

Argos Applications and Services

UN/SAUDI ARABIA REGIONAL WORKSHOP ON THE SPACE TECHNOLOGY FOR DISASTER MANAGEMENT FOR WESTERN ASIA

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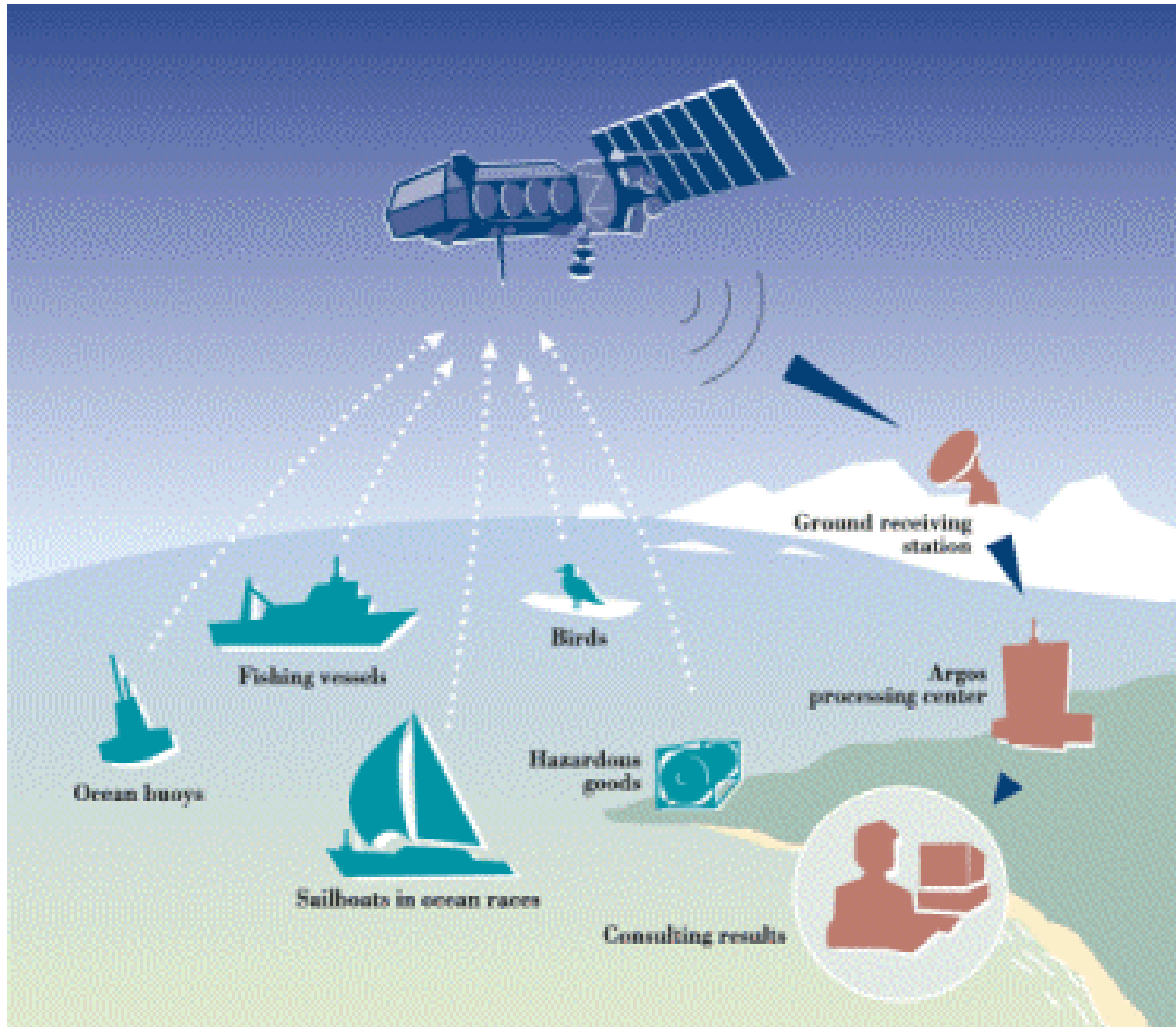
Space Research Institute

KACST



**A unique system providing geo-positioning and data collection services
to the environmental community**

ARGOS SYSTEM



The Argos system: space segment

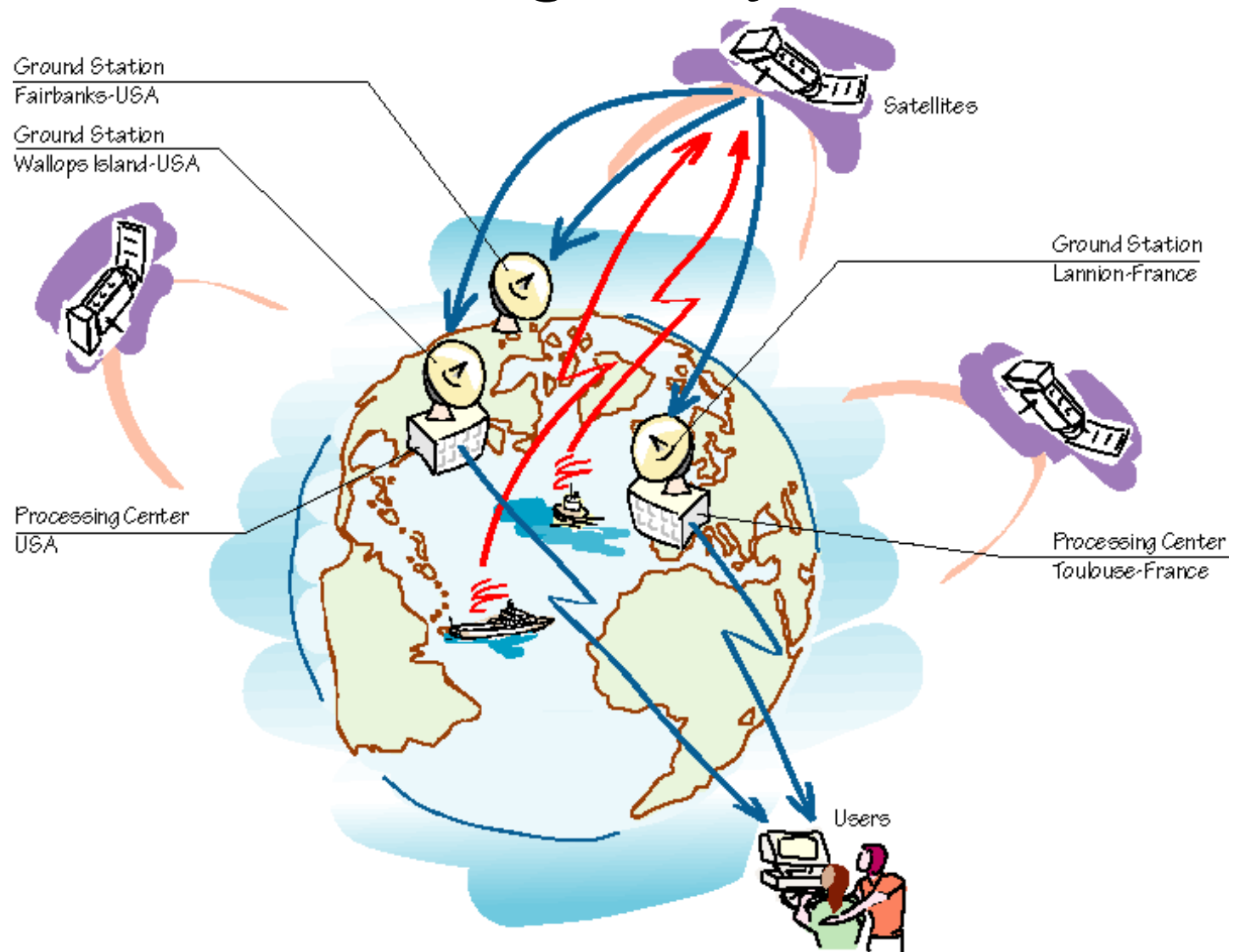
- Argos is operated worldwide by CLS, *Collecte Localisation Satellites*, subsidiary of CNES.
- The space segment relies on international cooperation:
 - a French-built payload designed by the French Space Agency (CNES) aboard,
 - US meteorological satellites from the National Oceanic and Atmospheric Administration (NOAA/USA) (now),
 - European satellites (METOP) from EUMETSAT (from 2005).

Argos services

- **Geopositioning**, with GPS (100 meters) or via Doppler (350 meters).
- **Sensor data collection** (scientific sensors, fishing activity, etc).
- **All data are processed** and stored in global processing centers.
- **Results are distributed** to end users worldwide.



The Argos system



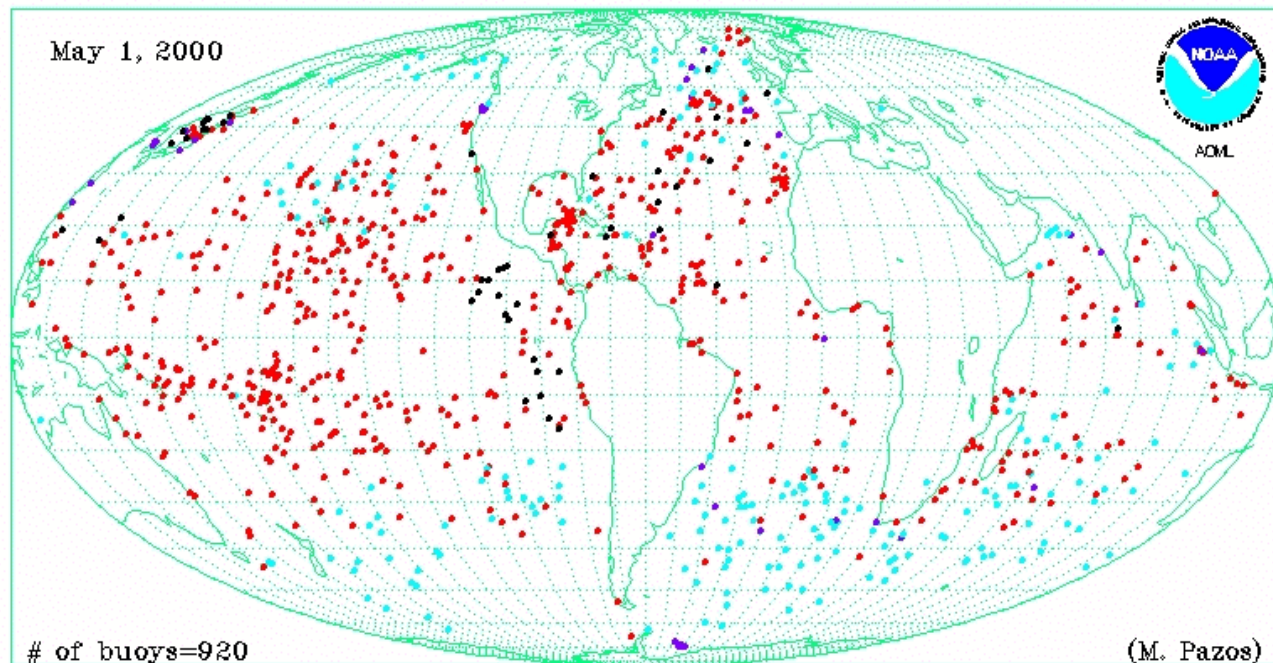
The applications of the Argos system

- The users' segment is made of:
 - more than 10,000 active transmitters,
 - belonging to 500 customers from 55 countries,
 - a variety of environmental applications.



oceanography

STATUS OF GLOBAL DRIFTER ARRAY



- SST ONLY
- SST AND BAROMETRIC PRESSURE
- SST/SLP/WIND
- Unknown type

GLOBAL DRIFTER PROGRAM
Peter Niiler
Mark Swenson

Argos is unique for wildlife tracking

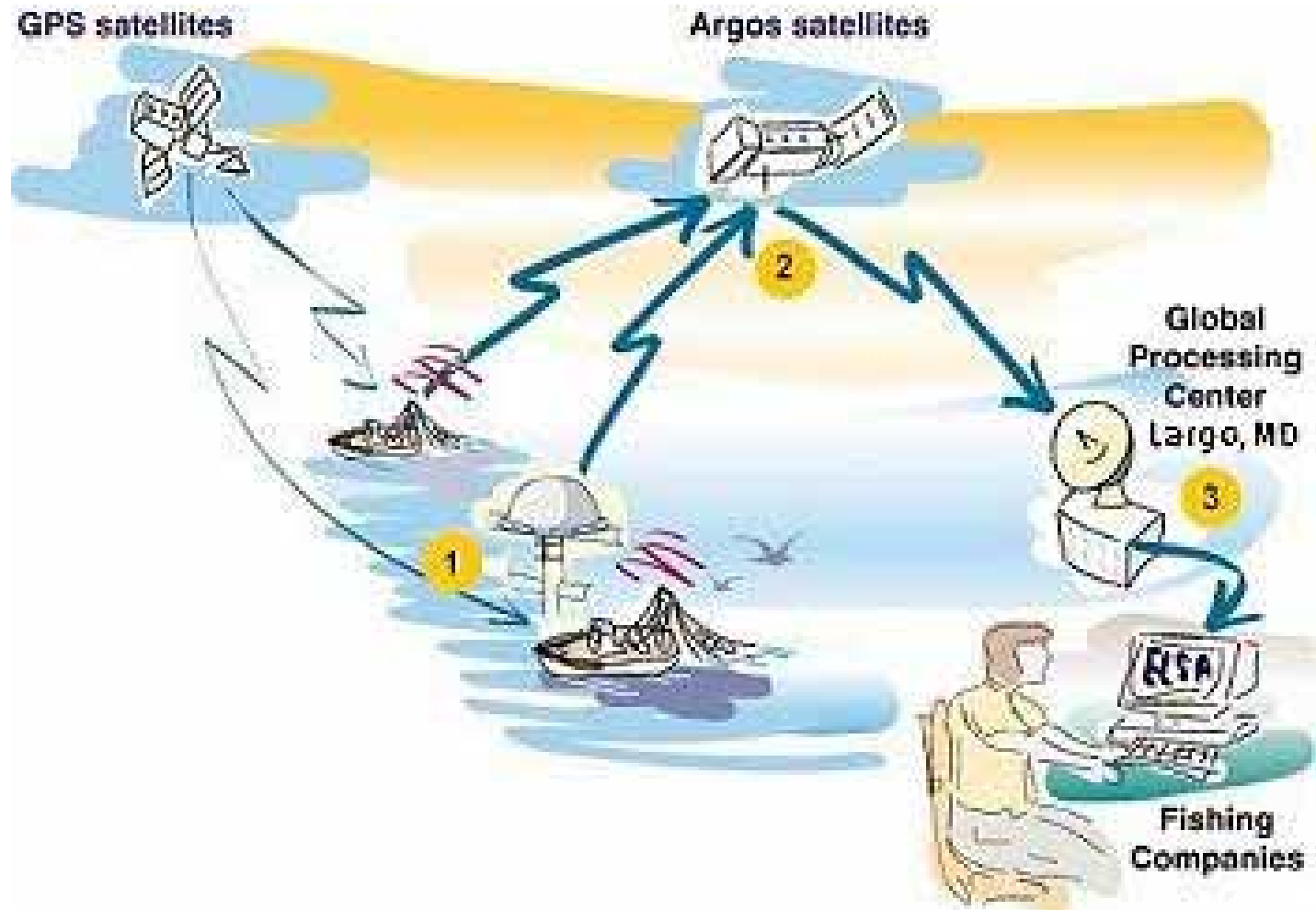
- **Global coverage including polar areas**
- **Exceptional radio-electrical link budget**
- **Interference free bandwidth**

Allowing for,

- **Miniaturized low power transmitters**
- **Unsophisticated antennas**

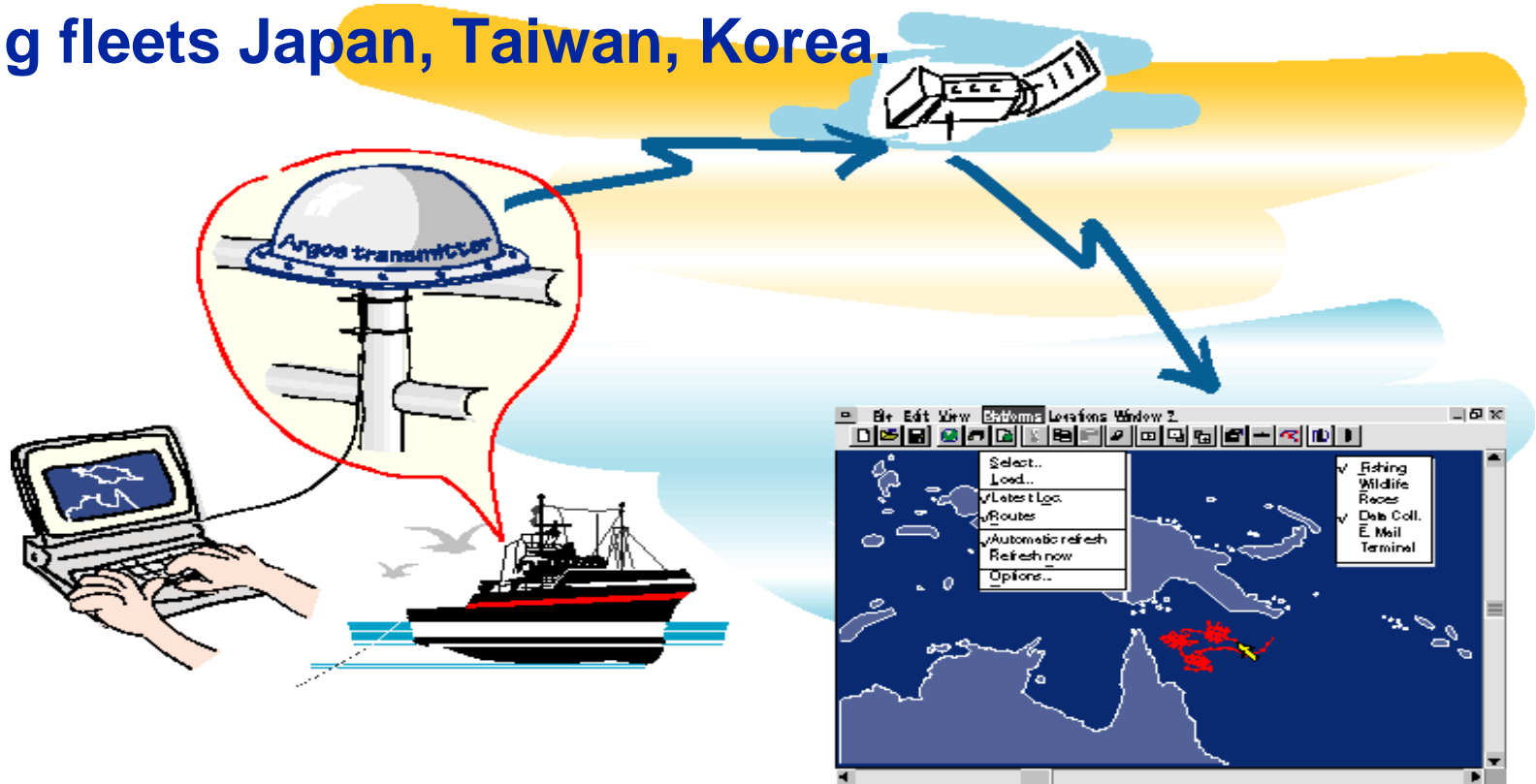


YOU FISH, WE TRACK



ArgoNet: Vessel Monitoring System

- 1500 vessels in for the directorate of fisheries of Indonesia (DKP),
- 800 vessels in Peru,
- 100 tuna fishing vessels under Panamean flag,
- largest fishing fleets Japan, Taiwan, Korea.



TRACKING HAZARDOUS MATERIALS



Monitoring Tank Containers
Monitoring Refrigerated Containers
Monitoring other hazardous materials

The Argos system: Operations

- The use of the system is subject to approval by the Operations Committee;
- The Operations Committee is co-chaired by a person from CNES and a person from NOAA;
- CLS is mandated by the Operations Committee to manage the day-to-day operations of the system and to promote it;
- CLS was created in 1986 by CNES (55%), IFREMER (15%) and a group of banks (30%).

The Argos system ground segment

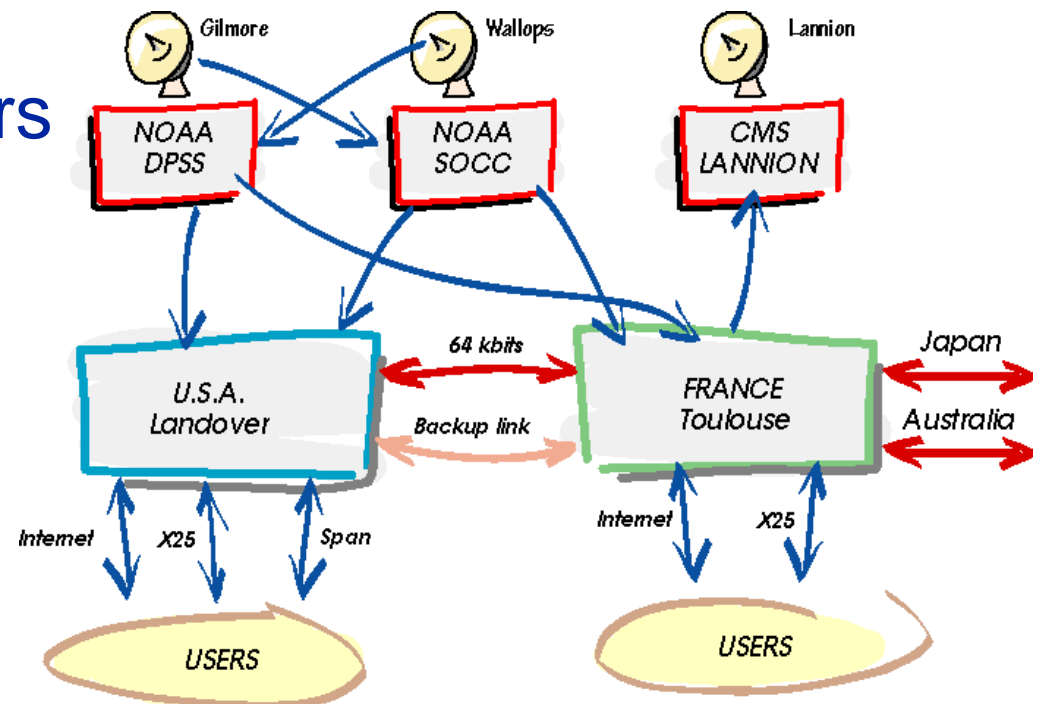
- 2 global processing centers (Washington, USA and Toulouse, France)
- 3 regional processing centers (Melbourne, Tokyo, Lima)
- More than 40 receiving antennas worldwide providing realtime coverage



The Argos system: Operations

Since 1986, CLS has demonstrated its ability to develop and operate a global satellite-based, Low Earth Orbit data communication network. 99% availability is now achieved.

CLS processes in its centers 300,000+ messages and 100,000+ positions every day.



The satellite constellation

Today: 5 NOAA Satellites.

3 Second-generation satellites:

- **NOAA-K(15),**
- **NOAA-L(16),**
- **NOAA-M(17).**

2 First-generation satellites:

- NOAA-J(14),
- NOAA- D(12),



Next launch: NOAA-N (18) is planned for February 2005.

Argos location accuracy

Location class	Accuracy
G	100 m
3	150 m
2	350 m
1	1000 m
0	> 1000 m
A, B	Not calculated

Cooperation with the European Eumetsat

- MOU with EUMETSAT to have a payload onboard their 3 METOP satellites.
- New payload allows:
 - frequency channeling (allocate one channel to low power units),
 - one high data rate channel (4800 b/s, QPSK),
 - very short message (1d + zero bit),
 - satellite remote command,
 - message acknowledgment (send one message and go silent).
- First launch: METOP-1 end of 2005.

Conclusion

- More than ever before, Argos is becoming the **only global solution** for governmental environmental monitoring.
- Argos **lifetime is guaranteed** beyond 2010 thanks to major space agencies (USA, Europe).
- Argos **performance is improving** under a strong commitment of CLS to develop realtime capabilities.
- Access to Argos is always easier with **turnkey solutions** dedicated to each type of application.