Tonelli et al, 2022: Geomagnetic disturbance associated with vagrancy in migratory landbirds.

Overview:

The core data used in the analysis (banding records) is publicly available from: <https://www.sciencebase.gov/catalog/item/613f7134d34e1449c5d35c2c>

Data is then processed into individual species files (Processed\_Species\_Data).

Data is then filtered to species and temporal ranges of interest in the main analysis.

Fit models and data are available via Zenodo (link to be added upon acceptance).

Structure:

1. **Code**
   1. Scripts
      1. Figures: Code to recreate all figures.
      2. Main\_analysis: Code to run Bayesian models with processed data.
      3. Phylo: Code to run phylogenetic post-hoc analysis
      4. PPC: Code to run posterior predictive checks
      5. Processing\_filtering: Code to filter and process raw banding records, add vagrancy and Ap/sunspot indices.
   2. Stan\_models:Stan model code
2. **Data**
   1. Compiled\_Banding\_Records: Contains a large CSV with all species banding and encounter records. (These need to be downloaded form the BBL/Sciencebase URL above)
   2. Geo\_data: Contains Ap and sunspot indices.
   3. Processed\_Species\_Data: Contains individual species CSVs with vagrancy indices and various Ap and SS indices for all banding records across the annual cycle. (These need to be created with combine\_bands\_enc.R after downloading banding and encounter data).
   4. Spec\_data: Contains all species data used in the analyses, including species life history traits, phylogenetic information.
   5. Spec\_NB\_lats: Contains weekly species range centroids for post-hoc analyses.
   6. Phylo\_signal: Results of phylogenetic post-hoc tests.
   7. PPC: Results of posterior predictive checks.
3. **Fit models and data**
   1. Data: Contains cross-species data files used for each analysis.
   2. Model Diagnostics: Model fit information
   3. Models: Model fit objects, saved as .rds files.