# Exploring NCAR's Campaign Store with Elasticsearch

## How much can we know about 120 PiB in a summer?


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## BACKGROUND

### NCAR Campaign Store:

- Resource for medium-term storage of project data, typically for three to five years, by NCAR labs and universities
- Large volume (120 petabyte capacity, 90% currently being used)

### Application:

- Java-based web application that utilizes Elasticsearch, Kibana, Spring Boot, Java FileVisitor interface to index files and directories

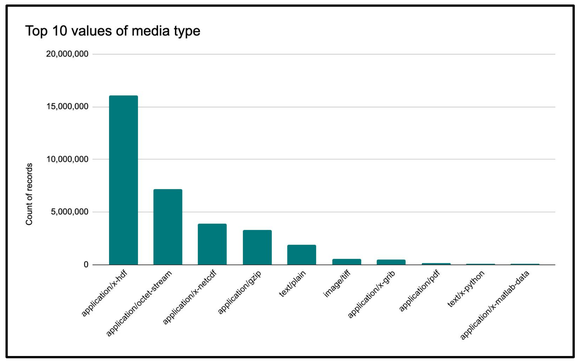
### Long-term goal:

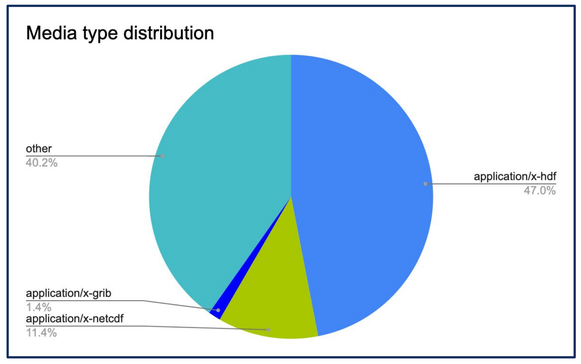
- Facilitating data searching within Campaign Store for NCAR scientists

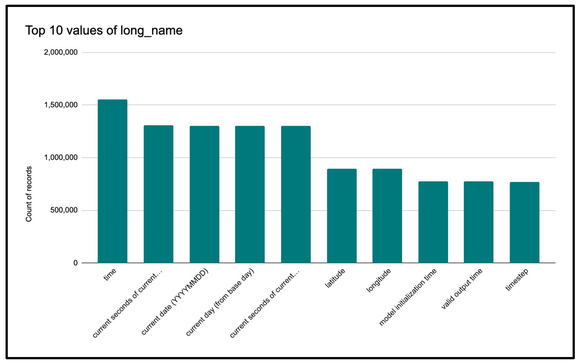
## OBJECTIVES

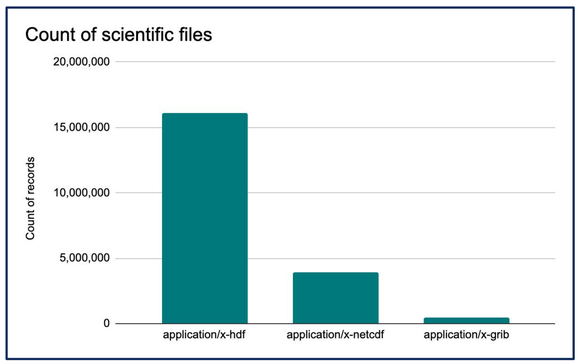
- **Index** : Index selected directories that contain a lot of scientific data
- **Restart** : Implement ability for file walkers to keep track of progress and restart
- **Update** : Improve efficiency of media type updates
- **Explore:** Explore scientific metadata extraction from NetCDF, HDF, Grib files

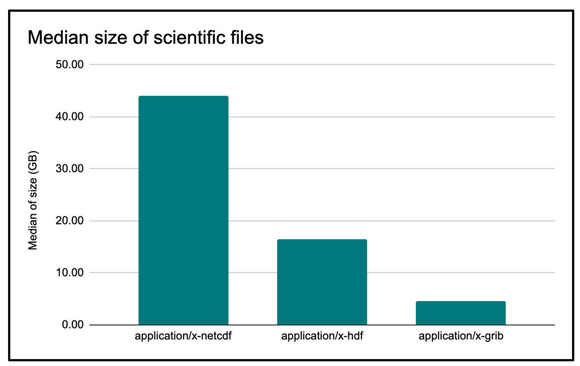
## FINDINGS

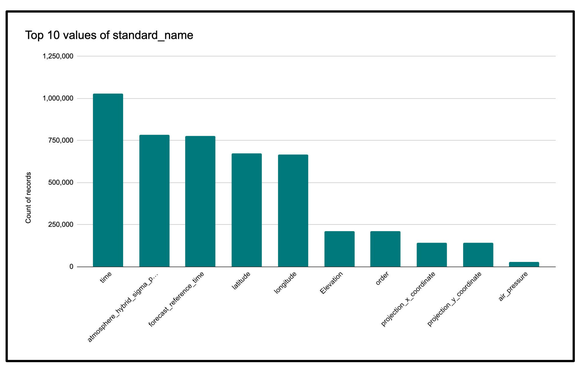


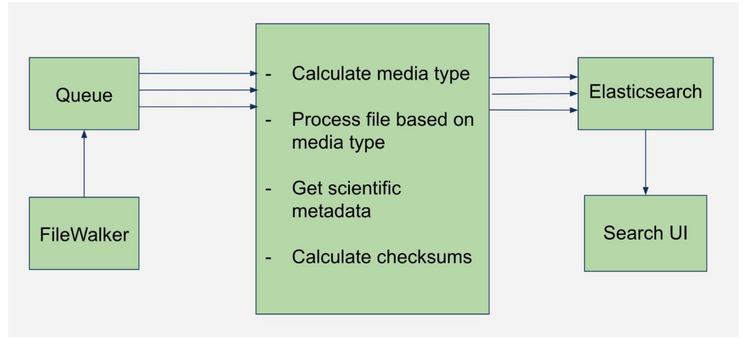




## CONCLUSION

- Implemented restart ability for the file walkers
- Indexed **486,899,650** files and **13,075,066** directories (**~37.1 PiB)**
- Calculated media type for **36,262,238** files, with max speed **120,000 updates/hr**
- **152** unique media types, **21,722,204** are hdf / netcdf / grib
- Checked **2,657,132** files for selected scientific metadata

## FUTURE WORK

- Adding functionalities and increasing efficiency





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