- **cm1r21.1**: Cloud Model 1 (https://www2.mmm.ucar.edu/people/bryan/cm1/) with my background and initialization routines. See CM1_getting_started.pdf for more information.
- **misc_routines**
  - **CM1_quick_viewer.py**: A quick interactive interface to view CM1 outputs.
  - **nl_wave_convergence_test.ipynb**: This code generates the nonlinear inversion wave solution of Chapter 4 then preforms convergence checks on the residual of the solution substituted into the full PDE operator and interface conditions.
  - **partial_derivs.py**: Contains the routine *get_partial_derivatives*, which generates the partial derivative coefficients by solving eq. (A.4) or eq. (A.12) (cloud).
  - **symbolic_amp_expansion.ipynb**: This notebook symbolically computes the expansion for a nonlinear gravity wave with a slowly varying amplitude.
- **thesis_figures**
  - **CM1_plot.ipynb**: Read CM1 output and generate plots.
    - Figure 3.10

    Along with the presentation (animated) version.
  - **dispersion_check.ipynb**: Code to generate the dispersion relationship check against CM1 using the measure cloud edge motion.
    - Figure 3.9
  - **dispersion_comparison.ipynb**: Solves for the theoretical dispersion relationships on the semi-infinite and finite domains and plots a set of normal modes for a particular value of k in each domain.
    - Figure 3.4
    - Figure 3.5
    - Figure 3.6
    - Figure 3.7
  - **HRRR_background.ipynb**: Code to fetch HRRR data and load idealized background made in CM1 from a .nc file. Generates plot of HRRR data and idealized background.
    - Figure 3.2
  - **inversion_setup.ipynb**: Code to generate the inversion background + extensions from appendix B and generate the linear wave mode with near interface corrections to θ_ℓ.
    - Figure B.1

    * Figure 3.3
    * Figure 3.8
- **nl_wave_sol.ipynb**: Compute the nonlinear wave solution of Chapter 4 and plots of the modes at each correction.
    * Figure 4.1
    * Figure 4.2
    * Figure 4.3
    * Figure 4.4
    * Figure 4.5
- **nls_param_plot.py**: Compute the nonlinear Schrodinger equation parameter (γ) over a range of wavenumber (k) and latent heat response ($\mathcal{L}$) values.
    * Figure 4.6
- **pres_cartoon.ipynb**: Generate cloud/clear wave cartoons for thesis defence presentation.
- **scale_plots.ipynb**: Generates plots showing the scale of various parameters (including skew-T plots) in the Boussinesq theory including:
    * Figure 2.1
    * Figure 2.2
    * Figure 2.3
    * Figure 2.4
    * Figure 2.5
    * Figure 2.6
    * Figure 2.7

  along with the associated presentation version.
- **weak_solution_regions.ipynb**: Generates a figure of the weak solution regions in chapter 5.
    * Figure 5.1