The analysis of team visual observations

Some aspects

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Motivation

1. This years was a good occasion to test and measure typical observation errors.
2. We had many new, inexperienced observers.
3. Bad weather conditions due to cloudyness and full moon on the dates close to maximum of perseid activity.

Main Objectives

The main goal was to make distinction between perception and meteor event, ie. the goal was to connect meteor to all observers who saw the same meteor and to estimate the error made by each observer in a group and then estimate the overall quality of obesvations.

Realization

Experiment was condutced by splitting observers in separate groups, in this particular case observers were separated into 3 groups. For that purpose each group needed a person who would read the serial number of a seen meteor and write down the exact time. So, the aplication was developed for that purpose. Aplication automatically generated codes with timestamps and saved them to android device. Each group consisted of a code reader and minimum 3 observers. Each observer wrote down shower, magnitude and code. Afterwards we were able to correlate meteor event with entries in our visual observation base. With that information, we calculated different observation errors.

First results

We analysed the relationship between limiting magnitude of an observer and the number of seen meteors, lmg compared to the number of darker seen meteors and the estimated error of shower classification.
First thing that we can see from our observations is that our observers have sporadicomania.

Date-aug	Avg. error	Standard deviation
8	0.41	0.31
9	0.47	0.41
10	0.43	0.30
11	0.54	0.36
12	0.65	0.52
14	0.59	0.46
15	0.67	0.58
16	0.60	0.43
17	0.53	0.57

Table 1: Magnitude error estimation

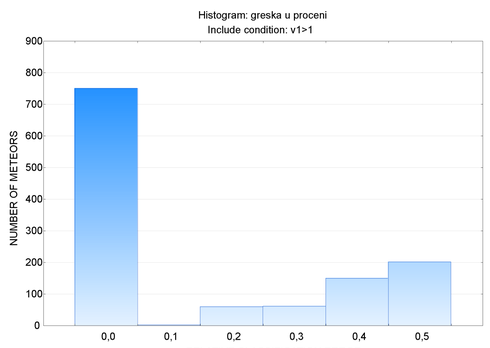

Figure 1: Relative classification error for two or more observers

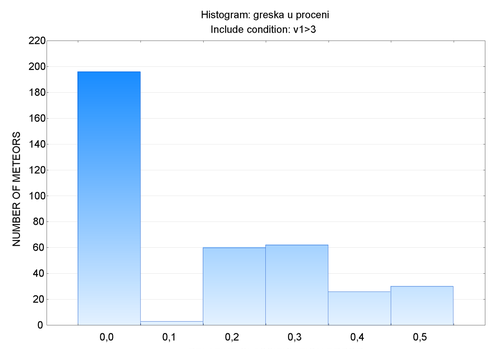

Figure 2: Relative classification error for four or more observers

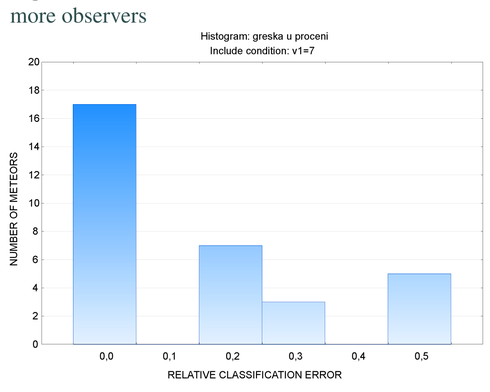

Figure 3: Relative classification error for exactly 7 observers

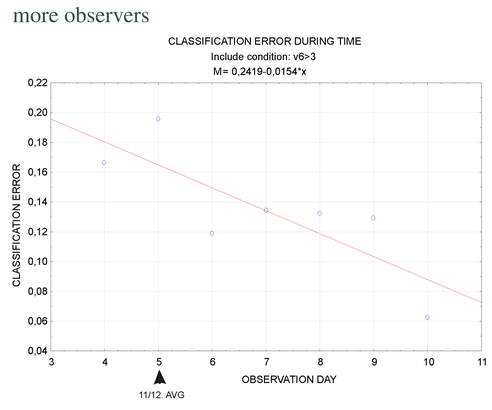

Figure 4: Meteor classification error

From the fig4 we can see one particular date that stands out with unusually high error. That error is expected due to the fact that the number of inexperienced observers increased on that day.
From table 1 we can conclude that the correlation between limiting magnitude and the number of seen meteors does not exist.
The corelation between lmg and darker seen meteors came to be 0.1 which is not that much but is statistically significant. *To be continued...*