

2022-09-29

Presentation by Francois V on CRTM 2.4 transition



CRTM

- Successful 3-weeks trip to MetOffice, goal was to enable CRTM and RTTOV to intercompare
 - Report due end of October
- Support for 2.4 release in JEDI
- ATMS instrument coefficients for the JPSS-2 satellite are now also available and work on updated GEMS-2 cubesat coefficients is ongoing with Francois V.

OBS

- Ingest: query/cxx (compatibility with NCEP bufr lib) - all PRs are in, unblocking a lot of other PRs
 - Can now use NCEP bufr output files directly
- Obsproc: Work on CRTM changes
- Obsproc: Three OBS members visit to Austria for the IROWG (international Radio Occultation Working Group) meeting (Hui)
 - one of the results: compare legacy (gsi) observation error configuration in JEDI for RO data assimilation, find significant improvements using a new estimated error (using the three-cornered-hat method) and a change to the way of observation error being used. The results might be relevant to operational applications. This also could be a skylab feature in the future.
 - use skylab to expand research capabilities in the future
- Does new observation error require any techniques hook up directly with IODA or more infrastructure needed
 - Can use directly with JEDI, able to read netCDF files
- How different are the errors when compared with what the MetOffice uses?
 - Our experiments compare mainly against GFS
 - Did some comparison against RO obs errors from other agencies, which shows mostly the difference for lower and upper levels. The new method shows benefits with variability in latitudes and with seasons
- Discussion between Ricardo, Ben and Hui regarding the obs error tuning for specific applications. Ben proposed a follow up discussion offline. since more details about this implementation were discussed in a separate international working group meeting for obs errors.

SOCA

- Finished everything for skylab-v2
 - 3dvar 0.25 degree working with full set of obs (ice, marine)
- Start picking up on hybrid envar for next quarter
- Forward operator for PACE/OCI ocean color: Working on the non-linear forward operator for ocean color (OASIM) in UFO, which should be ready in a couple of weeks

COMPO

- Ready for the release, added MOPITT CO experiment for skylab-v2
- Started working on tasks for next quarter

JEDI Infrastructure

- spack-stack-1.1.0 release almost ready, final bug fix and documentation updates going in this/next week. release branch release/1.1.0 can be used to install on local laptops or HPCs until the tag is created
 - This release contains four CRTM installations, 2.3 emc/jedi and 2.4 emc/jedi; 2.4 versions are the default
 - Current installation progress on HPC can be followed in the skylab-2.0 JEDI release repository tagging spreadsheet <https://docs.google.com/spreadsheets/d/1wyNbCgUo0ncXJHCQqSXIXqt7XpiCMIhgXliiduu3vOtU/edit#gid=986508819>
- spack-stack ported to Narwhal, so far successful compilation of jedi-bundle but errors on exit (known problem when OpenMP is enabled, working with NRL on a solution)
- Asked NG-GODAS operational folks to switch from the testing spack-stack to the new spack-stack-1.1.0 install on Gaea so that the old test installations can be deleted
- New CI containers and new public containers (Docker, Singularity) based on spack-stack-1.1.0 were created and pushed
 - Currently on S3 for testing, will be pushed to sylab after testing is completed
- jedi-cmake PR that requires a recursive checkout was merged last week
 - We missed to update the saber repo but Benjamin M. followed what we did and fixed it
 - Problems on hera (Guillaume Vernieres to work with Dom) - will be solved by new spack-stack
- R2D2 and EWOK changes for skylab-v2 release being finalized
 - basic job metrics collection
 - final decisions on the skylab experiments for the release will be made next week
- IODA writer PRs to create single file merged into release/skylab-v2 branch (ioda, ioda-data)
 - so far one error report from Michael Cooke that it's not working as expected, Steve H. currently investigating
- Progress on AWS parallelcluster runs of skylab, sorting out some technical problems with AWS tech team
 - These are using the JCSDA-USAF account in us-east-2
 - Currently transferring R2D2 data to this region (from hard iron) to avoid inter-region egress costs

JEDI Algorithms/Interfaces

- Finalizing the Skylab v2 atmosphere experiment, goal is EDA with 3DFGAT with ensemble covariances.
- SABER blocks refactoring to make them not templated on MODEL and to pass correct geometries and variables between the blocks (important for interpolation and variable change blocks). Work in progress, it will affect yamls and some test references, but not increments (look for announcement on jedi-models page). ATTACH: [saber-blocks.pdf](#)
- Interpolation: improved accuracy in oops::UnstructuredInterpolator, and similar accuracy in AtlasInterpolator (can be used for non-PointCloud functionspaces). Work in review, it will affect test references (look for announcement on jedi-models page). Work in progress: global interpolators that can be used e.g. for resolution change. ATTACH: [interp.pdf](#)
- VADER: linear variable changes in vader (work in progress). Tentatively a code sprint the week of November 7th, with the goals of the sprint to:
 - The goals of this code sprint are as follows:
 - Ensure that all participants have code in their respective model's VariableChange and LinearVariableChange classes to call the VADER methods and use its recipes.
 - Ensure that VADER contains at least one recipe that is of use to each model.
 - Code as many VADER recipes as possible, prioritizing those that will be of use to the greatest number of models.
 - Contact Steve Vahl if you are interested but have not received an invite yet.
 - Merged: hybrid TLM option with tests in the QG toy model.
 - Work in progress on JEDI-EDU for tutorials with QG and non-cycled 3DVar/4DVar.



saber-blocks.pdf



interp.pdf