

Meteor Shower Search ***for amateurs***

or: How I Learned to Stop Worrying
and Love Data Analysis

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Meteor Shower Search

- What was our problem?
- What was our idea?
- What have we got?
- What does it all mean?
- What can YOU do?



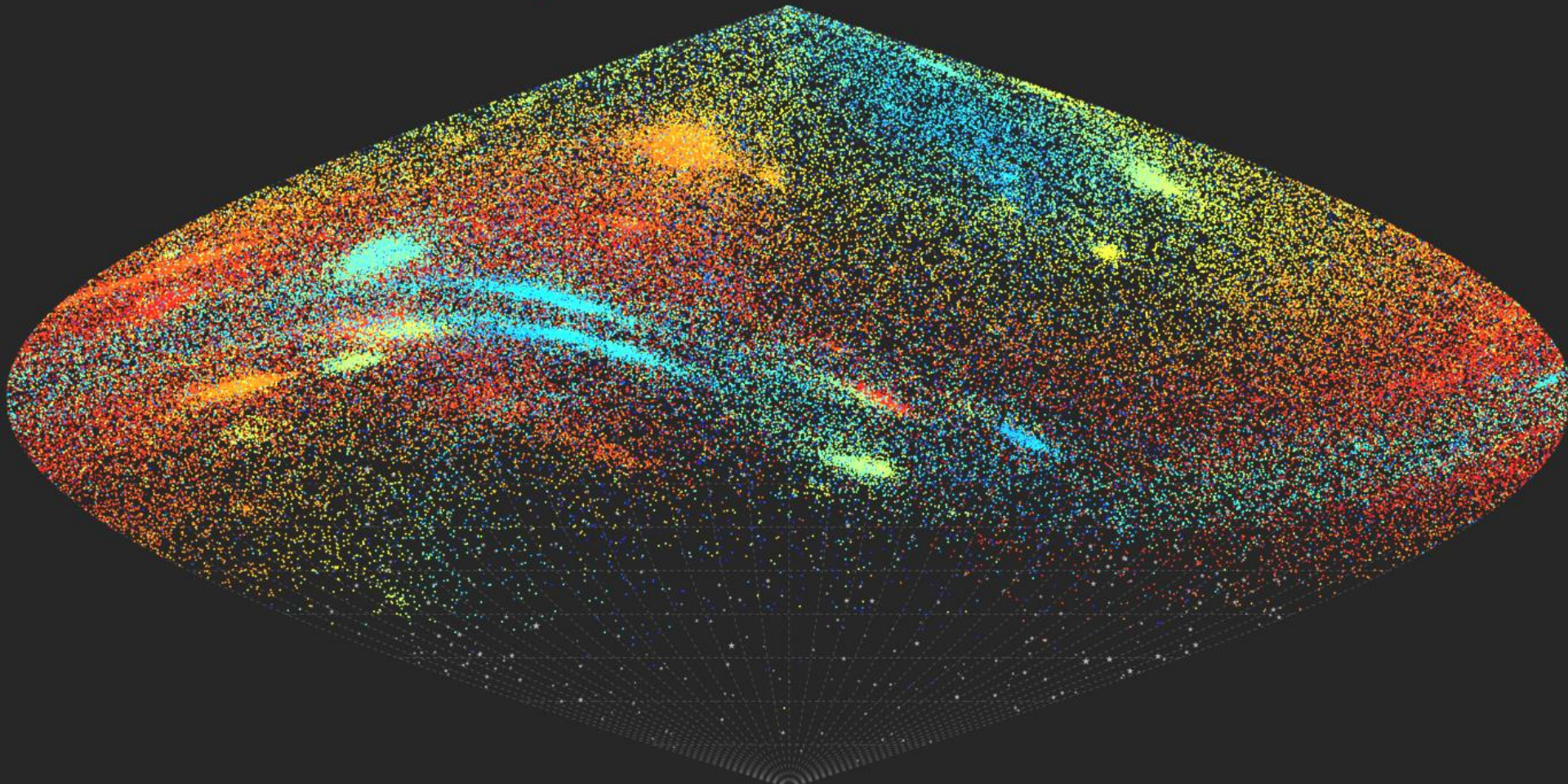
What is the problem?

- Find new showers
 - among 130 000+ individual meteor orbits
 - 5 SonotaCo & 4 CMN years worth of data
- Find the easy way of doing it

What to do with data?

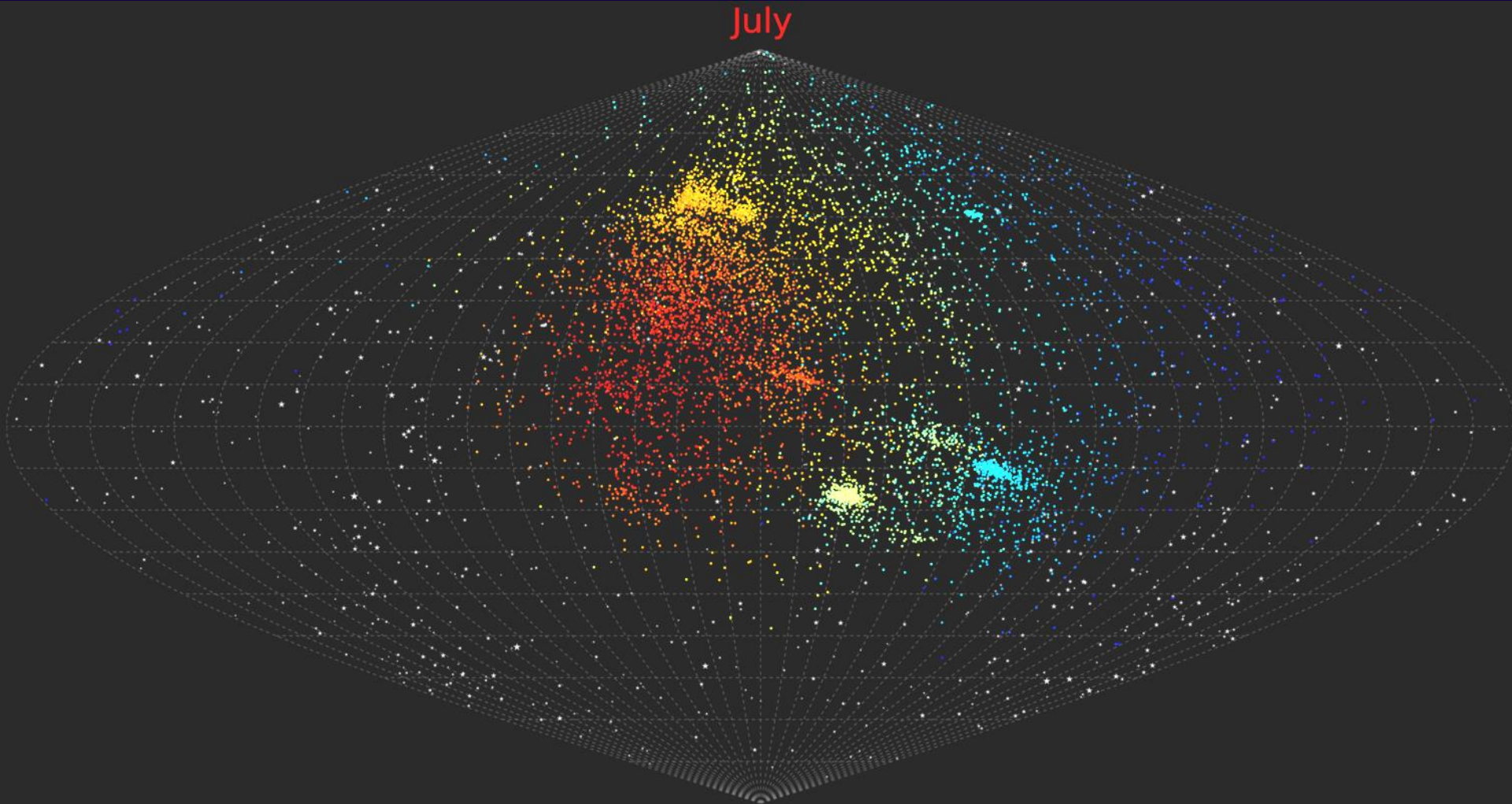
- **Plot it** (*“let’s see what we have”*)

Radiant Map - SonotaCo 2007-11 & CMN 2007-2010



What to do with so much data?

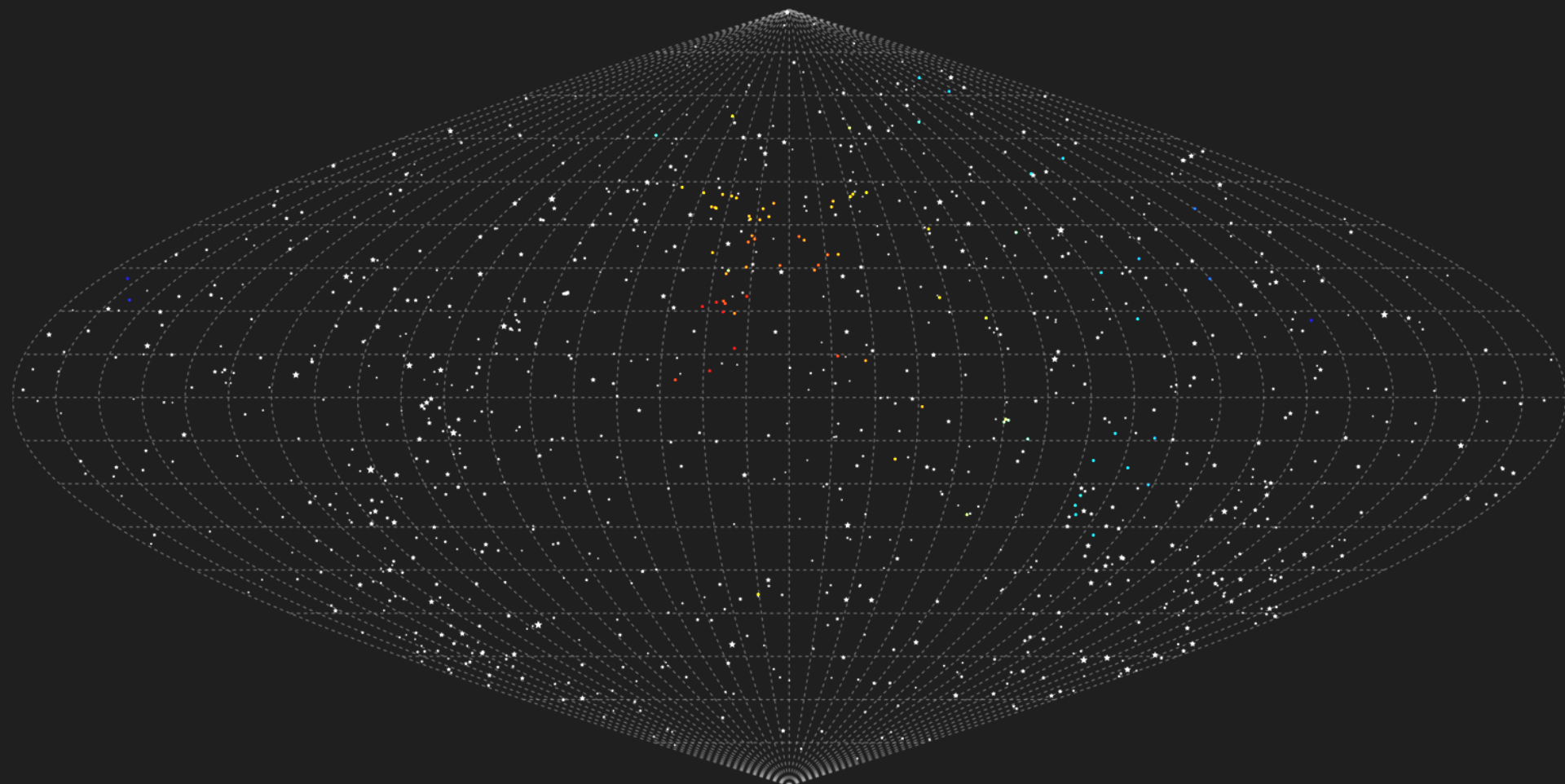
- Reduce the plotting period (*“take only July”*)



What to do with **so little** data?

- *“No streams that I can see. No radiants also.”*

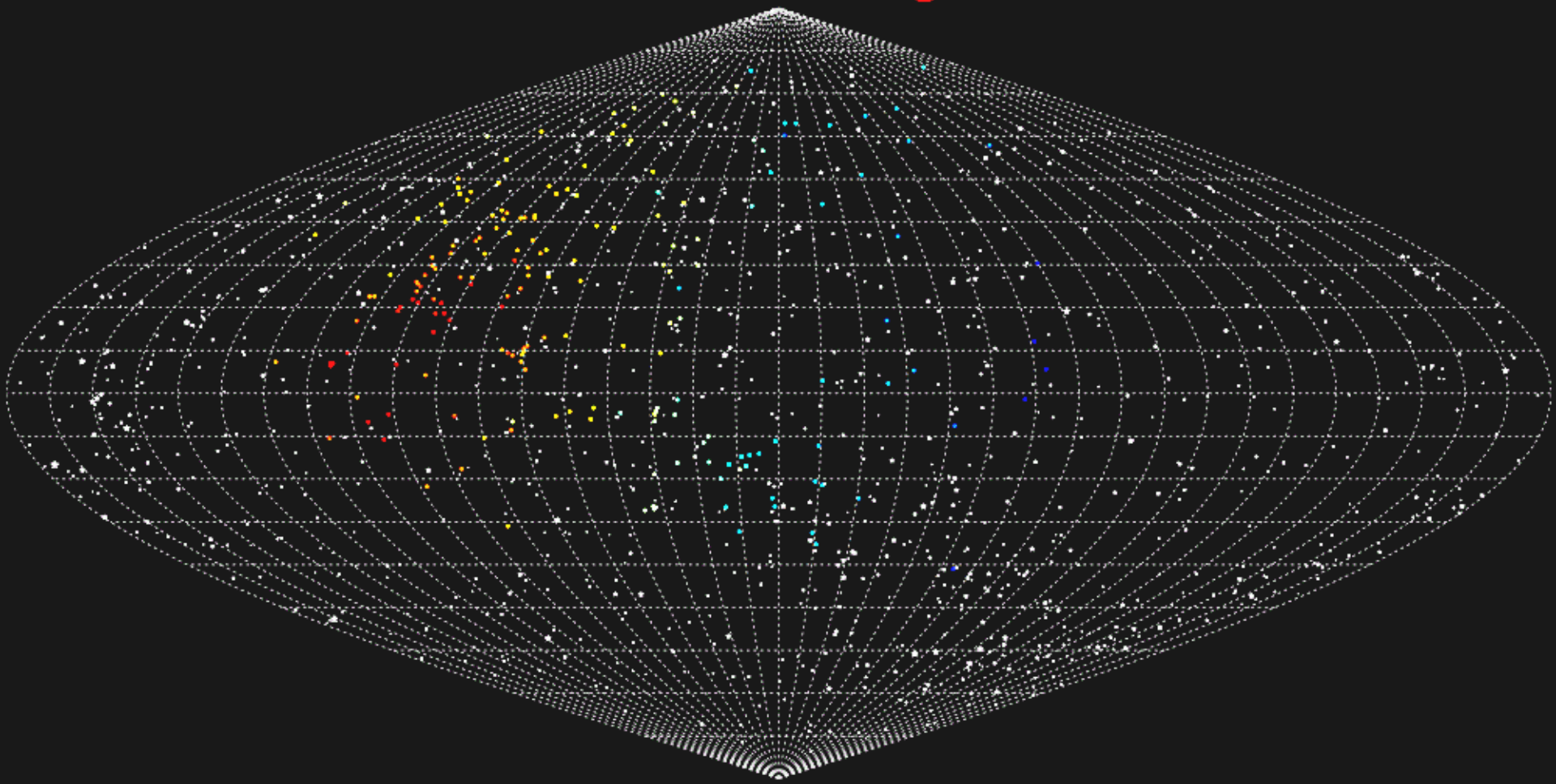
Solar longitude range: 100 - 101



What's the catch?

- Animate it (*"It's alive!"*)

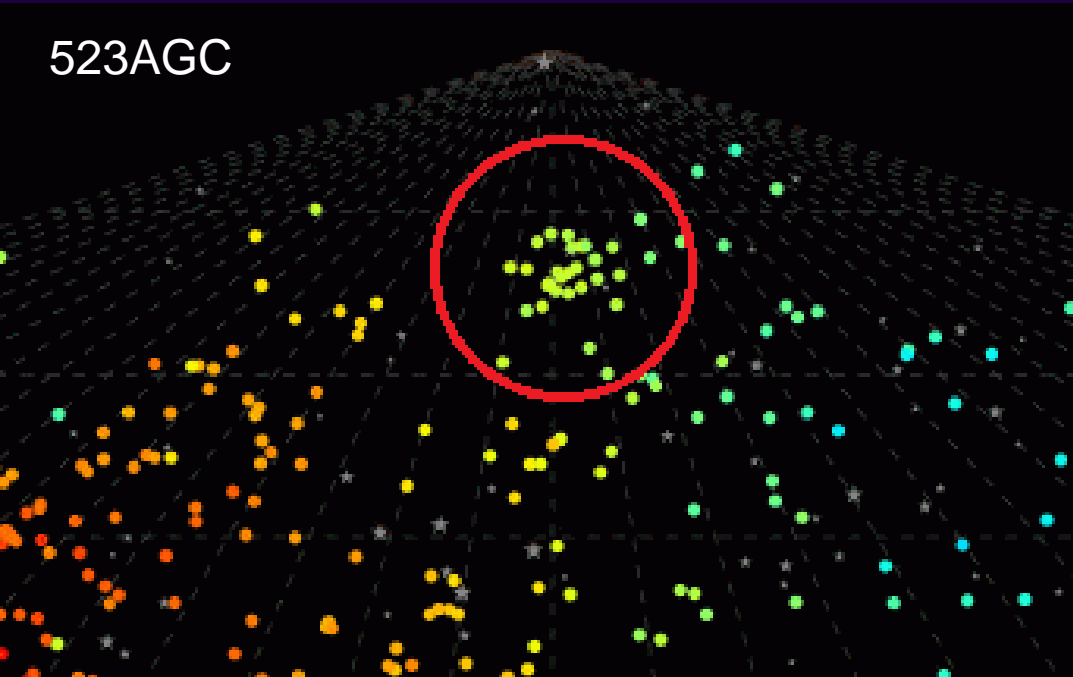
Sol=105 deg



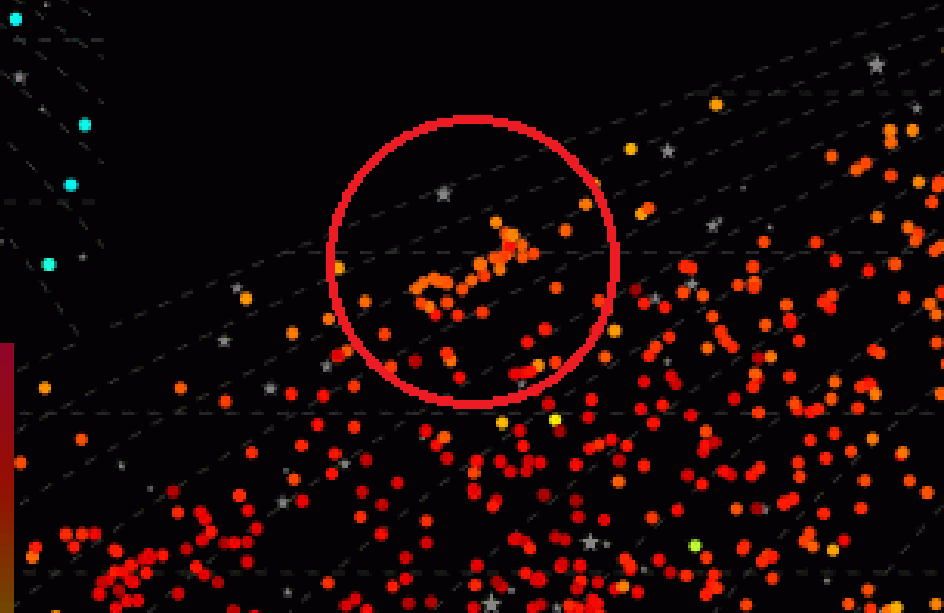
What to look for?

- Same colored lumps lasting a few days

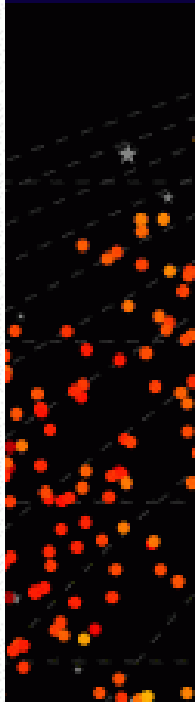
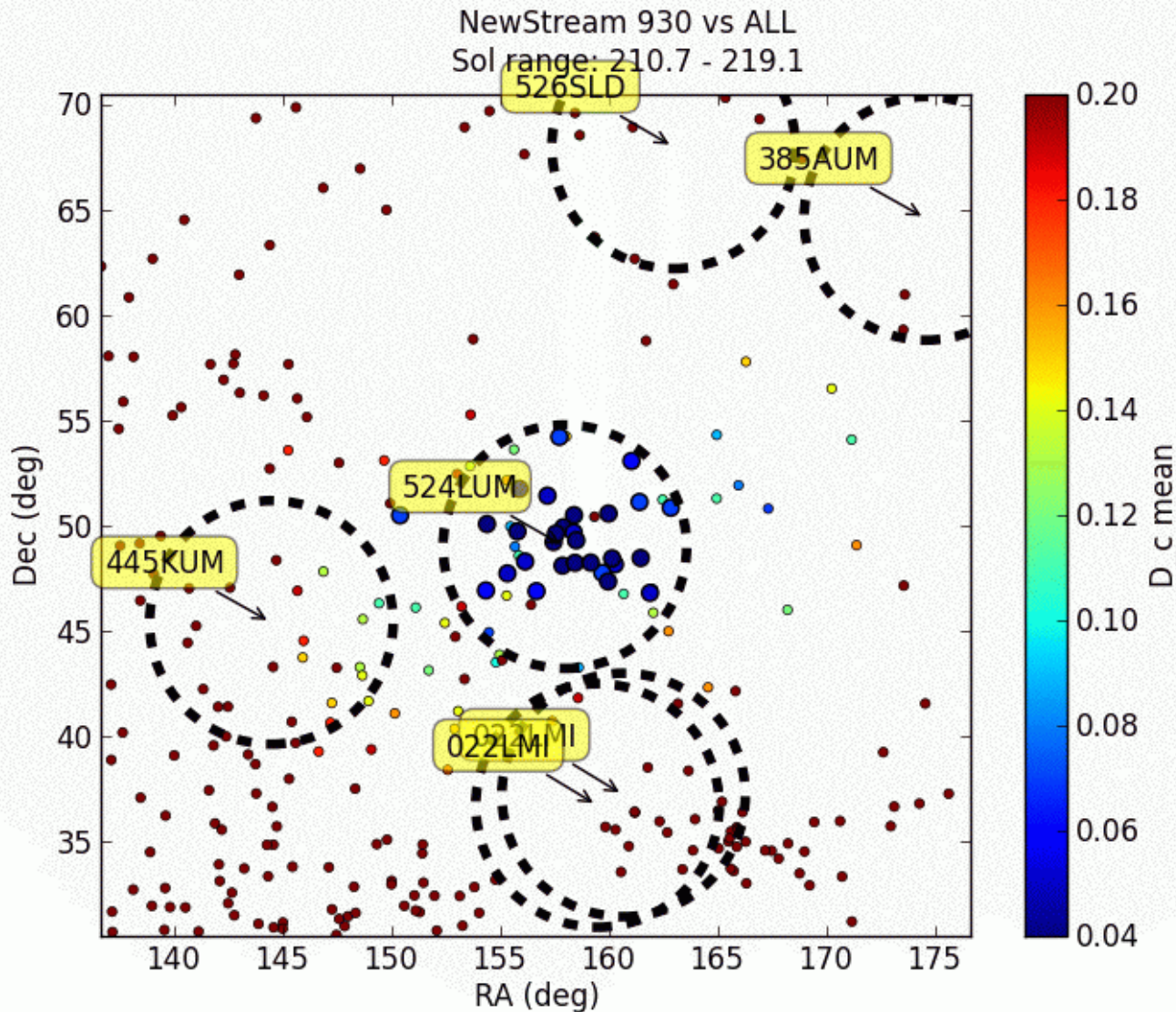
523AGC



524LUM



How to process that?



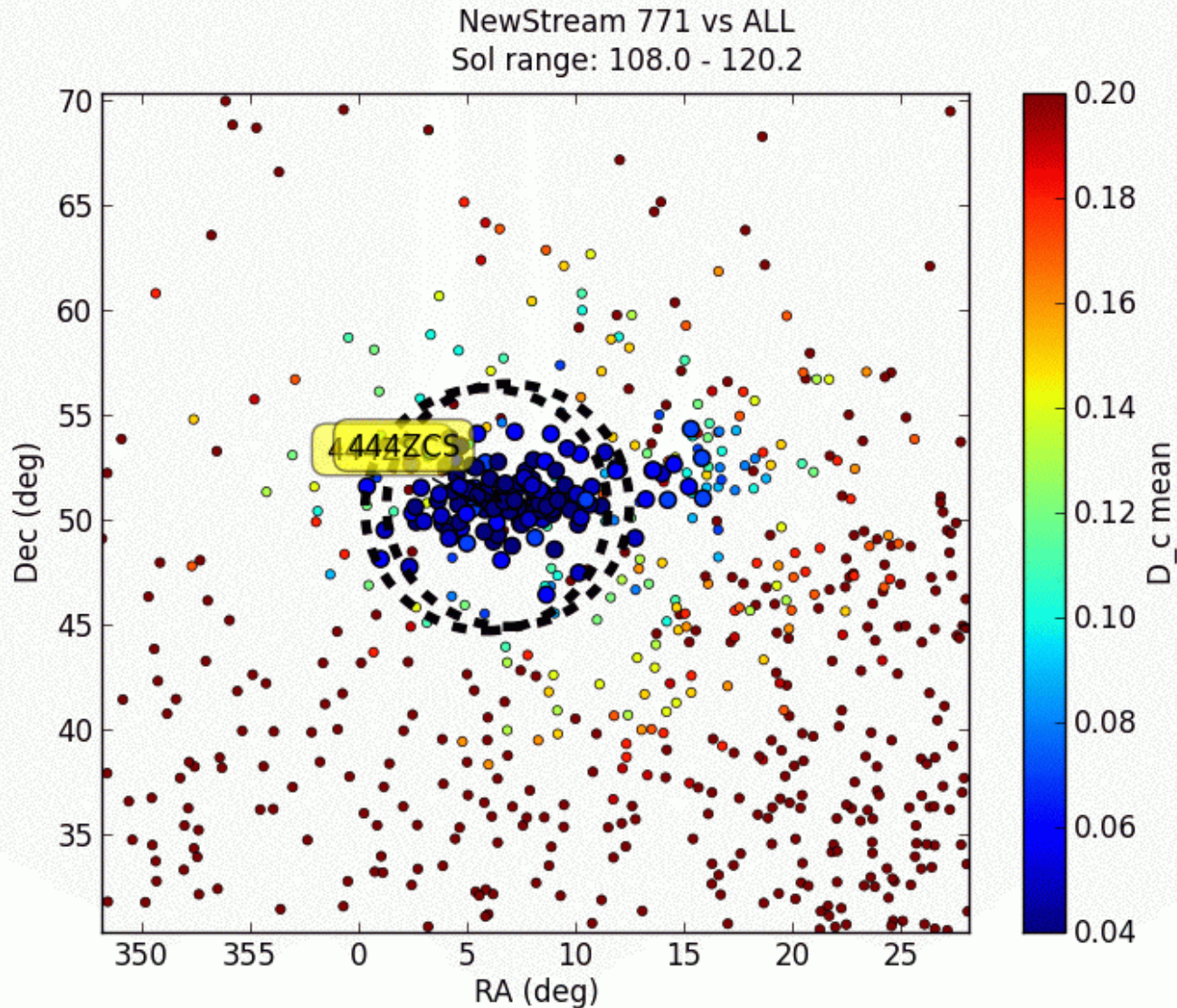


What have we discovered?

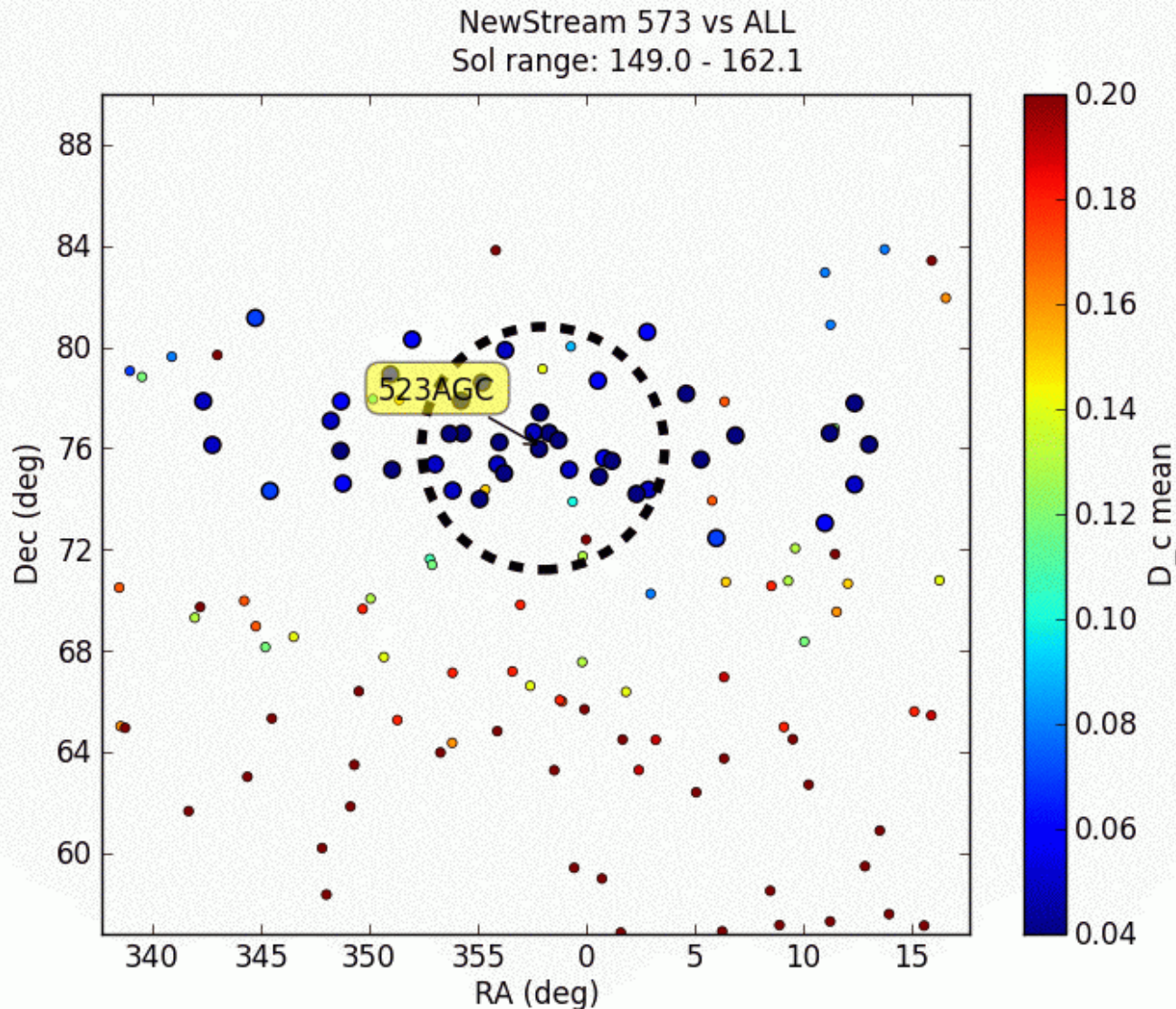
- 20 new meteor showers discovered

zeta Cassiopeiids	omega Capricornids	April lambda Ophiuchids	lambda Ursae Majorids
kappa Virginids	omikron Leonids	April 102 Herculids	iota Cygnids
June rho Cygnids	February mu Virginids	beta Aquariids	Southern lambda Draconids
15 Lyncids	eta Hydrids	May beta Capricornids	upsilon Ursae Majorids
rho Puppids	August iota Cetids	August gamma Cepheids	January zeta Draconids

444ZCS - zeta Cassiopeiids



523AGC - August gamma Cepheids





Discussion

- Advantages
 - **Simple detection** (radiant concentrations clearly visible)
 - **Simple definition of parameters** (sol, RA, Dec)
- Disadvantages
 - **Subjective detection** (instrument = a pair of eyes)
 - **Difficult to notice radiants with large dispersion**
 - **Long preparation** (plotting software)



Conclusion

- **Universal method** (where RA, Dec & V_g are known)
- **Great visualisation tool**
- Adding more data welcome
 - More data = more new streams?
- Web app?
 - Easy data access, more plotting combinations



Acknowledgements

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- Ministry of Science, Education and Sports of the Republic of Croatia

Thank you for your attention!

Sol=000 deg

