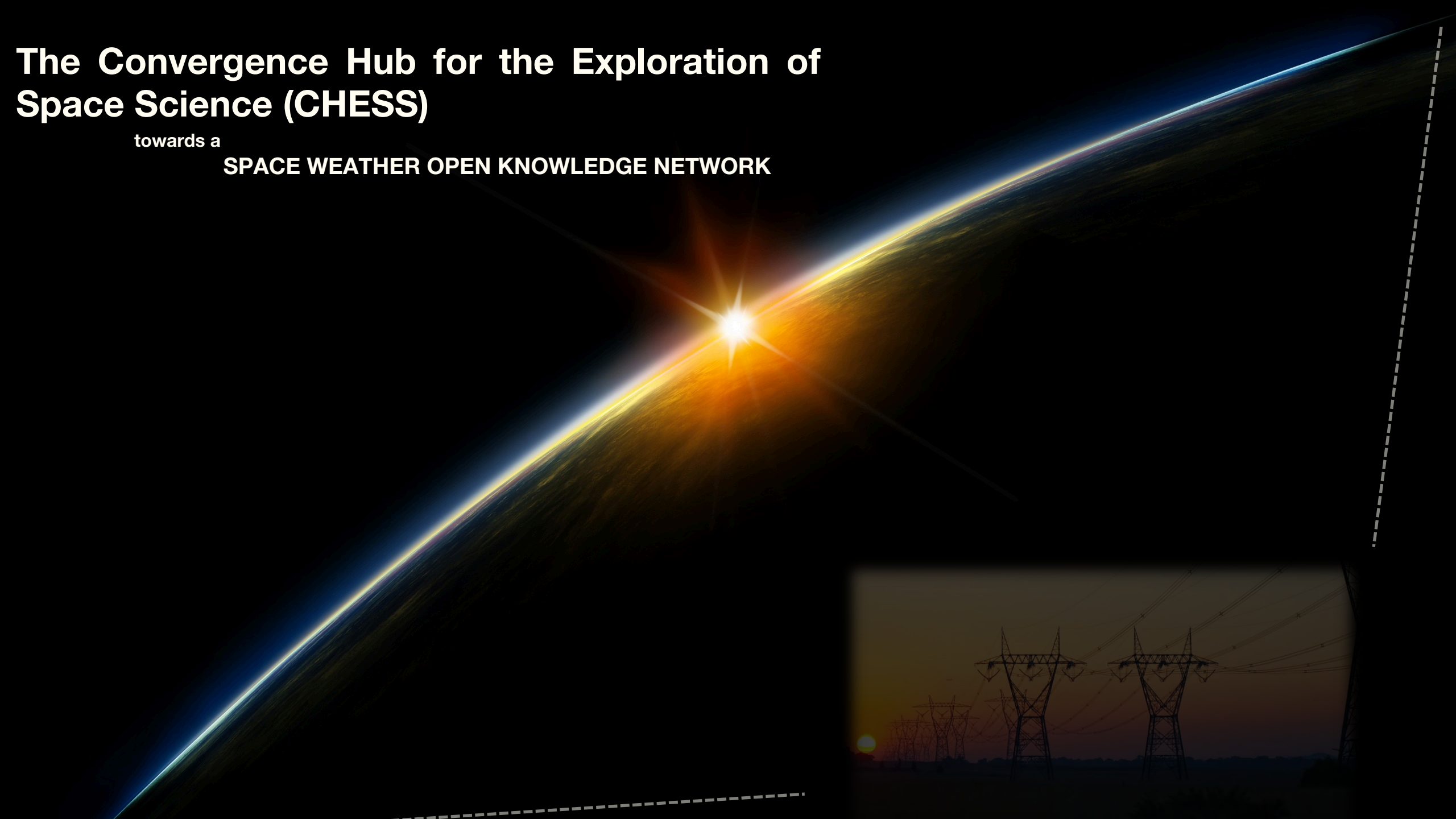
The Convergence Hub for the Exploration of Space Science (CHESS)

towards a

SPACE WEATHER OPEN KNOWLEDGE NETWORK



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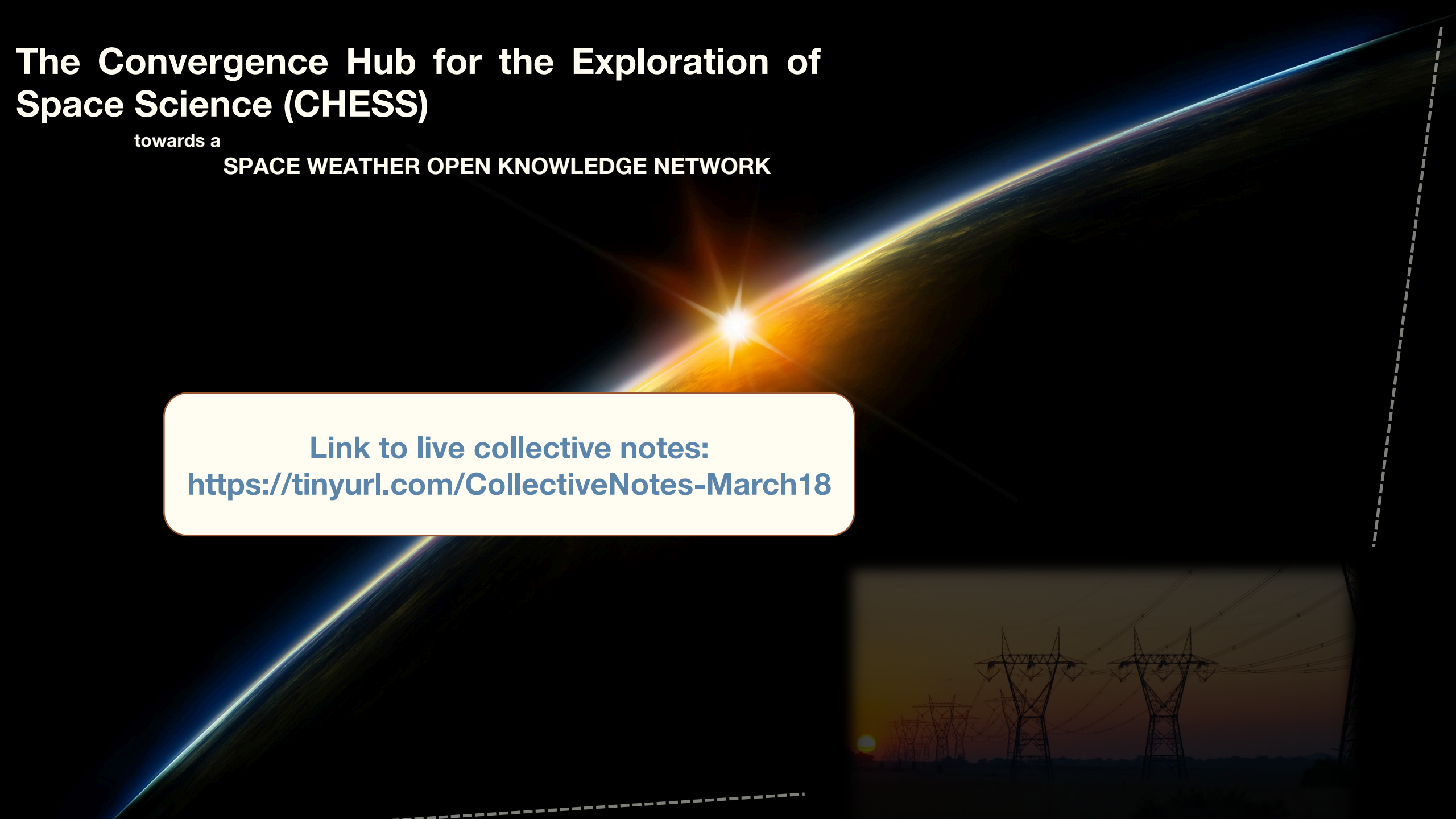
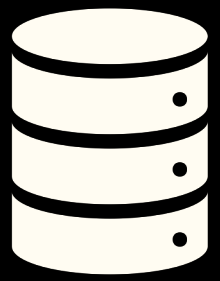


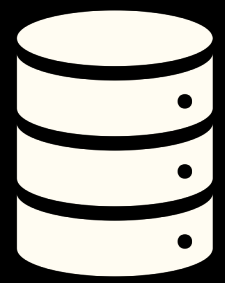
Link to live collective notes:
https://tinyurl.com/CollectiveNotes-March18



What is our Heliophysics challenge?

How do we realize the potential of data science for Heliophysics?

What is the new paradigm?



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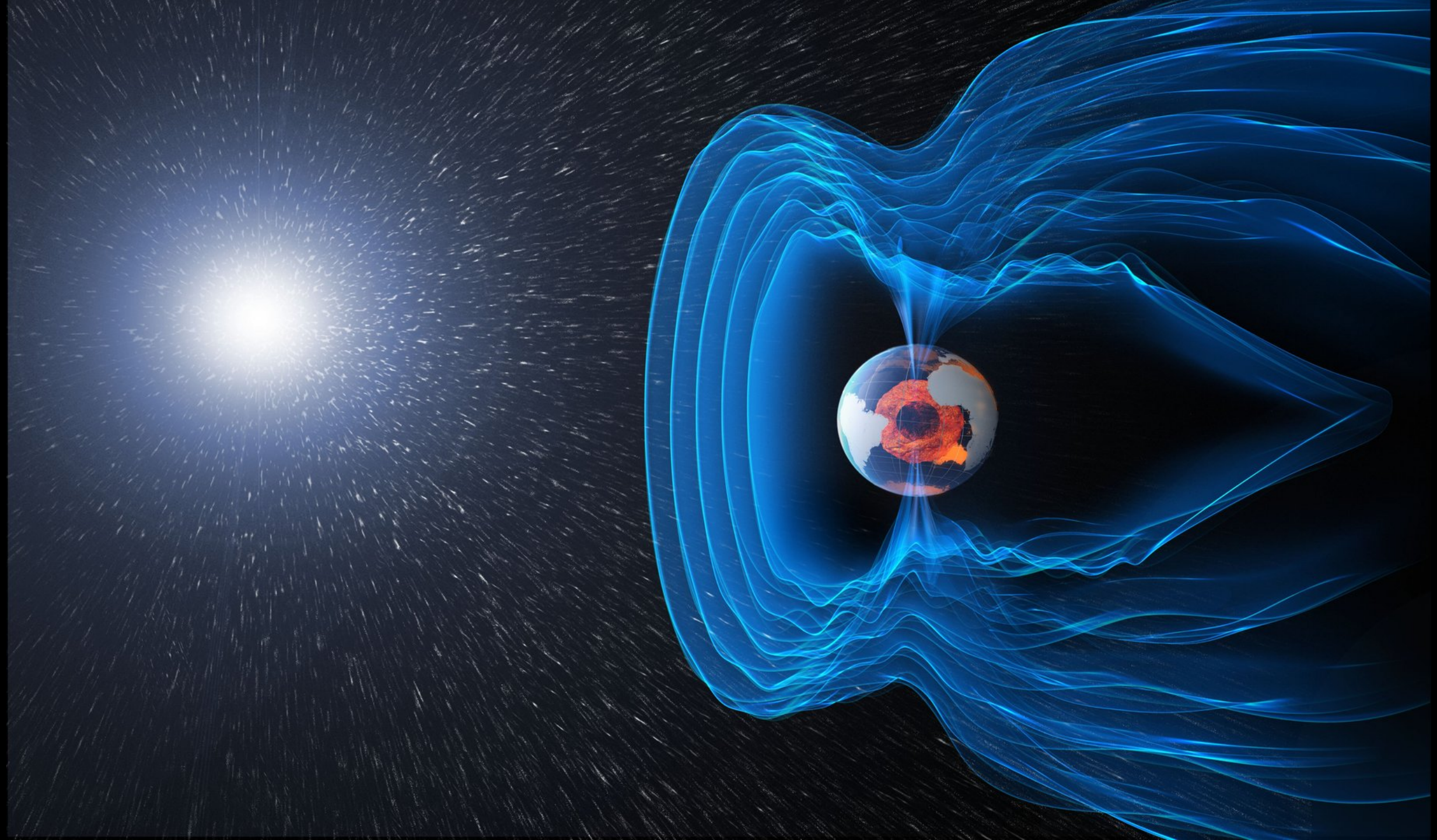
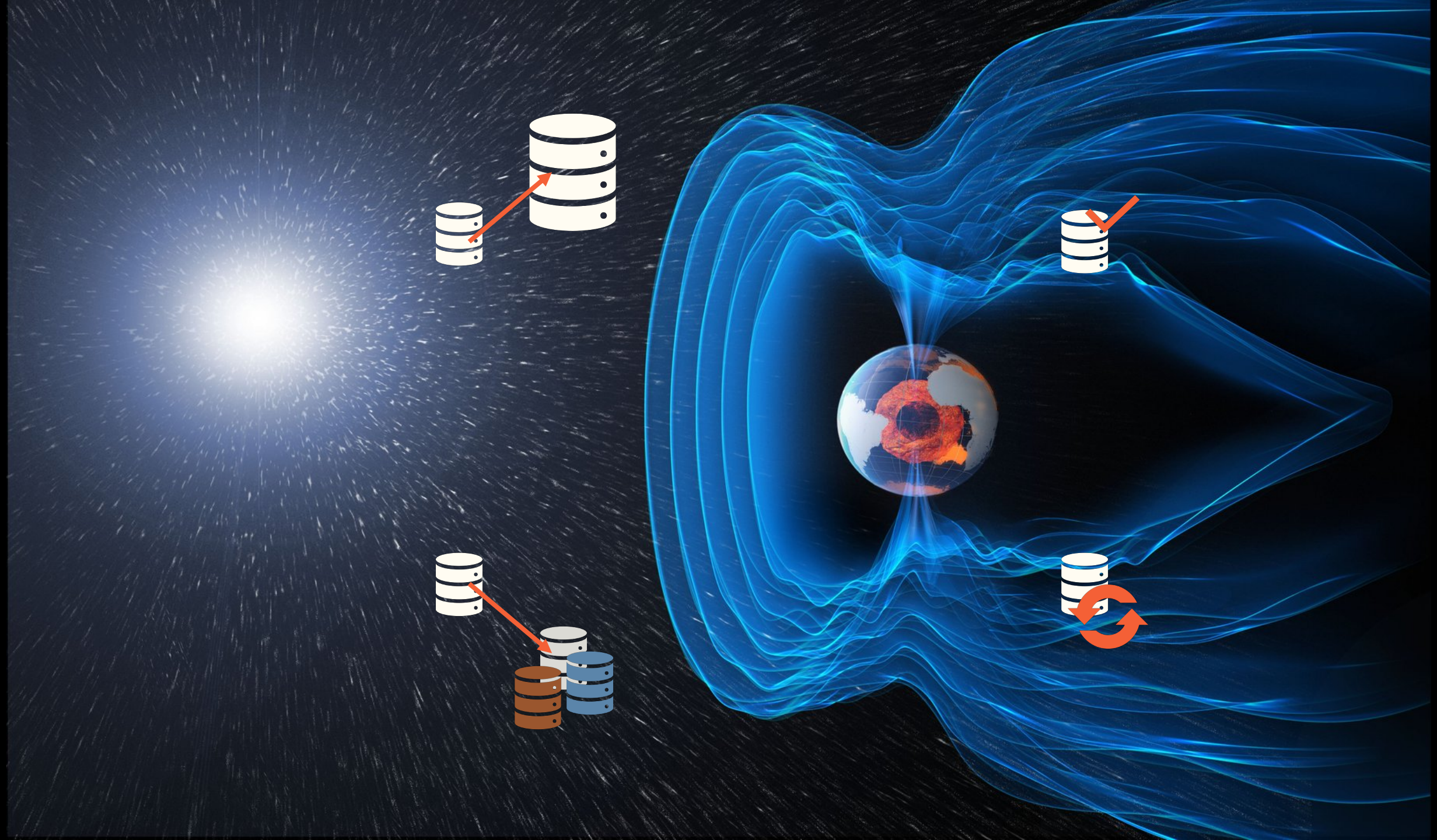
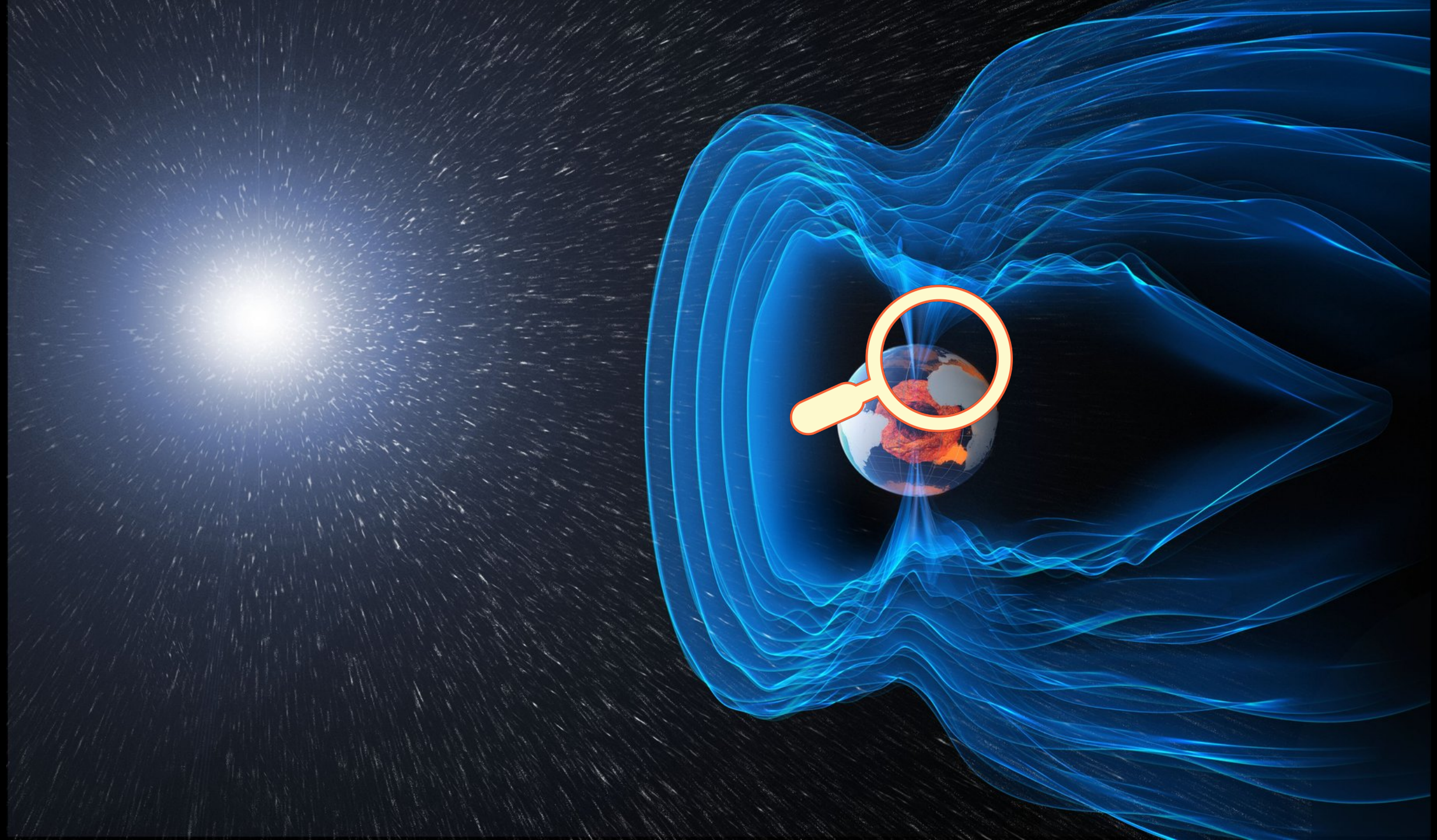
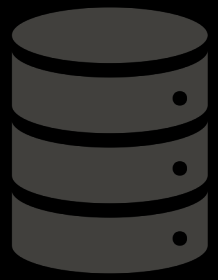




Discussion:

What is the challenge and opportunity of data science?

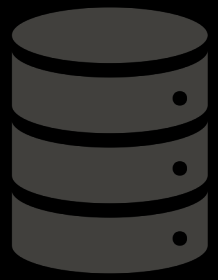




How do we realize the potential of data science for Heliophysics?

Interactive demo:

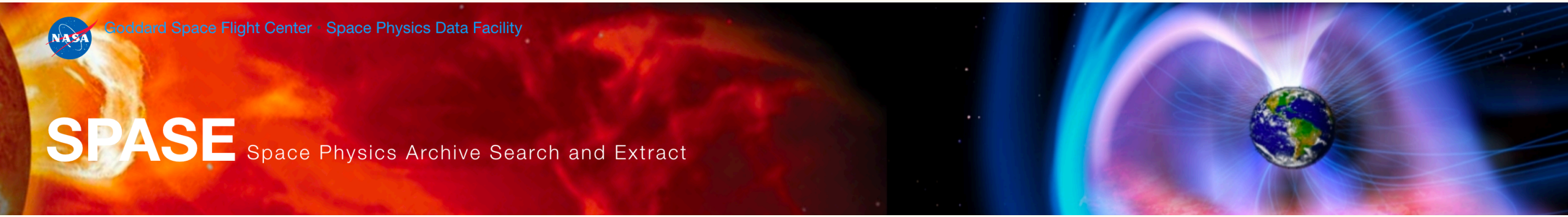
https://github.com/rmcgranaghan/NSF_CHESS.git



What is the new paradigm?

Integration with Space Physics Archive Search and Extract (SPASE)

Designing the infrastructure for the open exchange of Heliophysics data



http://spase-group.org

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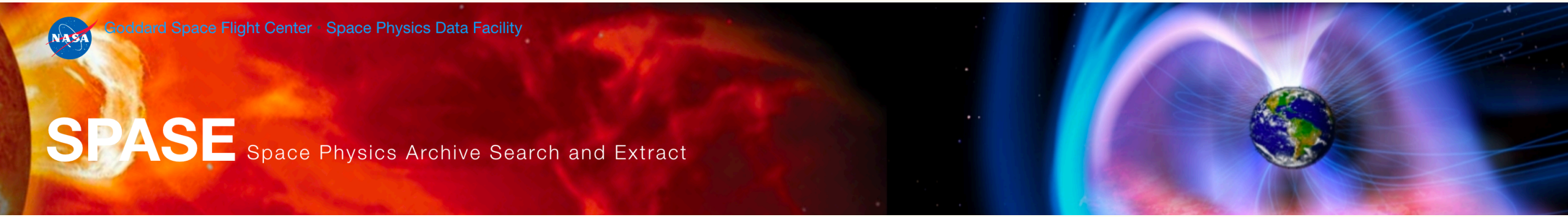

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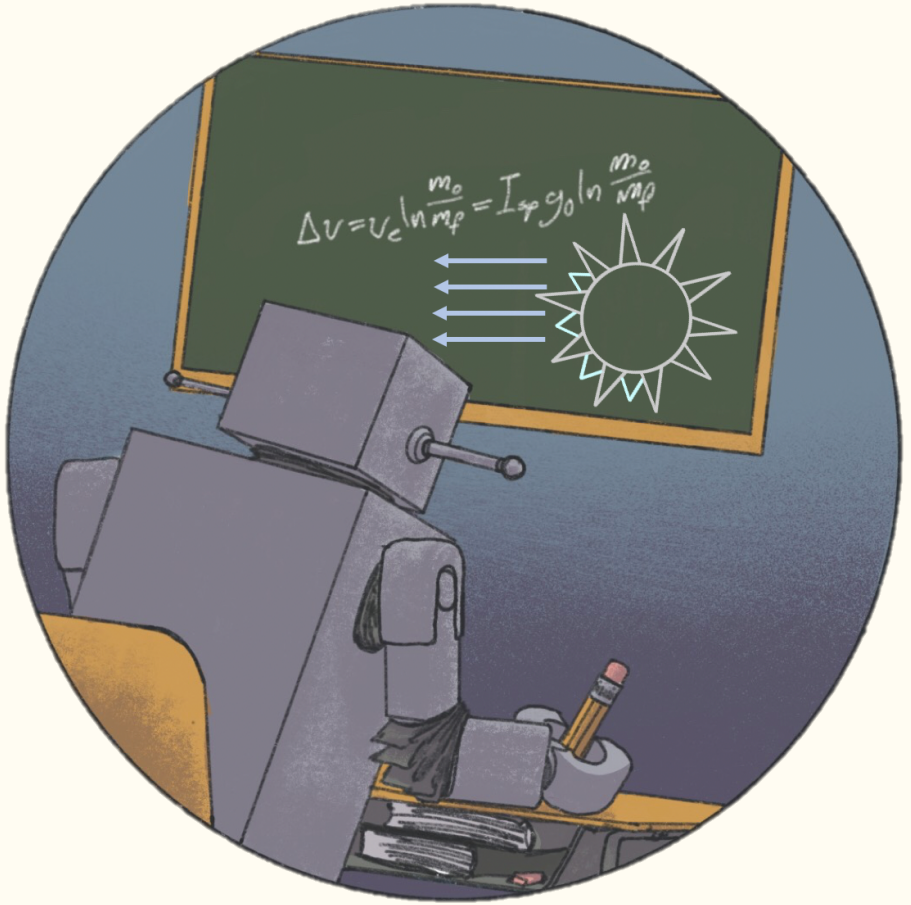
Discussion:

How do we enable diverse research efforts to link their data and results? How do we *use* SPASE?

The Center for HelioAnalytics

Attack, with modern methods, problems that we cannot attack otherwise.



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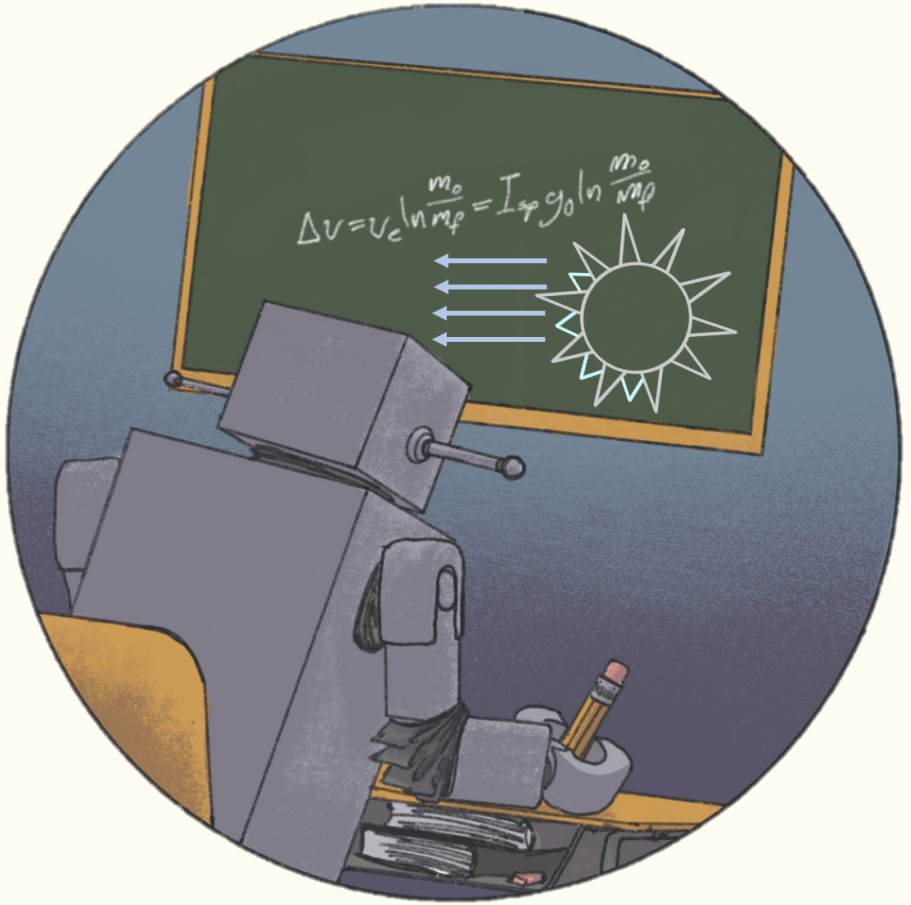

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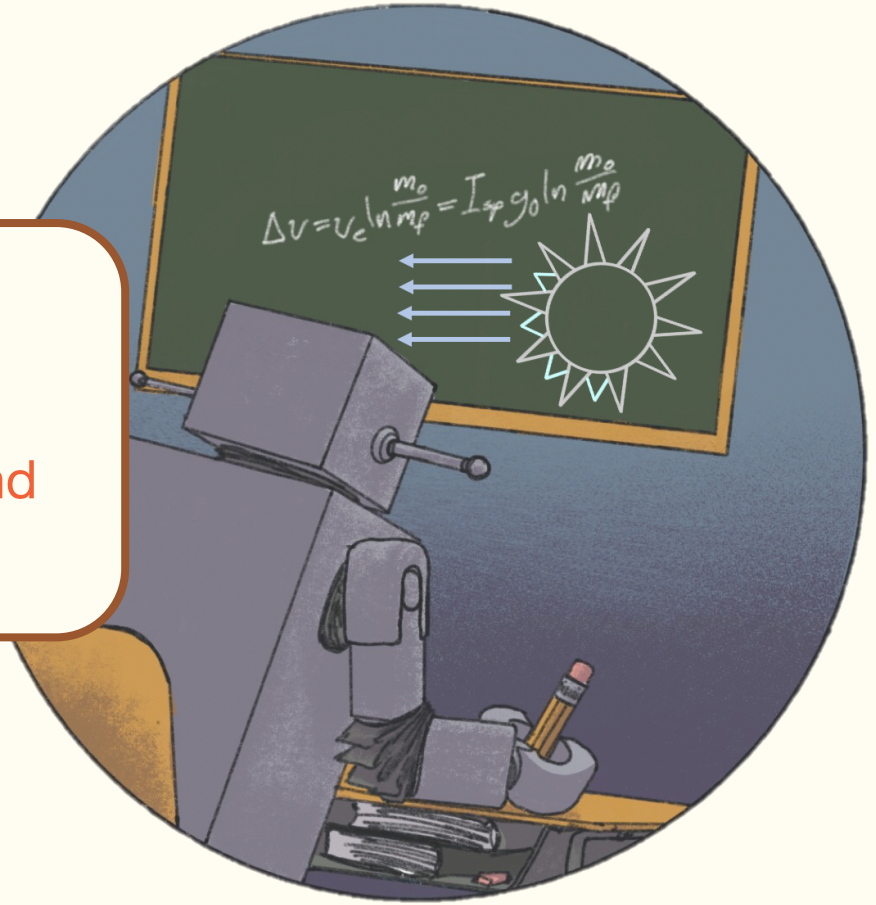
The Center for HelioAnalytics

Attack, with modern methods, problems that we cannot attack otherwise.

Discussion:

How can the Center for HelioAnalytics pioneer new connection (across data and across communities)?



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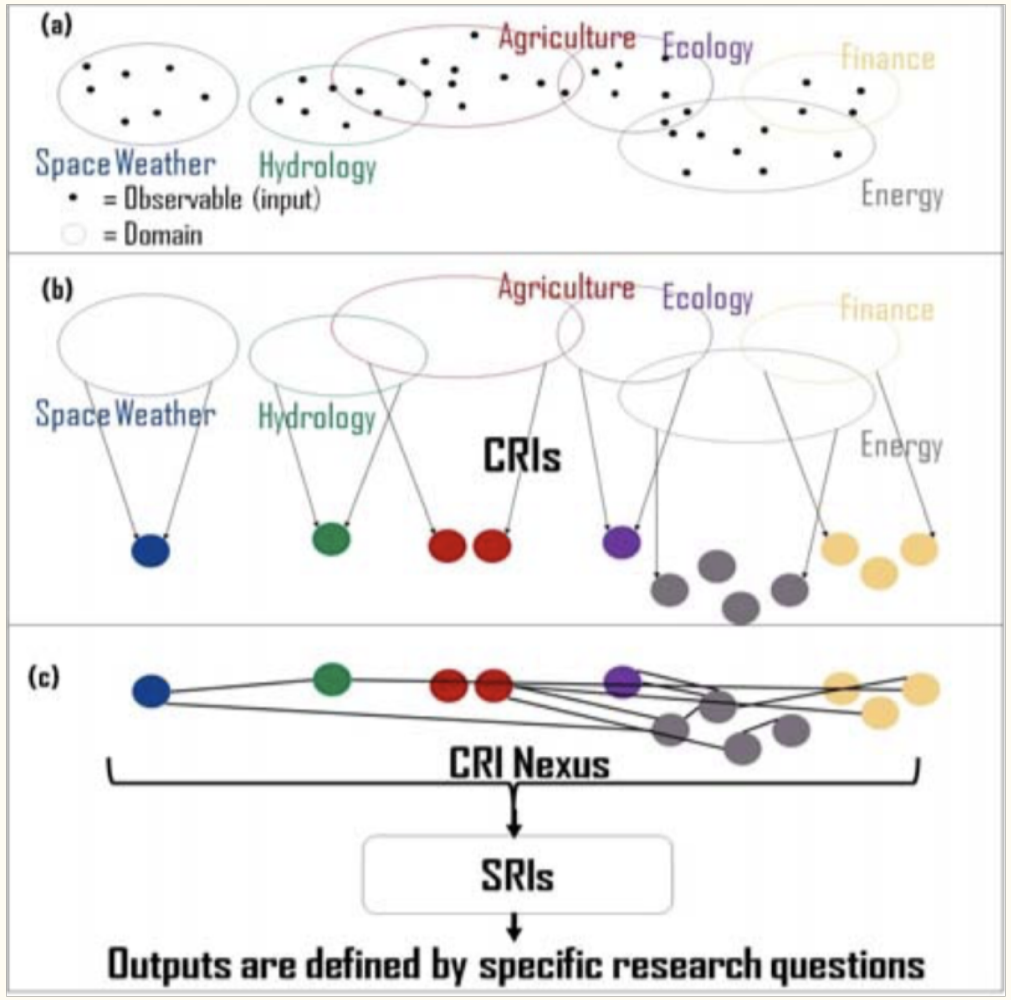
Predictive Risk Investigation SysteM (PRISM) for Multi-layer Dynamic Interconnection Analysis

Identify systemic risk for complex interconnected human-natural systems

Domains

Critical risk indicators (CRI)

Systemic risk indicators (SRI)



https://sites.google.com/view/prism-prj/home

Predictive Risk Investigation SysteM (PRISM) for Multi-layer Dynamic Interconnection Analysis

Identify systemic risk for complex interconnected human-natural systems

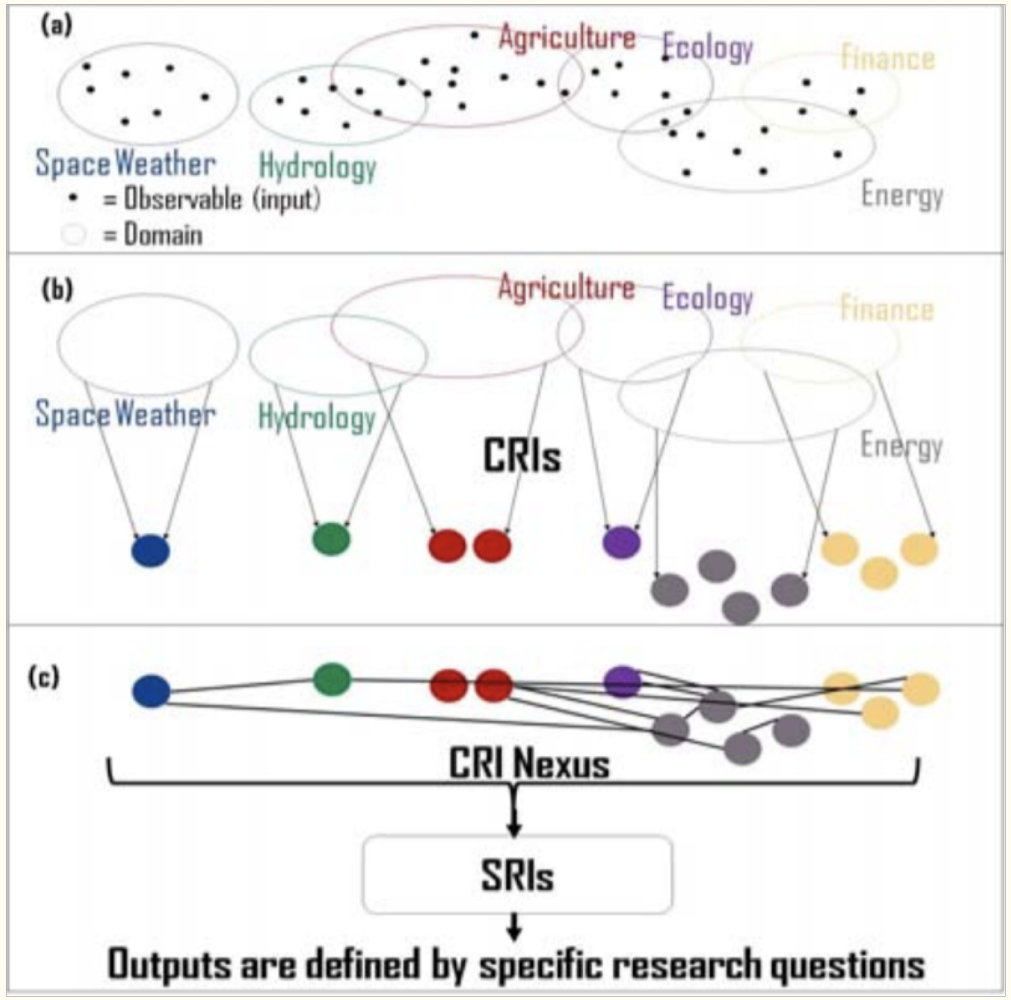
Discussion:

How do we conduct trans-domain (*anti*disciplinary) projects and collaboration?

hains

Critical risk indicators (CRI)

Systemic risk indicators (SRI)



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Contribute!

Center for HelioAnalytics

Resources:

- Data Science Tools & Resources
- Non-traditional funding sources

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RyanMcGranaghan.com

rmcgranaghan

Backup

Resources

- HelioAnalytics – Goddard Space Flight Initiative to "*harness advanced statistics, informatics and computer science methods to achieve science*"
- Thought-leaders:
  - Kirk Borne and on Twitter
  - Joi Ito
  - Cesar Hidalgo
  - Andrew Ng
  - Barbara Thompson
  - Naval Ravikant
  - Hilary Mason
  - *Expand your horizons with the papers that you read, the fields to which you pay attention, and the thinkers that you choose to learn from
- Compilations of resources
  - Non-traditional funding resources
  - Data science tools and resources
  - Data Science Success Stories from Science and Engineering
- Being 'antidisciplinary'
  - MIT Media Lab
  - Fall AGU Town Hall 2018: "Data Science and a New Scientific Frontier in Space Science"
  - Fall AGU Town Hall 2019: "Antidisciplinary: Science and engineering in the digital age"
- Podcasts
  - Origins
  - Microsoft Research Podcast
  - Grey Mirror Podcast
  - Voices from DARPA
  - Artificial Intelligence Podcast
  - Data Skeptic

Resources (cont'd)

- Camporeale et al., [2019]
- AGU Earth and Space Science Informatics (ESSI)
- National Research Council "Enhancing the Effectiveness of Team Science"
- Meetups, hackathons, and unconferences
- Open source communities (e.g., Open Source Initiative)
- Citizen Science
- Many resources to discover based on your own passions and search!