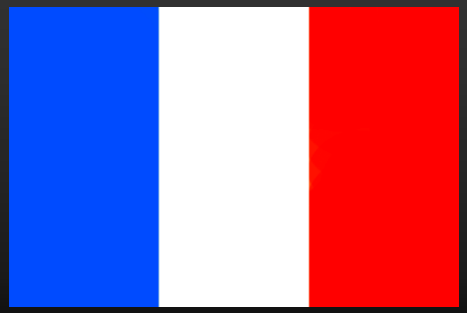


METEOR DETECTION SOFTWARE

Ivan SAULI

Engineer

2009-2010

THE "PODET-MET" PROJECT

Purposes:

- First French video meteor network
- New meteor observation technics
- High precision meteoroids orbits study

J. Vaubaillon – P. Atreya - F. Colas – S. Bouley – I. Sauli

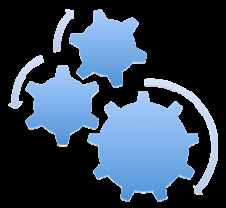
THE "METEORFINDER" SPECIFICATIONS

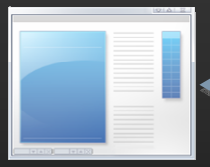
- Windows compatible

- Use of **FITS** files inputs

Flexible **I**mage **T**ransport **S**ystem

- Detection algorithm





MeteorFinder.exe

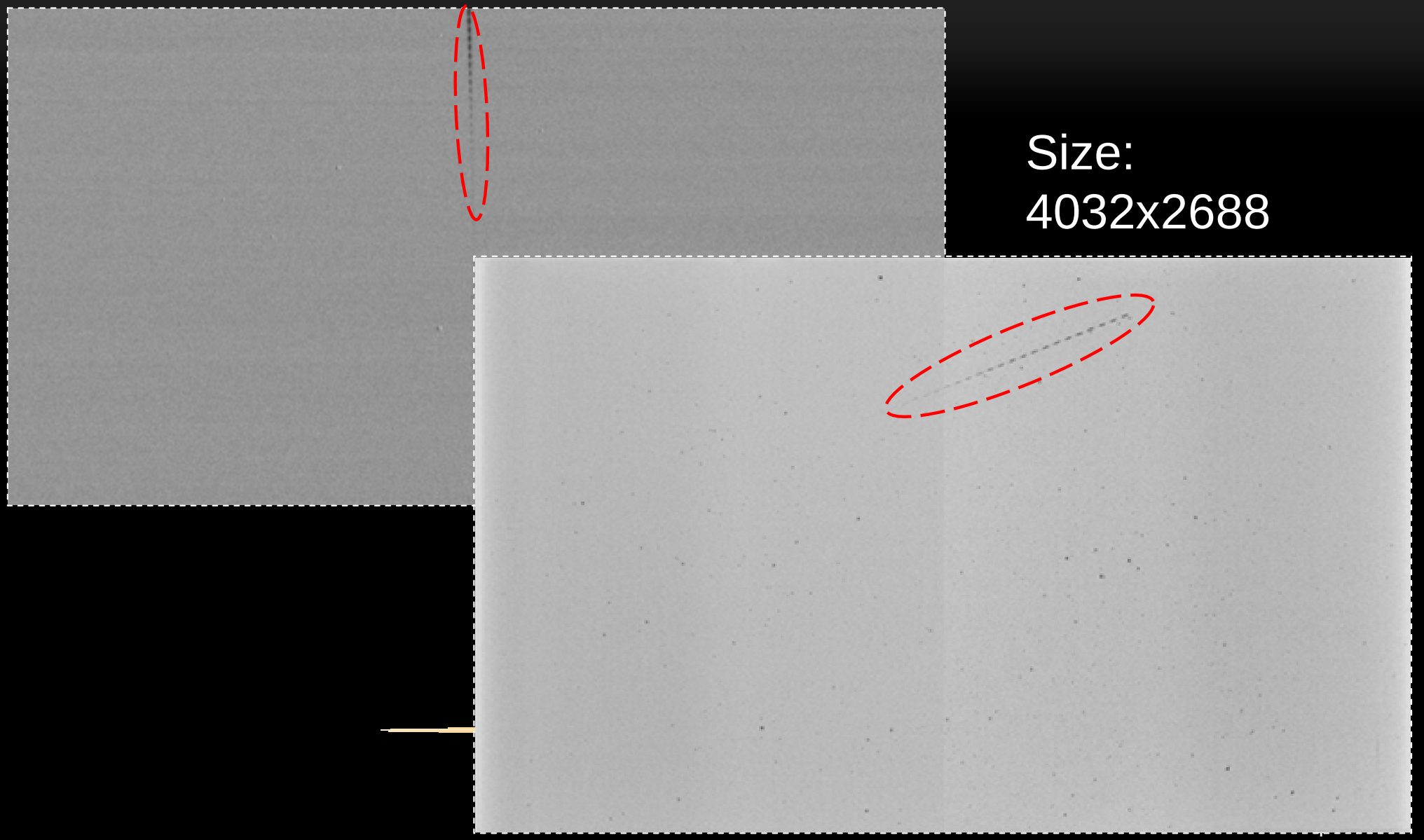
Installshield

Cfitsio.dll

Setup.txt

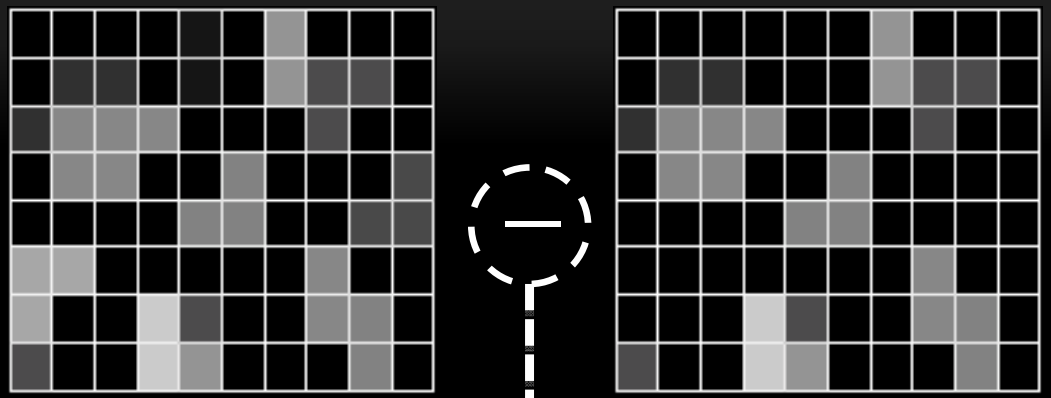
ReadMe.txt

THE "METEORFINDER"
DATA EXAMPLE



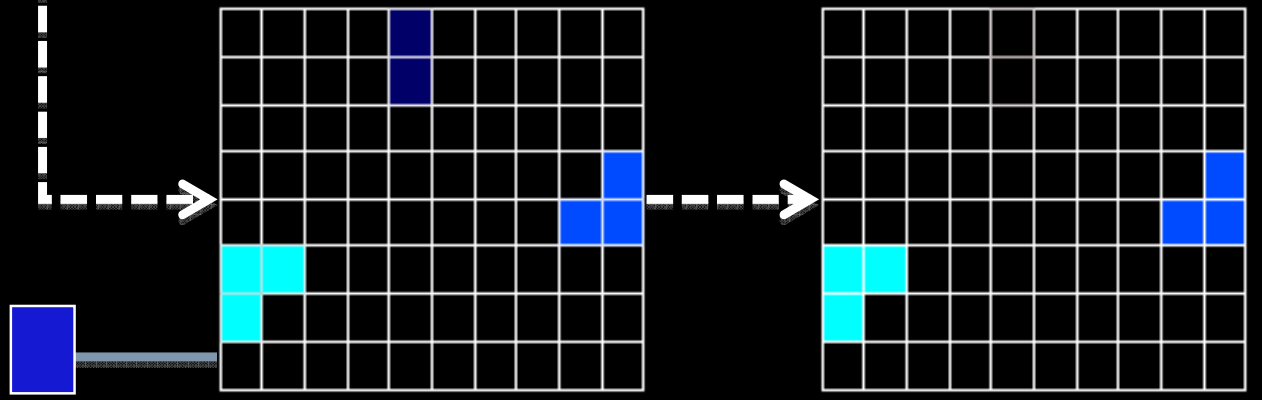
Size:
4032x2688

THE "METEORFINDER"
MOVEMENT DETECTION



3 steps:

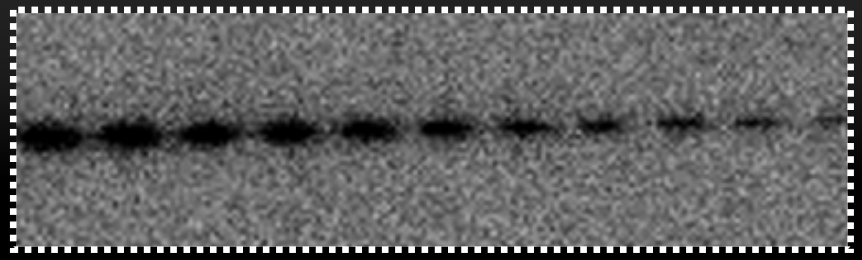
- Subtraction
- Threshold calculation
- Pixels selection



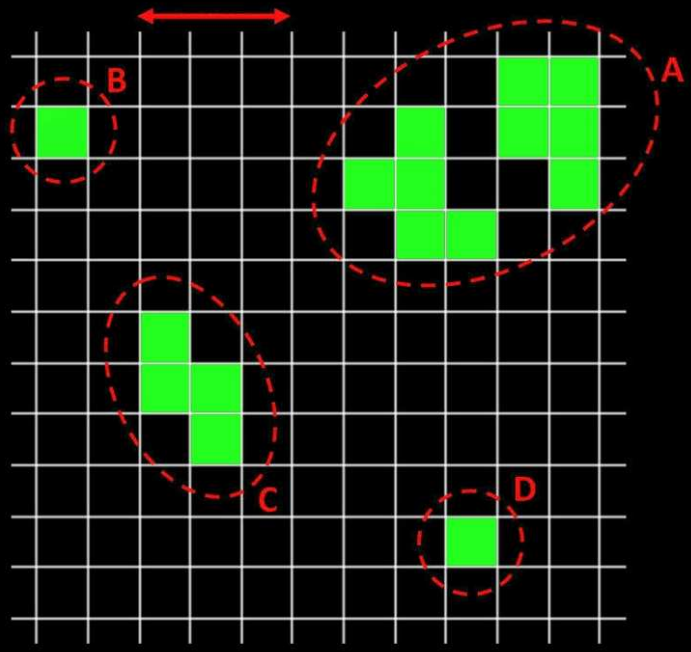
$$THR = K(MEAN + STD)$$

THR : Threshold
STD : Standard Deviation

THE "METEORFINDER"
GROUPING ALGORITHM & CENTROIDING



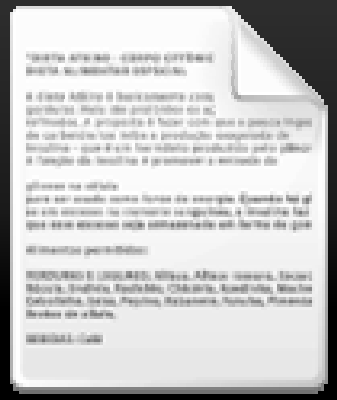
- Critical radius
- Minimum size of each group
- Number of groups



- Centroid calculation (X_c, Y_c)

$$X_c = \frac{\sum_{i=0}^{n} X_i V_i}{\sum_{i=0}^{n} V_i} \quad Y_c = \frac{\sum_{i=0}^{n} Y_i V_i}{\sum_{i=0}^{n} V_i}$$

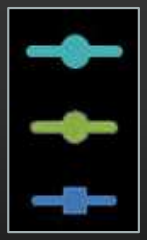
THE "METEORFINDER"
INPUT "SETUP.TXT" FILE



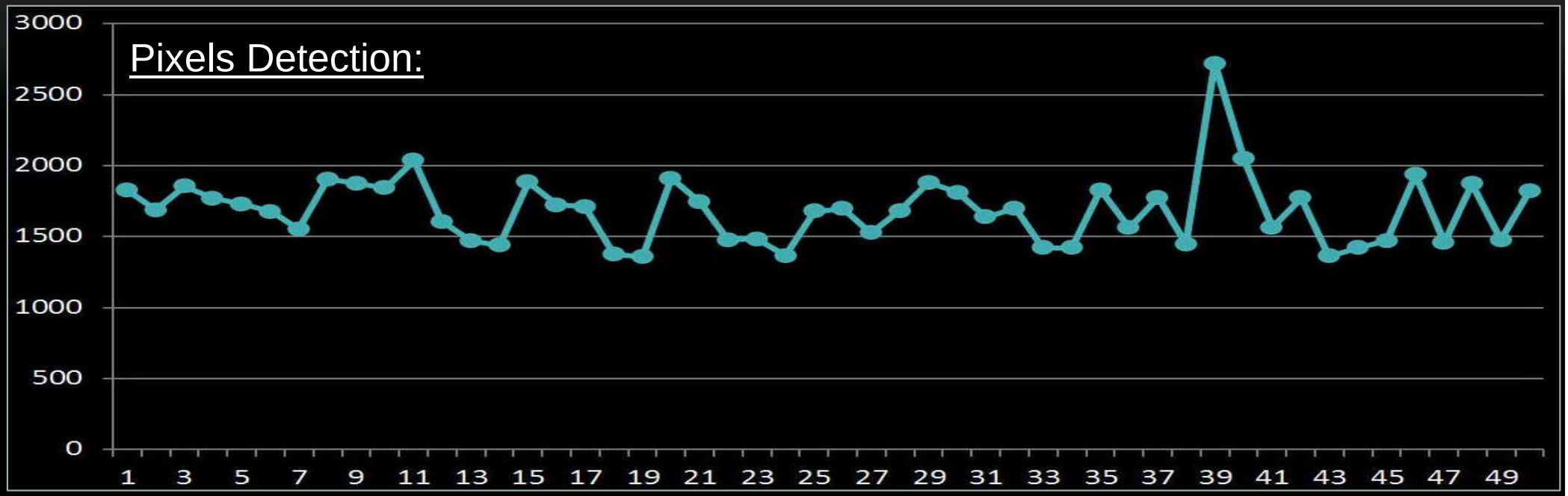
Parameters list:

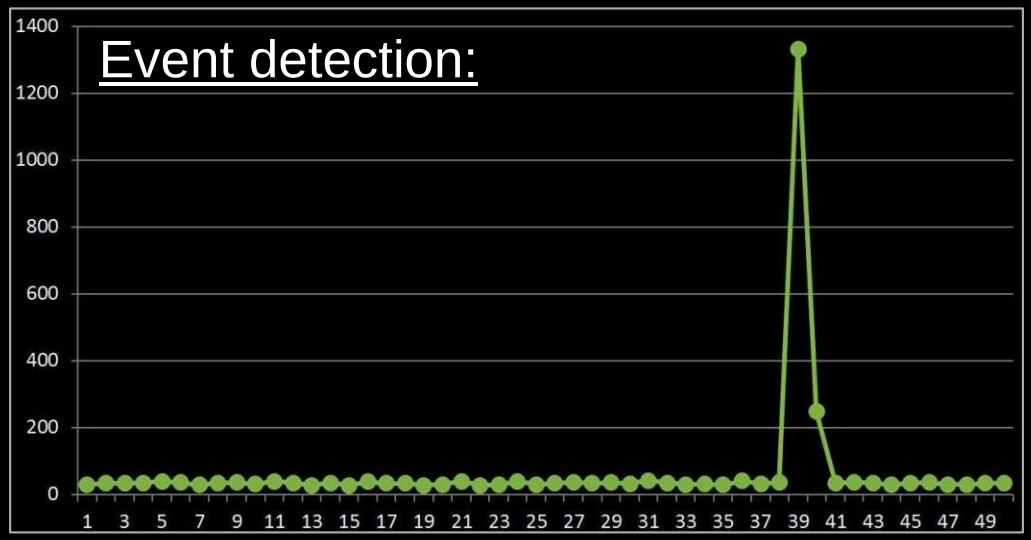
Input path	=	C:\Documents\fit_folder	
K	=	2.5	(Default: 3)
CriticalRadius	=	20	(Default: 20 for groups, 50 for events)
SizeOfGroups	=	20	(Default: 20 for groups, 50 for events)
NbGroups	=	10	(Default: 12 for groups, 1 for events)
Threshold	=	0	(0 for automatic calculation)

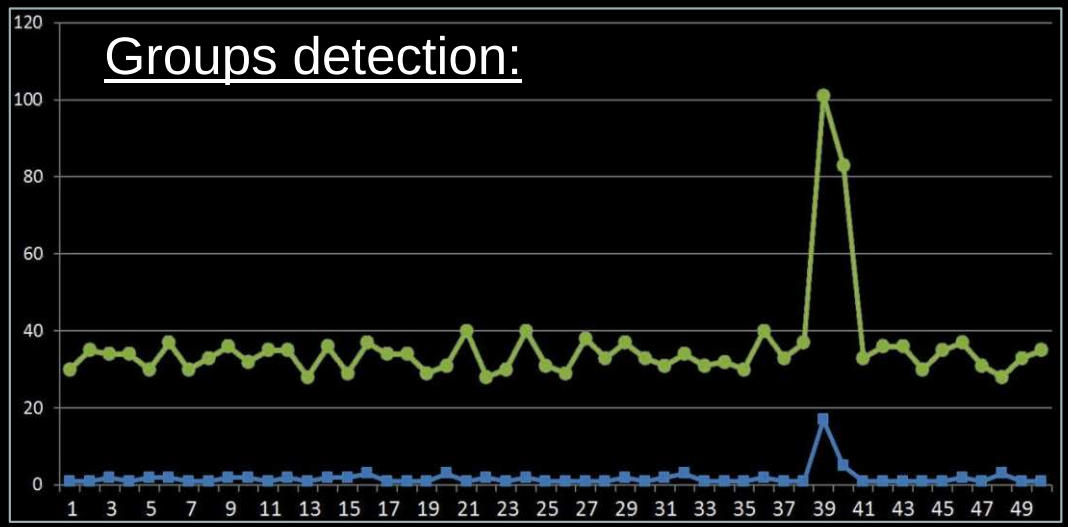
THE "METEORFINDER"
RESULTS – DETECTION



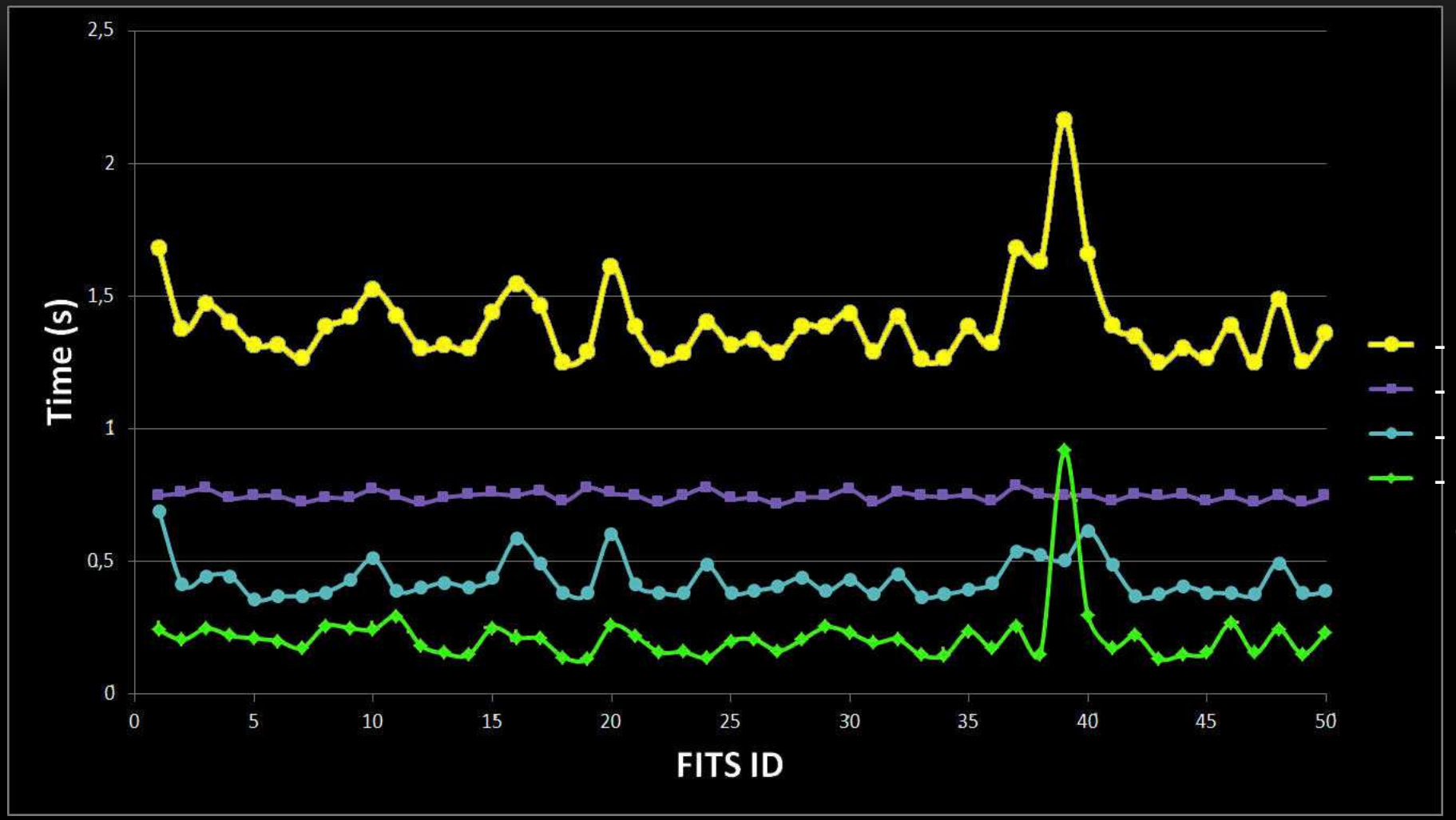
- Number of pixels > threshold
- Size of the biggest group
- Number of group detected



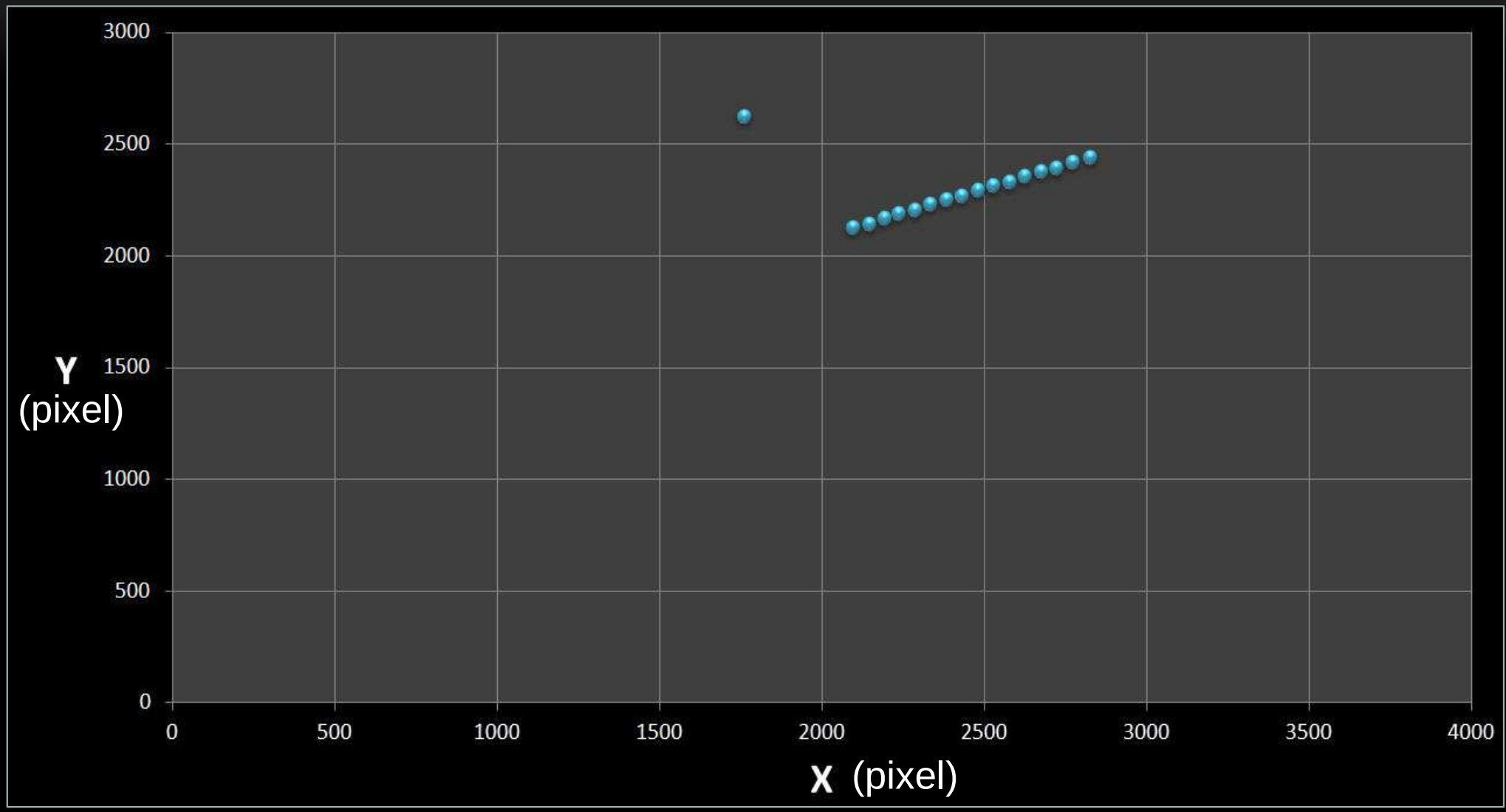




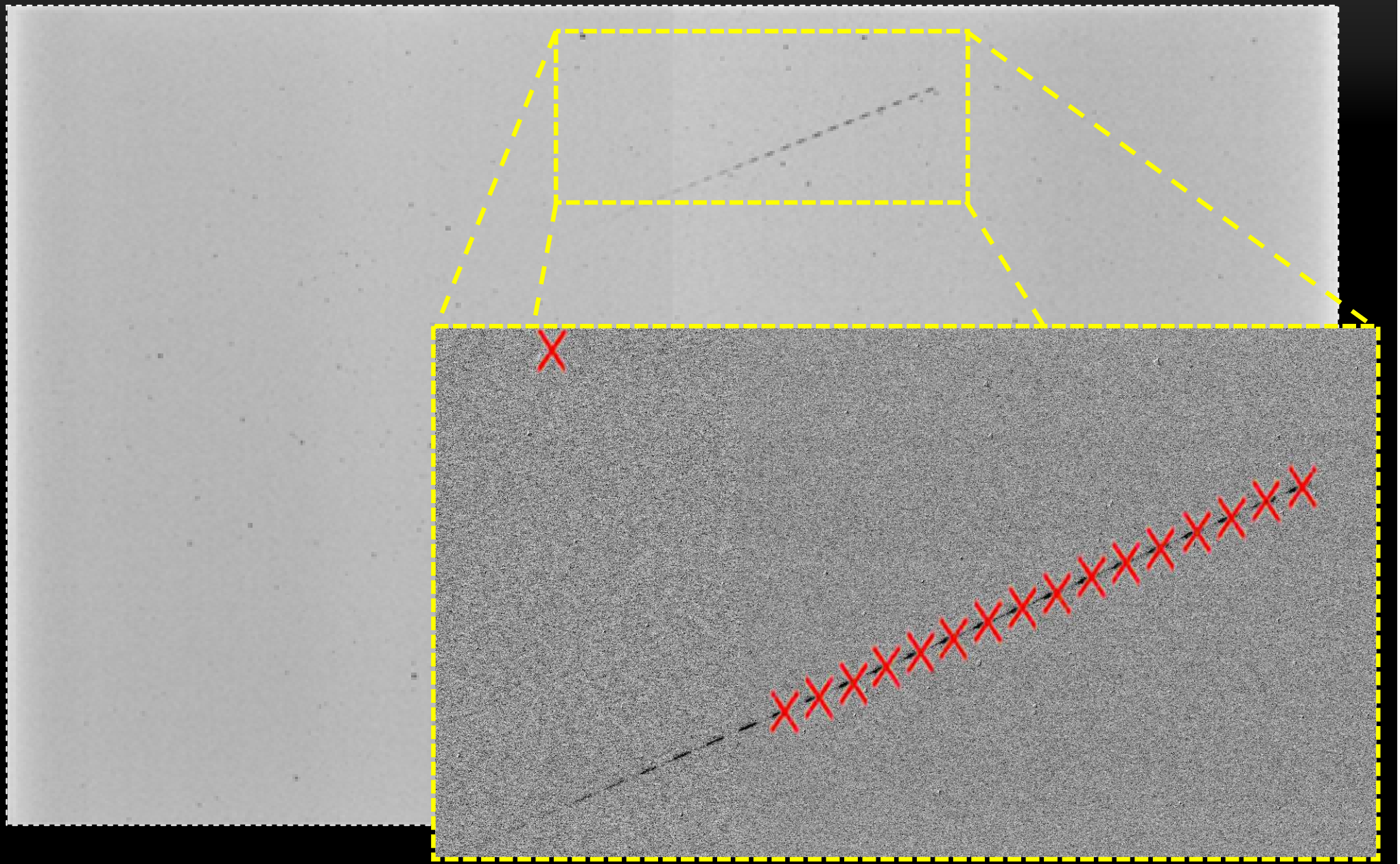
THE "METEORFINDER"
RESULTS – PROCESSING TIME



THE "METEORFINDER"
RESULTS – CENTROIDING



THE "METEORFINDER"
RESULTS – DETECTION



THANK YOU FOR YOUR ATTENTION

Questions or advises

Software link: http://www.imcce.fr

ivan.sauli@gmail.com