Committee on Science Priorities (CSP) report

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IVOA Committee on Science Priorities (CSP)
http://wiki.ivoa.net/twiki/bin/view/IVOA/IvoaSciencePriorities

ESAC Science Data Centre (ESA), Madrid, Spain

IVOA virtual Interop, 25 May 2021
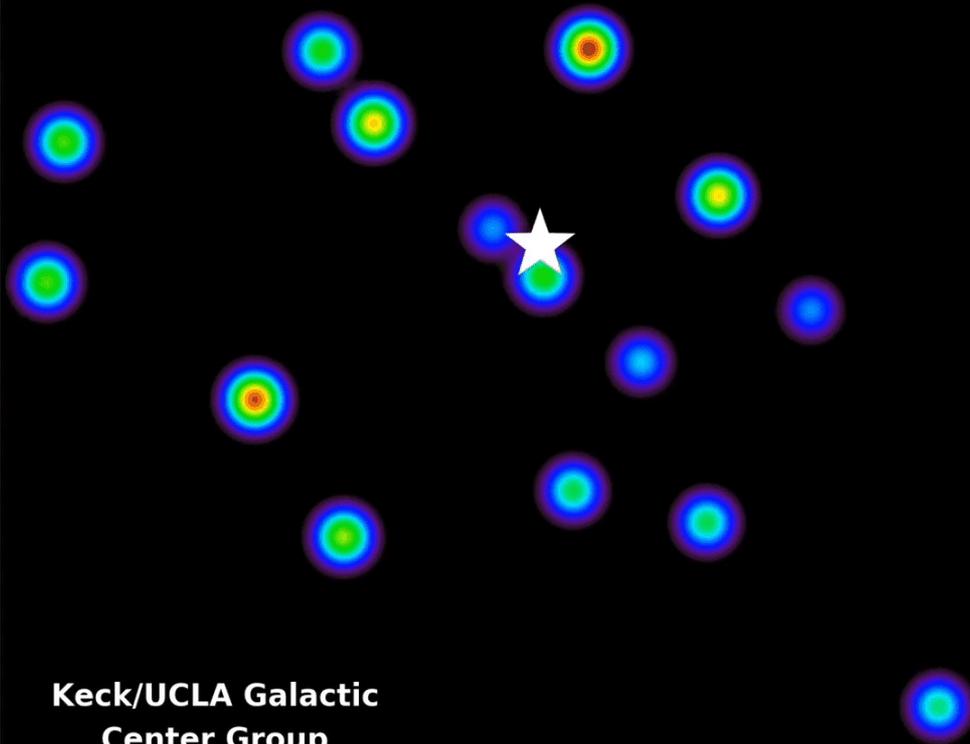
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re-search

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1. Motivation

2. Scientific priorities

   1. Currently identified

   2. Upcoming

3. Re-fueling the CSP

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What does the IVOA provide?

1. *Visualization tools* -> SAMP, HiPS, (ST-)MOC, TopCat, Aladin, AladinLite

2. *Simple / easy* access to data -> registry, ObsCore, SAMP, TAP, SODA, SIA/SSA, HiPS, (ST-)MOC, Datalink

3. *reliable* data -> DataModels, Semantics

4. *relevant* data -> ??? (missing, links to papers?, data ratings?) -> Special session on Radioastronomy in the VO

5. Fast computation on new data
-> GWS, Computing resources close to the data, VOSpace interface for distributed storage

6. Easy comparison tools between data and models/theory
-> SimDAL, but models usually created by users..

7. Data *completeness* and *consistency*
-> Registry complete and consistent? Glots? -> SODA/Datalink services?

8. Reproducible data representation
-> Scripting interfaces, python wrappers?, ADQL, TopCat

The best way to make progress is via a constant dialogue:

science ⟷ *technology*

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# Current scientific priorities at IVOA

- **Time-domain astronomy**: TIMESYS (light curves) and ST-MOC (discovery). -> Handling of alerts? GW triggers?

- **Multi-dimensional data**: spectral or time cubes (sky + wavelength/frequency or sky + time)

- **Upcoming priorities:**
  - **Python reference implementations** prioritized for major services (now with pyVo and better coordination with astropy)
  - Ways for accessing **large amounts of data** from future surveys?
  - Other growing areas/priorities?
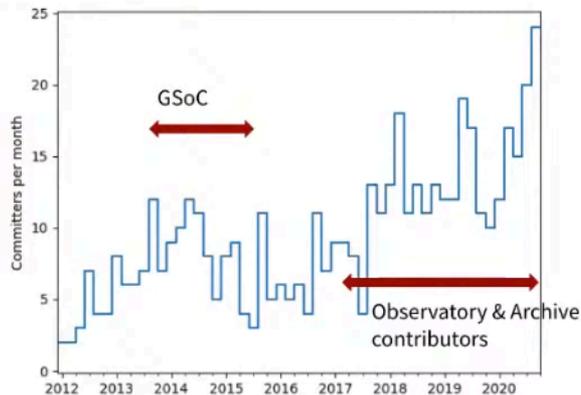
ADASS XXX

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- **Upcoming priorities:**
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  - Ways for accessing **large amounts of data** from future surveys? (Theory/GWS session on science platforms this interop)
 - Other growing areas/priorities?

# Upcoming scientific priorities for the IVOA

### Gravitational waves
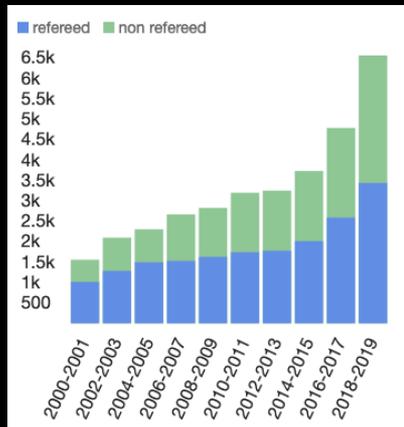
Multi-wavelength
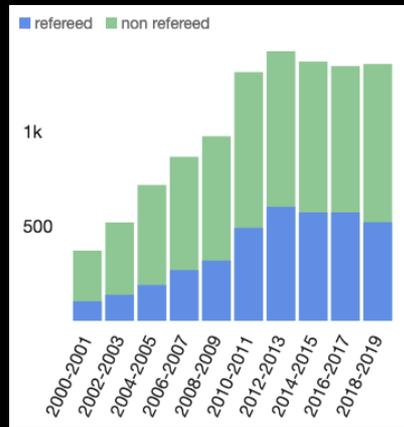
Python
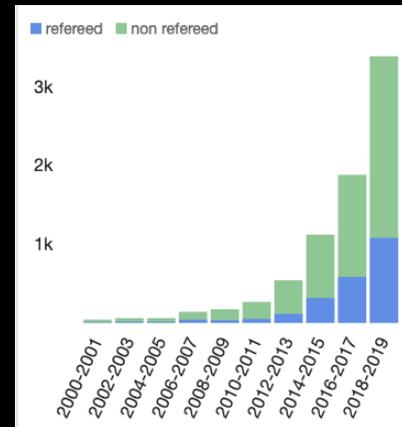
Machine learning*
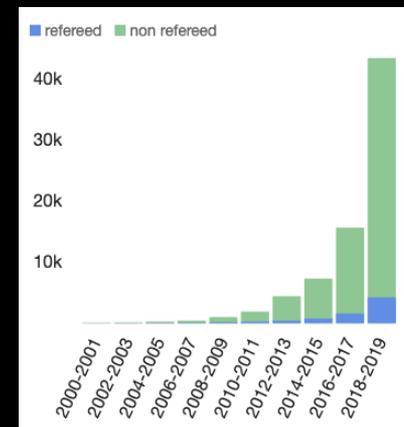
ADS-listed articles containing those keywords as a function of time

* Possibly biased by size of other scientific fields

Final recommendations from the CSP

- Always try to ask the question: how is the user going to use this?

- Try follow the user workflow to the paper and keep the big picture (is provenance clear? Can I explain/make a plot of this?)

- Connect to the future generation of users where they are: e.g. python, github, open source projects, social media, online open fora, connected to new big astronomy projects, using mobile devices and expecting quick answers

Refueling the CSP

- **New charter**

  - Proactively liaising with large upcoming projects
  - Involving active scientists in and out of the VO
  - Champions: individuals pushing for specific scientific use-cases (what do you want?)

- **Interested? Please talk to us !**

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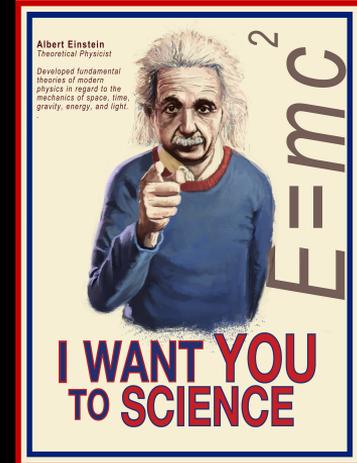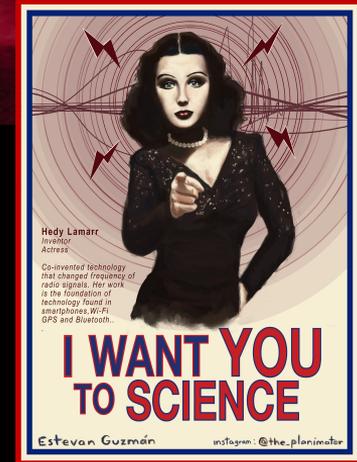
Thanks!

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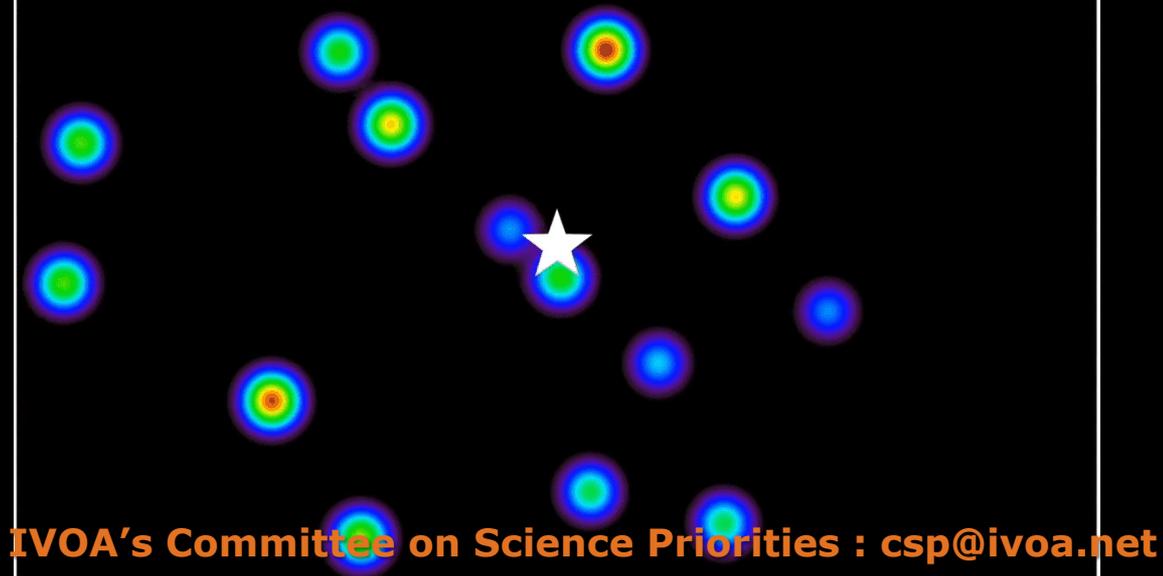
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