Cifelli, R., V. Chandrasekar, H. Chen, and L. E. Johnson, 2018: High resolution radar quantitative precipitation estimation in the San Francisco Bay Area: Rainfall monitoring for the urban environment. *J. Meteor. Soc. Japan*, **96A**, 141-155.
https://doi.org/10.2151/jmsj.2018-016

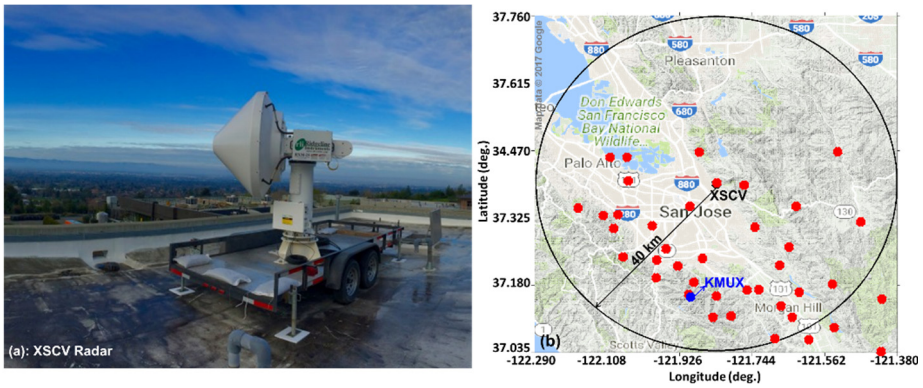

Figure 1. (a) Photo of the X-band XSCV radar deployed at the SCVWD Penitencia Water Treatment Plant; (b) Location and coverage map of the XSCV radar. The red dots denote rainfall gauges operated by SCVWD. The blue square indicates the location of S-band KMUX WSR-88D radar.

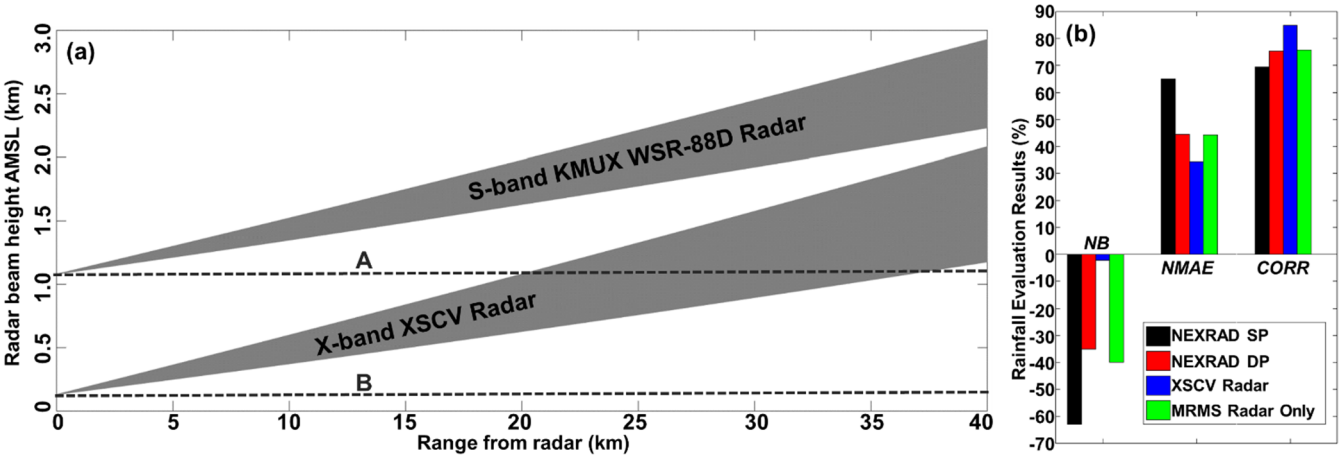

Figure 2. (a) Two-degree beam height above mean sea level (MSL) as a function of range. The dashed lines "A" and "B" indicate the altitude of the S-band KMUX WSR-88D radar and the X-band XSCV radar, respectively; (b) evaluation results of hourly rainfall estimates during the pilot study in 2016. The evaluation results are derived based on rainfall measurements by rain gauges shown in Fig. 1b.

- Radar quantitative precipitation estimation (QPE) over complex terrain such as the San Francisco Bay Area remains a challenge due to the complex spatial and temporal variability of precipitation microphysics.
- The NEXRAD operational radar network is insufficient to provide accurate, short-term near surface rainfall estimates in the Bay Area for urban hydrometeorological applications. This paper describes the deployment of X-band radar system to augment NEXRAD coverage and aid in monitoring precipitation for local forecasters and water managers as well as to better understand precipitation processes occurring in this region.
- The X-band radar can provide high quality rainfall estimates that perform better than NEXRAD-based operational products. The high resolution rainfall monitoring system based on gap-filling radars in this urban region also provides a host of benefits across different sectors of the economy.