The Joint Effort for Data assimilation Integration (JEDI)

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JEDI: Abstraction and Genericity

Abstract, model-agnostic DA system

OOPS is complemented by generic (shared) components.
Abstract interfaces and generic codes eliminate duplication of code and effort, including across Earth-system components.
JEDI-GODAS: Observations and Generic QC

Generic Quality Control: No Coding!

- Rejected observations
  - Reject ADT obs if SST<5°C
  - Reject ADT obs if |Obs-Bkg|<0.2 m
  - Reject ADT obs outside of [-2.0m, 2.0m]
  - Assign ADT obs error [m]
  - Reject ADT obs in specific region

Figures from SOCA team
JEDI-SkyLab: Next Generation Earth System DA
Sea ice
Snow
Constituents
Aerosols
Land
Waves
Atmosphere
JEDI
Ocean
SST (AVHRR METOP-B/METOP-C)
Ocean Profile
Ice (SSM/I F17-F18)

AMSUA (N18/19/20, METOP-A/B)

GNSS-RO

METAR
SYNOP
RAOB

AOD (VIIRS NPP)

CO (MOPITT)

NO2 (TROPOMI)

Snow Depth

Soil Moisture (SMAP)

Wind (SCAT)

Altimeters (3A/3B/C2/J3/SA)

SST (AVHRR METOP-B/METOP-C)

CrIS (N20/NPP)
IASI (METOP-A/B)

AMSUA (N18/19/20, METOP-A/B)

JEDI-SkyLab: Next Generation Earth System DA
JEDI is a maturing generic DA system for all Earth system components.

JEDI is moving towards coupled data assimilation in steps:
- All Earth system components in the same experiment (generic workflow/scripts/data handling) and in the same executable (generic code) - Proof of concept
- Coupled H(x) - In development
- Coupled B matrices
- Coupled solver
JEDI generic interfacing to coupled models

If the coupled model components already have a JEDI interface, this can be simplified: a generic “coupled” state interface can be used to couple any existing JEDI-interfaced model states. Currently under development at JCSDA.

Design drivers:
- N models selected at compile time
- Models share a (global) communicator or each run on a subset of tasks
Questions?