Advancing User Supports with a Structured How-To Knowledge Base for Earth Science Data

NASA

NASA/Goddard EARTH SCIENCES DATA and INFORMATION SERVICES CENTER (GES DISC)

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Motivations

The How-to Knowledge Base consists of Data Recipes that help to distribute knowledge from the folks that have it to the folks that need it

- Earth Science datasets are big and complicated with varied data types/structures, map projections, format, and metadata models, and more.

- Expertise in Earth science data access and usage exists throughout EOSDIS DAACs.

- Users have varying levels of experience, from novice to expert. Experts can contribute, novice can identify needed recipes.

- Task oriented step-by-step instructions with real data examples make learning data discovery, access, and use easier
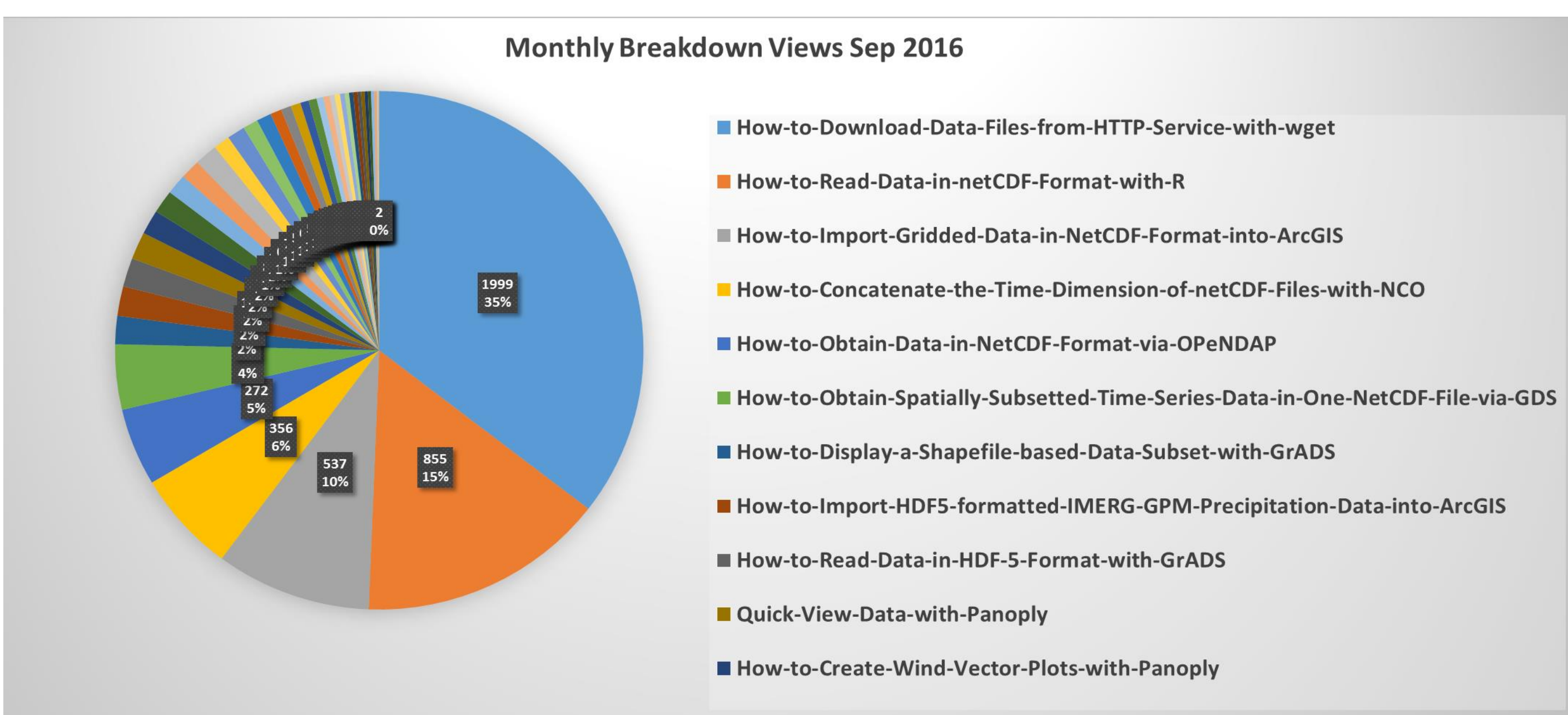
Data Recipe Template

*(Each recipe is tested by a scientist or engineer other than the creator)*

- ✓ **Overview** -- summary of the recipe
- ✓ **Example** -- description of a use scenario for the recipe
- ✓ **Prerequisites** -- (optional) name and version of the tool or service to which the recipe applies
- ✓ **Procedure** -- **step-by-step instruction with screenshots**
- ✓ **Additional Information** -- (optional) additional information about using the service or tool
- ✓ **Related Data Recipes** -- (optional) related recipes
- ✓ **Keywords** – list of related tool name, product name, data type, etc. for tagging the document

Current Status and Futures

… Current …

Tools & Services

DATA

at DAAC:
(e.g. GES DISC)
Mirador
Giovanni
OPeNDAP
THREDDS
WMS/WCS

Non-DAAC:
ArcGIS
GrADS
Panoply
McIDAS-V
IDL
NCO
MatLAB

Data format:
netCDF3
netCDF4
HDF4
HDF5
HDFEOS
GRIB
ASCII

Data type:
Grid
Swath
Point

Recipes @ DAAC-A

Recipes @ DAAC-B

Recipes @ DAAC-C

….. Recommended Future ….

Open Data How-To Knowledge Base @ NASA ESDIS

- Metadata model for data recipes
- Recipe register tool
- Centralized data recipe portal
- Link recipes from/to a product
- Enable cross-link of data recipes from different DAACs

Data recipes available at: GES DISC, PO DAAC, ASF DAAC, GHRC DAAC, ASDC DAAC

Sample Data Recipe at GES DISC

http://disc.sci.gsfc.nasa.gov/recipes/?q=recipe-cookbook

Monthly Breakdown Views Sep 2016

- How-to-Download-Data-Files-from-HTTP-Service-with-wget
- How-to-Read-Data-in-netCDF-Format-with-R
- How-to-Import-Gridded-Data-in-NetCDF-Format-into-ArcGIS
- How-to-Concatenate-the-Time-Dimension-of-netCDF-Files-with-NCO
- How-to-Obtain-Data-in-NetCDF-Format-via-OPeNDAP
- How-to-Obtain-Spatially-Subsetted-Time-Series-Data-in-One-NetCDF-File-via-GDS
- How-to-Display-a-Shapefile-based-Data-Subset-with-GrADS
- How-to-Import-HDF5-formatted-IMERG-GPM-Precipitation-Data-into-ArcGIS
- How-to-Read-Data-in-HDF-5-Format-with-GrADS
- Quick-View-Data-with-Panoply
- How-to-Create-Wind-Vector-Plots-with-Panoply


Monthly Views of Data Recipes

Over 30 data recipes have been created during the last three years. Data Recipes have received significant use since released. During last six months, the average number of monthly views is over 5000 (left plot).
For example, to help users for the transition from ftp to HTTP with use of the User Registration System (URS), GES DISC has created a data recipe "**How to Download Data Files from HTTP Service with wget**". This recipe became most viewed during the first several months after URS was implemented on Aug 1, 2016.
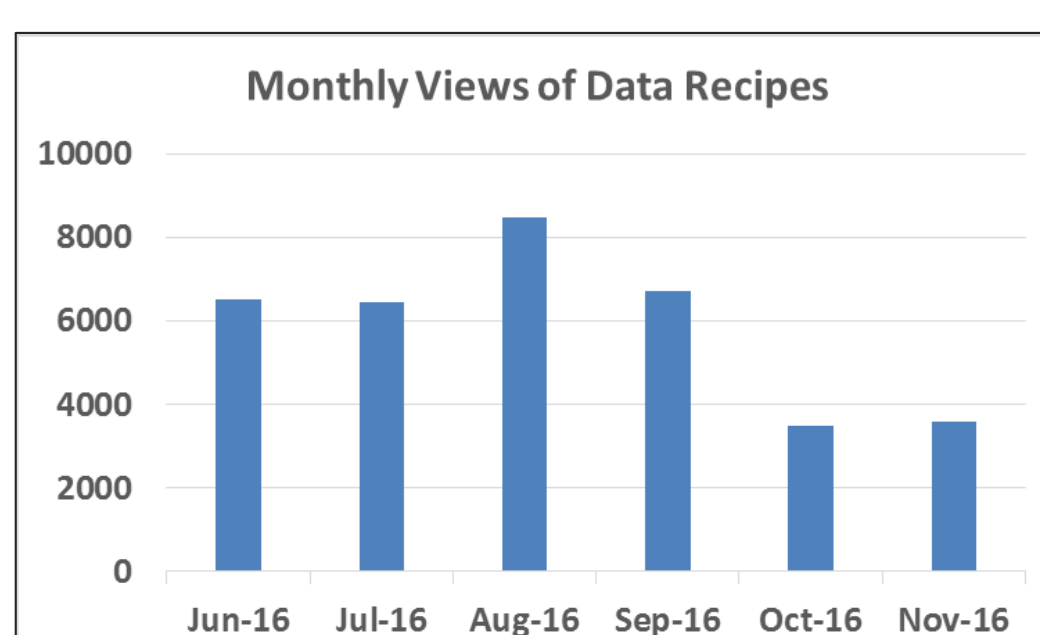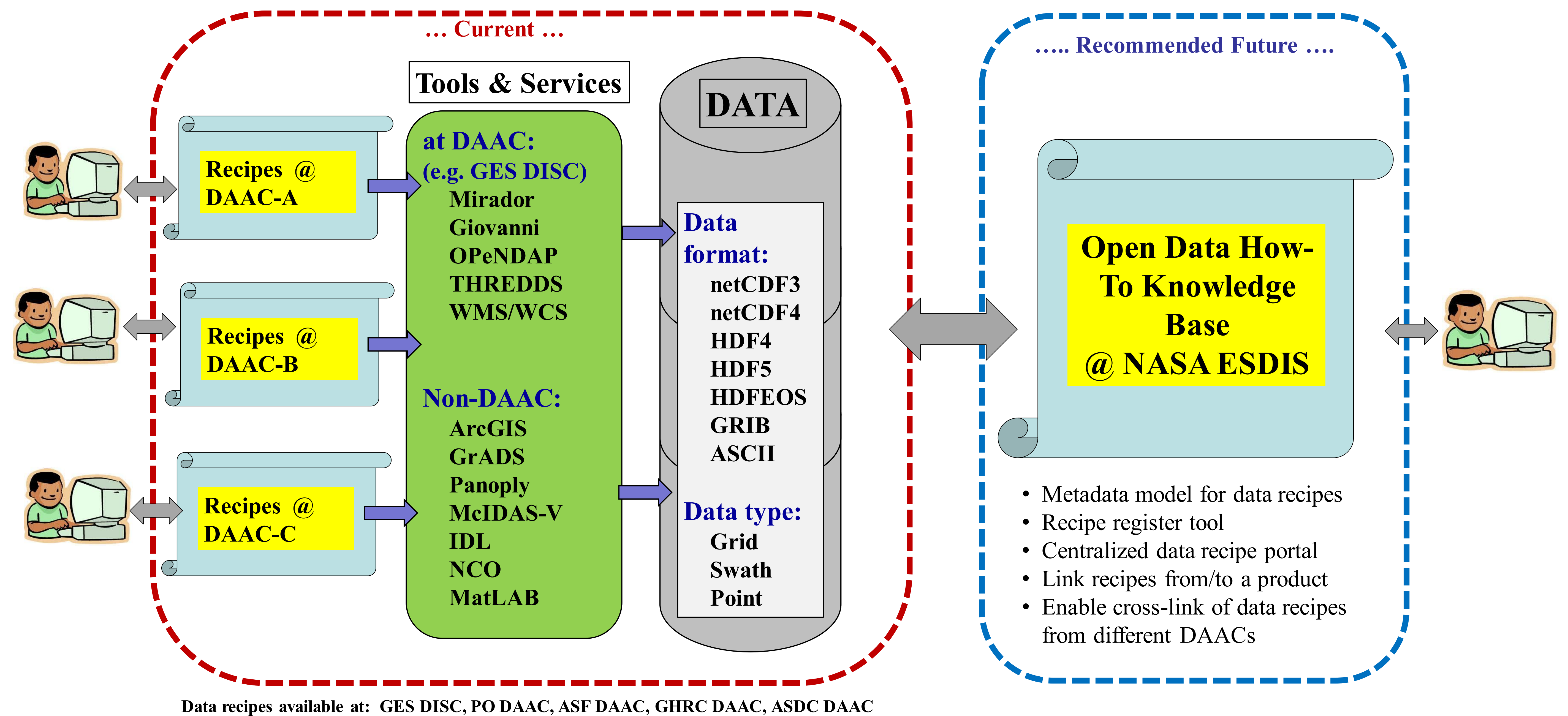
Future Plans at GES DISC

- ➢ Migrating into the unified user interface data searching system, with a common document structure

- ➢ Enabling search and navigation functions to find topics of interest

- ➢ Investigating options for linking recipes from/to a product landing page;

- ➢ Incorporating data recipe feedback capabilities and moderation of user contributed recipes to effectively expand GES DISC Data Recipes

- ➢ Linking forum and FAQ with data recipes

- ➢ Working with ESDIS to register data recipes in ESDIS tool when available

ESDIS Working Group Recommendations

The following are operational procedures recommended by 2015 NASA Earth Science Data Systems Working Group (ESDSWG) on Data Recipes:

- ➢Use ESDSWG recommended template to create common structured document
- ➢Add labels (used in future UMM-D metadata) to each recipe for interoperable searching across EOSDIS
- ➢Recipes may be created with DAAC preferred method or ESDIS infrastructure, such as Earthdata wiki
- ➢ESDIS provides a recipe registration tool
- ➢Data recipe is made searchable
- ➢Each DAAC should link to ESDIS knowledge Base
- ➢Each DAAC should have a POC to coordinate work with ESDIS

An author submits a recipe to the data recipe POC at a DAAC

An authorized staff member imports the recipe into the working area

POC check and approve the structure, then find one or more testers

The author and tester(s) work together to revise the recipe

Authorized staff publish the recipe in the DAAC's data recipe portal

Register at ESDIS's recipe list; ESDIS centralized data recipe portal pointing to the recipes at DAACs