



Or

Pride and Prejudice in Citizen Science

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for the FRIPON collaboration

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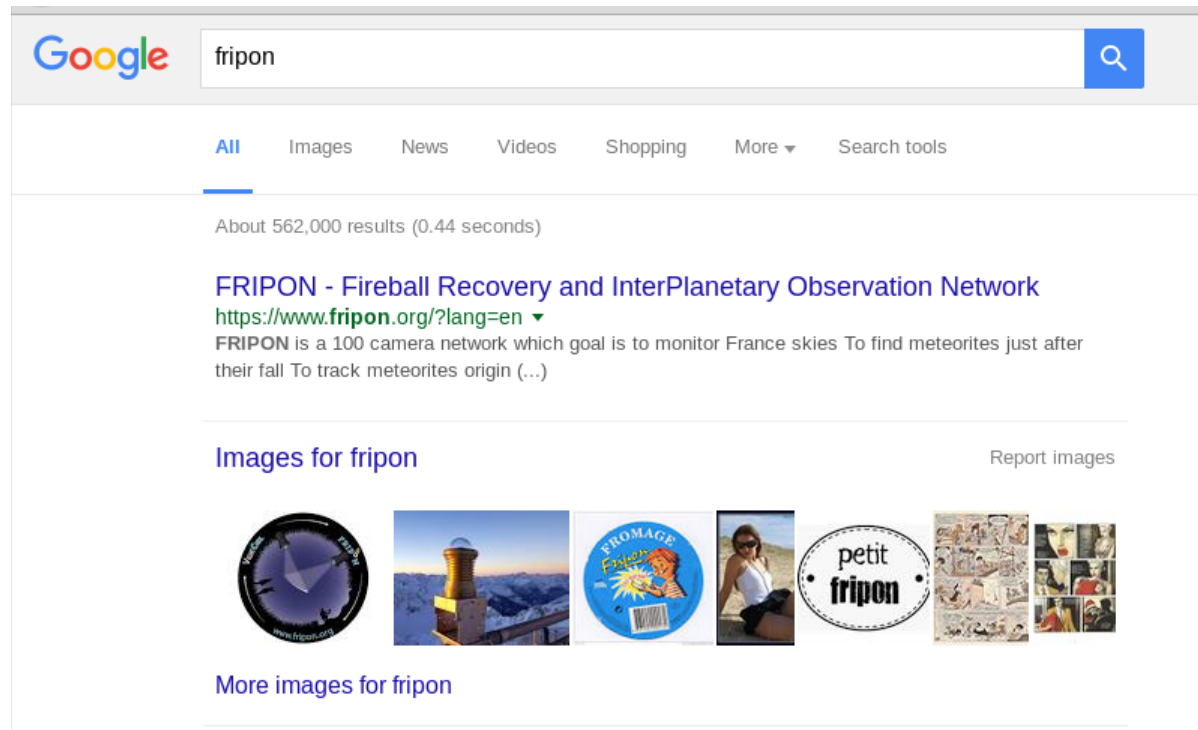


FRIPON

Fireball
Recovery
InterPlanetary
Observation
Network

www.fripon.org

It also means “trickster”,
but you can [google](#) us without fear!



FRIPON Objectives

Install and operate all over France a network of a hundred optical fish-eye cameras and radio detectors

- 1) to detect fireball events in real time :
to compute meteor trajectories and discover meteorites after impact
- 2) to compute meteoroid orbits outside the atmosphere :
to statistically determine possible parent bodies

The link between physical and chemical properties of meteorites and their possible parent bodies will enlighten us about the origin of the Solar System.



Network status: Hardware

70% of the optical network is operational

20% of the radio network

CCD SONY chip ICX445



Antenna COMET GP-5N

Low cost hardware,
standard protocols



Network Status : software

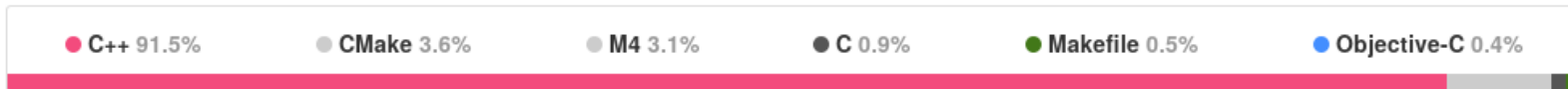
Operating System: open-source, vanilla Debian8 Linux, monitored by virtualized central servers

lewing@isc.tamu.edu

The GIMP



Optical acquisition and real-time detection : open-source, cross-platform, FreeTure (GNU-GPL3)



<http://fripon.github.io/freeture/>

FreeTure makes use of the Aravis library : open-source, implements the GigE Cam standard

<https://github.com/AravisProject/aravis>



Network status: software

Radio acquisition : SoX, the Swiss Army knife of sound processing programs

<http://sox.sourceforge.net/>

Optical calibration pipeline : AstrOmatic software (SExtractor, PSFEx, SCAMP)

<http://www.astromatic.net/>



Orbit and trajectory computation : python, astropy+spiceypy+... under validation for release

VOEvent alert (syntax definition in progress) : COMET, open-source, python
VOEvent server originally developed for the LOFAR Transients Key Project

<http://comet.transientskp.org>



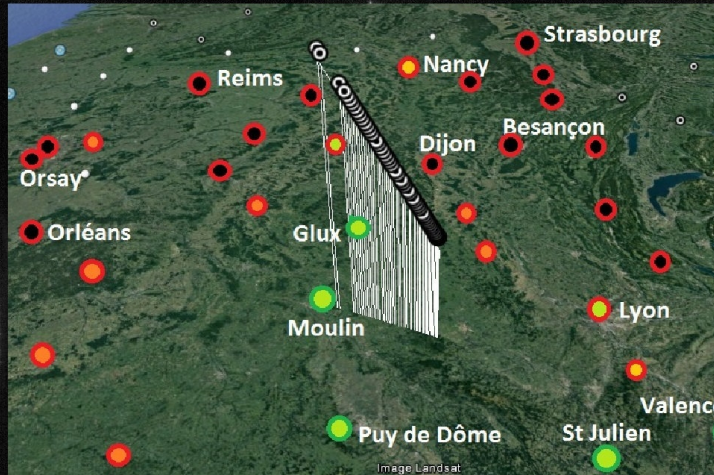
**Beaumont
les Valence**

**Glux en
Glenne**

**Moulins
sur Allier**

Puy de Dôme

**St Julien
du Pinet**



**2016-08-06
22h07m UTC**

FRIPON
www.fripon.org

FRIPON institutional partners

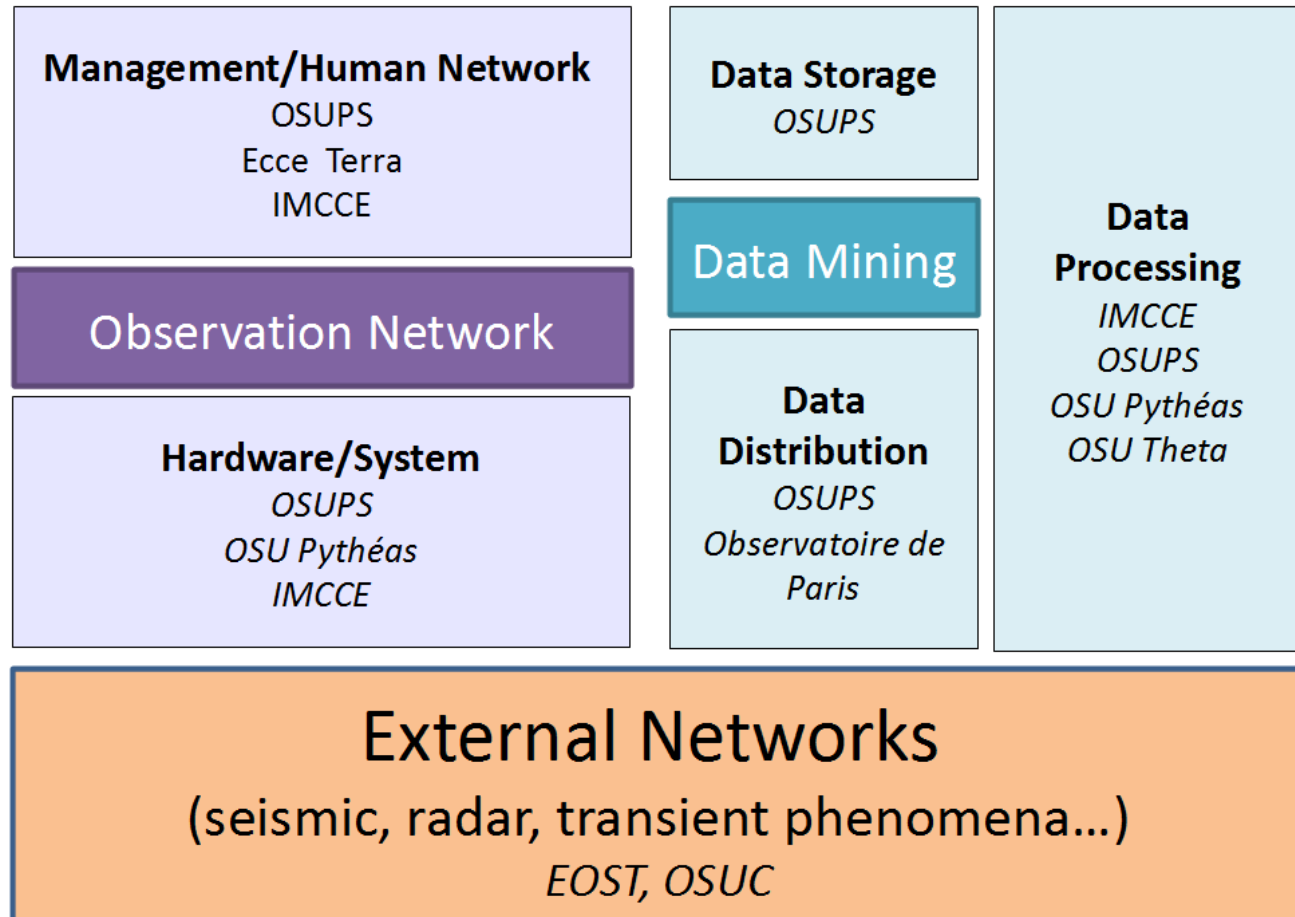
French ANR funded
(~400Keuros/4yr) :

IMCCE/Observatoire de Paris :
*Orbit and trajectory computation,
instrumentation*

**GEOPS/OSUPS /Université
Paris Sud :** *meteor impact flux,
data mining*

IMPMC/MNHN : *meteorite
discovery, citizen science*

OSU Pythéas : *source regions,
meteorite characterization, network
infrastructure*



Attracting other French *Observatoires des Sciences de l'Univers (OSU)*
Attracting European collaborations (Italy - PRISMA, Belgium - BRAMS)



FRIPON Citizen Science partners

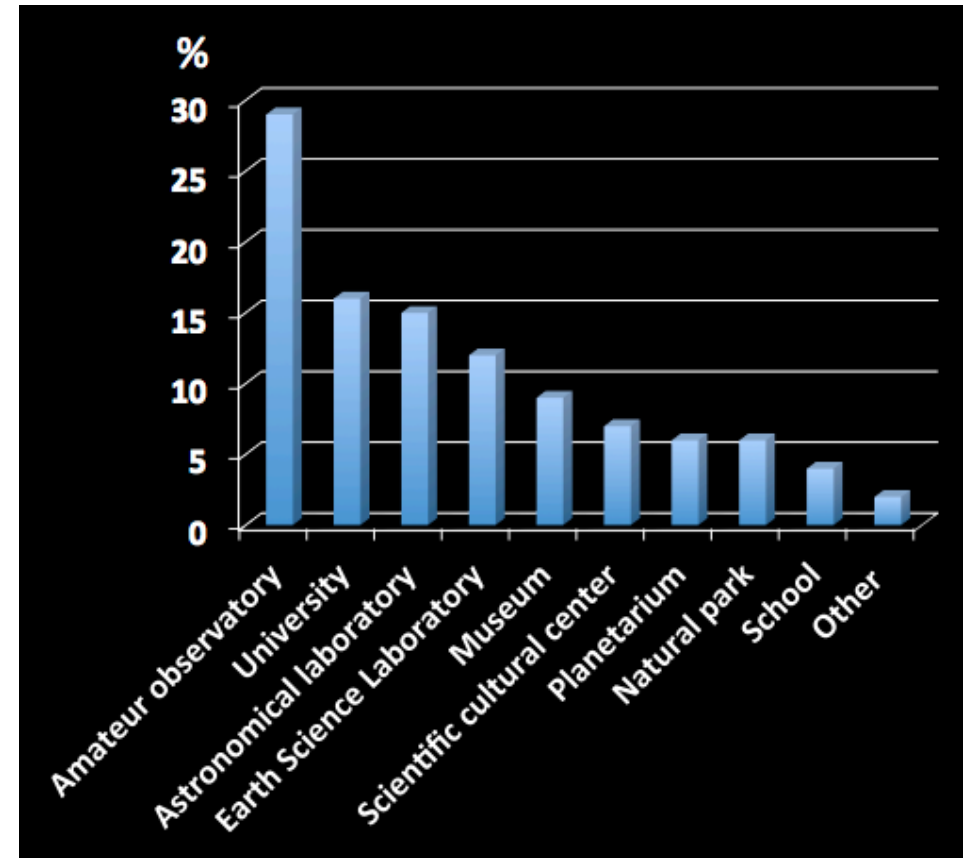
Two levels of participation:

FRIPON Station Host:

Amateur Observatories and cultural associations are official partners of the project.

Vigie-Ciel (Sky-Watch) participant:

the sister project (funded by the French *Investissement d'Avenir* call) allows people to provide FRIPON with auxiliary data and help in looking for meteorites.



Prejudice

“An adverse judgment or opinion formed beforehand or without knowledge of the facts” (en.wiktionary.org/wiki/prejudice)

Against professionals	Against Citizen contribution
“Information withholding”	“Lack of method and rigor”

“With great power comes great responsibility”

Scientific institutions have the responsibility to dispel prejudice.

Improving knowledge is a complex process (conceptually and technically).

Researchers and Engineers must learn how to communicate about it.

FRIPON pride

...Nothing fullfills the wish to be in the right place at the right time like catching a falling star in the sky...





- Technical advances make low cost hardware a new opportunity for surveys
- Low cost hardware is a way to promote participation of the public to the progress of Science
- System architecture administrators must be involved in project design: they are an asset for the project
- Generic and open (means re-usable) software improve your chances of success