

# Interpolation

Steps for inline interpolation from homme to a lat-lon grid:

1. Add a list of points to be interpolated in `element_t` - this would be an allocatable array of type `cartesian2d_t`
2. During initialization determine what lat,lon points to interpolate to fall into each element and fill in the `cartesian2d_t` array with their cartesian equivalents.
3. Rework `gen_grid_assemble` to work on an element basis
4. Write an analog of the `netcdf_io_mod` that works on a lat/lon grid. This module is currently a mess so I think that I would prefer that it be rewritten rather than amend it. The new module would only support PIO. I suppose that we should go ahead and write this into the model, instead of as a standalone postprocessor.
5. a vector interpolation routine also. It would convert the vector to contra-variant coordinates, interpolate the contra-variant coordinates via `gen_grid_assemble()` and then map back to lat-lon. So it will have to compute the `elem(ie)%D(:, :, :)` matrix at the lat-lon points. Since that is an analytic formula, probably it should just be computed on the fly?