

Solar Physics News You Can Use

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Late October Flares

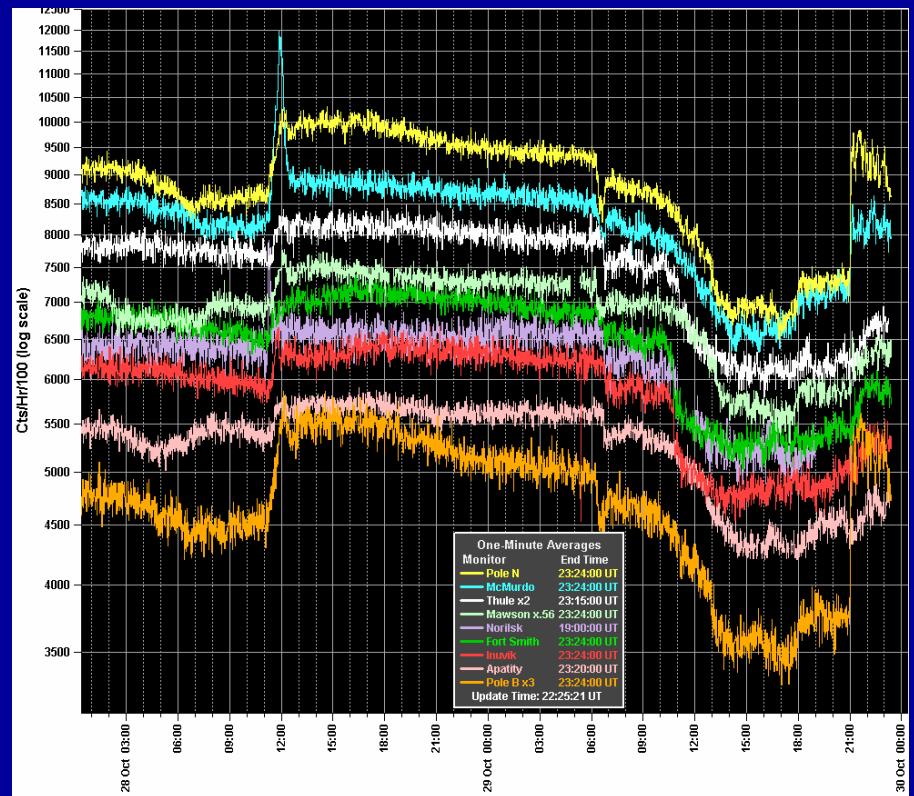
- A few active regions appeared and produced several massive flares, some of which were aligned for significant terrestrial effects.



25 October from
Ryan's back yard

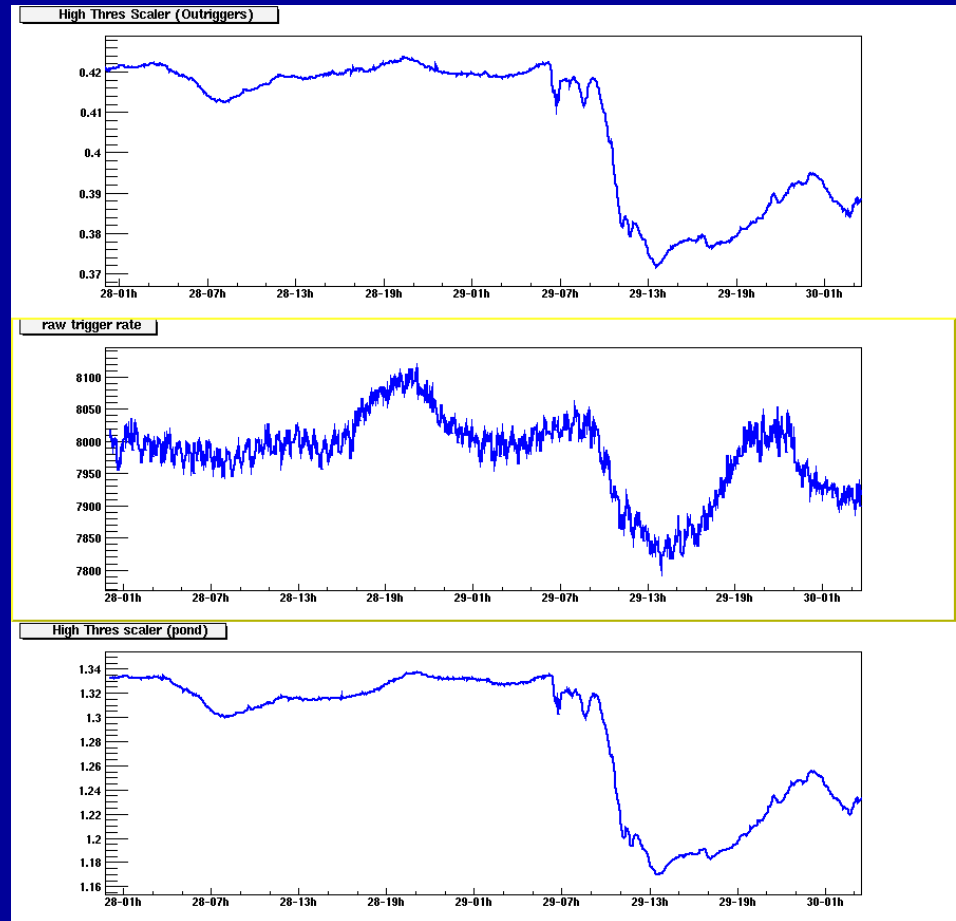
Ground-level Activity

- Polar NM stations registered solar particle event on 1200 UT 28 October with a Forbush decrease at ~0600 on 29 October.

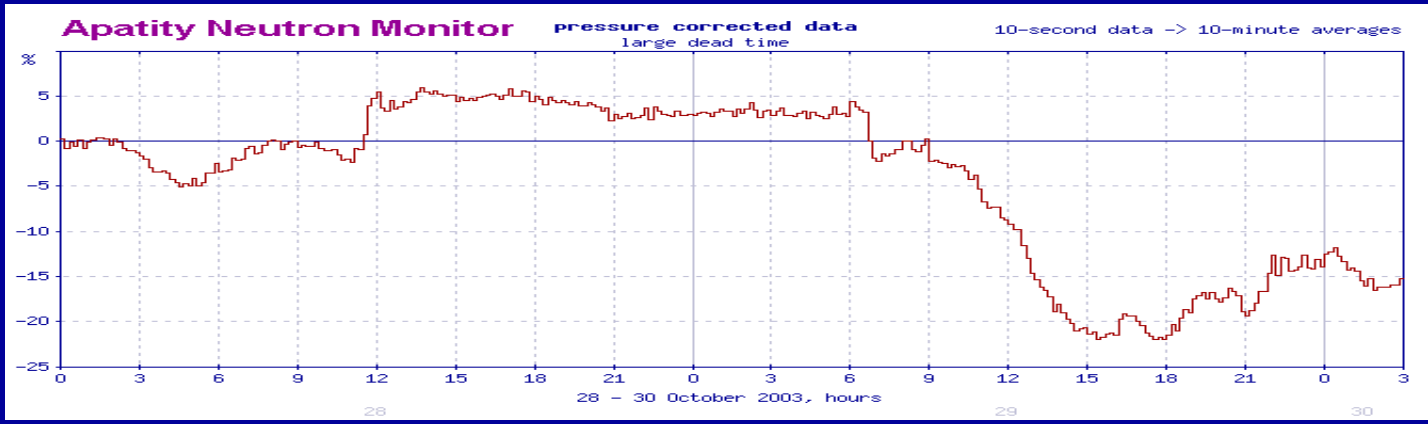
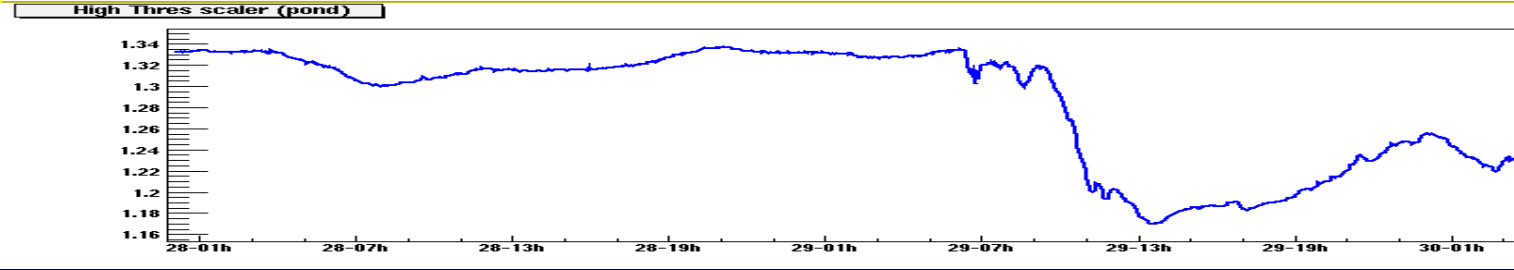
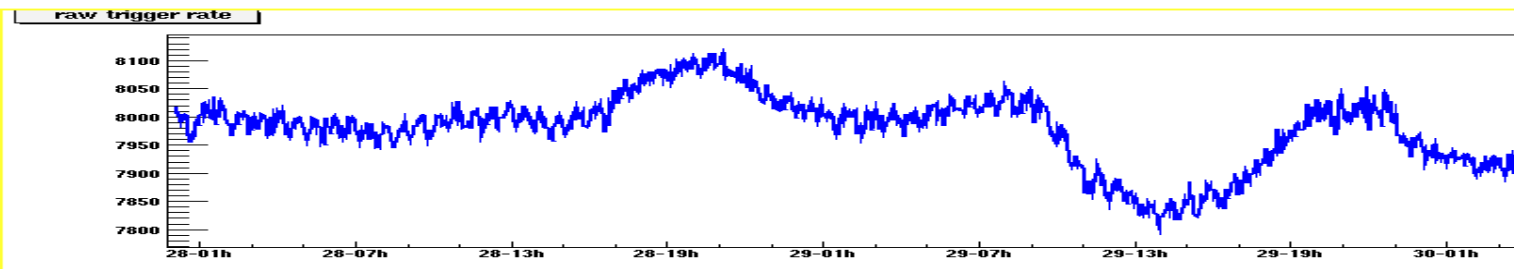
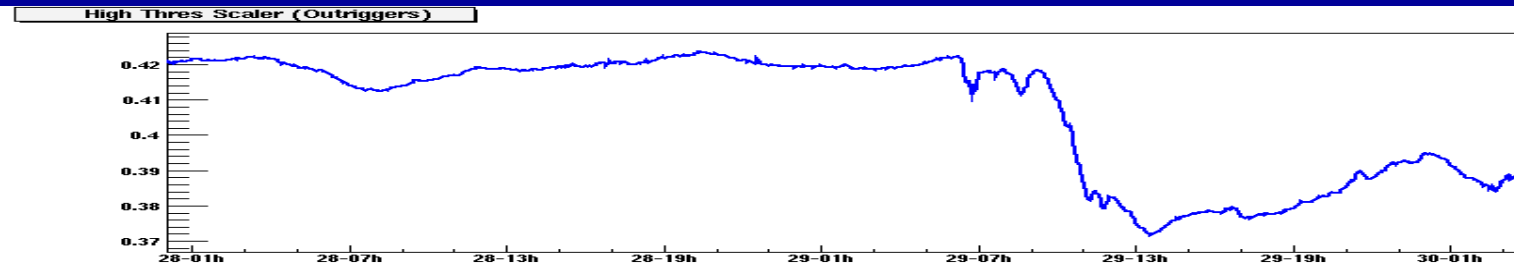


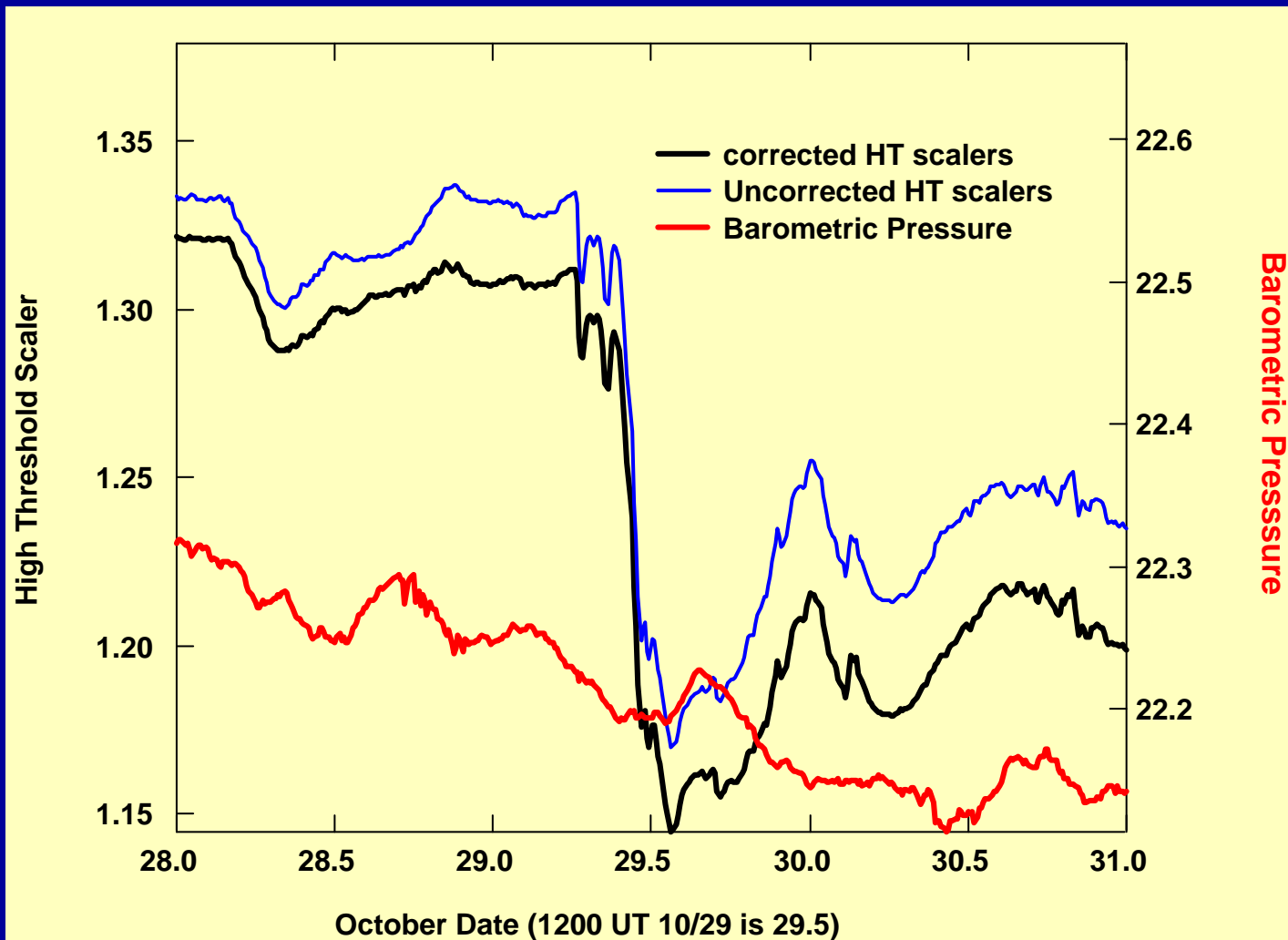
Milagro Record

- Milagro registered in several channels a major Forbush decrease on 29 October, but nothing on 28 October.



0600 UT is approx. at falling edge





Summary

- Some stations saw direct solar particles on 28 October. (Mt. Washington and Climax not in the beam.)
- Apatity and Milagro saw only the Forbush decrease on 29 October.
 - Could be some weak signal of solar particles in Milagro scalars.
- Mt. Washington saw direct solar particles at the deepest part of the decrease ~1100 UT 29 October (Climax too). (Not shown.)

Significant Items

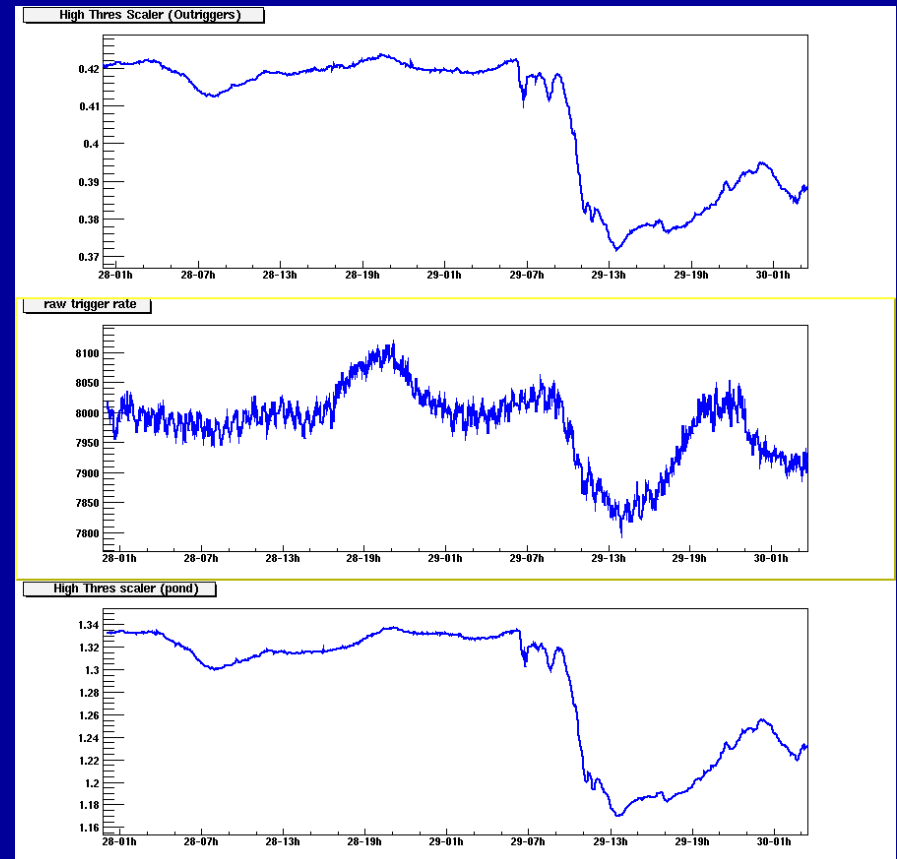
- Very anisotropic beam of solar protons at depth of Forbush decrease on 29 October.
 - Can perform spectral measurement with Climax as with 6 November '97.
- Significant Forbush decrease **even in triggered rate.**

Scientific Pay Dirt

- Forbush decreases are poorly understood above 15 GV.
 - Previous identifications from underground detectors are dubious.
- **If** our triggered threshold corresponds to ~ 50 GV, then we are measuring the differential backfilling of the heliosphere with galactic cosmic rays, never seen before.

Evidence

- The duration of the decrease and its recovery are typically **momentum independent**. We see that the triggered rate (middle) (assuming small corrections) **recovers faster**.



Thumbnail Hypothesis

- At ~ 50 GV the gyroradius at 1 AU is about 0.2 AU compared to 0.02 AU for a 5 GV proton.
- The diffusion of galactic protons back into 1 AU is therefore more rapid.
- ***Finally, a new probe into the transport of galactic cosmic rays in the heliosphere.***

Further Work

- Look at other trigger criteria rates.
- Model effective proton threshold for different channels.
- Compare to Climax.
- Correct for meteorological effects in other data channels.