

# **KISS: Software**

**(pipeline/database/interface)**

**大規模観測KISS: ソフトウェア**  
**(パイプライン/データベース/インターフェース)**

**田中 雅臣**  
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**Thanks to...**

**諸隈智貴 松永典之 冨永望 森健彰 浮田信治**

**Michael Richmond 酒向重行**

**アマチュア天文家のみなさん**

# KISS: KIso Supernova Survey

- **Extremely short cadence survey**

- **1-hr cadence**

- 3 min exp.

- ~ 20-21 mag in g-band (~4500 Å)

- ~50-100 deg<sup>2</sup> /day





**Extreme cadence**



**Realtime discovery**



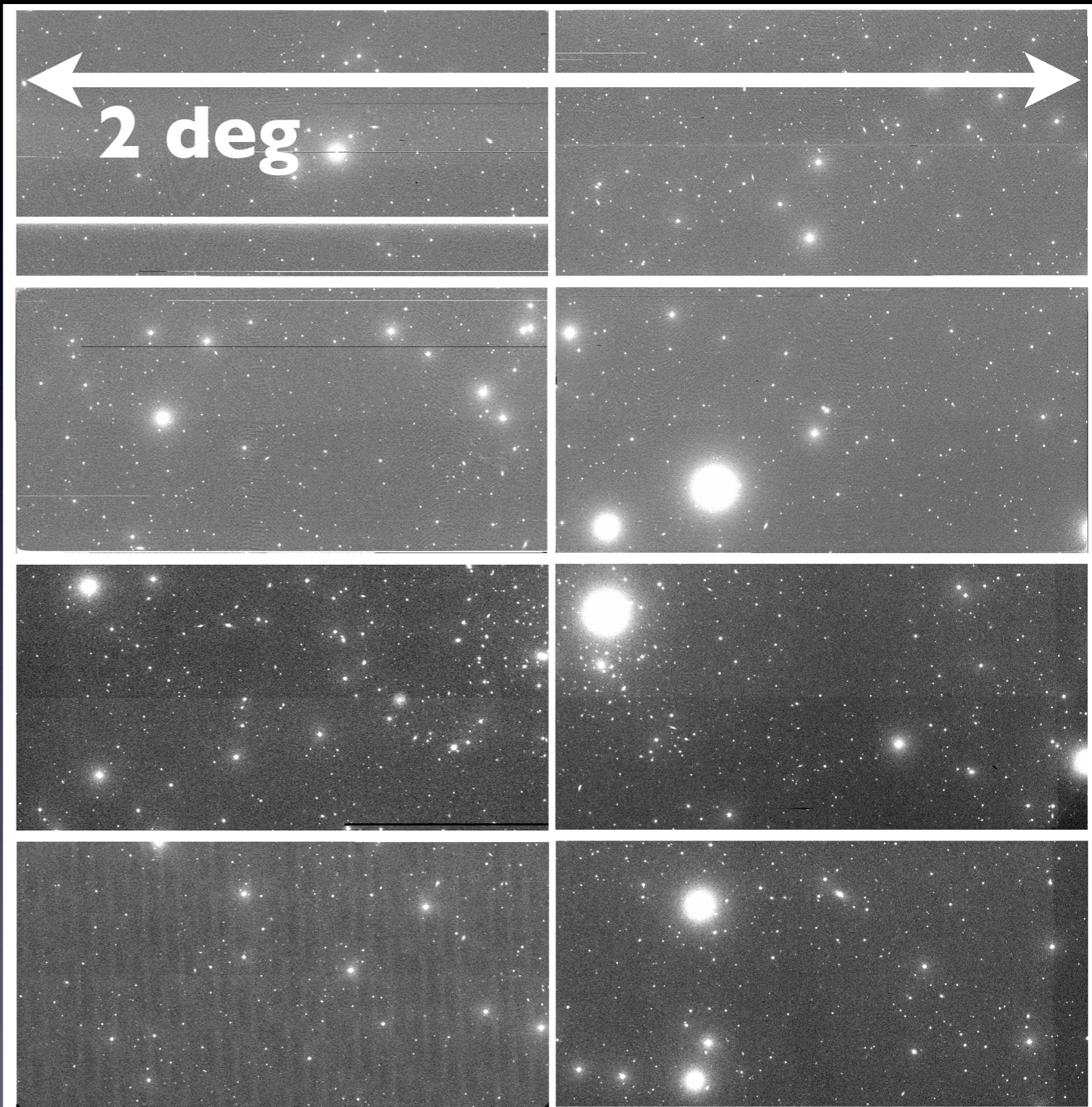
**Rapid follow-up**



# Realtime astronomy



- \* observations
- \* reduction
- \* image match
- \* PSF match
- \* image subtraction
- \* transient finding
- ... in 5 min !





# KWFC pipeline

(Morokuma-san's talk)

bias, flat correction

(~ 5 min)

astrometry

flux calibration



# KISS pipeline

match with template

(~ 5 min)

image subtraction

source detection

## KISS database

data management

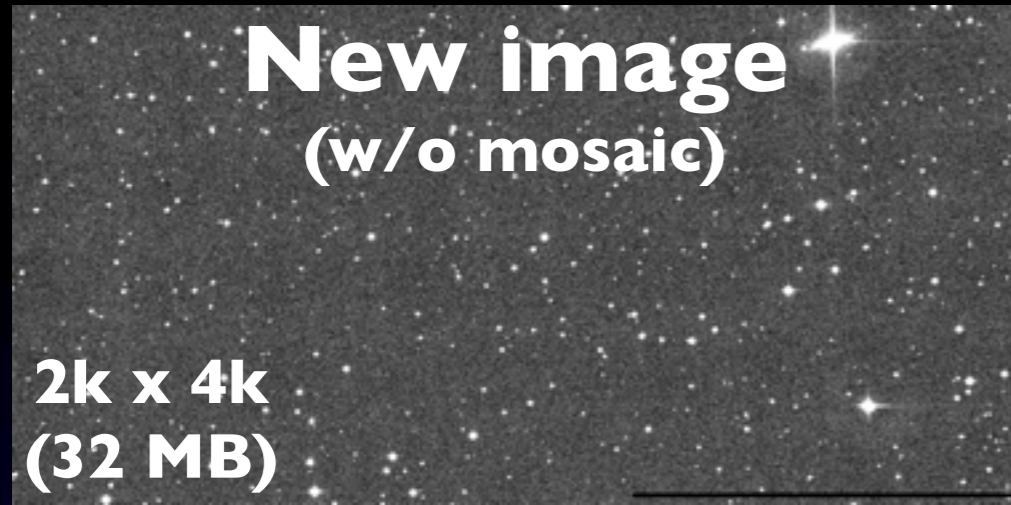
## KISS interface

transient finding

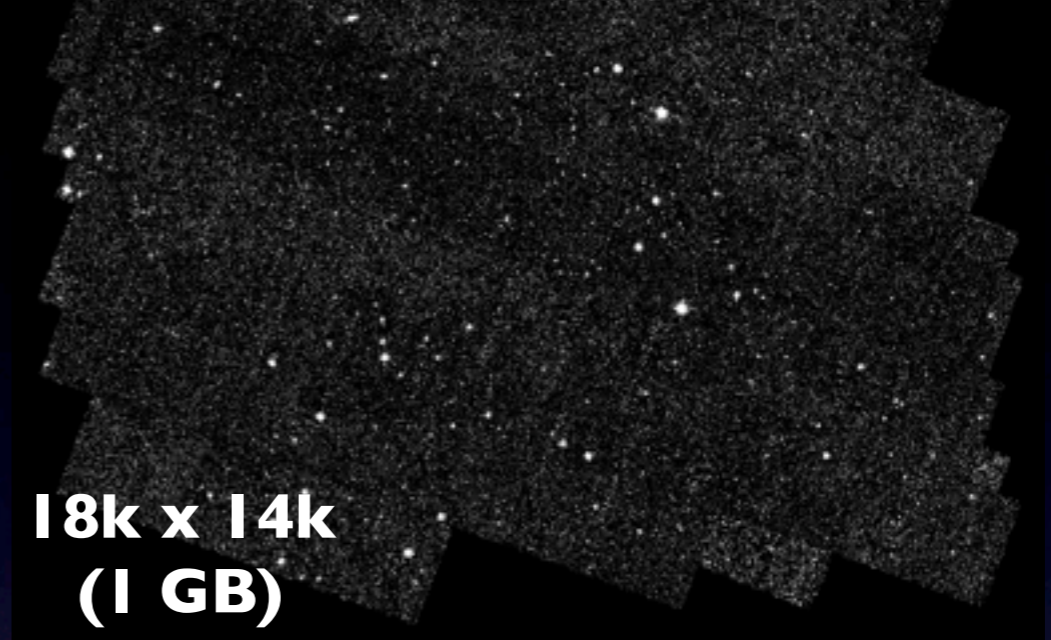


# KISS pipeline

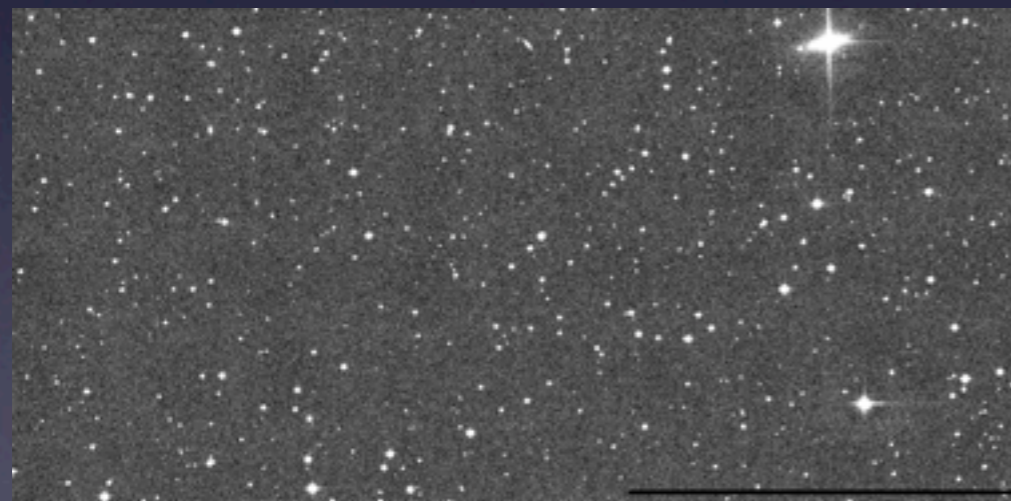
python  
pyraf



## Template image (SDSS)



**CR removal**  
*(LA Cosmic)*



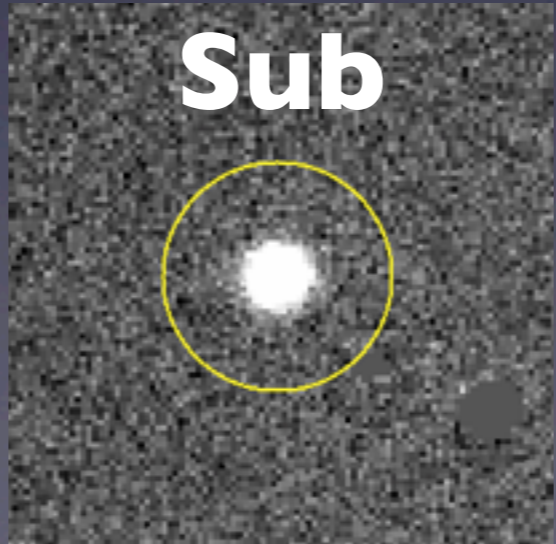
**x-y match**  
*(wcsremap)*



**PSF match and  
image subtraction**  
*(hotpants)*



# KISS pipeline



**Source detection**  
*(sextractor)*

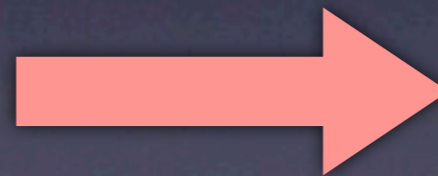
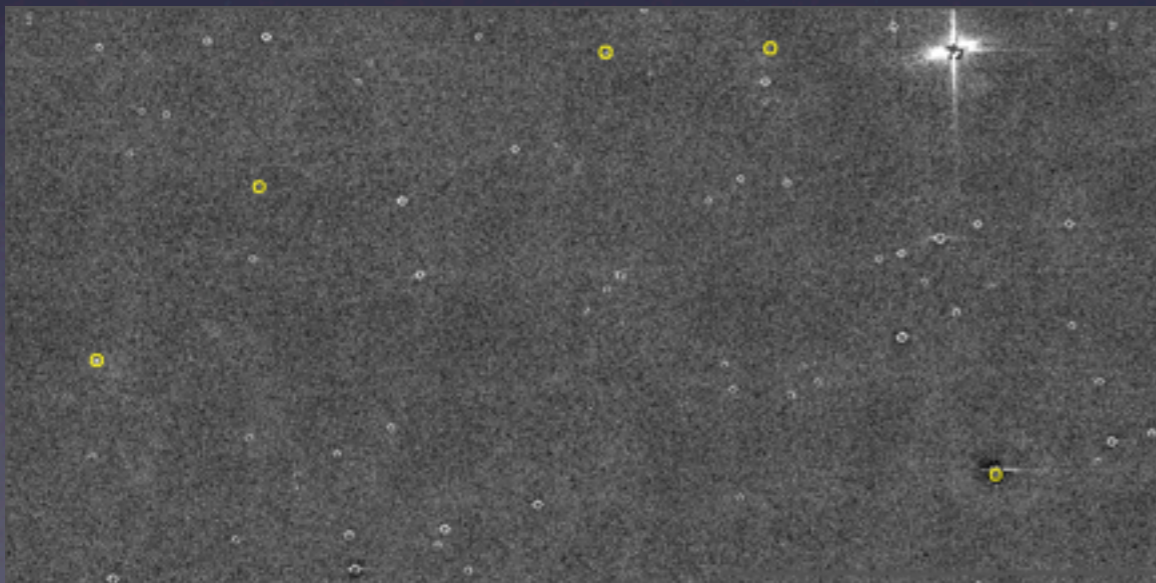
**Clipping**



# KISS database

mysql

## KISS pipeline



## Reduction

**process ID**

frame: exp ID, object, filter, date, UT, MJD

info: background, FWHM, WCS, depth

reduction: date, template

## Source

**source ID**

position: RA, Dec, x, y

source: FWHM, elongation, mag



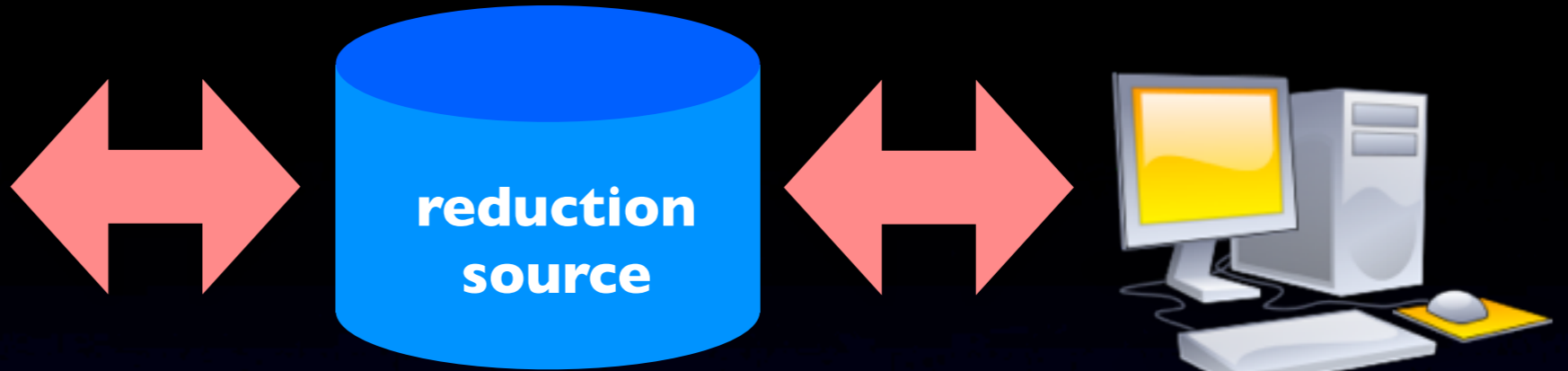
# KISS interface



php

KISS database

KISS pipeline



KISS: KISO KWFC Supernova Survey

http://kiss.sakura.ne.jp/top.php

Google カレンダー Gmail Hotmail ADS NASA NED conf 理論部 事務 obs SN SNSurvey ALC My website Dropbox MyPaper\_1st MyPaper\_all

# KISS

## KISO KWFC Supernova Survey

**KISS DB (ver 2012.02.06)**

Connection to the database -- success --  
Total number of records in reduction table: 664

**Search**

Date

Object

**Date**

**Survey field**



## List of Reduced Data

### Selected date

2012-05-18

### Selected object

%%

# List of reduced data

Total number selected: 49


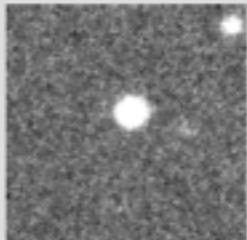
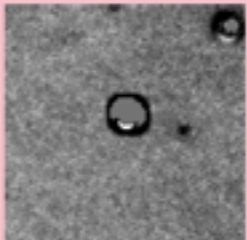
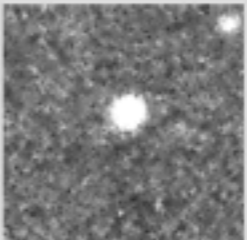
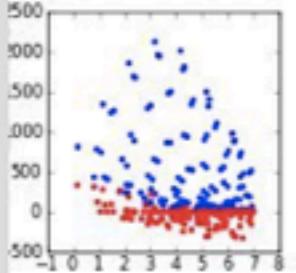

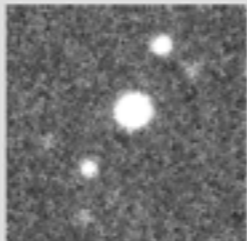
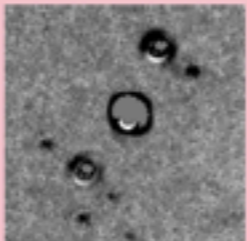
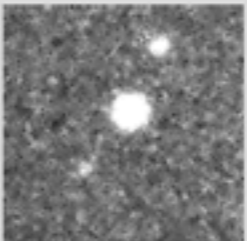
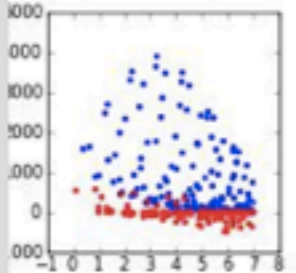

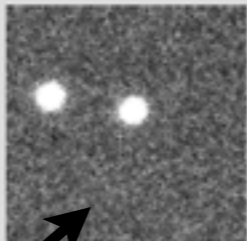
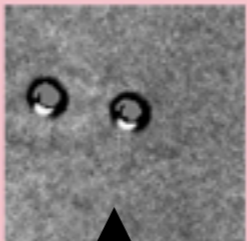
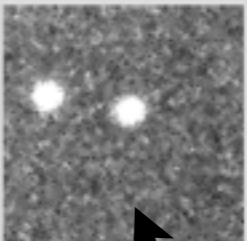
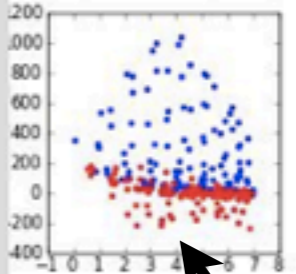
Request	Date	UT	Object	ExpID	Filter	Limit Mag	Reduced date (newest)
<input type="button" value="submit"/>	2012-05-18	18:02:14	A2199	0012356	g	0.00	2012-06-14 12:08:44
<input type="button" value="submit"/>	2012-05-18	17:56:51	A2199	0012355	g	0.00	2012-06-14 12:06:17
<input type="button" value="submit"/>	2012-05-18	17:47:30	KSFJ2020+0000	0012354	g	0.00	2012-05-19 02:56:29
<input type="button" value="submit"/>	2012-05-18	17:38:59	KSFJ1510+4600	0012353	g	0.00	2012-06-14 03:36:21
<input type="button" value="submit"/>	2012-05-18	17:31:30	KSFJ2020+0000	0012352	g	0.00	2012-05-19 02:40:29
<input type="button" value="submit"/>	2012-05-18	17:24:10	A2199	0012351	g	0.00	2012-06-14 12:04:27
<input type="button" value="submit"/>	2012-05-18	17:17:21	KSFJ1515+0800	0012350	g	0.00	2012-05-19 02:24:28
<input type="button" value="submit"/>	2012-05-18	17:10:57	KSFJ1455+0730	0012349	g	0.00	2012-05-19 02:18:28
<input type="button" value="submit"/>	2012-05-18	16:55:23	KSFJ1710+3430	0012347	g	20.85	2012-06-14 20:59:13
<input type="button" value="submit"/>	2012-05-18	16:48:56	A2199	0012346	g	20.78	2012-06-14 12:02:22
<input type="button" value="submit"/>	2012-05-18	16:42:17	KSFJ1626+4030	0012345	g	20.84	2012-06-14 19:54:19



**Change criteria**

FWHM (pix) >   
 Elongation (a/b) <

Total number selected: 73

No	Request	FltsID	Reference	New	Subtracted	Previous	Profile
			(2' x 2')	(2' x 2')	(2' x 2')	(2' x 2')	7pix
1	<input type="button" value="submit"/>	0012302_0					
2	<input type="button" value="submit"/>	0012302_0					
3	<input type="button" value="submit"/>	0012302_0					

**reference  
(SDSS)**

**new**

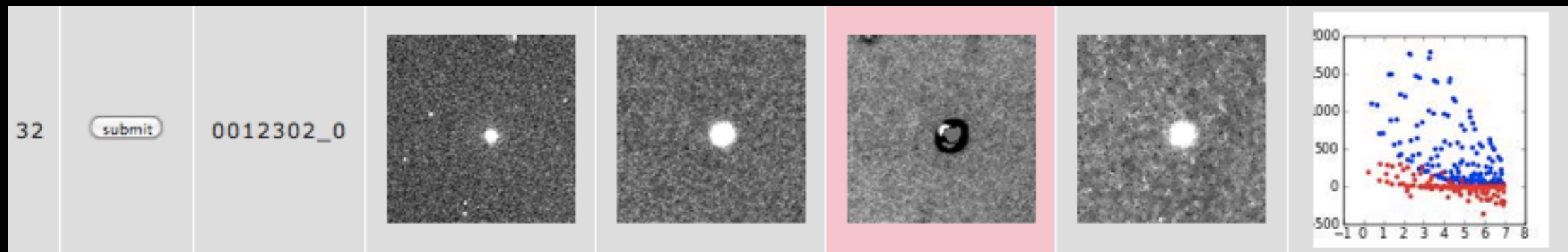
**subtracted**

**previous**

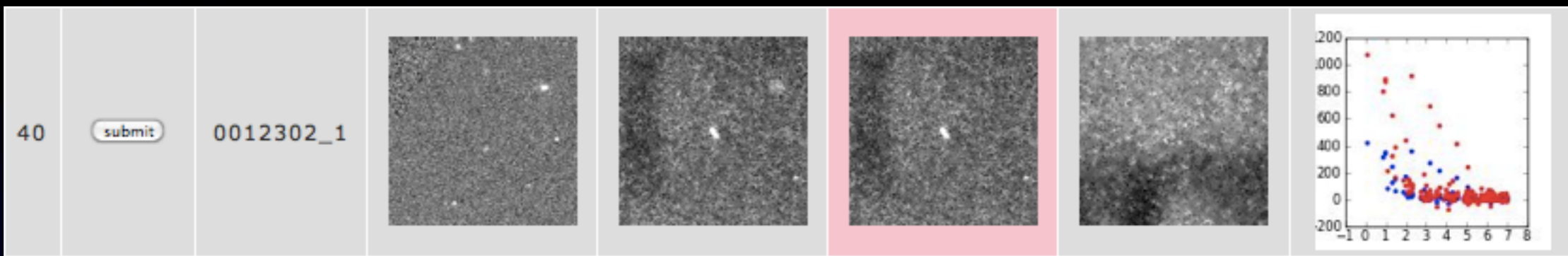
**radial profile**



**failed  
subtraction**



**CR**



**Ref**

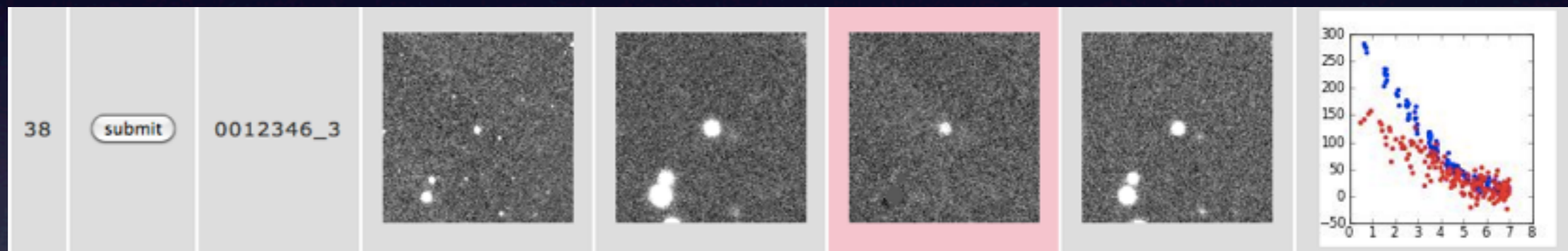
**New**

**Sub**

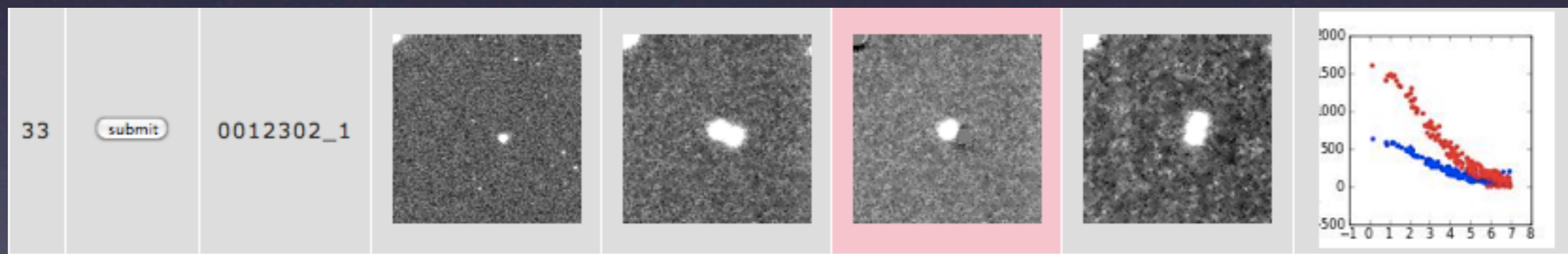
**Prev**

**Prof**

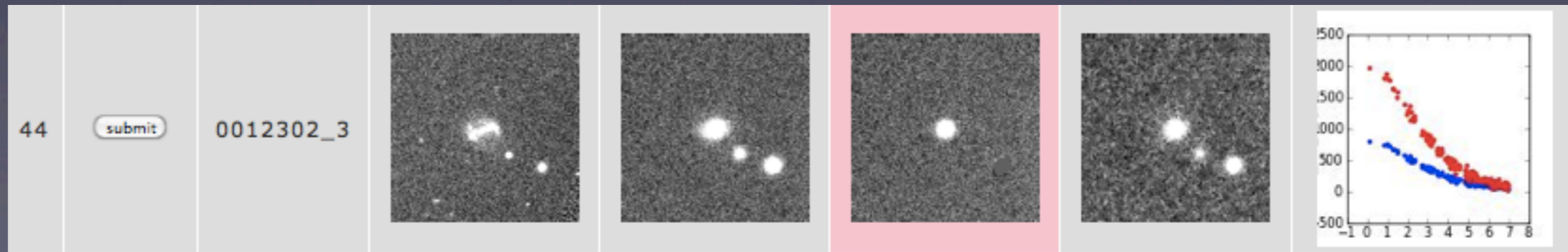
**Variable  
star**



**moving  
object**

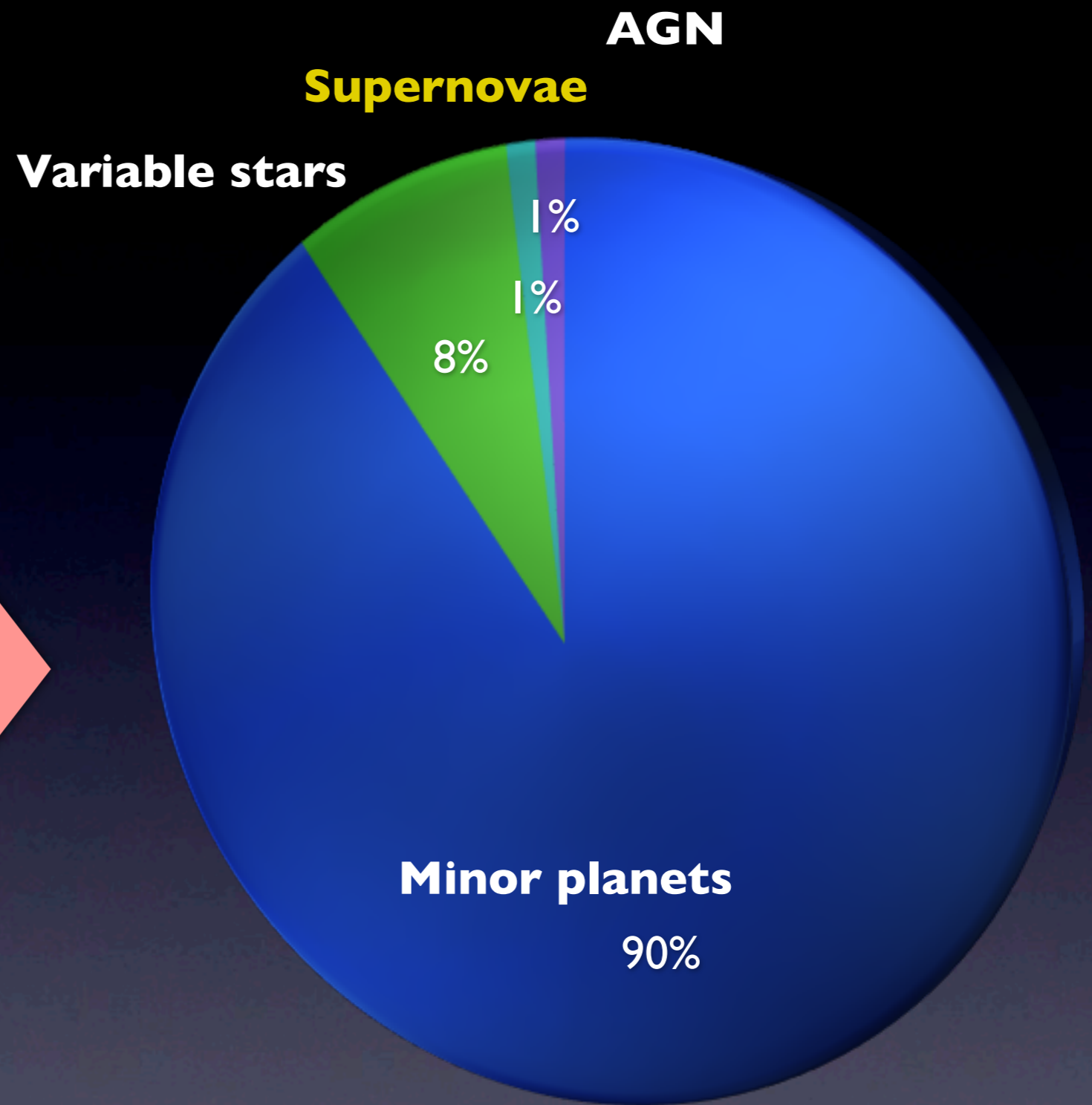
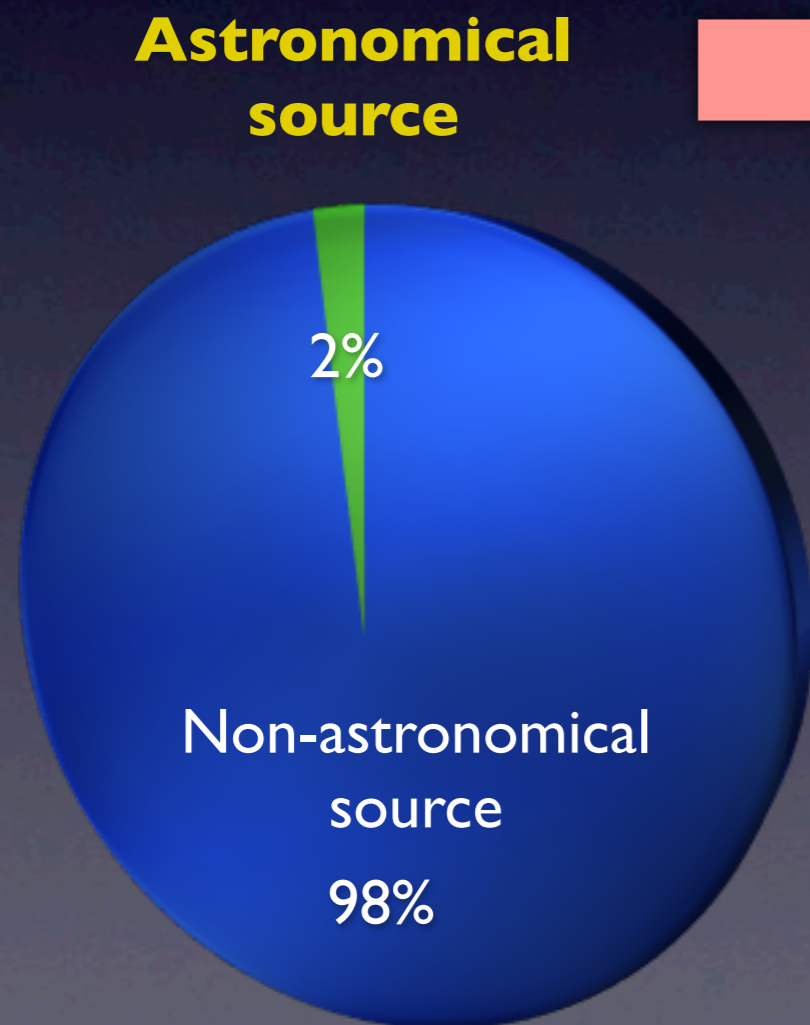


**SN**





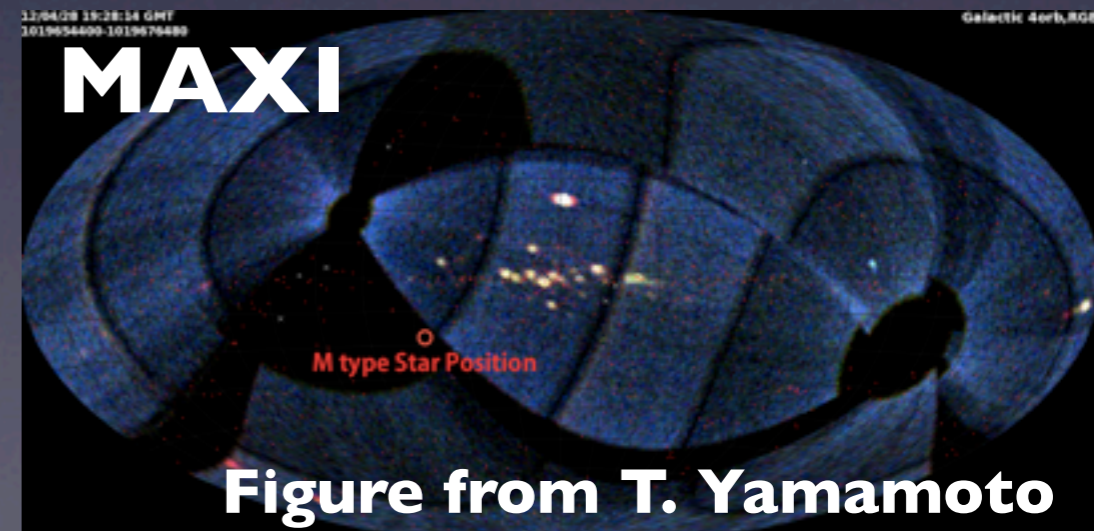
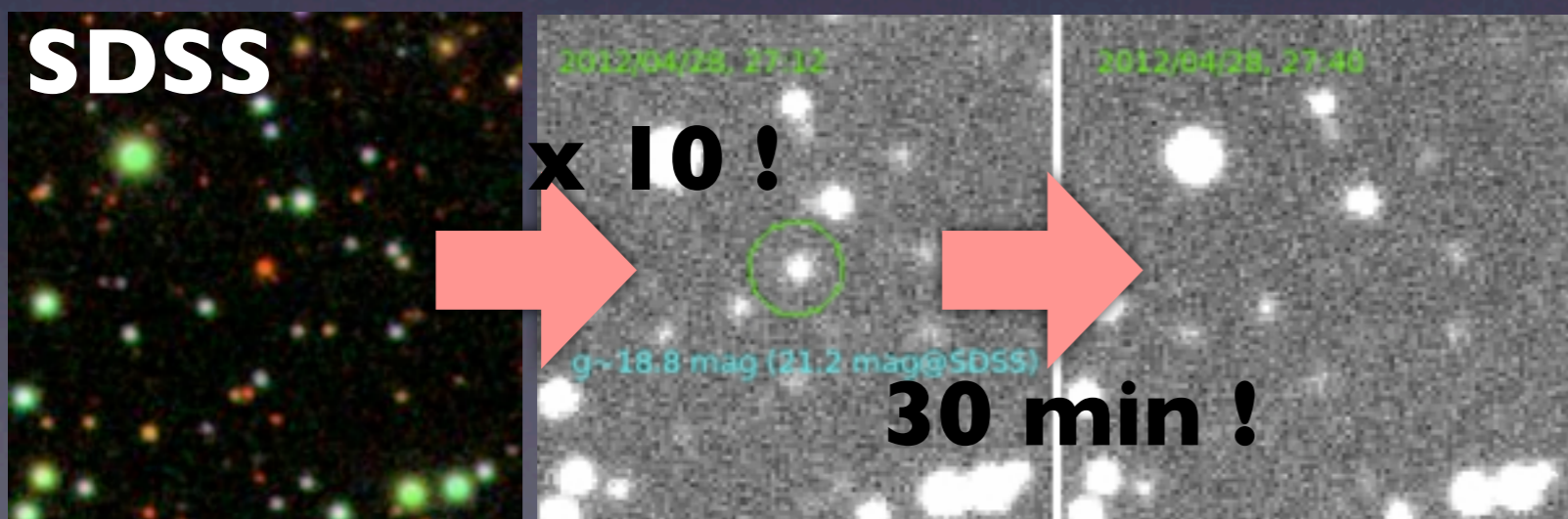
# Statistics





# Update plans

- **Machine learning**
- **Voting system**
- **Automatic alert system**





# Your input is welcome

## **Extension for your science**

Idea for machine learning

Usage/management of minor planet data

Usage for education

Suggestion for survey field

Theoretical prediction

...