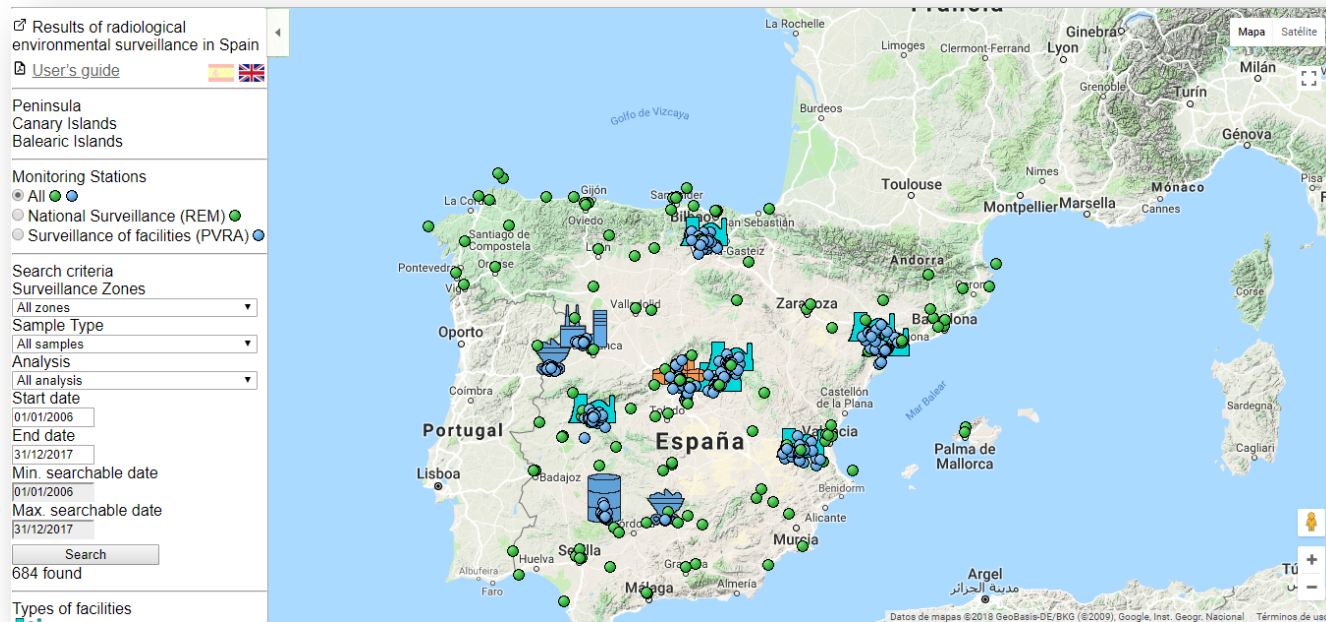


NEW ONLINE TOOL TO GIVE PUBLIC ACCESS TO THE CSN'S ENVIRONMENTAL RADIOACTIVITY MONITORING DATABASE, KEEPER

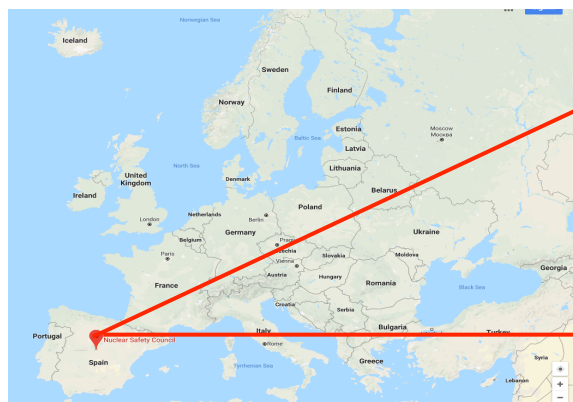


2 | NUCLEAR SAFETY COUNCIL (CSN)

- CSN is the sole competent authority in nuclear safety and radiological protection matters.

Mission:

“To protect workers, the general public and the environment against the harmful effects of ionising radiations”

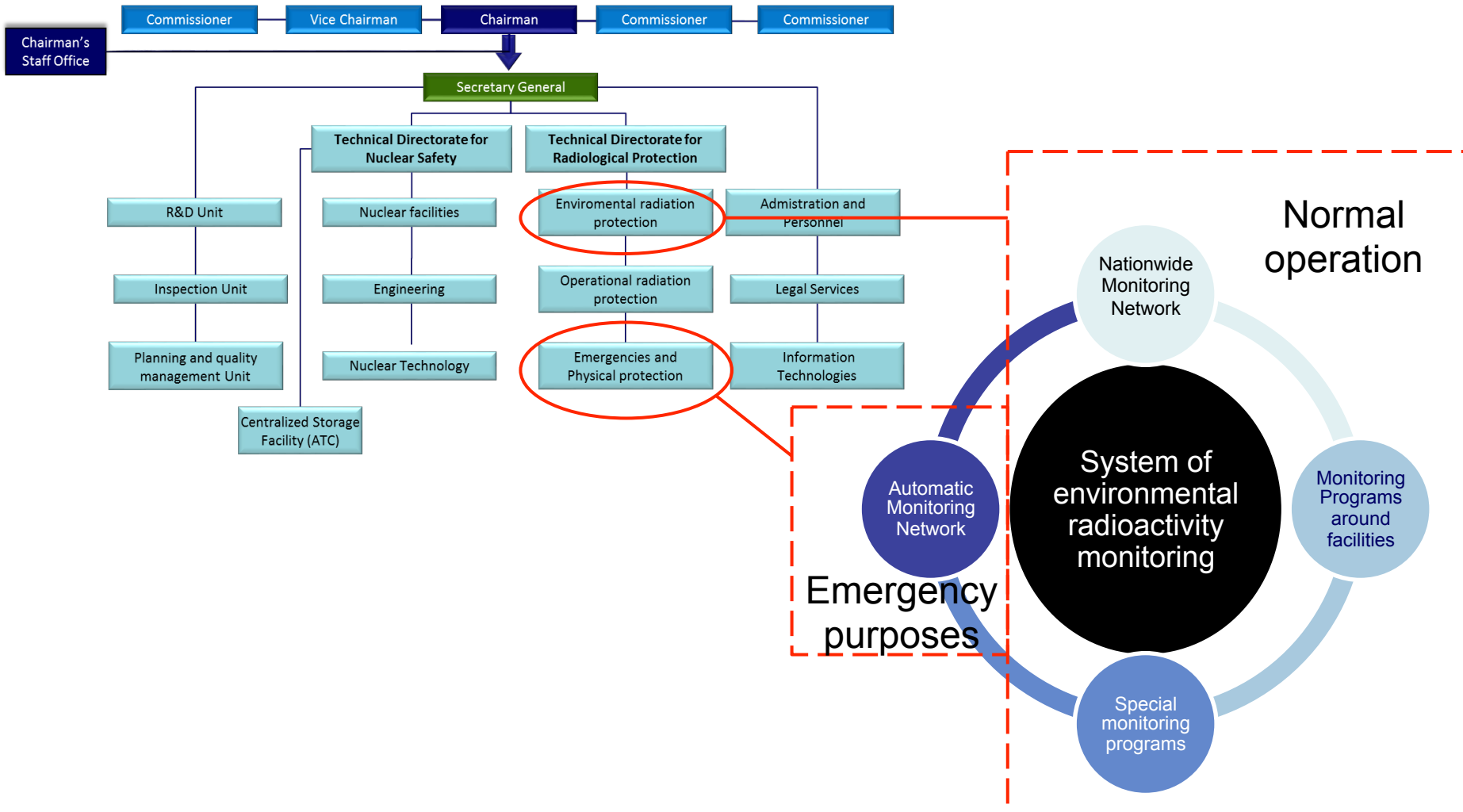


**NUCLEAR SAFETY
COUNCIL - CSN
(MADRID, SPAIN)**

Functions:

- Control & monitor radioactive discharges and radiological quality of the environment
- Inform public and cooperate with other institutions

3 | CSN FOR RADIOLOGICAL ENVIRONMENTAL MONITORING



4 AUTOMATIC MONITORING NETWORK (REA)

Automatic Monitoring Network



<https://www.csn.es/en/valores-ambientales-rea-mapa>

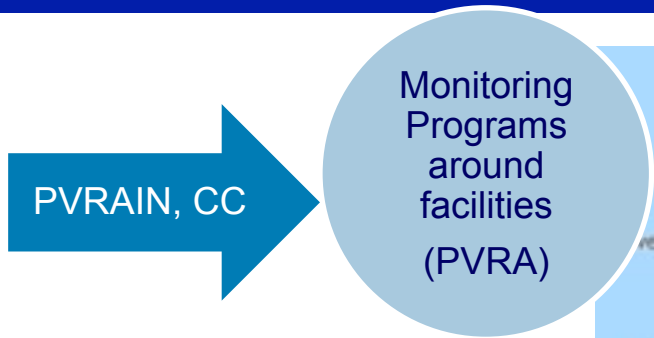








EMERGENCY ROOM CSN



<https://remap.jrc.ec.europa.eu/GammaDoseRates.aspx>

5 ENVIRONMENTAL RADIOACTIVITY MONITORING AROUND FACILITIES



-  5 operating NPPs
-  3 decommissioning NPPs
-  Fuel assembly manufacturing plant
-  Low and intermediate level radioactive waste disposal
-  4 Manufacturing uranium concentrate plants and 2 restored uranium mining sites
-  Nuclear research centre



6 ENVIRONMENTAL RADIOACTIVITY MONITORING AROUND FACILITIES (PVRA) – NORMAL OPERATION

| Type of samples | Frequency |
|-------------------------|-----------|
| Air particles (filters) | Weekly |
| I-131 (charcoal) | Weekly |
| H-3 | Quarterly |
| C-14 | Quarterly |
| Rainfall | Monthly |
| Soil | Yearly |
| Dry deposition | Monthly |
| Surface water | Monthly |
| Ground water | Quarterly |
| Drinking water | Fortnight |

| Type of samples | Frequency |
|--------------------------------|--------------|
| Sediments | Twice a year |
| Vegetables | Monthly |
| Milk | Monthly |
| Meat | Twice a year |
| Flora | Twice a year |
| Fish and seafood | Twice a year |
| Integrated Gamma Radiation TLD | Quarterly |

7 ENVIRONMENTAL RADIOACTIVITY MONITORING NOT ASSOCIATED TO FACILITIES (REM)

Atmosphere and earth programme

Dense network: Air, soil, drinking water, mixed diet and milk

Sparse Network: Air, drinking water, mixed diet, milk

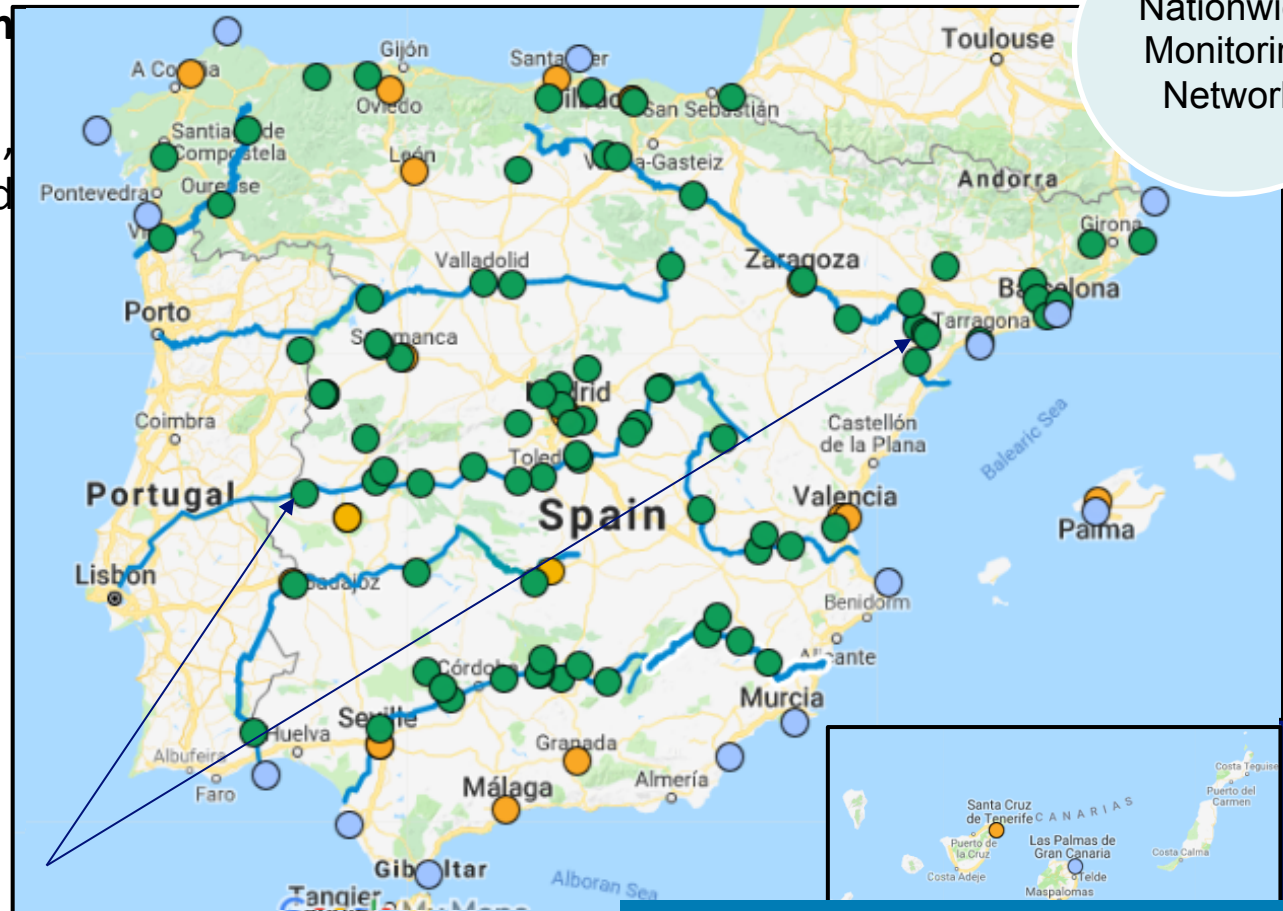
Water programme

Dense coastal network

Sparse coastal network

Dense continental network

Sparse continental Network



Nationwide Monitoring Network

8 | ENVIRONMENTAL RADIOACTIVITY MONITORING NOT ASSOCIATED TO FACILITIES (REM)

Dense network (atmosphere, soil and water)

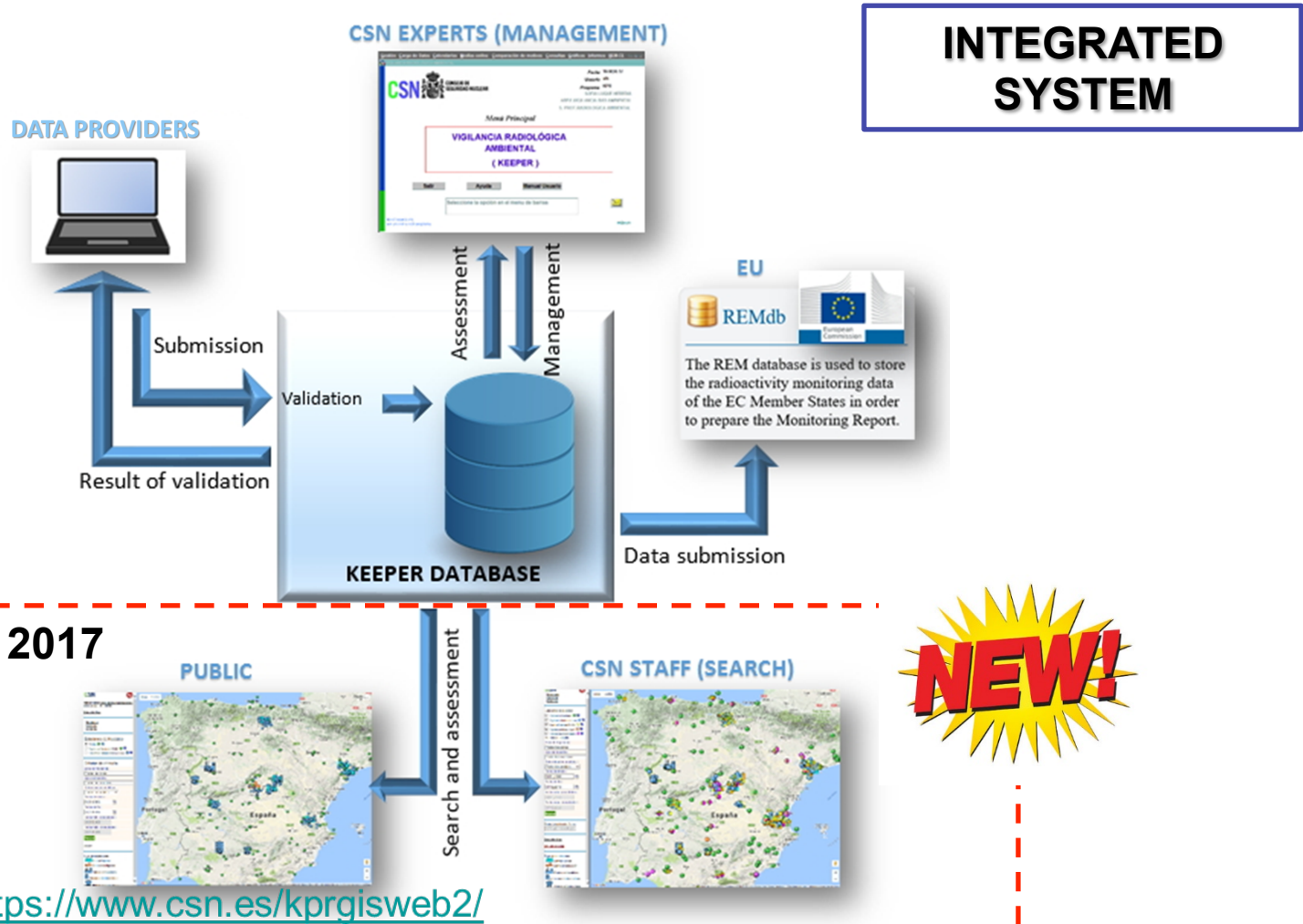
| Type of samples | Frequency |
|-----------------|-------------------|
| Air particles | Weekly |
| Iodine | Weekly |
| Soil | Yearly |
| Drinking water | Monthly |
| Milk | Monthly |
| Mixed Diet | Quarterly |
| Surface water | Monthly-quarterly |
| Sea water | Monthly-quarterly |

Sparse network (atmosphere, soil and water)

| Type of samples | Frequency |
|-----------------|-------------------|
| Air particles | weekly |
| Drinking water | monthly |
| Milk | monthly |
| Mixed Diet | quarterly |
| Surface water | Monthly-quarterly |
| Sea water | Monthly-quarterly |

9

MANAGEMENT OF THE DATA: KEEPER



10

NEW KEEPER WEB

Environmental Radioactivity Monitoring Department



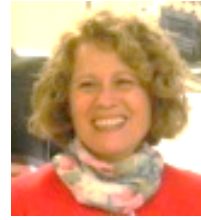
Rosario Salas



Inmaculada Marugán



Carmen Rey



Lucila Ramos



Pilar Lorente



Agustina Sterling



Sofía Luque

**Application
Development (IT):**



Carlos Santamaría



Angel García



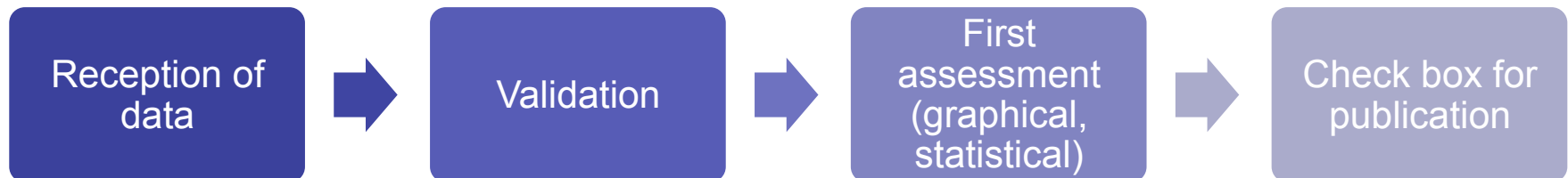
José Trinidad, Belén Sánchez, Adriana Ortiz, Sofía Luque, Carmen Rey, Pablo Martínez, María Fernanda Sánchez, María Jesús Muñoz

PROJECT
2013-2017

11 | MAIN ISSUES OF PROJECT

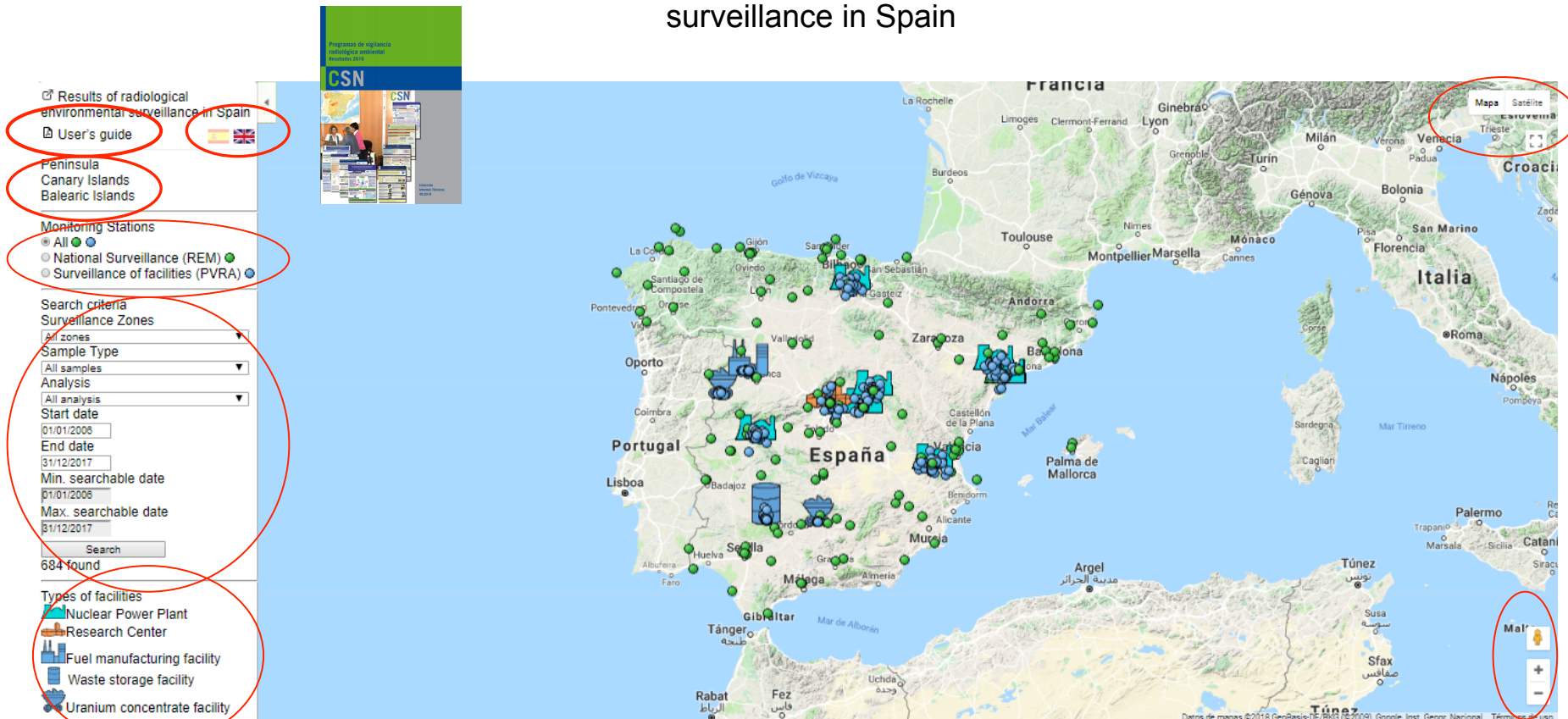
Main issues:

- Legal matters (permissions, agreements, etc)
- Data review (statistical tools)
- Review of geographical coordinates of monitoring stations
- Compatibility (explorer, chrome, portable devices...)
- Explain for laypersons
- Translation (focus on potential viewers)
- Procedure for management



12 | KEEPER WEB INTERFACE

Route 1: www.csn.es – Operating states and Environmental values – Environmental values PVRA REM
 Route 2: www.csn.es – Radiation Protection – Radiation protection of public and environment - Environmental surveillance in Spain



The screenshot displays the CSN web interface for environmental surveillance. On the left, there is a sidebar with several sections:

- Results of radiological environmental surveillance in Spain**: Includes a "User's guide" link and flags for Spain and the UK.
- Peninsula, Canary Islands, Balearic Islands**: Geographic selection options.
- Monitoring Stations**: Radio buttons for "All", "National Surveillance (REM)", and "Surveillance of facilities (PVRA)".
- Search criteria**: Includes "Surveillance Zones", "Sample Type", "Analysis", "Start date", "End date", "Min. searchable date", and "Max. searchable date". A search button and "684 found" result count are also present.
- Types of facilities**: A legend with icons for Nuclear Power Plant, Research Center, Fuel manufacturing facility, Waste storage facility, and Uranium concentrate facility.

The main area shows a map of Spain and its surroundings, with various monitoring stations marked by colored icons (green, blue, orange) across the country. A small inset window in the top right corner shows a "Mapa" and "Satélite" view. In the bottom right corner, there is a "Mal" button with a plus and minus sign.

13

KEEPER WEB DISPLAYS

Start date: 2006-01-01

Start date: 2017-12-31

Surveillance Zones : C. INVESTIGACIONES ENERGÉTICAS MEDIOAMBIENTALES TECNOLÓGICAS

Station: MADRID (CIEMAT)

| Type of surveillance | Sample | Analysis / isotope | No. of measures |
|----------------------------|--------------------|--|-----------------|
| SURVEILLANCE OF FACILITIES | H-3 | H-3 / H-3 | 3 |
| SURVEILLANCE OF FACILITIES | IODINE | YODO GAMMA / I-131 | 9 |
| SURVEILLANCE OF FACILITIES | AIRBORNE PARTICLES | GROSS ALPHA / GROSS ALPHA ACTIVITY | 9 |
| SURVEILLANCE OF FACILITIES | AIRBORNE PARTICLES | GROSS BETA / GROSS BETA ACTIVITY | 9 |
| SURVEILLANCE OF FACILITIES | AIRBORNE PARTICLES | GAMMA SPECTROMETRY / AM-241 | 1 |
| SURVEILLANCE OF FACILITIES | AIRBORNE PARTICLES | GAMMA SPECTROMETRY / BA-140 | 1 |
| SURVEILLANCE OF FACILITIES | AIRBORNE PARTICLES | GAMMA SPECTROMETRY / BE-7 | 1 |
| SURVEILLANCE OF FACILITIES | AIRBORNE PARTICLES | GAMMA SPECTROMETRY / BI-214 | 1 |
| SURVEILLANCE OF FACILITIES | AIRBORNE PARTICLES | GAMMA SPECTROMETRY / CE-141 | 1 |
| SURVEILLANCE OF FACILITIES | AIRBORNE PARTICLES | GAMMA SPECTROMETRY / CE-144 | 1 |
| SURVEILLANCE OF FACILITIES | AIRBORNE PARTICLES | GAMMA SPECTROMETRY / CO-58 | 1 |
| SURVEILLANCE OF FACILITIES | AIRBORNE PARTICLES | GAMMA SPECTROMETRY / CO-60 | 1 |
| SURVEILLANCE OF FACILITIES | AIRBORNE PARTICLES | GAMMA SPECTROMETRY / CS-134 | 1 |
| SURVEILLANCE OF FACILITIES | AIRBORNE PARTICLES | GAMMA SPECTROMETRY / CS-137 | 1 |
| SURVEILLANCE OF FACILITIES | AIRBORNE PARTICLES | GAMMA SPECTROMETRY / EU-152 | 1 |
| SURVEILLANCE OF FACILITIES | AIRBORNE PARTICLES | GAMMA SPECTROMETRY / FE-59 | 1 |
| SURVEILLANCE OF FACILITIES | AIRBORNE PARTICLES | GAMMA SPECTROMETRY / K-40 | 1 |
| SURVEILLANCE OF FACILITIES | AIRBORNE PARTICLES | GAMMA SPECTROMETRY / LA-140 | 1 |
| SURVEILLANCE OF FACILITIES | AIRBORNE PARTICLES | GAMMA SPECTROMETRY / MN-54 | 1 |



15

KEEPER WEB

The screenshot displays the KPRGISWEB application interface. The browser address bar shows the URL: <https://www.csn.es/kprgisweb2/index.html?lang=es>. The page title is "Results of radiological environmental surveillance in Spain".

Left Panel (Filters):

- Results of radiological environmental surveillance in Spain
- User's guide
- Peninsula
- Canary Islands
- Balearic Islands
- Monitoring Stations
 - All
 - National Surveillance (REM)
 - Surveillance of facilities (PVRA)
- Search criteria
 - Surveillance Zones
 - Sample Type
 - Analysis
 - Start date
 - End date
 - Min. searchable date
 - Max. searchable date
 - Search
- Types of facilities

Main Map: A map of the Iberian Peninsula showing monitoring stations. The map includes labels for "Portugal", "España", and "Argel". Major cities like Madrid, Barcelona, and Seville are visible. The map is overlaid with numerous green and blue circular markers representing monitoring stations. A search bar at the bottom right of the map area shows the number "684" and the word "found".

Bottom Panel (Windows Taskbar): Shows the Windows taskbar with various application icons and the system tray displaying the time "19:01" and date "16/09/2018".



16 | CONCLUSIONS

- KEEPER WEB Project has been a very **positive** and **coordinated** effort
- It **enhances** CSN's functions on **TRANSPARENCY** and **PUBLIC SERVICE**

Main challenges:

- Improve public understanding
- Shorten the time between the reception of the data and availability for public

We **invite** you all to sail through keeper web and are **thankful** to receive any comments or suggestions to improve this tool

17 | **THANK YOU FOR YOUR ATTENTION!**



<https://www.csn.es/kprgisweb2/>