REMOTE SENSING vs. IN-SITU OBSERVATION

Pros:
- Measurements from a distance
- Measurements from where you can’t be
  - too far away (atmosphere, space)
  - hostile environment

Cons:
- Lower spatial and/or temporal resolution
- Less accurate
- Higher efforts for data analysis
  - Sensitive to environmental conditions
  - Crucial approximations and assumptions
Remote Sensing at IRF Kiruna

Dr. Uwe Raffalski, Associate Professor
uwe.raffalski@irf.se

Ozone Measurements
- Ozone variation (annual/interannual)
- Ozone hole / Ozone recovery

Carbon Monoxide measurements
- Dynamics in the mesosphere (< 90 km)
Remote Sensing at IRF Kiruna

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uwe.raffalski@irf.se

KIMRA
KIruna Millimeter Wave RAdiometer

Periscope
Quasi-optics
230 GHz mixer (receiver)
Vacuum dewar with 25 K arm
PhD-Project ideas at IRF Kiruna

Dr. Uwe Raffalski, Associate Professor
uwe.raffalski@irf.se

(1) **CIO measurements / atmospheric trace gases**
(KIT, Germany, J. Martin-Torres, LTU)

(2) **A new water vapor radiometer**
(KIT, Germany, swedish industry?)

(3) **Observation of industrial emissions**
(LKAB, MPI Mainz, Germany, Chalmers, M. Milz, T. Kuhn, LTU)