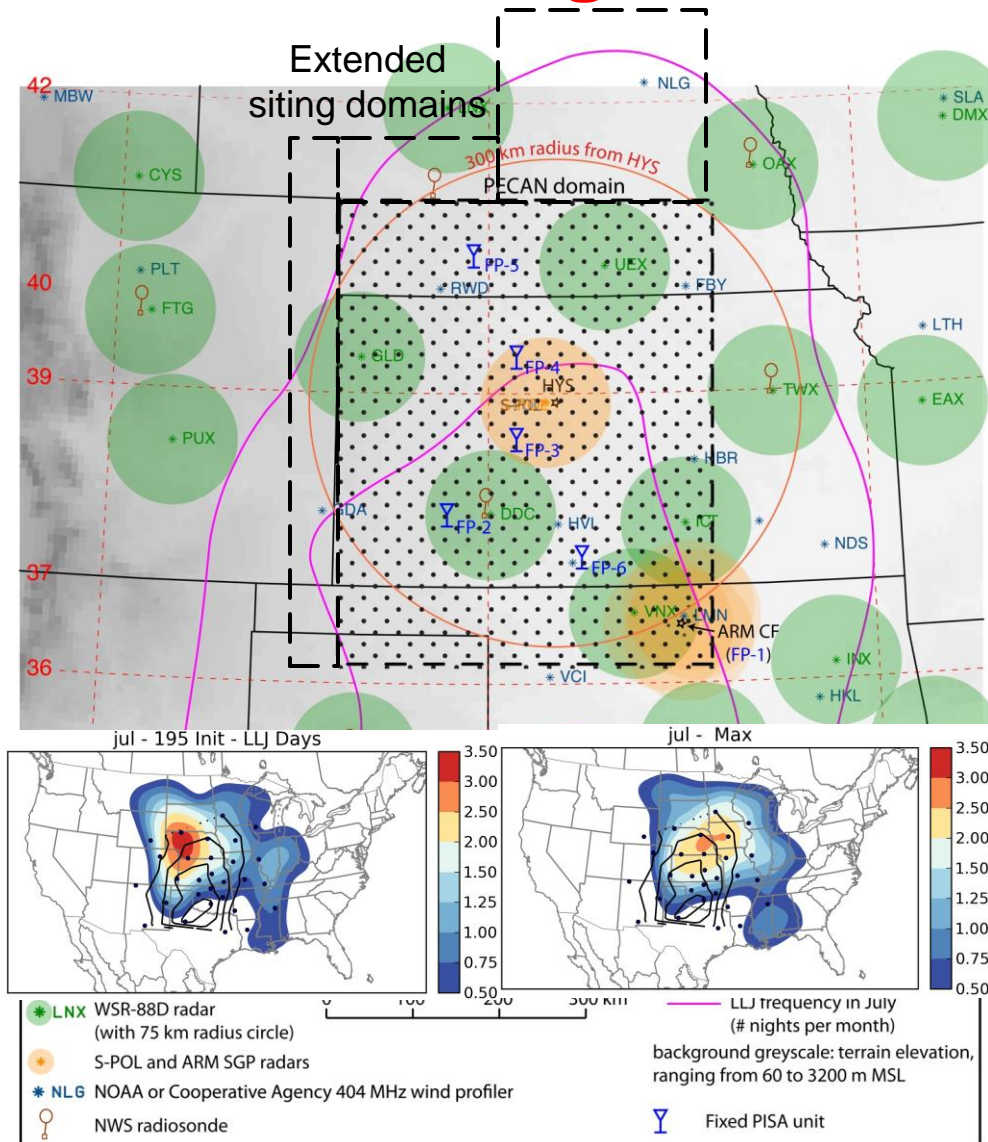


Geo-database survey for mobile radar/PISA/soundings sites

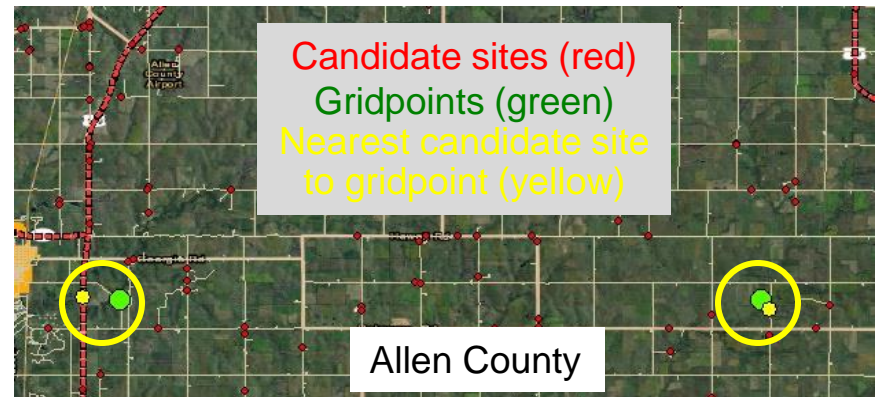
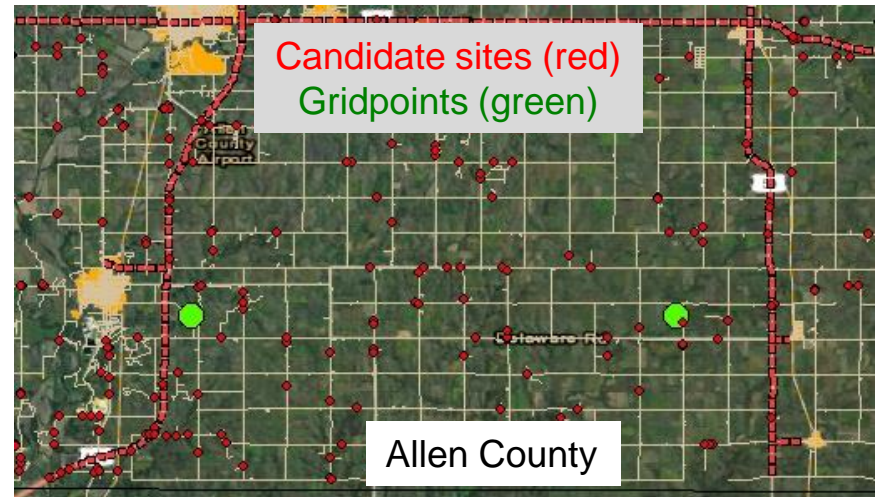
- ❑ Need to pre-select mobile radar/PISA/sounding sites for probable nocturnal deployments
- ❑ Assuming 10 km spacing, PECAN domain requires ~1800 sites
- ❑ Gridding usefully maps sites to computational space of chosen resolution
- ❑ Extended siting for MCSs in NE, SD, and eastern CO in June-July requires ~ 2700 total sites at 10-km spacing



Candidate sites and gridpoints

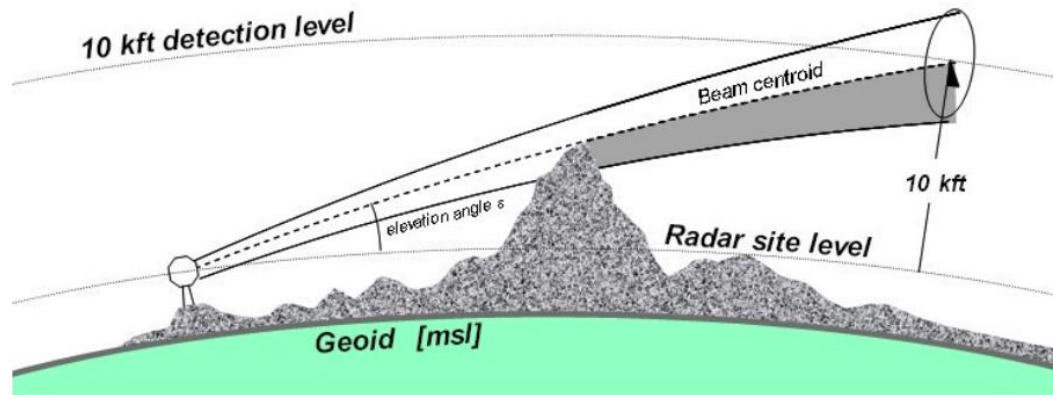
- ❑ Look at example for Allen County KS assuming a 20 km grid spacing
- ❑ apply objective siting rules in ArcGIS:
 - spaced along S1100 or S1200 roads;
 - intersections S1100/S1400, S1200/S1400, S1100/S1200
- ❑ Upper panel: shows candidate sites from ArcGIS (red) and gridpoints (green)
- ❑ Lower panel: same as upper panel but shows nearest candidate site to each gridpoint (yellow)

(GIS analyses/images courtesy Ami Arthur, CIMMS/NSSL)



Pre-PECAN virtual site selection procedure

- ❑ NSSL-authored ArcGIS plug-in Python script will *objectively derive* candidate parking sites from TIGER-2010 road data including simple local terrain-slope thresholding
- ❑ Second ArcGIS plug-in Python script will perform *objective* “radar terrain occultation” calculation at each site in sets of prescribed 360-deg, constant-elevation sweeps

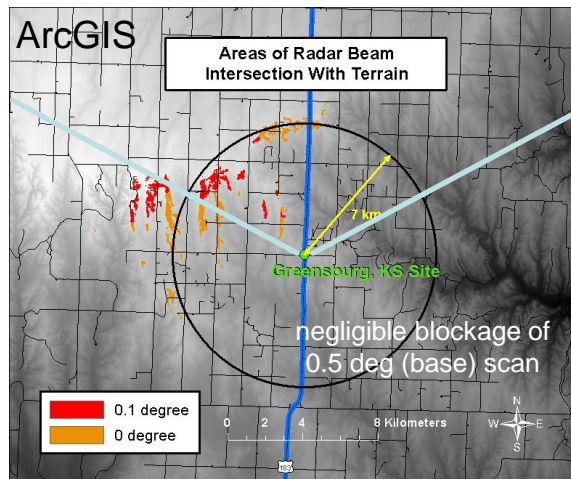


- ❑ SHAVE students will create SAT/StreetView™ images for sites (~450 sites/student)
- ❑ Site database: metadata, GEO/StreetView™ & occultation images (lowest height & el angle)
- ❑ *Virtual-visual* evaluation of sites by mobile radar experts:
 - examine occultation calculation images for scan blockage;
 - examine GEO and (where roads permit) StreetView™ for nearby trees, structures;
 - rate (and write brief description?) of each site.

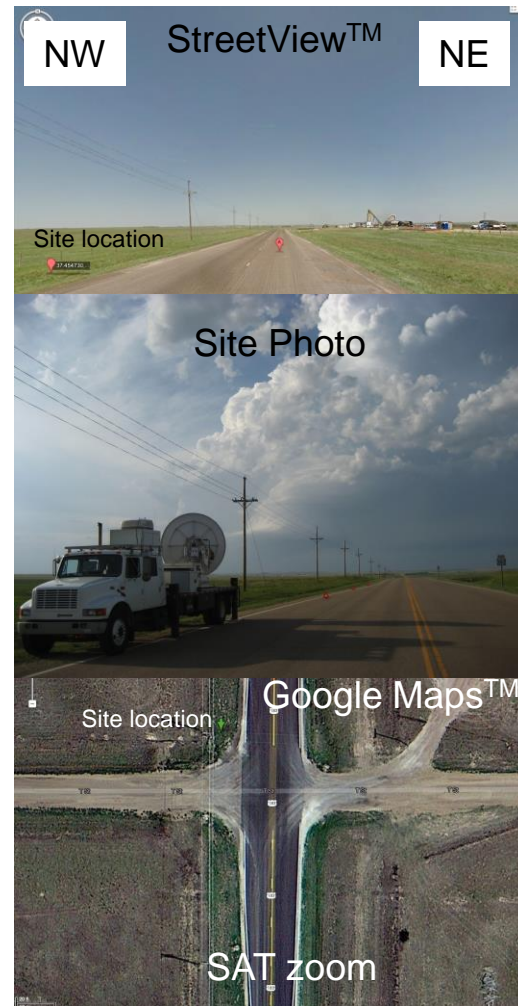
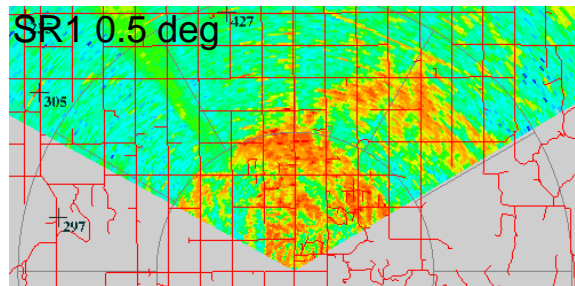
Example: SR1 site near Greensburg, KS (6/9 during VORTEX2-2009)

Operator description: “radar site, west shoulder of US-183, excellent visibility”

- ❑ Have 100+ known radar parking sites from VORTEX2 to test method
- ❑ Determined blockage using DEM and ArcGIS Viewshed at the known SR1 location
- ❑ Negligible terrain above 0 deg sweep (orange) & no terrain above 0.1 deg (red-filled)
- ❑ Validation of known SR1 site:
 - Minimal blockage;
 - Available parking & absence of proximate trees/structures inferred from SAT and StreetView™ images



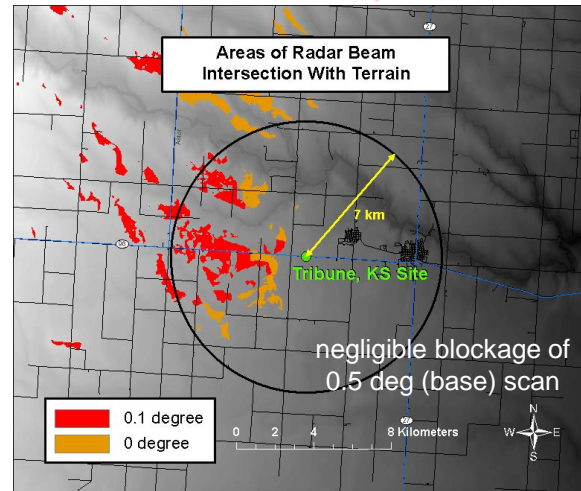
Minimal blockage & ground returns from lower half of main lobe & side lobes



Example #2: SR1 site near Tribune, KS (5/25 during VORTEX2-2010)

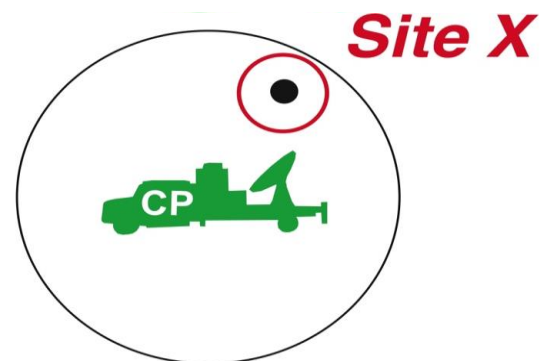
Operator description: “Good site, almost 360 horizontal view, with *slight LL blockage NE from grain tower*”

- ❑ Determined blockage using DEM and ArcGIS Viewshed at the known SR1 location
- ❑ Negligible terrain above 0 deg sweep (orange) & no terrain above 0.1 deg (red-filled)
- ❑ Validation of known SR1 site:
 - Minimal blockage;
 - Available parking & absence of proximate trees/structures from SAT and StreetView™ images



Perusing candidate sites in situational awareness display

- ❑ PECAN needs an ability to peruse candidate sites in a situational awareness (SA) display with pan/zoom anywhere in domain during any given IOP
- ❑ Example: “virtual” MCS intercept north of Hays modeled from 11 June 2002 IHOP nocturnal MCS/LLJ forecast
- ❑ Select target area for MCS
- ❑ Zoom to locate e.g., radar array
- ❑ Zoom on given radar to peruse sites
- ❑ Select “Site X” to peruse properties
- ❑ Note: overall size of data set is function of number of sites and image quality.



Site X Data (i.e., all data near gridpoint)

Metadata:

(lat, lon), site rating, description of imaged Site X
(lat,lon) of other proximate (non-imaged) sites

Images:

