First observations with the FRIPON network

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Introduction

FRIPON (Fireball Recovery and InterPlanetary Observation Network) was recently founded by ANR (Agence Nationale de la Recherche). Its aim is to connect meteoritical science with asteroidal and cometary science in order to better understand solar system formation and evolution. The main idea is to set up an observation network covering all the French territory to collect a large number of meteorites (one or two per year) with accurate orbits, allowing us to pinpoint possible parent bodies. At present time more than 50 cameras are installed (real time image can be view on www.fripon.org fig 1), we whole network will consist in 100 all sky camera covering France with an average distance of 100km between stations. To maximize the accuracy of orbit determination, we will mix our optical data with radar data from the GRAVES beacon received by 25 stations. As both the setting up of the network and the creation of search teams for meteorites will need manpower beyond our small team of professionals, we are developing a citizen science network called Vigie-Ciel. The public at large will thus be able to simply use our data, participate in search campaigns or even setup their own cameras.

Network characteristics

Our network have several innovative features compared to previous one:

- First it is an open source project, our aim is to share our work to extend the network to other countries.

- We use digital Gige camera allowing short exposure time for day time observations

- All the cameras are connected pour our headquarter in Orsay. This is important as the detection process take into account the other cameras. If we have a simultaneous detection on several cameras we are sure that it is a meteor. Moreover we will get all the data within a few minutes, compute the trajectory within a few hours and at the end decide for a searching campaign.

Installation and evolution

At that time (april 2016) we have installed 50 cameras so half of the network. We also start to install some cameras in neighboring countries, the idea is to show hos it works and to help other teams to write proposal to extend the network.
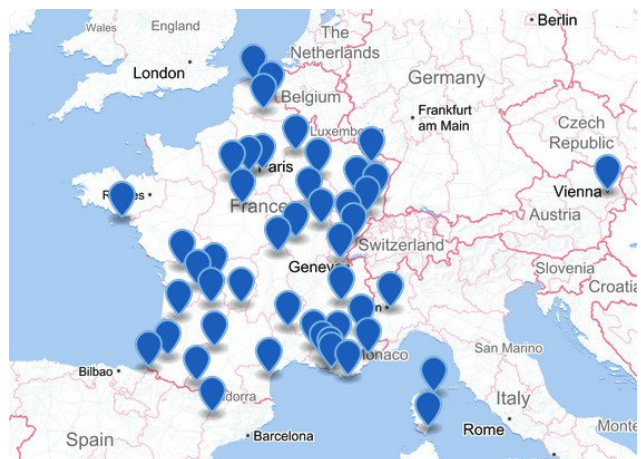

Fig 1 : active network (april 2016)

First results

As the density of the network is nominal over south est of France we got several multi detections allowing us to test our pipe line (detection, astrometrical calibration, orbit determination).