

Initial JEDI-based GDAS Cycling

Initial Work and Issues Found

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Preliminary Work Completed

Add JEDI tasks/functionality to EMC's global-workflow:

- Separate the 'global_cycle' from the 'anal' job
 - Updates the surface RESTART fields independently from GSI
- Add checkout/build scripts and modulefile to build "UFS-DA" alongside other components
- Add new configuration scripts for JEDI related tasks
- Created python script to fill in templated YAMLS
- Add new "j-jobs" and "ex-scripts":
 - prep - stage files (fix and R2D2 obs); create YAML
 - run - run fv3jedi_var.x
 - post - combine diags and archive in R2D2

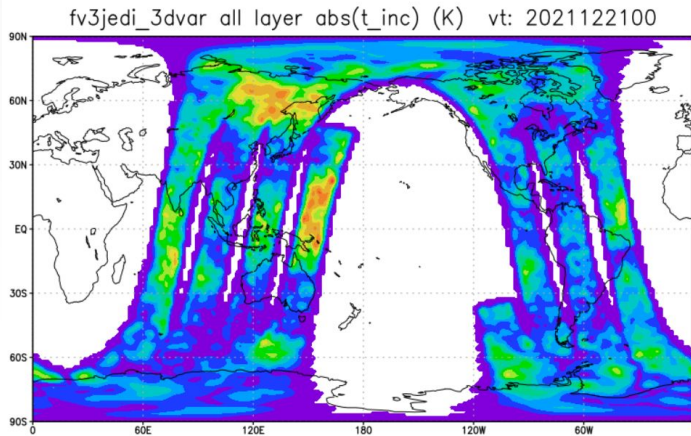
Note: R2D2 is being used for obs but not for backgrounds/analyses

Current Progress/Status

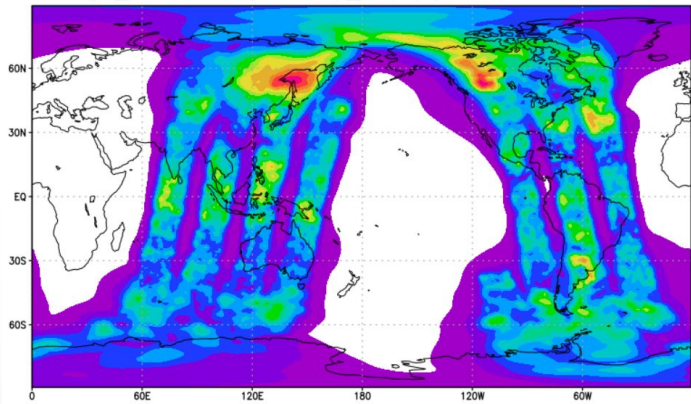
Have been able to run:

- C96 (~ 1 degree)
- 3DVar with AMSU-A n19
- Identity **B** (and later a simplified BUMP **B**)

The model was eventually able to be restarted, and run for 6 hours without crashing, using updated fields from FV3-JEDI (an offline python script updated the RESTART files from the analysis files)



gsi_3dvar all layer abs(t_inc) (K) vt: 2021122100



Issues / Problems / Short-Term Needs

- FV3-JEDI produced analysis FMS RESTART files are not sufficient to restart the model
 - **Need to list every state variable**, plus things like checksums, and mismatched dimensions can also occur
 - This is currently mitigated by an offline python script to update specified fields
- Current GDAS uses RESTART + increment files
 - these are lat-lon netCDF files produced by GSI
 - **Need OOPS to be able to write out “full” increment, and not just the iteration’s increment**
 - We will work with modeling team to read cubed-sphere increments
 - Model can now write cubed-sphere history files; will collaborate with Dan on unifying FV3-JEDI history I/O.

Issues / Problems / Short-Term Needs

- We are using YAML files from UFO/ewok and FV3-JEDI/ewok
 - These don't work out of the box for 3DVar in all cases
 - Missing bias/error related things for observations
- Need for stand alone YAML generators
 - I use SOLO + in house developed scripts to fill out/concatenate templated YAML files
 - **Is there a JCSDA led solution in development?** Not all users want/need cycling/ewok and a YAML generator would be useful.