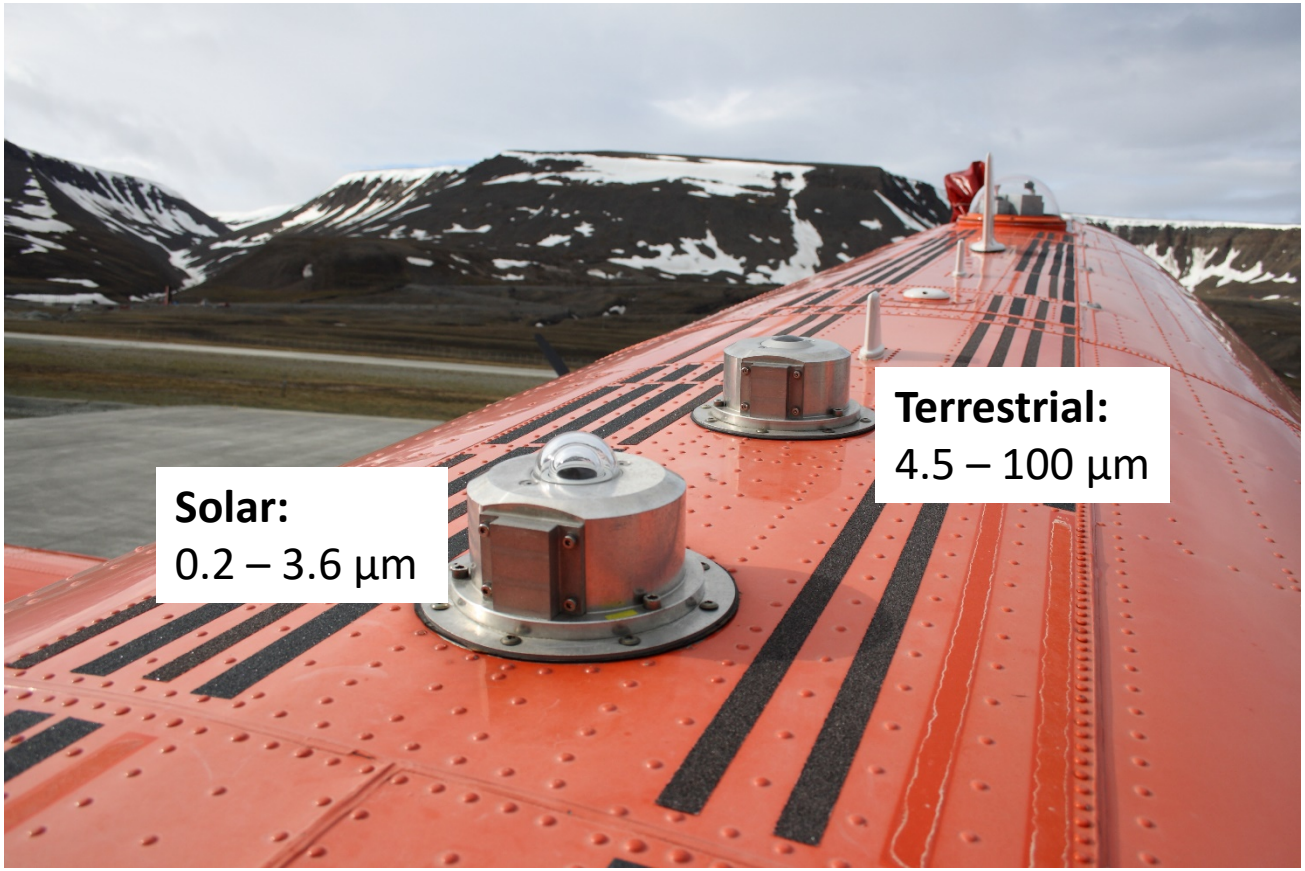
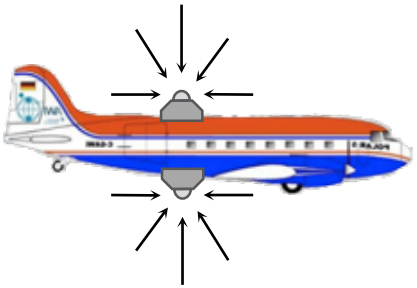
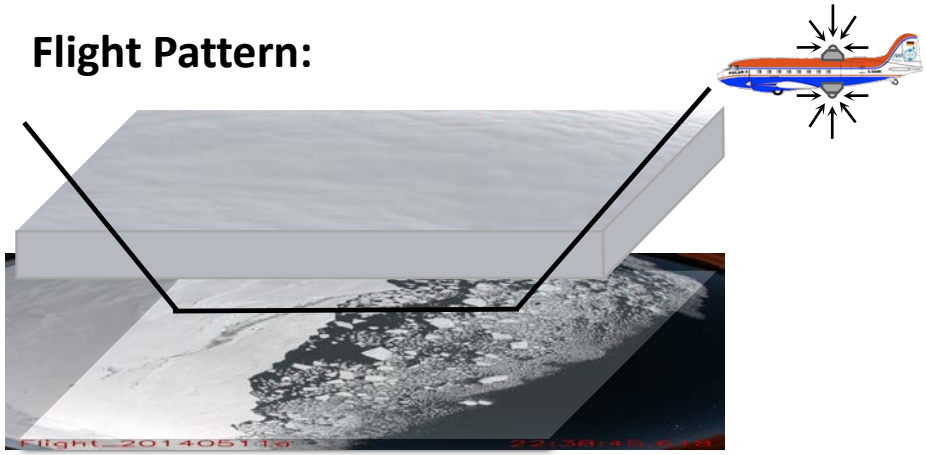
Broadband radiative flux densities: Pyranometer / Pyrgeometer



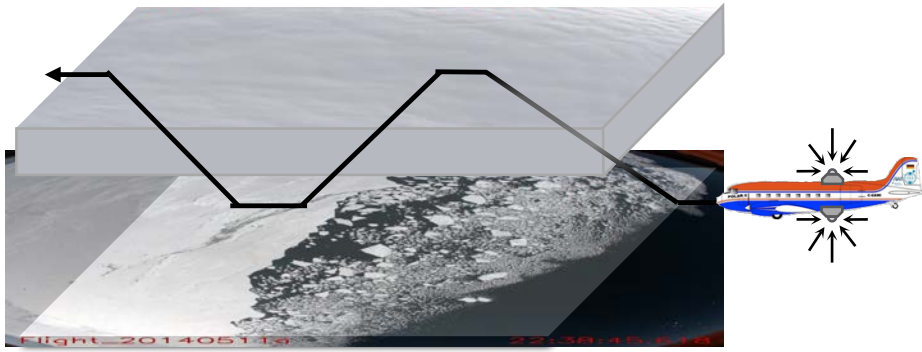


⇒ Surface Radiative Energy Budget
⇒ Warming or cooling effect of clouds on the surface
⇒ Radiation-Cloud Interaction: Heating Rates

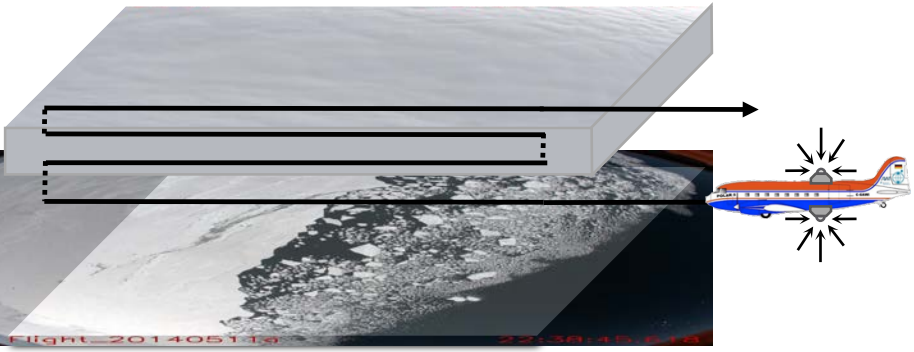
Flight Pattern:



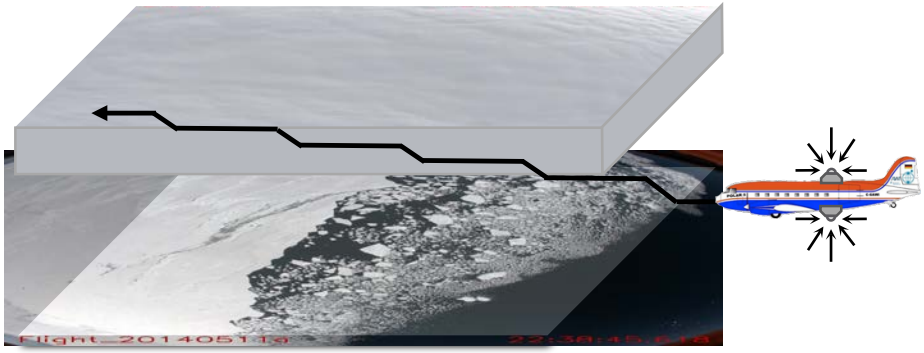
⇒ Local atmospheric profile
⇒ As low as possible



+ Small horizontal scales
+ Icing: less likely
+ Statistics / Diversity
- Homogeneous clouds required
- Aircraft Attitude



+ Local Averages / Heterogeneities
– Icing
– Vertical resolution for averages...
=> One leg/ short section close above cloud top



– Cloud top ≠ Cloud base!
– Icing
– Horizontal scale

AFLUX:

⇒ Cloud Air Outbreaks / Warm Air Intrusions and Radiative Energy Budget

⇒ Impact of larges scale processes on the local REB

⇒ Heating Rates

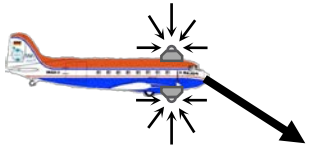
⇒ Cold Air Outbreaks (Cloud base warming)

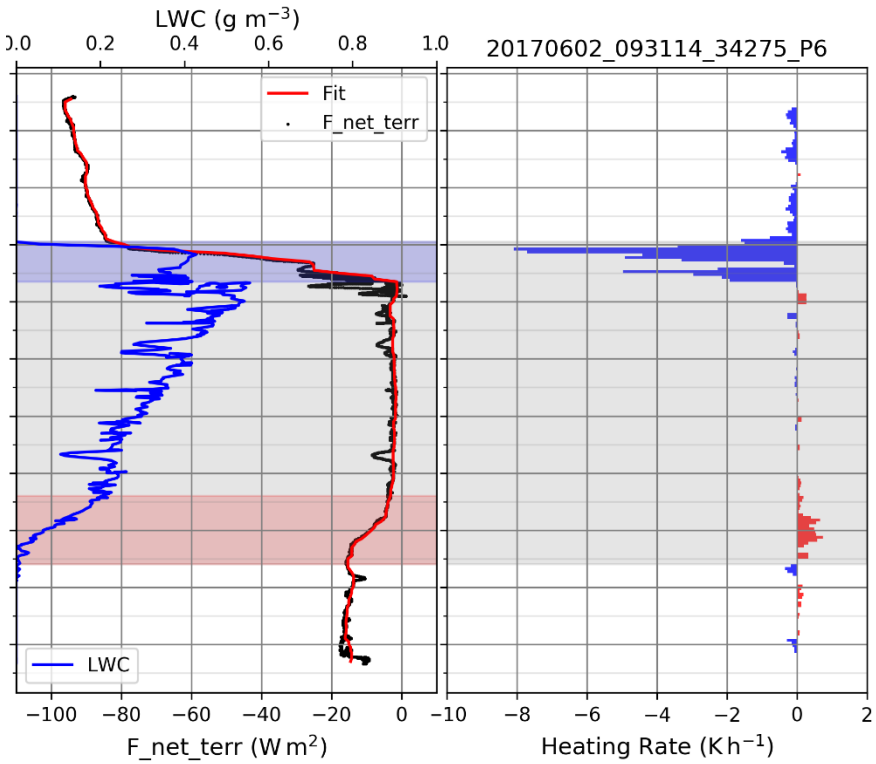
⇒ Double layer clouds

⇒ More statistics / Diversity / Characterization

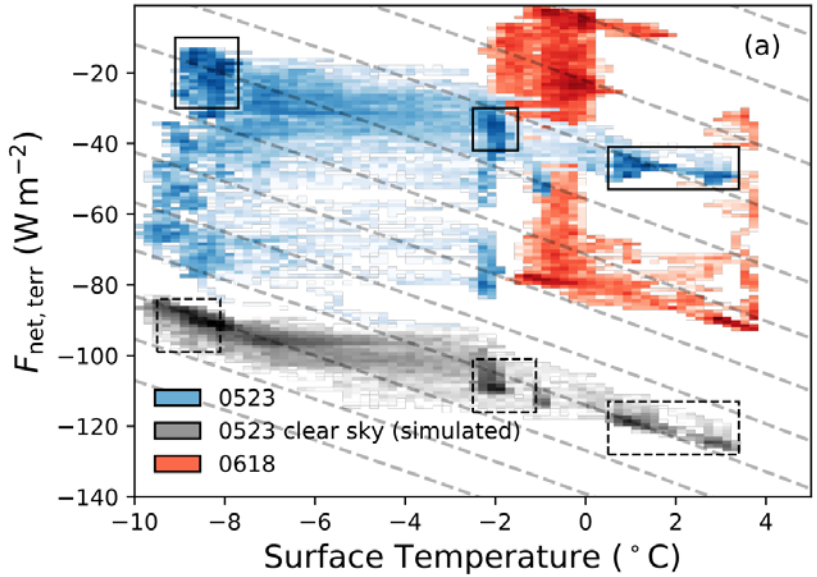
⇒ Seasonal dependences: AFLUX ⇔ ACLOUD

Radiation-Cloud interaction: Heating Rates





Surface Radiative Energy Budget:



Warming or cooling effect of clouds on the surface: