Polar QuEEEst 1928 – 2018

Purpose:
- measurement of absolute Cosmic Ray fluxes at different latitudes
- sensitivity to low energy Cosmic Rays ("trapped" at Poles by Earth magnetic field)

Telescope with Two-Planes of scintillators
SiPM readout
50x50x30 cm^3 total volume
Low consumption electronics

Three telescopes built by high school students at CERN
- same type detectors
- synchronous (GPS)
- installed on Nanuq sailboat and schools in Norway and Italy

CENTRO FERMI
MUSEO STORICO DELLA FISICA E CENTRO STUDI E RICERCHE ENRICO FERMI

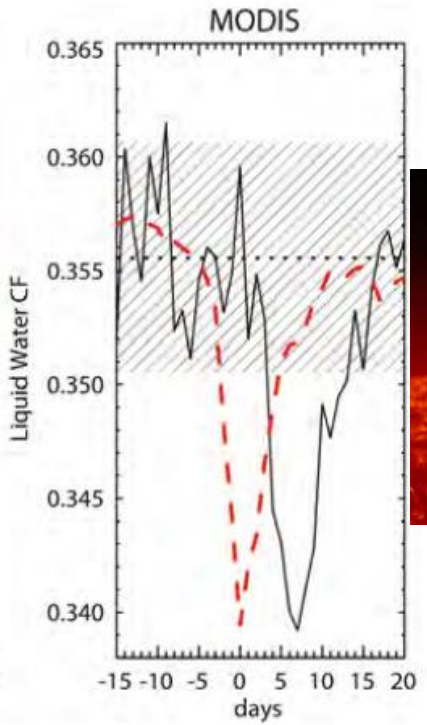
Extreme Energy Events
Science inside Schools

INFN
Istituto Nazionale di Fisica Nucleare

CERN

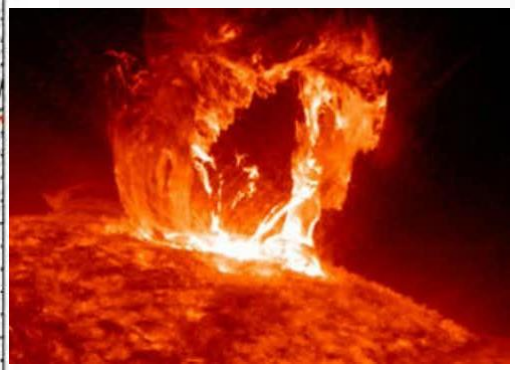
Cosmic Rays, Life and Paleoclimate

https://www.europhysicsnews.org/articles/epn/pdf/2015/02/epn2015462p26.pdf



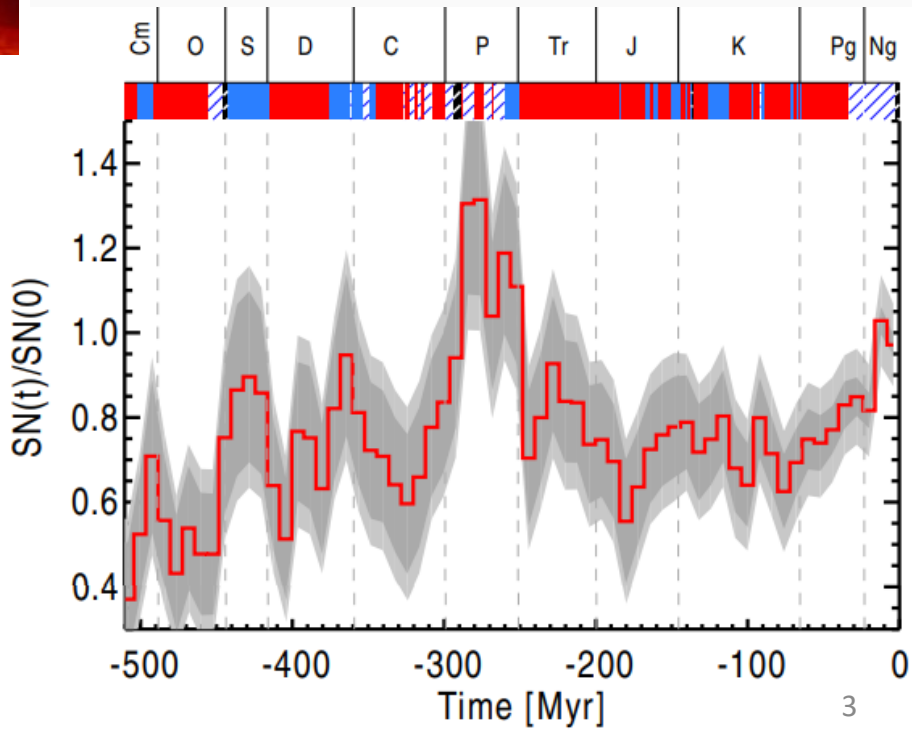
Forbush events

Correlation of neutron measurements (red) and liquid water cloud fraction (black)



Paleoclimate

Correlation of Supernovae rate (i.e.CR) and climatic periods (blue = cold = cloudy) over 500 Myr



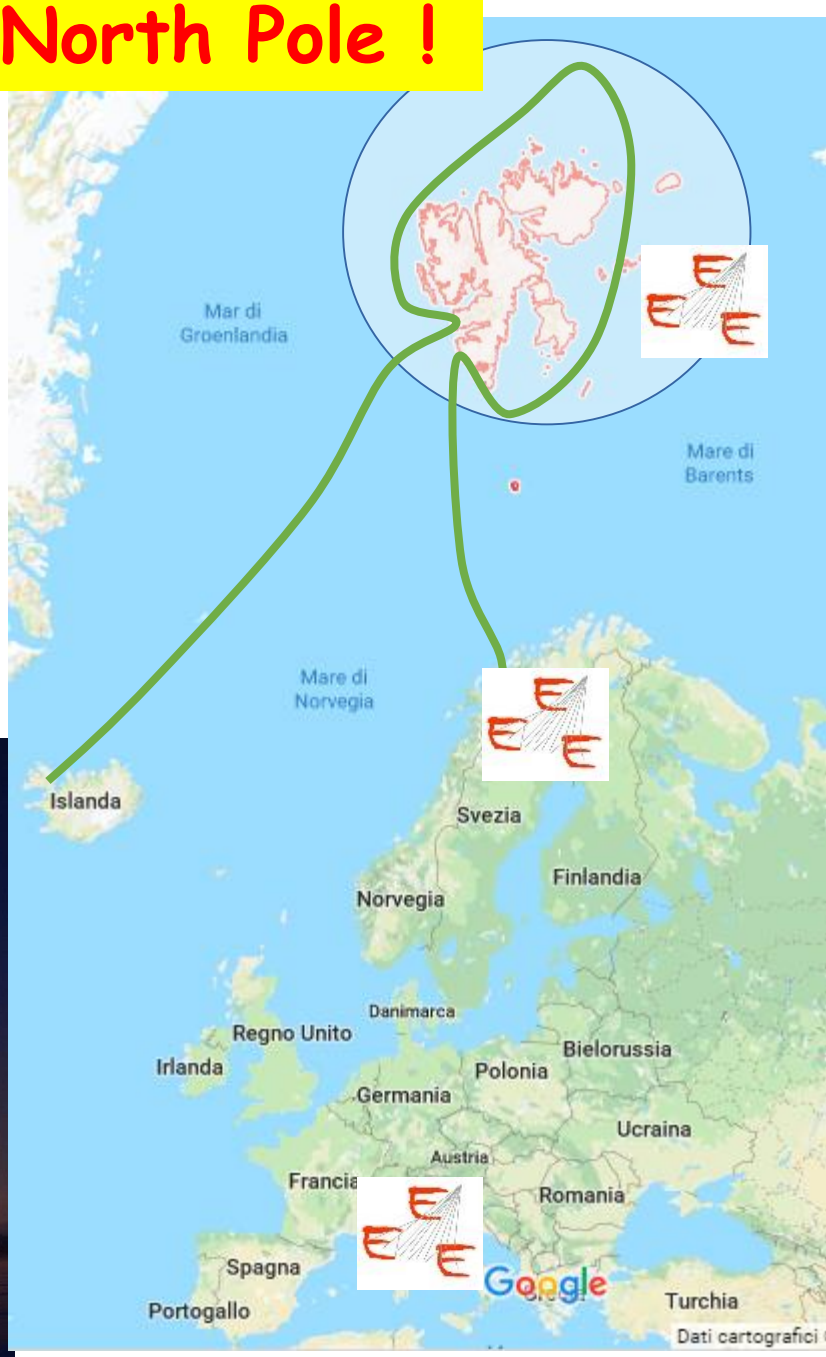
Cosmic Rays and Clouds (CLOUD experiment at CERN)

Condensation Nuclei density is influenced by CR flux

https://home.cern/about/experiments/cloud
http://cerncourier.com/cws/article/cern/41723

The EEE project sails to North Pole !

Dirigibile Italia – 1928
Umberto Nobili



Polar QuEEEst 1928 – 2018

Measure Cosmic Rays flux with three detectors
45° in latitude span
5000 km distance

http://www.polarquest2018.org/

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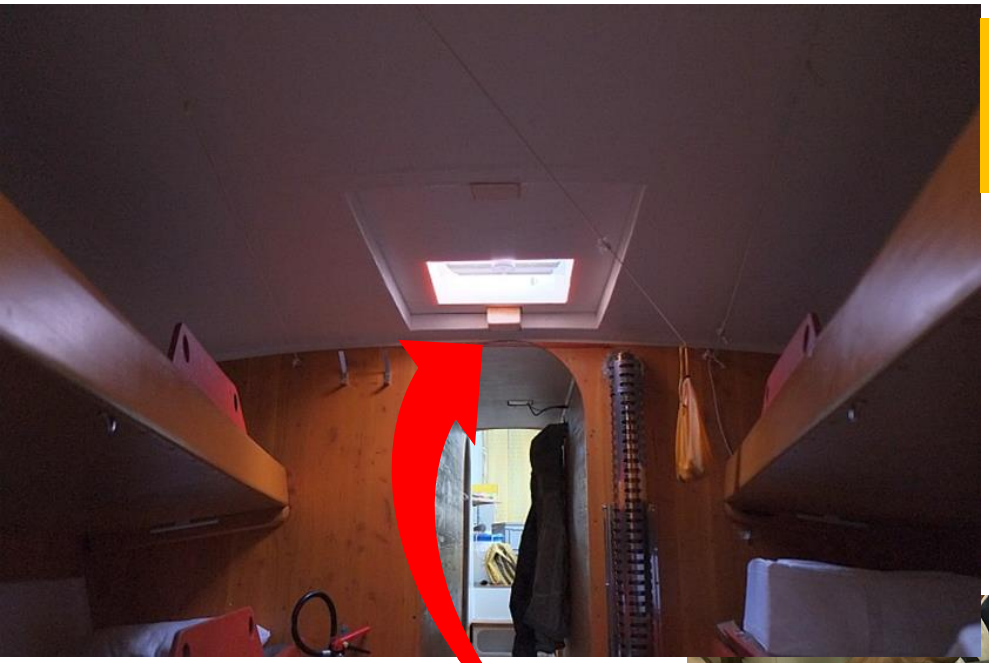
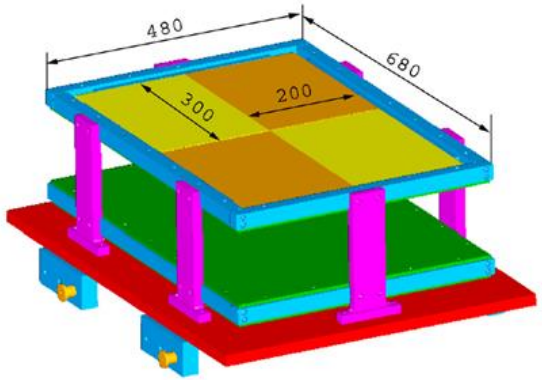
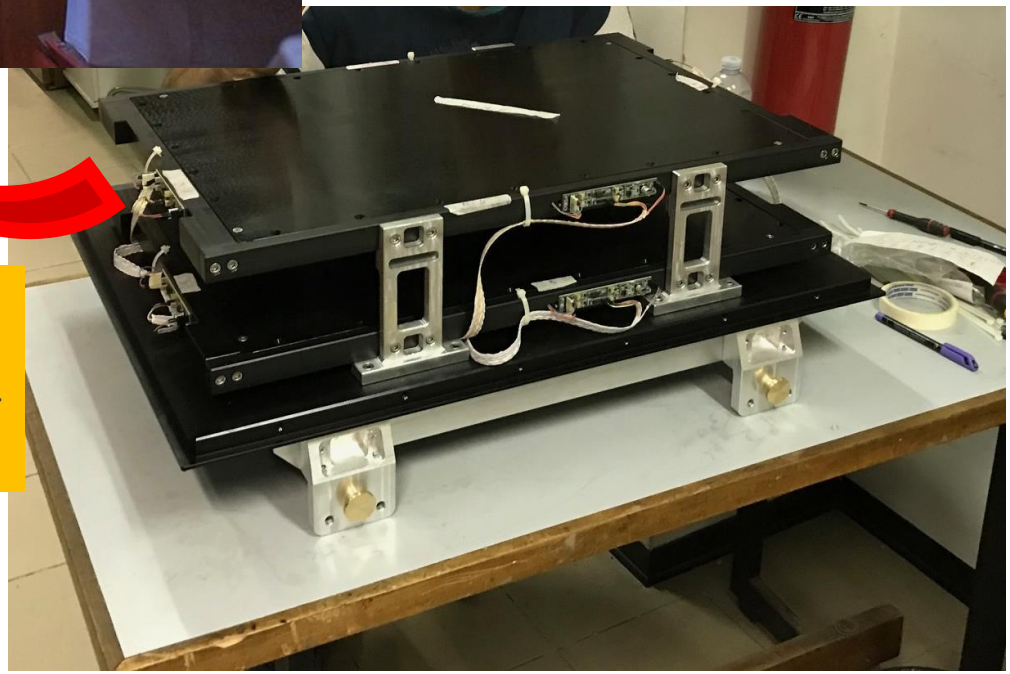
Extreme Energy Events
Science inside Schools

The EEE project sails to North Pole !



- 8 scintillator tiles+16 SiPMs in two planes
- Full TDC custom readout (<10 Watts)
- GPS time stamp





May 22nd- May 25th
18 High Schools students from Norway, Switzerland and Italy at CERN to build the detectors.

PolarQuEEEst 2018

Schedule CERN
Building 29

22-mag		
09:00	Introduction + School presentation	Slides from each school
09:30	Presentation CERN	J. Vigen
10:00	Introduction to EEE	D. Hatzifotiadou
10:20	PolarQuEEEst general	P. Catapano/R. Nania
10:45	Instructions for POLARQuEEEst construction	
11:15	group subdivision : start construction	
12:00	Lunch	
13:00	Construction of two detectors	
14:30	EEE Extreme Energy Events	Prof. A. Zichichi
15:15	Construction of two detectors	
16:00	High energy astrophysics and blue water cruising	Prof. T. Courvoisier
16:45	Extra time for construction	
23-mag		
08:30	visit SC/Exhibition/Globe	
11:15	Masterclass: Cosmics Rays and applications	M. Garbini, I. Gnesi
13:30	Oscilloscopes /signalssignals for all three telescopes	
16:00	visit to EEE	C. Williams, D. Hatzifotiadou
17:00	groups prepare presentations	
24-mag		
09:00	HV scan efficiency on detectors	
11:00	Masterclass data analysis	F. Noferini (vidyo)
13:00	visit SM18/magnets LHC /AMS/ALICE/	
17:00	report groups detector/multimedia	Students
19:00	party	