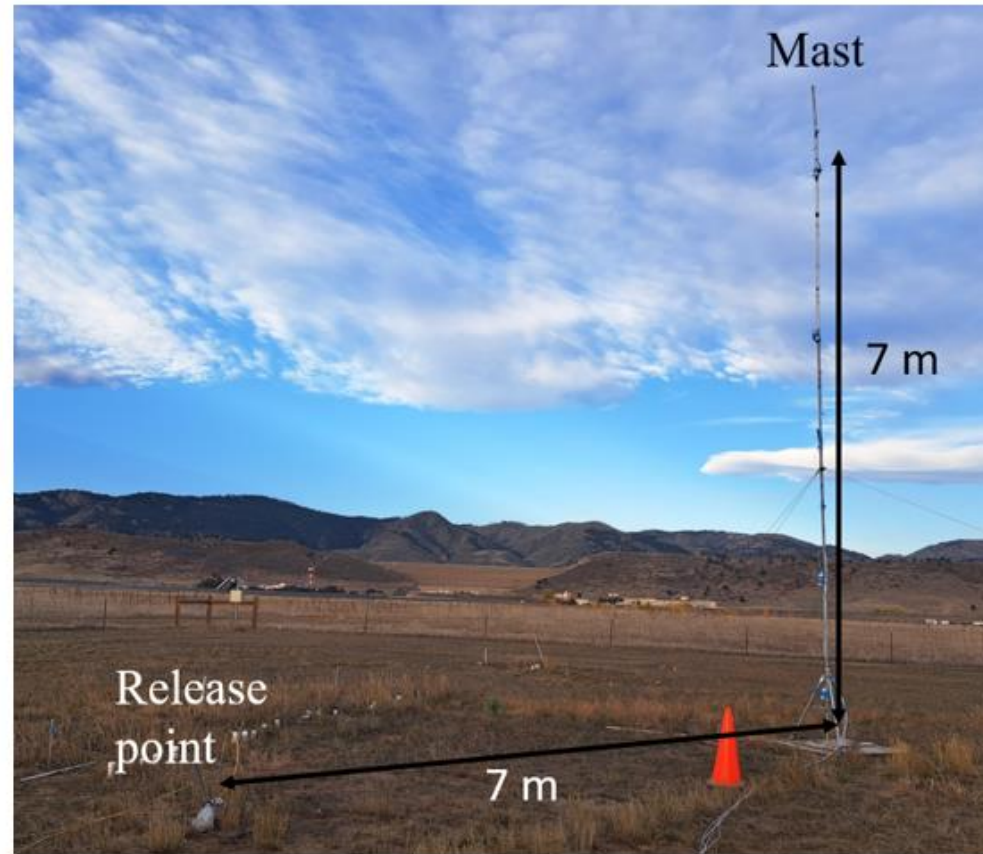


# UPSIDE:

## 1. Investigating the Effect of Leak Variation on Above-ground NG Detection

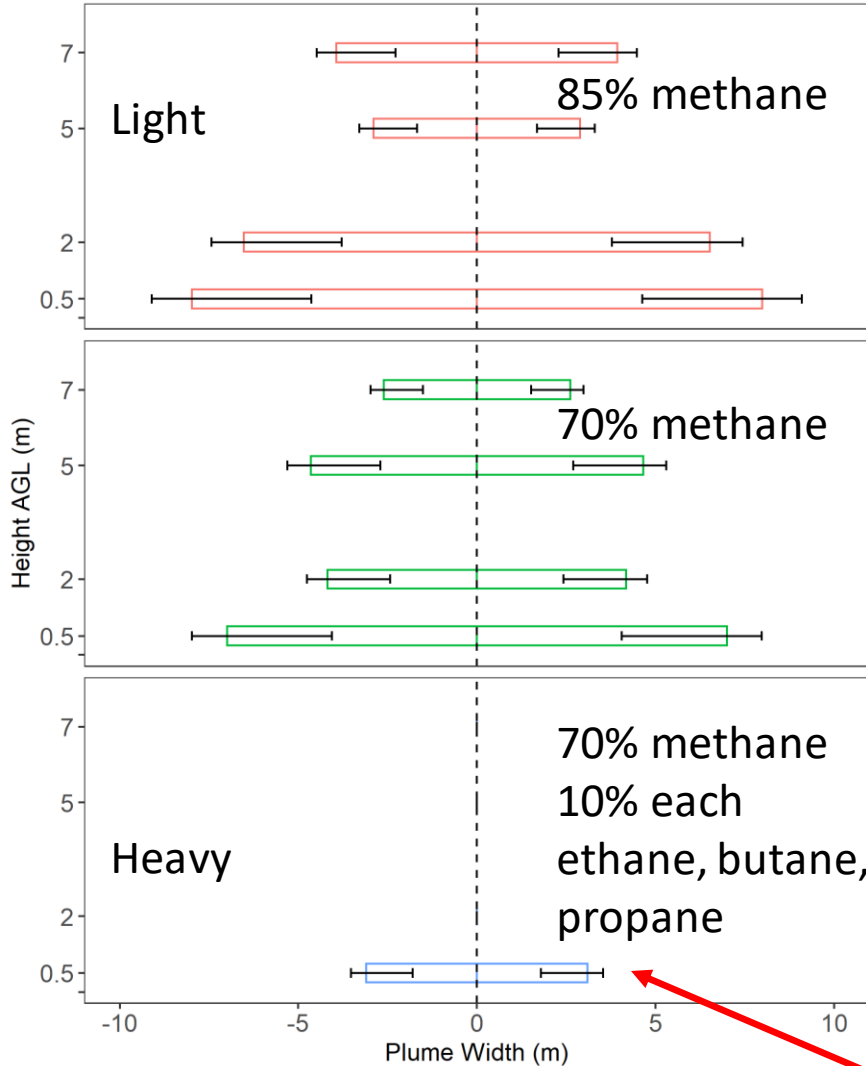
- Above-ground CH<sub>4</sub> measurements at METEC
- Measurements taken 7 m away (edge of ROW)
- Each height sampled for 1 minute (0.5, 2, 5, 7 m)



# Detection decreases with heavier gas and slower leak rates

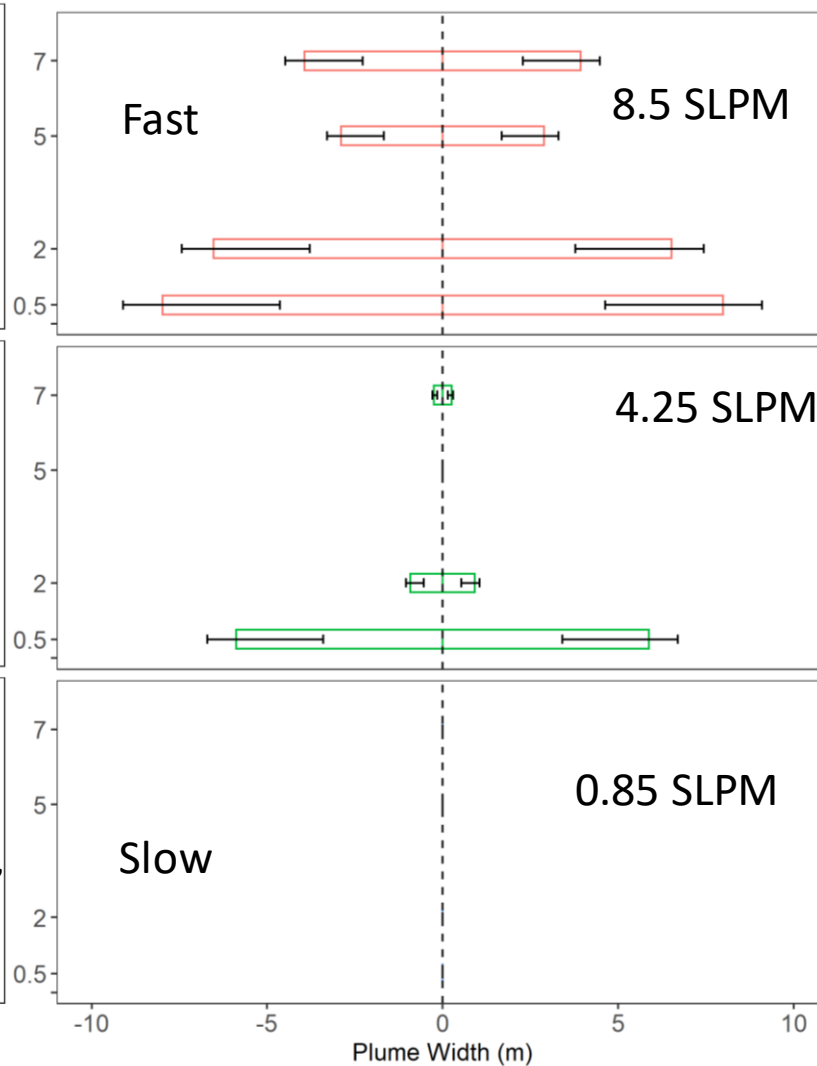
## Gas composition

(leak at 0.9 m, 10 SLPM)



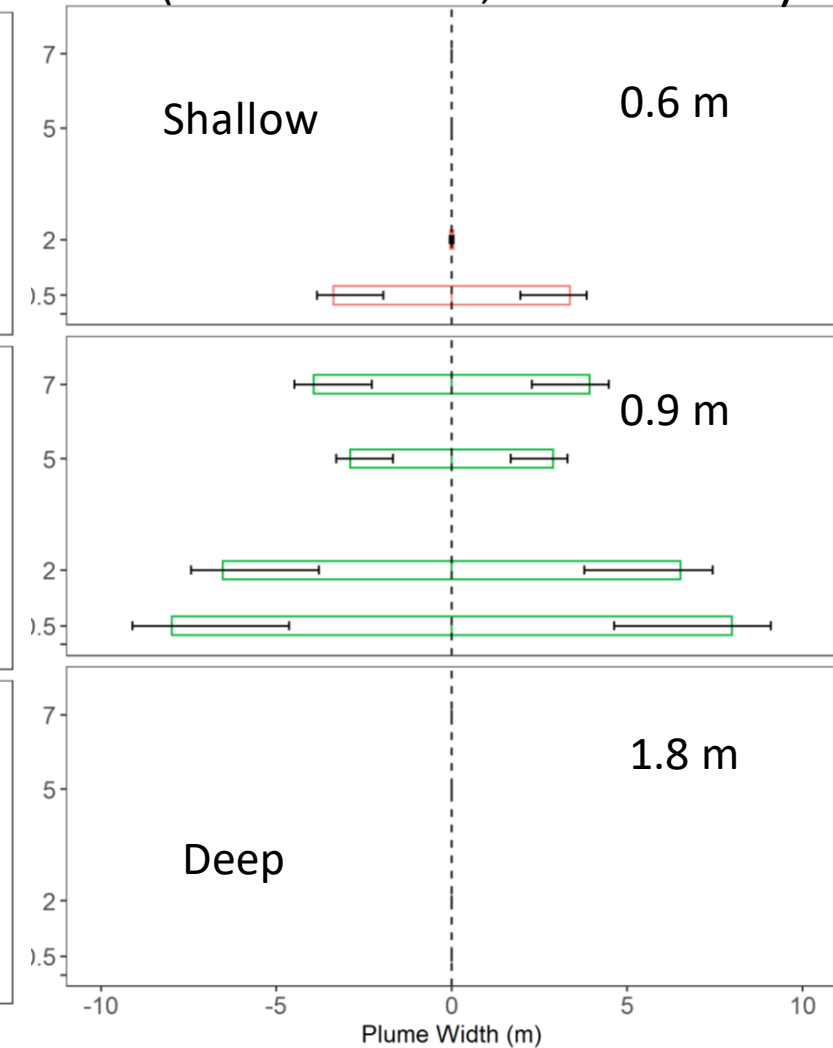
## Leak rate

(leak at 0.9 m, 85% methane)



## Leak depth

(leak at 10 SLPM, 85% methane)

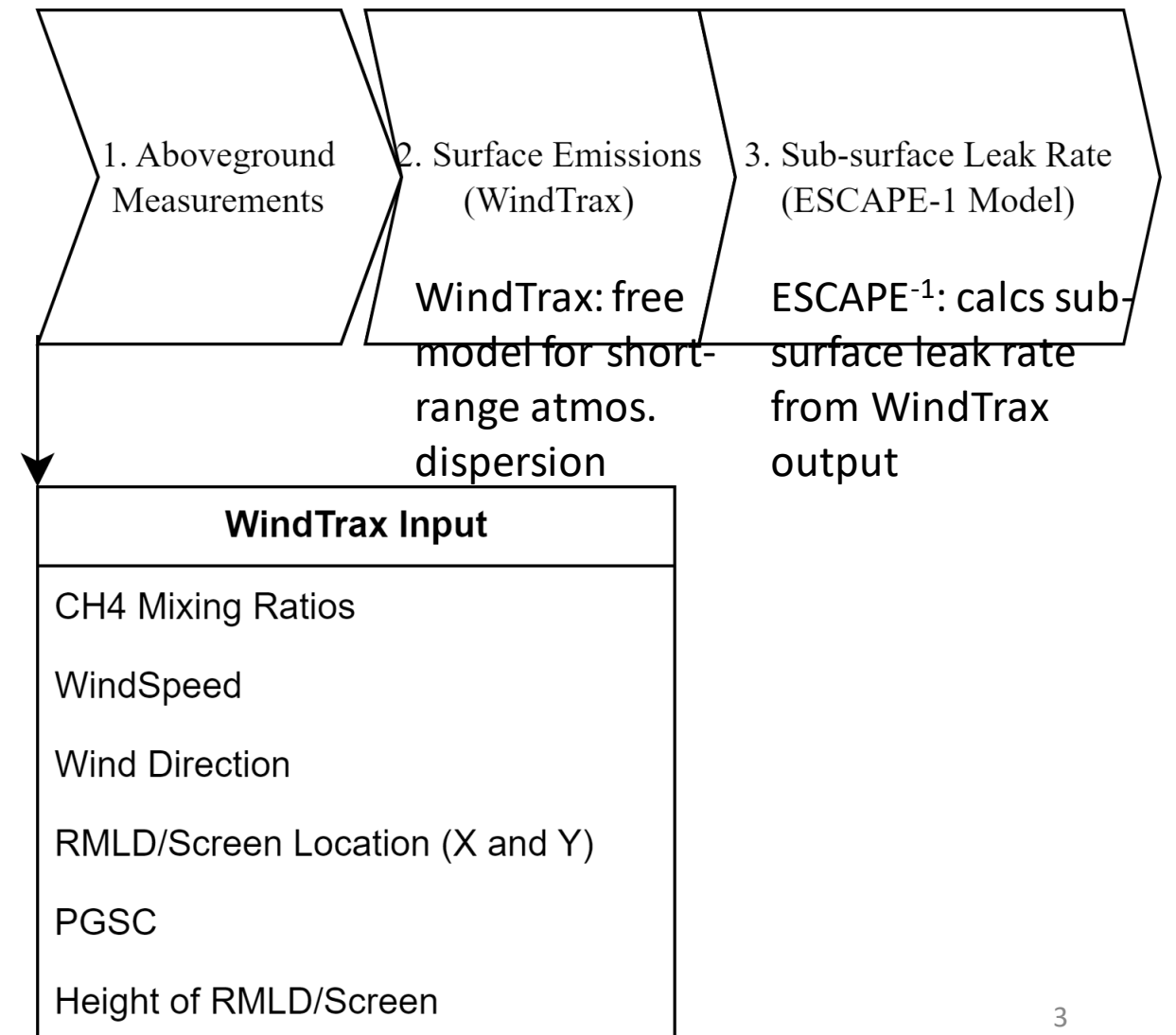
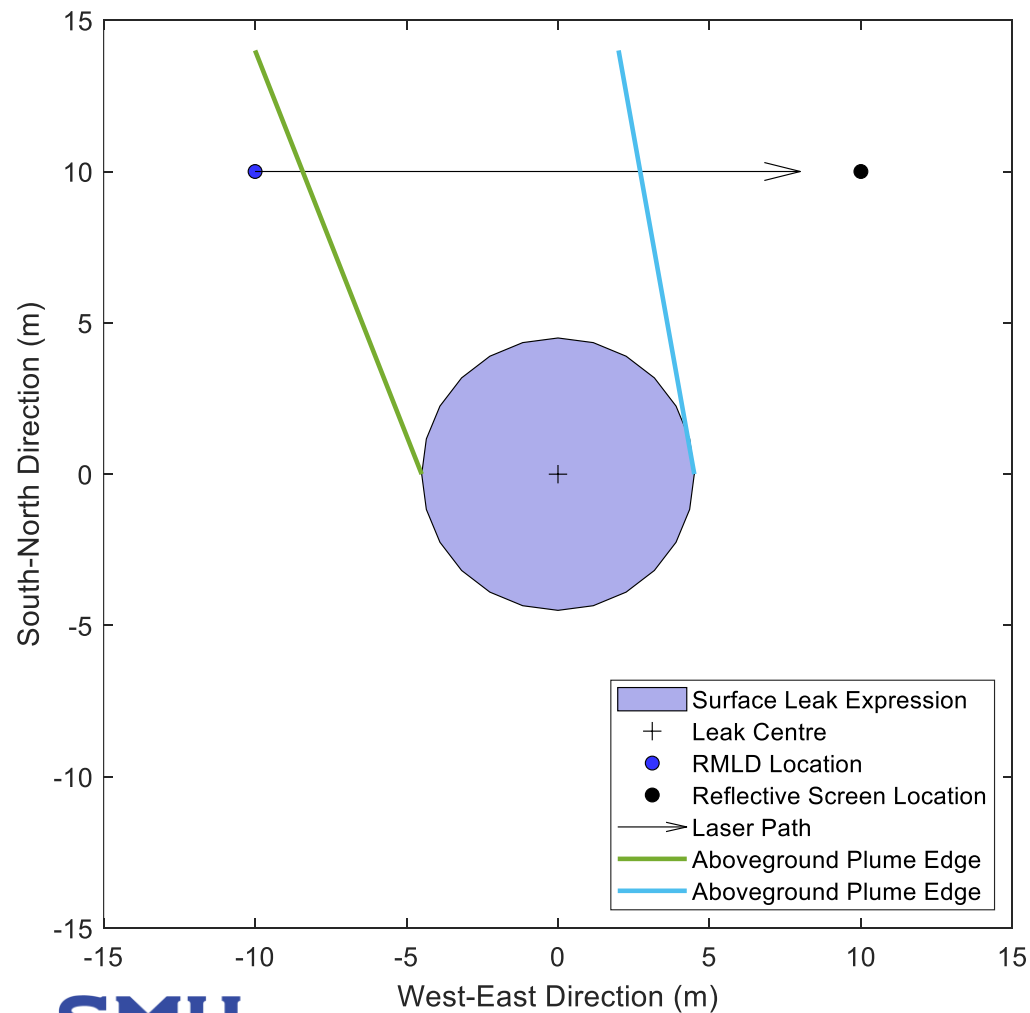


Major implications for detecting plumes in basins with heavy gas composition!

# UPSIDE:

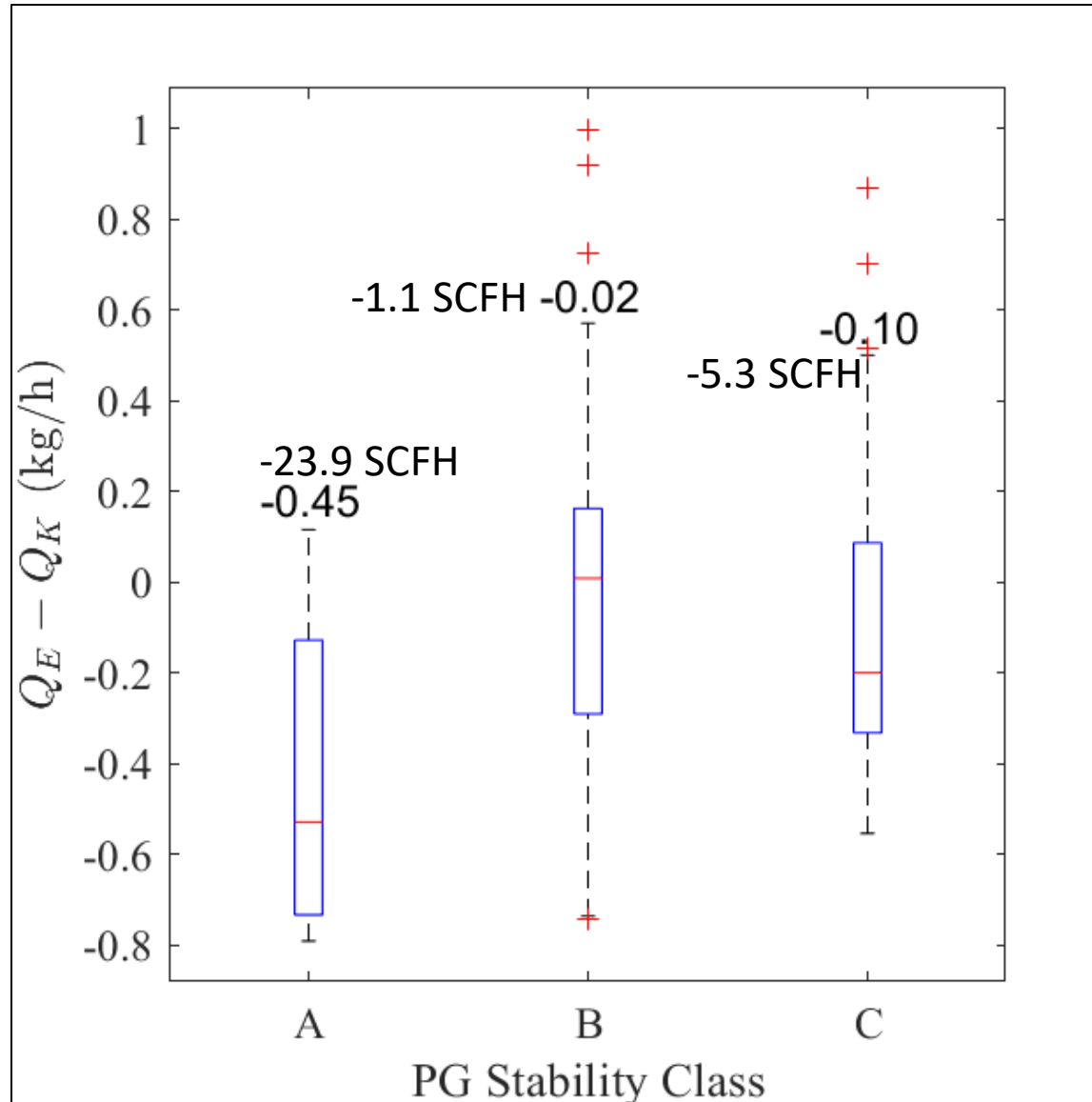
2. Estimating the sub-surface leak rate using above-ground measurements and the ESCAPE<sup>-1</sup> model

## Major Steps



# The model appears to perform the best for moderately to slightly unstable conditions (Stability class B, C)

Y axis:  
estimated –  
controlled release  
rate



A: extremely unstable  
B: moderately unstable  
C: slightly unstable

Note stability is impacted both by wind speed and insolation!

**Model performs best in wind speeds 2-5 m/s, moderately to slightly unstable conditions**