NCTools tools context from “workflow” style unit tests

This is a short list of selected unit test shell scripts from directory FRE-NCtools/t that represent some nontrivial workflows and can potentially provide context and examples for the tools. The “workflow” scripts (e.g.) are self explanatory, but if you read them note that some input files are generated(by script generate_all_from_nct) from ncl files in related directories. E.g. Input ocean_vgrid.nc and ocean_mosaic.nc used by Test06-regrid_extrap.sh are generated from files in Test06-input.

Test name	Tools used	Summary
Test03-grid_coupled_model.sh	make_coupler_mosaic, make_solo_mosaic, make_hgrid, make_vgrid, make_topog	Creating grids and mosaics for a coupled model. Ocean component includes tripolar grids, use of ocean topography data. Land/atmos component used cubed sphere
Test04-grid_coupled_nest.sh	make_coupler_mosaic, make_solo_mosaic, make_hgrid, make_vgrid, make_topog	Creating grids and mosaics for a coupled model. Ocean component includes tripolar grids, use of ocean topography data. atmos component used cubed sphere with a nested grid, and a land grid is distinct from the atmos grid is created and coupled.
Test05-remap_c48_regular.sh	fregrid	Simple remapping of three scalar fields from a cubed sphere grid to a regular lat-lon grid.
Test06-regrid_extrap.sh	fregrid, make_hgrid, make_solo_mosaic,	More complex remapping of data onto cm2m ocean grid with extrapolation and vertical interpolation.
Test10-remap_land_res.sh	remap_land	Remapping land data from C48 to C192, using remap_land and not fregrid.
Test11-make_regional_mosaic.sh	make_regional_mosaic, make_solo_mosaic, make_hgrid	Creates a mosaic file for regional output and does remapping for regional output
Test12-mppnscatter.sh	Mppncscatter, mppnccombine.	Just another example use of mppncscatter and mppnccombine.
Test13-make_quick_mosaic.sh	make_quick_mosaic, make_solo_mosaic, make_hgrid, make_vgrid, make_topog	Create a mosaic from an ocean_mosaic and an ocean_topog.nc
Test14-remap_ocean.sh	fregrid, make_hgrid, make_solo_mosaic.	Use fregrid to remap ocean restart file from CM2.1 to CM2.5.

Test15-regrid_land.sh	fregrid	regrid land data with cell_measures and cell_methods attributes. The fregrid tool (and not the remap_land tool) is used.
Test20-fregrid.sh	fregrid, make_hgrid, make_solo_mosaic	Creates a target mosaic (file latlon_grid.nc) and then uses fregrid to remap an existing file (--input_file ocean_temp_salt.res.nc) of a known mosaic (CM2.1_mosaic.nc) to the target mosaic.
Test24-reference_fregrid.sh	make_hgrid, make_solo_mosaic, fregrid	Creates a target mosaic (file latlon_grid.nc) and then uses fregrid to remap an existing file (--input_file ocean_temp_salt.res.nc) of a known mosaic (CM2.1_mosaic.nc) to the target mosaic. Then compare the regridded output with a known reference output using the Intel compilers.
Test25-hydrology.sh	make_simple_hydrog.csh	Let's remove both the test and the make_simple_hydrog.csh script.
Test26-reference_fregrid_gcc.sh	make_hgrid, make_solo_mosaic, fregrid	Creates a target mosaic (file latlon_grid.nc) and then uses fregrid to remap an existing file (--input_file ocean_temp_salt.res.nc) of a known mosaic (CM2.1_mosaic.nc) to the target mosaic. Then compare the regridded output file with a known reference output with a tolerance for FP differences.
Test27-multiple_nests.sh	make_hgrid	Creates some level 1 nests and some level 2 nests.
Test28-make_hgrid.sh	make_hgrid	Create a 1-degree tripolar grid
Test29-make_vgrid.sh	make_vgrid	Create a vertical grid containing 3 levels with the center cell location set to c_cell (suitable for the MOM model).
Test31-fregrid_stretched.sh	make_hgrid, make_solo_mosaic, fregrid	Create 3 different stretched cubed-sphere grids using –grid_type=gnomonic_ed, –stretch_factor=2.5, and 3 target latitudes. Then a solo mosaic is created for each, and then fregrid generates a remapping file that is checked for a low conservation error.

Test32-fregrid_no_stretched.sh	make_hgrid, make_solo_mosaic, fregrid	Create cubed-sphere grids using --grid_type gnomonic_ed. Then create the solo mosaic file for the 6 tiles. Then use the mosaic file to generate a remapping file using fregrid, and check that the conservation error is low.
Test33-reference_make_hgrid.sh	make_hgrid	Creates a cubed-sphere grid using the options “--do_cube_transform” (and not the “--grid_type=gnomonic_ed” option). Creates a second cubed sphere grid with the “–grid_type=from_file”. Both grids are then compared.