Hail Verification Method

1. Case Identification
   1. Convection must maintain at least 30 dBZ for at least 15 minutes
   2. Identify if the cell was seeded at any point
2. Proximity Soundings
   1. 17Z-03Z indicates daytime convection and limits model uncertainty
   2. Cells found on radar must be shown within 3 counties and/or three hours on the model for the event to be used
   3. Once a case is good, proximity soundings are manually selected based on:
      1. Sounding location must be outside of the outflow boundary
      2. Sounding location must be downwind of cell motion
      3. Sounding location can’t be within any convection
3. Determine forecasted hail size
   1. If LHP>20000 m3/s3 and Cravens index > 28926 m3/s3 hail is classified as greater than 2 inches
   2. If LHP<20000 m3/s3 and Cravens index < 28926 m3/s3 HAILCAST is used to determine if there is any potential for hail
      1. If HAILCAST shows nothing the case does not have hail potential
      2. If HAILCAST has indications of hail, size is then evaluated
   3. If only one of LHP or Craven’s index exceed 20000 m3/s3 or 28926 m3/s3 respectively severe weather indices must be considered
      1. If either MLCAPE or LI and either sfc-6km shear or BRN are red hail potential is greater than 2 inches
      2. If MLCAPE, LI, and BRN are green, there is hail potential, but less than 2 inch hail
      3. If MLCAPE, LI, and BRN are yellow:
         1. If sfc-6km shear is red the hail potential is greater than 2 inch hail
         2. If sfc-6km shear is not red, use SWEAT index.
            1. If SWEAT is greater than 300 hail potential is greater than 2 inches
            2. If SWEAT is less than 300, hail potential is less than 2 inches
4. Preprocess level 2 radar data
   1. Pull radar files from Amazon Web Service archive
   2. Convert radar files to Cartesian coordinates using Radx2Grid
      1. should be netCDF format
   3. Collect sounding data from nearest NWS balloon site
      1. Sounding data must be edited so any missing data spots are filled with zero
      2. May consider using a reanalysis or model sounding
5. Run the hail size retrieval algorithm focusing on the 2-4km CAPPIs to determine if there was no hail, less than 2 inch hail, or greater than 2 inch hail