



INNOVATION - World Conservation Congress: CLS announces it is putting AI, BIG DATA and an XXL Space system at the service of biodiversity

PRESS KIT SEPTEMBER 2, 2021

On the 3rd of September, France will open the doors of the World Conservation Congress held in Marseille. Thousands of speakers, NGOs, national and international agencies are expected to define priorities and guide conservation and sustainable development actions on a global scale.

CLS, a subsidiary of the French Space Agency (CNES) will be present at the congress and will announce that it has launched the development of new technologies capable of transforming knowledge and monitoring of the state of health of biodiversity from space:

- Artificial intelligence and monitoring of domestic and wild herds
- Big data software platform to help preserve species (tool to help decision-making in the face of the effects of global warming and the impact of human activity on wildlife and its environment, etc.),
- Or the development of "new space", with the construction already underway, via its subsidiary Kinéis, of a unique constellation of 25 nanosatellites carrying Argos payloads, which will make it possible to track hundreds of thousands of animals per satellite, compared with the current 8,000.

These enhanced technologies could revolutionize the state of our knowledge of biodiversity, which is the basis for the implementation of effective conservation regulations.

Since the 1980s, more than 200,000 animals have been tracked thanks to CLS, the historical operator of the Argos system, which today provides environmental data for the eponymous constellation, and to CNES, the co-founder of the system.

Scientists agree that CLS and CNES, with Argos, have made it possible to rewrite the history of animal migrations.

We take a glance at the scale change, an XXL science at the service of biodiversity.



Yakutian shepherd ©CLS

Artificial Intelligence/Space IoT - A technological shift that changes dimensions and tracks hundreds of thousands of animals to be rescued

Less than 20 years ago, a million wild reindeer roamed the Yakutia tundra. Since the beginning of the 21st century, the number of **reindeer** has fallen to less than 400,000 individuals. In 20 years, this species has seen its members **fall by 60%**!

The main threats to the reindeer are global warming, famine and epidemics.

In this context, CLS is leading a consortium composed of representatives of nomadic populations, scientists, territorial authorities, space agencies (CNES and ESA), together they are trying to stem the decline of a species

on which an entire populace depends.

How?

By conducting the SISMA program, which aims to develop a global information system on the reindeer populations of Yakutia for the actors involved in pastoralism in northern Russia, i.e. the four different communities.

Yann Bernard, Director of Environment & Climate Activities at CLS: *"Thanks to this program, satellite collars equipped with **artificial intelligence** have been developed. These collars automatically detect the behavior of the reindeer (sleeping, walking, feeding, sickness etc.) This summer, 200 reindeer were equipped with this type of collar and this monitoring has already enabled several tribes to find their lost herds. This surveillance will soon be increased tenfold with the arrival of the constellation of our subsidiary Kinéis "* (see next paragraph space in XXL mode).



Yakut reindeer equipped with an Argos satellite collar ©CLS

Adding to this monitoring component, is a component for **herd management in territories combining satellite monitoring with Earth observation** to support pastoralism in Russia. This spatial approach is necessary due to the vastness of the territories to be monitored, the weakness of terrestrial communication systems and the low population density. This project provides easy-to-use, affordable tools to collect data and provide continuous observations on reindeer, from their habitat to their living conditions.

Similar projects on **wild horses, bison**, and other large mammals are being implemented



Wild horses and bison equipped with Argos satellite collars ©CLS

Big data - Study and measure on a large scale to better understand and act effectively



Flight of wood pigeons ©CLS

37,400 species are threatened with extinction according to the IUCN, this figure represents 28% of the species we know, and 14% of threatened species are birds. **The 5 main threats to birds are intensive agriculture, deforestation, invasive species, hunting and climate change.** The great migrations are strongly affected by the constructions and the developments made by the man on the territories. Migratory routes, feeding grounds, resting places, breeding grounds are all threatened or disturbed.

CLS in close collaboration with the **regional agency of biodiversity Nouvelle-Aquitaine, the Chamber of Agriculture of Nouvelle-Aquitaine** and NGOs such as the Gifs, a scientific association which aims to develop knowledge on the Columbidae, are currently developing a new program which aims to:

- **share data** from animals equipped with Argos tracking devices collected on a large scale on certain species,
- **merge these positional data with environmental information** (vegetation, forest cover, water points, etc.) and data related to land use (urban areas, agriculture, infrastructure, human population density, distance to the coast, etc.)
- give access to the data to all, thus allowing the land managers to **take informed measures**,
- **free scientists** from data processing tasks allowing them to focus on analysis and research

This unique platform will save precious time in analyzing trajectories, when it used to take 10 years to reconstitute a migration route, today it only takes 10 minutes to identify a migration path.

This platform could **transform the state of our knowledge on biodiversity** and especially accelerate the taking of concrete and relevant conservation measures.



Trajectories of birds equipped with Argos beacons ©MIGR-SAFE



This MIGR-SAFE program, like the SISMA program, has been labelled SCO, Space Climate Observatory by the CNES.

Space in XXL mode - From declaration to action

As a global satellite system, **Argos** is able to **connect animals** even in the most remote areas.

In nearly **50 years** the satellite system known for tracking the greatest offshore races, rewriting the history of animal migrations, fighting illegal fishing, securing sea routes has tracked more than **200,000 animals** over the past 5 decades.

In 2018, CLS alongside CNES decided to **transform the Argos system and create Kinéis**, a company (its subsidiary) that raised **100 million euros in 2020** to build a unique constellation capable of **connecting 2 million objects**.

Launching in 2023, the Kinéis constellation, which will carry the latest generation of Argos payloads, will track **several hundred thousand animals** each month, compared with 8,000 each month today.

It is the **only satellite constellation** that can create **Argos beacons** so small that they can **track birds weighing only 67g from space!** Something unheard of!

CLS is working with CNES and its subsidiary Kinéis to create an **XXL space system** for biodiversity

A constellation with enhanced capabilities that will connect millions of objects and provide near-real-time data, making the monitoring of every individual in a herd a reality.

By combining satellite tracking, artificial intelligence and earth observation data, CLS is developing space-based solutions to support herds in remote areas, suitable for the sustainable management of pastoral livestock or rewilding species.



Kinéis constellation project ©KINEIS/CLS



Kinéis Satellite ©KINEIS



CLS' Operations Center ©CLS



Herd of wild horses ©CLS

A technology that goes hand in hand with the miniaturization of transmitters and that will make it possible to go even further in the protection of biodiversity.

More miniaturization, more data, more adapted measurements

The early life of loggerhead turtles and all other **juvenile sea turtles** were once called "**the lost years**" because no one knew exactly where they went after leaving their birth nests until they returned to nesting beaches decades later.

But this was without counting on the **progress of technology and miniaturization**.

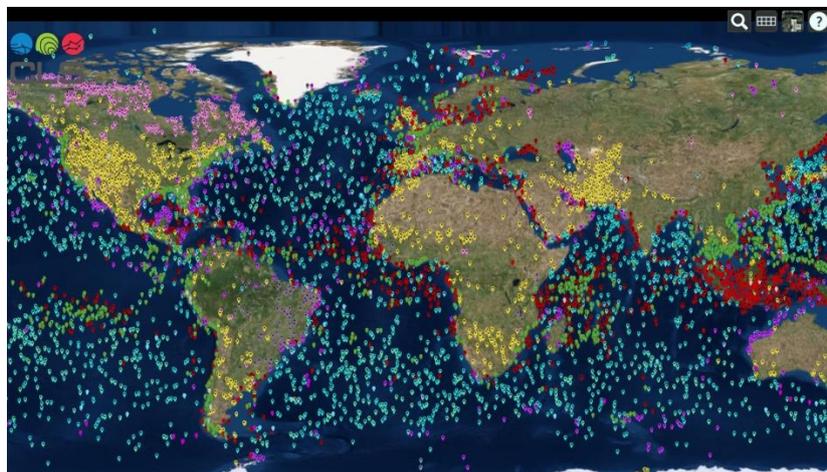
Thanks to new "**micro-satellite**" beacons, scientists can now know where the young turtles go and how they use their environment.



*Juvenile turtle joining the sea
©istock*

Such **technological advances** are possible thanks to the highly sensitive satellites of the **Argos system**. These satellites are so sensitive that transmitters can reach them using only one-fifth the power usually used yet still send 10 times more messages.

Collecting such **valuable data** on these "lost years" is essential to developing appropriate conservation measures to **protect sea turtles** throughout their life cycle.



Map of all Argos beacons tracked by CLS

CLS

CLS, a subsidiary of the CNES¹, the French Space Agency, and CNP², an investment firm, is a global company and pioneer provider of monitoring and surveillance solutions for the Earth, created in 1986. Our mission is to create innovative space-based solutions to understand and protect our planet and to manage its resources sustainably. CLS employs 800 people at our headquarters in Toulouse (France) and in 29 other sites around the world. The company works in five strategic markets: sustainable fisheries management, environmental monitoring, maritime surveillance, fleet management, and energy & mining. CLS processes data from 100,000 transponders per month (such as drifting buoys, animal tags, VMS transponders, & LRIT tracking) and observes the oceans and inland waters (more than 20 instruments onboard satellites daily deliver information to CLS on the world's seas and oceans). In addition, we monitor land and sea activities by satellite (nearly 10,000 radar images and several hundred drone flights are processed each year). The CLS Group had revenue of nearly 138,4 million Euros in 2020. Committed to a sustainable planet, the company works every day for the Earth, from Space.

CLS. Amélie PROUST ALBRAND aproust@groupcls.com + 33 6 62 80 45 92

CLS. Anna SALSAC-JIMENEZ asalsacjimenez@groupcls.com +33 6 70 01 67 55

Verbatee. Valérie SABINEU v.sabineu@verbatee.com +33 6 61 61 76 73

Verbatee. Florence BASTIEN f.bastien@verbatee.com +33 6 61 61 78 55

www.cls.fr

1CNES

CNES (Centre National d'Études Spatiales) is the government agency responsible for shaping and implementing French space policy in Europe. It designs and puts satellites into orbit and invents the space systems of tomorrow; it promotes the emergence of new services useful in everyday life. Founded in 1961, CNES has developed major space projects, launchers, and satellites and is the industry's natural partner for promoting innovation. The agency has nearly 2,500 employees passionate about space and its infinite, innovative fields of application. They work in five areas: the Ariane project, science, observation, telecommunications, and defense. CNES is a major player in technological innovation, economic development, and France's industrial policy. It also forges scientific partnerships and is involved in many international cooperative endeavors. France, represented by CNES, is the main contributor to the European Space Agency (ESA).

www.cnes.fr

CNES Raphael SART raphael.sart@cnes.fr +33 1 44 76 74 51

CNES Pascale BRESSON pascale.bresson@cnes.fr +33 1 44 76 75 39

2CNP

CNP is an investment firm founded by Mr. Albert Frère and exclusively managed by the Frère family. CNP invests its permanent capital for control or joint-control of European industry leaders and acts as an active partner to drive sustainable value creation alongside the founders, management and families it associates with. Together with GBL, CNP is one of the 2 pillars of Groupe Frère that manages net assets of approximately € 5.5Bn

www.cnp.be

SCO

The Space Climate Observatory is a global initiative to study the impacts of climate change. As an informal group of space agencies and international organizations,

the Space Climate Observatory (SCO) International Initiative addresses the need to step up international coordination for accurate assessment and monitoring of the consequences of climate change from observations and numerical models.

By conceiving methodologies that combine various data sources to provide scenarios for action, the SCO aims to become an important tool for decision-making on preparedness, adaptation and resilience to the impacts of climate change at the local level.

The SCO aims to study, monitor and adapt to the impacts of climate change especially at local scales, using satellite-based Earth-observation tools in combination with field data and models. This objective is grounded on four pillars :

- Transparency of its actions, of data used and provided
- Local capacity building
- Sharing of knowledge
- Effective applications for climate change adaptation

For this, the SCO International is structured as an international consortium without legal personality, with national and regional versions, depending on the food will and capabilities of SCO Partners and local actors. For the time being, each SCO Partner will contribute to the initiative on a best-effort basis. This will complement and extend existing initiatives, boosting them at national and local scales.

CNES Raphael SART raphael.sart@cnes.fr +33 1 44 76 74 51

CNES Pascale BRESSON pascale.bresson@cnes.fr +33 1 44 76 75 39