

# 2020-10-15

Yannick opened the meeting announcing that today's meeting will be a general update. We then proceeded to hear updates from the five JEDI AOP categories.

## JEDI1 - Infrastructure

Mark M presented the following summary.



In addition to the summary, Mark M added that the CI containers and development containers scheduled for the release have been updated with the dependencies necessary for the new ioda-engines system (hdf5 1.12.0, pybind11, gsl-lite) along with the cgal package.

Mark O added that the NRT H(x) GEOS flow is close to working. He explained that the performance issue mentioned in the summary is with the concatenation of the ioda output netcdf files, and was adequately addressed by organizing the process in a tree structure that concatenates no more than 30 files at a time. This solution is in a stand-alone tool in jedi-rapids called "netcdf-concat" that can be used on its own outside of jedi-rapids. As a result of repairing this performance bottleneck, the NRT flow can now accommodate hyperspectral instruments such as IASI and CRIS.

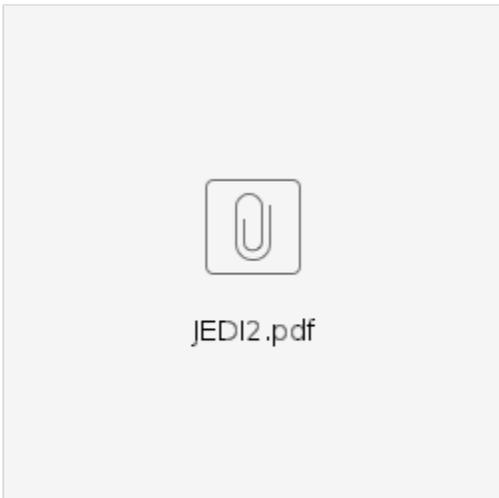
A discussion occurred about whether MPAS was ready for the ATLASIFIED control to be removed. The consensus appeared to be that MPAS was indeed ready, but this should be verified.

Chris S announced that NCAR was starting a project to re-work their workflow scripts, and that they are interested in EWOK. Chris asked when it would be a good time to start engaging with the EWOK development, and the response was immediately after the release is out.

At this point Yannick asked everyone, if they haven't done so already, to update their GitHub profiles with their "organization" name. This is needed for reporting purposes and the next quarterly report is coming up soon (Thu, Oct 29th).

## JEDI2 - Observations

Ryan presented the following summary.



The JEDI2 summary was compiled on Oct 7th, so Ryan added an update that the ObsSpace refactoring (based on ioda-engines) will not be included in the upcoming release. However, it will be merged into develop soon after the release. There is a pull request in ioda for the ObsSpace refactoring which has been validated on most HPC systems with ioda, ufo and fv3-jedi tests passing. Two issues (one performance related, the other a functional issue) did surface while testing with the Near Real Time system. Work to resolve both of these issues is underway.

Ben J commented on the importance of the multi-dimensional variable feature of ioda-engines noting that IASI has 17,000 channels and it will be infeasible to continue with the one-variable-per-channel scheme in the current ObsSpace. Yannick responded that work to enable this feature in JEDI will begin immediately after the release.

Sergey added that the creation of one ioda output file per MPI process is another issue that needs to be addressed soon, since it is becoming more common to generate many output files (on the order of 1000's) per obs type now.

## JEDI3 - Models

Dan presented the following summary.



Dan added that Mark M now has access to the NRL system (Gaffney) and is assisting NRL with NEPTUNE Atlas-ification.

Anna asked how the time interpolation is implemented and Steve S responded that they are using the UFO interpolation. Anna suggested using the generic `getValues()` interpolation instead since it should offer higher efficiency. Steve S will work with the JEDI core team to make this switch.

## JEDI4 - DA Algorithms

Anna gave a summary of JEDI4 work.

- Merged a set of PRs that lay the groundwork for more parallelization in 4D EnVar DA runs.
- Benjamin
  - Removed the ensemble deep copy from BUMP/SABER which resulted in a significant memory usage improvement
  - Added plotting to SABER
  - Has an Atlas PR in the works which will cause slight changes in model results
- NRL
  - Sarah completed the Static-B work and will be integrating into NEPTUNE next
- UKMO
  - Marek is working on UM updates related to SABER and Atlas
- Clementine
  - Merged ensemble applications PR
  - Has PR under review that allows different ensemble members to apply different thinning filters
- SOCA - LETKF
  - Travis has merged several QC updates, plus is working on fixing memory issues with large observation counts
  - Sergey has a PR under review which separates the Observer and Solver components
    - This allows the Observer to utilize the round robin MPI distribution, while the Solver utilizes a halo MPI distribution
  - Helen is working on an improved halo MPI distribution method for observations
    - Currently a halo distribution is being supplied with an inefficient method that reads in all observations to every MPI process, and then strips away the observations located outside their halo.

## JEDI5 - Training & Support

Yannick gave a summary of the JEDI5 work.

- Release
  - Successfully completed two code sprints: documentation and testing
  - Putting in final touches for the release

- Still have a number of open PR's for documentation
    - These will get addressed next week
  - Tomorrow is Migration Day where we stage the public and private organizations for JCSDA on GitHub
- Academy
  - The first of two planned academies will take place shortly after the release
    - Currently targeted for the week of Nov 16th

## General Discussion

At this point, Yannick opened the floor for general updates and discussion from the group.

Mark M gave more details about the GitHub migration planned for tomorrow.

- Any branches on the current repo that are older than 3 months will be removed with the exception of branches that have been "claimed"
- After the migration, there will be two JCSDA organizations
  - jcsda
    - Will be made public on Oct 28th
    - Current develop, master branches in all repos that are going public
  - jcsda-internal
    - Private
    - Rename of the current JCSDA organization
    - Repos that will be going public will be renamed "repo-old" (eg, oops-old, ufo-old, ioda-old), and replaced with forks of the public repos
      - The forks will also contain the feature branches that remained after the pruning
    - Repos that will remain private (for this release) will remain as is
  - Initially everyone will have the same access to the private organization as before
- As a result of the organization rename, you must reclone your local repos
- All open PRs will be closed and the authors will need to re-open them after the migration
  - We want the authors to re-open the PRs so that they remain the authors of the new PRs
- ZenHub
  - The boards may or may not be up to date on Monday
    - May take an extra day or two to get back in sync after the rename
  - Won't lose issues, it's just a matter of getting them copied correctly
    - ZenHub is helping us with this process

There were no more discussions at this point. Yannick reminded people that they could prepare their Quarterly review bullet items tomorrow while the GitHub repos are offline (during the migration). He then closed the meeting.