

2021-12-02

General announcement: New hire Dom - new lead for JEDI 1. Welcome!

JEDI 1

Maryam:

- CI for ops-um-jedi repository is ready now.
- CodeBuild nightly builds for fv3-bundle is almost done. I have a PR in fv3-jedi for review and I am currently working on addressing the comments there.
- started working on CI for jckit repos, adding 3 CodeBuild projects (similar to other repos) based on intel, gnu, and clang compilers.

Rick:

- Cheyenne and casper: new conda module for Python
- Existing python modules are deprecated. In my opinion, it's advisable that a JEDI 1 person have a look at the stack on these hosts and try to create a new stack with the supported conda module.

Steve:

- PRs set is under review that adds in the epoch style datetime representation:
 - Metadata/dateTime variable
 - Offset time in seconds
 - Attribute "units" that defines the epoch - "seconds since <iso 8601 format string>"
 - Ref/offset:
 - "date_time" global attribute
 - Metadata/time offset in hours
 - String:
 - Metadata/datetime variable with ISO 8601 strings
 - <https://github.com/JCSDA-internal/ufo/pull/1683>
 - <https://github.com/JCSDA-internal/ufo-data/pull/90>
 - <https://github.com/JCSDA-internal/ioda/pull/525>
 - <https://github.com/JCSDA-internal/ioda-data/pull/57>
 - It is backward compatible (works with current fv3-bundle develop branch with no modifications, there is a dummy PR in fv3-jedi: <https://github.com/JCSDA-internal/fv3-jedi/pull/330>)
 - Epoch style representation consists of:
 - We will be deprecating the existing datetime representations
 - Ioda output files have only the epoch style datetime (variable: Metadata/dateTime) which may impact diagnostic tools
- Work is in progress on completing the Fortran API for ioda
 - Consist of PRs to the new jckit repo, and to ioda
 - Will have the "look and feel" of the ioda C++ API

JEDI 2 and 3

Yannick:

- Status of get values refactoring to speed it up: for now everything is in new branches and the work is progressing.
- Will need all models to adapt: as of now the latlon is passed to create a global k-d tree, but we'll also need a local k-d tree on each task containing the halo points. There will be a new argument in the routine to pass this, and this 2nd k-d tree is necessary for now but in the longer term models can do without (if they have their own search method). There will be other changes but that's the first one.
- We will start having mini-code sprints to add these changes, on Thursday after the weekly meeting (like the 'not a meeting' we used to have). 1st meeting is today!

Ollie asked if the local kd-tree is necessary when they already have their own search method. Yannick replied that it will be best to do the local kd-tree now to enable the development path (for all models) to the long term solution. Once there, then the decision can be made whether to keep the local kd-tree.

Steve V's:

- PR in oops refactoring the change of variable, published in the JEDI models and will do a presentation about it on Monday 6 dec. The models will need to adapt (fv3-jedi + UM Jedi are done already). If you don't have access to UM and you need to see it let me know.
- Office hours or sprint to help, we plan to merge in about 2 weeks.

JEDI 4

Yannick: working on more flexible generic suite, developing with toy models. Should have before Christmas some cycling at least with fv3-jedi.

OBS 1

Ben Ruston:

- Greg Thompson has pull request for BUFR converter for Synop, buoys and ship observations: <https://github.com/JCSDA-internal/ioda-converters/pull/715>
- Likewise UKMO is working through many of the in-situ observations ensuring the in memory ODB2 reading is working correctly.
- Work is being done on ability to ingest raw observations upstream of ODB or prepBUFR, so these are a mixture of BUFR, netCDF, H5, etc. directly to IODAv2
- Good discussion with Andy Smith of the Australian bureau on the OBSmon (driven by ODB2), what functionality is bring in an effort to survey the existing tools from the partners and their functionality.

Hui:

- Discussion needed: Rename air_pressure_levels and geopotential_height_levels from UKMet see <https://github.com/JCSDA-internal/ufo/issues/1725>

Obs team current efforts:

- Updating radiance configuration
- Updating GDAS database
- Working to set up L127 testing cases: new golden month: Aug 2021
- Working on the obs data stream for NRT demo
- Setting up single test for JEDI analyses and cycling for COSMIC-2 Skylab experiment (and for other Skylab tests as well)

PRs merged lately:

- FOV and antenna power computation (GDAS)
- Temporarily commented some config due to the pending data updates (GDAS)
- Obs operator test for ABI (GDAS) (also testing other obsFunctions for conventional data)
- ObsFunction for variable ID (UKMO)
- Bugfix for mixing macro to CRTM AOD
- UKMet office for changing to surface pressure from 2m Surface pressure. Added surface pressure at mean sea level (RTTOV 1dVar check and others)
- Add mixing ratio to RH filter for variable transform (UKMO)
- Vertical obs error inflation (GDAS)
- Impact height check on obs profiles (UKMO)

OBS 2

- For OBS2.3: The IOS website stopped receiving NRL FSOI data since the Nov 18th analysis cycle (this date coincides with Rolf Langland's retirement); Elizabeth Satterfield & Nancy Baker are helping to provide these files to us regularly again.
- For OBS2.4: The reviewers' comments under the PR adding the LinearForecast application were addressed to some extent; currently waiting for their feedback

OBS 3

- Obs Conventions should be out soon. Following some discussion, we have decided to host the general conventions document on ReadTheDocs. We are embedding the tables in the public document - a google sheet link will be available to direct JEDI contributors, and we will have the PR later today
- This Friday, we are discussing obs data flow in UFO, IODA and the converters. This has become somewhat complicated with the introduction of the Derived data and EffectiveQC groups. David has requested some utility functions to better manipulate Groups and Variables inside groups, and we want to continue the discussion regarding how groups are organized.
- Next Wednesday, Eric is giving a brief summary of R2D2 followed by a discussion of how we want to link it to our converters. What metadata do we want to store in R2D2, and how will it be reflected in our files. Following that we discuss status updates.

SOCA

- S2S (sub-seasonal to seasonal forecast) initialization
- LETKF for the regional MOM6 (Kriti)
- multi-domain HofX for IR observations (Hamideh)
- Implementation of the "coupled" forecast application with fv3 and soca
- Technical work on soca to keep up with the new getvalue implementation in oops (Travis)

LAND

- Thanks to Francois H. we finally have the snow-specific LETKF updates in FV3-JEDI, and this was really the last piece in the pipeline that Clara at PSL has put together to enable a cycling system using the increments calculated by JEDI, and represents an end point we've all been working towards for the last 9 months or so, so that's great
- We're now thinking hard about to best proceed in the medium term, and to that end had a good meeting this week with all the EMC and PSL land folks to get that discussion going, in particularly talking about whether and how to best continue land DA work outside of the FV3-JEDI interface without duplicating effort, and defining what future requirements might be.
- And I'll be meeting with GFDL folks tomorrow as well, as they are hoping to get their land model, LM4, in to the UFS
- Also, we welcomed Zofia Stanley as an in-kind who will be working specifically on soil moisture DA with SMAP observations
- On the WRF-Hydro side of things, Soren has been putting the finishing touches to, and checking, some of his speed-up work, and there will be a PR related to that soon.
- I've got round to implementing the geometry iterator, not in itself particularly remarkable, but it was very pleasing to then be able to get a very simple LETKF test case up in running almost immediately.

Atmospheric DA

- fix UFO AOD CRTM K matrix initialization
- update HofX tests on AERONET AOD
- PRs on IODA converters for MODIS, VIIRS and AERONET are still open
- still working on the avgkernel ufo operator generalization
- scoped out the status of AOD and O3 assimilation at NOAA and NASA for Y2022 planning

CRTM

- Comparison between RTTOV and CRTM
- Also working on CRTM radiance transfer solvers

NCAR

- Work on varBC and varBC preconditioning in WRF, investigating more scenario for the preconditioning
- Also working on variable dependent localization scales

Next week Ollie will explain how he did the MetOffice grid in atlas! Sharing is caring