



WP3-Task 2.2

Measurement standardization and data submission protocol for cloud relevant products: Liquid Water Content (LWC) and droplet effective radius (R_e)

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ACTRIS-2 WP3 / WP8 / WP11 Technical Meeting

Athens, Greece

November 10-12, 2015

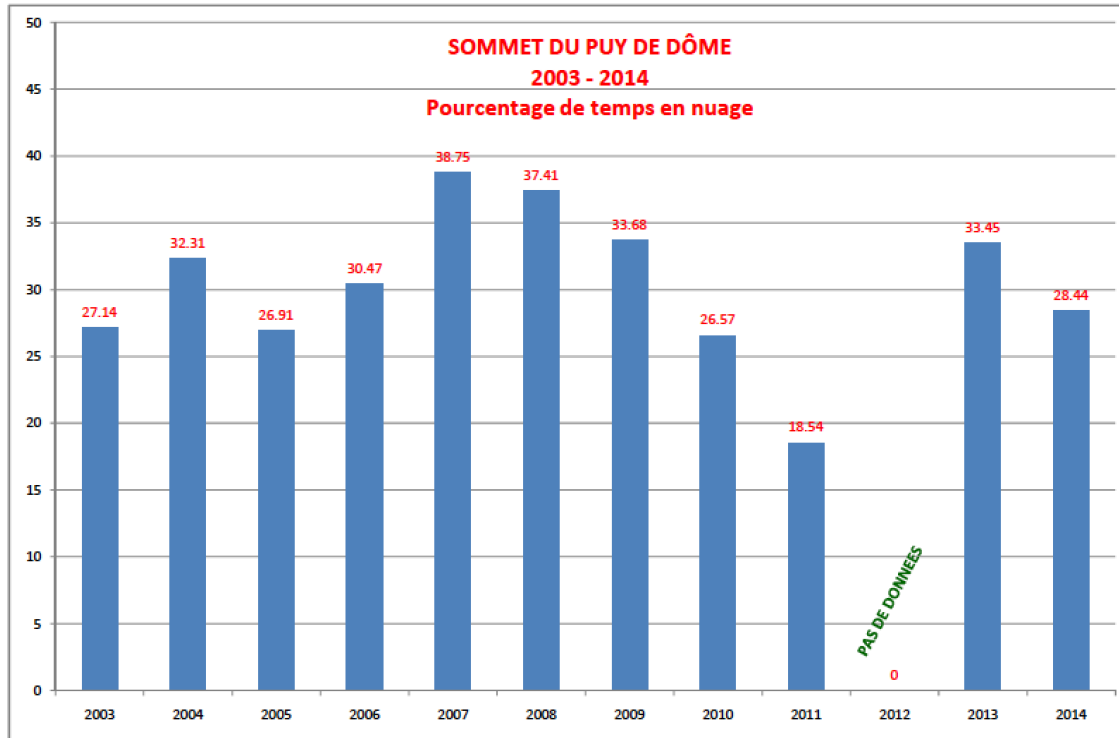


Task 2.2. Objectives and milestones

- To evaluate performances of existing probes for the measurement of Liquid Water Content (LWC) and Droplet effective Radius (Re)
 - Intercomparison field campaign with all cloud microphysical probes existing in the ACTRIS community, in order to determine the detection limit, robustness, advantages and drawbacks (M12)
 - Report on intercomparison campaign (Deliverable on M18)
- To harmonize the standard operation procedures for the bulk probes (PVM, PWD)
 - Workshop on cloud microphysical measurements (M24)
 - provide to the community recommendations and standard operating procedures (Deliverable on M24).
- To develop a new PVM-ACTRIS probe prototype according to the identified drawback (M36)

Task 2.2.: State of the Infrastructure at project start

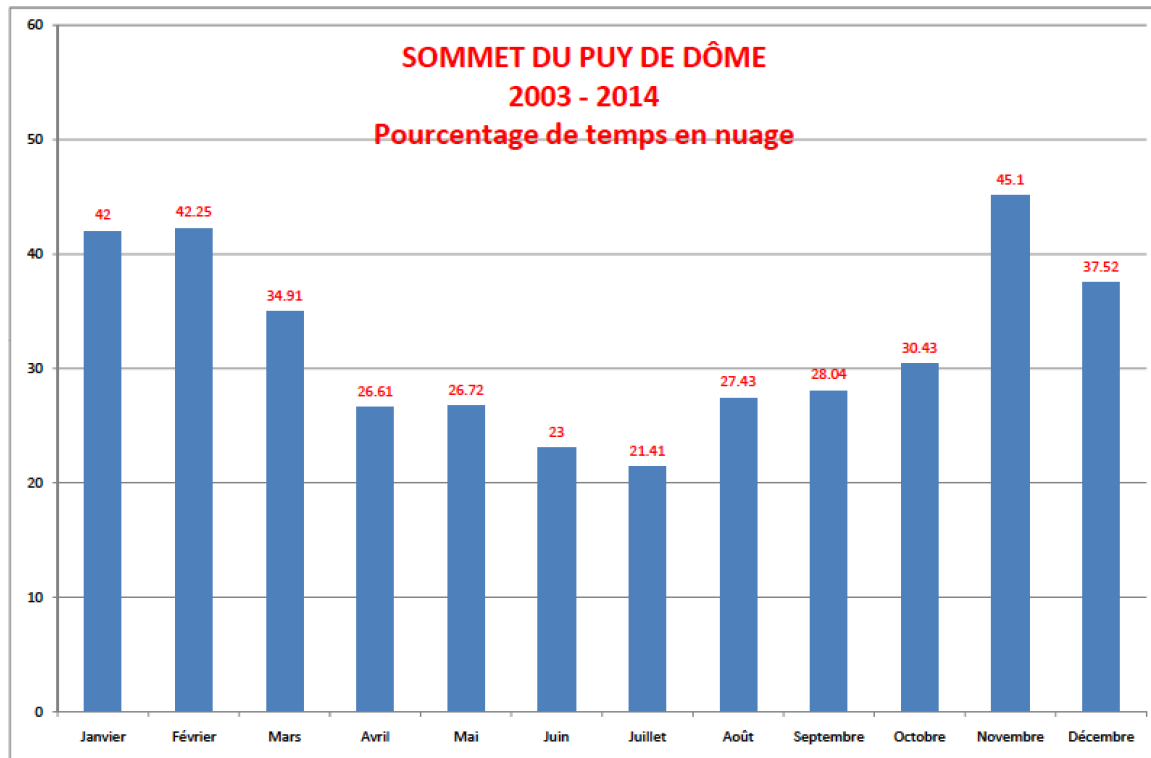
- Existing measurements of LWC and Droplet Re at ACTRIS stations:
 - Puy de Dôme
 - Jungfrauoch
 - CNRS-SIRTA



| Year | Field campaign | Season |
|------|----------------|--------|
| 2014 | CLACE2014 | Winter |
| 2013 | CLACE2013 | Winter |
| 2011 | CLACE2011 | Summer |
| 2010 | CLACE2010 | Summer |
| 2008 | CLACE2008 | Spring |
| 2007 | CLACE 6.5 | Summer |
| 2007 | CLACE 6 | Winter |
| 2006 | CLACE 5 | Winter |
| 2005 | CLACE 4.5 | Summer |
| 2005 | CLACE 4 | Winter |
| 2004 | CLACE 3.5 | Summer |
| 2004 | CLACE 3 | Winter |
| 2002 | CLACE 2 | Summer |
| 2000 | CLACE 1 | Winter |

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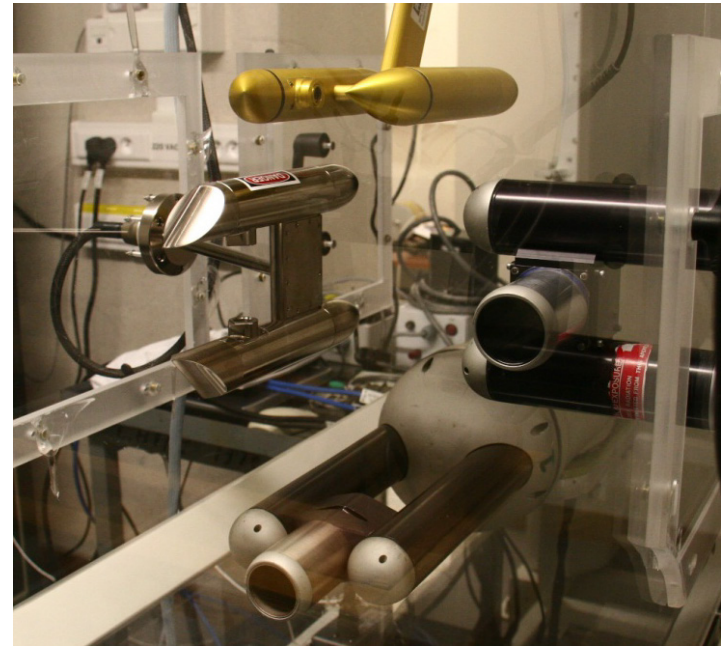
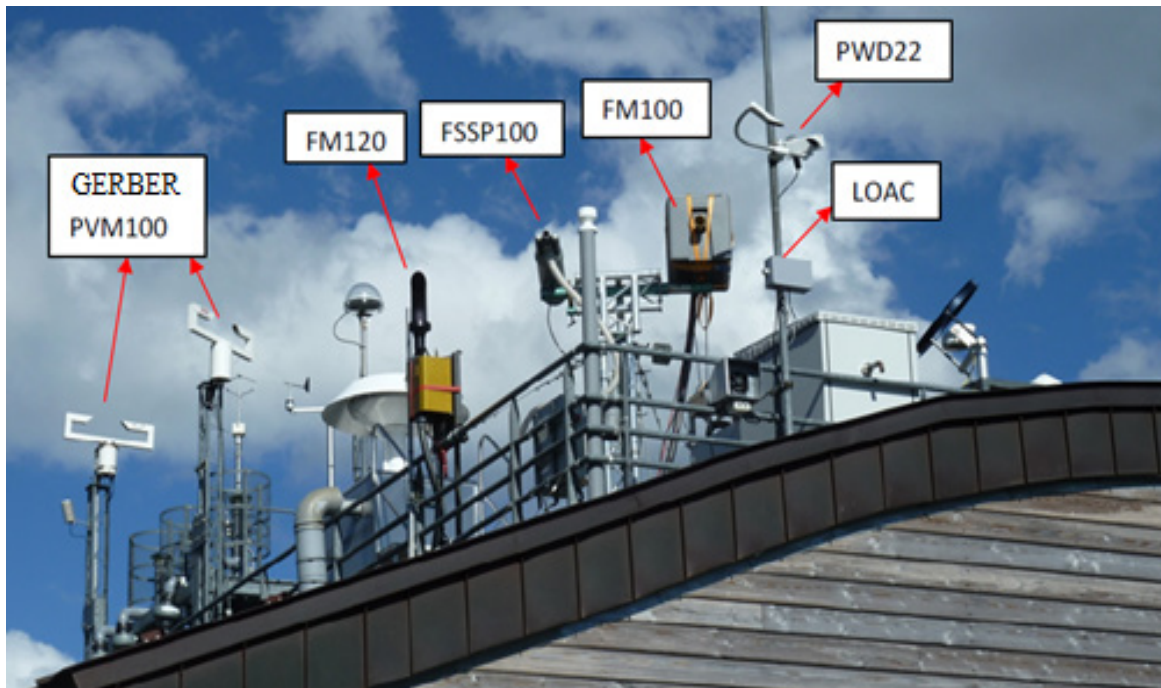


Task 2.2.: State of the Infrastructure at project start

- Existing measurements of LWC and Droplet Re at ACTRIS stations:
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- Potential future measurements at ACTRIS stations: all high altitude stations (often in clouds)
 - Maito, Mte cimone, Izana, Zugspitze, Zeppelin, Hohenpeissenberg, Pic du Midi, Pyramid, CHC, others?
- No data submissions up to now – but climate relevant variable for long term trend studies, link to CCNC measurements, remote sensing inversion algorithms

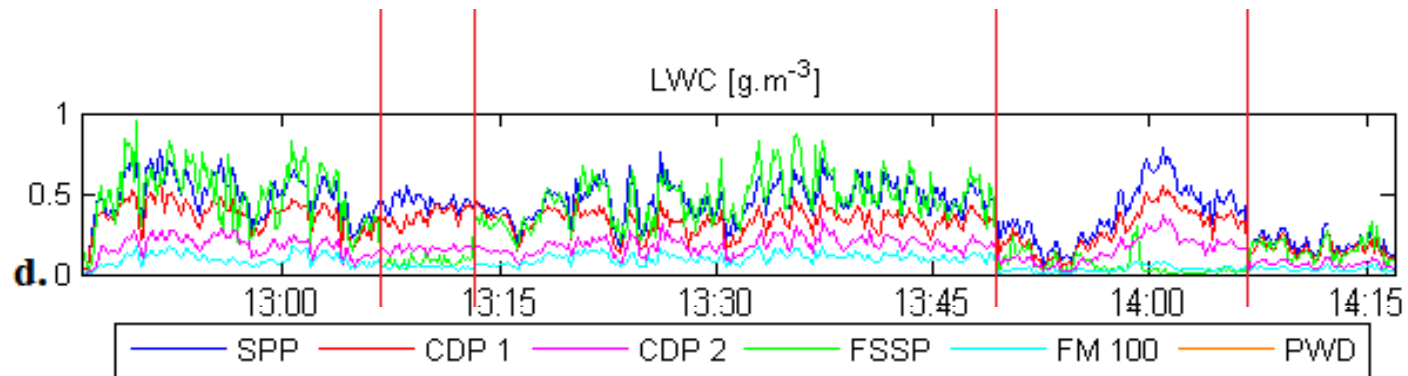
Task 2.2. – Evaluate performances of existing probes for LWC and Re

- First intercomparison campaign at puy de Dôme



Task 2.2. – Evaluate performances of existing probes for LWC and Re

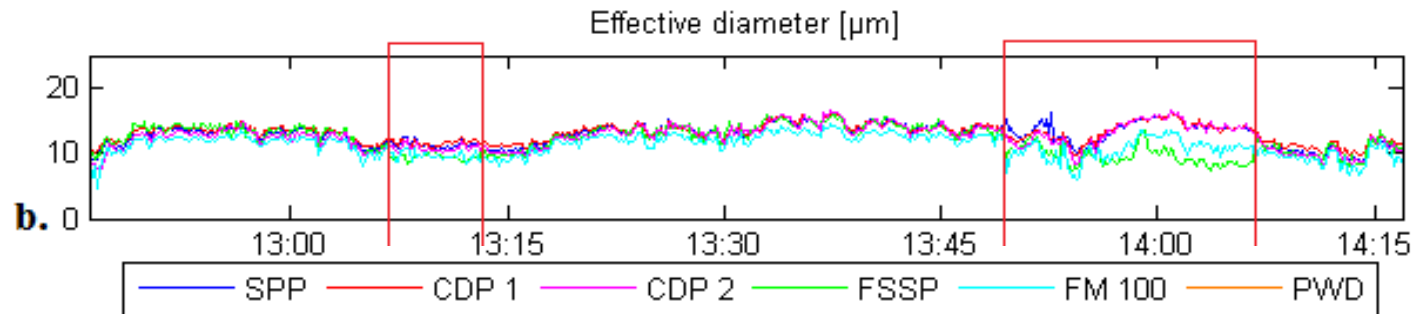
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- *Discrepancy up to a factor 5 on LWC measurements*

Task 2.2. – Evaluate performances of existing probes for LWC and Re

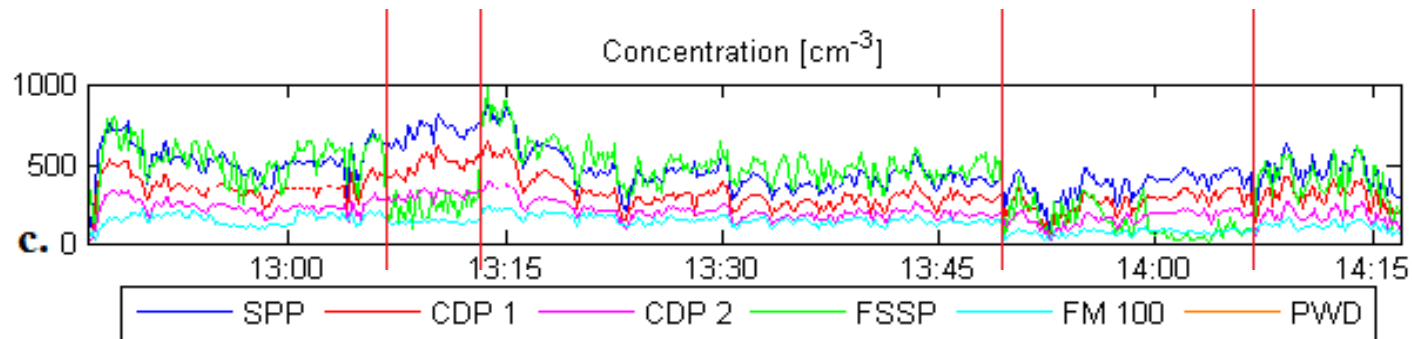
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- Agreement within 10% on Cloud droplet Re

Task 2.2. – Evaluate performances of existing probes for LWC and Re

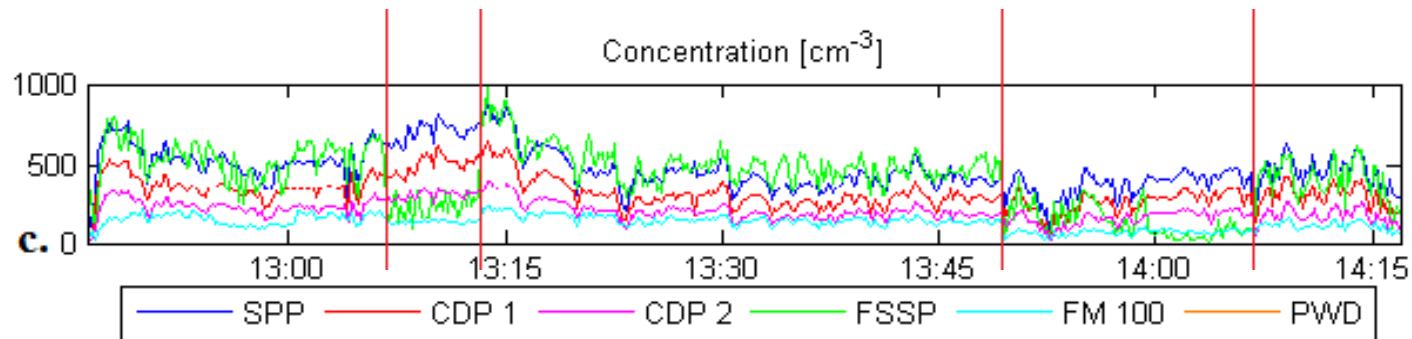
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- *Discrepancy identified to originate from Cloud Droplet Number concentration*

Task 2.2. – Evaluate performances of existing probes for LWC and Re

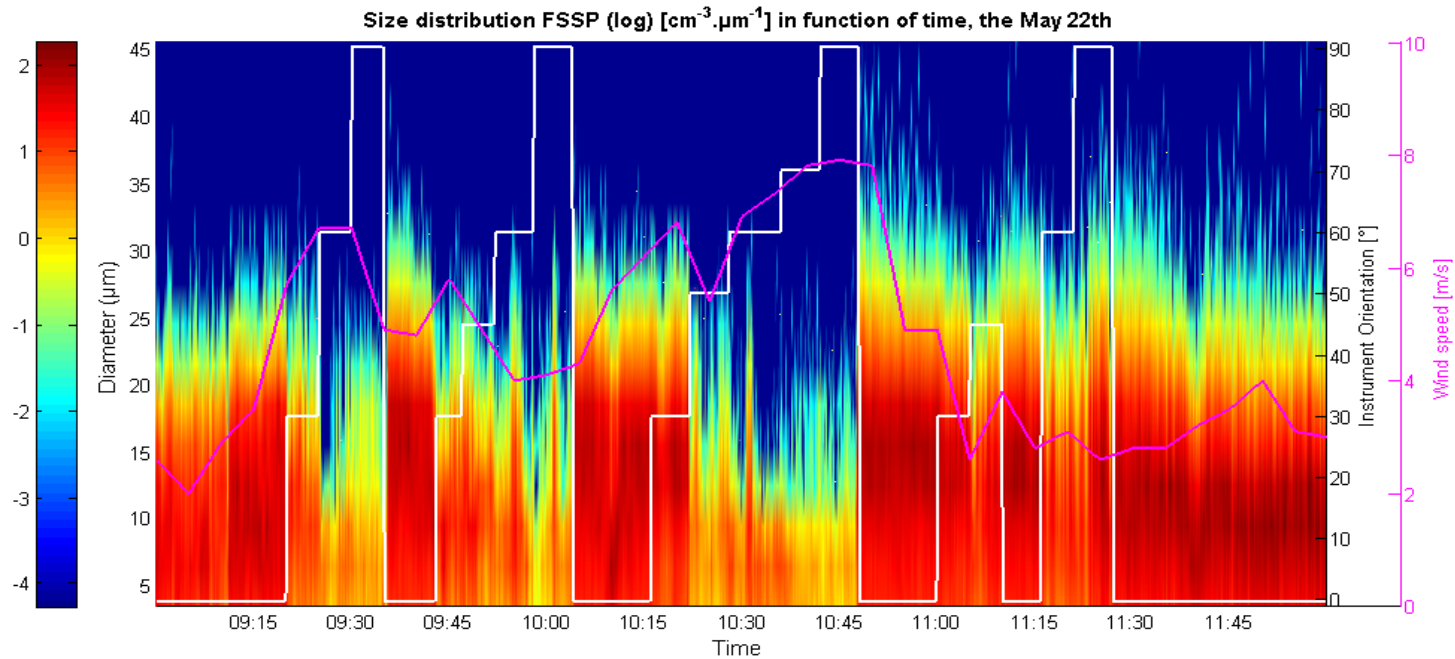
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Task 2.2. – Evaluate performances of existing probes for LWC and Re

- First intercomparison campaign at puy de Dôme



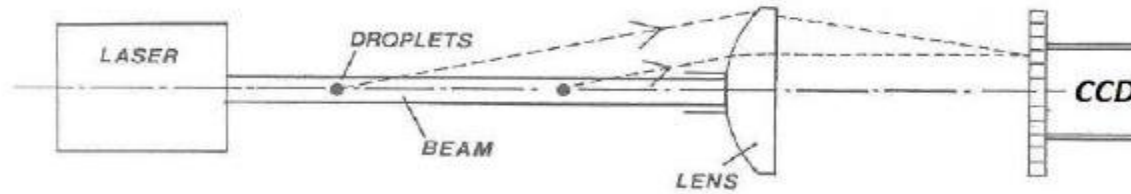
- Identified bias due to probe orientation in the wind field

Task 2.2. timeline & planned actions

- 2016: Organize next intercomparison field campaign (Autumn)
 - Invite actual ACTRIS 2 stations already operating cloud microphysics probes
 - Invite potential ACTRIS2 station future users (Mt Cimone..)
 - Invite external groups (Meteorological organizations...)
 - Invite probe companies (DMT, PMS, PALLAS ..)

Task 2.2. timeline & planned actions

- 2017: Finalize new PVM development

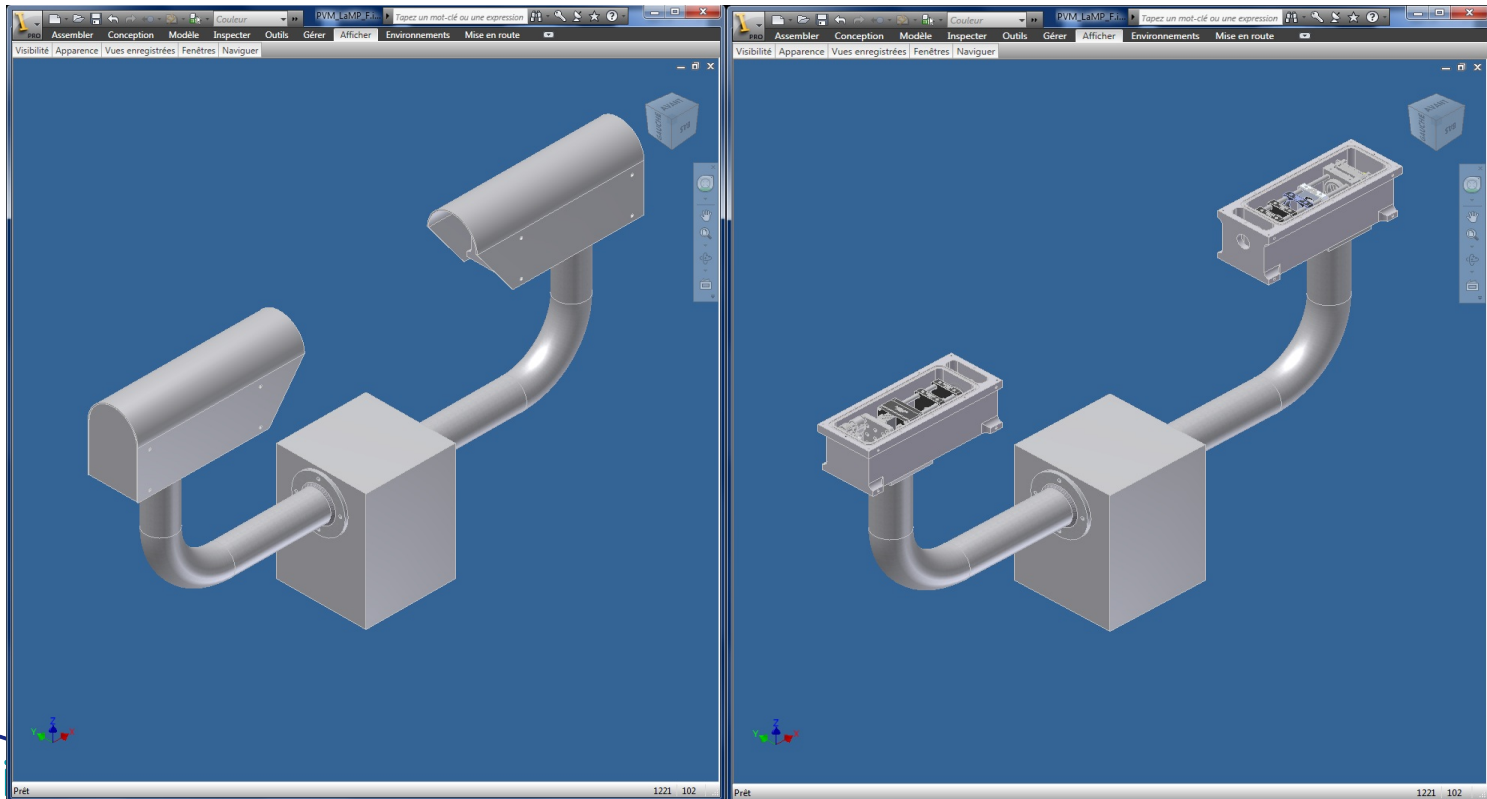
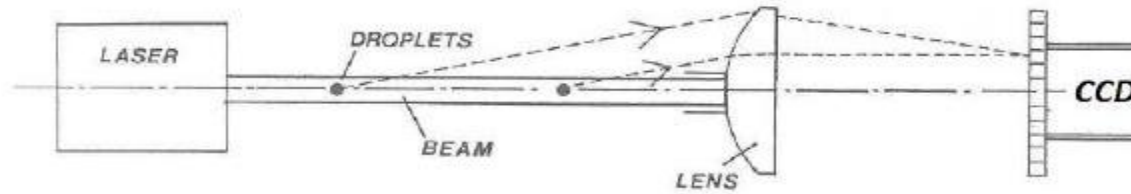


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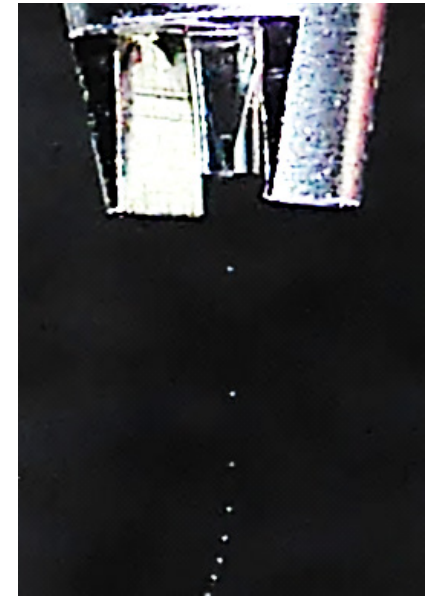
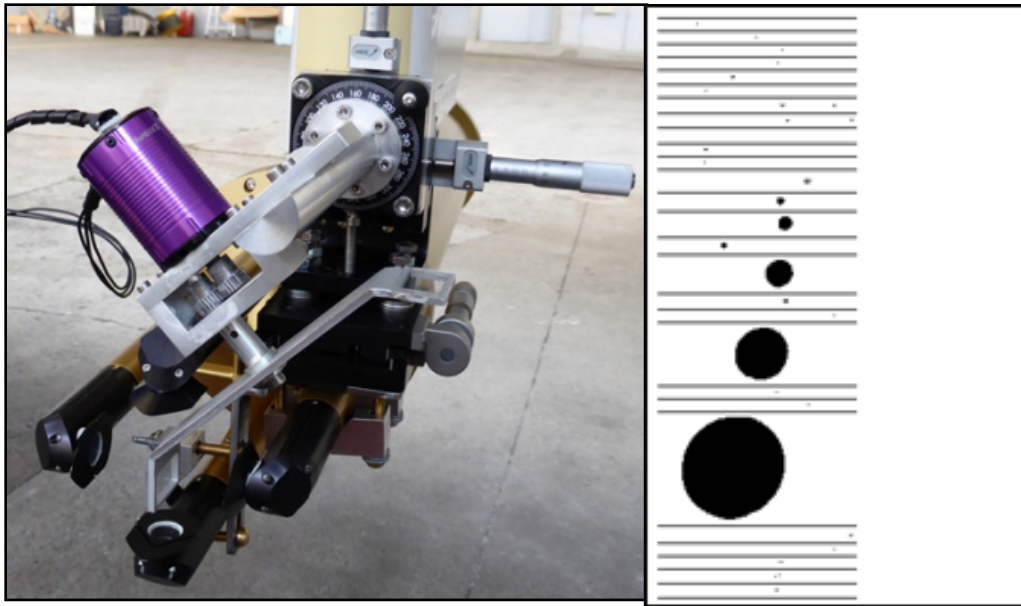
Task 2.2. timeline & planned actions

- 2017: Finalize new PVM development



Task 2.2. timeline & planned actions

- 2017: Initialize cloud droplet measurement calibration center?



Task 2.2. timeline & planned actions

Questions?

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- Existing measurements of LWC and Droplet Re at ACTRIS stations:
 - Puy
 - JFJ
 - CNRS-SIRTA

