

Mobile soundings and mesonets

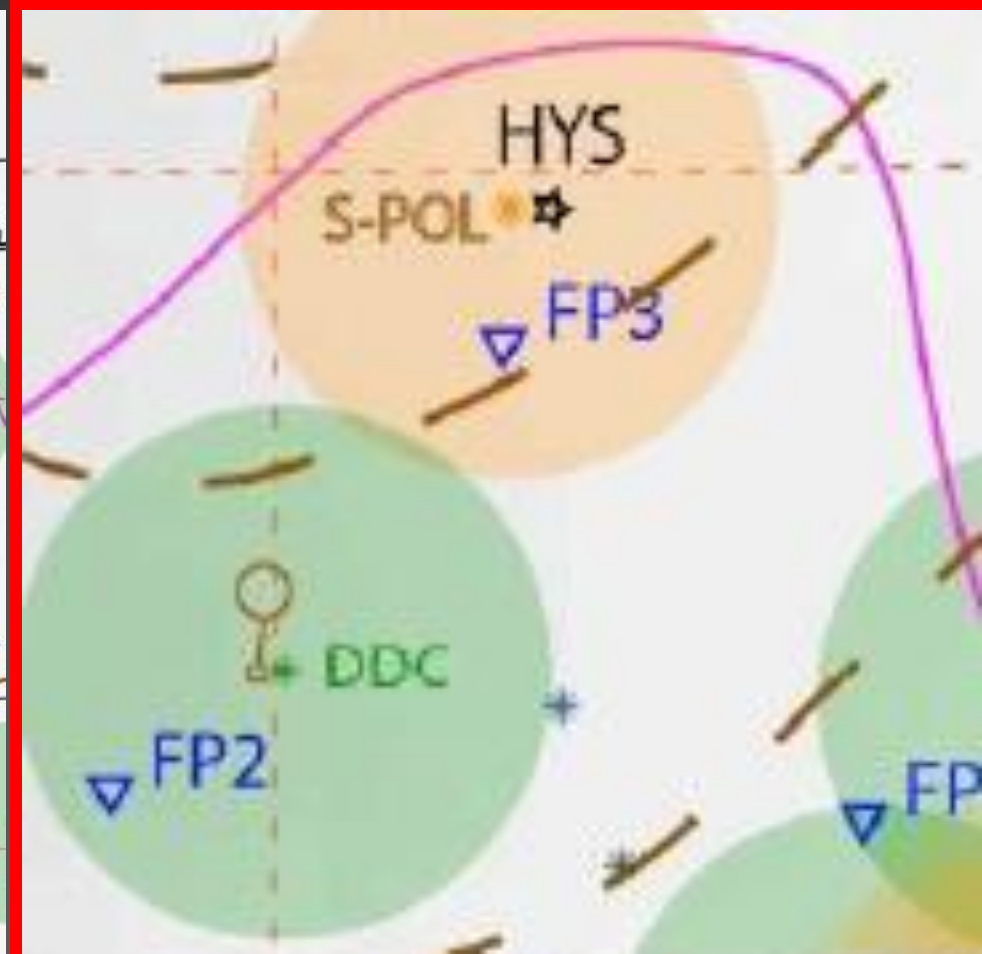
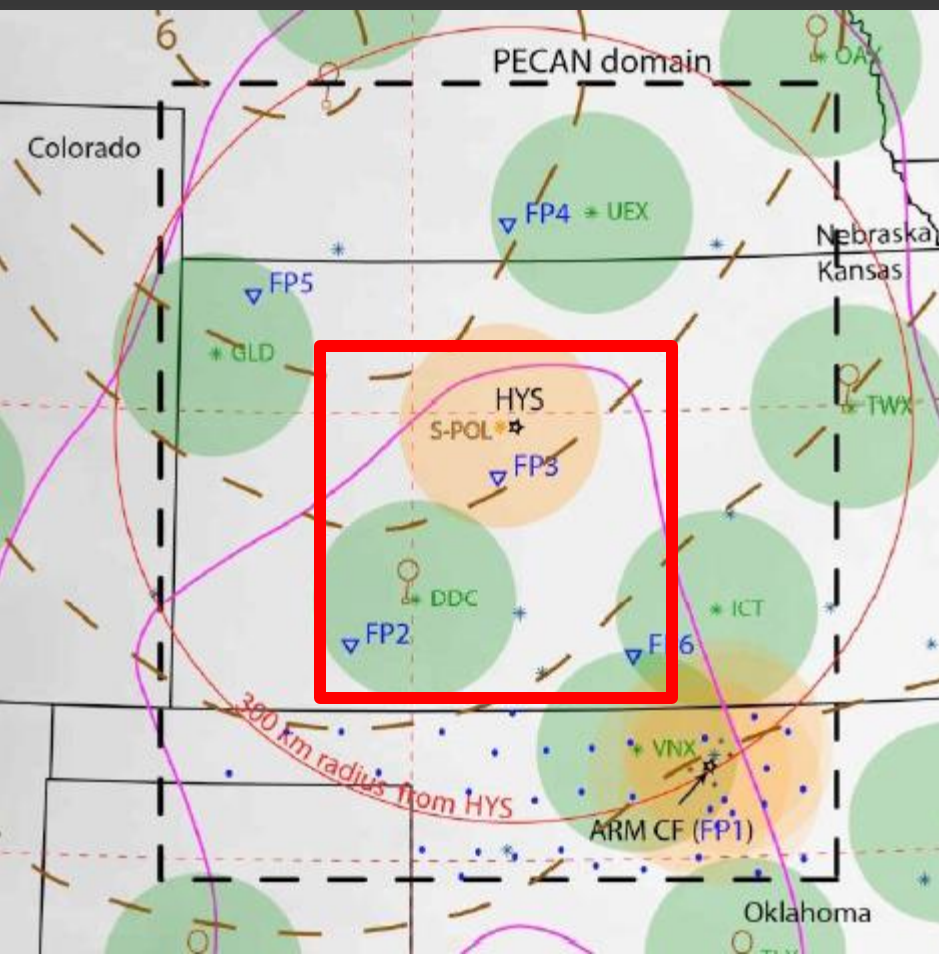
- ❑ Parker (NCSU), Schumacher (CSU), Ziegler & Coniglio (NSSL), Wurman (CSWR)
- ❑ Instruments that can collect data while moving
 - 2 x NSSL MGAUS systems with surface station roof racks
 - 1 x CSU MGAUS system (likely with surface station roof rack)
 - 2 x NSSL mobile mesonets
 - (likely) 3 x CSWR mobile mesonets
- ❑ Temporary fixed measurements
 - (likely) 15+ CSWR surface pods (drop and recollect)



Mobile soundings and mesonets

□ Primary concepts

- Fill gaps between fixed assets (FPISAs, stationary MPISAs, NOAA sites)
- Cover “misses” and extend sampling outside high-density domain
- Properly sample important outflow structures below base scan

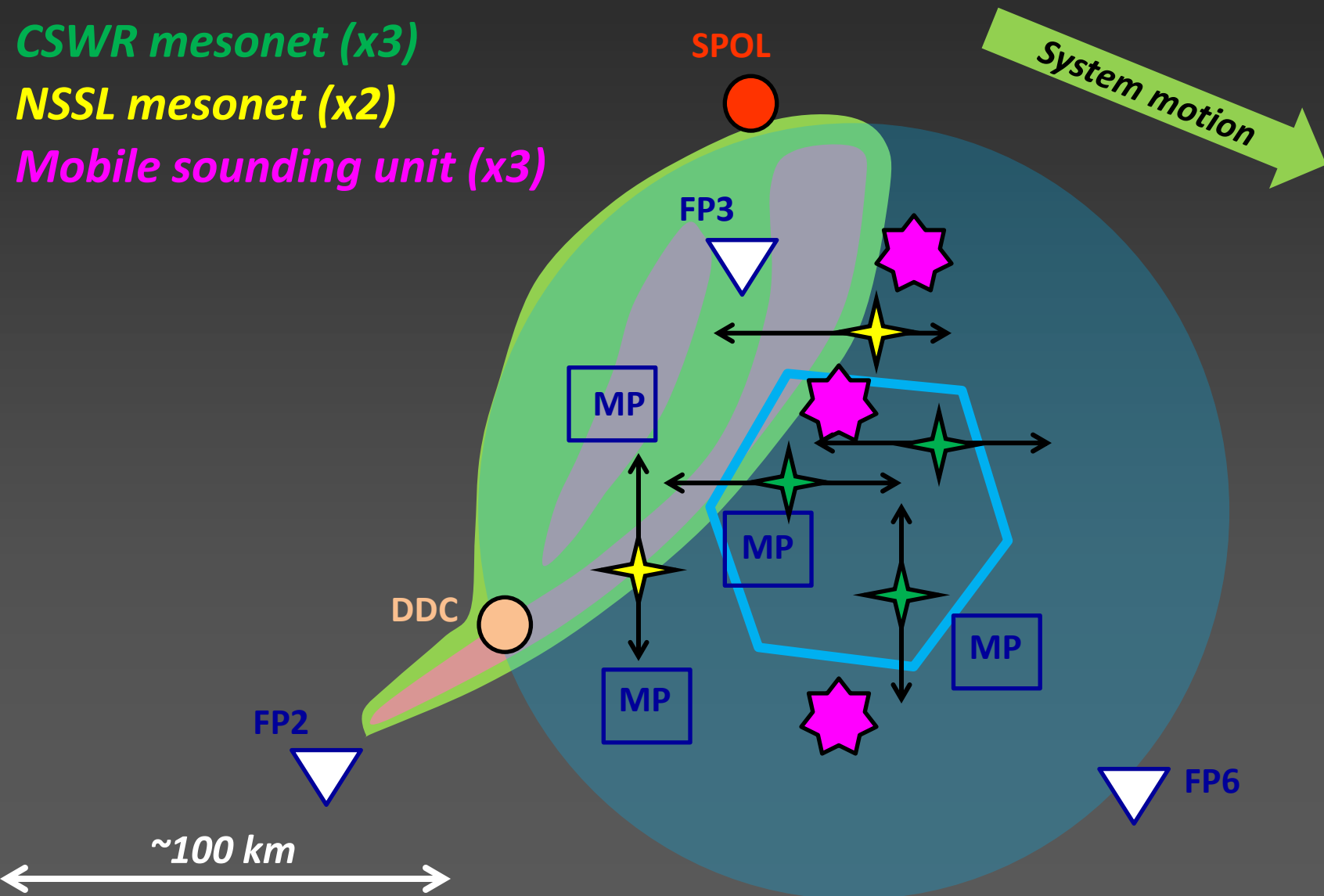


Filling gaps between stationary assets

CSWR mesonet (x3)

NSSL mesonet (x2)

Mobile sounding unit (x3)

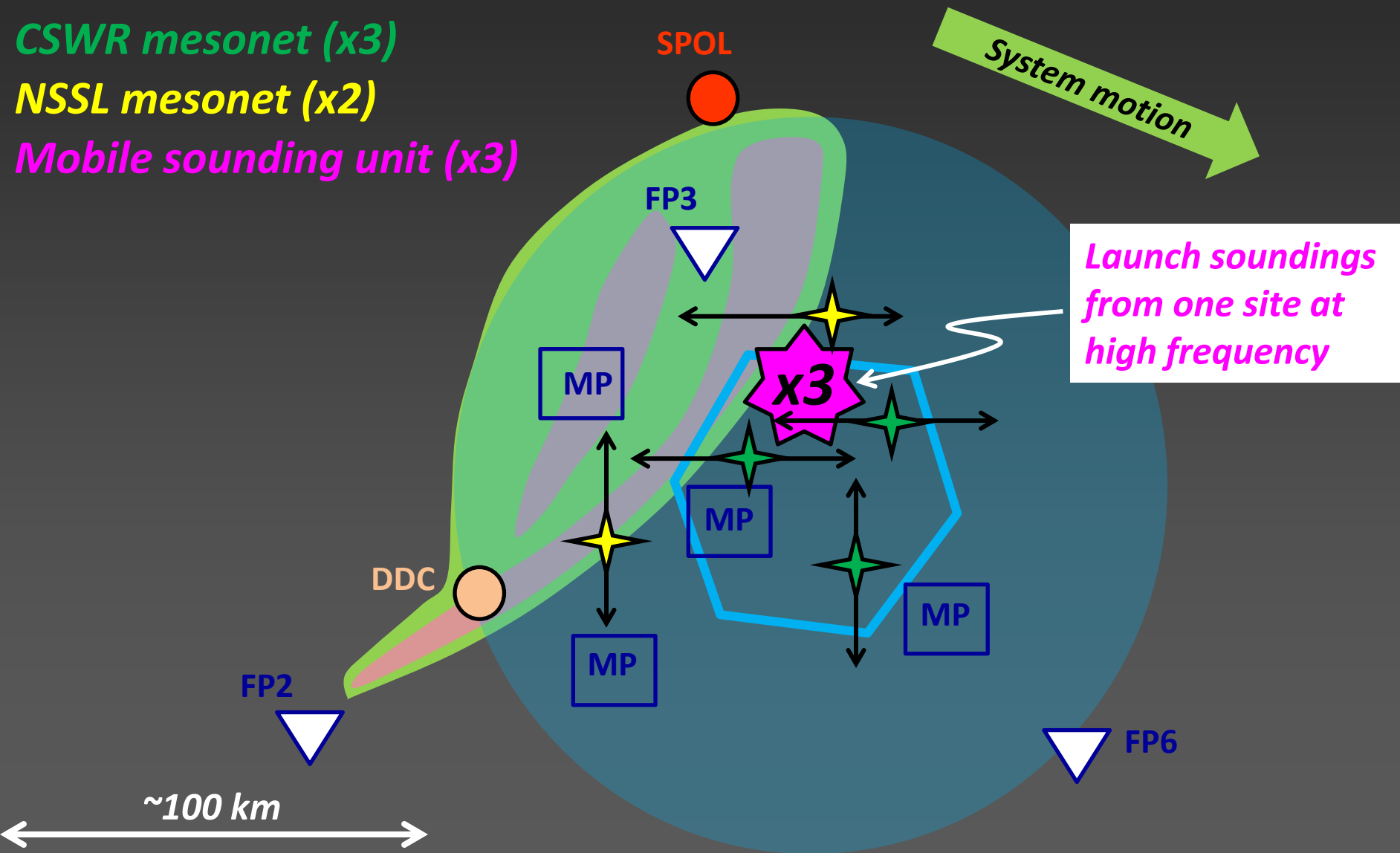


Filling gaps: alternative approach

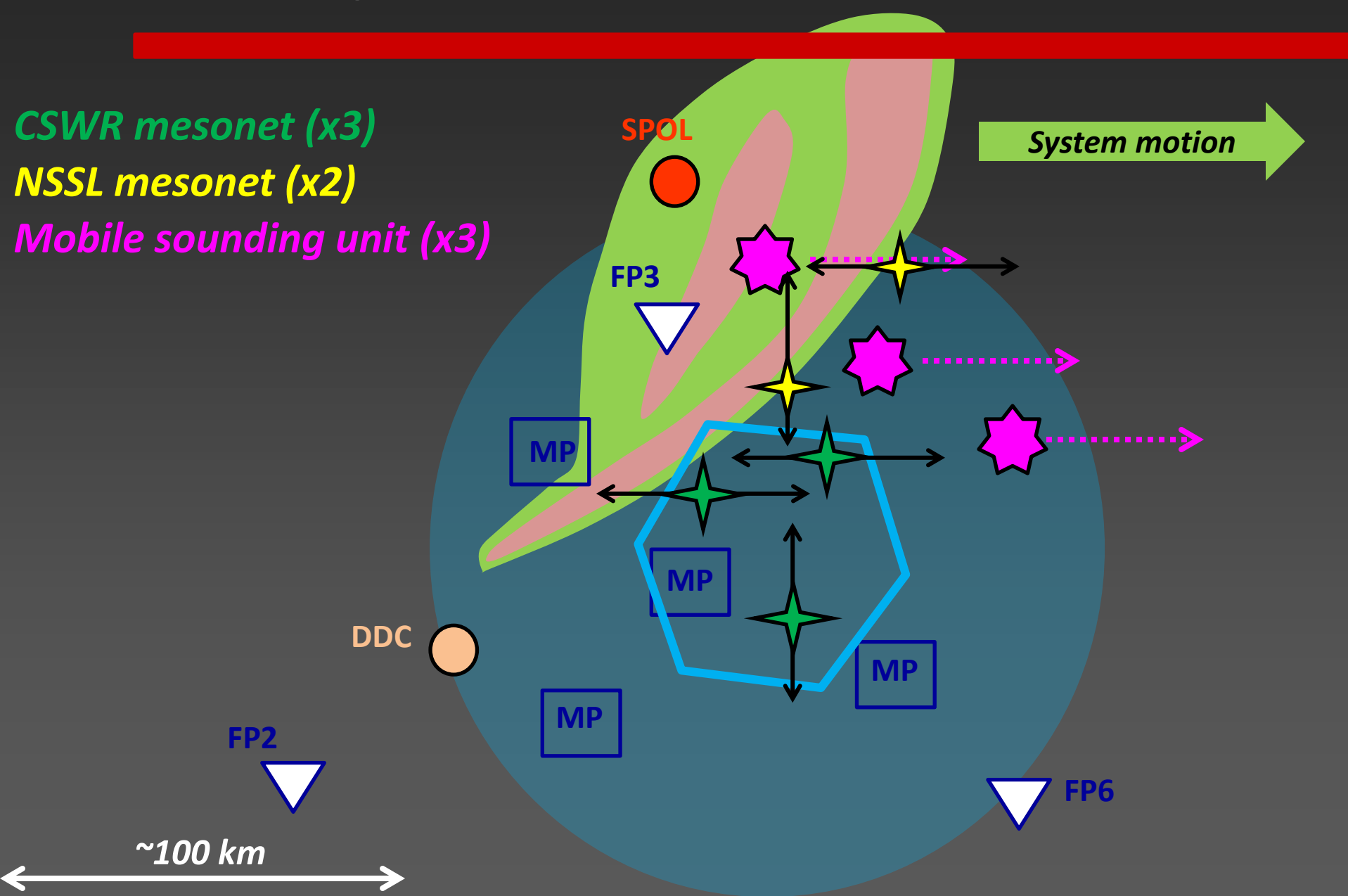
CSWR mesonet (x3)

NSSL mesonet (x2)

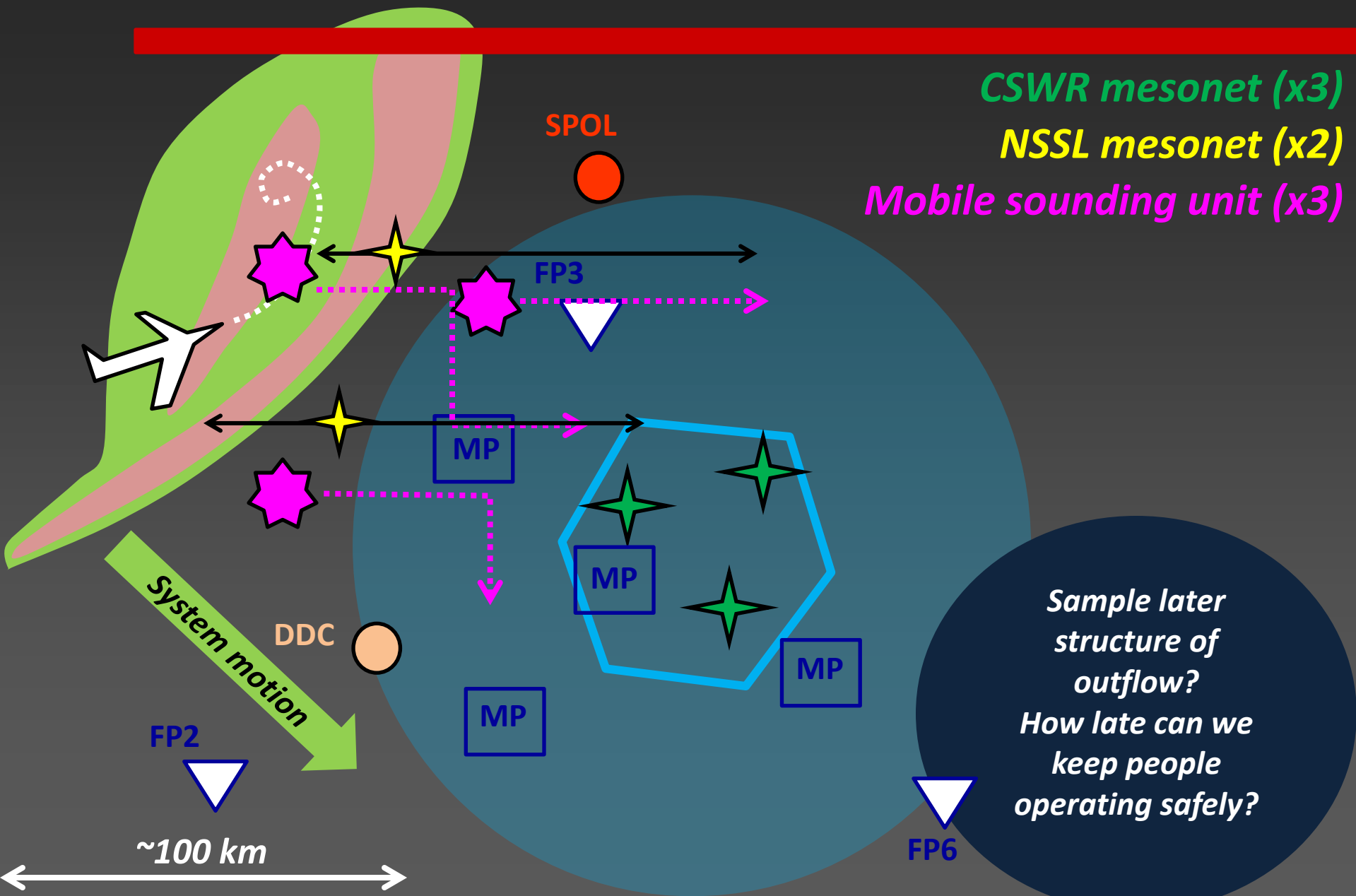
Mobile sounding unit (x3)



Covering a "miss"



Extended sampling



Operational philosophy

- ❑ CSWR pods and mesonets (surface only)
 - Likely to remain in the multi-Doppler lobes
 - Likely to execute rather simple repeated patterns in order to maximize density of surface data within the MD lobes (“lightly coordinated”)

- ❑ NSSL/CSU soundings and mesonets
 - Philosophy similar to VORTEX2 (Parker) and MPEX (Coniglio, Schumacher) coordination, with similar tools
 - One lead coordinator outlines desired deployment and goals, with continual status updates (both safety and operational)
 - Each mobile team has a “captain” who is entrusted to execute that mission semi-autonomously (if comms are lost or there are immediate/local safety considerations)

- ❑ Likely a rotating lead coordinator
 - Coniglio, Parker, Schumacher (PIs)
 - Lead coordinator could be in one of the vehicles, or at the HYS ops center, or even at another site with good bandwidth and comms
 - Non-lead PIs will still be engaged and provide feedback/suggestions

Concerns

❑ Safety challenges

- Driving in heavy rain, possibly with strong winds
- Nighttime visibility in regions with possible flooding or wind damage
- Crew fatigue (very little down-time on storm-following missions)
- Working outside vehicle near active roadway, ditches, nocturnal critters, cloud to ground lightning flashes

❑ Operational challenges

- Rear-to-fore transects will be difficult for fast-moving systems (especially given need to drive more slowly in convective region)
- Identification of suitable launch sites in the dark (hopefully the GIS database will really help here)... avoiding power lines, etc. Also, not leaving equipment outside vehicle. Hoping for flood lights!
- Launching in strong outflow and heavy precipitation
- Frequency allocation

Input

- Our proposal and philosophy to this point have heavily emphasized the MCS missions, and sampling of the outflows
 - What other tasks could be useful for CI / bore missions? Mesonets will certainly be up... should sounding systems be using expendables?
 - What other PI aims could we be satisfying with these teams?
- Questions, concerns, or special requests?

