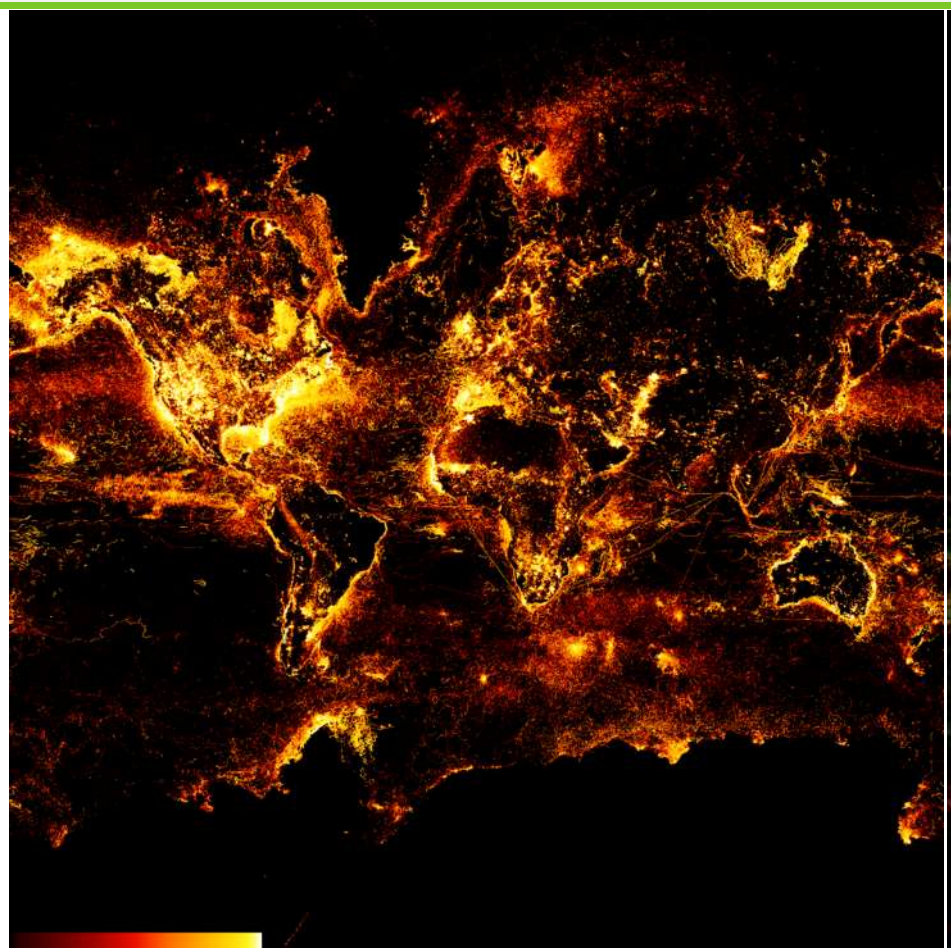
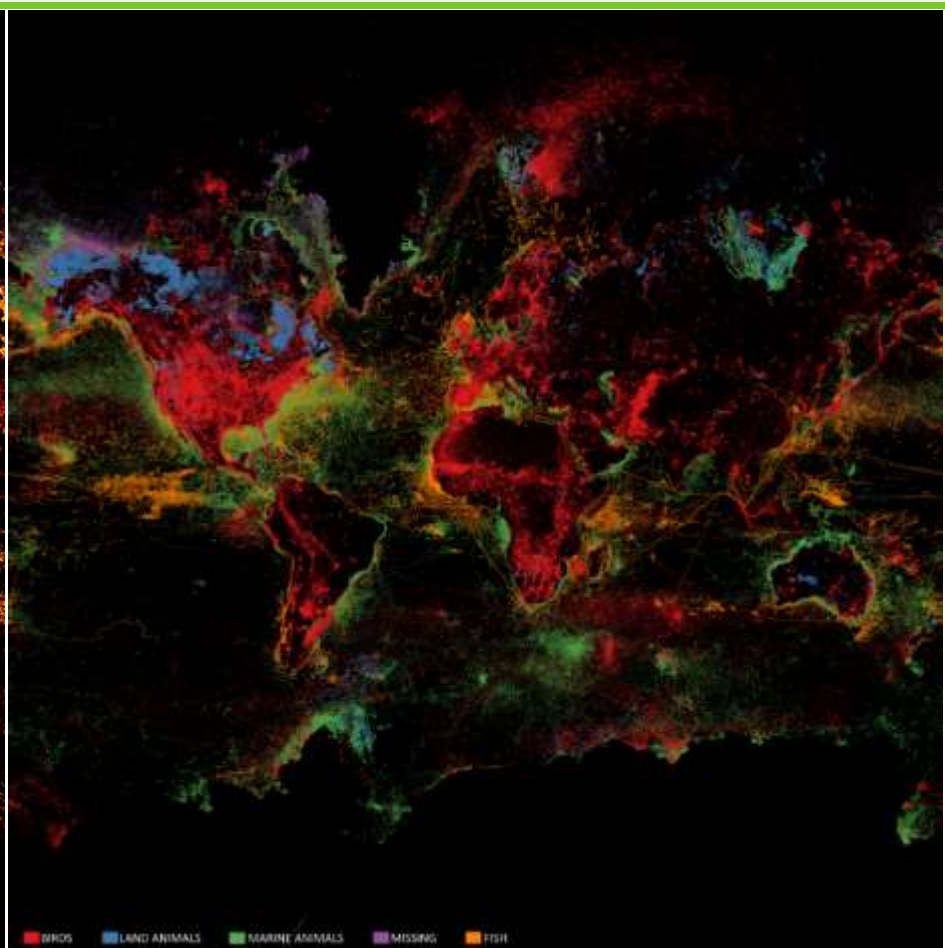
439
Programs



By country





By constructor

Argos density map is drawing the continents