

# COPS Airborne Platforms

## Mission Scenario

### “Targeted Observations”



Christoph Kiemle, DLR

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DLR

Institut für  
Physik der  
Atmosphäre

## Areas and Layers of Operation of Airborne Platforms

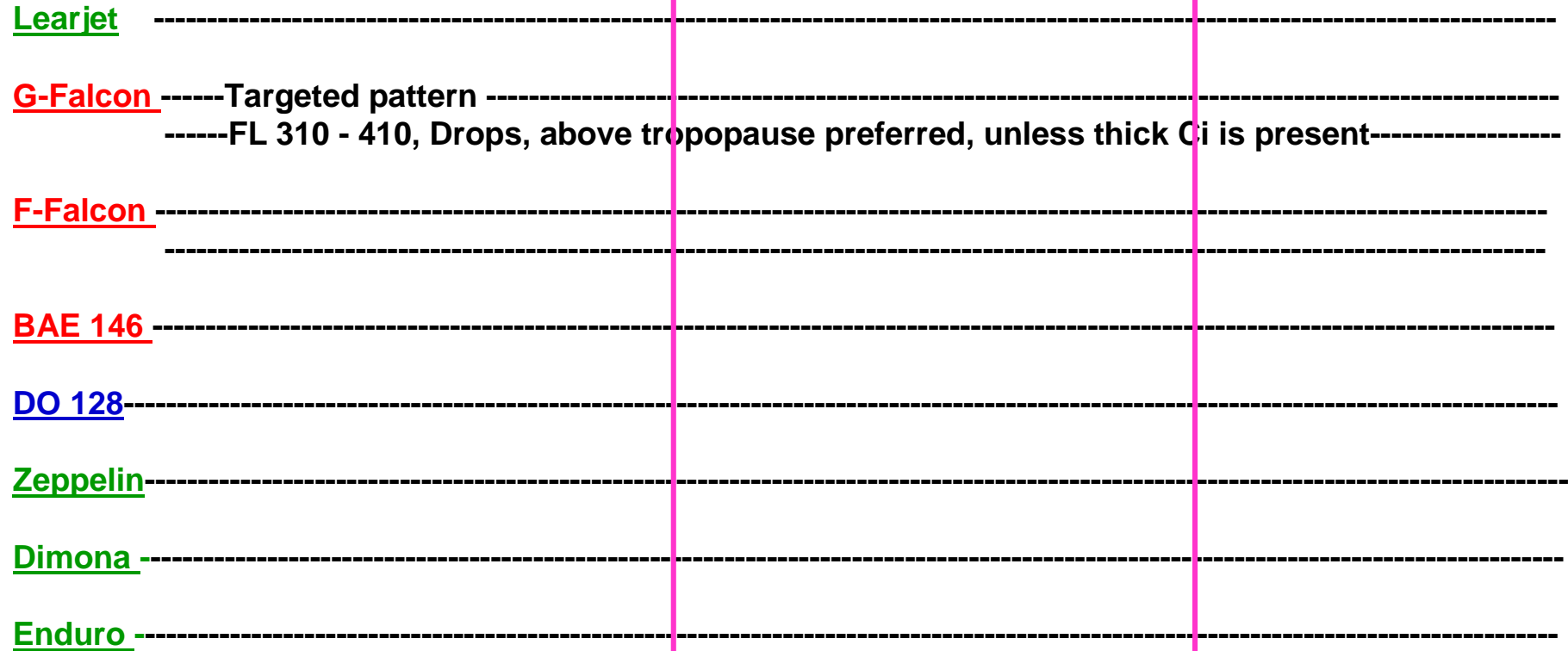
### Mission Scenario “Targeted Observations”

| Aircraft No. | Aircraft            | Area  | Flight level (Flight layer) | IFR/VFR Operation |
|--------------|---------------------|---|-----------------------------|-------------------|
| 1            | Learjet             | No participation in “Targeted Observations” |                             |                   |
| 2            | DLR Falcon (D-CMET) | western Europe                              | FL 310 - 410                | IFR               |
| 3            | SAFIRE Falcon       | > RED                                       | FL 150                      | IFR               |
| 4            | BAE 146             | No participation in “Targeted Observations” |                             |                   |
| 5            | DO-128 (D-IBUF)     | No participation in “Targeted Observations” |                             |                   |
| 6            | Dimona              | No participation in “Targeted Observations” |                             |                   |
| 7            | Zeppelin NT         | No participation in “Targeted Observations” |                             |                   |
| 8            | UL Enduro           | No participation in “Targeted Observations” |                             |                   |
| 9            | Partenavia P68      | No participation in “Targeted Observations” |                             |                   |
| 10           | ATR42               | No participation in “Targeted Observations” |                             |                   |

**Mission Scenario "Targeted Observations"**  
with forced convection predicted on next day

**Blue Sky --- > Shallow Convection -- > Deep Convection-- > Dis. Convection**

**07—08--09---10---11---12---13---14---15---16---17---18---19---20---21---22 local**



Assimilation of dropsdonded data in ECMWF 12 UTC forecast

Assimilation of lidar data for mesoscale 18 UTC forecast (or earlier if available)

**! Mission Scenario "Forced Convection" following on next day !**

**Scenario:** Forced Convection  
**Platform 2:** G-Falcon, D-CMET  
**Mission:** TARGET OBSERVATIONS

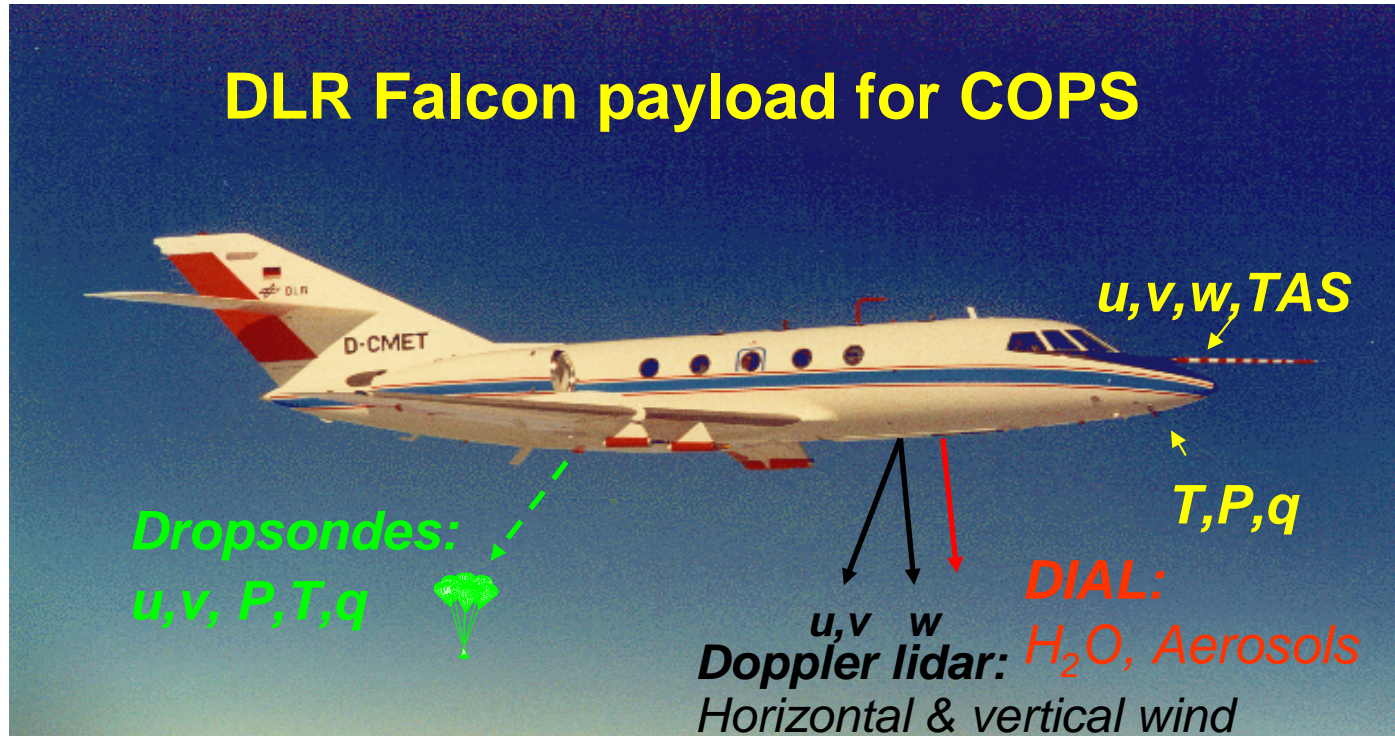
**D-CMET performance:**

| Altitude [m]       | 3000  | 6000  | 9500  | 12500 |
|--------------------|-------|-------|-------|-------|
| max. Range [km]    | 2100  | 2800  | 3200  | 3700  |
| max. Endurance [h] | 04:10 | 04:15 | 04:45 | 05:00 |

**Mission characteristics „Humidity Advection“ I:**

| Mission objective  | Operation region                            | Flight altitude | Flight time  | Drop-sondes   | Flight pattern  | Other aircraft involved |
|--|---|-----------------|--|---------------|---|-------------------------|
| <b>Large-scale</b> advection of water vapour, targeted upstream measurements | predicted upstream region in Western Europe | 10 – 12 km      | day before humidity is advected over COPS-IOP region | 30 per flight | 300 - 500 km long straight legs across streamer; possible stopover for extended range | None                    |

## DLR Falcon payload for COPS



|               |       |       |       |       |
|---------------|-------|-------|-------|-------|
| Altitude [m]  | 3000  | 6000  | 9500  | 12500 |
| FL [hft]      | 100   | 200   | 310   | 410   |
| Range [km]    | 2100  | 2800  | 3200  | 3700  |
| Endurance [h] | 04:10 | 04:15 | 04:45 | 05:00 |

**Availability: Weeks 26 - 31, 6 weeks from 28.6. - 5.8.2007.**

installation, test & first mission flight in week 26.

**In total 45 flight hours, 40 days funded 50/50 by DFG/DLR-IPA.**

**Scenario:** Forced Convection  
**Platform 2:** G-Falcon, D-CMET  
**Mission:** TARGETED OBS.

**Red box: target region.**

**Black segment: sector of likely target regions with a radius of 1800 km.**

**Measurements along PV streamers or streamlines during transfer to target region.**

- Wind lidar in scanning mode
- FL 310 - 410
- ~20 flight hours (5 flights)
- ~30 dropsondes

**Problem: DS over France/Spain/GB?**

Relative humidity and geopotential height at 400 hPa on 18.6.02 12UT, 30 h before heavy precipitation occurred in the Black Forest.

ECMWF Analysis VT: Tuesday 18 June 2002 12UTC 400

