UWKA flight patterns

120 flight hours

instruments

- MARLi <u>or</u> WCL up & compact Raman lidar down (Zhien Wang)

- gust probe, state variables, turbulence
- high-frequency temperature (reverse flow thermometer)
- high frequency humidity (closed path LI-COR 6262 and/or the open path LI-COR 7500)
- clouds: LWC-100 and CDP
- Radiation: hemispheric IR and VIS up and down, plus Heimann nadir IR thermometer
- applanix (dGPS position & attitude) ← perturbation pressure
- satcom   ← data exchange
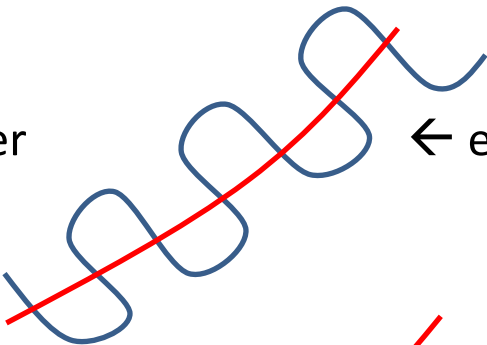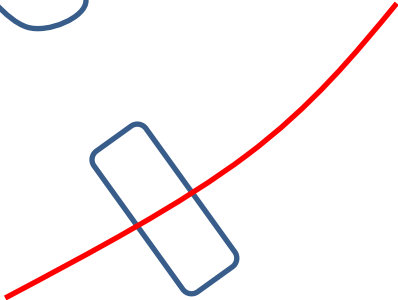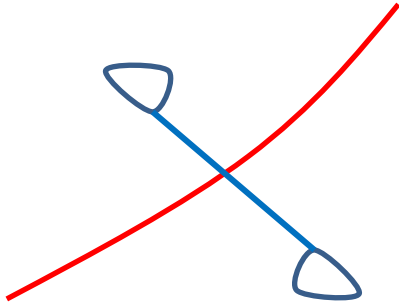
- other probes?

flight level considerations

minimum flight level

- MARLi:
  - minimum eye-safe level: ~700 m AGL
  - MARLi data range at least 2.0 – 2.5 km AGL
  - This happens to cover the depth of
    - the SBL and the LLJ (LLJ missions)
    - disturbances above the SBL (MCS and bore missions)
    - the layer of most unstable CAPE (CI missions)
- compact Raman lidar:
  - min eye-safe level of no concern
  - data range ~1 km → preferred flt level 1-3 kft AGL
- flight safety
 - ~300 m AGL (1000 ft) in VFR, depending on tower height

upper flight level

- determined by depth of feature, or its influence (~5 km MSL)
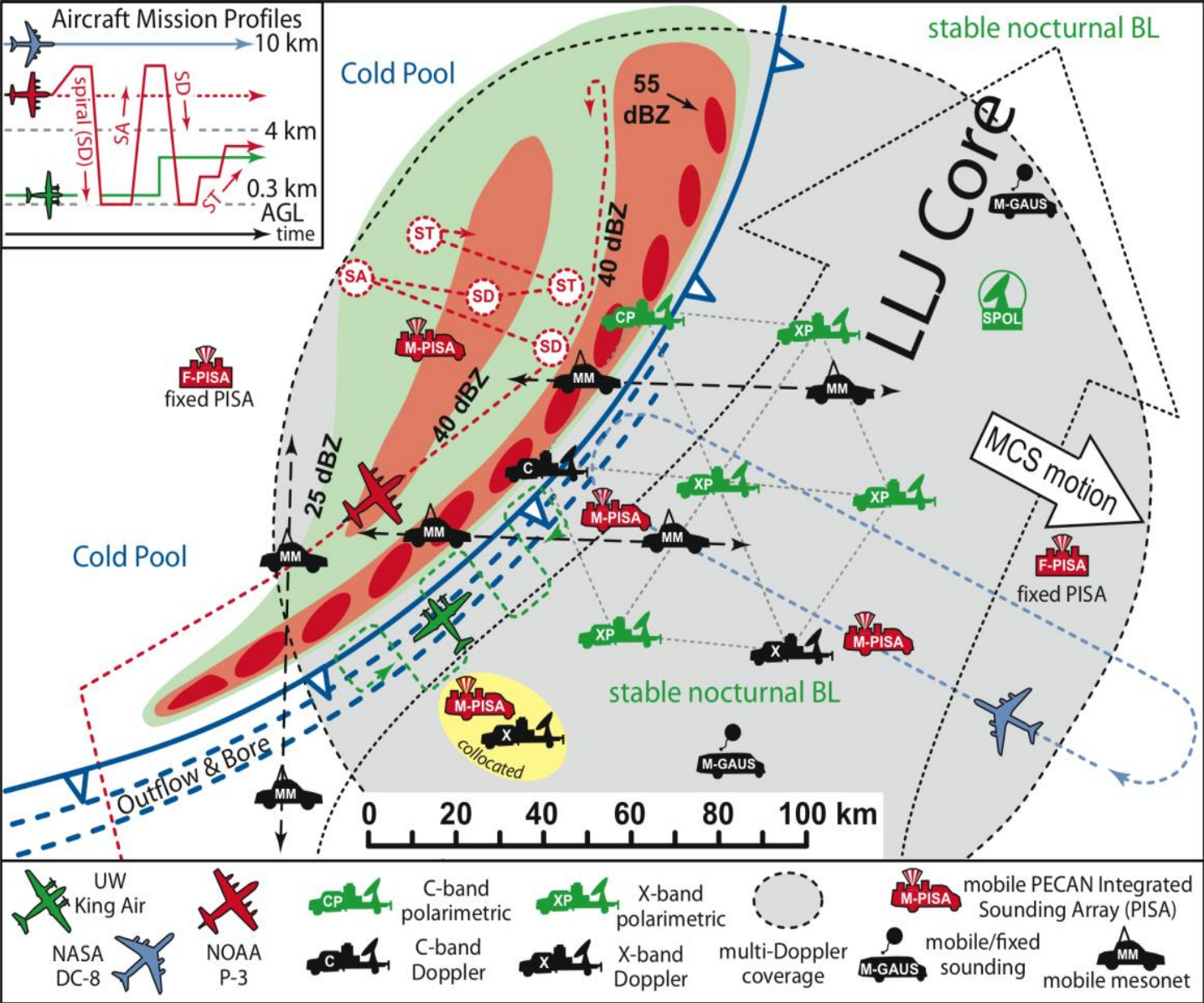
basic patterns <u>across</u> feature of interest

— lawnmower   ← emphasizes variations in transect structure <u>along</u>

feature of interest moves
→ dynamic waypoints!

— racetrack

— single track with 90/270° turns   ← emphasizes <u>evolution</u>
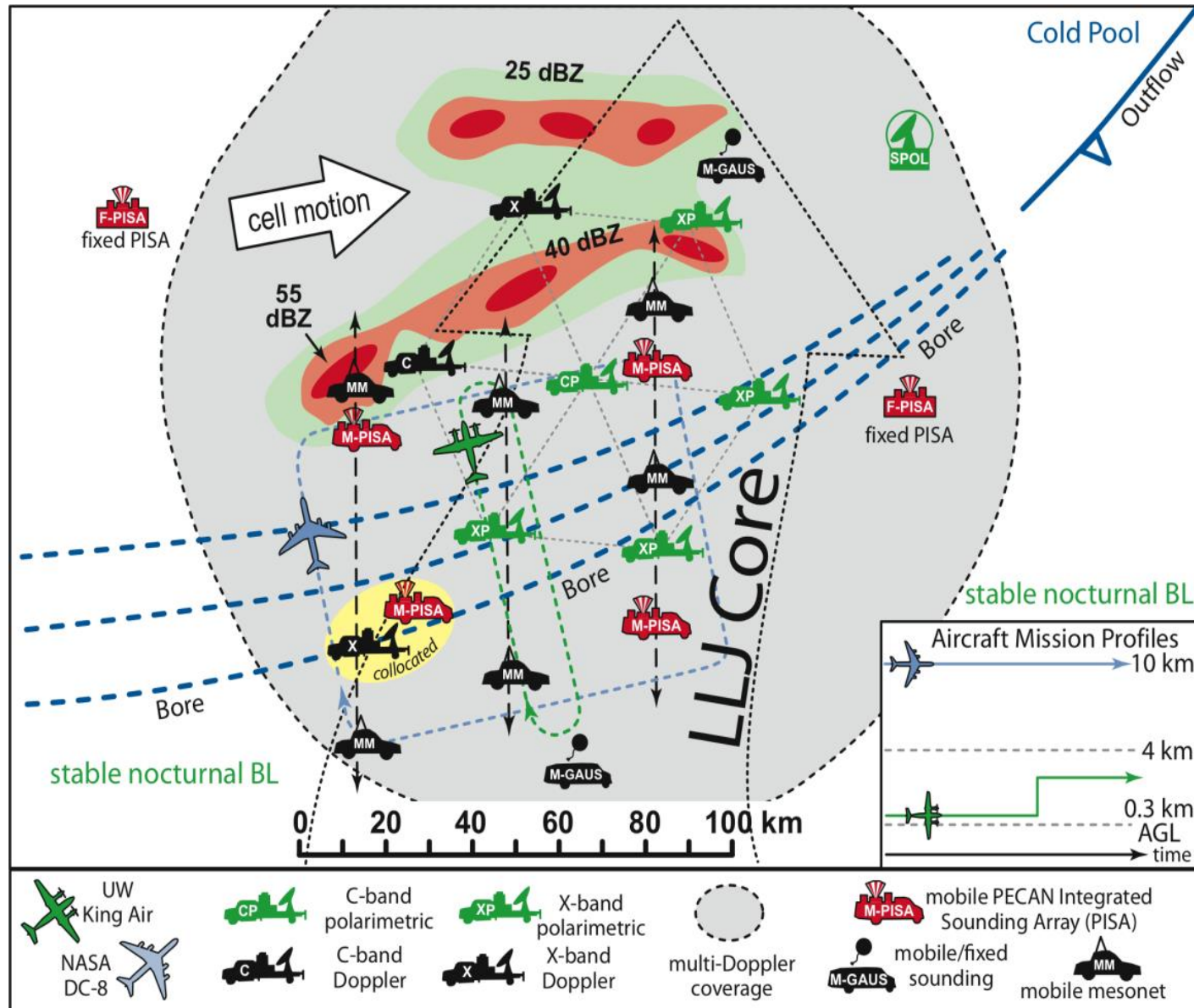
— single level or stacked traverses

UWKA stepped traverse

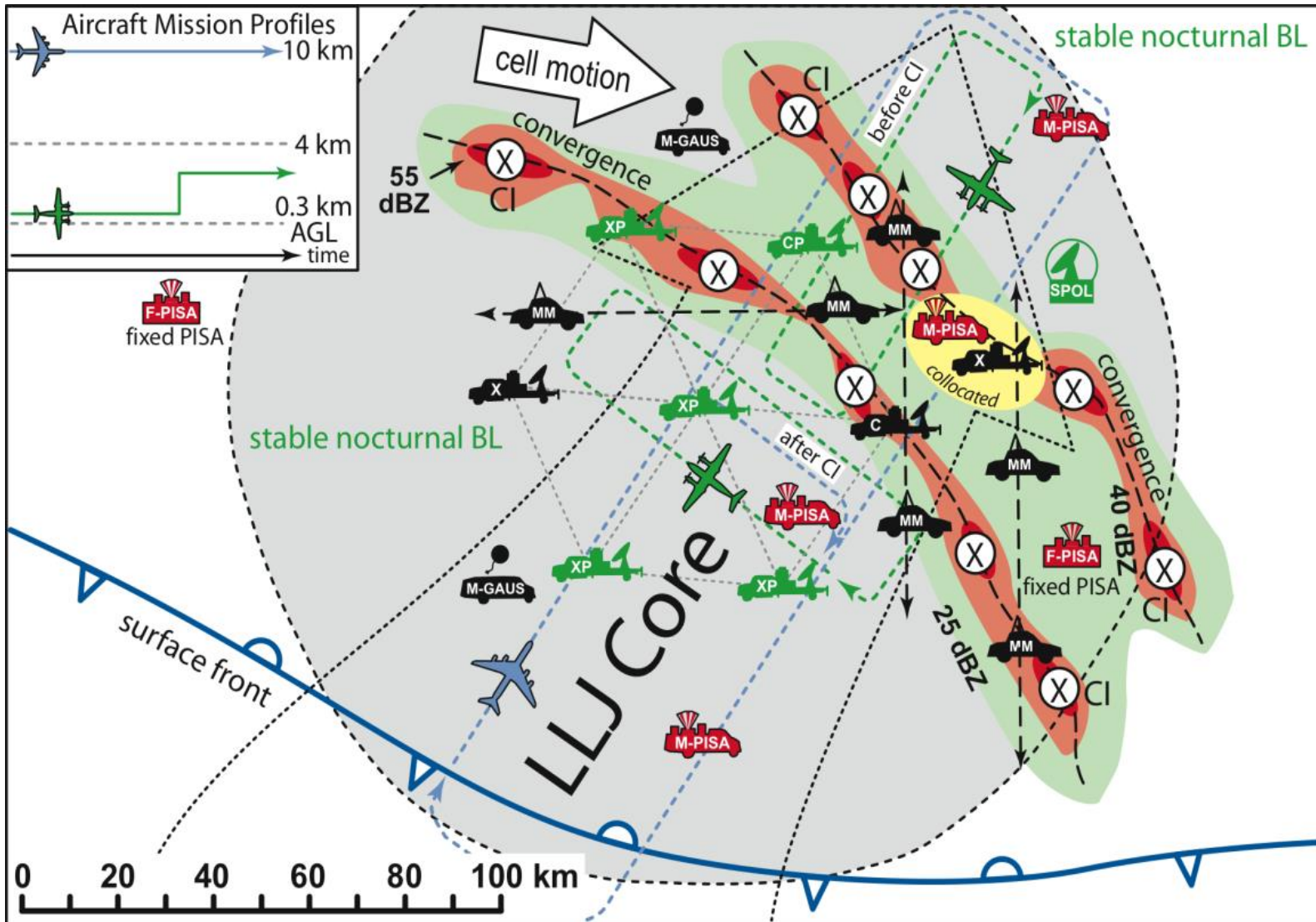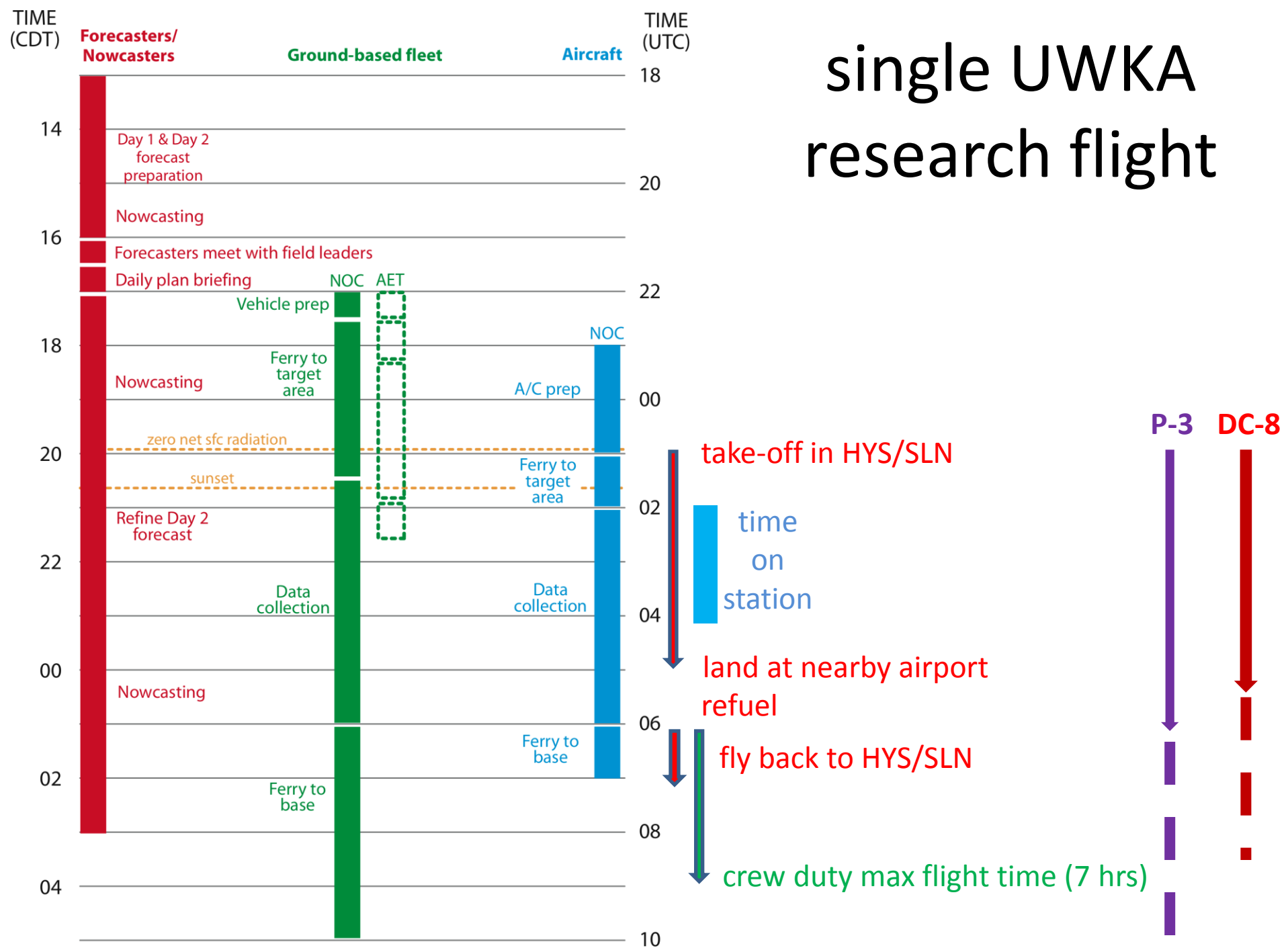
time (UTC)
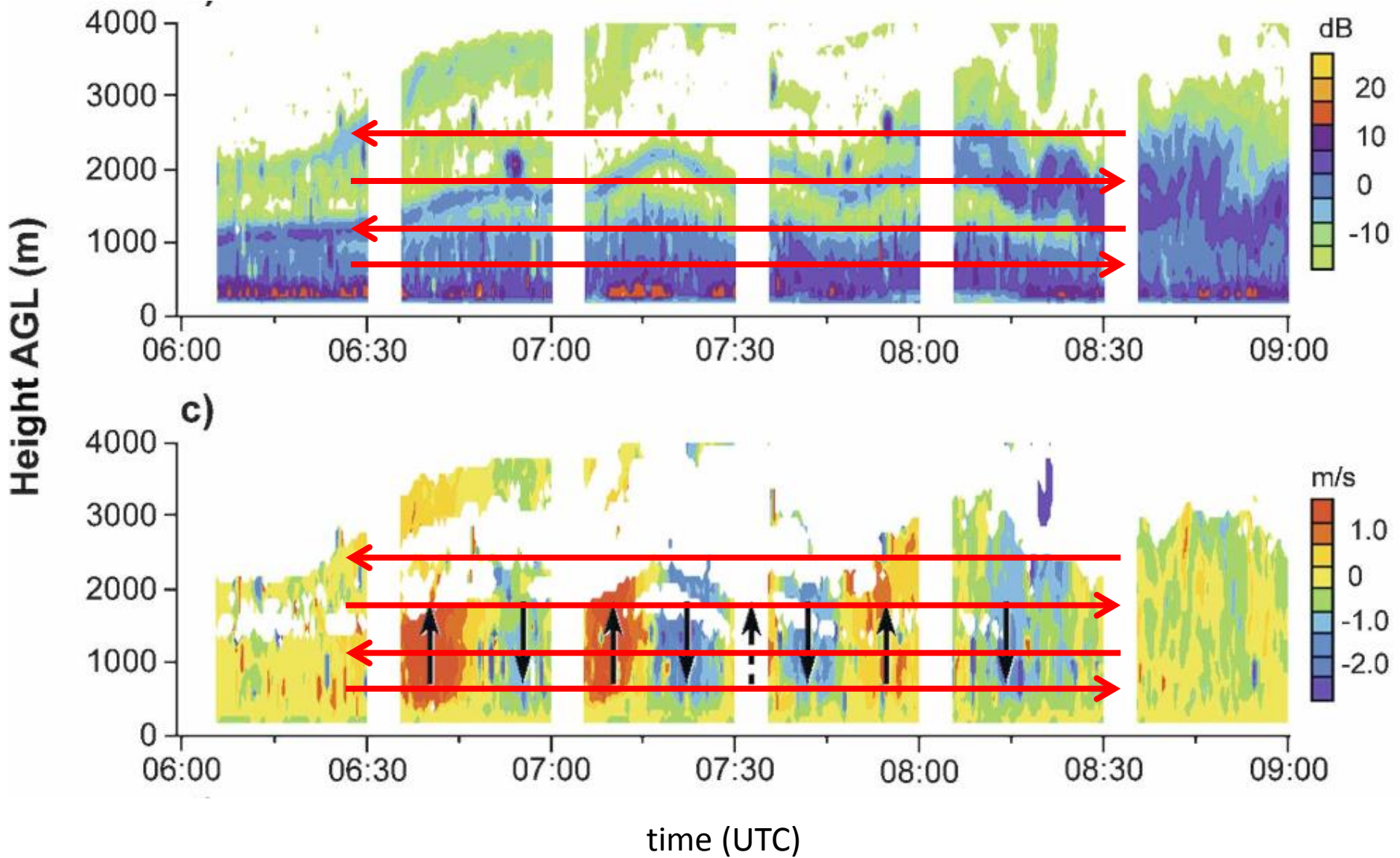
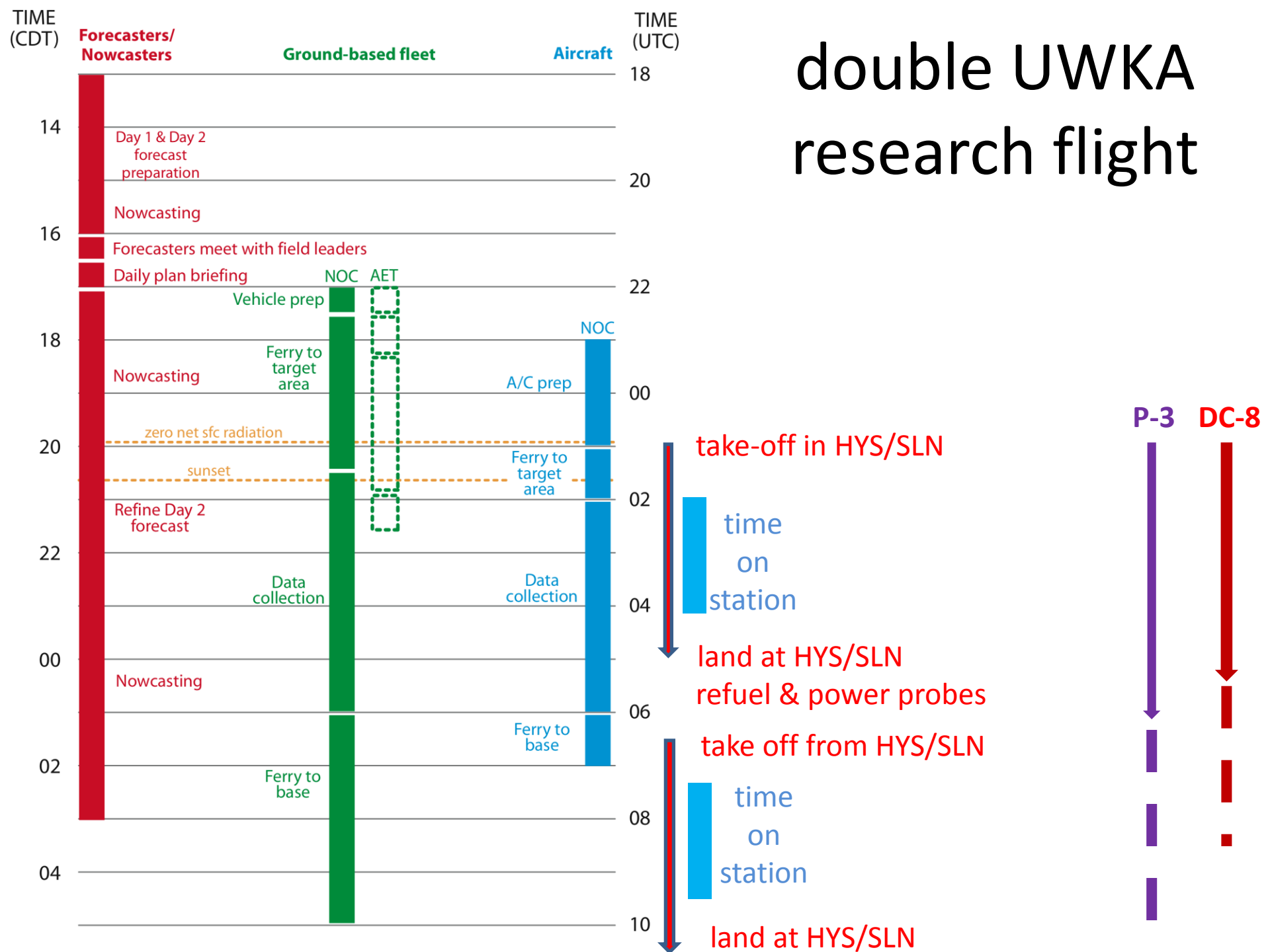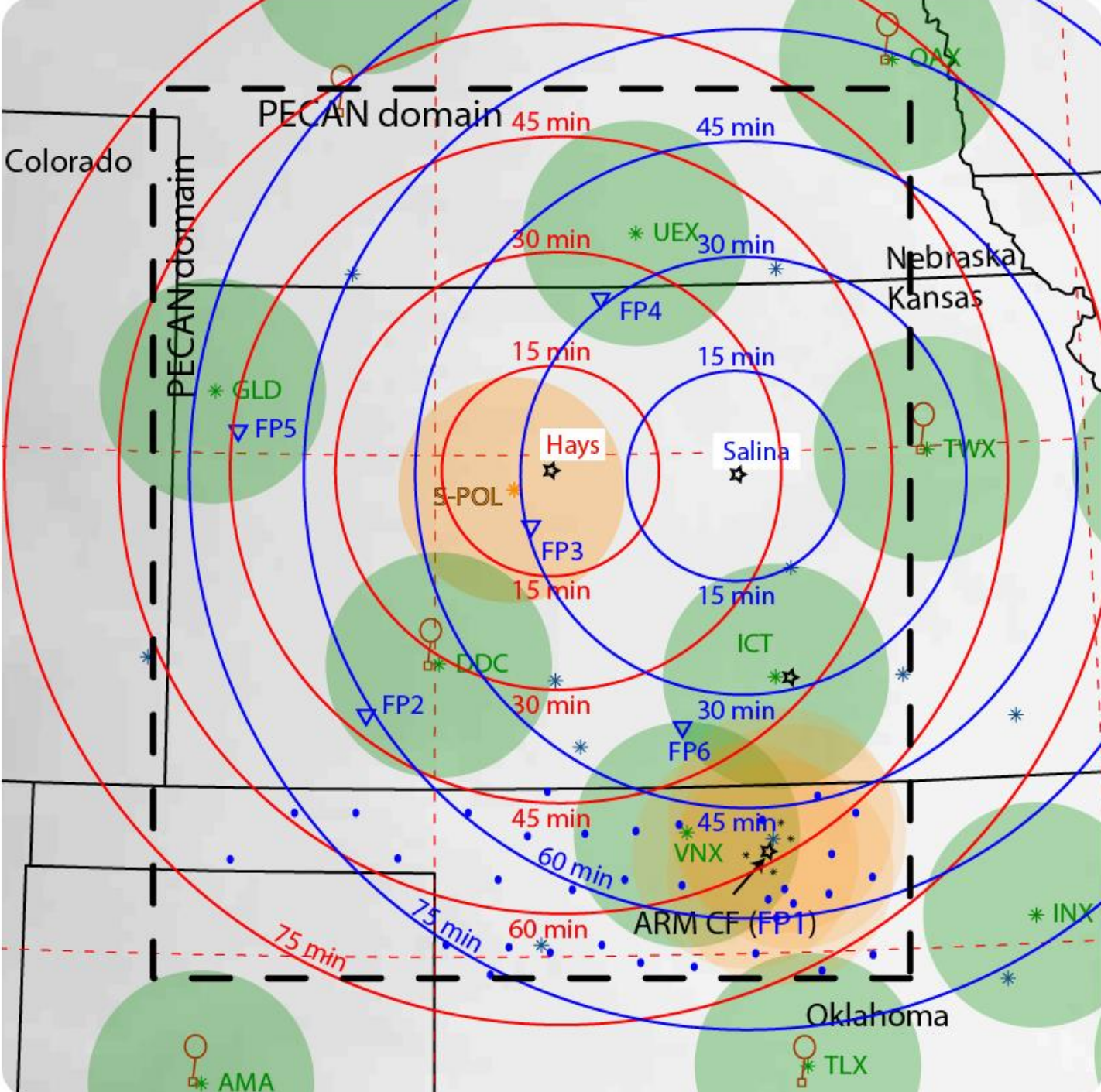# example: lawnmower

example: racetrack

CI mission

single UWKA research flight

double UWKA research flight

UWKA
one-way ferry time

NLLJ flights under fair weather conditions

~20 flt hrs
(5 flights)