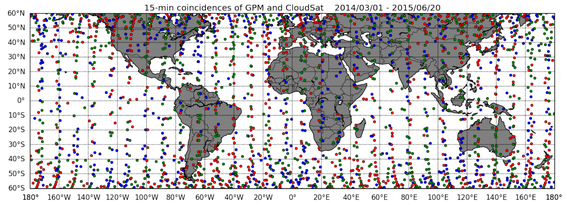
Big Picture Improvements of GPM: Over-Land Characteristics, and Comparison With Other Sensors

F. Joseph Turk[1], P. Partain[2], S. Tanelli[1], G. Liu[3], E. Nelson[4]
[1]JPL/Caltech, Pasadena, CA; [2]Colorado State Univ., Fort Collins, CO
[3]Florida State Univ., Tallahassee, FL; [4]Univ. of Wisconsin, Madison, WI

PPS: ftp://arthurhou.pps.eosdis.nasa.gov/gpmdata/YYYY/MM/DD/radar/2B.CSATGPM.COIN
ATBD: http://pps.gsfc.nasa.gov/Documents/CSATGPM_COIN_ATBD.pdf

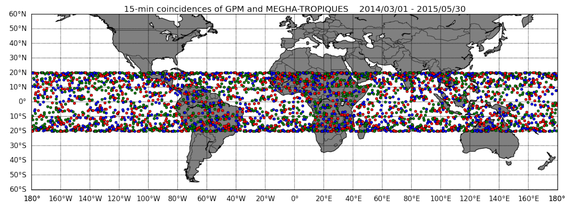
CloudSat-GPM-Sounder Coincidence Dataset

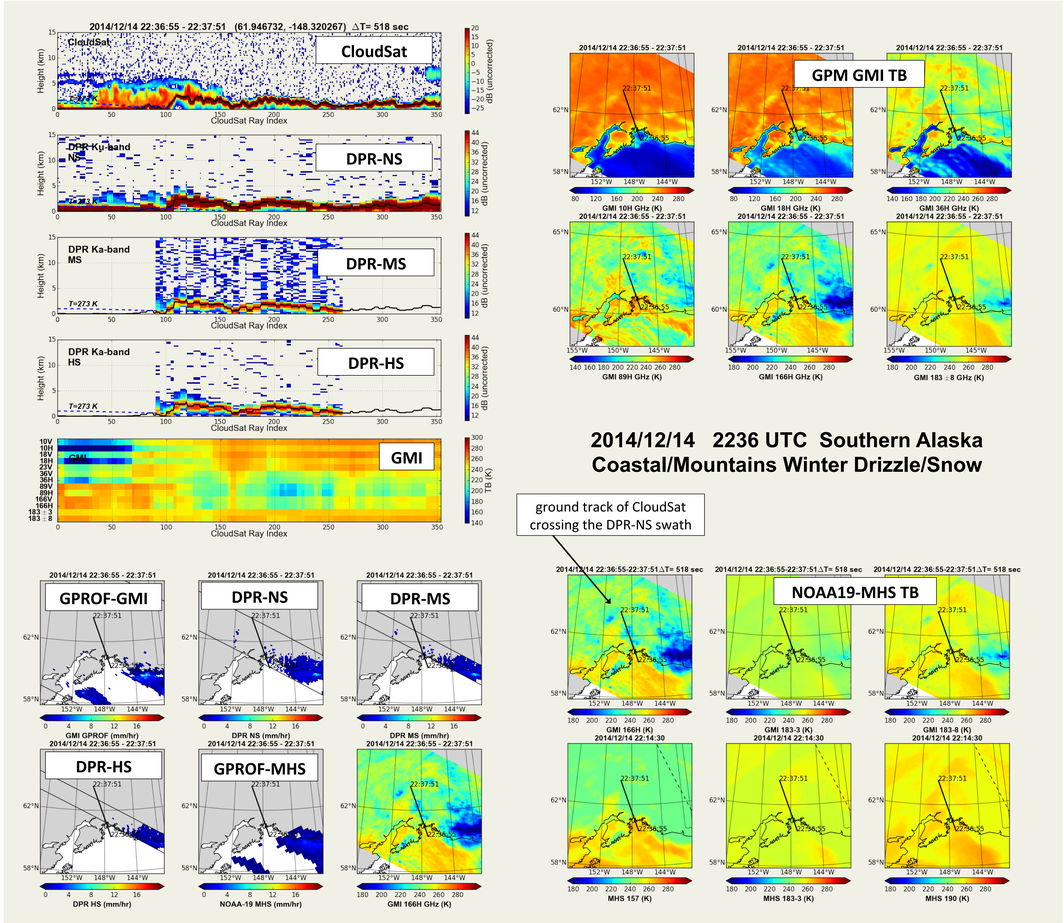
Owing to the Global Precipitation Measurement (GPM) core satellite's unique asynchronous orbit, its orbital ground tracks intersect the orbital tracks of many other sun-synchronous satellites. Of particular interest are the intersections (coincidences) between the GPM core satellite and the 94-GHz (W-band) CloudSat profiling radar (CPR), within small enough time differences, such that the combination of the resulting "pseudo three-frequency" radar profiles (W-band from CPR, and Ku/Ka-band from GPM), and the 13-channel (10-183 GHz) GMI radiometer are useful for many scientific purposes. Examples include algorithm evaluation and identification of deficiencies, snow and light rain sensitivity studies, cloud process studies, radiative transfer simulations, and studying land surface effects on the radar, radiometer, or combined-sensor precipitation retrieval algorithms.



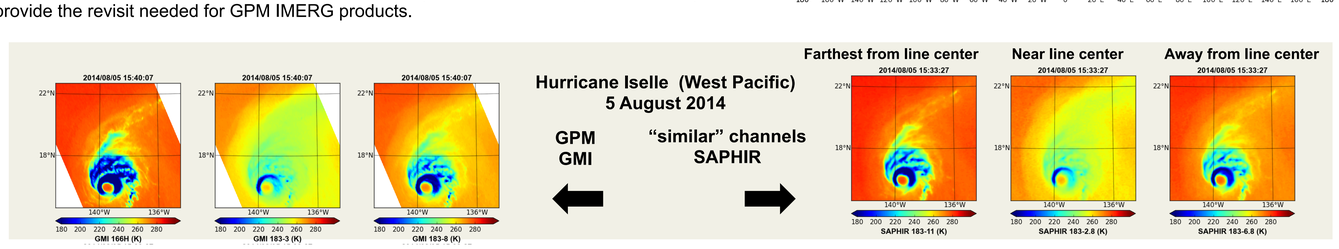
GPM-Megha Tropiques Sounder Coincidence Dataset (in progress)

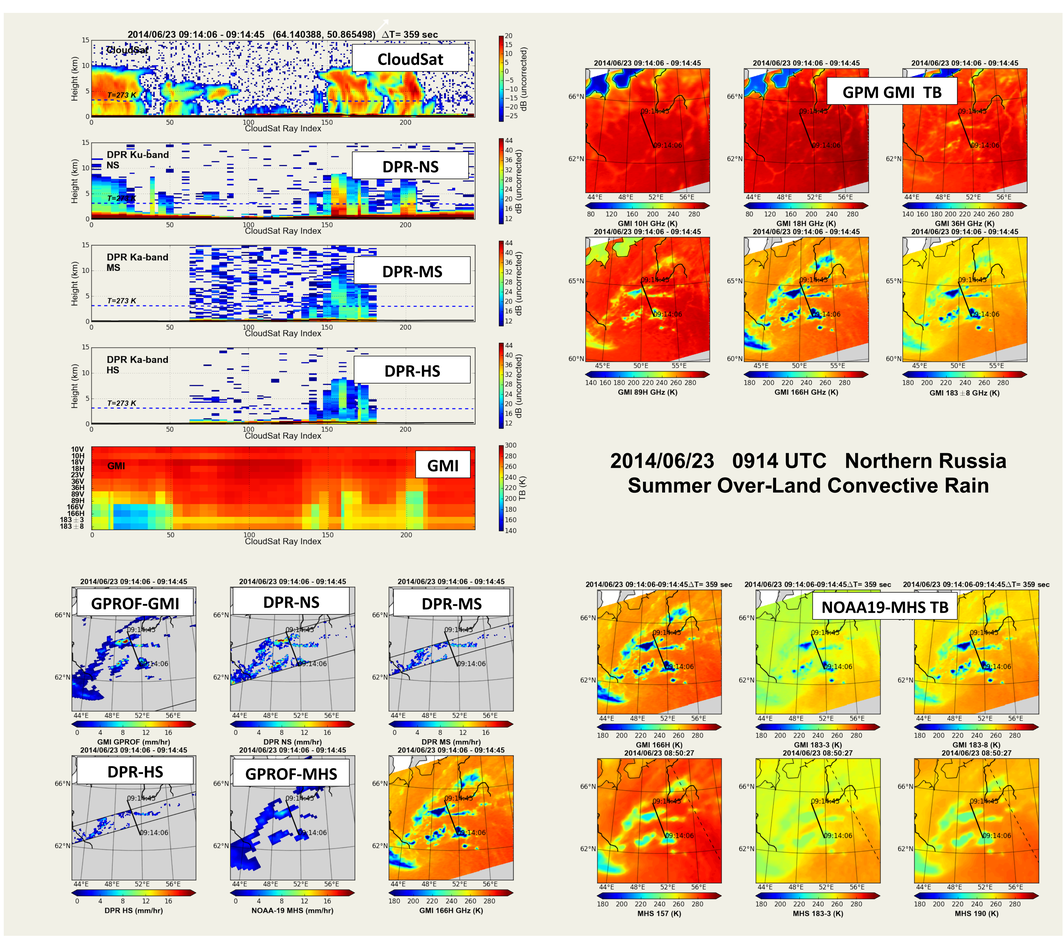
The wide-swath (1700-km) six-channel SAPHIR sounder onboard the asynchronous orbiting CNES/ISRO Megha-Tropiques (M-T) satellite provides frequent time sampling in the tropics. This is especially critical to cover sampling gaps created by TRMM's recent de-orbit. With the demise of the MADRAS MW imager, M-T does not have a companion MW imager nor a precipitation radar. While they are not beam-matched, orbit coincidences between M-T and GPM can be used to "attach" the GMI and DPR observations. These joint data can be used to validate eventual GPROF retrievals from SAPHIR, to build observationally-based SAPHIR retrieval databases, and in general to study what cloud properties can be effectively retrieved from MW sounder channels, which are abundant (ATMS, NPP, MetOp, and future) and provide the revisit needed for GPM IMERG products.



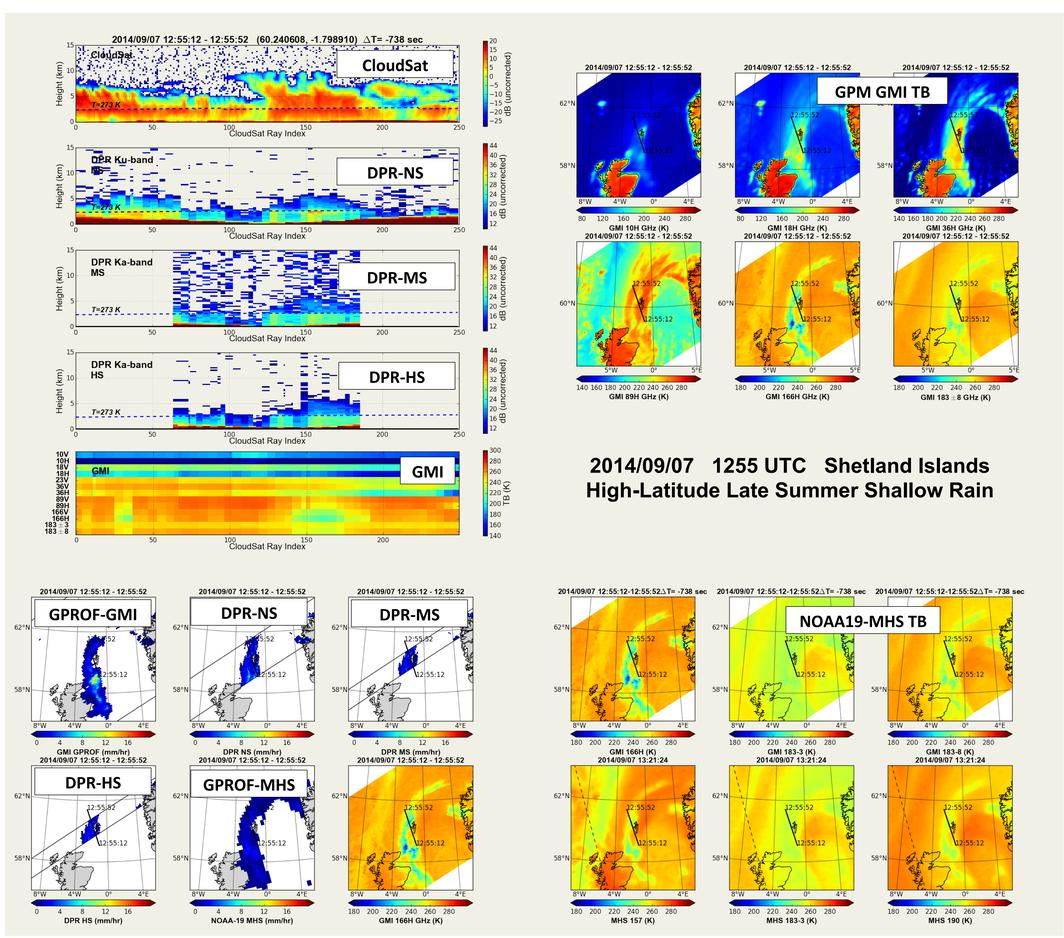


2014/12/14 2236 UTC Southern Alaska Coastal/Mountains Winter Drizzle/Snow





2014/06/23 0914 UTC Northern Russia Summer Over-Land Convective Rain



2014/09/07 1255 UTC Shetland Islands High-Latitude Late Summer Shallow Rain