Steps to Process Raw SLAP Radar Data into Geolocated Google Earth Images

Refer to the SLAP Handbook in the same directory for more detailed explanations of this process.

If there are any ancillary scripts not listed that MATLAB requires, they will be in the SLAP Working Directory folder on the SLAPUSB2 Drive.

MATLAB scripts needed

SLAP\_read\_multiple\_radar\_data\_files.m

SLAP\_read\_raw\_radar\_data.m

importOxTSPostprocessed\_v2.m

CombineAncillaryData.m

radar\_6deg\_universal.m

radar\_6deg\_universal\_combine\_and\_save.m

SLAP\_publisher\_2015.m

Procedure

1. Locate radar return observations for day of interest
   1. Should be in format like: RDRRETURN\_20140505T131000.slapbin

|  |  |
| --- | --- |
| Abbreviation/Number | Meaning |
| RAD | Radar |
| RETURN | Return Data |
| 2014 | Year |
| 05 | Month |
| 05 | Date |
| 13:10:00 | Time in UTC |
| 175 | Orbit Number |
| Slapbin | Binary file |

* 1. Process it with “SLAP\_read\_raw\_radar\_data.m”. All data files for that day can be processed with “SLAP\_read\_multiple\_radar\_data\_files..m” if they are in the same folder.
  2. Then there are MATLAB workspace files for each ten minute radar return data set.

1. Next run “radar\_6deg\_universal.m” to get geolocated six degree (in scan angle) averaged h-pol and v-pol pixels. This script is commented extensively so only the inputs are discussed here.
   1. The GPS receiver data is in an excel file that must be imported into MATLAB using “importOxTSPostprocessed\_v2.m”.
   2. This produces a file with a format like: OxTSPOSTPROCESSED\_150212\_144640.mat
      1. This MATLAB workspace file contains all of the GPS receiver data for that flight including time tags, altitude, latitude, longitude, pitch, roll, heading, tracking angle, and velocity east, velocity down, and velocity north.
      2. The time tags are in GPS time while the other data (scan angle, radar, housekeeping temps) are in UTC time so the GPS time tags must have 16 seconds added to them to convert to UTC time.
   3. The rest of the code is well commented and should be easy to follow.
   4. Currently, the radar return sigma\_0 results are not as expected. Further examination into the algorithm is necessary.
2. The script ‘radar\_6deg\_universal\_combine\_and\_save.m’ combines the saved radar data, geolocation information, and scan angle data into tabular format.
3. Auto report of scan angle data, GPS geolocation data, and housekeeping temperatures can be autogenerated using “SLAP\_publisher\_2015.m”