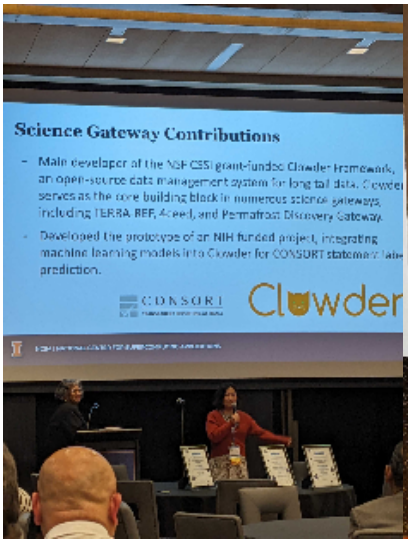
2023 - Science Gateways

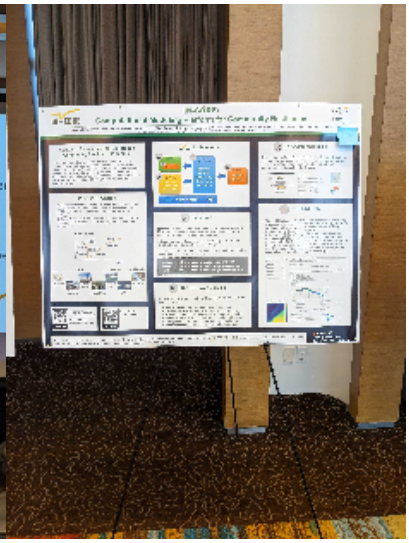
Attendees:

- Yong Wook Kim
- Chen Wang
- Jong Lee

I attended the Science Gateway Conference 2023, which took place in Pittsburgh from Oct 30 - Nov 1. There are two main purpose of attending this conference except general purpose of attending conference. One is to present the Socialmedia Macroscope project and the other is the poster session for IN-CORE. The number of attendees are around 130 according to a committee member. There was no parallel sessions so whole conference were held on in the one big hall for whole time without missing any sessions.

The presentation for SMM was the morning of the last day (Wednesday). We presented the project for about 15 min, and the presentation was very smooth. We introduced SMILE, and little bit of clowder and the future plans. Interestingly, we were the one of the two projects that used kubernetes for the work. There were two questions after the presentation, one was for how to handle the Reddit's api cost since Reddit has changed their policy of using the api since last summer, and the other was how to identify the users' and their interaction. The answer for the first one was that reddit is still okay for in our case since it was an academic purpose, and the answer for the second one was that SMM used cilogon for individual login and use the personal account for X and Reddit after logged in. One thing that I regret about the presentation was that it could be better to do demo instead of the explanation of the conceptual background. Unlike IN-CORE that requires some professional knowledge on the related field, SMM has way lower entry barrier, that probably almost any age or knowledge level can use and get interested, since most people knows X or Reddit and the user interface of SMM is easy enough to use. If we have another chance to present SMM, the live demo or at least playing video of demoing must be considered.





I believed that the poster session went really well. The main hours for poster showing was from 6:40 to 9 PM on Monday evening. There were many people probably around 15-20 people asked about IN-CORE. If I recall correctly, it was probably more people than last years AGU poster session. We (mostly Jong) tried to explain the project and answer the questions. Poster session time was also free drinking hour at the same place and I thought that it helped to attract many people to come and spend time looking at posters and asked questions.

IN-CORE: Computational Modeling Platform for Community Resilience

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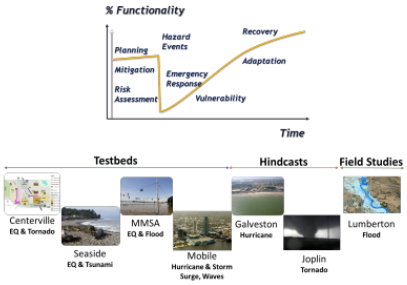
Center of Excellence for Risk-Based Community Resilience Planning

The National Institute of Standards and Technology (NIST) has funded the multi-university Center of Excellence for Risk-Based Community Resilience Planning (CoE) since 2015, headquartered at Colorado State University, to develop the measurement science to support the community resilience assessment. The development team at NCSA has developed the IN-CORE platform working with all members of CoE.

What is IN-CORE?

- Measurement science of resilience is implemented on the platform.
- It incorporates a risk-based approach to decision-making that enables quantitative comparisons of alternative resilience strategies.
- On the platform, users can run scientific analyses that model the impact of natural hazards and resiliency against the impact on communities.

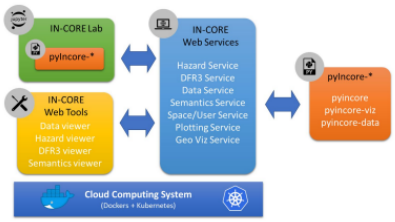


IN-CORE Website
https://incore.ncsa.illinois.edu
SCAN ME

Support Email
incore-dev@lists.illinois.edu

Sign-Up a Free IN-CORE Account
SCAN ME

IN-CORE Architecture



pyIncore-*

pyIncore is a Python package to model the community resilience. It allows users to perform various analyses and provides classes to communicate with the IN-CORE Web Services.

pyIncore-viz is a package contains methods to generate various visualization including charts, tables, and maps.

pyIncore-data is a package contains methods to manipulate data into compatible data for IN-CORE analyses.

```
> conda install -c in-core -c conda-forge pyincore
> conda install -c in-core -c conda-forge pyincore-viz
> conda install -c in-core -c conda-forge pyincore-data
```

IN-CORE Web Service

IN-CORE uses a service-oriented architecture (SOA) with a RESTful Web Service API:

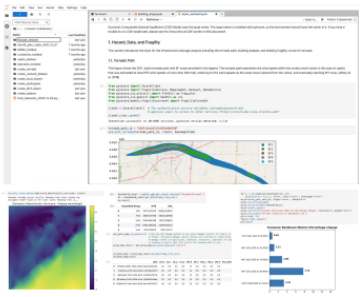
- **Data Service:** manage the data and related metadata
- **DFR3 service:** fragilities and fragility mappings. Given a set of infrastructure attributes, the service can find a matching fragility.
- **Hazard Service:** creating model-based or data-based hazards, including earthquakes, tsunamis, tornadoes, and hurricanes.
- **Semantics Service:** manage the definition of dataset types

IN-CORE Web Tools

The web front-end provides the user interface for interacting with the web services. It enables users to browse and search the datasets, hazards, fragilities, dataset types, view the metadata and visualizations, and download the datasets.

IN-CORE Lab

- The IN-CORE Lab on JupyterHub provides a web-based working environment for multiple scientific research users. JupyterHub is a multi-user Hub which spawns, manages, and proxies multiple instances of the single-user JupyterLab.
- Python is enabled and the pyIncore libraries along with a few popular scientific libraries, are preinstalled. Custom components such as the IN-CORE login plugin and IN-CORE Web Tools plugin improve the code writing experience of the users. Code consoles and Kernel-backed documents provide transient scratchpads for running interactively with full support of rich output.



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There were various Keynotes and presentation that helped me to understand more on Science Gateway. The keynote addresses were especially inspiring like, the role that science gateways play in accelerating research across various disciplines by reviewing past and picturing the future of scientific collaboration, or how to assemble or construct scientific information or knowledge to be more accessible to public, or how to collaborate to transfer the scientific information. There was the keyword in most of speeches , "The User". I got an impression that the common keyword for science gateways should be "The User" and it must be considered as one of the highest priority in building it. One sentence from the presentation that deeply impressed me was "focus on the user then everything will follow" and I will try to remember this.

One thing that I think could have been better was that length of the technical sessions that was around 15 minutes. There are many technical sessions that include our SMM project and others but 13-15min is not enough time to introduce the project and answer the questions. For example, there was a technical session for TAPIS that I thought it was pretty interesting. The presenter from Texas Tech University introduced it and the point that got my attention was the similarity to Kubernetes. There was a question about what are the differences between TAPIS and Kubernetes and the answer was Kubernetes was not fun to mess with and docker is easier to use, like easier to set up ingress and others, also it was plug and play. But he also mentioned, when answering other question regarding the scalability, that TAPIS was on top of kubernetes and there were not much explanation about that. Also, there was no more time for asking questions so I was not able to ask follow up questions. There was one session that showed of using Kubernetes, Again, I was trying to ask a question but I was not selected because the lack of time and the next session should be started. So I had to approach to the presenter later and had to ask questions. Consequently, since the session time was so short, it was hard to get enough information about the project and it was also hard for us to provide enough information to the audience either. Likewise, some other sessions just show the live demo, but not much explanation about how the things going on behind. Or just focused on how their project created without showing any examples. SMM also focused on conceptual side but it could be better if we did some live demo that could attract people way more than just explaining. At least to me, even making technical sessions to parallel sessions, making the session time longer could be much beneficial even though some session will be missed, at least it would be possible to get enough information about the project.

Other thing that I expected was that I wanted to hear more about how AI impacted on science gateway, but there was not much sessions or posters.

The conference was held on the second floor of casino building and casino was fully filled with smoke from Tabaco and Vapes, interesting. The city was beautiful and the season made all the trees look very colorful and the topography was very different from Champaign area so it was very pleasant visually. The hotel located right by the Steelers football stadium and was able to see so many people since there was a game when we got to hotel. The food was amazing. Probably the best food I've ever had in any conference. Overall, the accommodation was really good and satisfied.

Finally, I would like to thank to NCSA to give me this opportunity and also thanks to the organizers, speakers, and fellow attendees for making this conference a memorable and productive experience. I am not very sure if I participate Science Gateway again but I definitely look forward to the next opportunity to join another conference.