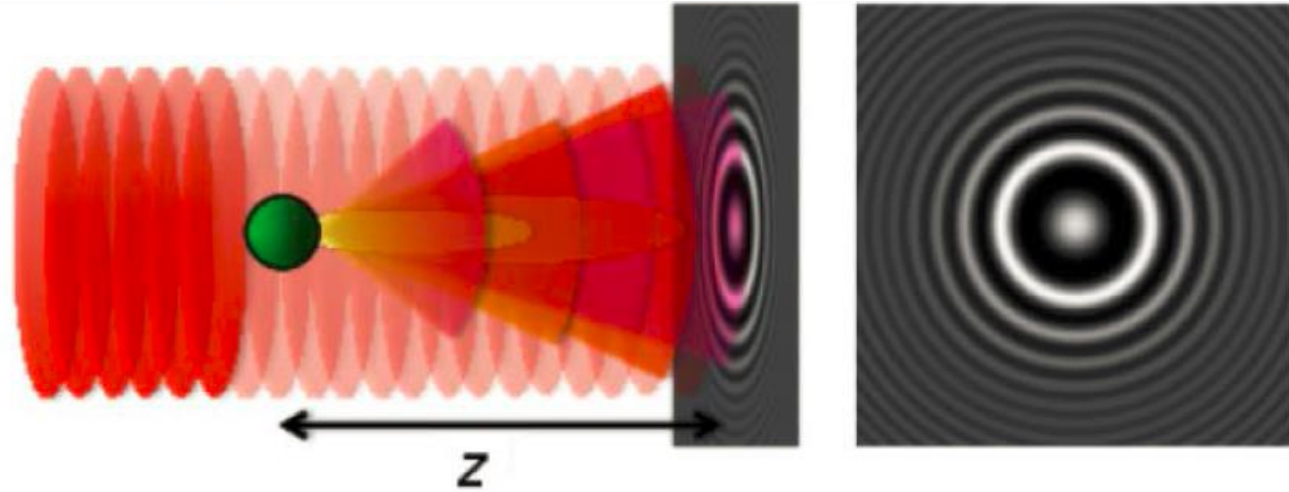


HOLODEC – Holographic Detector for Clouds

Susanne Glienke
Raymond Shaw
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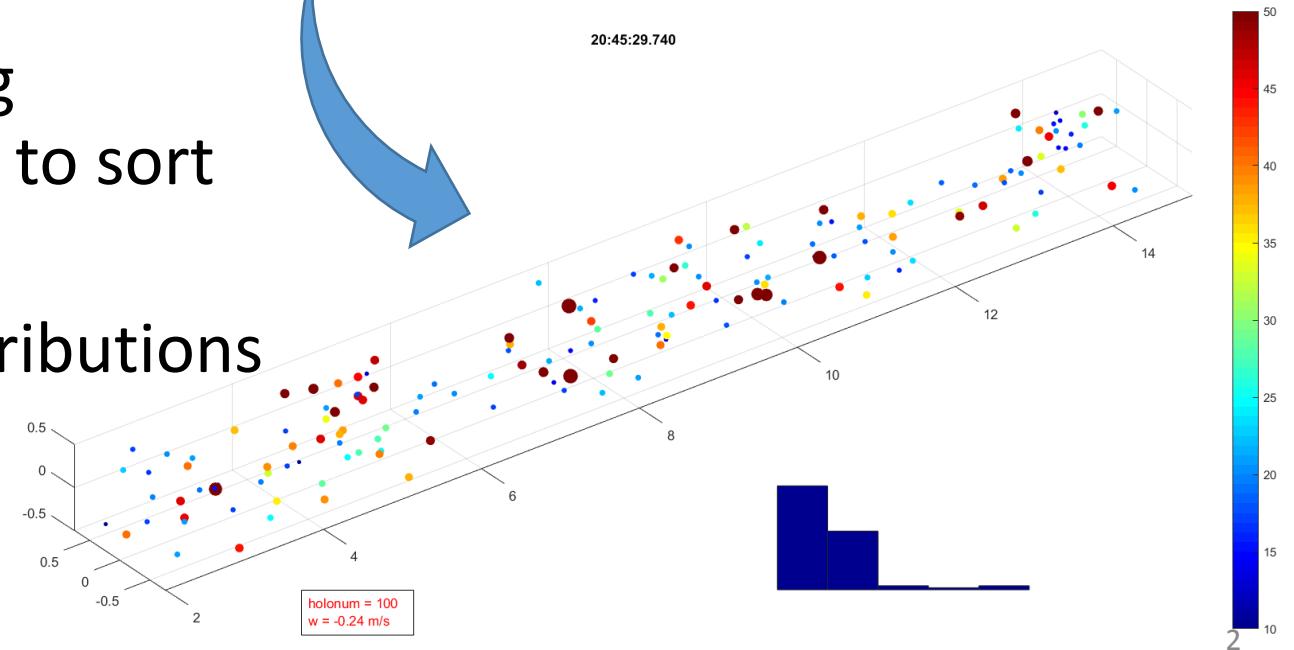
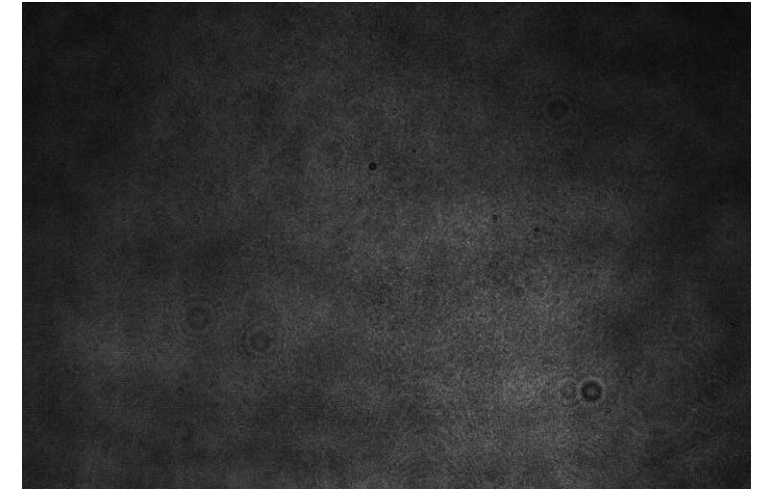


HOLODEC



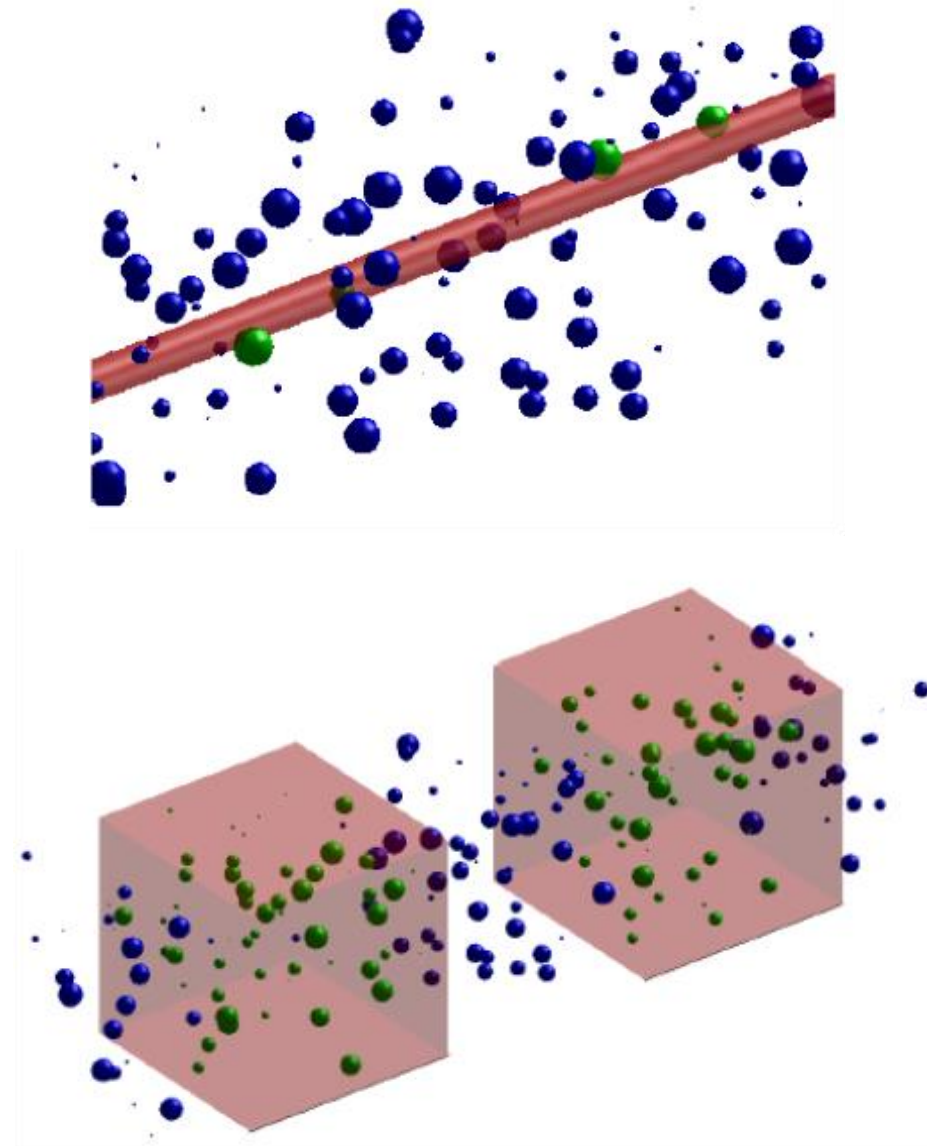
From raw holograms to results

- Hologram quality control
- Batch-Reconstruction (on supercomputer) saves everything that might be a particle.
- Use supervised machine learning (classification) to train algorithm to sort particles from noise/artefacts.
- Then look at spatial and size distributions etc.



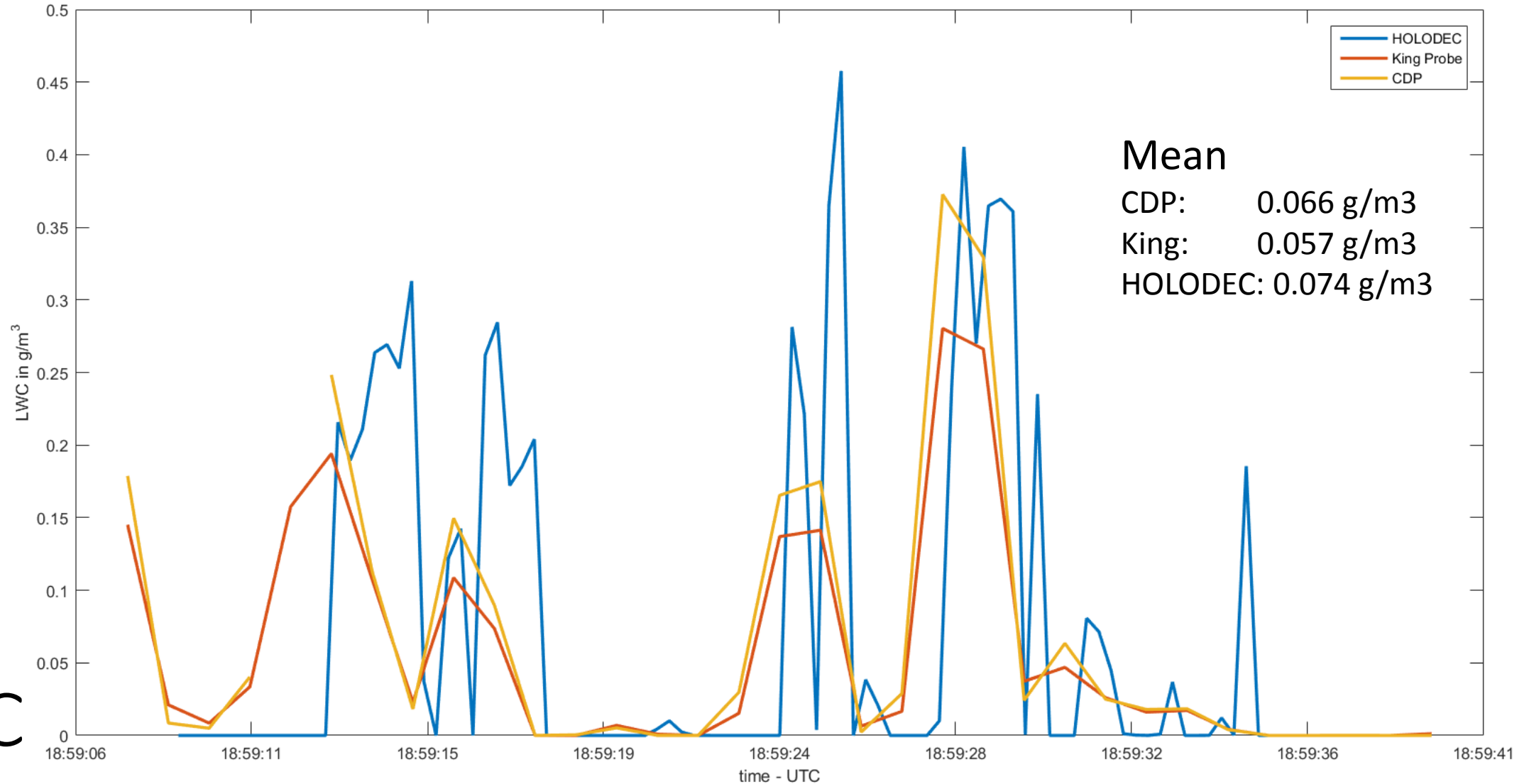
Unique capabilities of HOLODEC

- $\sim 15 \text{ cm}^3$ sample volume ($14 \times 9 \times 120 \text{ mm}^3$) per hologram taken at 3.3 Hz with $3 \mu\text{m}$ pixels.
- Size range $6 \mu\text{m}$ to about 1 cm.
- Airspeed independent volume sample rate.
- Local size distributions as in one size distribution per hologram as opposed to be stretched out over say 100 m of flight path.
- Shattering correction available and is also affected by splashes on the windows (like other probes).

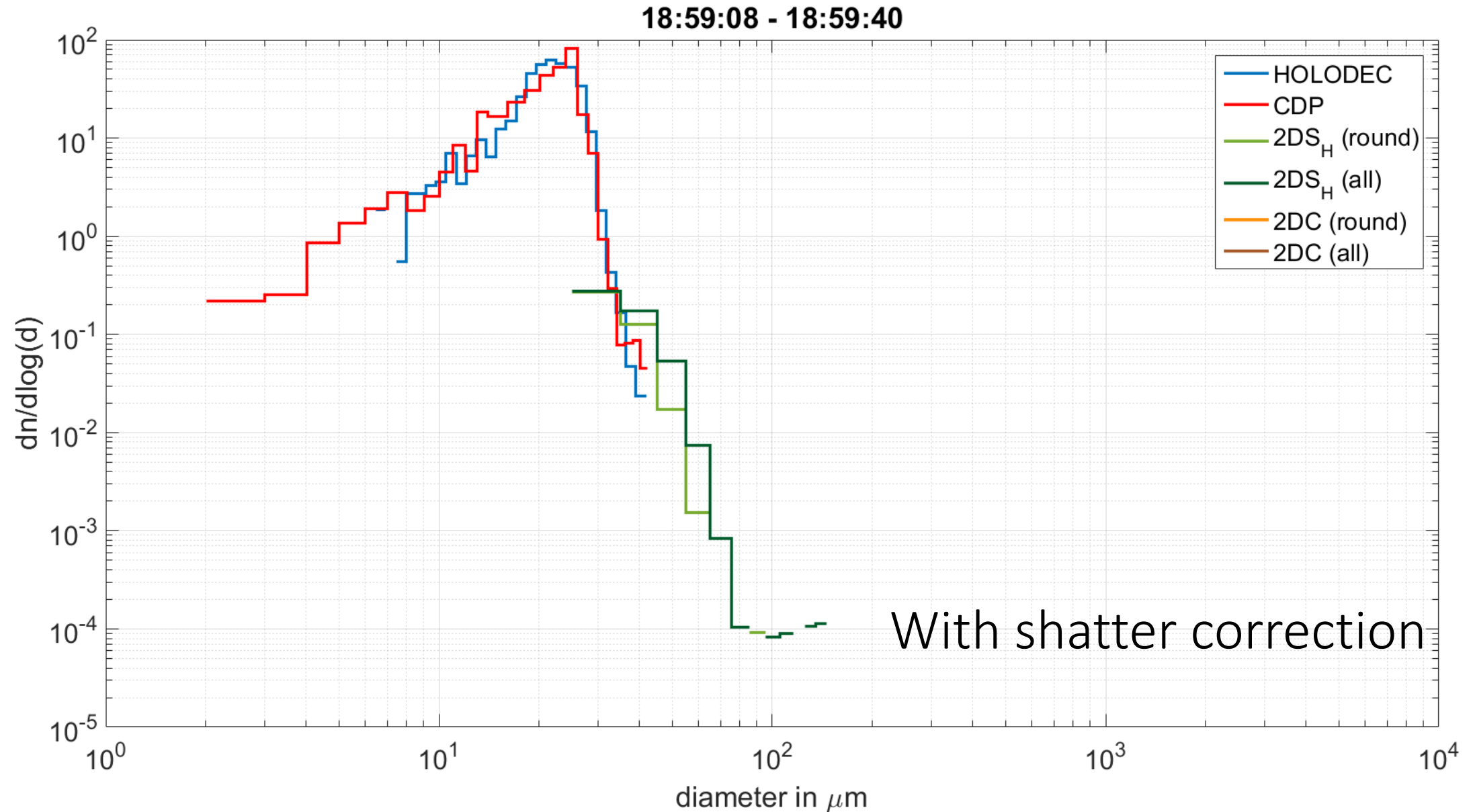


Sample 1 (no rain): 18:59:08-18:59:40

LWC

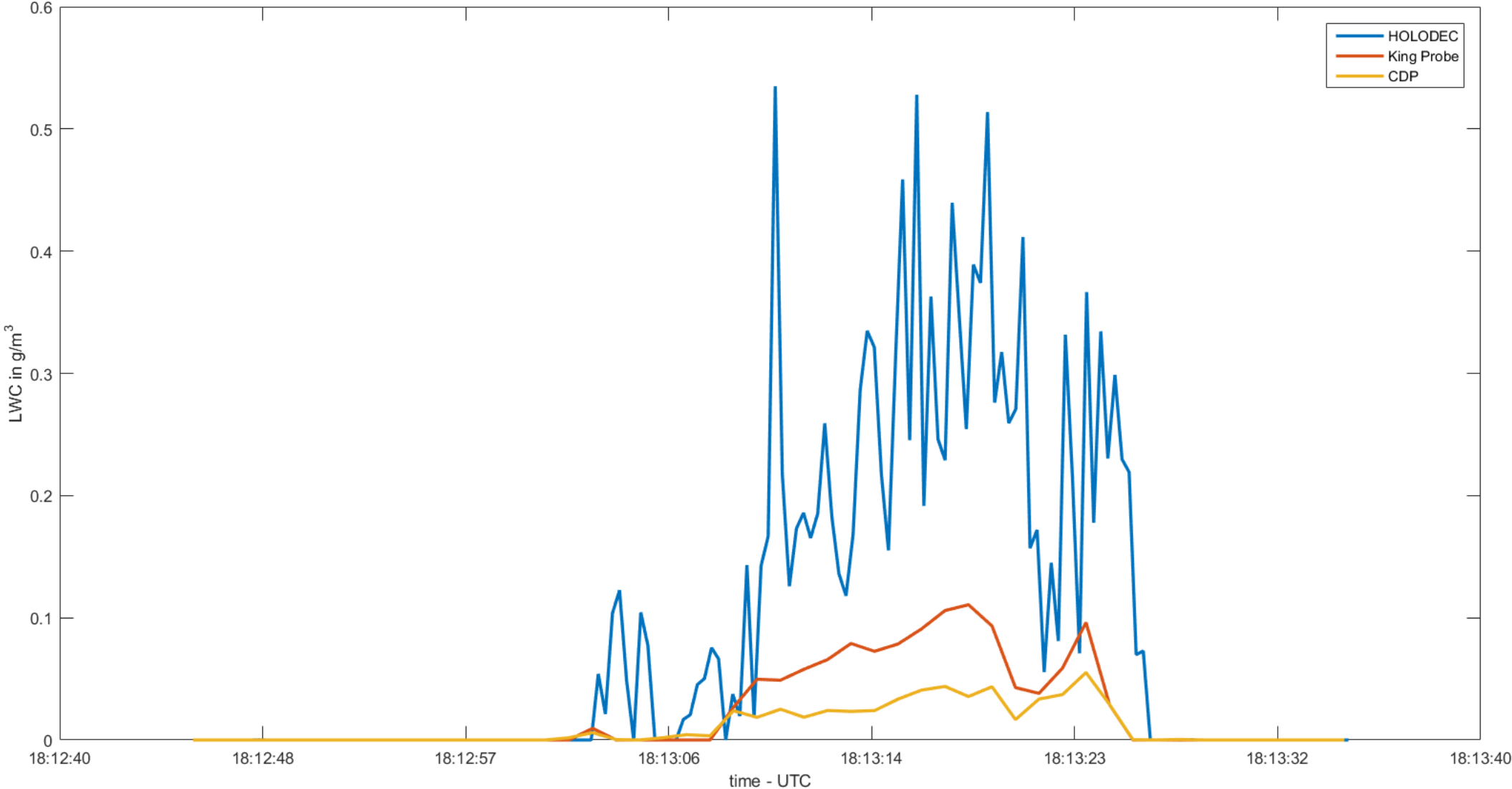


Sample 1 (no rain): 18:59:08-18:59:40



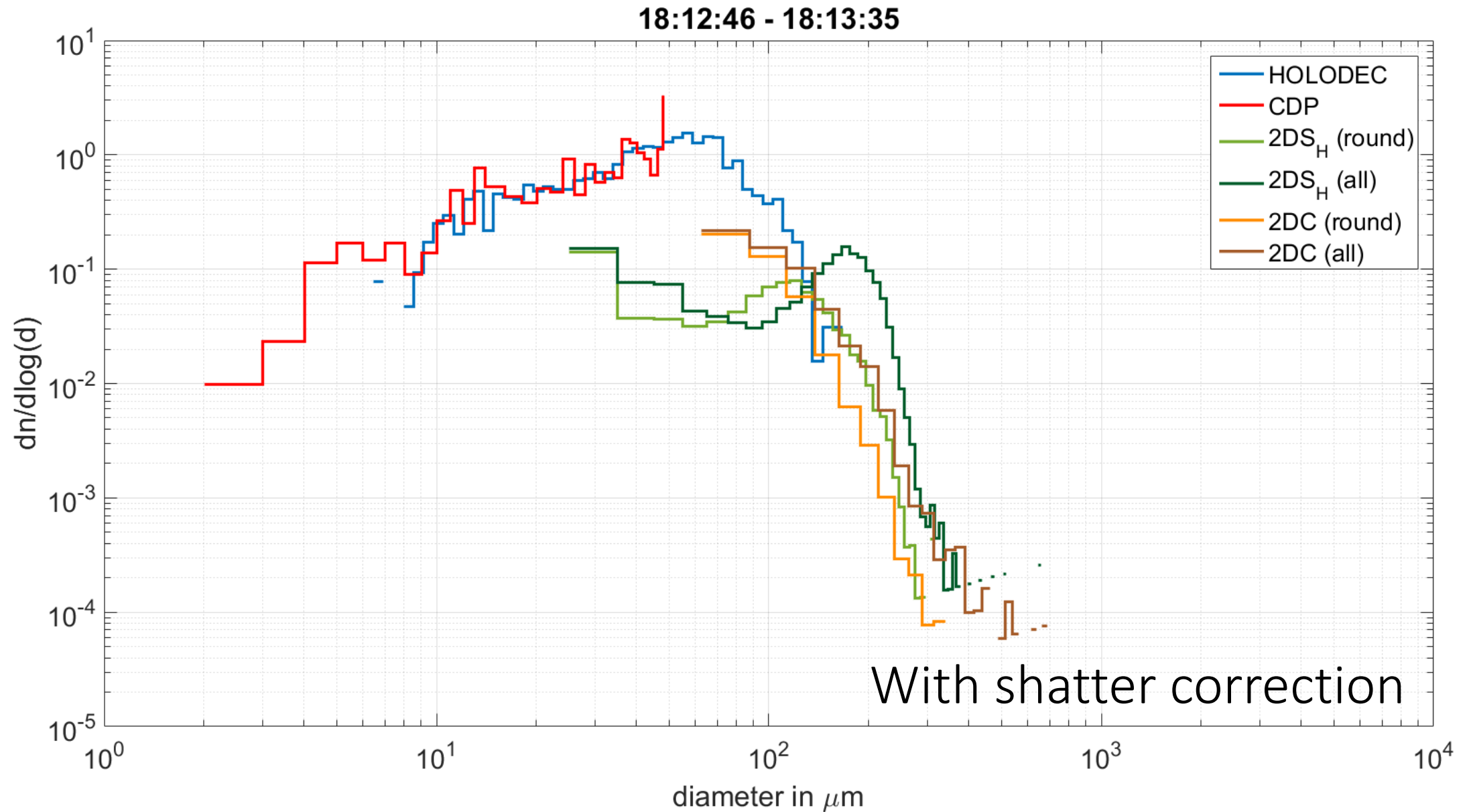
Sample 2 (rain):

18:12:46-18:13:35



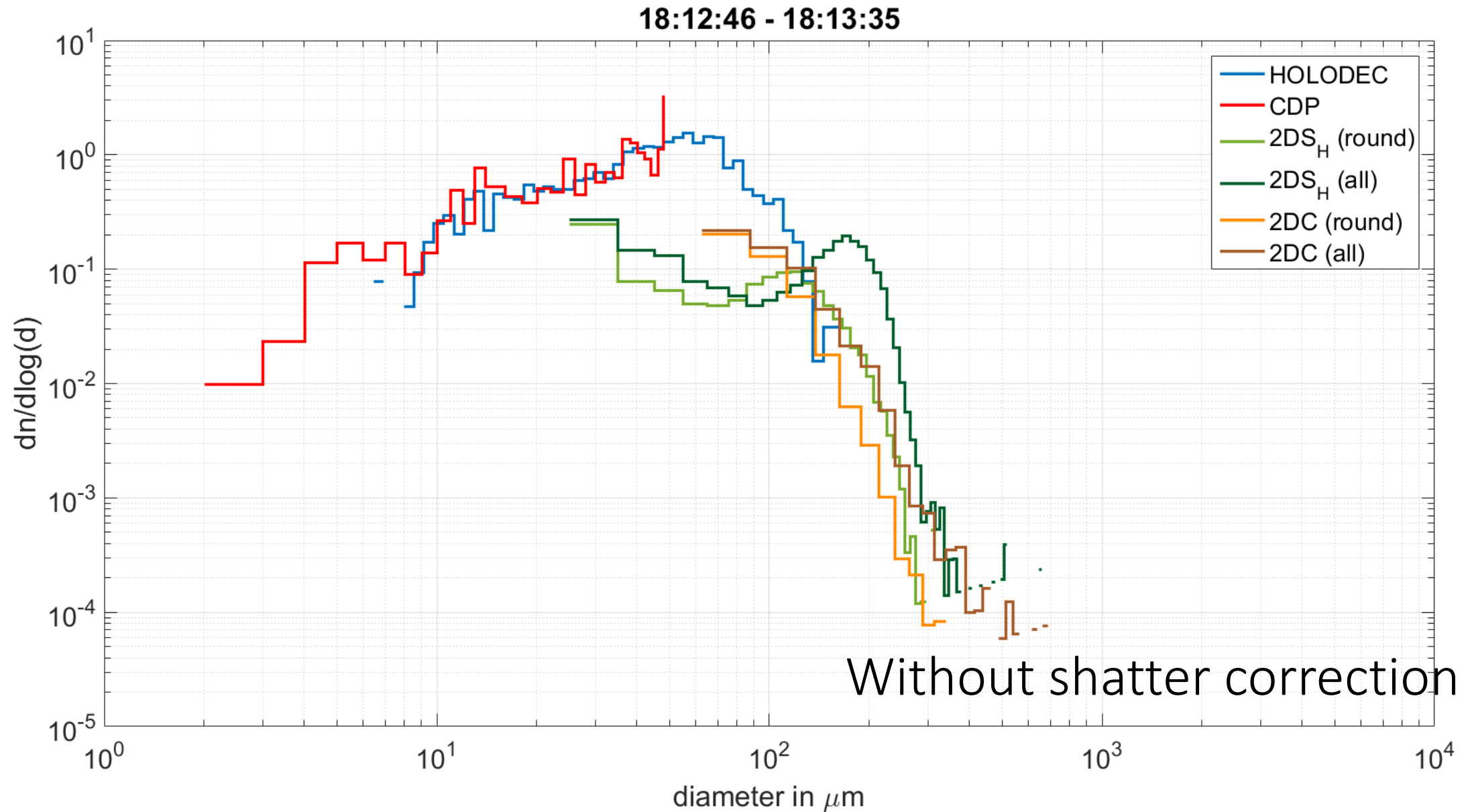
Sample 2 (rain):

18:12:46-18:13:35



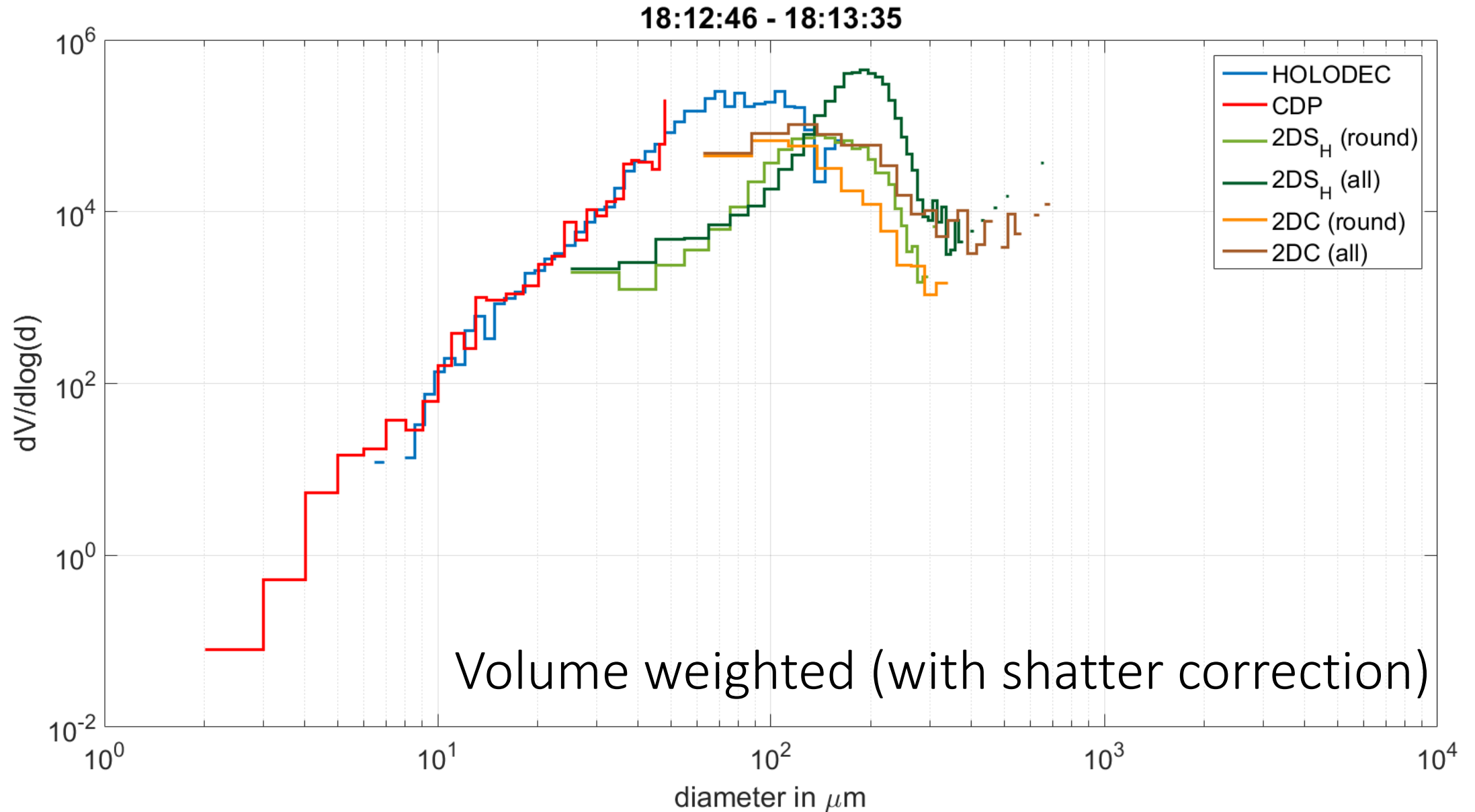
Sample 2 (rain):

18:12:46-18:13:35



Sample 2 (rain):

18:12:46-18:13:35



No shatter correction for 2DS - Volume

