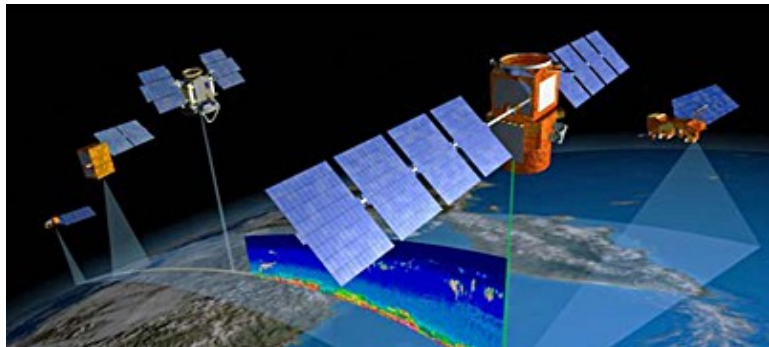


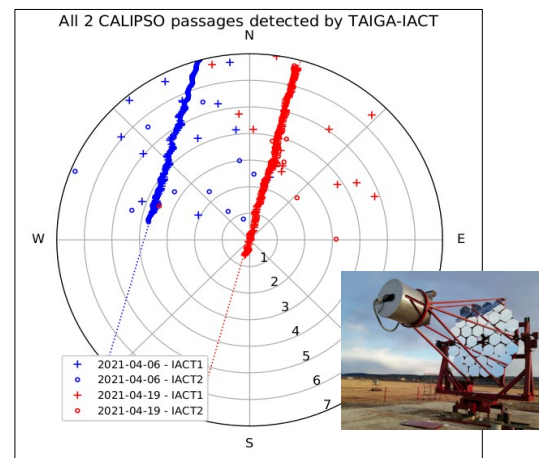
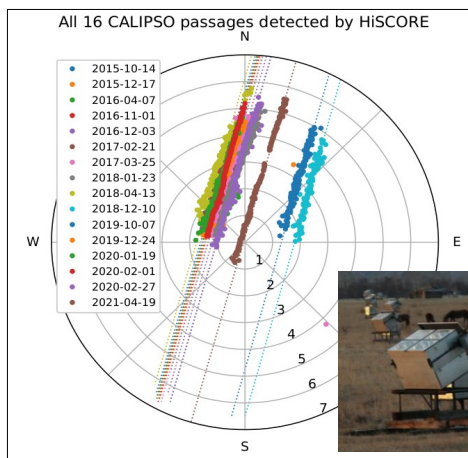
Satellite-based Calibration of the TAIGA-HiSCORE Cerenkov Array by the LIDAR on-board CALIPSO.

Andrea Porelli (DESY-Zeuthen) for The TAIGA Collaboration, ICRC 2021, Berlin, 12-23 July 2021

TAIGA detection of LIDAR on CALIPSO satellite

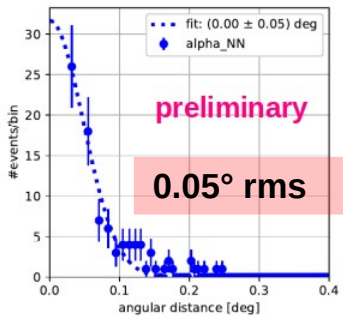


Signal seen by TAIGA:
 20Hz rate
 532nm laser
 110mJ/pulse (x100 ISS/CATS)
 20ns pulse width



HiSCORE: 16 passages seen between 2015-2021 (archival analysis)
 IAC2: 2 passages seen with both TAIGA-IAC2s in April 2021 (targeted observation)
 * First experience in 2015-2017: 11 passages of similar LIDAR on CAST onboard ISS

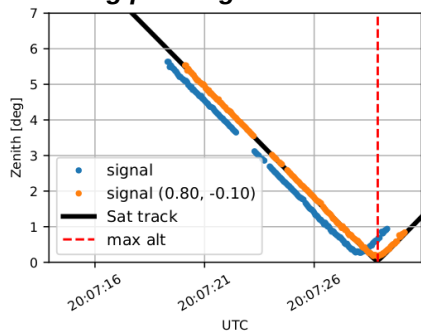
Angular resolution: neighbour events



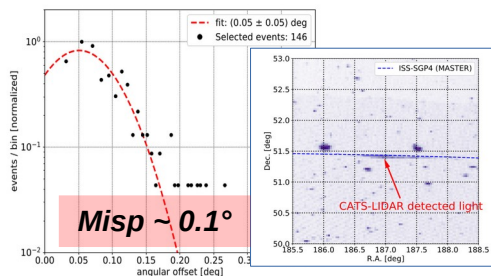
$$\alpha_{68\%} = \frac{\vec{dir}_i \cdot \vec{dir}_{i-1}}{\sqrt{2}} \leq 0.05^\circ$$

Ground array calibration with LIDAR

Timing/pointing verification



Pointing verification (CATS+MASTER)



Pointing calibration analysis with LIDAR tested with CATS/ISS(+MASTER) - ICRC17. In progress with CALIPSO(+IAC2)

Station time calibration (CATS+MASTER)

