



HEAP: Getting NUCAPS CrIS and IASI products on the same page

Letitia Soulliard
GAMA-1 Technologies
NOAA/NESDIS/STAR

Outline

- What is the HEAP?
- Current NUCAPS CrIS Status (NOAA-20 and S-NPP)
- Current IASI Status (MetOp-A and MetOp-B)
- Similarities between CrIS and IASI
- Differences between CrIS and IASI
- Combining the Systems
- Other related talks
- Questions

What is the HEAP?

- Hyper-Spectral Enterprise Algorithm Package
- Main Goal: Get both sets of instruments using the same NUCAPS retrieval algorithm to ensure consistency in the processing of both instrument packages.
- Create a system that can run NOAA-20 and S-NPP CrIS data, as well as MetOp-A and MetOp-B IASI data. (And easily expandable to include MetOp-C)
- Separate the “NUCAPS” STAR wrapper system name (preprocessor, subsetter, ect) from the “NUCAPS” retrieval algorithm name

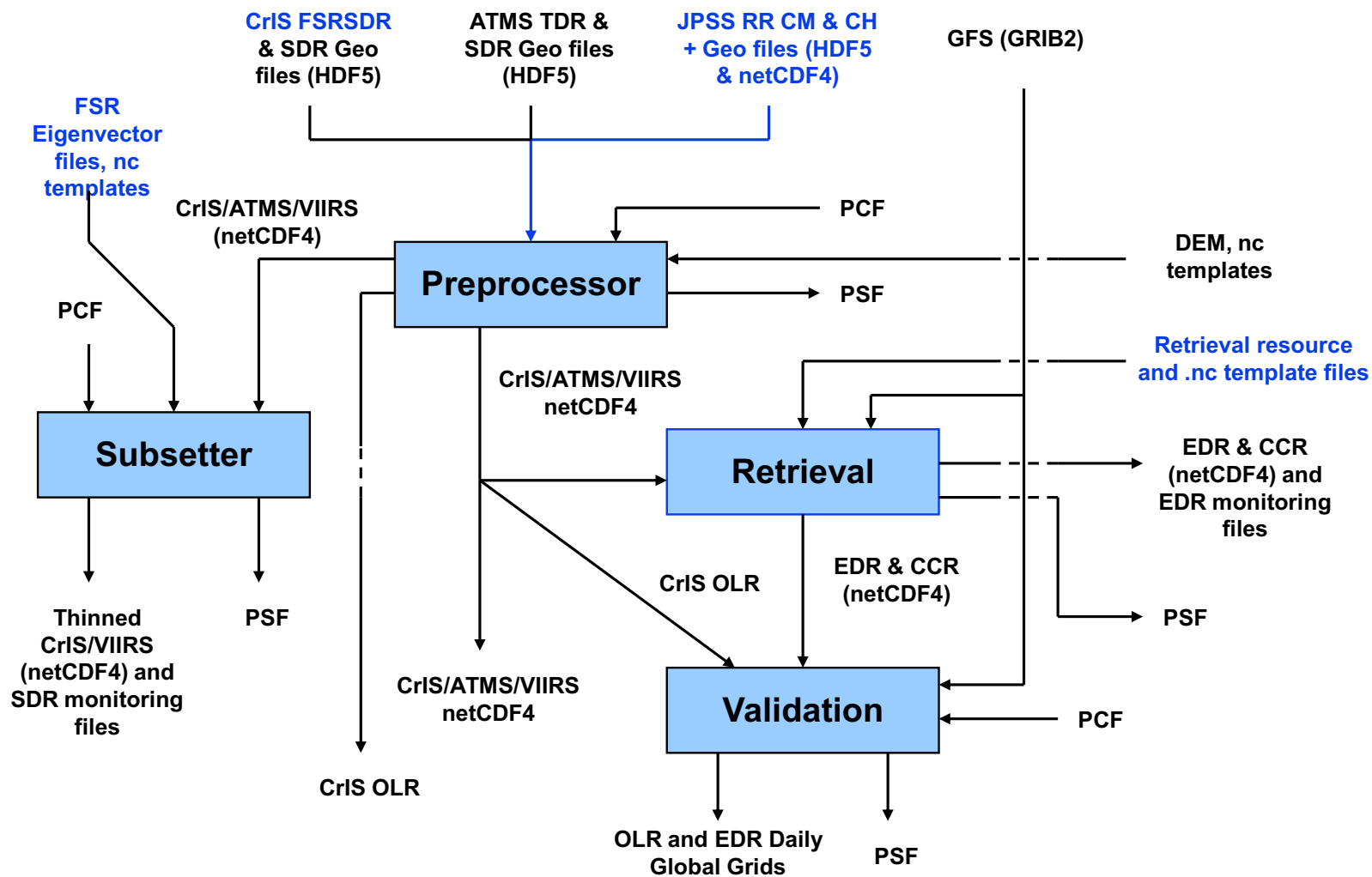
What is the HEAP?

- In the future will be able to run Eumetsat Polar System Second Generation (EPS SG)
- Have outputs from both systems be more compatible, same naming structure, and variable names
- Have this running in NDE as well as Direct Broadcast
- Deliver to NDE Spring of 2019 for NOAA-20 (and S-NPP)
- Deliver to NDE Fall of 2019 for MetOp-C

Current NUCAPS CrIS Status

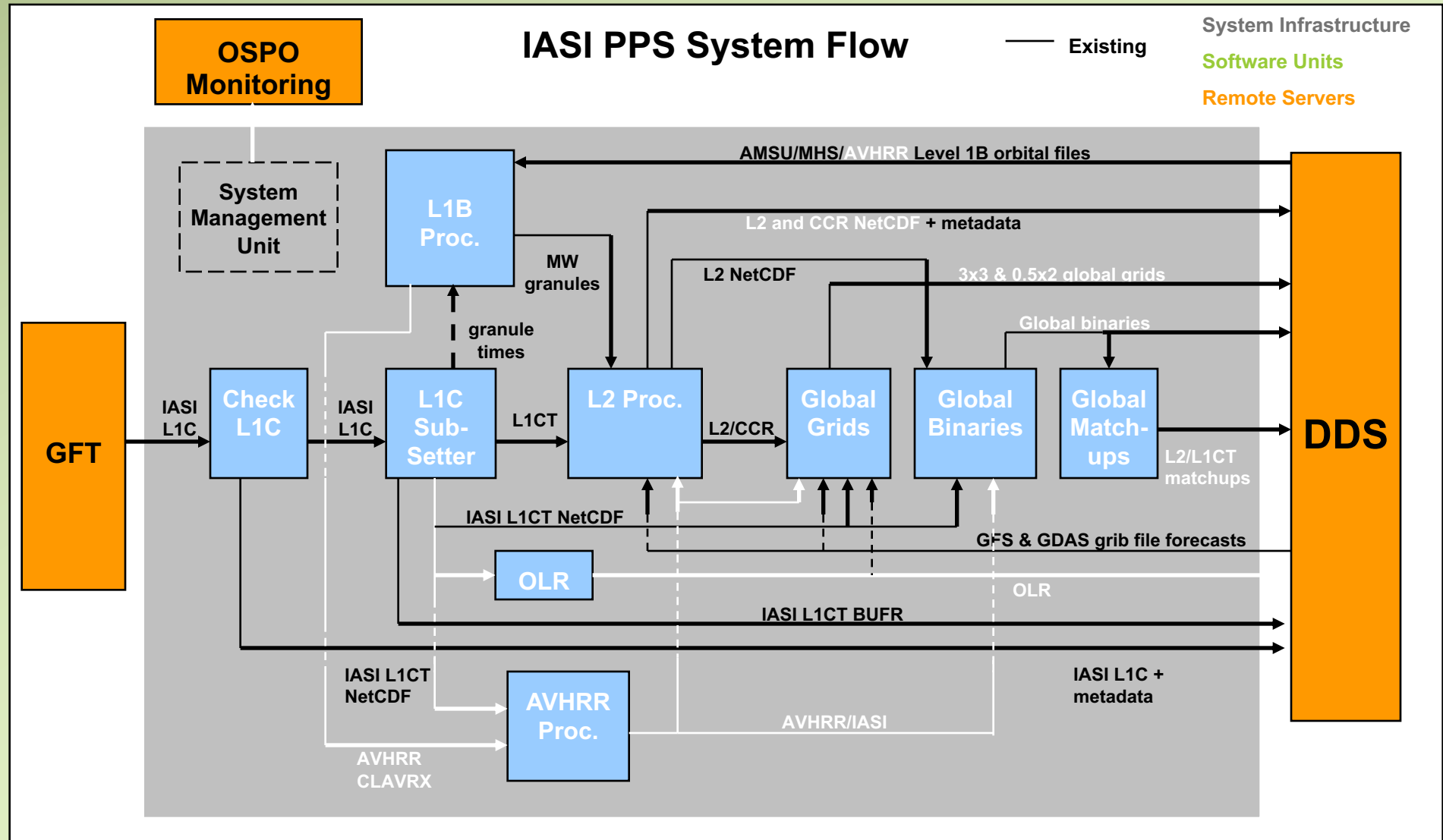
- Runs both NOAA-20 and S-NPP
- Running in NDE with latest and greatest algorithm code
 - V2.1.12c was delivered to NDE on August 15, 2018
- Running at Direct Broadcast

NUCAPS System Layer Data Flow



Current IASI Status

- Running on an AIX Unix stand alone system at OSPO
- Runs both MetOp-A and MetOp-B
- Last DAP Update: 10/27/2015 for a AMSU-A channel that was seriously degrading the retrievals
- A modified version of the code called ISRP (IASI Simplified Retrieval Package) which runs on Linux is running at Direct Broadcast.



Similarities between CrIS and IASI

- Both use IR instrument data input
 - CrIS files
 - IASI files
- Both can use MW supplementary instrument data input
 - ATMS files
 - AMSU-A and MHS files
- Both can use Cloud supplementary instrument data input
 - JPSS-RR Cloud files
 - AVHRR Clavr-X files

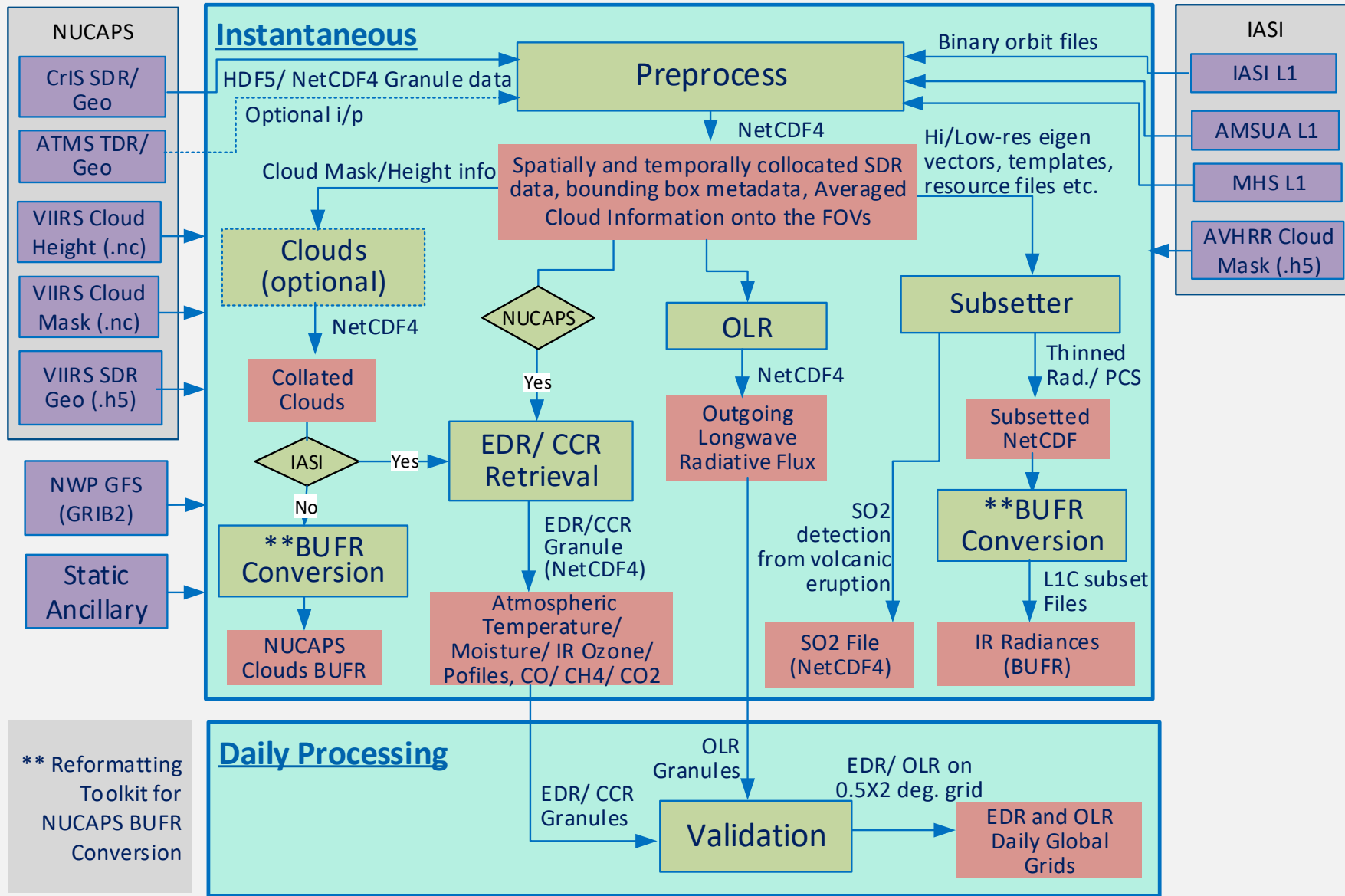
Differences between CrIS and IASI

- Things unique about the CrIS system
 - GEO data is in a separate file
 - Cloud data is only used in creating the BUFR file output not in the retrieval
 - Already set up to run in NDE and is organized in an NDE like manner
 - Wrapping scripts are separate from System scripts
- Things unique about the IASI system
 - Cloud data is used in the retrieval
 - Stand alone so many of the scripts are a spaghetti mess when separating NDE system stuff and wrapper script stuff

Combining the Systems

- Updated the IASI codes to work on Linux instead of Unix
- Updated the IASI codes to work with netCDF-4 instead of netCDF-3
- Broke out the OLR and Clouds units from the Preprocessor
- Removed the IASI BUFR conversion from the system. That will be handled by the Reformatting Toolkit
- Renamed and edited some of the Fortran codes that were similarly named but had different internal data structures

HEAP Unit Level Processing



Related Talks

- Callyn Bloch
 - Near real time CAPE combining hyper spectral IR satellite soundings and surface meteorological stations
 - After the break at 10:50am
 - An example of using a baselined system, which the HEAP will contribute to in the future
- Antonia Gambacorta
 - Status of the NOAA Unique Combined Atmospheric Processing System (NUCAPS). Latest algorithm developments and first glance results from NOAA20
 - Today 4:40pm
 - The science that drives the HEAP
- Nicholas Nalli
 - Status of SNPP and NOAA-20 NUCAPS Validation
 - Today 5:00pm
 - The Validation of the results of HEAP data

Questions

- Any Questions?
- Letitia.Soulliard@noaa.gov