

# CONTROLODOR® & ODORTEL®: new systems for odour impact assessment





Environmental sustainability means attention for environment, health and life

*The dissemination of knowledge determines a greater sense of protagonism and responsibility, necessary for the development of plans aimed at planet sustainability.*

Availability of scientific studies, carried out inside the University, for the territory and its productivity and control systems.

*LEnviroS is «resource of the territory for the territory» for advancing and improving projects aimed at sustainability.*



# The problem...

- ✦ The conventional continuous monitoring is performed directly at sources or by monitoring network.
- ✦ Conversely, the standard approach isn't applicable to fugitive emissions and odours.
- ✦ The market has not yet found a solution to this problem that needs a customized monitoring both for the verification of the impacts, and for the control of process.



# Decision Support System - DSS

The increased attention to the environment and the quality of life we need to develop DSS with integrated features that support:

- Companies in process control
- Authorities Control (such as Environmental Agencies)
- Etc.





# Why CONTROL ODOR

The aim of CONTROL ODOR project is to **monitor odor emissions** produced during the activities of a industrial process in order to implement **integrated policies for improving process management.**





# Some emission sources...



Composting plants



Wastewater treatment plants



Landfills



Food industries



Refineries

# Odour impact assessment: Implementation steps



# Different kind of «noses»



**SENSORS**

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Gas chromatography

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Wind tunnel system

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PID

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NO<sub>x</sub>, BTX, NMHC

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Electronic Nose	PEN3
	RQBOX

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**DYNAMIC OLFATTOMETRY**

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Sensorial methodology for the determination of odour concentration in air samples, according to **UNI-EN 13725**

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**REPORTS of CITIZENS**

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traditional questionnaires

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The new born:  
**ODORTEL Sistem**

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# CONTROL MONITORING

A magnifying glass with a silver frame and a black handle, positioned over the word "MONITORING" in the title.

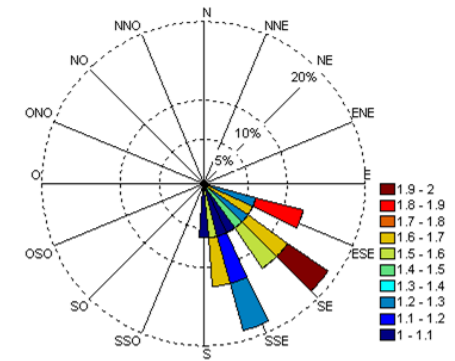
The control activity has the aim to verify the “**real life**” emissions.

Therefore, it is necessary to place sensors both in the "fence" positions and at the receptors.

# Some examples.....



Wind rose



## Case 1

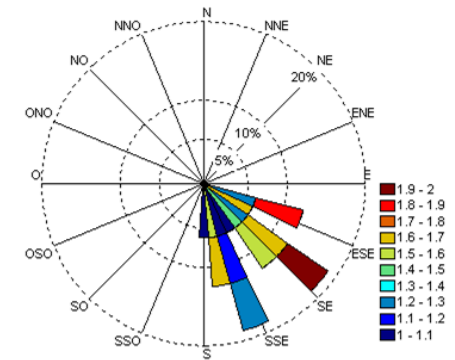
Sensor	Signal
1	yes
2	yes
3	yes
4	yes
5	no



# Some examples.....

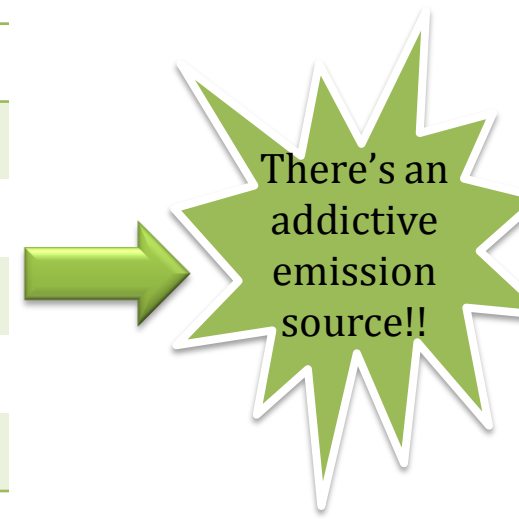


Wind rose



## Case 2

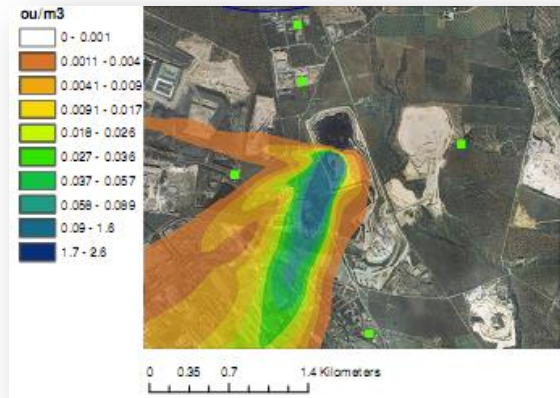
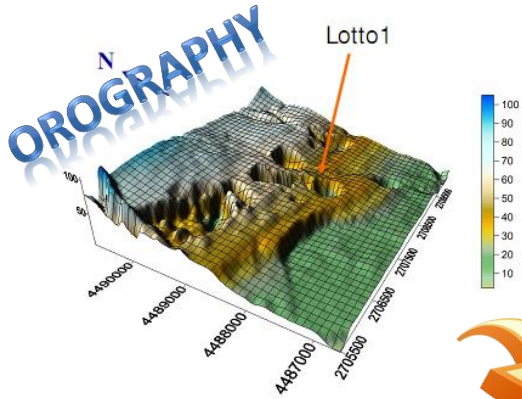
Sensor	Signal
1	yes
2	yes
3	yes
4	yes
5	yes





# DISPERSION MODELS OF EMISSIONS AROUND THE SITE

## EMISSIONS

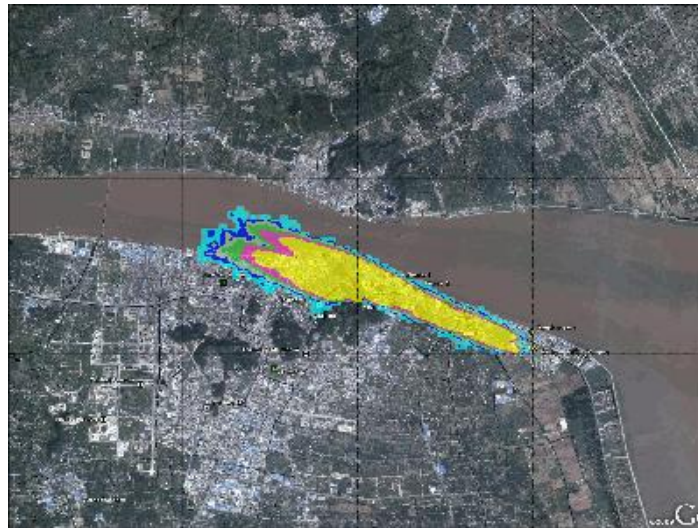




# EMISSION FORECASTS



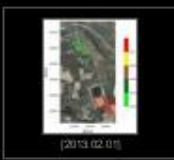
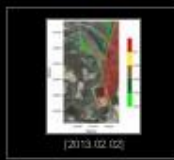
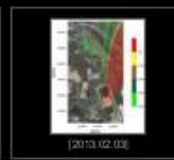
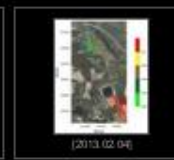
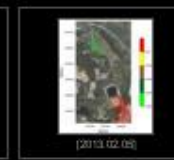
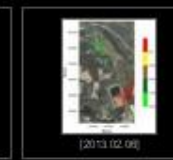
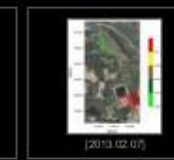
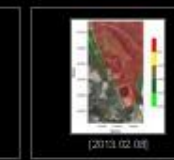
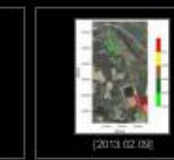
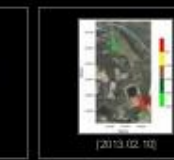
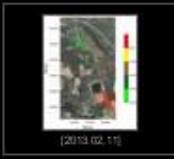
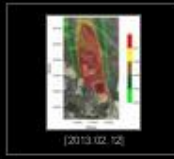
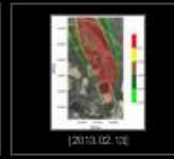
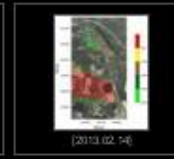
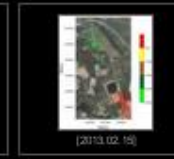
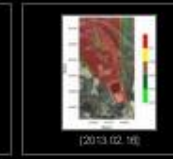
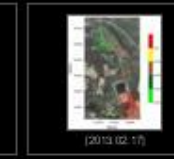
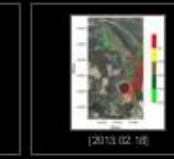
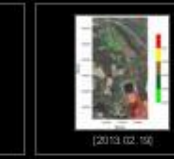
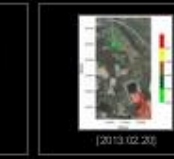
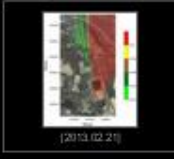
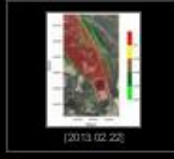
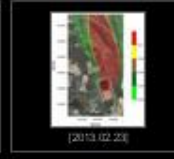
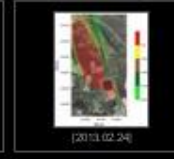
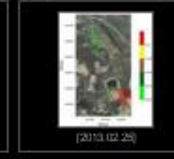
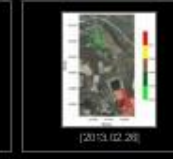
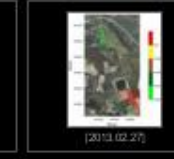
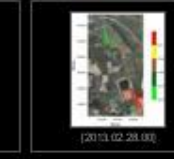
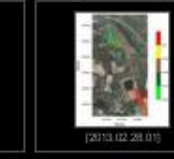
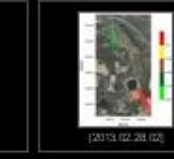
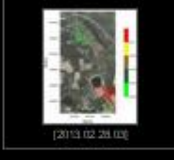
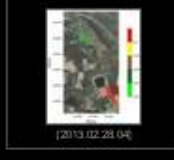
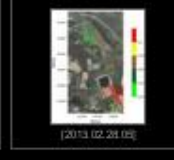
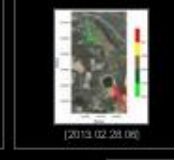
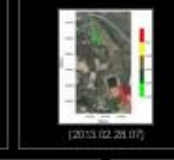

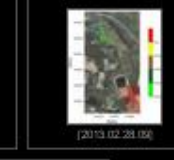
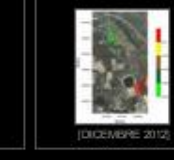
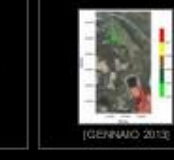
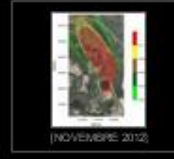
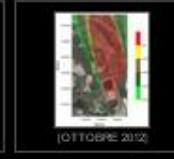
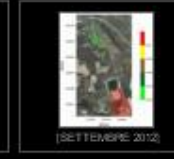
Continuous emissions monitoring allows to collect time series.  
This dataset, after statistical processing (eg. Neural networks), can  
provide emission forecasts.



# PAST, PRESENT ...

## Archived model scenarios

← → ↻ odortel.controlodor.it/gallery.php 🔍 ☆ ☰

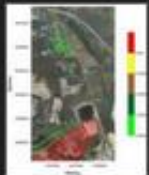
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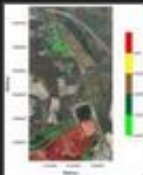
# What will happen in the next 24 hours?

## Forecast ...

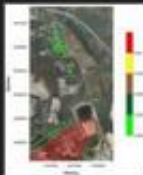
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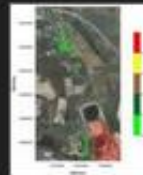
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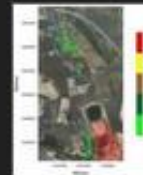
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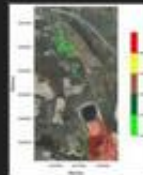
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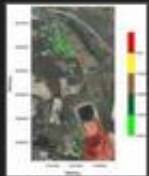
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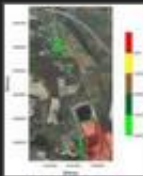
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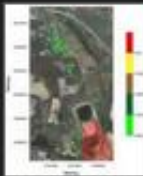
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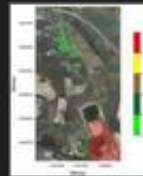
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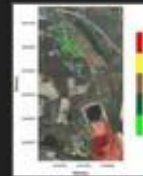
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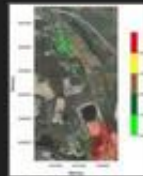
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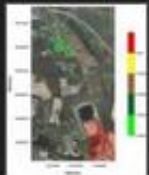
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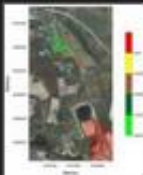
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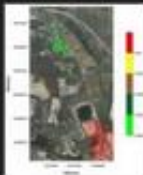
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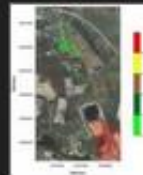
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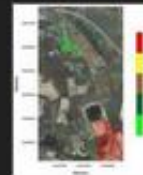
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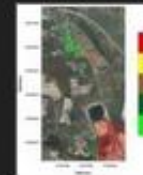
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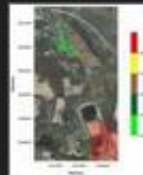
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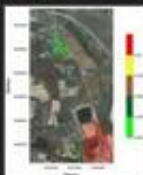
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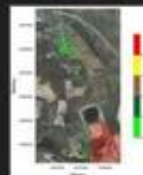
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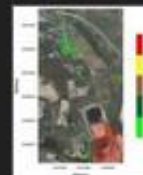
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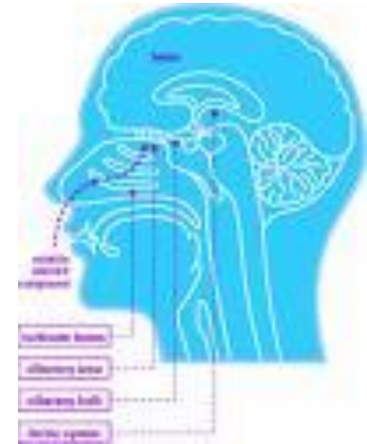
2013.03.03.14



2013.03.03.15



# DYNAMIC OLFACTOMETRY



Dynamic olfactometry: sensorial methodology for the determination of odour concentration in air samples, according to UNI-EN 13725



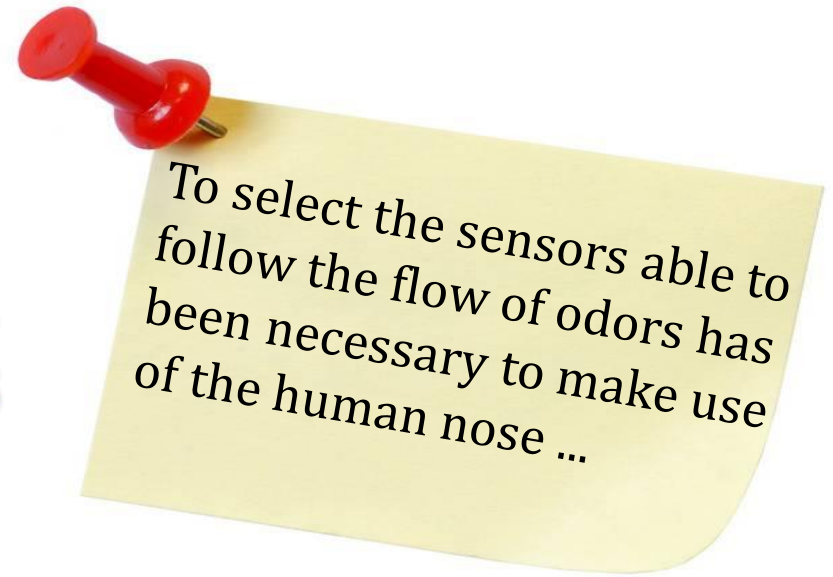
The panel members are qualified examiners, selected according to a standardized procedure in order to choose individuals with average olfactive sensitivity, who constitute a representative sample of human population. The screening is usually performed using a reference gas, n-butanol.

The numerical value of the odour concentration is equal to the dilution factor that is necessary to reach the odour threshold.

Therefore the odour concentration at the odour threshold is 1  $OU_E$  by definition.



# ..... FURTHER “MONITORING SYSTEM” .... AT SENSITIVE RECEPTORS



*As an alternative to traditional  
questionnaires.....*

**The call.....  
“ODORTEL”**

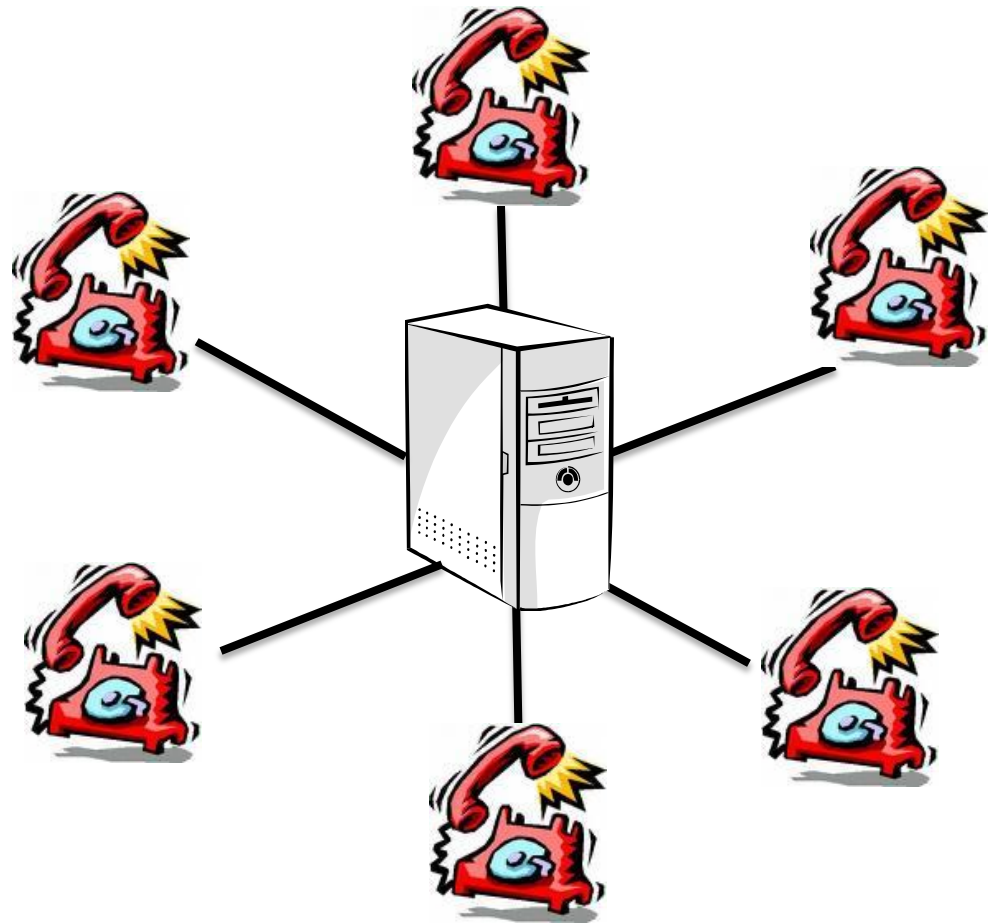


# THE TELEPHONE SYSTEM...

## How does it work?



- ❖ ID Number
- ❖ Intensity of odor  
(range from 1 to 3)





# .... Odor abatement system



## 1) *Real time*

The odor abatement system will be connected to monitoring network. Then, when the sensors exceeds a predetermined threshold, the abatement system is activated.

## 2) *Forecast - SSD (Support System of Decisions)*

The SSD will assess the correct position of odor abatement systems on the bases of weather, activities and place of sources in order to arrange corrective action before the odorous event occurs and to prevent it.

Of course, at first, the system has to be installed

This requires the identification of low environmental impact



stem

stances with high efficiency



