

IMC 2018  
SLOVAKIA



International Meteor Conference  
August 30–September 2, Pezinok-Modra, Slovakia

# Visual Meteor Workshop 2018

Pezinok, Slovakia, August 29-30, 2018



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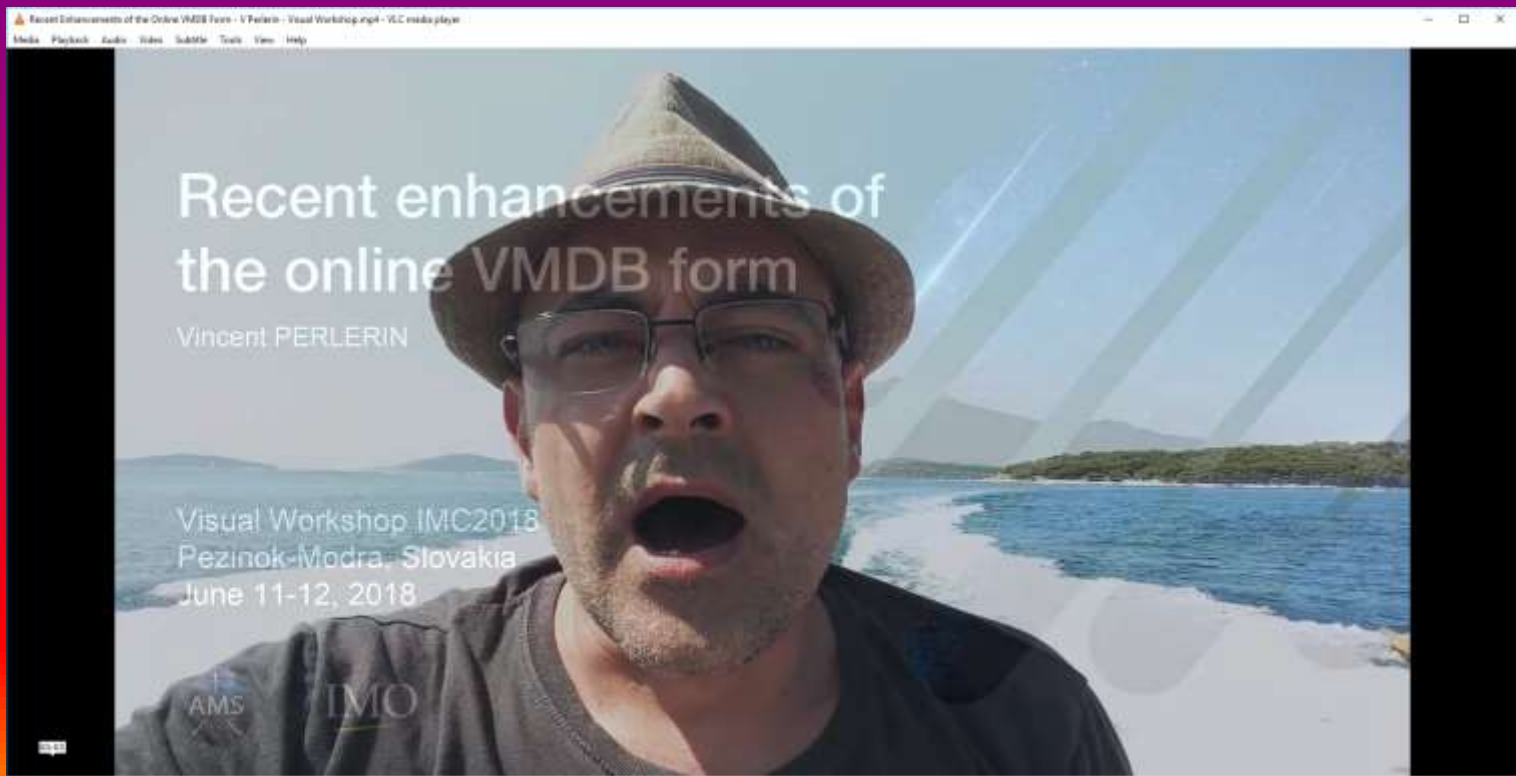


# Why a Visual Workshop?

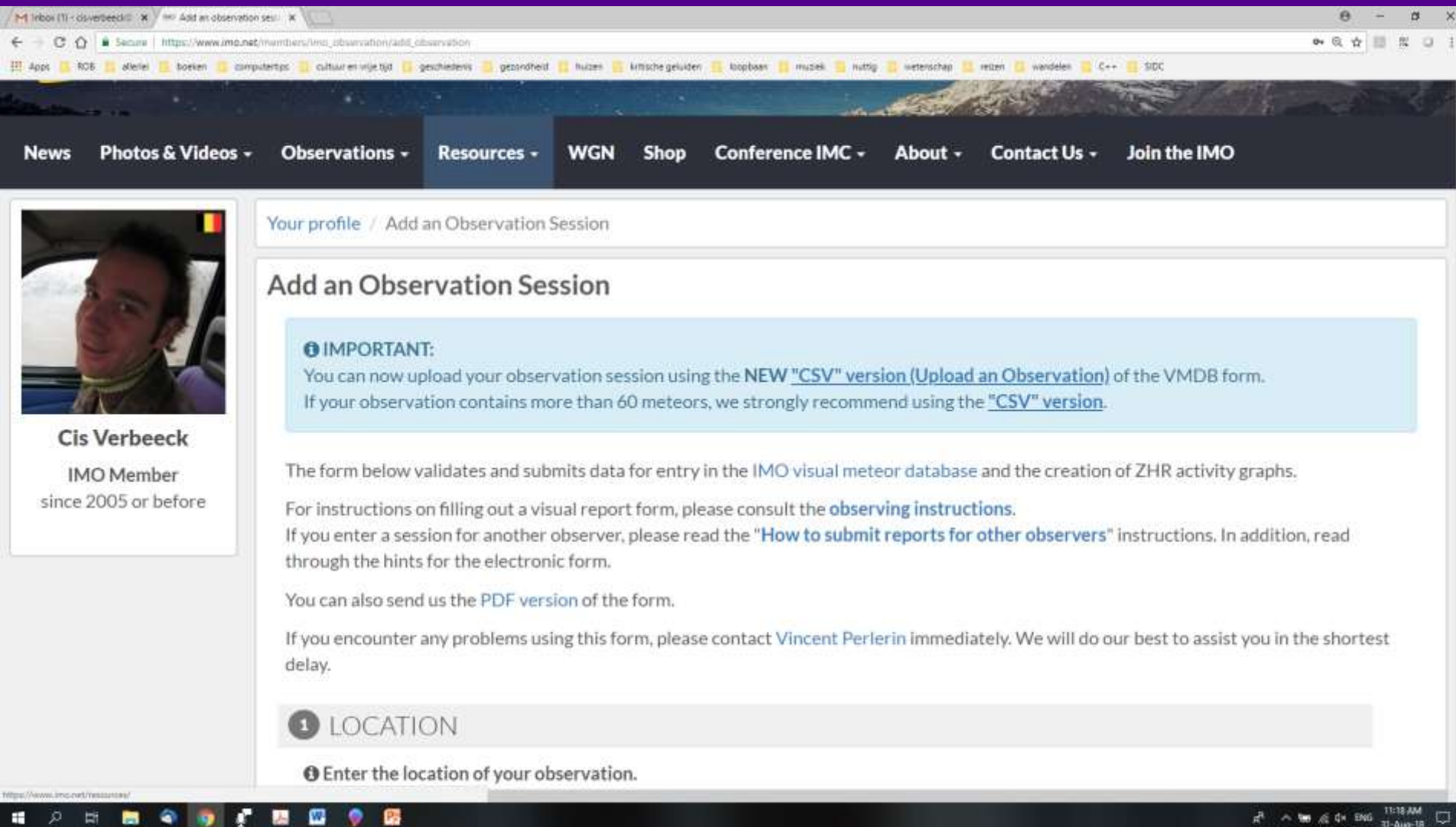
- New Visual Meteor Data Base (*VMDB*) was set up in 2016
- Kristina Veljković developed *MetFns*: user-friendly software to analyze visual observations
- Goals of the Workshop:
  - More persons that can analyze visual observations
  - Optimal knowledge and use of *VMDB* and *MetFns*
- Implementation: hands-on analysis of Perseids 2018 as a joint effort of all participants

# Great expectations!

- Number of registrations for the Visual Workshop: **22!**
- Participants to the Visual Workshop: **5...**
- One remote contributor



# Recent enhancements of the online visual form



Inbox (1) - dsverbeeck | Add an observation ses |

Secure | https://www.imo.net/members/imo\_observation/add\_observation

App | ROB | ofleiel | boeken | computertips | cultuur en vrije tijd | geschiedenis | gezondheid | huizen | kritische geluiden | loopbaan | muziek | nuttig | wetenschap | reizen | wandelen | C++ | SIDC

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## Add an Observation Session

**IMPORTANT:**  
You can now upload your observation session using the **NEW "CSV" version (Upload an Observation)** of the VMDB form.  
If your observation contains more than 60 meteors, we strongly recommend using the **"CSV" version**.

The form below validates and submits data for entry in the IMO visual meteor database and the creation of ZHR activity graphs.  
For instructions on filling out a visual report form, please consult the [observing instructions](#).  
If you enter a session for another observer, please read the ["How to submit reports for other observers"](#) instructions. In addition, read through the hints for the electronic form.  
You can also send us the [PDF version](#) of the form.  
If you encounter any problems using this form, please contact [Vincent Perlerin](#) immediately. We will do our best to assist you in the shortest delay.

### 1 LOCATION

**Enter the location of your observation.**

https://www.imo.net/resources/

11:18 AM 31-Aug-18



# Live ZHRs on the IMO website

The screenshot displays the IMO website's interface for the Persids 2018 campaign. At the top, the IMO logo and navigation menu are visible. The main content area features a 'Persids 2018 campaign Live Graph' section. A blue button labeled 'Full Campaign' is located to the right of the graph title. Below the title, a text box explains that the page shows automated results based on visual observations reported by citizen scientists. A note above the graph states: 'This graph will automatically update in 04:24:79 - View the Persids 2018 campaign details.' The graph itself is a scatter plot with error bars, showing the ZHR (corrected hourly meteor rate) on the y-axis (ranging from 0 to 120) and Time (UTC) on the x-axis (ranging from August 10 to August 26, 2018). The data points show a clear peak in ZHR around August 20-21, reaching approximately 100. The graph is titled 'PER 2018 - Peak'.

# MetFns: software for analysis of visual observations

Online app: <https://kikimoreau.shinyapps.io/MetFnsApp/>

R package: <https://cran.r-project.org/web/packages/MetFns/index.html>

The screenshot displays the MetFns online application interface. On the left, there is a form titled "Calculate Zenithal Hourly Rate" with several input fields and dropdown menus. The form includes fields for "Enter start date in format YYYY-mm-dd HH:MM (e.g. 2015-08-01 22:00)", "Enter end date in format YYYY-mm-dd HH:MM (e.g. 2015-08-20 07:00)", "Select the shower code" (set to PER), "Select the minimum and maximum line size" (set to 100-1000), "Select number of meteors" (set to 200), "Select ZHR correction" (set to 1.5), "Select gamma exposure" (set to 1), and "Choose an option for population index" (set to "Constant (beta) value"). A "Compare" button is at the bottom of the form.

On the right, there is a table titled "Analysis of visual meteor data" with columns: "id", "date", "rMT", "rPER", "ZHR", "gamma", "density", and "beta error". The table contains 20 rows of data, including the following entries:

id	date	rMT	rPER	ZHR	gamma	density	beta error
136 062	2010-08-11 00:24:17	30	222	27.3	1.0	34.1	2.3
136 056	2010-08-11 01:18:15	30	203	30.6	2.0	35.7	2.5
136 156	2010-08-11 02:43:58	9	115	54.1	3.2	42.6	4.0
136 254	2010-08-11 07:42:25	8	79	25.8	2.9	32.2	3.6
136 510	2010-08-11 11:36:29	6	33	23.0	4.0	28.7	6.0
136 701	2010-08-11 16:23:02	8	61	20.9	3.7	36.1	4.0
136 082	2010-08-11 20:54:34	39	203	35.1	2.5	43.9	3.1
136 016	2010-08-11 21:52:04	41	227	41.3	2.7	41.6	3.4
136 949	2010-08-11 22:36:04	30	214	42.9	2.9	52.5	3.6
136 078	2010-08-11 23:20:04	25	205	52.4	3.7	65.4	3.6
136 954	2010-08-11 23:42:35	26	204	50.5	4.0	70.9	6.0
136 008	2010-08-12 00:03:35	30	202	53.3	3.7	66.3	4.7
136 024	2010-08-12 00:27:34	30	200	53.9	3.7	66.2	4.7
136 042	2010-08-12 00:54:34	36	299	45.2	2.6	56.4	3.3
136 061	2010-08-12 01:23:05	28	200	49.7	3.5	62.0	4.4
136 076	2010-08-12 01:45:35	30	204	48.5	3.4	59.9	4.2
136 101	2010-08-12 02:23:06	15	207	52.0	3.6	65.2	4.5
136 162	2010-08-12 04:24:35	2	32	79.7	14.6	99.4	17.4
136 207	2010-08-12 09:47:08	20	171	63.3	4.8	70.6	6.0
136 721	2010-08-12 11:53:00	13	205	117.8	8.2	147.0	18.3
136 013	2010-08-12 20:10:50	39	212	98.6	6.3	114.4	3.0
136 034	2010-08-12 20:42:26	39	203	87.1	6.1	100.7	3.8
136 047	2010-08-12 21 01:57	36	232	96.2	6.4	122.5	8.0
136 059	2010-08-12 21 19:57	31	220	102.2	6.9	127.5	8.6
136 073	2010-08-12 21 31:17	33	220	113.8	6.7	129.1	8.1

# Playing with data: Perseids 2018

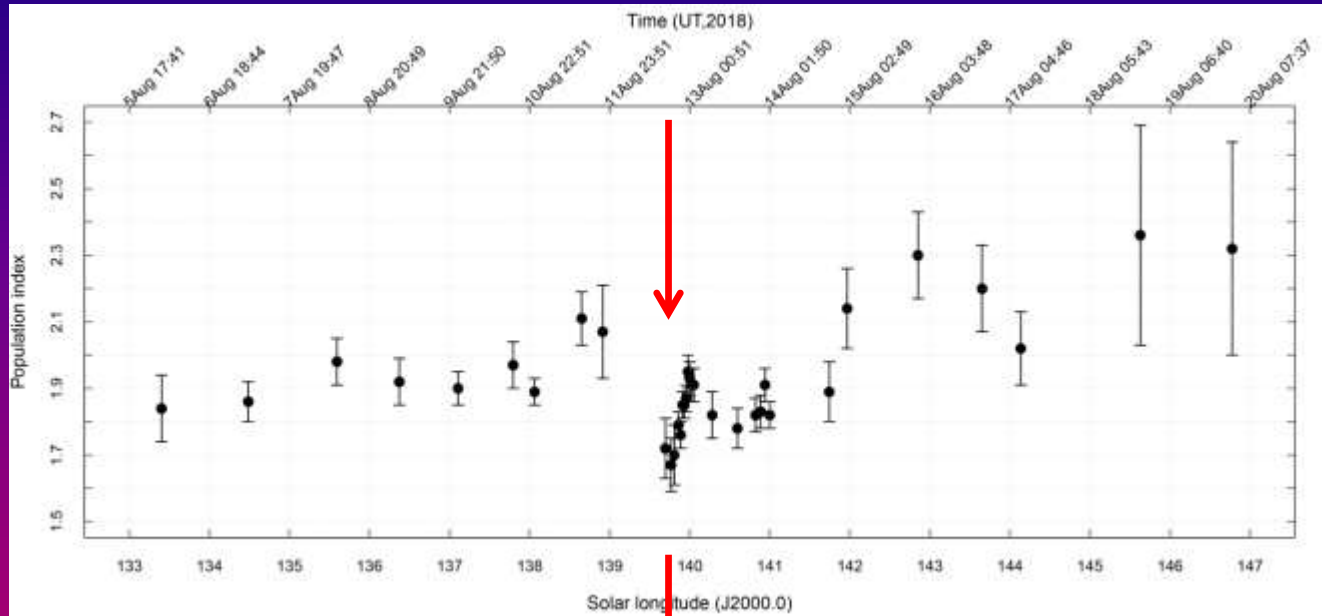


# Playing with data: Perseids 2018

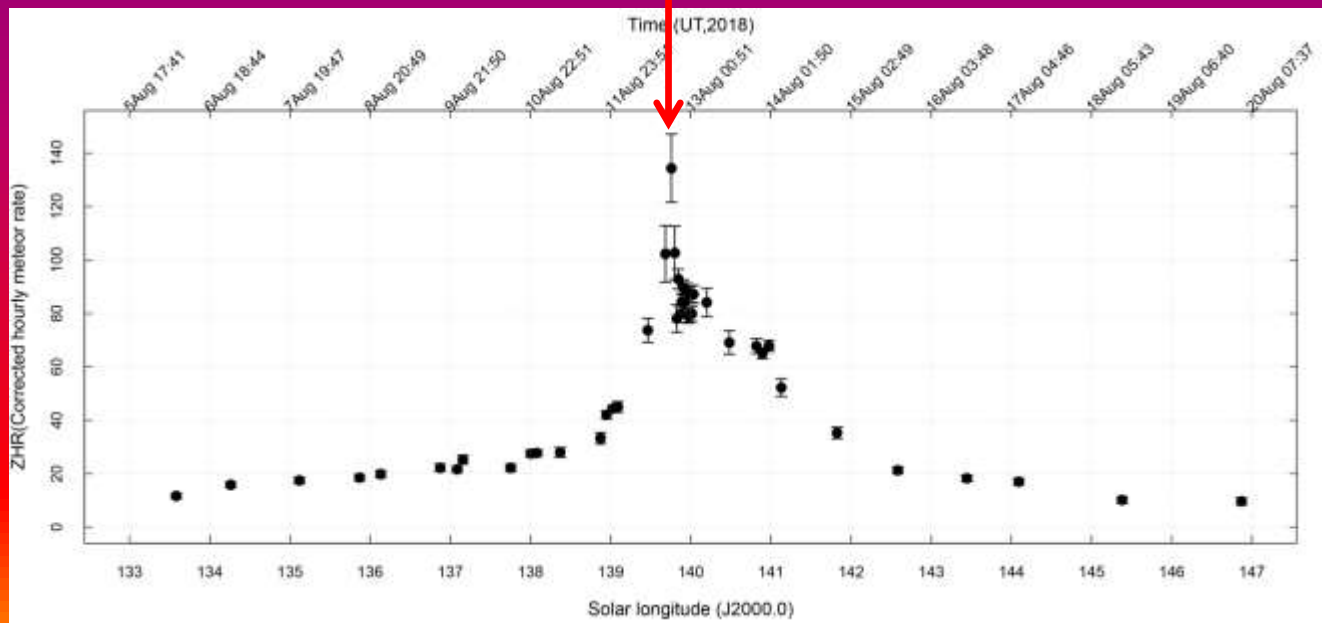
- Shower analysis routines in MetFns
- Optimal bin size algorithm
- Effect of poor vs. good observing conditions



# Results Perseids 2018



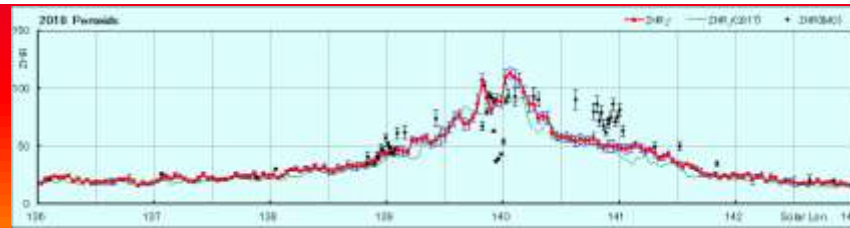
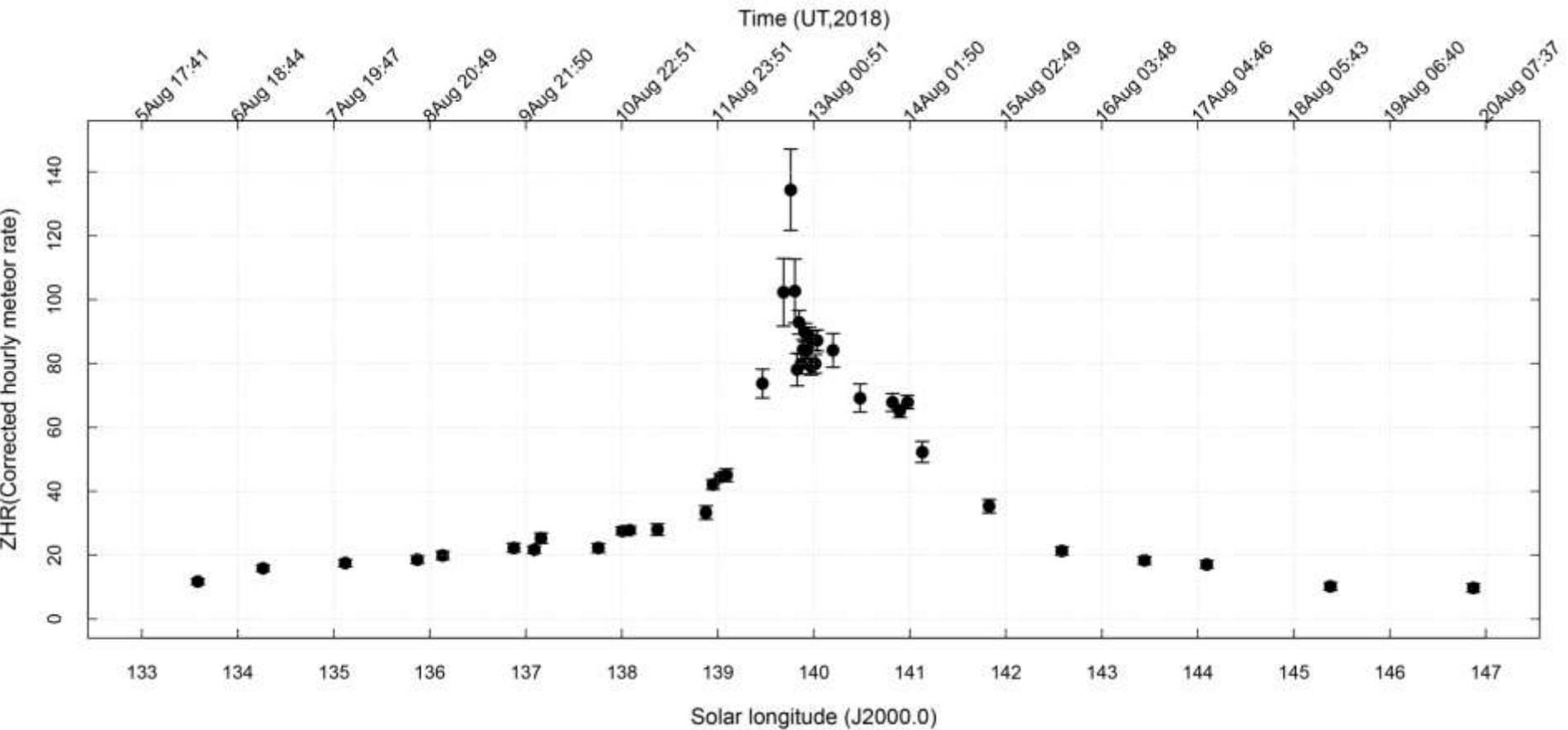
Population index  $r$



ZHR

# Comparison to radio data

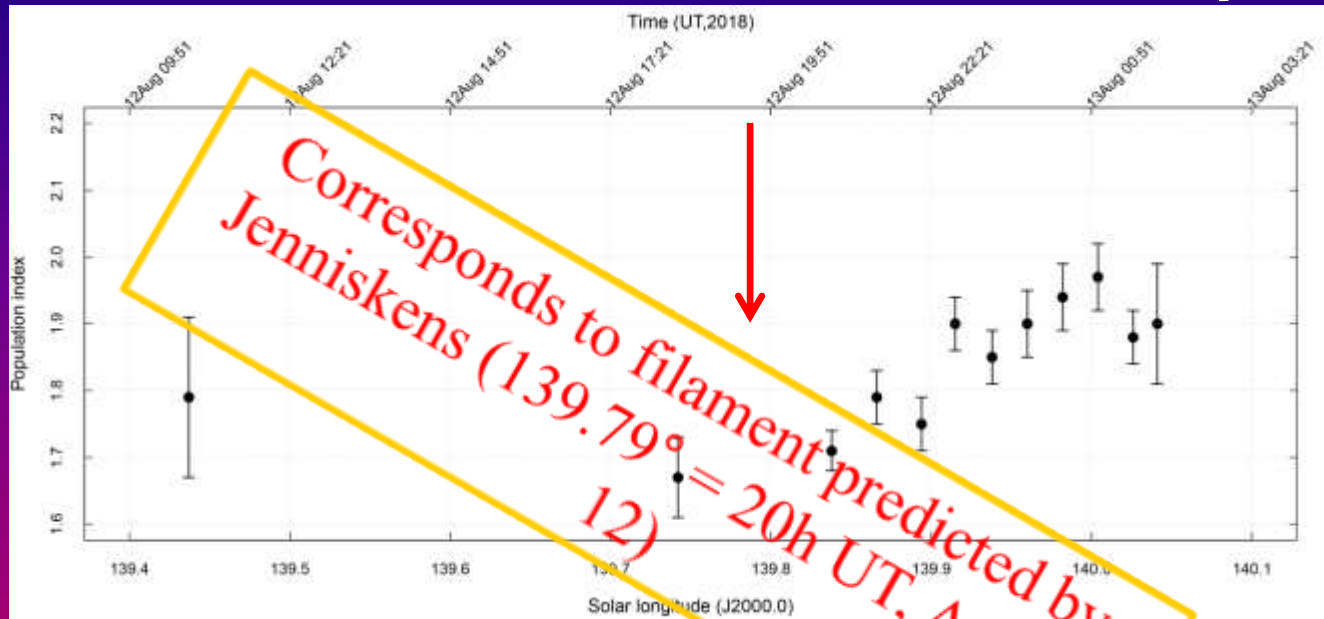
ZHR (Visual Workshop)



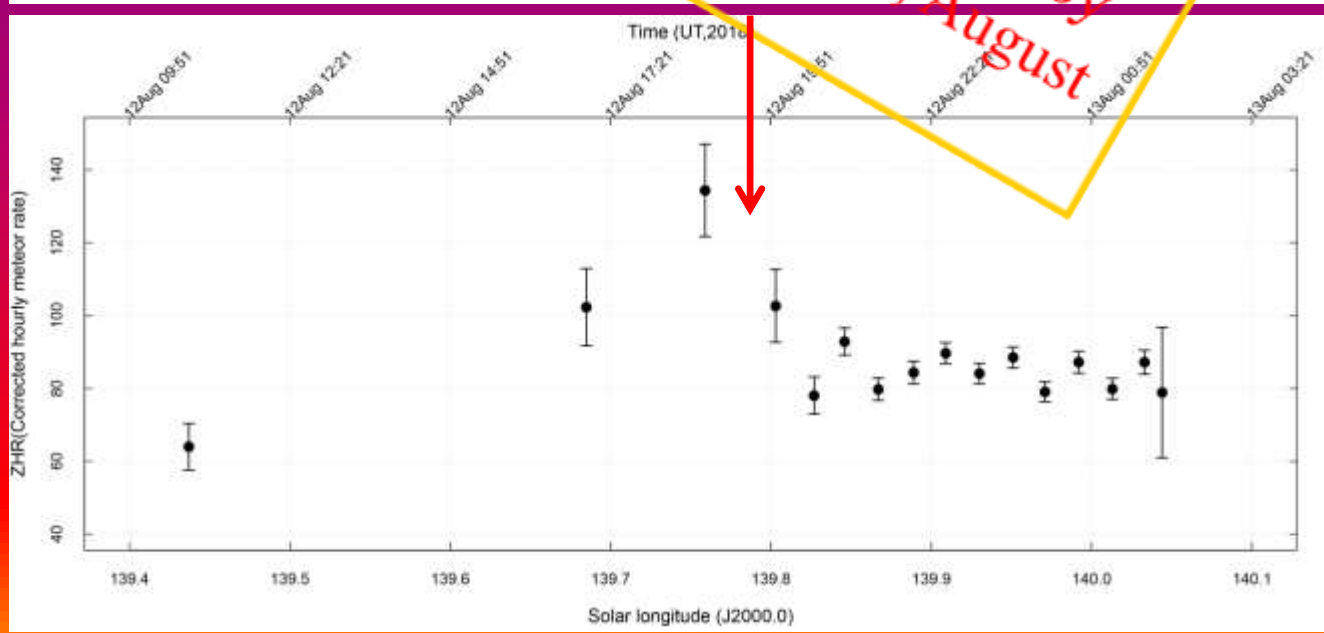
Radio ZHR\_r  
(Shugimoto)

# Results Perseids 2018: peak

Pop.  
index  
r



ZHR



# Workshop outcome

- 2 papers will be written:
  - WGN paper with results on Perseids 2018
  - IMC Proceedings paper describing how we derived these results, using MetFns
- Publication rate:  $2 / 5 = 0.4$  papers \* person<sup>-1</sup> \* day<sup>-1</sup> 😊