



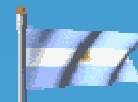
“JOURNEY” MONITORING FOR RADIOLOGICAL MEASUREMENT OF LARGE AREAS

A SIMPLE METHODOLOGY FOR RADIOLOGICAL
USES.

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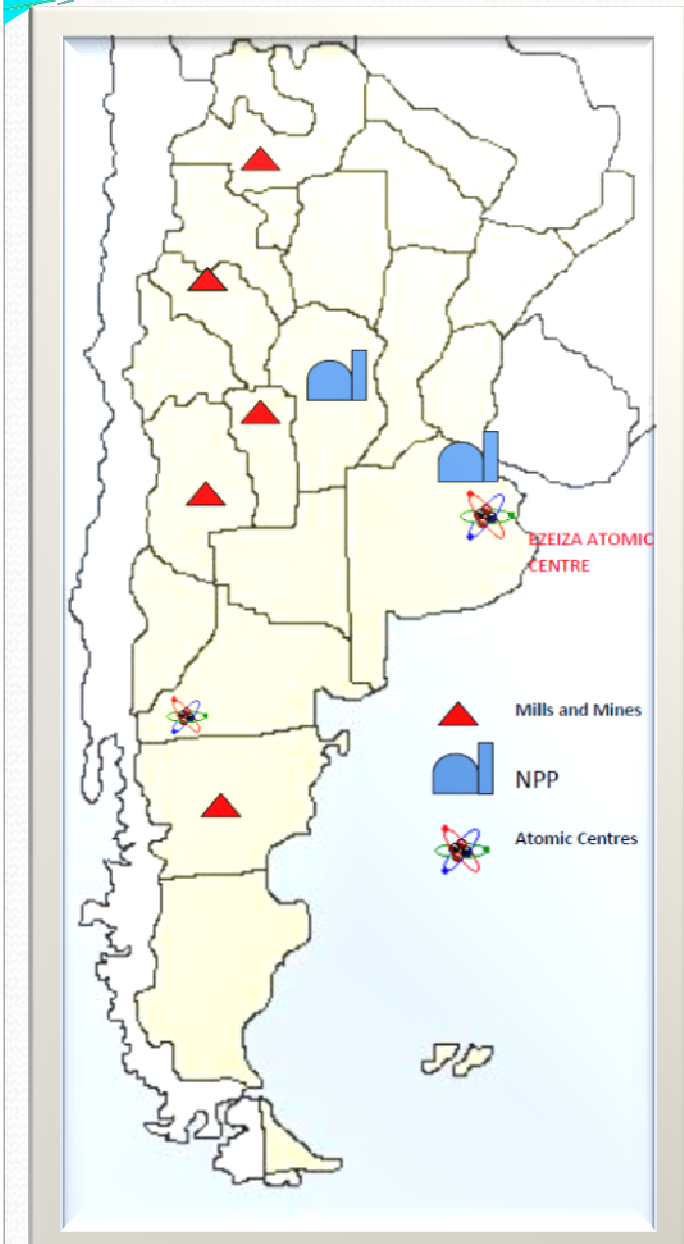
Comisión Nacional de Energía Atómica (C.N.E.A.)

ARGENTINA 2010



UNIDAD SEGURIDAD CAE

ARGENTINEAN FACILITIES & LOCATION



The Ezeiza Atomic Centre is located in the Buenos Aires Province, 33 km far from Buenos Aires city, the Federal District of Argentina.

BRIEFING OF CAE ACTIVITIES



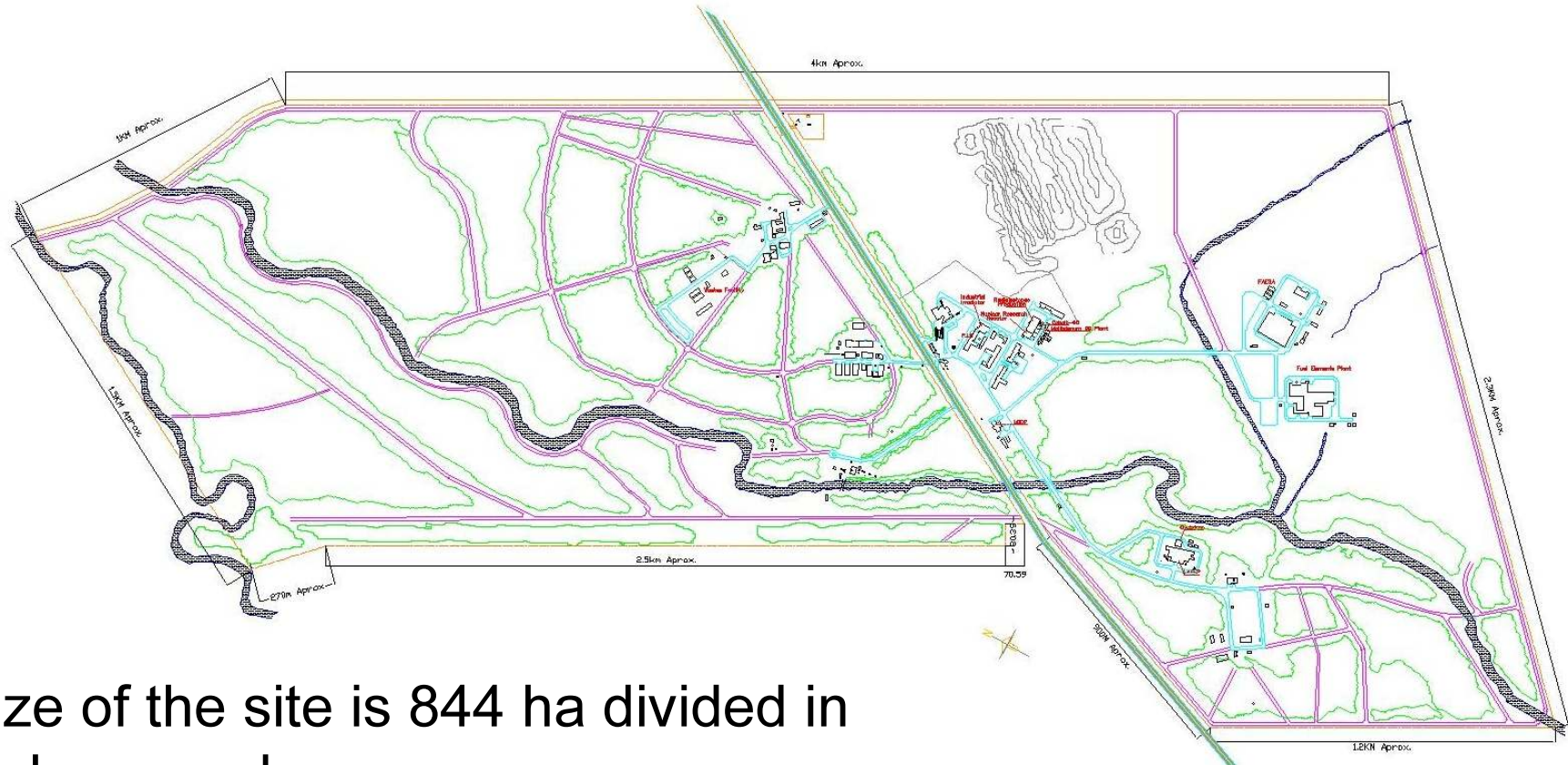
- This is a nuclear site where are operated several facilities:
- Nuclear fuels production plant
- Facilities for Wastes Disposal and Management
- R&D of Nuclear Science and Technology laboratories
- Research and production Nuclear Reactor of 10 MW (RA-3)
- Three Radioisotopes Production Plants (Iodine-131, Molibdenum-99 and Cobalt-60 among others)
- Industrial Irradiation for sterilization uses
- Cyclotron

HISTORY of CAE



- Was created in the late Fifties
- Laboratories for radiochemical experiments
- Scientists worked with Natural Uranium
- Research Reactor RA-3 was built a few years later
- Started the developing of radioisotopes production for medical uses
- By that time, Argentina had a significant development of certain areas of the science, specially in nuclear field, may be more than other countries of the region and only compared with Brasil.
- 1974 Started Up Atucha 1 NPP
- 1982 Second NPP Embalse

EZEIZA Atomic Centre Premise (CAE)

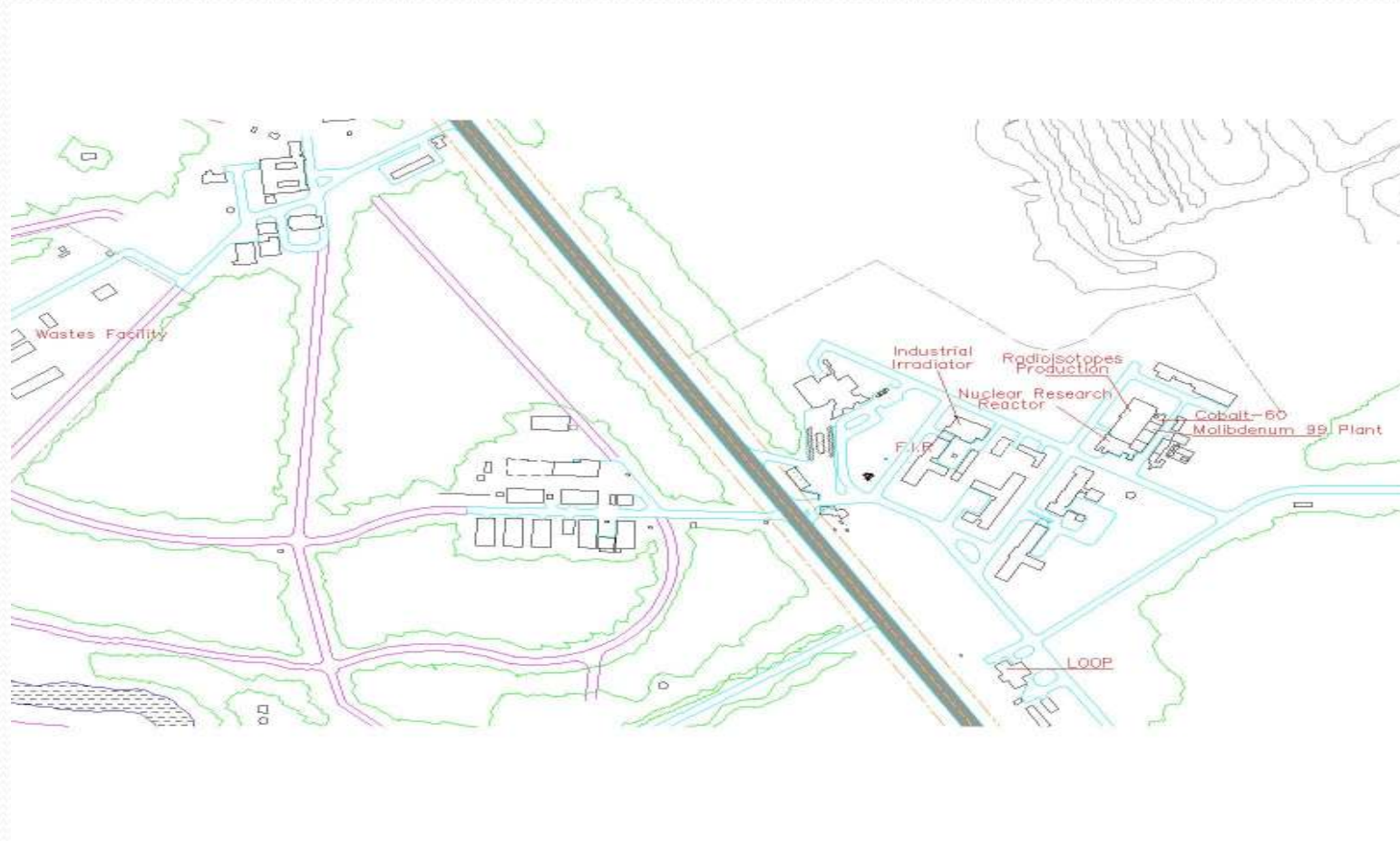


The size of the site is 844 ha divided in halves by a road.

There are 4 streams one of them, the Aguirre stream, flows inside the property side to side

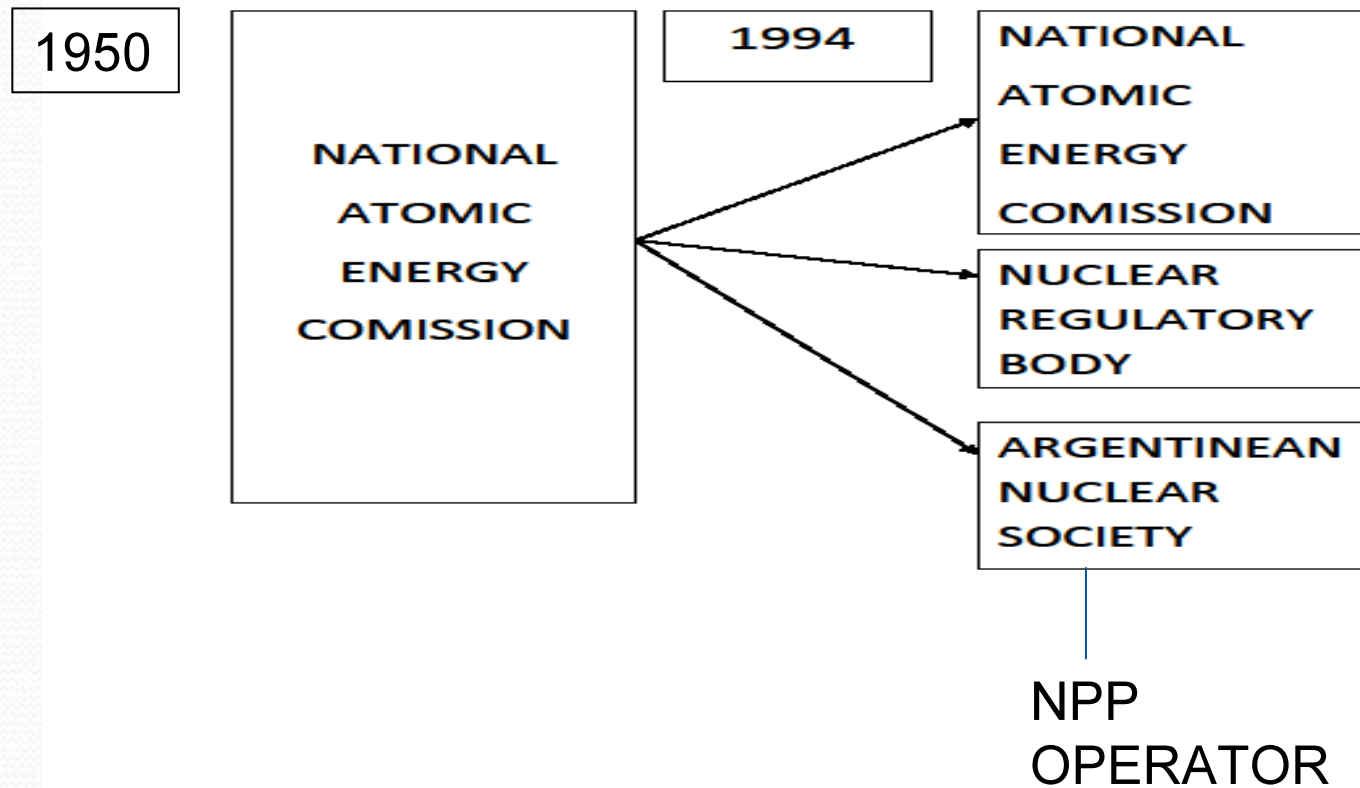


LOCATION OF MAIN FACILITIES



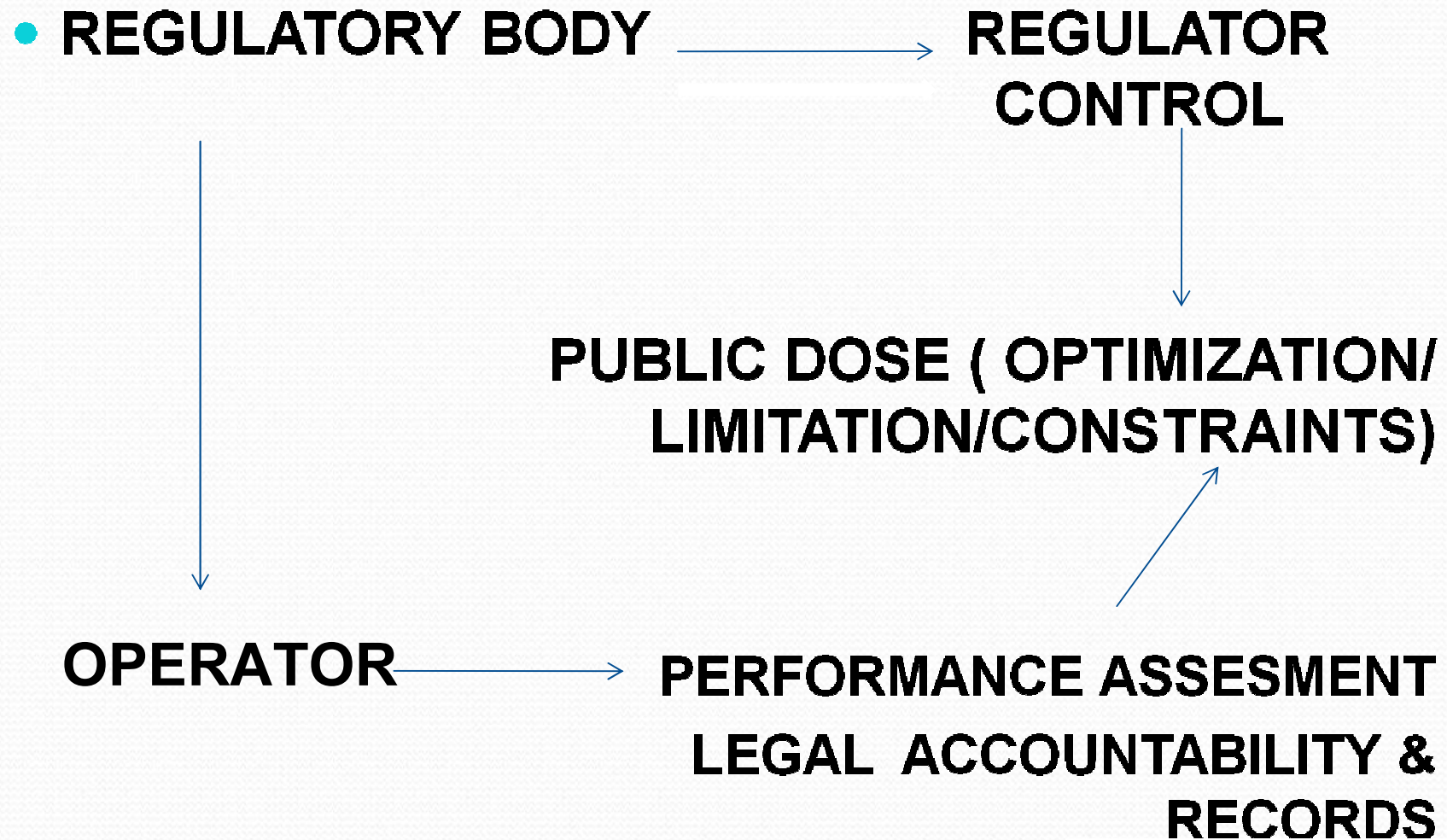


Regulatory Evolution





ENVIRONMENTAL MONITORING PLAN





Objectives of EMP

- Compliance with safety standards and operation licenses
- Evaluation of long-term trends and performance of Environmental Protection Systems
- Control of accumulation in Environment
- Assurance of public radioprotection, in harmonization with integrated quality management system, including records and accountabilities clearly established.



CAE ENVIRONMENTAL MONITORING PLAN (EMP)

EMP will include the sampling of water courses, drinking water, soil, sediments, air, external exposure(Dose Rate/Dose) , and compartments of possible accumulation of contaminants, like certain foodstufs

To design the best ways to do that, the site characterization and base line for evaluate tendencies, must be assessed with reasonable accuracy



Dose Rate measurements

To perform the evaluation of the current dose rates in the site, identifying the sources and circumscribing their extent, we used a system that called “journey” monitoring.

Materials used



- Radiation detector with INa
- GPS
- Free Software available in internet
- Notebook
- Vehicle
- Wireless Internet adapter



Materials





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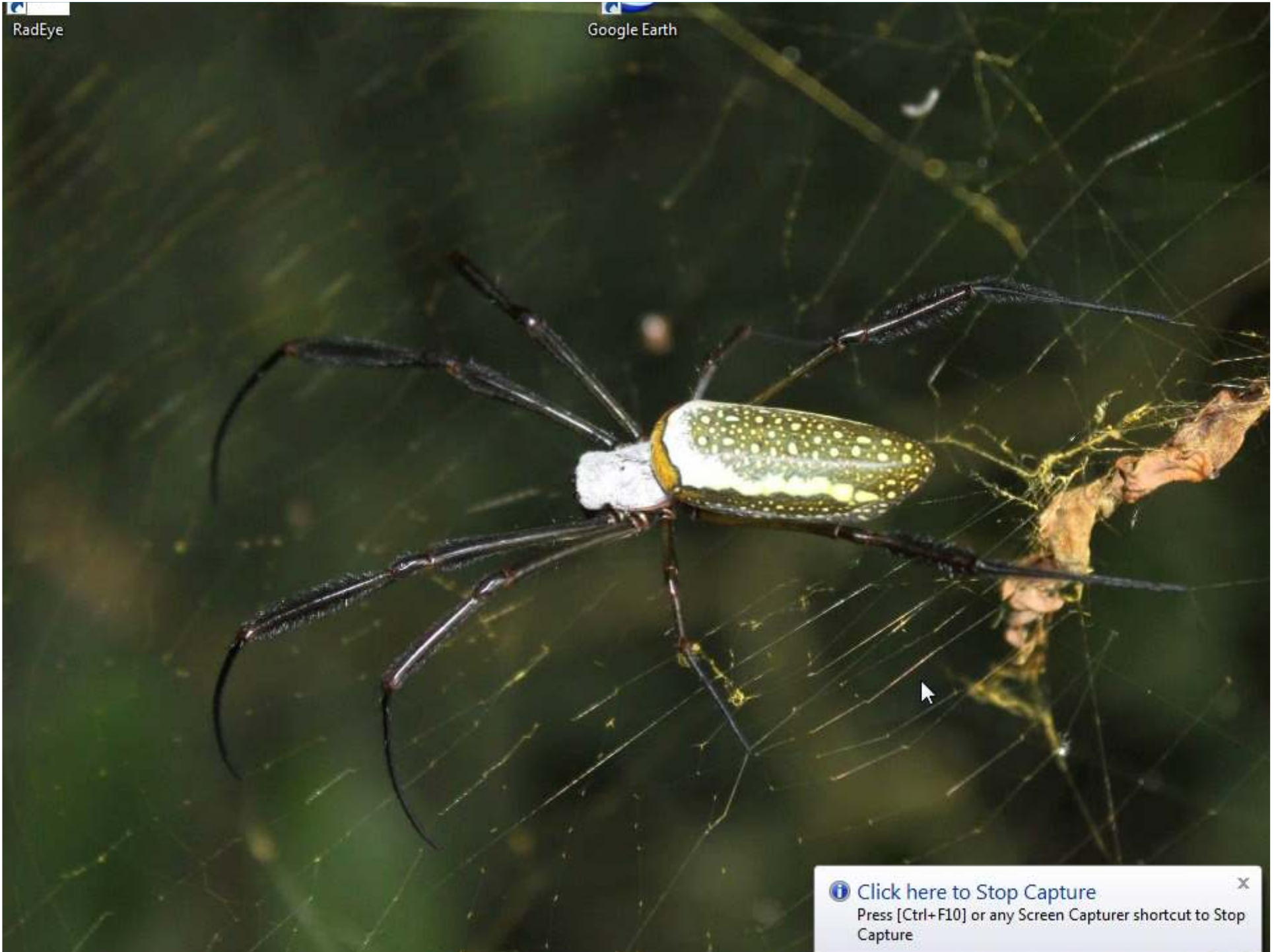


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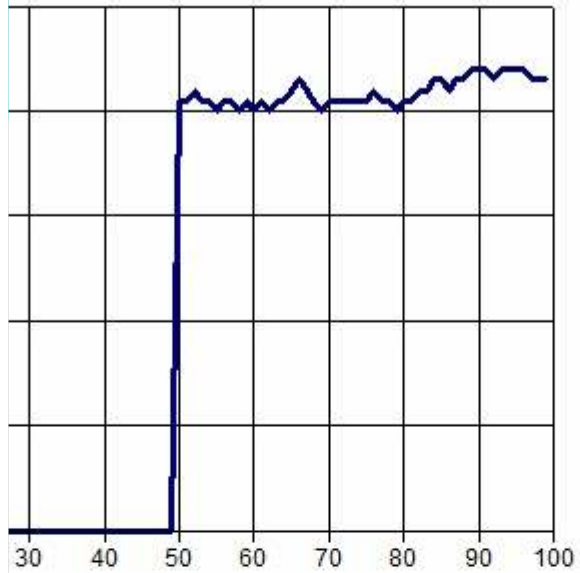
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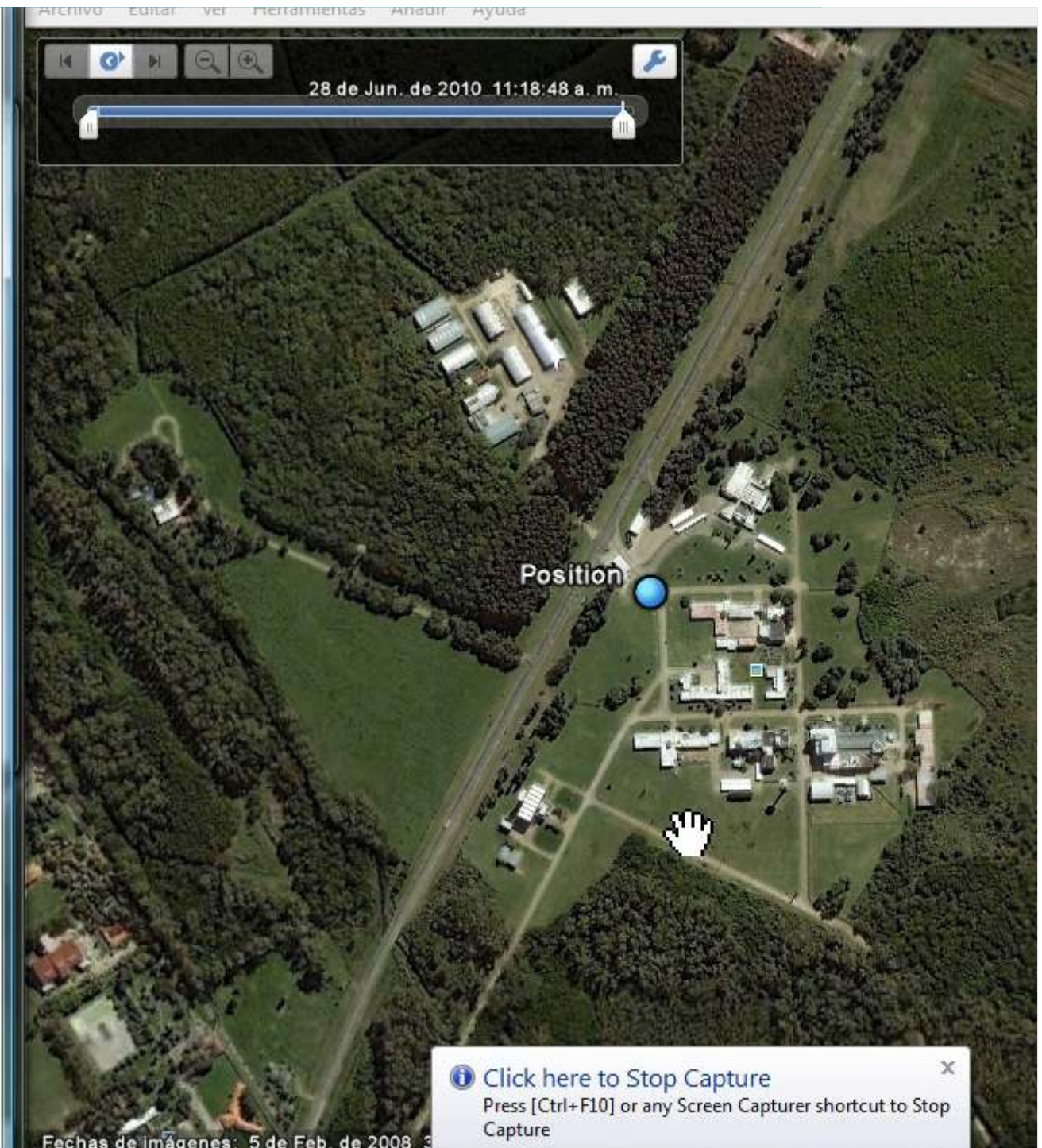
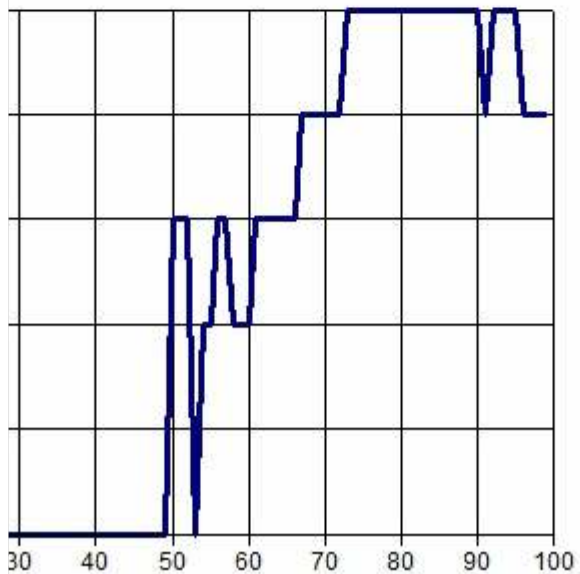


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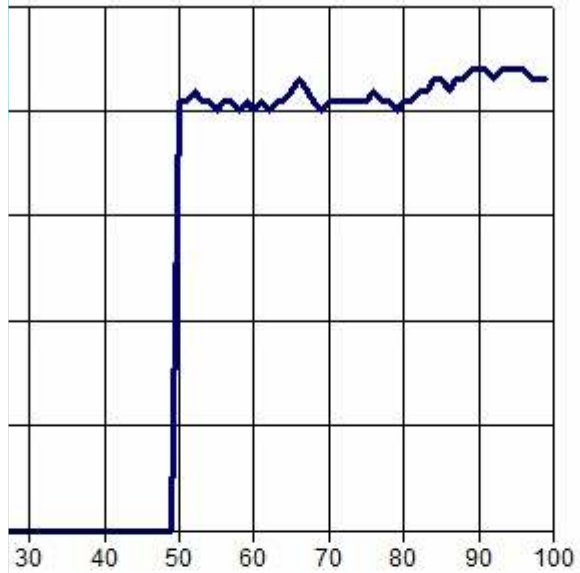
Count Rate



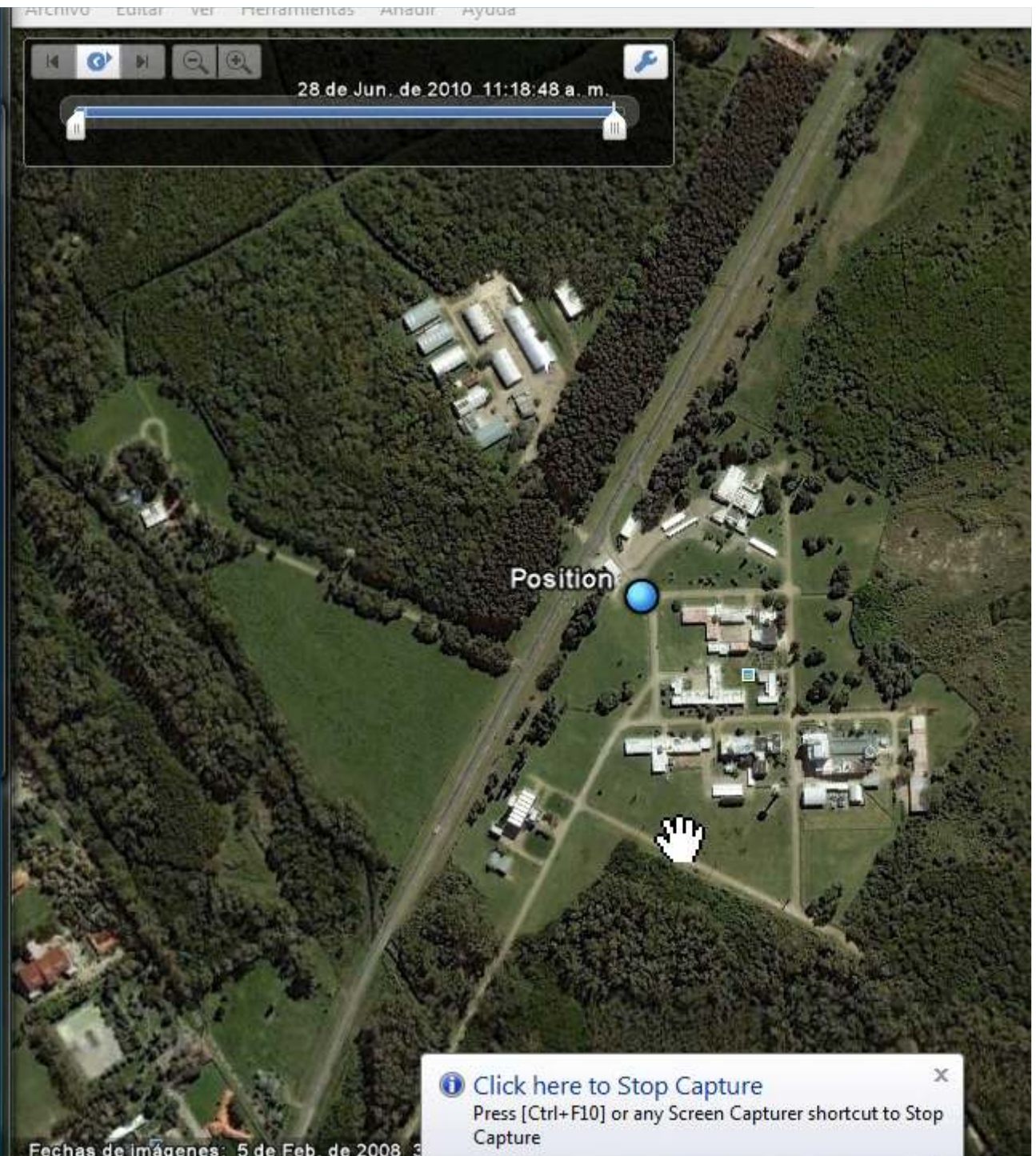
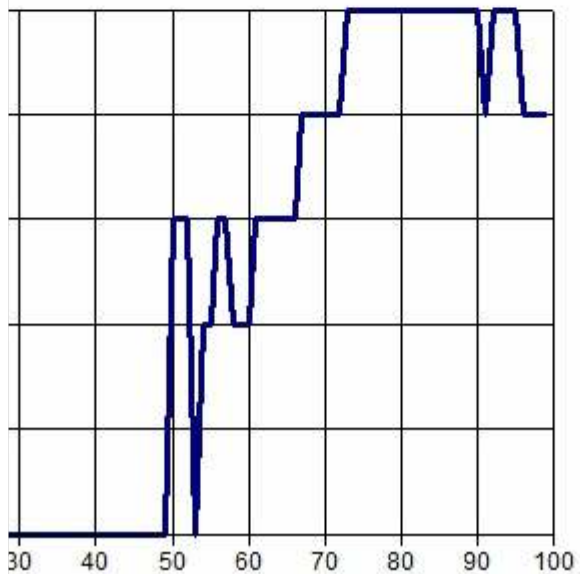
Dose Rate



Count Rate



Dose Rate





Advantages vs. disadvantages

- The method is being tested and developed
- At the moment, we can talk about some advantages and disadvantages:



Disadvantages

- Link between geo-reference and Dose Rate is manual (this may be solved)
- Depends on the internet communication



Advantages

- Low COST
- May use existing adapted equipment
- Offers a graphical user- interface of the information (ANALOGICAL vs. DIGITAL)
- Is suitable to RECORD information
- fast
- IT WORKS ON-LINE / IN-SITU
- it is portable
- Does not need to be operated by specialized personnel



Conclusions:

- Journey Monitoring, may be one of the methods to be used for:
- Develop the Base Line for the beginning of a Environmental Monitoring Plan, and may be a method for the sampling of Dose Rates in the performing plan
- It has demonstrated that it would be useful to other purposes like the searching of lost or hidden sources, and remediation evaluations.
- Most relevant: This was made for a group of young people, with no budget only the willingness and enthusiasm. So We have to encourage this kind of things and think that with few resources, in developing countries, we can do it.



Thank you for your attention