

Space Based Precipitation Measurement with a CubeSAT

Precipitation measurement is necessary to study the rainfall patterns and predict the rainfall and storms. There are multiple ground based radars that perform this functionality. CSU-CHILL is one such example where ground based radars are used precipitation measurement. Maintenance of these radars are difficult and expensive. The proposal is to now use CubeSAT and develop a doppler Radar as payload. These doppler radars are small and can be deployed on CubeSATS. The performance of these payload can be improved with cloud profiling too.

X-band is the most suited frequency for such applications and it has been found that the existing small architecture can be used for a sensitivity upto -45 dBz. This can be further improved with reduced NF, high gain antenna and pulse bandwidth. Also, beamsteering can be used with array thinning for estimating rain fall in a specific direction.

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