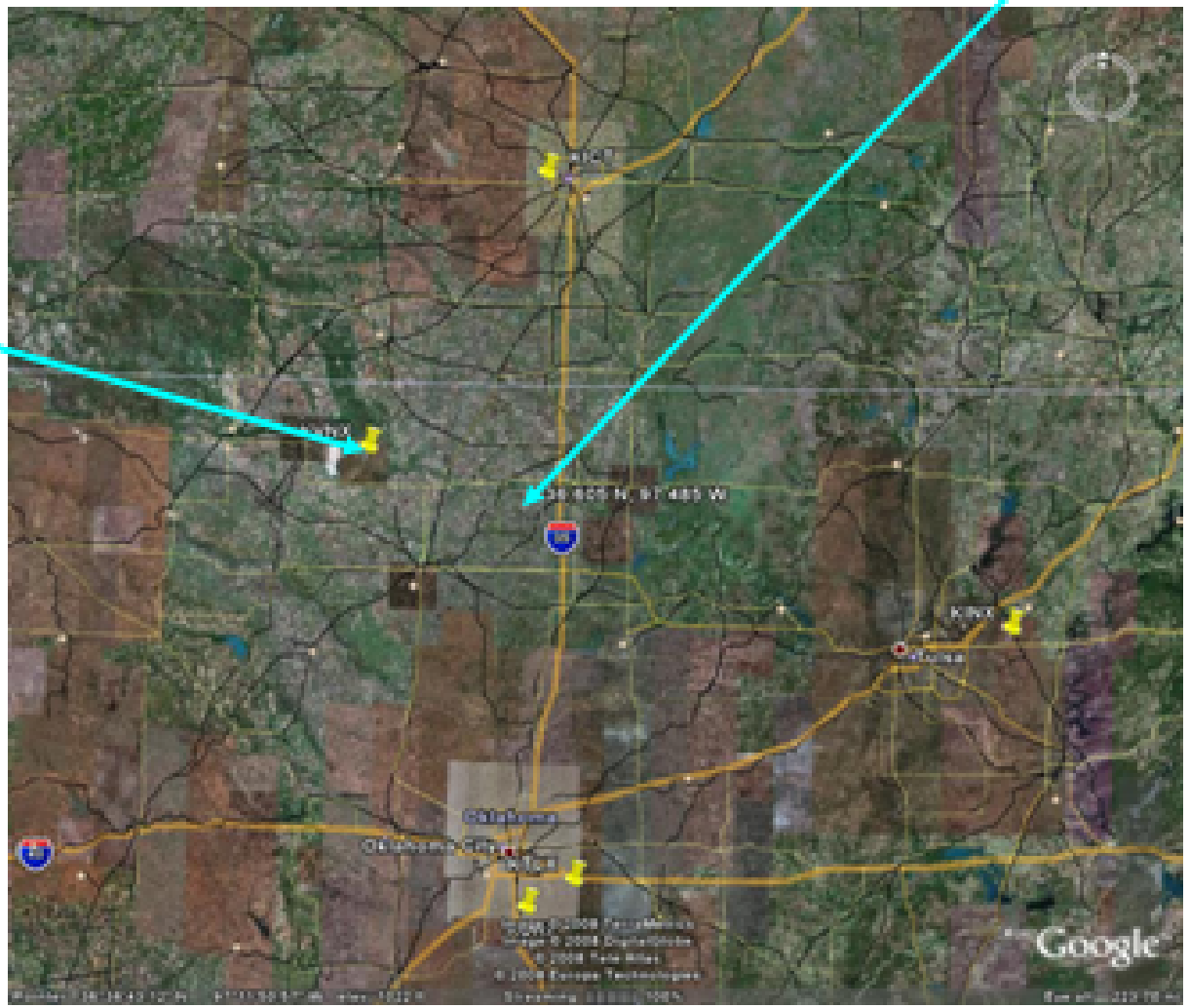
PI VAP (X. Dong et al., University of North Dakota)

WSR-88D profiles over SGP ARM site

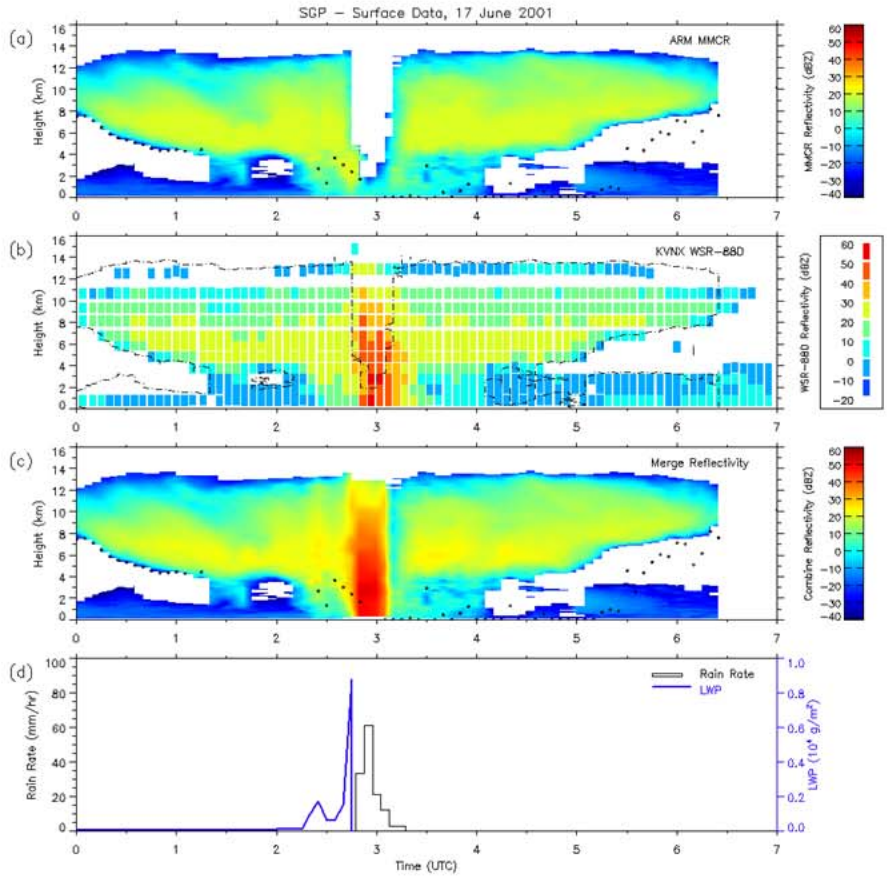
SGP Central Facility

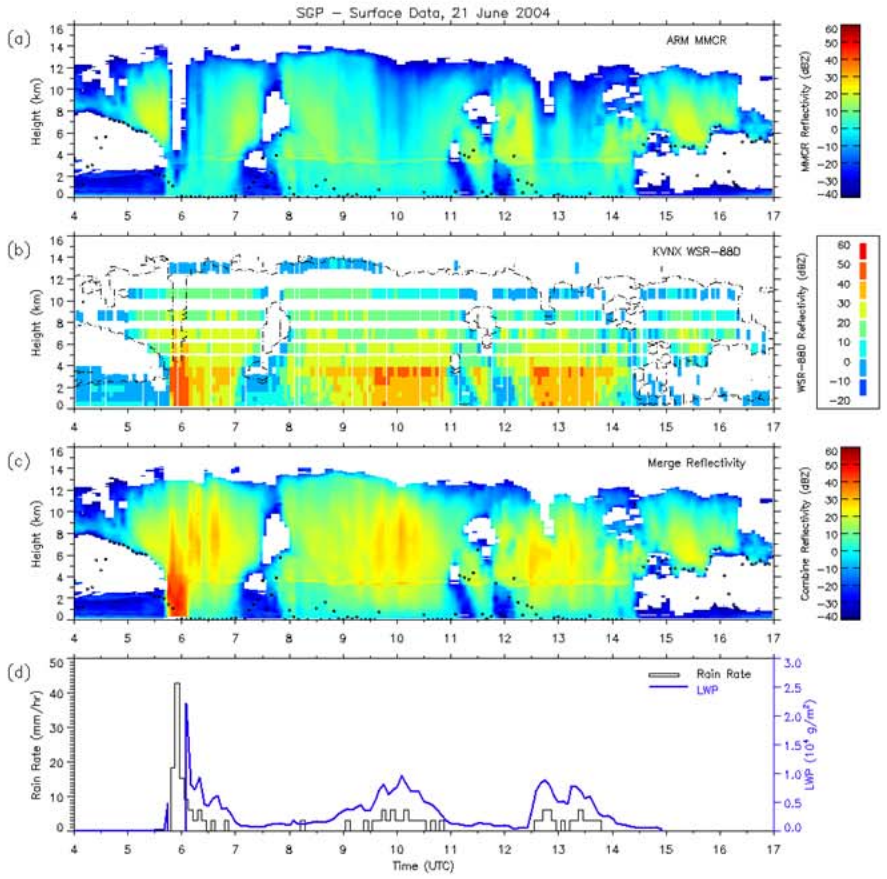
KVNX
NEXRAD
(WSR-88D)

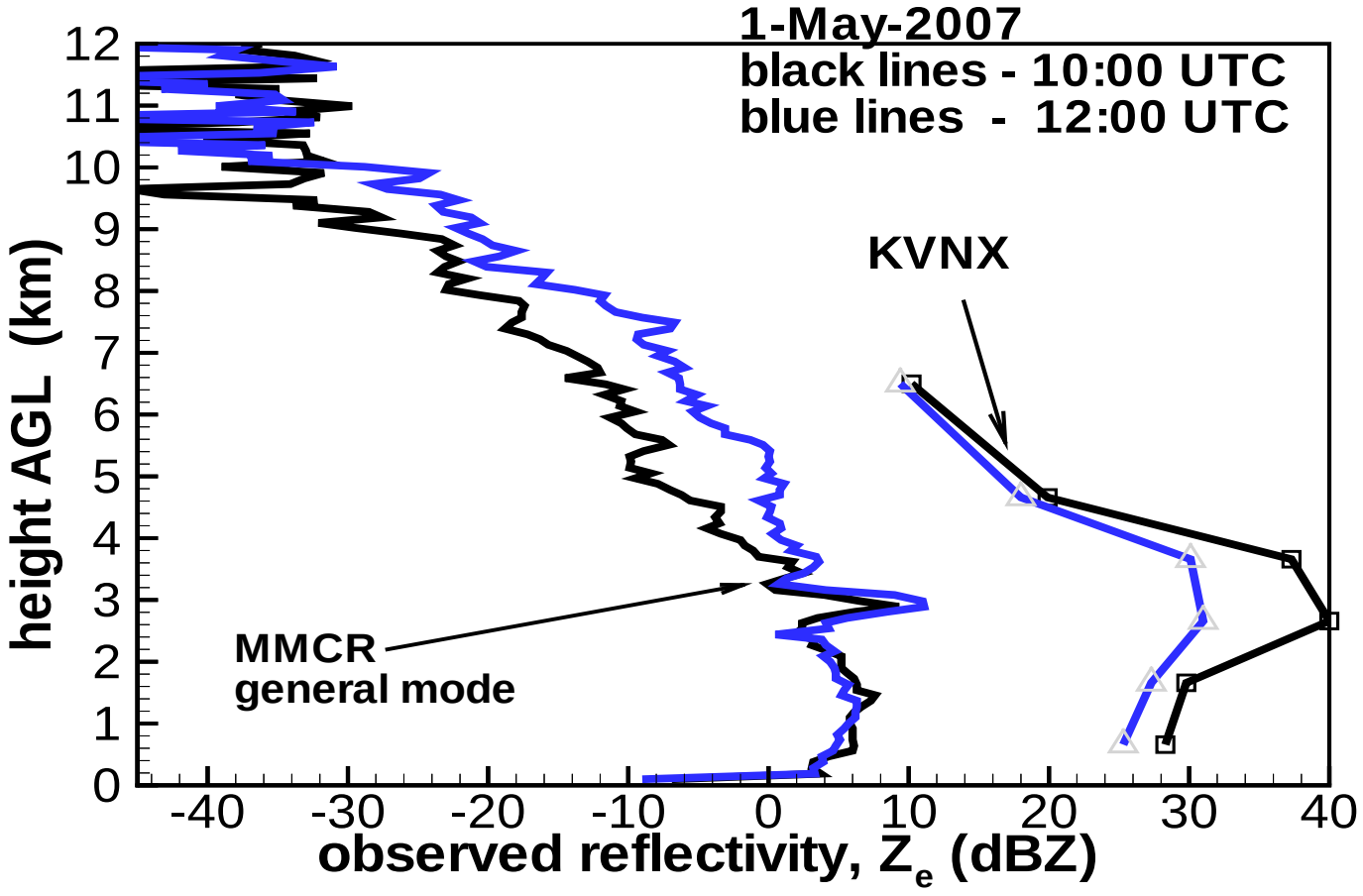


Examples from X. Dong:

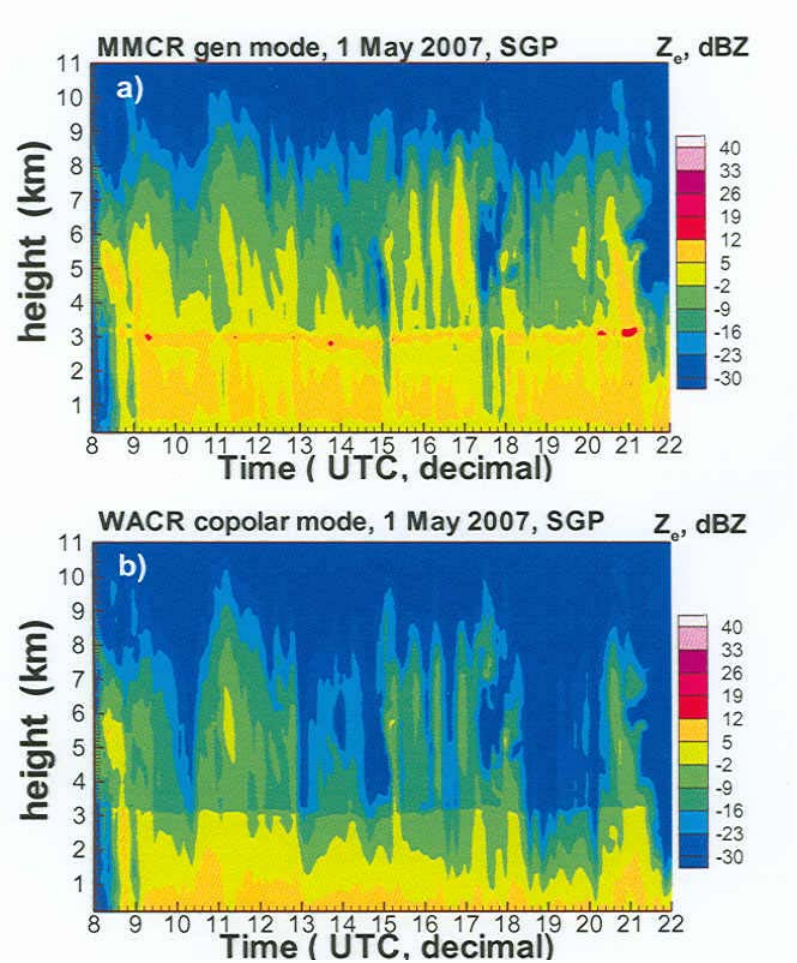
a) MMCR time-height cross-section
b) KVNX time-height cross section
c) merged product
d) surface rain rate and LWP

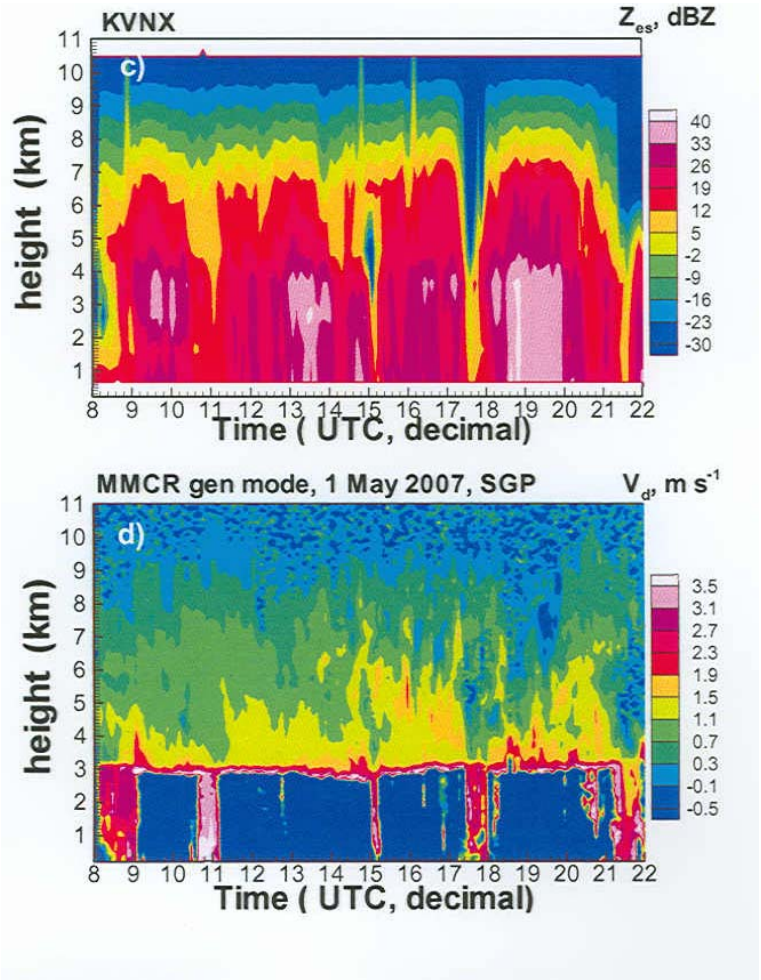


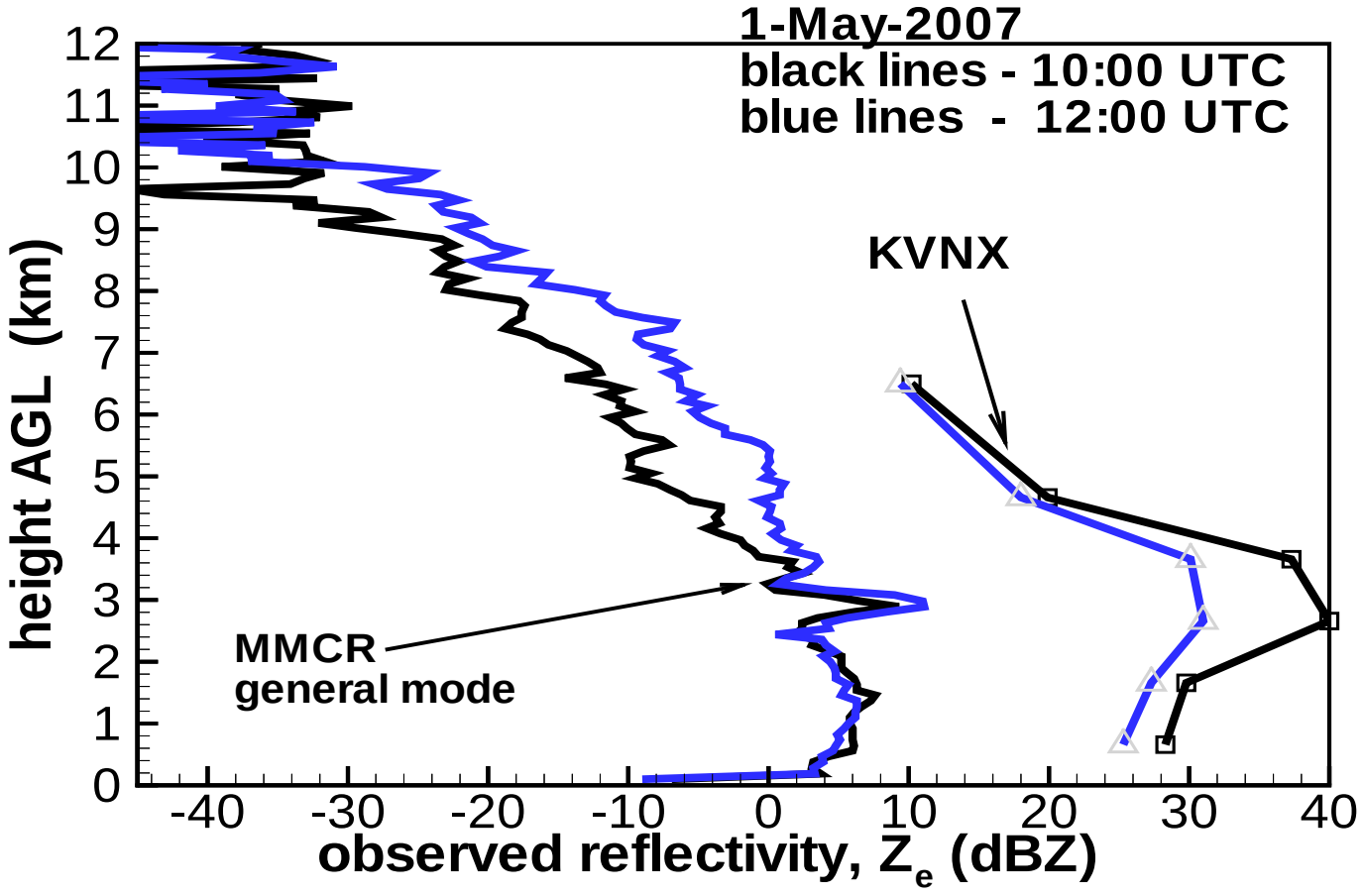



1-May-2007
black lines - 10:00 UTC
blue lines - 12:00 UTC
KVNX
MMCR
general mode
height AGL (km)
observed reflectivity, Ze (dBZ)
0
1
2
3
4
5
6
7
8
9
10
11
12
-40
-30
-20
-10
0
10
20
30
40

A stratiform precipitation case study at SGP (1 May 2007)



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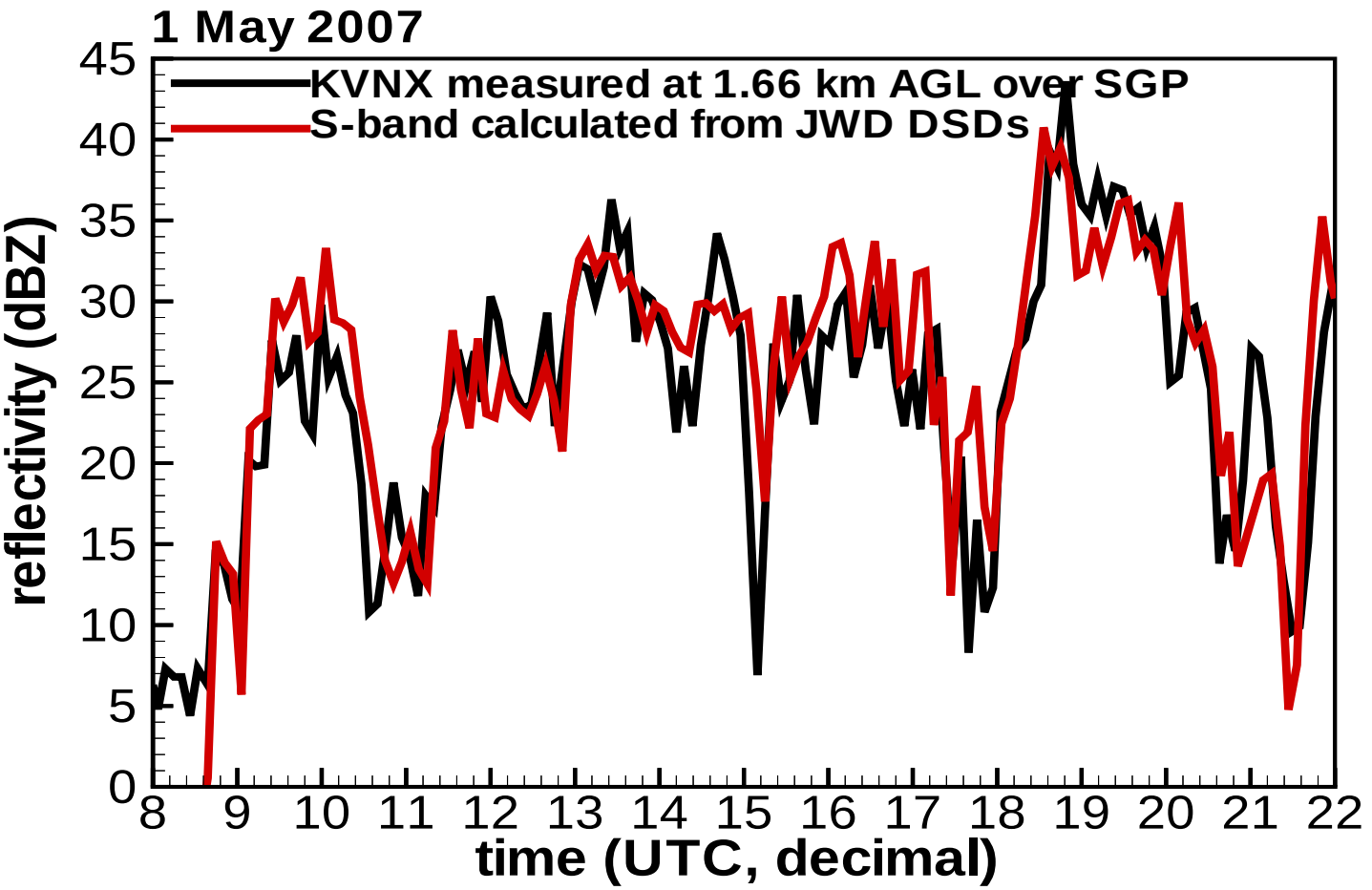
How good KVNX measurements are ?

Comparisons of KVNX and S-band JWD reflectivities



Issues to be beware of:

-general mode MMCR measurements are not appropriate for rain (low Nyquist, receiver saturation)

-precipitation mode MMCR measurements are often attenuated out in ice parts of precipitating systems (well below cloud tops)

-in a typical precipitation mode volume scan KVNX NEXRAD has only 6 points in the vertical profile over the SGP site

-the spatial resolution of the KVNX NEXRAD over the SGP Central facility is about 1 km^3, the time resolution of the KVNX profiles is about 5.5 min

-scattering at the MMCR frequency can be non-Rayleigh for heavier rainfalls and large snowflakes. For the KVNX radar it is largely within the Rayleigh regime

Nevertheless, this PI product will be a very useful addition to the ARM data