Nanomonitor Web Portal

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NanoMONITOR is partly funded by the European Commission Life with grant agreement LIFE14 ENV/ES/000662

The Concept

The NanoMONITOR web portal has two specific objectives:

1. To store, manage and elaborate data

2. To disseminate knowledge to the scientific community, the stakeholders and the general public.

url: http://185.23.121.71/nanomonitor/index.php

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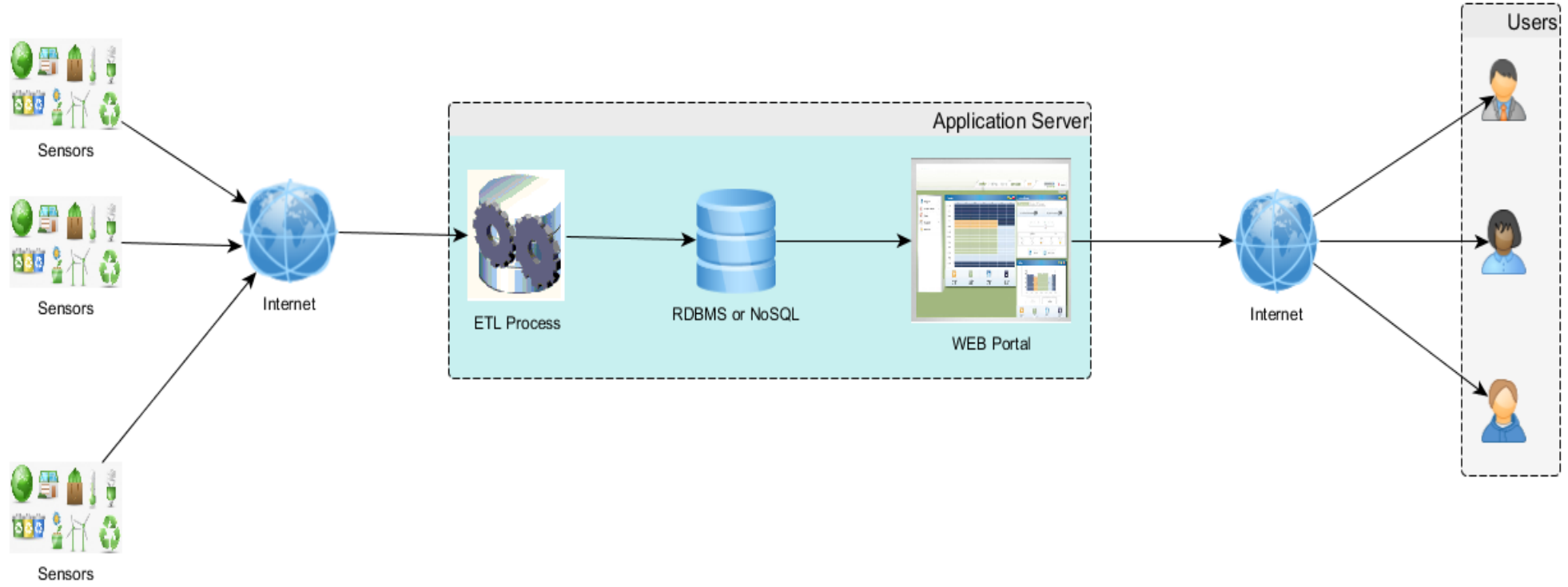
Nanomonitor Web Portal – System Architecture

A high level diagram of the solution in relation to the external entities



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Functionality of the Open Platform [1]

- Accessible over the Web and user friendly
- With pluggable computational modules
- Making use of processed data from various environmental sensors
- Not limited, scalable and expandable.

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Functionality of the Open Platform [1]

- Internet access with password for scientists, and/or authorised users
- Auto-storing function to avoid loss of data
- Availability of versions for PCs, tablets and mobile devices
- Use of alerts when improving the software features
- Data downloadable in excel sheets
- Ensure cooperation with main browsers

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Data sources

- There are two methods to receive sensor data.
- Both methods push data TO the data repository server.

Method 1: Real time (MAIN)

- JSON data are pushed from each sensor to the server for processing

Method 2: Off-line mode

- CSV data are pushed to the server by an operator (an authenticated user).

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User types

General Public

No registration, access to general data, no access to statistical elaboration.

Stakeholders

Access to all data and to the statistical tools.

Data providers / Partners / Scientists

Access to all data and to the statistical tools.

Administrator

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Input data file

According to the available specs every 10 secs a new record will be created from each sensor, thus, for every time instance t_i, the following values will be available in the DB.

- Station ID
- Date, Time
- Temperature (ambient) T
- Pressure
- Wind Speed, Wind Direction
- PN (number of particles) **and Concentration C_A**
- Diameter $\overline{d}$ (the monitoring station measures, for every time instance, the average diameter of the particles detected.)
- PM, PM10, PM2.5, O_3, CO, SO_2, NO_X

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Data Analysis [1]

- ✓ Trends
- ✓ Max values (*MAX*)
- ✓ Min values (*MIN*)
- ✓ Average value ($\overline{AVG}$)
- ✓ Percentile (*P*)
- ✓ Variance (*VAR*)
- ✓ Standard deviation (*s*)
- ✓ Correlation (*r*)
- ✓ Covariance (*COV*)
- ✓ Forecast (*F*)

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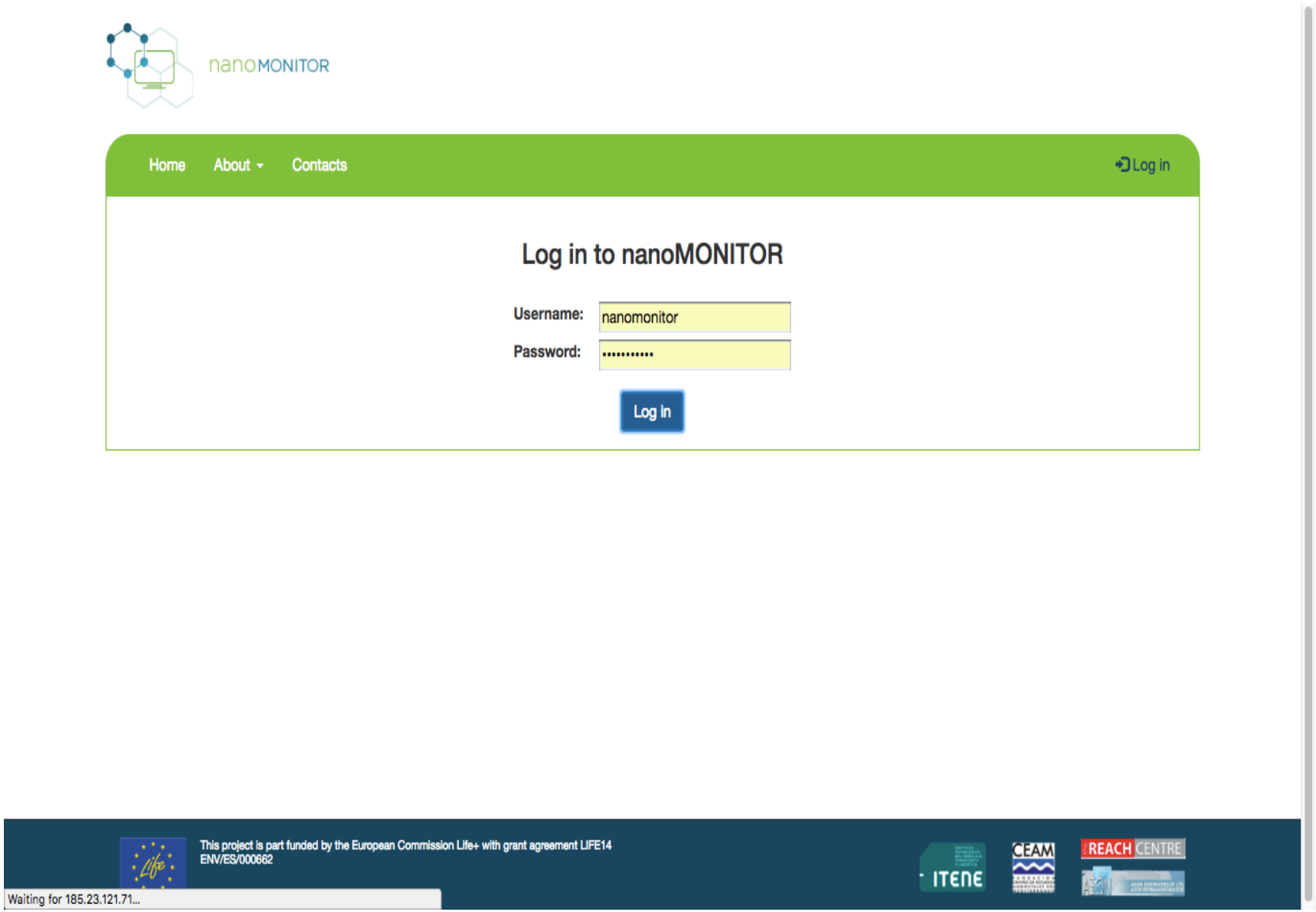
nanoMONITOR
Home
About
Contacts
Log in
Log in to nanoMONITOR
Username:
nanomonitor
Password:
Log in
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ITENE
CEAM
REACH CENTRE
Waiting for 185.23.121.71...

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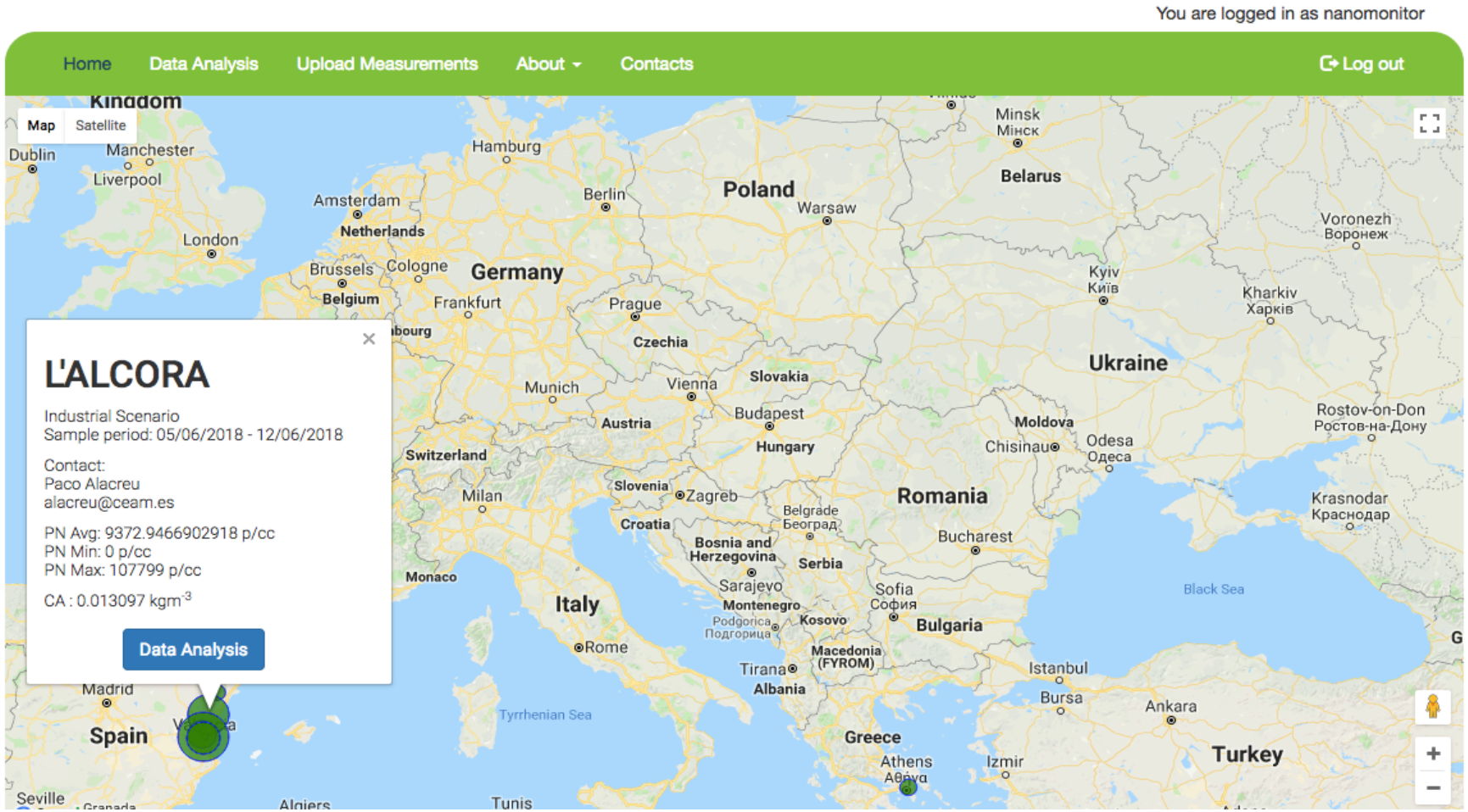

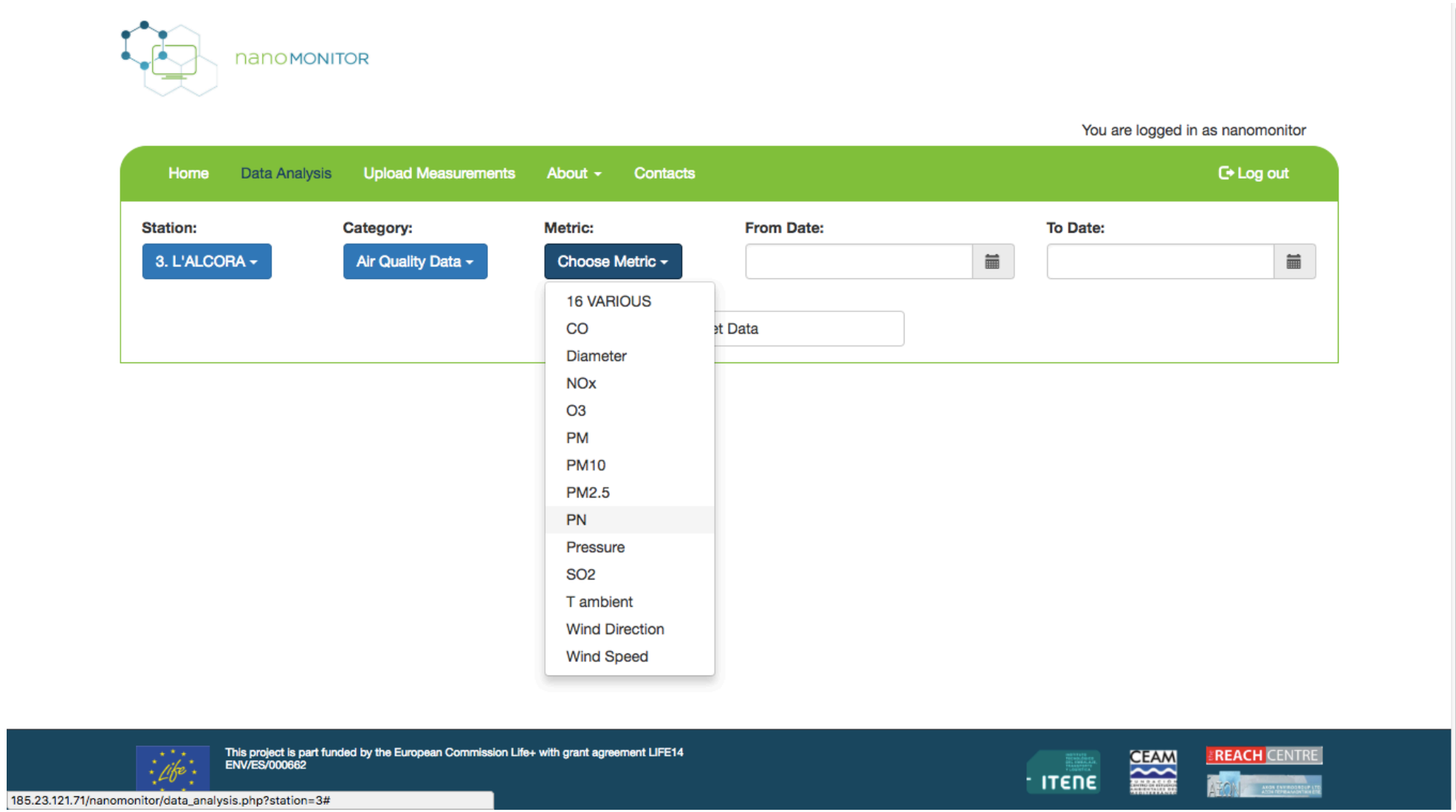
nanoMONITOR
You are logged in as nanomonitor
Home
Data Analysis
Upload Measurements
About
Contacts
Log out
Station:
3. L'ALCORA
Category:
Air Quality Data
Metric:
Choose Metric
From Date:
To Date:
16 VARIOUS
CO
Diameter
NOx
O3
PM
PM10
PM2.5
PN
Pressure
SO2
T ambient
Wind Direction
Wind Speed
et Data
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ITENE
CEAM
REACH CENTRE
185.23.121.71/nanomonitor/data_analysis.php?station=3#

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Home | Data Analysis | Upload Measurements | About | Contacts | Log out

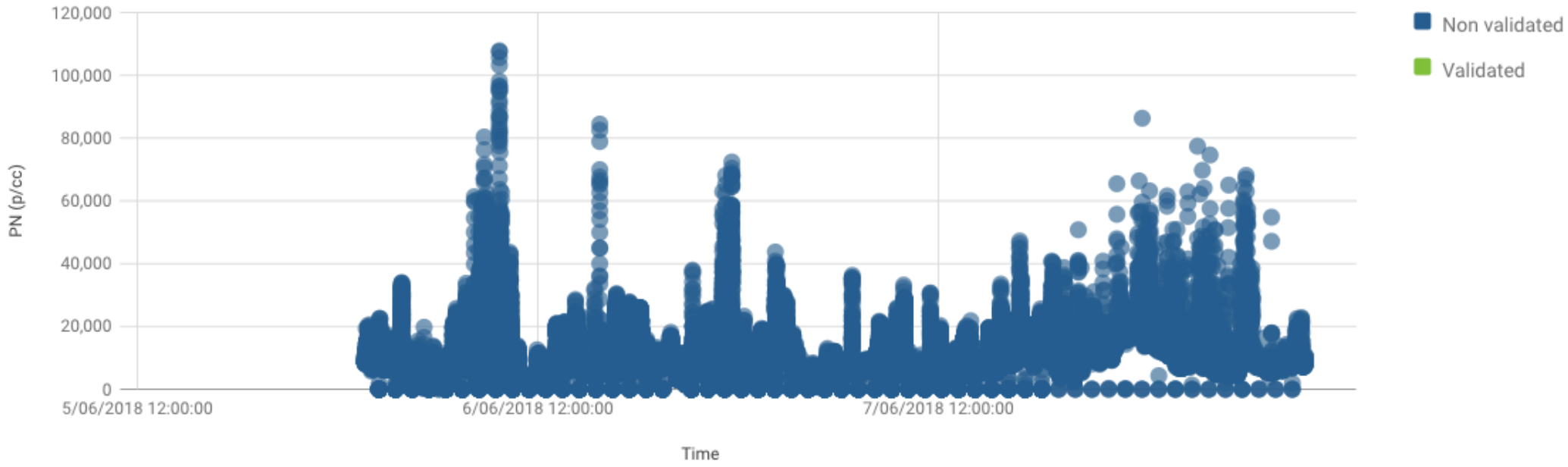
Station: 3. L'ALCORA | **Category:** Air Quality Data | **Metric:** PN | **From Date:** 05/06/2018 | **To Date:** 07/06/2018

Data Presentation | Statistics | Modeling | Risk

Non validated | Validated | Both

L'ALCORA

05/06/2018 - 07/06/2018



Export to Excel

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Home | Data Analysis | Upload Measurements | About | Contacts | Log out

Station: 3. L'ALCORA | **Category:** Air Quality Data | **Metric:** PN | **From Date:** 05/06/2018 | **To Date:** 07/06/2018

Data Presentation | Statistics | Modeling | Risk

Station ID	Location	Period	Metric	Unit	Statistic	Value
3	L'ALCORA	05/06/2018 - 07/06/2018	PN	p/cc	Min	0.00000
3	L'ALCORA	05/06/2018 - 07/06/2018	PN	p/cc	Max	107799.00000
3	L'ALCORA	05/06/2018 - 07/06/2018	PN	p/cc	Average	8368.63085
3	L'ALCORA	05/06/2018 - 07/06/2018	PN	p/cc	Variance	39696788.84583
3	L'ALCORA	05/06/2018 - 07/06/2018	PN	p/cc	Standard deviation	6300.53877

Export to Excel

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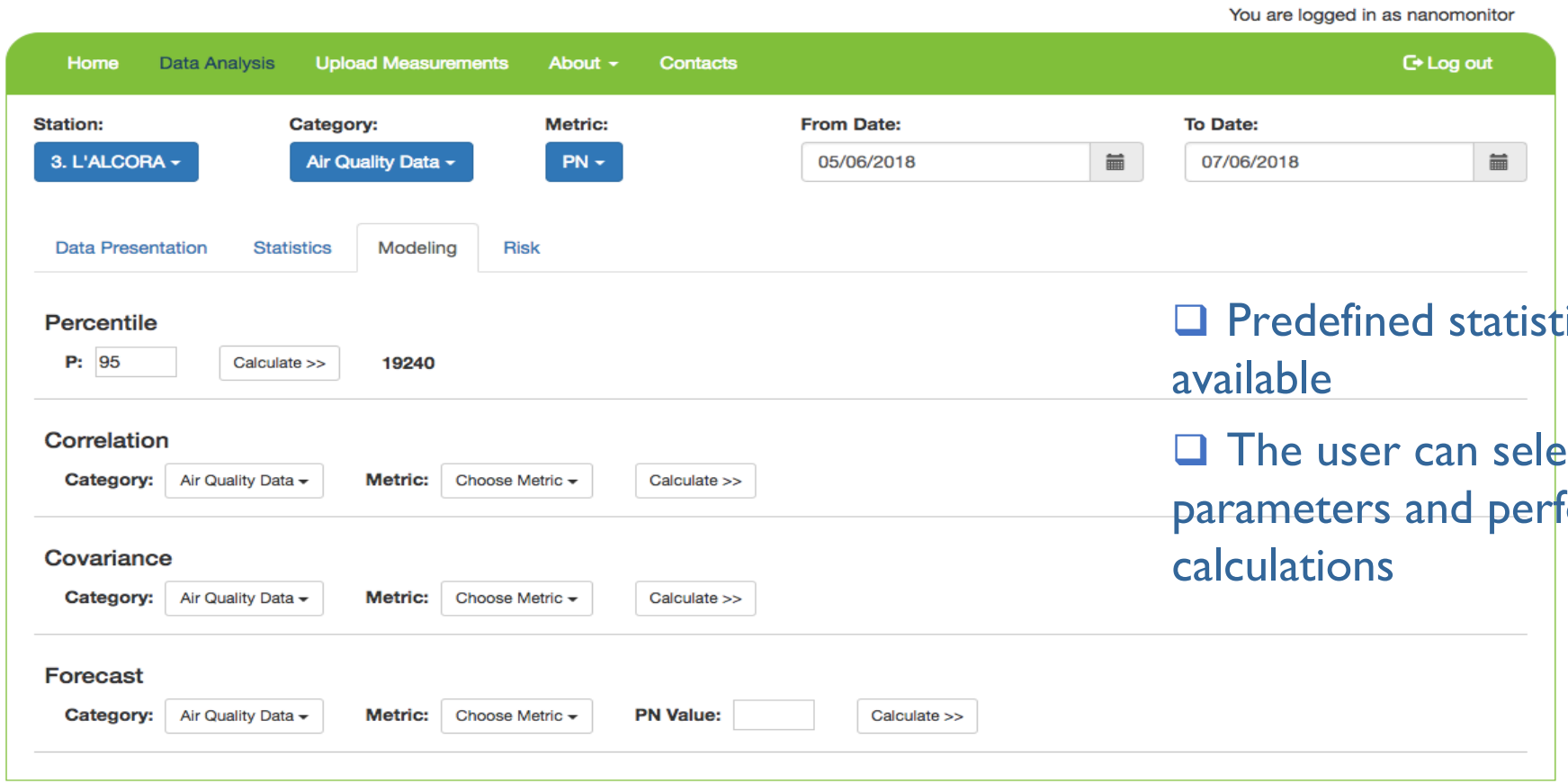
Data Analysis [2]



- Predefined statistical models are available
- The user can select the parameters and perform the calculations

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Data Analysis [3]

Predicted Environmental Concentrations in air, water and soil

$$\mathrm{PEC}_A = \overline{C_A} = \frac{1}{n}\sum_{i=1}^{n} C_A(t_i) \qquad (1)$$

$$\mathrm{PEC}_W = \overline{C_W} = \frac{1}{n}\sum_{i=1}^{n} C_W(t_i) \qquad (2)$$

$$\mathrm{PEC}_S = \overline{C_S} = \frac{1}{n}\sum_{i=1}^{n} C_S(t_i) \qquad (3)$$

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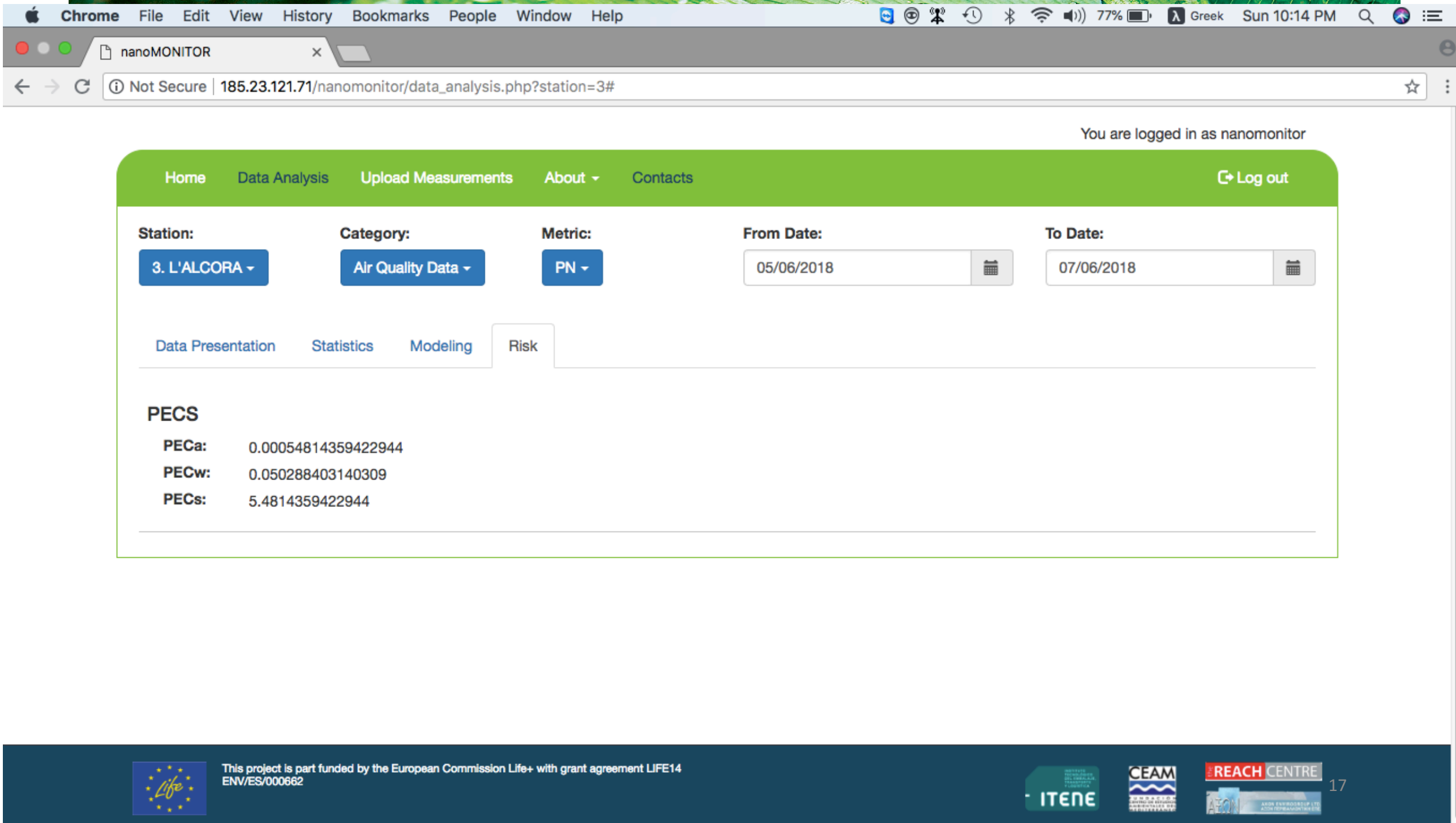

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Thank you for your attention!

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