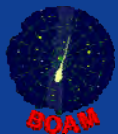


Post meteor data
coming from *UFOAnalyzer*
software into VMO via BOAM*
database
(part I)

Tioga Gulon
Jean Brunet
Stéphane Jouin
Arnaud Leroy

*french meteor observer database



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Overview of BOAM

[1/3]

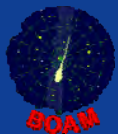
History (mainly date):

25Aug2008: First contact between Tioga Gulon and Stéphane Jouin after an article about meteor detection, written by Tioga, in “Ciel & Espace” monthly.

29Dec2008: First contact between Jean Brunet and Stéphane Jouin. Jean is the webmaster of “ASNORA” astronomic club website, and Stéphane is a member of “Atro-club de la Giraphe” astronomic club.

03Jan2010: Birth of BOAM database and www.boam.fr website.

21Aug2011: Birth of BOAM2 database.



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Overview of BOAM

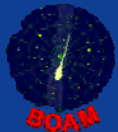
[2/3]

Who's who:

Tioga Gulon: webmaster and check all detections in database.

Jean Brunet: webmaster and programmer of software to post in database and others software (GraphBOAM, etc).

Stéphane Jouin: webmaster and writer the tool to create xml file to post into VMO.



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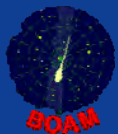
Overview of BOAM

[3/3]

Why BOAM2:

- Management of multi-detection in the same UFO's xml file (BOAM doesn't allow).
- Save all fields in database of UFO's xml file (excepted objpath part) (BOAM save only few fields).
- check all fields (and their coherence) of UFO's xml file before posting (not available in BOAM).
- administration interface allowing to manage database (not available in BOAM).
- Allow to create xml files in order to post into VMO database.

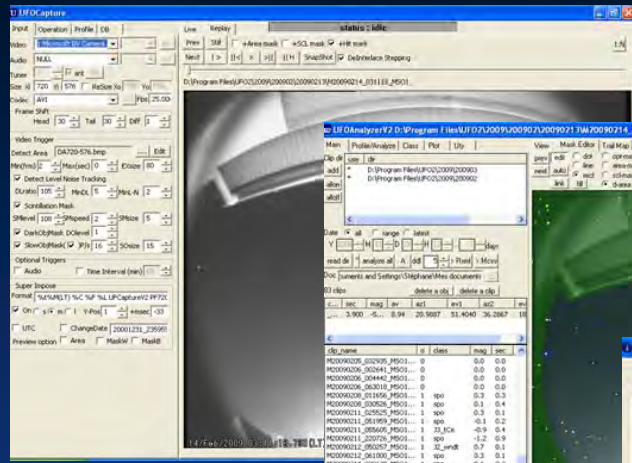
BOAM and BOAM2 databases work in parallel.



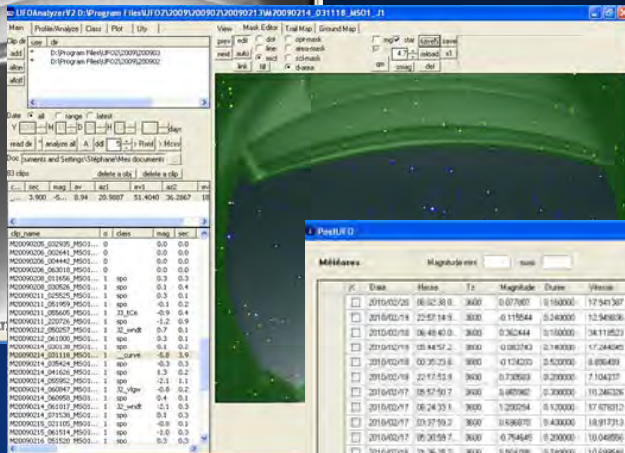
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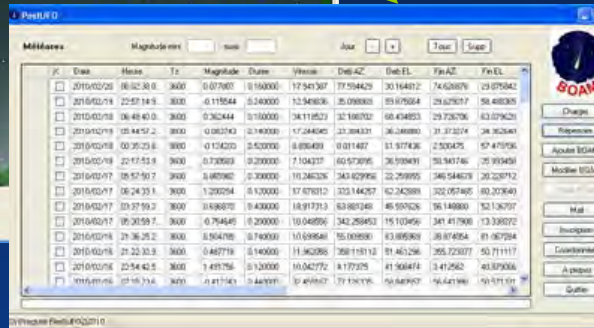
UFOCapture to BOAM/BOAM2



UFOCapture



UFOAnalyzer (free)



PostUFO (free)

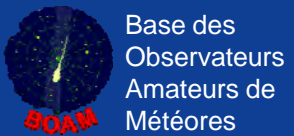
BOAM2

Date	UT	showeur	status	reference	latitude	longitude	altitude	start point	end point	velocity	direction
20100118	22:57:18.9	BOAM	1	BOAM	46.8	12.4	190	14.76	11.1	19.0	11.1
20100118	22:57:18.9	BOAM	1	BOAM	46.8	12.4	190	14.76	11.1	19.0	11.1

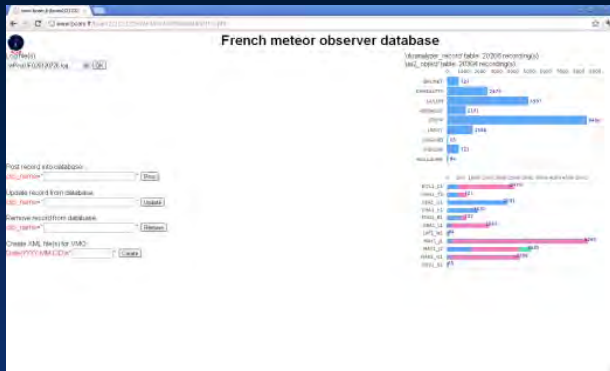
Date	Heure (UT)	Type	Camera	Duree (s)	Vitesse (%)	Magn.	Az	Evl	As2	Evl2	Ra1	Dcl1	Ra2	Dc2
20090210	05:40:36	SPO	M001.1	0.140	17.94	-0.1	77.59	30.16	34.62	29.97	302.58	30.09	305.54	31.34
19022010	23:06:36	SPO	F7M1 CWS1	0.700	6.77	-2.0	85.58	60.48	95.99	56.62	177.06	41.30	179.20	26.84

BOAM* (www.boam.fr/?lang=en)

*since 3 january 2010, more than 21700 meteors recorded



BOAM2 to VMO



BOAM2 ("admin" interface)

filters

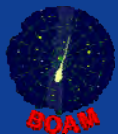


XML file*



VMO (vmo.imo.net)

*created following "The VMO file format. I. Reduced camera meteor and orbit data" document version 1.0.



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“Create xml files” program

[1/6]

```
1 <?php
2 //
3 // (c)2012 BOAM
4 //
5 clearstatcache();
6 set_time_limit(0);
7 //
8 include('connectDB.php');
9 include('connectDB.php');
10 //
11 include('IMOShowerCode.php');
12 //
13 if ($_SERVER[HTTP_HOST]== 'www.boam.fr')
14 {
15     $dir=" /var/www/boam/";
16 }
17 elseif ($_SERVER[HTTP_HOST]== 'www.boam.fr')
18 {
19     $dir=" /var/www/boam/";
20 }
21 //
22 $filename="log/cVMOxml_".date("Ymd").".log";
23 save_log($filename,"Begin:".date("Y-m-d H:i:s."));
24 //
25 $post=$_POST['date'];
26 $pdate=explode('-', $post);
27 if (checkdate($pdate[1],$pdate[2],$pdate[0]))
28 {
29     //
30     mysql_connect(.....) or die("erreur de connexion au serveur .....");
31     mysql_select_db(.....) or die("erreur de connexion à la base de données");
32     //
33     $i=0;
34     $vncfile=0;
35     $idate=mktime(12,0,0,$pdate[1],$pdate[2],$pdate[0]); // m,d,yyyy
36     $date=date("Y-m-d",$idate);
37     $time=date("H:i:s",$idate);
38     $h24=date("Y-m-d",strtotime("+ 1 day",strtotime($date)));
39     $request="SELECT DISTINCT observer,lid,sid FROM observer ORDER BY observer";
40     $query=mysql_query($request);
41     //
42     while ($dataDB=mysql_fetch_assoc($query))
43     {
44         $observer=$dataDB['observer'];
45         $lid=$dataDB['lid'];
```

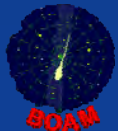
```
1 <?php
2 $shower_cat_code="IMO2009";
3 $shower=array('ANT','QUA','ACE','GNO','LYR','PPU','ETA','ELY','JBO','PAU','SDA','CAP',
4 'PER','KCC','AUR','SPE','DRA','STA','DAU','EGE','ORI','LMI','NTA','LEO','AMO','PHO',
5 'PUP','MON','HYD','GEM','COM','DLM','URS');
6 ?>
```

refer to the IMO meteor shower

a log file is created

connection to the database
after date request checked

select all observers in observer table



“Create xml files” program

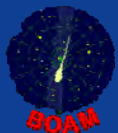
[2/6]

```
46 $sid=${dataDB['sid']};
47 $foanalyzer_record_request="SELECT * FROM foanalyzer_record WHERE observer='${observer}' AND lid='${lid}' AND sid='${sid}' AND ((date='${date}' AND time>='${time}') OR (date='${date}' AND time>='${time}'
48 $foanalyzer_record_query=mysql_query($foanalyzer_record_request);
49 if(mysql_num_rows($foanalyzer_record_query))
50 {
51     $error=false;
52     $observer_request="SELECT * FROM observer WHERE last_name='${observer}';
53     $observer_query=mysql_query($observer_request);
54     if(mysql_num_rows($observer_query))
55     {
56         $observerDB=mysql_fetch_array($observer_query);
57         $first_name=$observerDB['first_name'];
58         $last_name=ucfirst(strtolower($observerDB['last_name']));
59         $observer_code=substr($observerDB['last_name'],0,3).substr(strtoupper($first_name),0,2);
60         $country_code=$observerDB['country_code'];
61         $system_code=$lid."_".$sid;
62         $request="SELECT * FROM camera_session WHERE observer_code='${observer_code}' AND system_code='${system_code}';
63         $cam_session_query=mysql_query($request);
64         if(mysql_num_rows($cam_session_query))
65         {
66             $cam_sessionDB=mysql_fetch_array($cam_session_query);
67             $location_code=$cam_sessionDB['location_code'];
68             $request="SELECT * FROM location WHERE location_code='${location_code}';
69             $location_query=mysql_query($request);
70             if(mysql_num_rows($location_query))
71             {
72                 $locationDB=mysql_fetch_array($location_query);
73                 $location_name=$locationDB['name'];
74                 $location_country_code=substr($location_code,0,2);
75                 $j=1;
76                 $onetime=true;
77                 while($foanalyzer_record=mysql_fetch_assoc($foanalyzer_record_query))
78                 {
79                     $fid_ufoanalyzer_record=$foanalyzer_record['id'];
80                     $rstar_ufoanalyzer_record=$foanalyzer_record['rstar'];
81                     if ($onetime)
82                     {
83                         $vmofile=$vmofile+1;
84                         $xmlfile="file/VMO/CAM-".str_replace("-", "", $date)."-".$lid."_".$sid.".xml";
85                         @unlink($xmlfile);
86                         $file=fopen($xmlfile, 'a+');
87                         fwrite($file, '<?xml version="1.0" encoding="UTF-8"?>'. "\r\n");
88                         fwrite($file, '<vmo version="1.0" xmlns="http://www.imo.net">'. "\r\n");
89                         fwrite($file, "\t". '<boam version="0.0" xmlns="http://www.boam.fr">'. "\r\n");
90                         fwrite($file, "\t\t". '<ufoanalyzer_record>'. $fid_ufoanalyzer_record. '</ufoanalyzer_record>'. "\r\n");
```

list of detections from record table are created with existing observer and date request

read camera information and location from camera session and location tables

creation of xml files (beginning)

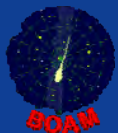


“Create xml files” program

[3/6]

```
91 fwrite($file, "\t\t", '<rstar>'. $rstar_ufoanalyzer_record. '</rstar>'. "\r\n");
92 fwrite($file, "\t", '</boom>'. "\r\n");
93 fwrite($file, "\t", '<observer>'. "\r\n");
94 fwrite($file, "\t\t", '<observer_code>'. $observer_code. '</observer_code>'. "\r\n");
95 fwrite($file, "\t\t", '<first_name>'. utf8_encode($first_name). '</first_name>'. "\r\n");
96 fwrite($file, "\t\t", '<last_name>'. $last_name. '</last_name>'. "\r\n");
97 fwrite($file, "\t\t", '<country_code>'. $country_code. '</country_code>'. "\r\n");
98 fwrite($file, "\t", '</observer>'. "\r\n");
99 $lon=number_format($ufoanalyzer_record['lng'],5);
100 $lat=number_format($ufoanalyzer_record['lat'],5);
101 $height=number_format($ufoanalyzer_record['alt'],1);
102 $cam_system_name=$ufoanalyzer_record['lens']. " | ". $ufoanalyzer_record['cam']. " | ". $ufoanalyzer_record['cap'];
103 if ($ufoanalyzer_record['ua']==0)
104 {
105     $ua="";
106 }
107 else
108 {
109     $ua=" ". number_format($ufoanalyzer_record['ua']/100,2);
110 }
111 $software_code="UFOAnalyzer".$ua;
112 fwrite($file, "\t", '<location>'. "\r\n");
113 fwrite($file, "\t\t", '<location_code>'. $location_code. '</location_code>'. "\r\n");
114 fwrite($file, "\t\t", '<name>'. $location_name. '</name>'. "\r\n");
115 fwrite($file, "\t\t", '<country_code>'. $location_country_code. '</country_code>'. "\r\n");
116 fwrite($file, "\t\t", '<lon>'. $lon. '</lon>'. "\r\n");
117 fwrite($file, "\t\t", '<lat>'. $lat. '</lat>'. "\r\n");
118 fwrite($file, "\t\t", '<height>'. $height. '</height>'. "\r\n");
119 fwrite($file, "\t\t", '<uncertainty>1</uncertainty>'. "\r\n");
120 fwrite($file, "\t", '</location>'. "\r\n");
121 fwrite($file, "\t", '<cam_system>'. "\r\n");
122 fwrite($file, "\t\t", '<system_code>'. $system_code. '</system_code>'. "\r\n");
123 fwrite($file, "\t\t", '<name>'. $cam_system_name. '</name>'. "\r\n");
124 fwrite($file, "\t\t", '<system_type>VIDE0</system_type>'. "\r\n");
125 fwrite($file, "\t", '</cam_system>'. "\r\n");
126 fwrite($file, "\t", '<cam_session>'. "\r\n");
127 fwrite($file, "\t\t", '<system_code>'. $system_code. '</system_code>'. "\r\n");
128 fwrite($file, "\t\t", '<location_code>'. $location_code. '</location_code>'. "\r\n");
129 fwrite($file, "\t\t", '<observer_code>'. $observer_code. '</observer_code>'. "\r\n");
130 fwrite($file, "\t\t", '<software_code>'. $software_code. '</software_code>'. "\r\n");
131 fwrite($file, "\t\t", '<shower_cat_code>'. $shower_cat_code. '</shower_cat_code>'. "\r\n");
132 fwrite($file, "\t\t", '<period>'. "\r\n");
133 fwrite($file, "\t\t\t", '<start>'. '</start>'. "\r\n");
134 fwrite($file, "\t\t\t", '<stop>'. '</stop>'. "\r\n");
135 fwrite($file, "\t\t\t", '<teff>'. '</teff>'. "\r\n");
```

lon and lat fields



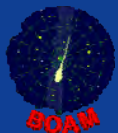
“Create xml files” program

[4/6]

```
136         $onetime=false;
137     }
138     $clip_name=$ufoanalyzer_record['clip_name'];
139     $id_ufoanalyzer_record=$ufoanalyzer_record['id'];
140     $date_ufoanalyzer_record=$ufoanalyzer_record['date'];
141     $meteor=array(array());
142     $pos=array(array());
143     $query_uo2_object=mysql_query("SELECT * FROM ufoanalyzer WHERE id_ufoanalyzer_record='$id_ufoanalyzer_record' ORDER BY id");
144     while($ua2_object=mysql_fetch_assoc($query_uo2_object))
145     {
146         $nb="";
147         while(strlen($nb)<4) $nb="0".$nb;
148         $meteor_code="CAM-" . str_replace("-", "", $date_ufoanalyzer_record) . "-" . $system_code . "-" . $nb;
149         $shower_code=str_replace('J5_', '', strtoupper($ua2_object['class']));
150         if (!in_array($shower_code,$shower))
151         {
152             $shower_code="SP0";
153         }
154         $duration=number_format($ua2_object['sec'],2);
155         $mag=number_format($ua2_object['mag'],2);
156         $speed=number_format($ua2_object['av'],2);
157         $fs=$ua2_object['fs'];
158         $fe=$ua2_object['fe'];
159         $fn=$ua2_object['fn'];
160         $exposures=$ua2_object['sn'];
161         $in_fov=dechbin($ua2_object['io']);
162         //Time
163         $y=$ufoanalyzer_record['y'];
164         $mo=$ufoanalyzer_record['mo'];
165         $d=$ufoanalyzer_record['d'];
166         $h=$ufoanalyzer_record['h'];
167         $m=$ufoanalyzer_record['m'];
168         $s=$ufoanalyzer_record['s'];
169         $tz=$ufoanalyzer_record['tz'];
170         $fps=$ufoanalyzer_record['fps'];
171         $interlaced=$ufoanalyzer_record['interlaced'];
172         $meteor_time=mktime($h,$m,$s+($fs/($fps*(1+$interlaced)))-$tz,$mo,$d,$y); ← meteor time
173         $meteor_time=date("Y-m-d\TH:i:s", $meteor_time);
174         fwrite($file, "\t\t\t\t\t.<meteor>". $meteor_time . "\r\n");
175         fwrite($file, "\t\t\t\t\t.<meteor_code>". $meteor_code . "</meteor_code>". "\r\n");
176         fwrite($file, "\t\t\t\t\t.<time>". $meteor_time . "</time>". "\r\n");
177         fwrite($file, "\t\t\t\t\t.<shower_code>". $shower_code . "</shower_code>". "\r\n");
178         fwrite($file, "\t\t\t\t\t.<exposures>". $exposures . "</exposures>". "\r\n");
179         fwrite($file, "\t\t\t\t\t.<duration>". $duration . "</duration>". "\r\n");
180         fwrite($file, "\t\t\t\t\t.<mag>". $mag . "</mag>". "\r\n");
```

*format into IMO
shower codes*

← meteor time



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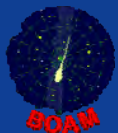
“Create xml files” program

[5/6]

```
181 fwrite($file, "\t\t\t\t\t" . '<speed>'. $speed . '</speed>'. "\r\n");
182 fwrite($file, "\t\t\t\t\t" . '<in_fov>'. $in_fov . '</in_fov>'. "\r\n");
183 $filepath = "$dir/" . $clip_name . ".A.xml";
184 if (file_exists($filepath))
185 {
186     $handle = fopen($filepath, "r");
187     $data = fread($handle, filesize($filepath));
188     fclose($handle);
189     //
190     $data = str_replace(chr(13), '', $data);
191     $data = str_replace(chr(10), '', $data);
192     $data = str_replace(chr(9), '', $data);
193     $pos_no = 1;
194     for ($k = $fs; $k <= $fe; $k++)
195     {
196         $data_object = ufoanalyser_object($data, '<ua2_object fs="' . $fs . '" fe="' . $fe . '" fn="' . $fn . '" sN="' . $exposures . '"', '</ua2_object>');
197         if (strpos($data_object, '<ua2_fdata2 fno="' . $k . '"') || strpos($data_object, '<ua2_fdata2 fno="' . $k . '"'))
198         {
199             $fdata2 = ufoanalyser_fdata2($data_object, $k);
200             $fdata2_mag = number_format(readfield($fdata2, " mag="), 2);
201             $fdata2_pos_ra = number_format(readfield($fdata2, " ra="), 4);
202             $fdata2_pos_dec = number_format(readfield($fdata2, " dec="), 4);
203             fwrite($file, "\t\t\t\t\t" . '<pos>'. "\r\n");
204             fwrite($file, "\t\t\t\t\t" . '<pos_no>'. $pos_no . '</pos_no>'. "\r\n");
205             fwrite($file, "\t\t\t\t\t" . '<mag>'. $fdata2_mag . '</mag>'. "\r\n");
206             fwrite($file, "\t\t\t\t\t" . '<pos_ra>'. $fdata2_pos_ra . '</pos_ra>'. "\r\n");
207             fwrite($file, "\t\t\t\t\t" . '<pos_dec>'. $fdata2_pos_dec . '</pos_dec>'. "\r\n");
208             fwrite($file, "\t\t\t\t\t" . '</pos>'. "\r\n");
209             $pos_no = $pos_no + 1;
210         }
211     }
212     fwrite($file, "\t\t\t\t\t" . '</meteor>'. "\r\n");
213 }
214 else
215 {
216     save_log($file_logname, $filepath . " inaccessible.");
217     $error = true;
218 }
219 $j++;
220 }
221 }
222 }
223 else
224 {
225     save_log($file_logname, "location: ". $location_code . " unknown.");
```

*read of ua2_objpath part
(meteor detection data)
from a UFOAnalyzer
A.xml file*

*manage multi-detection
possible in one
UFOAnalyzer A.xml file*



“Create xml files” program

[6/6]

```
226         $error=true;
227     }
228 }
229 else
230 {
231     savelog($logfile,"cam_session: ".$observer_code." and ".$system_code." no linked.");
232     $error=true;
233 }
234 }
235 else
236 {
237     savelog($logfile,"observer: ".$observer." unknown.");
238     $error=true;
239 }
240 if ($error)
241 {
242     @unlink($xmlfile);
243 }
244 else
245 {
246     fwrite($file,"\t\t'</period>'. "\r\n");
247     fwrite($file,"\t'</cam_session>'. "\r\n");
248     fwrite($file,'</vmo>');
249     fclose($file);
250 }
251 $i++;
252 }
253 }
254 //
255 mysql_close();
256 savelog($logfile,$vmo." xml file(s) created.");
257 }
258 else
259 {
260     savelog($logfile,"date: ".$post." unknown.");
261 }
262 savelog($logfile,"End: ".date("Y-m-d H:i:s"));
263 ?>
```

close xml file →

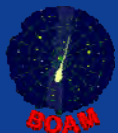
with errors →

without errors →

log file is completed →

```
1 Begin:2012-03-04 20:27:28.
2 cam_session: CULTI and NAN1_G1E no linked.
3 cam_session: JOUST and MAY1_J2B no linked.
4 4 xml file(s) created.
5 End: 2012-03-04 20:27:55.

1 Begin:2012-03-10 13:34:39.
2 2 xml file(s) created.
3 End: 2012-03-10 13:34:44.
```

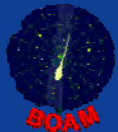


xml file example

CAM-20100101-MAY1_S1.xml 7 Ko Document XML 10/03/2012 14:34
CAM-20100101-SAV1_S1.xml 6 Ko Document XML 10/03/2012 14:34

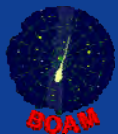
```
<?xml version="1.0" encoding="UTF-8" ?>
- <vmo version="1.0" xmlns="http://www.imo.net">
- <boam version="0.0" xmlns="http://www.boam.fr">
  <ufoanalyzer_record>63</ufoanalyzer_record>
  <rstar>0</rstar>
</boam>
- <observer>
  <observer_code>SOGPA</observer_code>
  <first_name>Patrick</first_name>
  <last_name>Sogorb</last_name>
  <country_code>FR</country_code>
</observer>
- <location>
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  <lat>48.57530</lat>
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- <cam_system>
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  <system_type>VIDEO</system_type>
</cam_system>
- <cam_session>
  <system_code>SAV1_S1</system_code>
  <location_code>FRSAVI</location_code>
  <observer_code>SOGPA</observer_code>
  <software_code>UFOAnalyzer_2.26</software_code>
  <shower_cat_code>IMO2009</shower_cat_code>
  - <period>
    <start />
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    <teff />
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<exposures>4</exposures>
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</pos>
- <pos>
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  <pos_dec>58.0637</pos_dec>
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- <pos>
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  <pos_ra>254.8600</pos_ra>
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- <pos>
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</cam_session>
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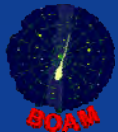
Conclusion

- several UFOAnalyzer fields are compatible with mandatory fields requested by “The VMO file format. I. Reduced camera meteor and orbit data document”.
- php code must be optimized, some fields improved (meteor time).
- php code can easy modified for other database.
- xml already e-mailed to VMO and a good feedback given has been by Geert Barenteen (IMO technical lead).
- we are ready to participate to test the VMO xml interface (in progress).



Question?

Thanks to Arnaud for the presentation!



Base des
Observateurs
Amateurs de
Météores



Reference

- International Meteor Organization:

www.imo.net

- Virtual Meteor Observatory:

vmo.imo.net

-The VMO file format. I. Reduced camera meteor and orbit data:

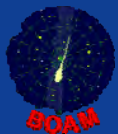
http://vmo.imo.net/ftp/documentation/vmo_camera_20090930.pdf

- UFO series software:

www.sonotaco.com

- Base des Observateurs Amateurs de Météores:

www.boam.fr
contact@boam.fr



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