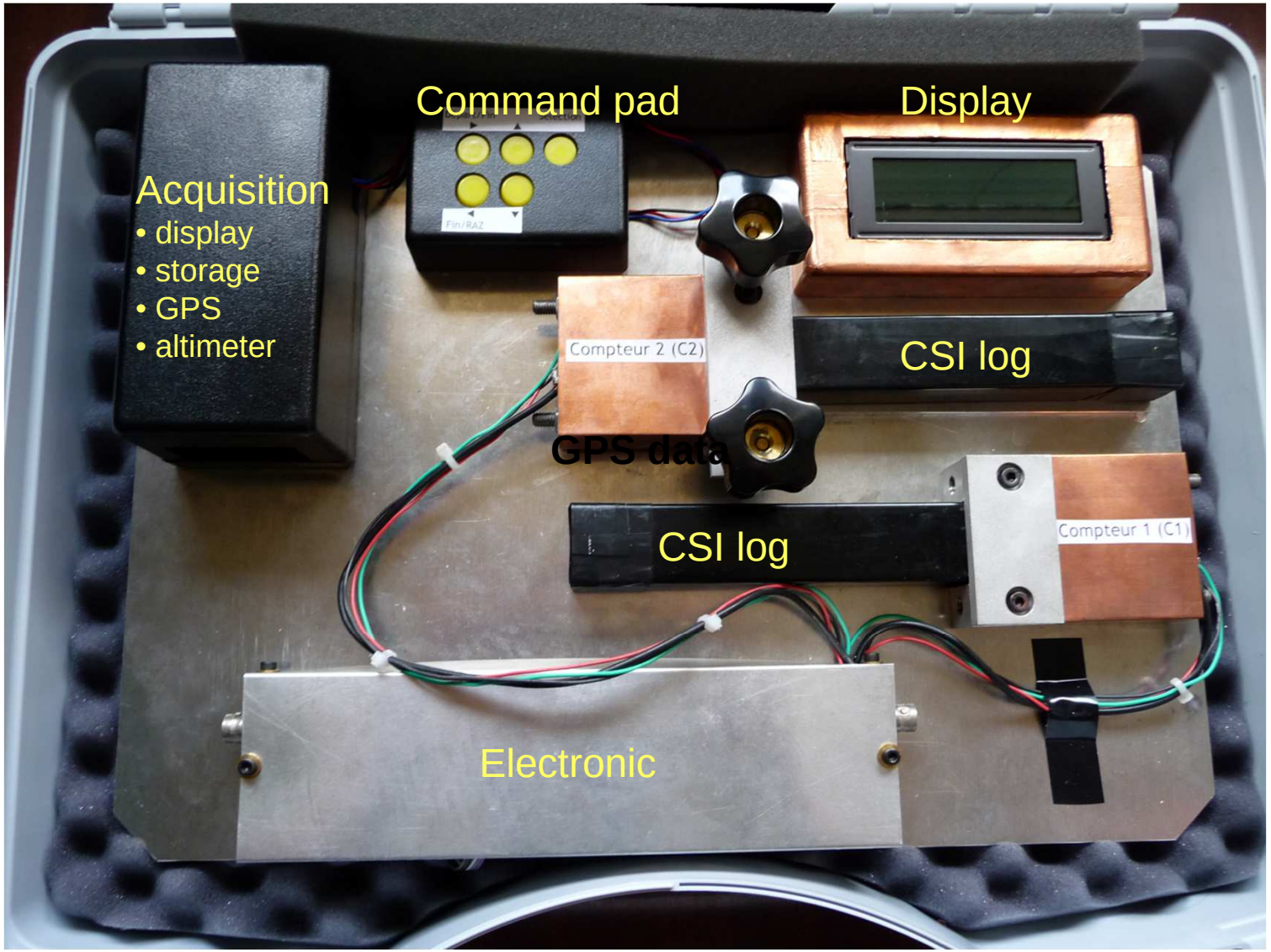
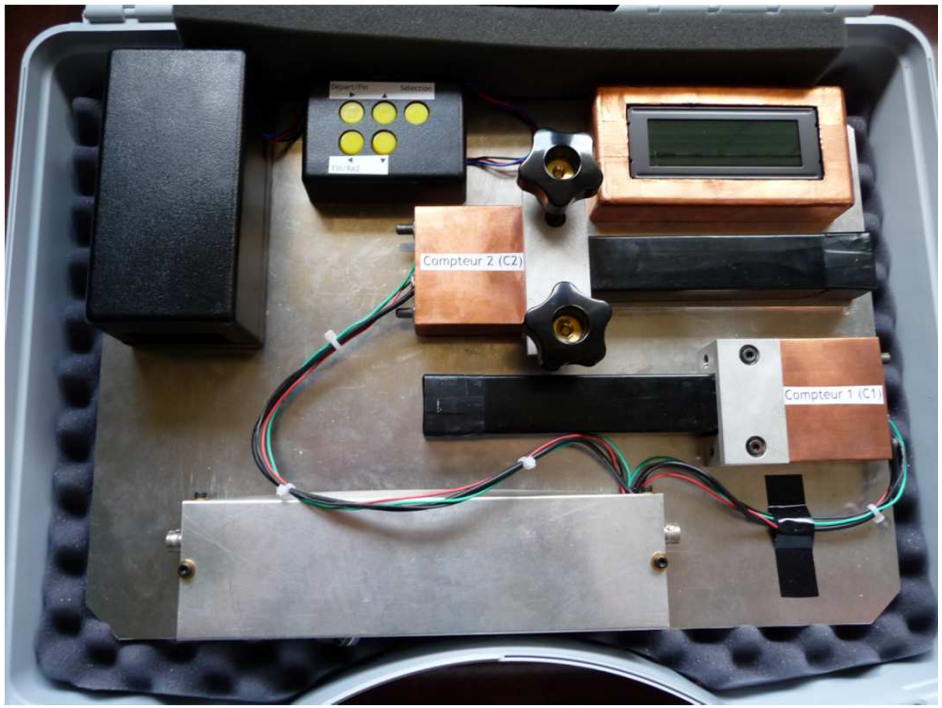
The COSMIX kit



COSMIX

https://www.cenbg.in2p3.fr/grand-public-scolaires/les-rayons-cosmiques-au-lycee/cosmix/

Designed by CEN-Bordeaux Gradignan



Case usable by a teacher or student without any specific training

Simple: no tuning
Cost effective: material recycling
Portable: USB powered
Data free of background

Allows the existence of atmospheric muons to be demonstrated

Visualisation of pulses with a simple oscilloscope – Buzzer

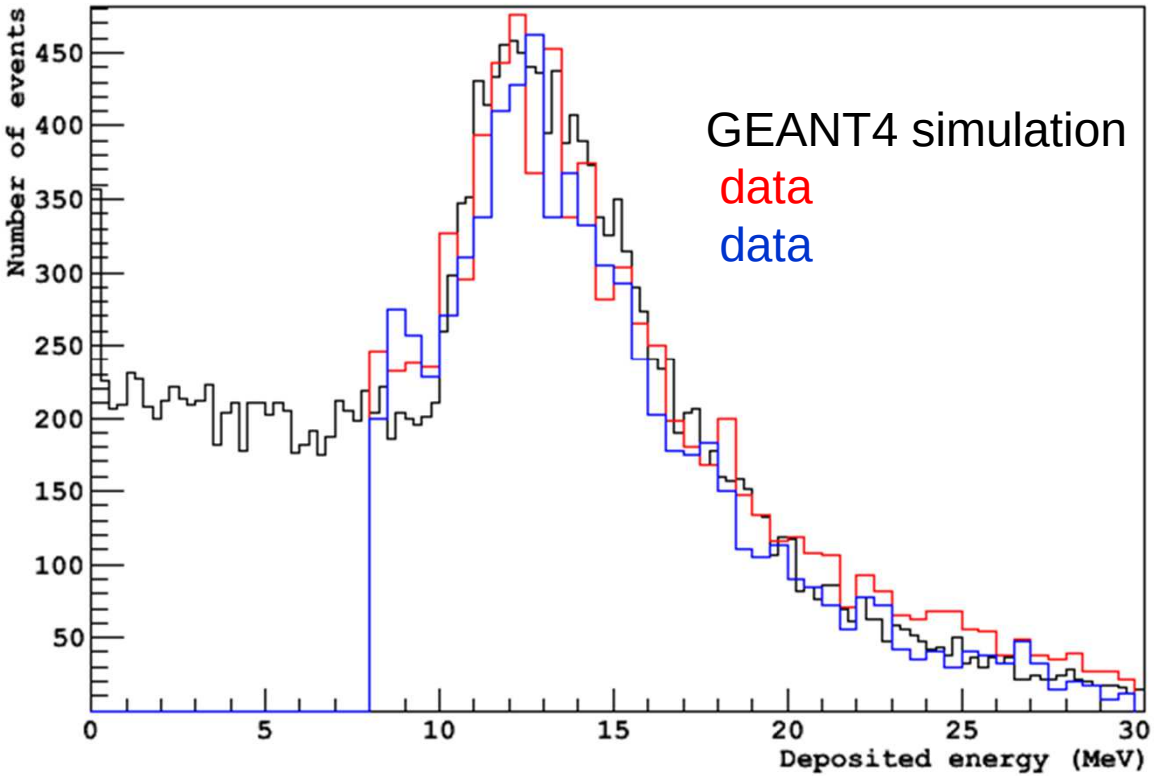
Counting and data logging via arduino and SD card

Fitted with a GPS and altimeter

Status: 51 kits built, 25 of which circulating in high-schools, the rest mainly used by professional scientists for outreach activities

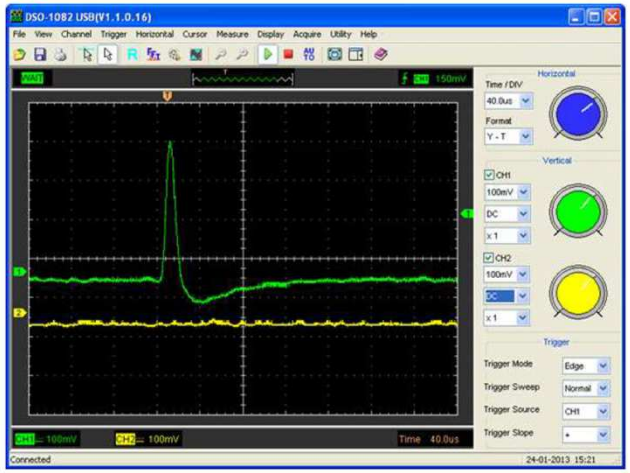
Deposited-energy distribution

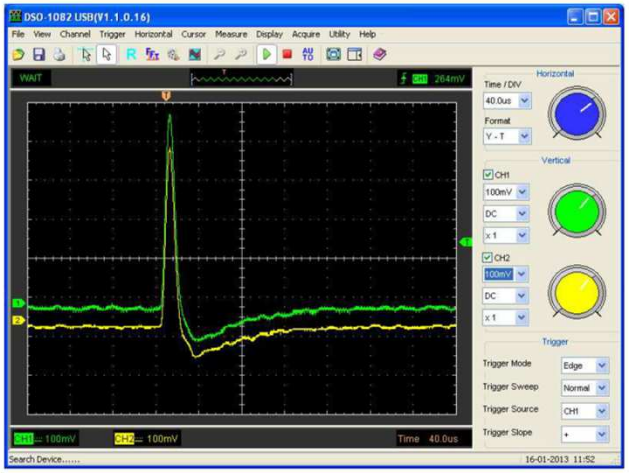
Thanks to the CsI density of 4.51, vertical muons deposit an energy of about 12 MeV in each bar (see Figure). This is considerably more than what the natural radioactivity can produce, so with a proper setting of the electonics the counting can be made essentially free of background.



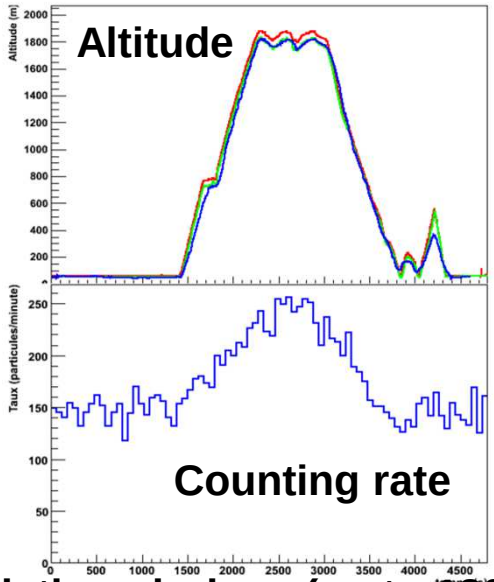
Examples of measurements

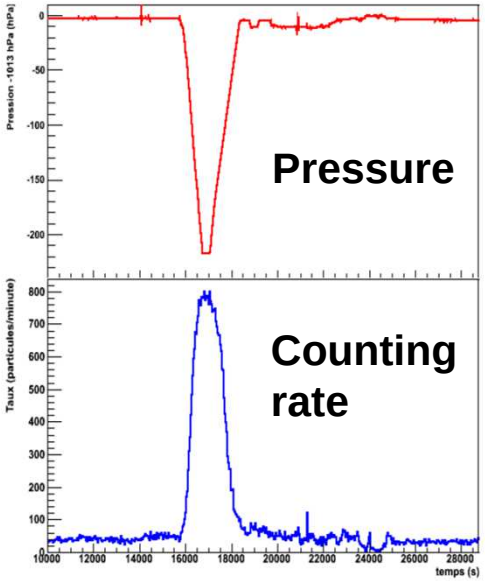
- Scope signals – a single counter coincidence between two counters





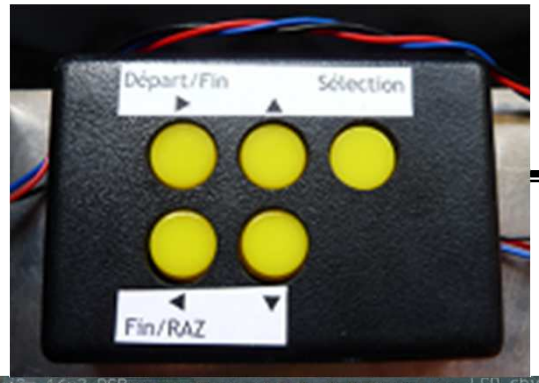
- Flights



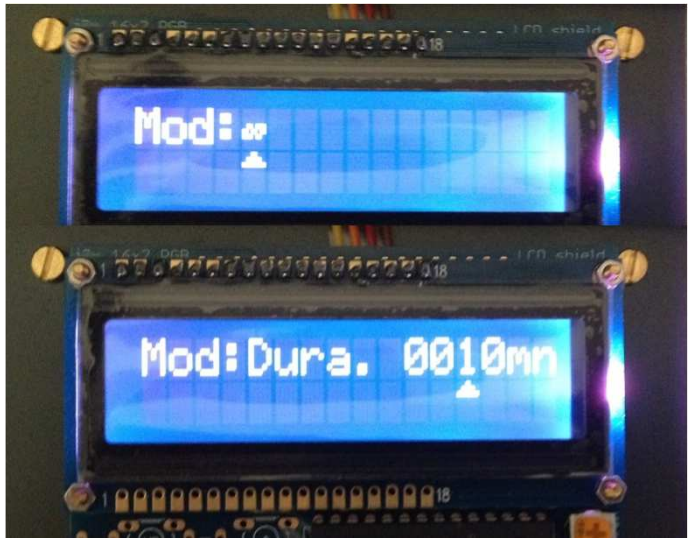


on a general aviation airplane (up to 1800 m) **on an airliner for a flight at ~10 000m**

Menu



Nominal counting



Setting the run duration

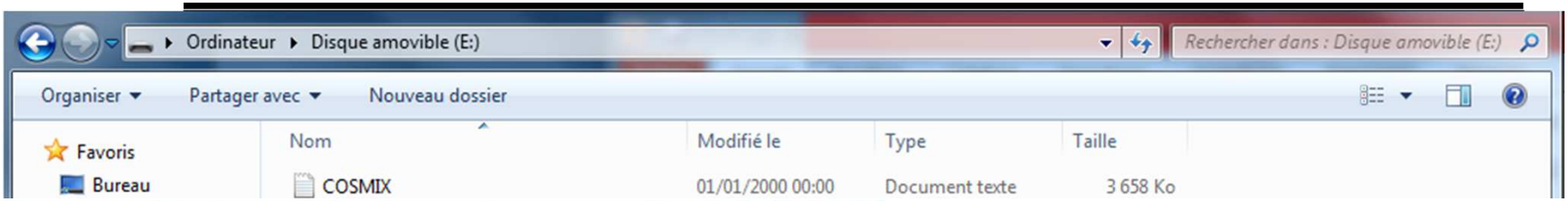
Temperature
Pressure data

GPS data

Date

Turning
Buzzer ON/OFF

Data format



COSMIX - Bloc-notes

Fichier Edition Format Affichage ?

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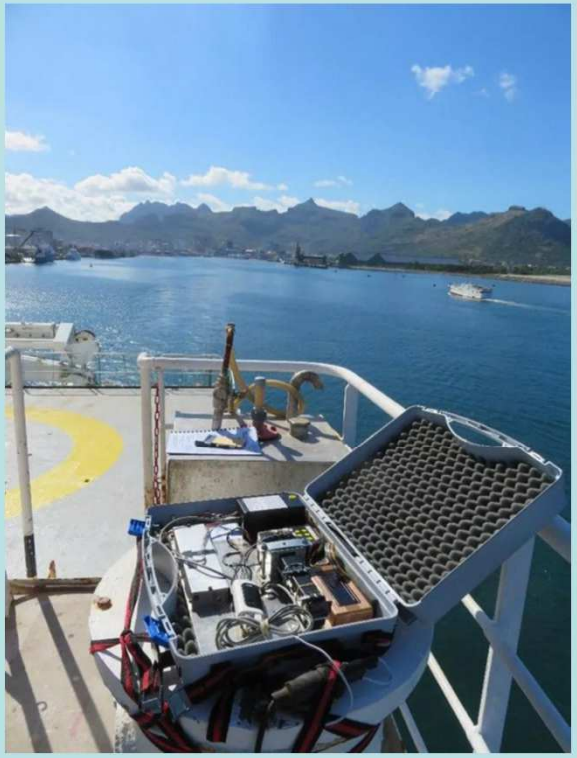
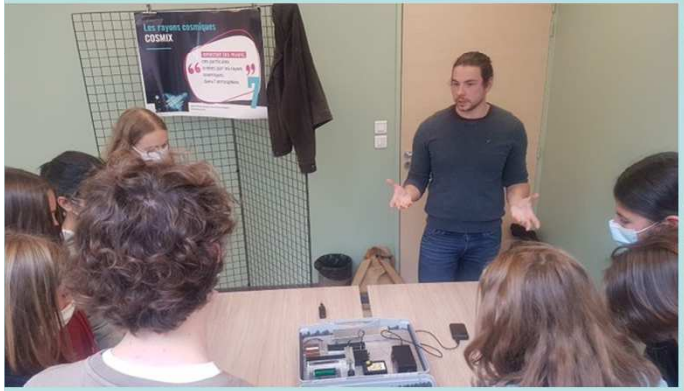
```

y, mo, d, hr, min, s, (GPS sat.), Ton*(1/100 s), long, lat, alt (m), T(°C), P(Pa), Tr1, Tr2, Tr1∩Tr2, C1, C2, C1∩C2

*** time lapse since powered on**


L'ASTROLABE




Les rayons cosmiques
COSMIX