

Height assignment of Atmospheric Motion Vectors (AMVs) using LIDAR observations

Kathrin Folger

T-PARC Mission:

Aug 23 – Oct 1 2008:

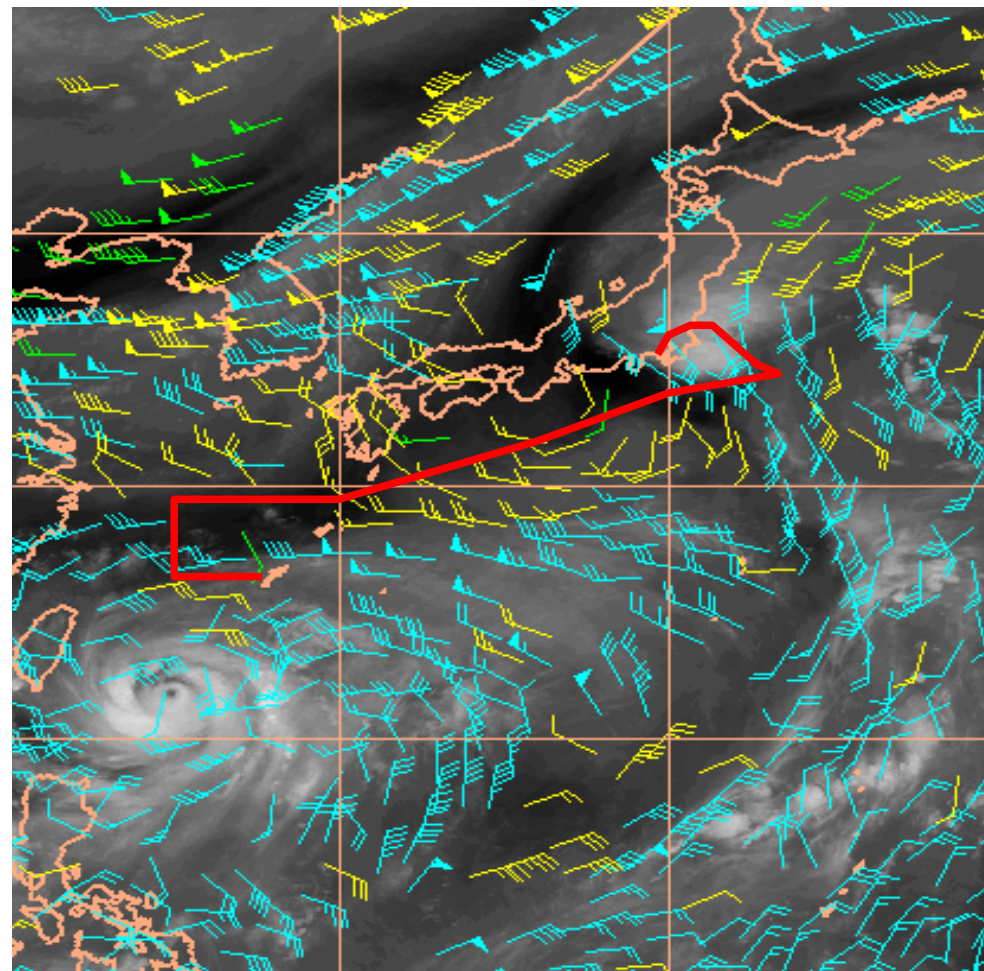
~25 flights of Falcon with
over 300 dropsondes

Case study

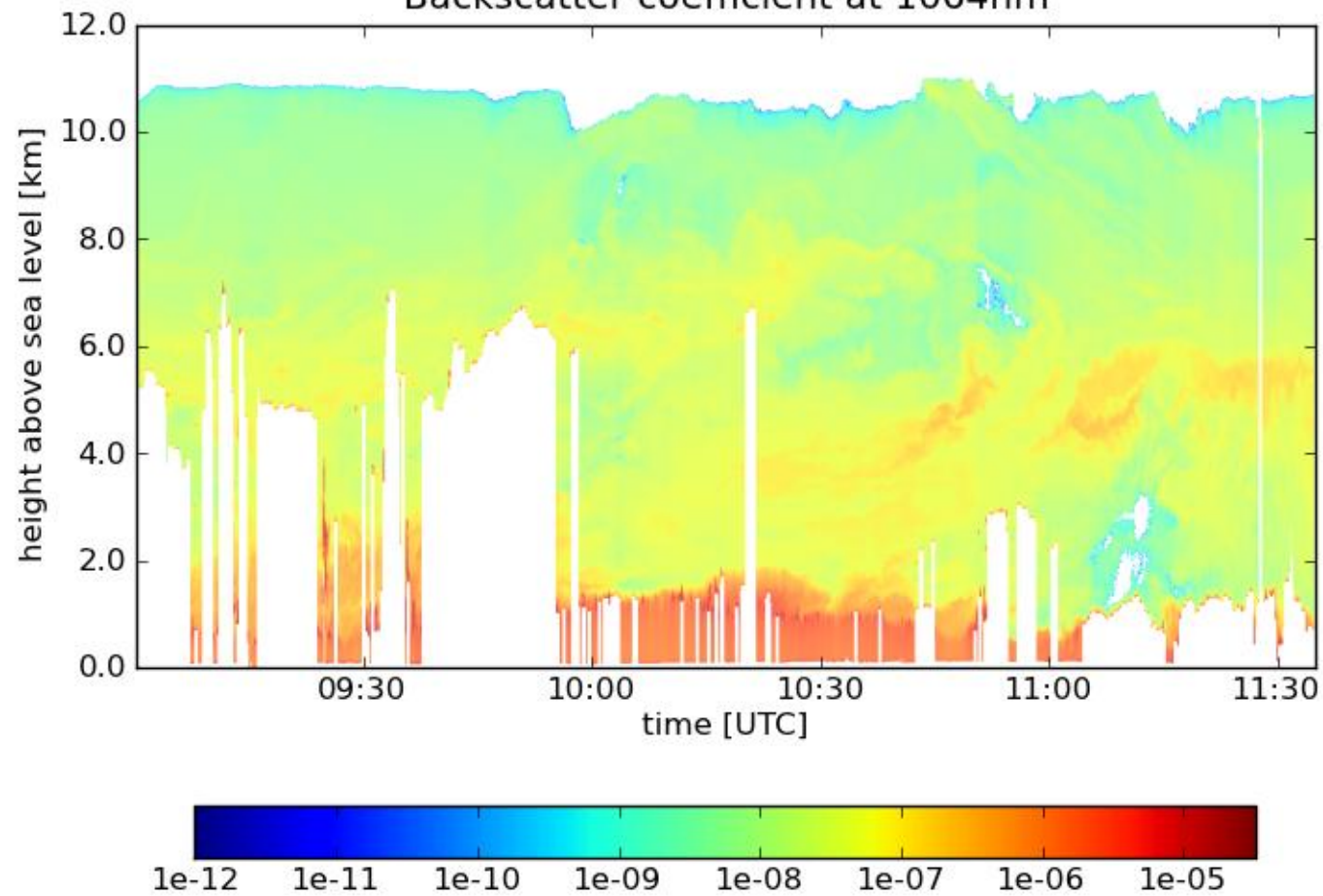
2008-09-11

9 UTC til 11:30 UTC

15 dropsond launches



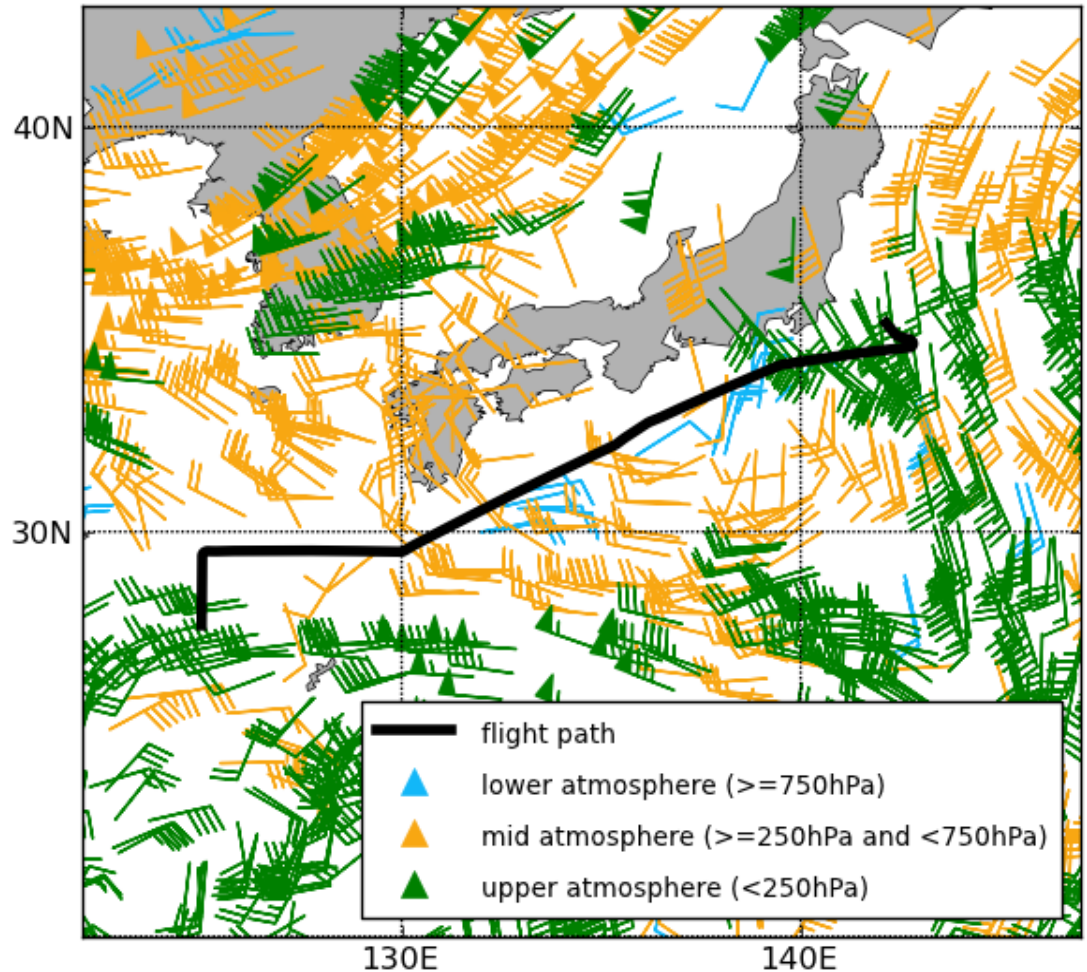
Japan T-PARC 2008-09-11 09 UTC Backscatter coefficient at 1064nm



Atmospheric Motion Vectors from MTSAT (Hourly and RapidScan)

Example:
 2008-09-11 09:57 UTC
 Hourly derived AMVs

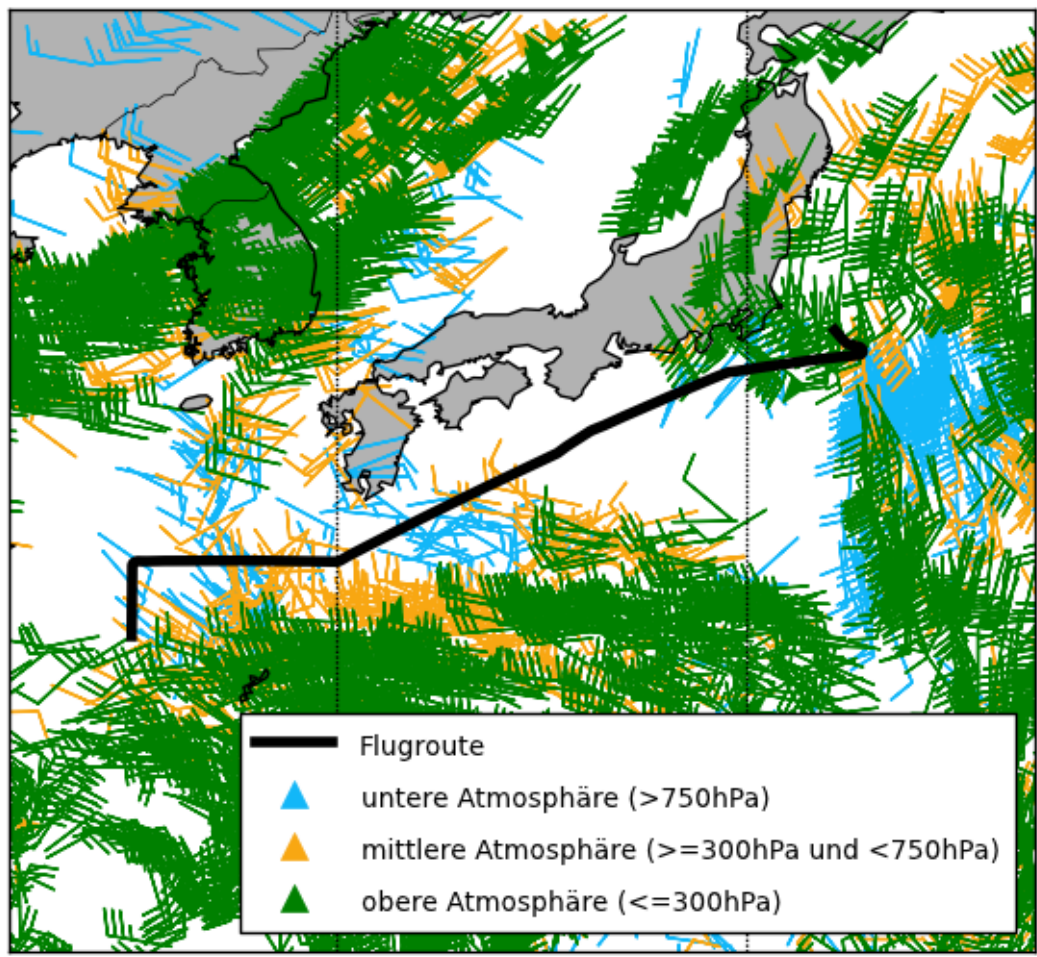
AMV plot for 2008-09-11 09:57 UTC



AMV wind barb plot for 2008-09-11 10:18

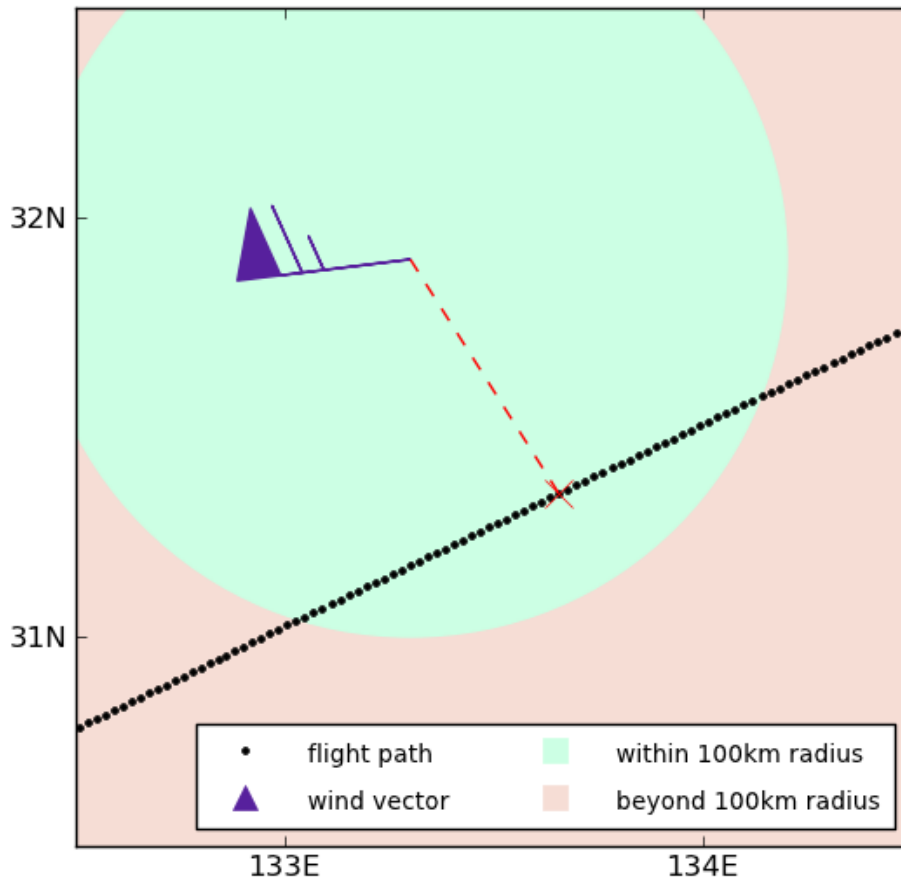
Atmospheric Motion Vectors from MTSAT (Hourly and RapidScan)

Example:
 2008-09-11 10:18 UTC
 Rapid Scan AMVs



Looking for suitable pairs

(AMV pressure ↔ LIDAR cloud top height)

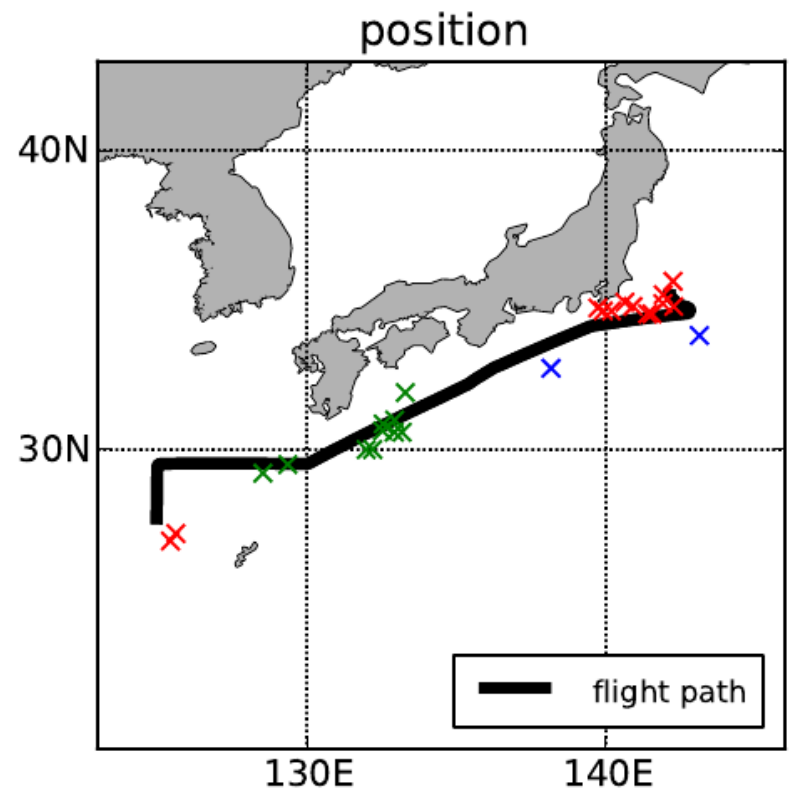
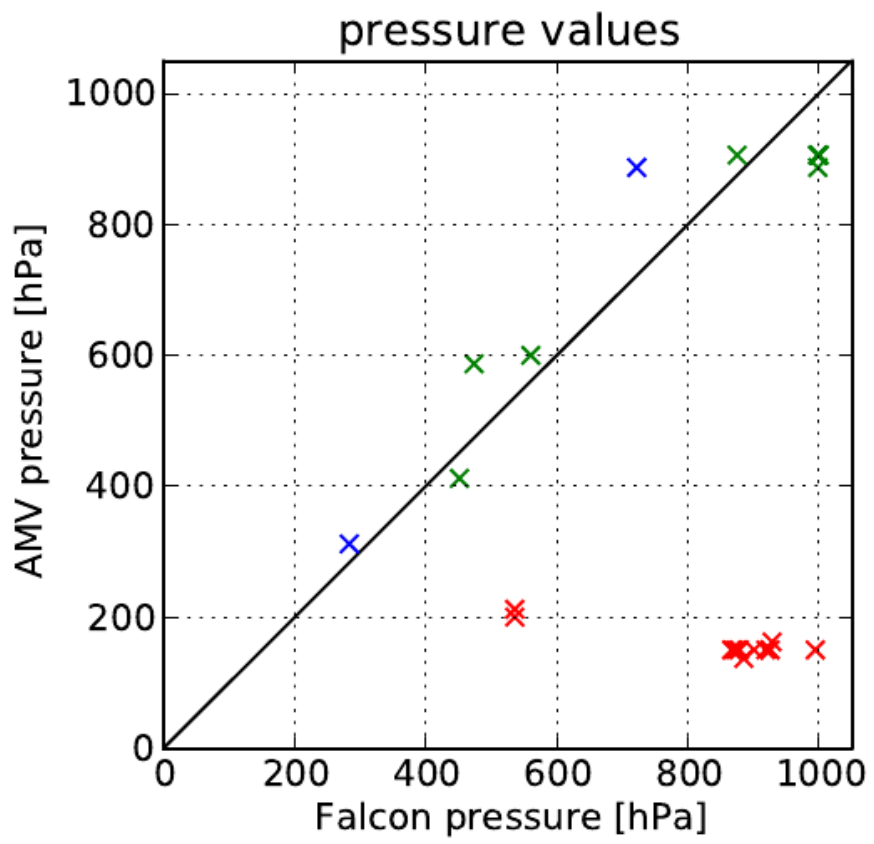


Conditions

- less than 100 km distance
 - less than 30 min. time difference
- no WV (only IR/SWIR/VIS)
- AMVs below flight height

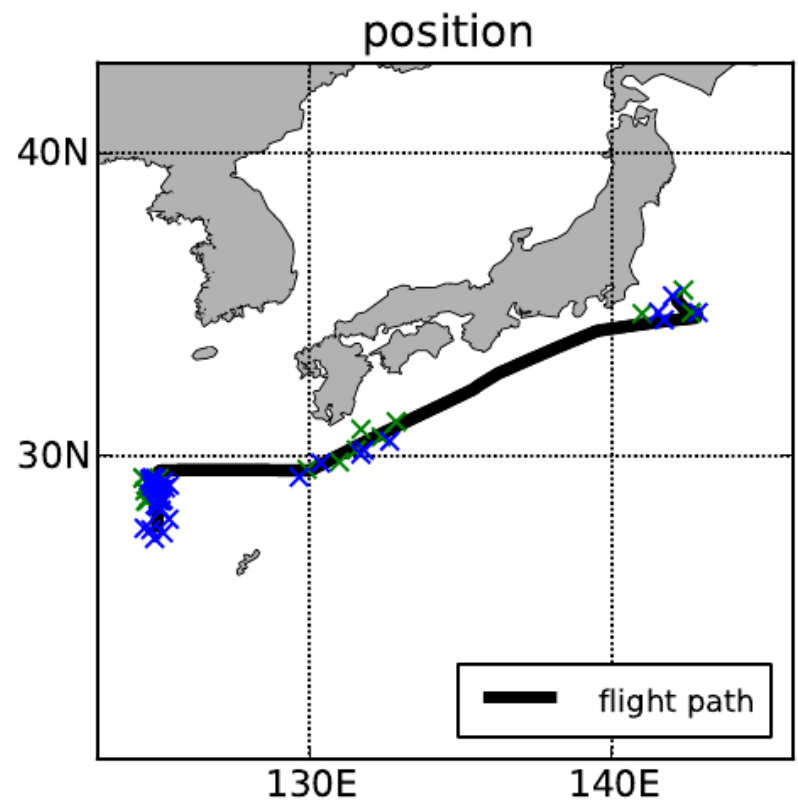
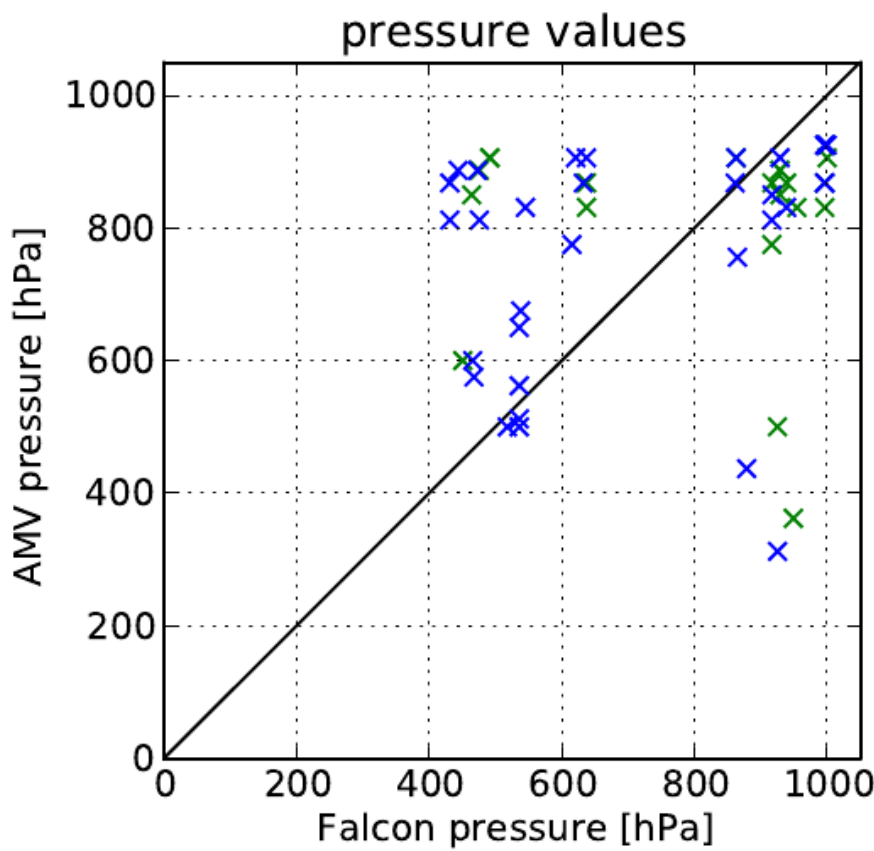
<100km and <30min HOURLY without WV

x AMV QI > 70
 x AMV QI ≤ 70
 x AMVs below 250hPa



<50km and <30min RAPIDSCAN

× AMV QI > 70
 × AMV QI ≤ 70
 × AMVs below 250hPa



What next?

Short term:

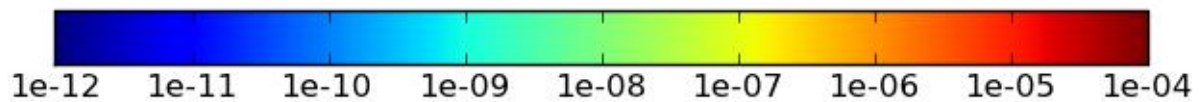
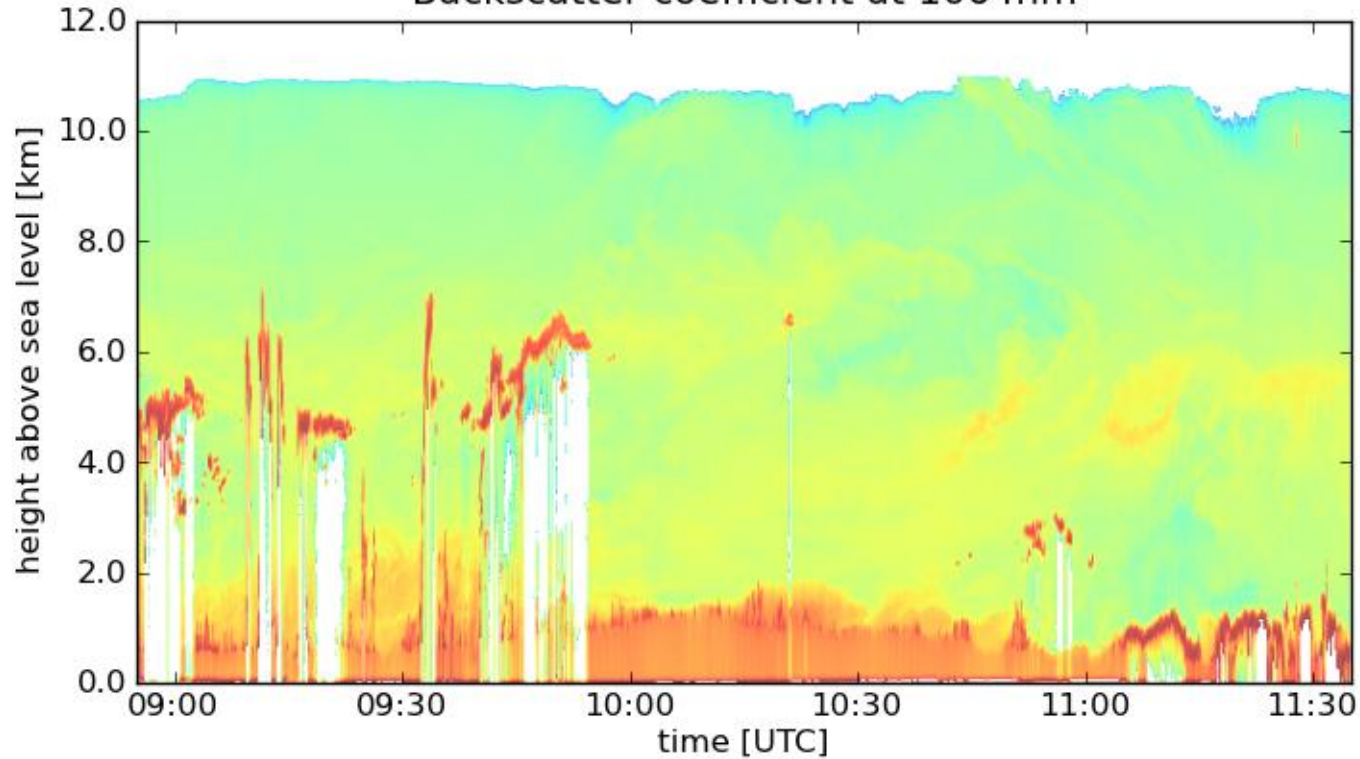
- Compare with satellite images
- New backscatter file → not masked
→ find „own“ clouds with two approaches:
 - **threshold value**
 - **gradient**

Long term:

- Examine other cases (remaining T-PARC flights, IPY, COPS)



Japan T-PARC 2008-09-11 9 UTC
Backscatter coefficient at 1064nm



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