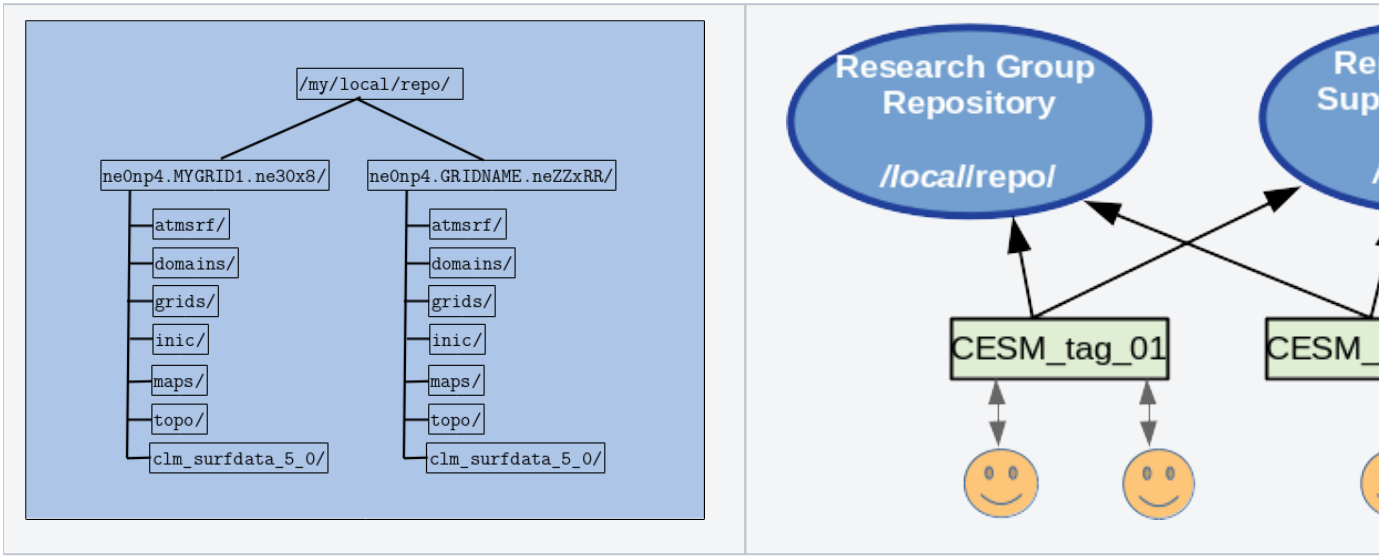
Generating variable resolution grids

With the release of CESM 2.2 users will have the ability to create and use variable resolution spectral element grids that are suited to their research needs. A fundamental limitation for adding custom grids has been that the grid information and all related data files for supported CESM grids reside in a readonly repository that users cannot modify. To address this limitation a research group can now create, maintain, and share a local repository containing the grids and related data tailored to their needs. Files that are not specific to the model grid are still obtained from the CESM repository unless the user specifies otherwise.



A number of steps, and a fair amount of trial and error, are required to create a new configuration of CAM-chem with a user-defined grid.

These steps are outlined in:

- **VRM_tools documents**
- a **step-by-step guide**

The above documents cover:

- Generating a new grid using SQuadGen or VRM_Editor. The VRM_tools for creating new grids are located in *https://github.com/ESMCI/Community_Mesh_Generation_Toolkit*. ***Note**:* new features were added to the linux version of VRM_Editor on Jan 11, 2022.
- Regridding standard atmosphere and land input datasets to the new grid
- Creating a new CAM case, using the resolution name of your new grid
- Running CAM for at least 1 year to spin-up the land model
- Setting up inputs for CAM-chem with your new grid (including: Regridding emissions, Regridding meteorological data, Regridding initial conditions)
- Creating a new CAM-chem case, using the resolution name of your new grid

This **video of the 12-Feb-2021 tutorial** describes these steps.

The **MUSICA Tutorial Session on 14-Jan-2022** provides additional tips and describes updates to the grid generation tools.

See **Tips and FAQ** for more guidance.