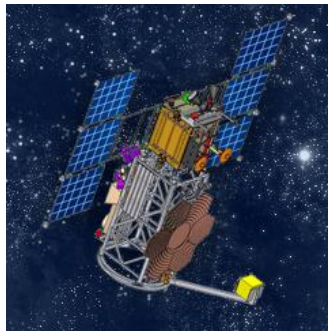
Main results of the TUS experiment on board the Lomonosov satellite

TUS is a first orbital fluorescent detector of ultra-high-energy cosmic rays

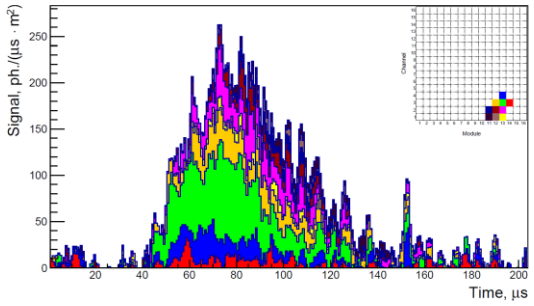


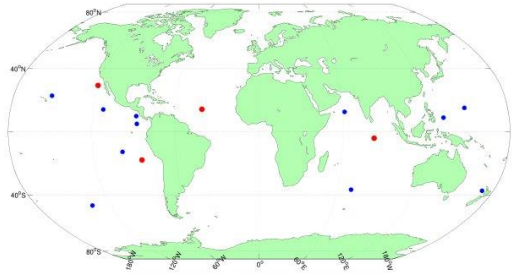
✓It was launched aboard the Lomonosov spacecraft on 04/28/2016. Time of operation until 12.2017 (with interruptions)

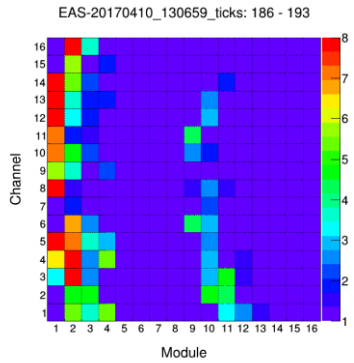
✓More than 200 thousand events registered

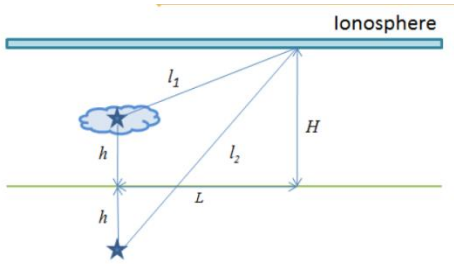
✓The total exposure ~ 1550 km^{2}sr yr.

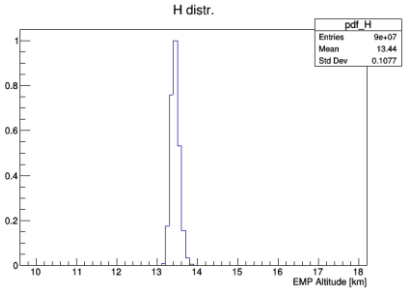
- ✓ EAS-like events are measured and analyzed. E>10^{21} eV – too high. Various hypotheses are discussed (man-made sources, relativistic dust grains …).
- ✓ Events above land are of anthropogenic origin. Number of flashes measured above oceans.



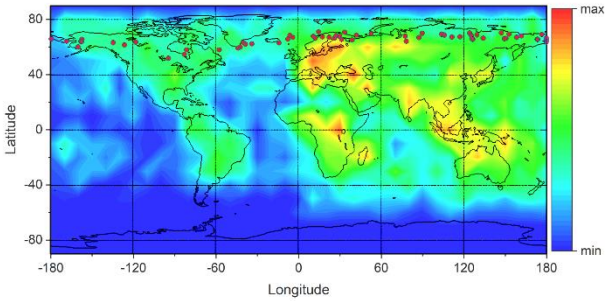


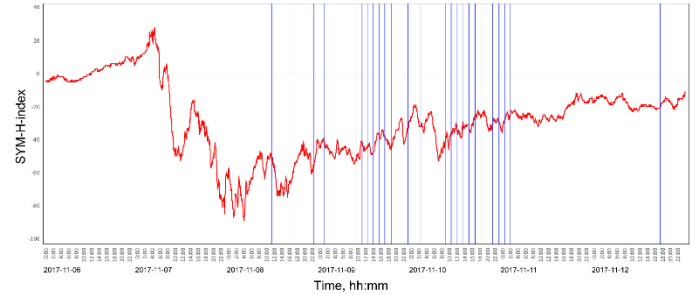






Transient atmospheric events double ELVES measured and studied





Pulsating Aurora events are observed with high temporal resolution.

- ✓ **The TUS detector has studied various UV phenomena which constitute the background for UHECR measurements.**
- ✓ **The technique proved a possibility to measure and recognize relativistic motion in the atmosphere, reconstruct direction and energy of the event.**
- ✓ **The TUS detector demonstrated multifunctionality of orbital fluorescent observatory and its usefulness for various astro- and geophysical studies.**