

# - Air Sample Collection and Analysis Methods -

## Recolección de muestras y análisis

### ① Real-Time Monitoring

The SENSIT® SPOD system offers real-time continuous monitoring. Two of the systems will be placed near the pads. These systems:

- Respond to changing levels of a suite of Volatile Organic Compounds (VOCs).
- Record meteorological conditions (temperature, wind speed and direction, etc.)
- Trigger canister collection to characterize plume events
- Help locate sources of emissions



### ② Integrated Canisters

7-day integrated VOC canister samples will be deployed at:

- Two locations near the multi-well pads
- One off-pad location as a background reference

- The canister samples are analyzed for 51 VOCs and methane concentrations by off-line gas chromatography in our lab at CSU.



### ③ CDPHE CAMML Trailer

The CDPHE Colorado Air Monitoring Mobile Lab (CAMML) collects information about the air around oil and gas operations. The CAMML measures:

- Speciated VOCs (online gas chromatograph, 1-hr resolution)
- CH<sub>4</sub> (Picarro methane analyzer, 1-min resolution)
- PM<sub>2.5</sub> (optical particle counter, 1-min resolution)
- NO<sub>x</sub> (chemiluminescence analyzer, 1-min resolution)
- Meteorological data

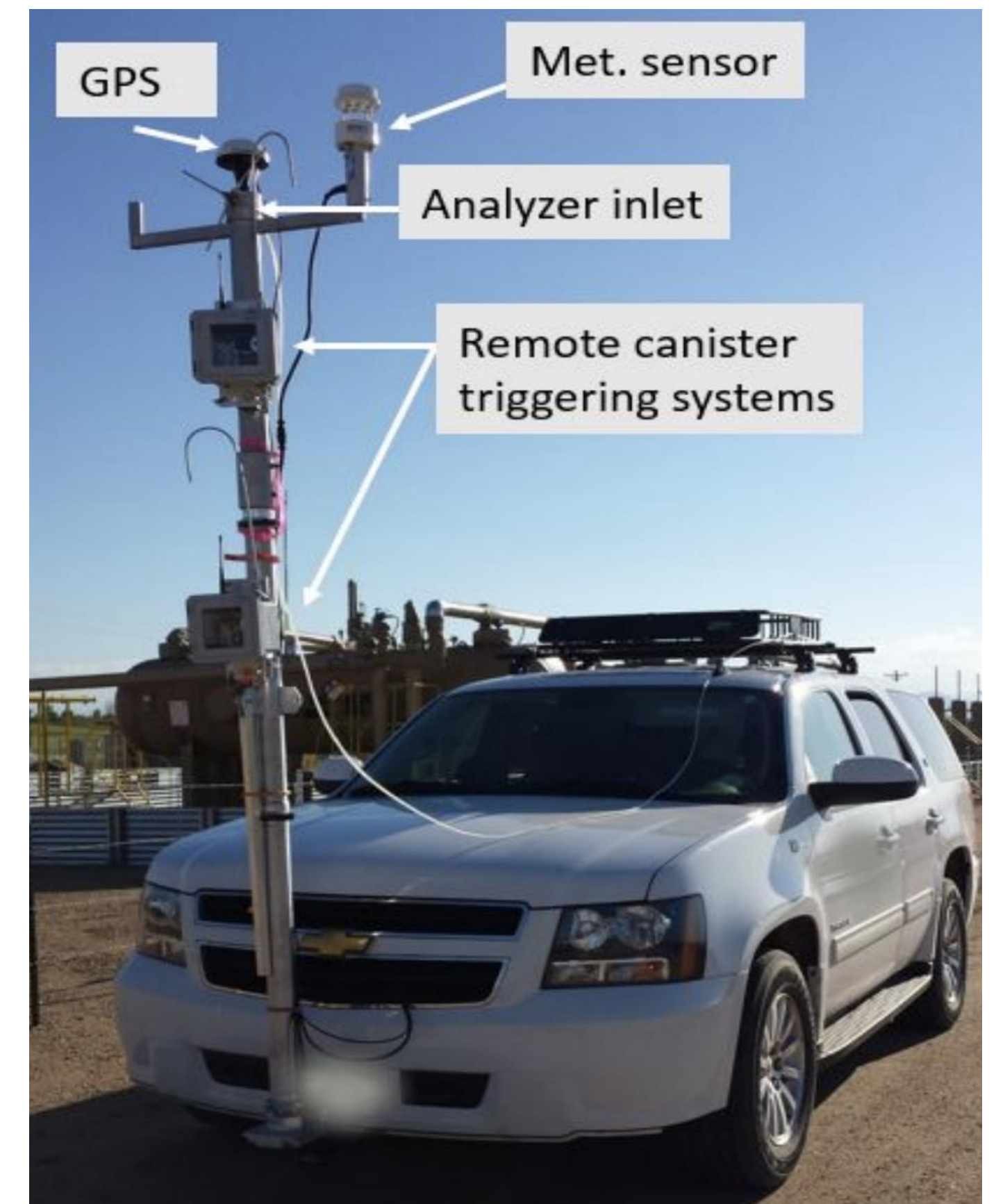


### ④ Mobile Monitoring

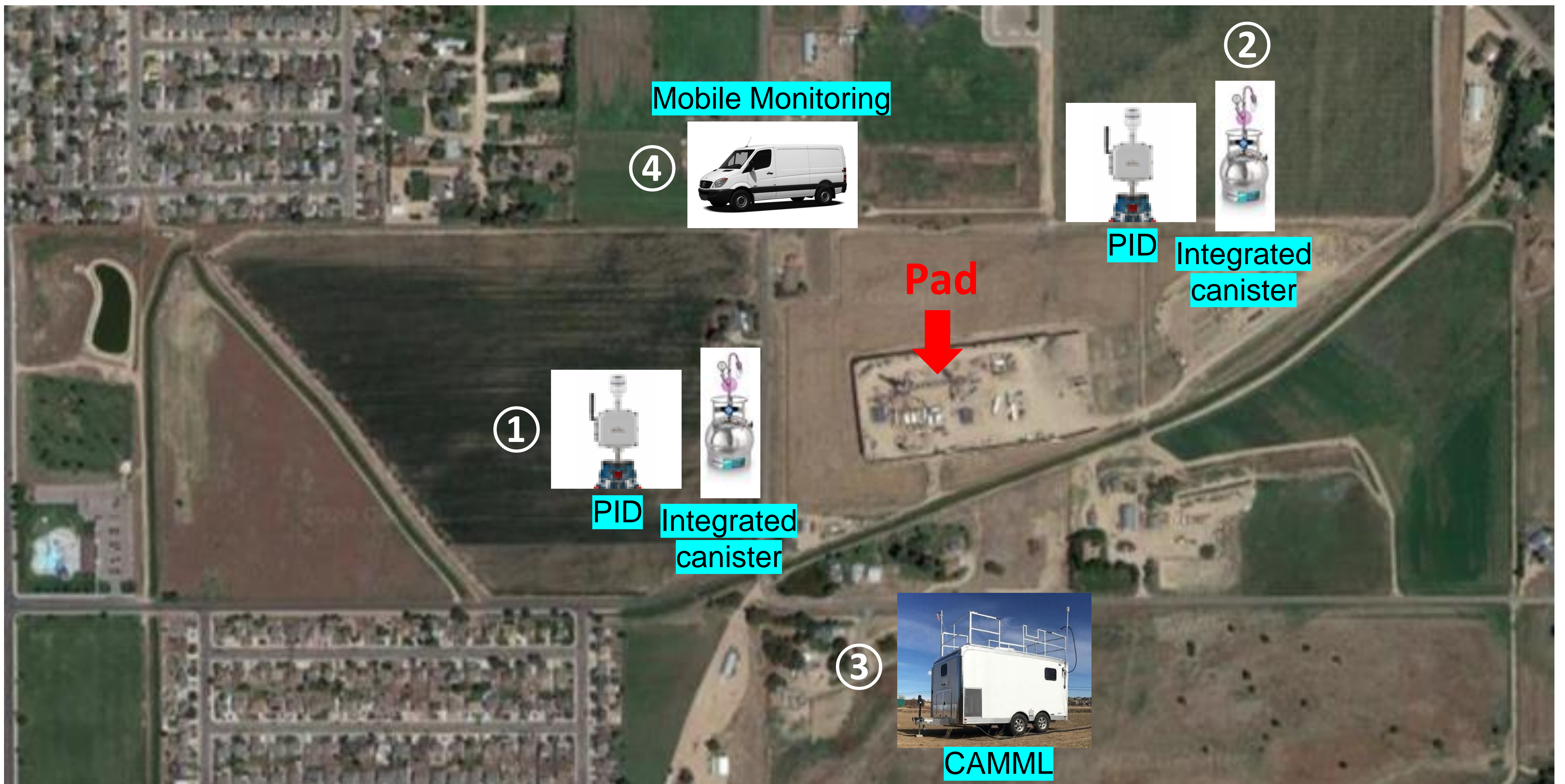
The CSU mobile plume tracker will conduct spatial surveys, hunt sources of plumes, and help document anticipated emission events. It will be equipped with:

- GPS and meteorological instruments
- AROMA-VOC analyzer (CH<sub>4</sub>, CO<sub>2</sub>, & several VOC classes, 5-seconds resolution)
- Canisters for plume sampling

- Once a plume is identified by the AROMA-VOC analyzer, we will collect canister samples for additional speciated VOC analysis by off-line gas chromatography.



CSU mobile plume-tracker



Utilizamos varias técnicas de medición como mediciones en tiempo real, recolección de muestras semanales y de eventos de contaminación para su análisis en los laboratorios CSU y un laboratorio móvil para entender las emisiones de la industria del gas y petróleo y la posible exposición a compuestos tóxicos del aire y otros Compuestos Orgánicos Volátiles (COVs).