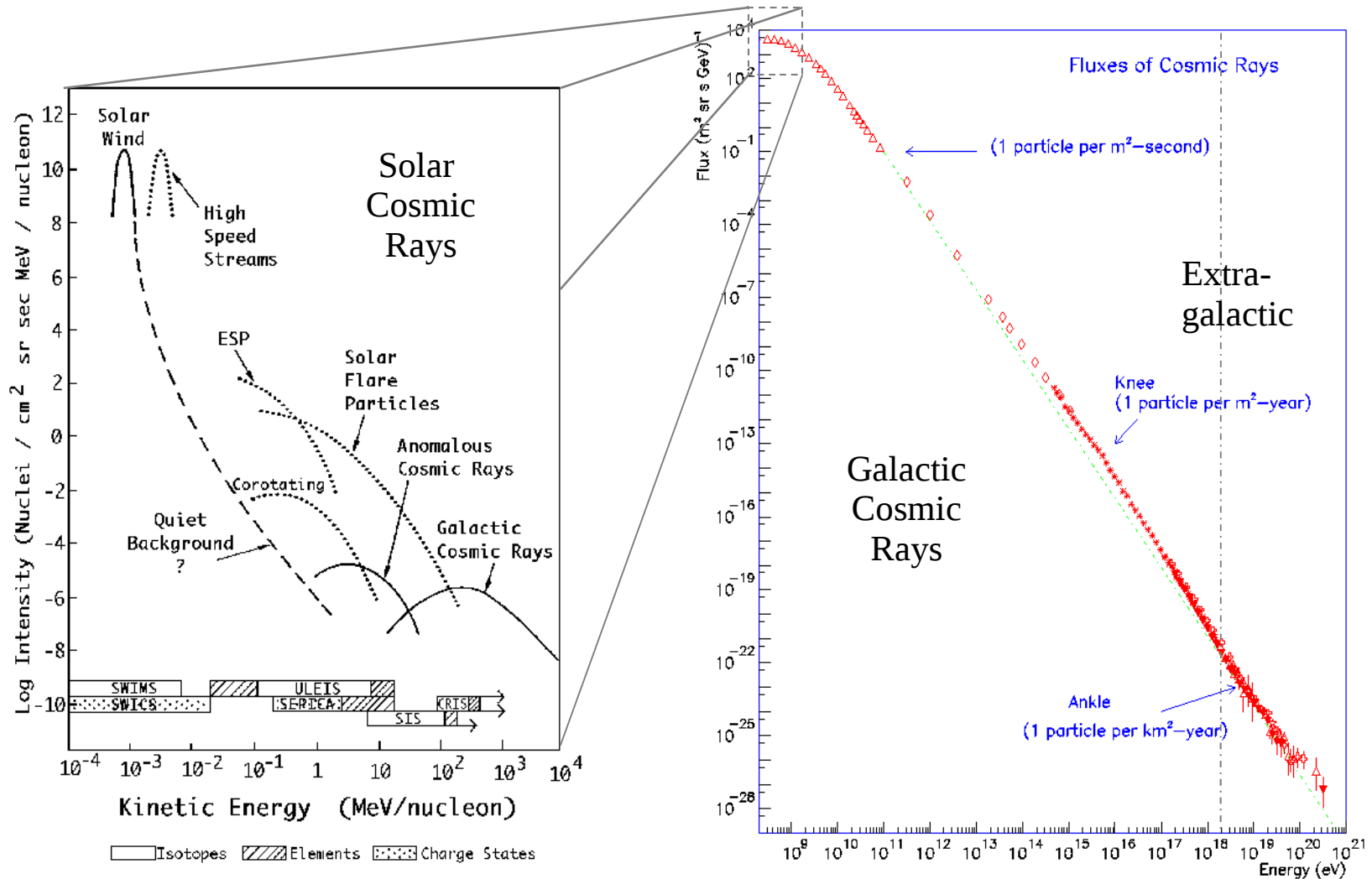


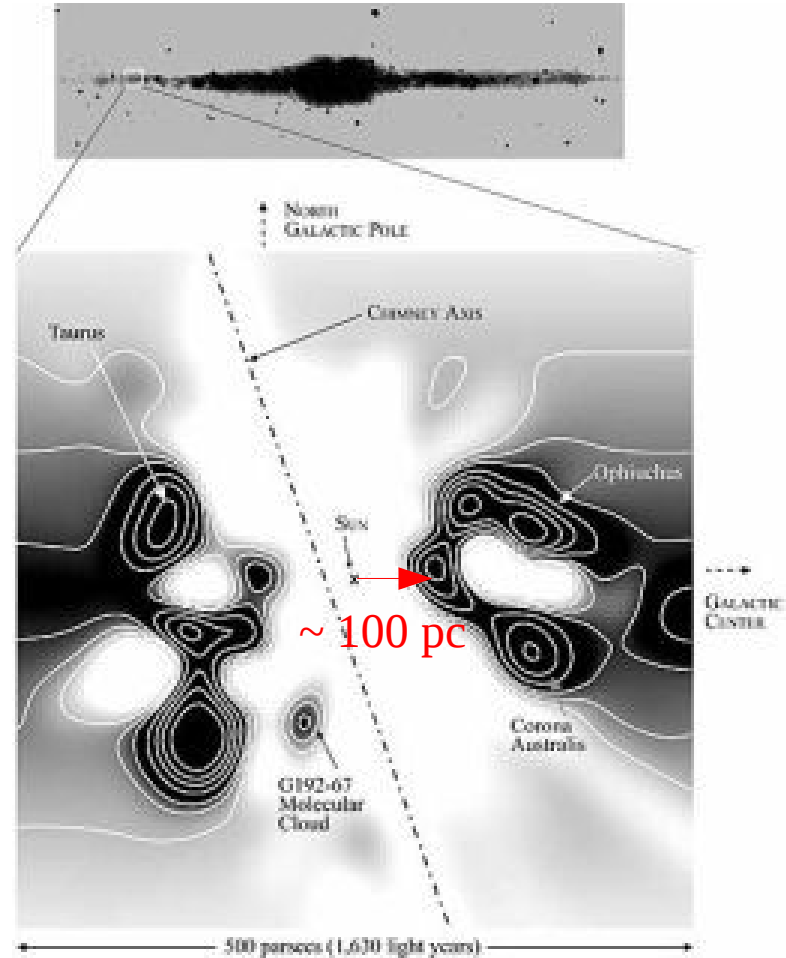
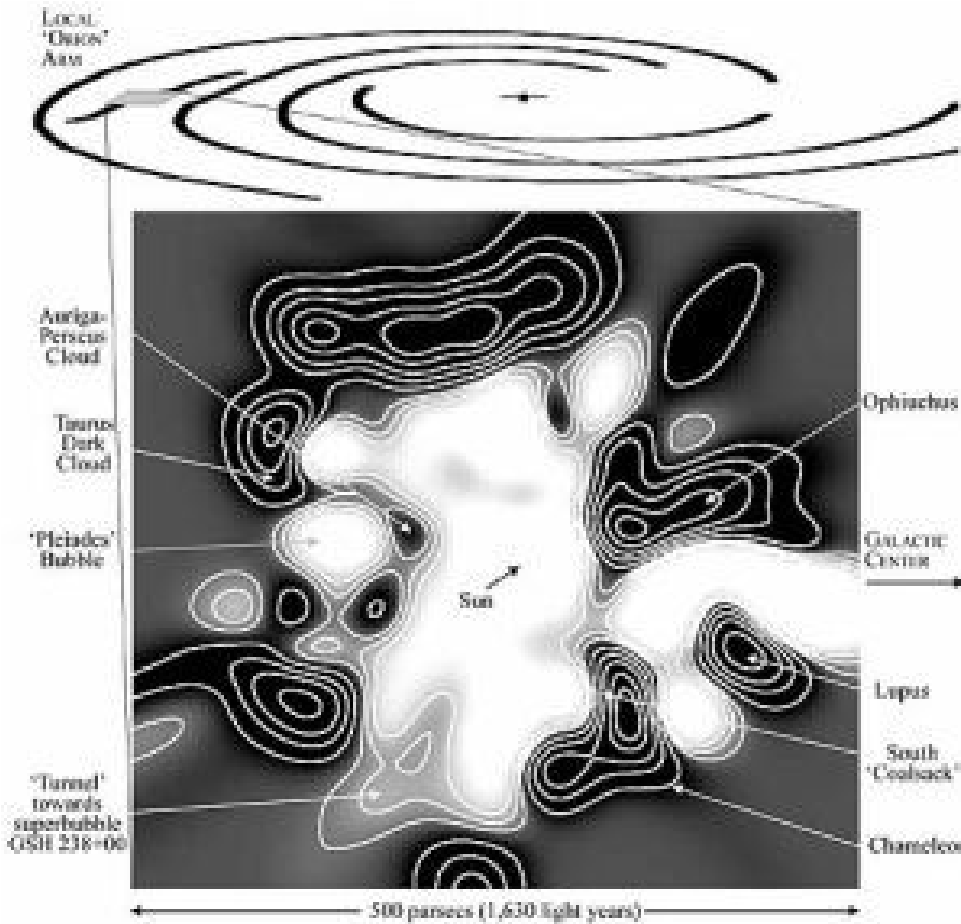
CR spectrum: from Solar to extragalactic origin



=> Solar modulation of GCRs below GeV/amu energies
 => Galactic Cosmic Rays are < PeV/amu energies

Galaxy, local bubble...

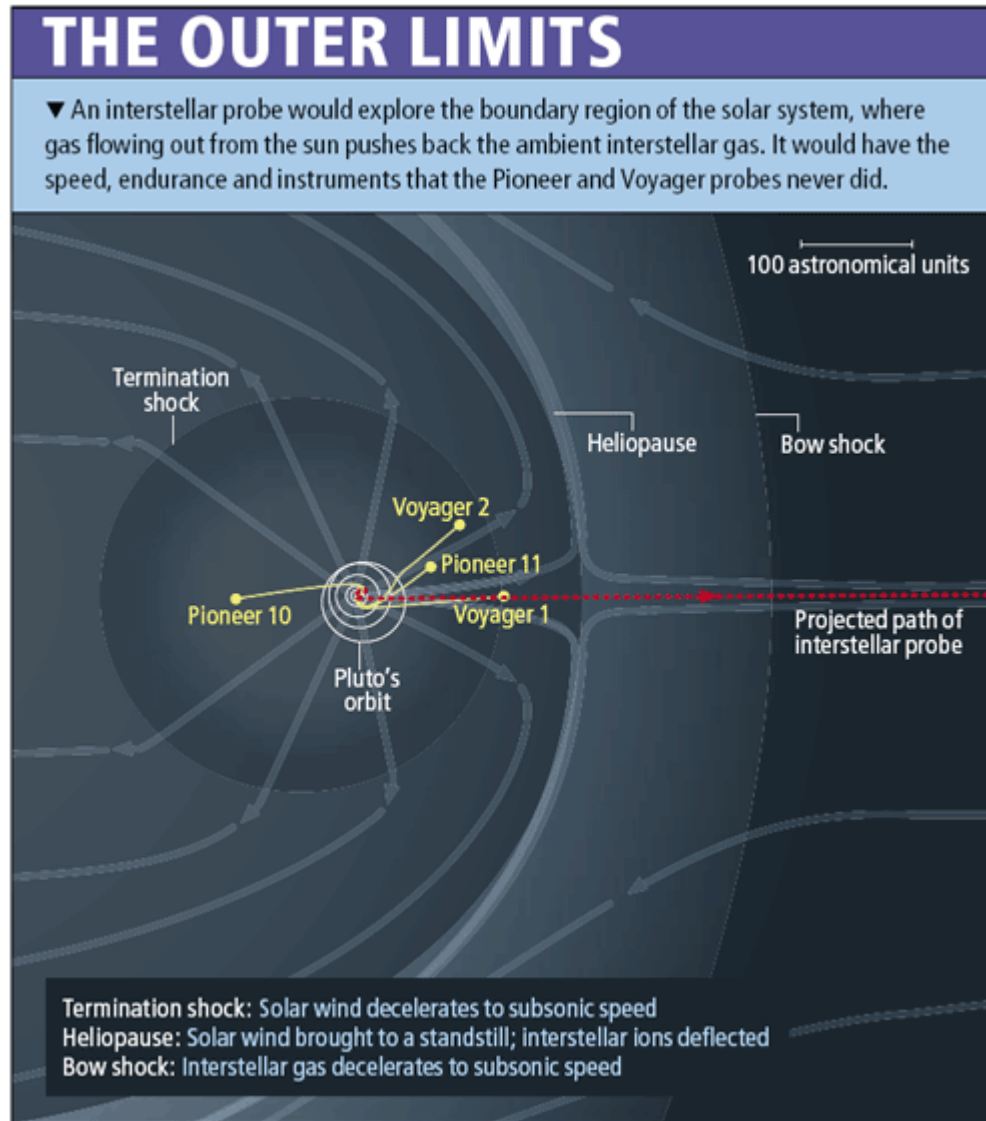
~ 20 kpc



<http://www.solstation.com/x-objects/chimney.htm>

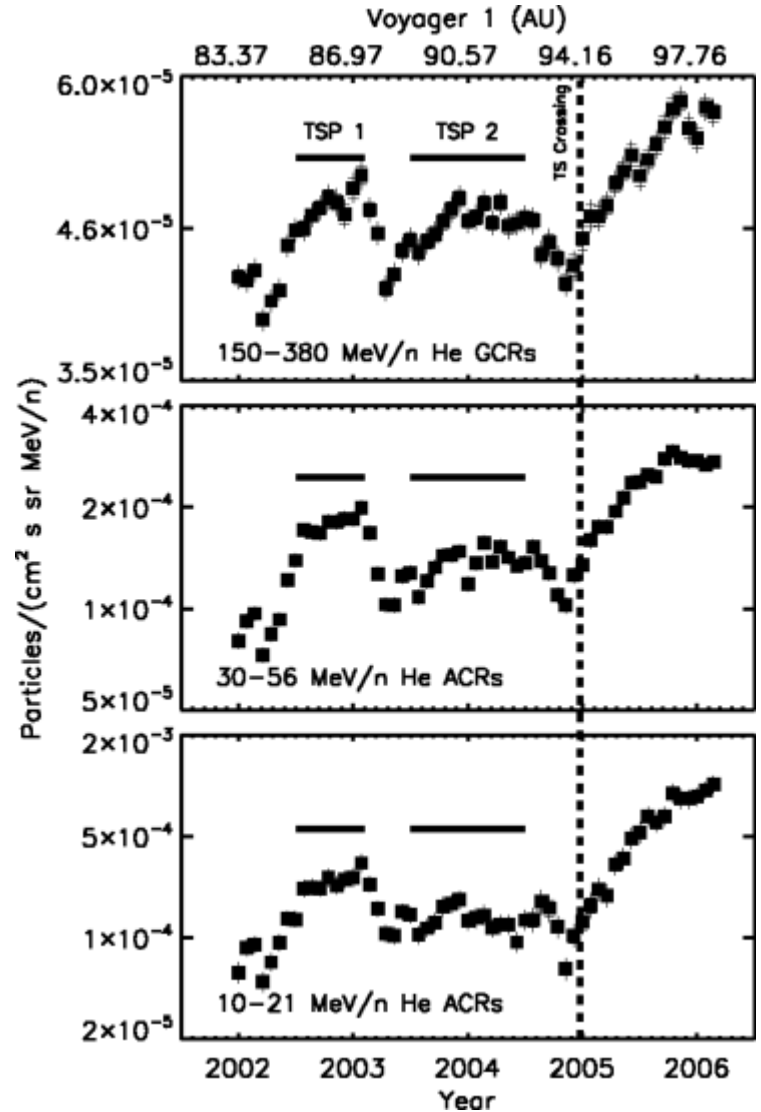
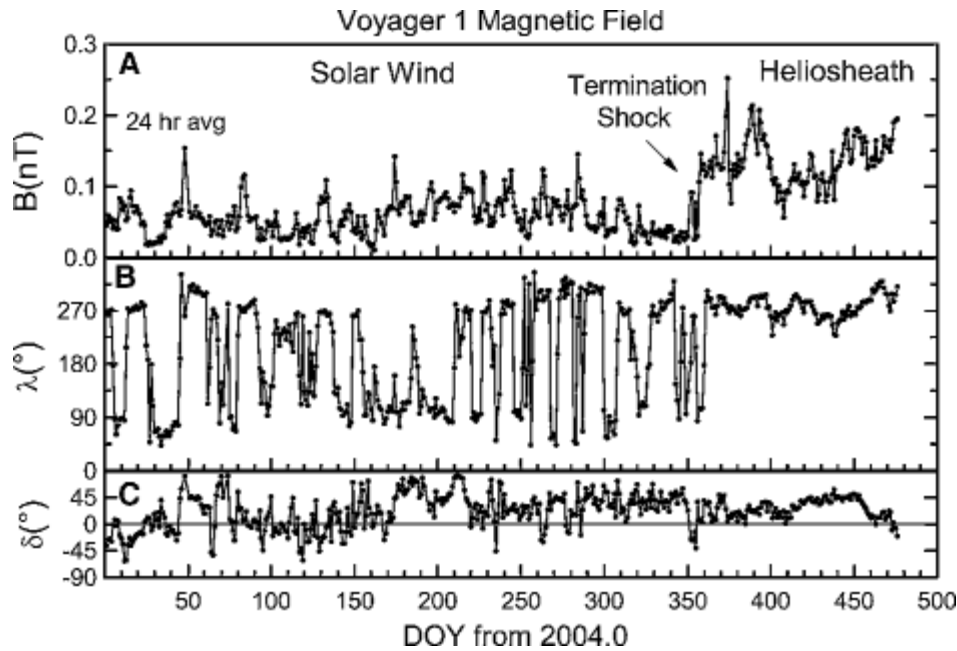
...and Solar cavity

1972 : Pioneer 10
1973 : Pioneer 11
1977 : Voyager 1 & 2

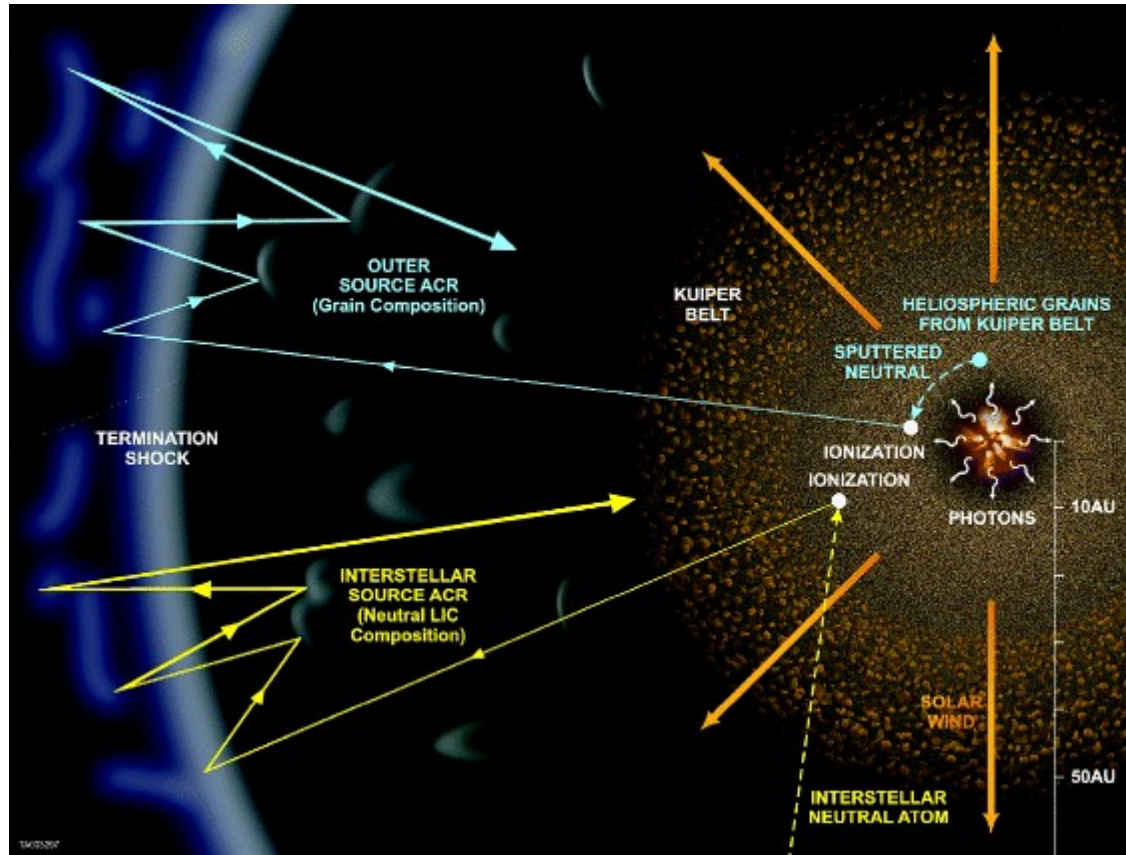
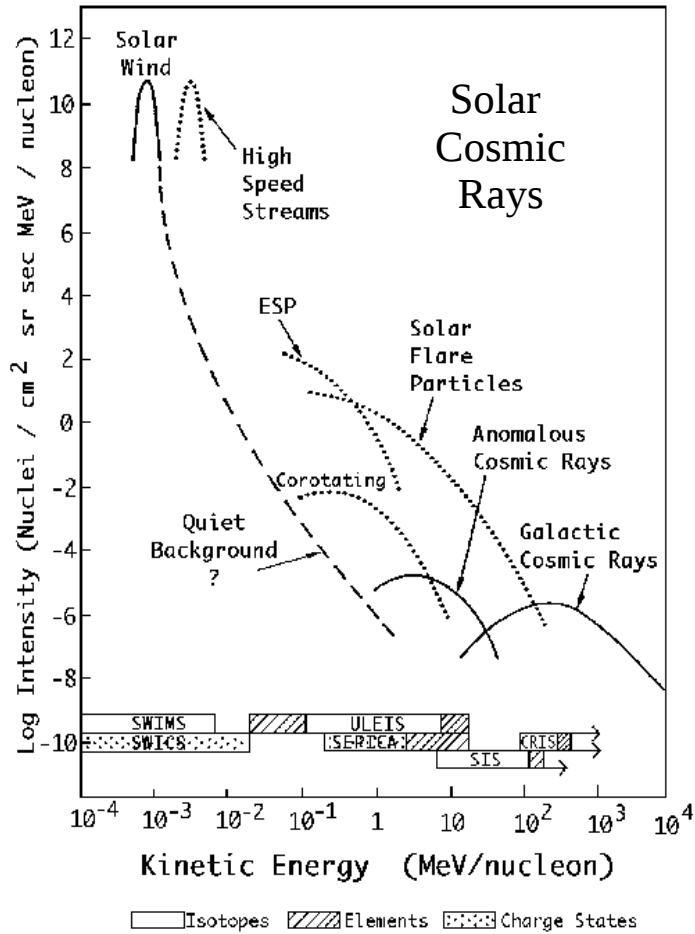


100 AU
= 10^{-3} pc

Voyager 1 crossed the heliosheath

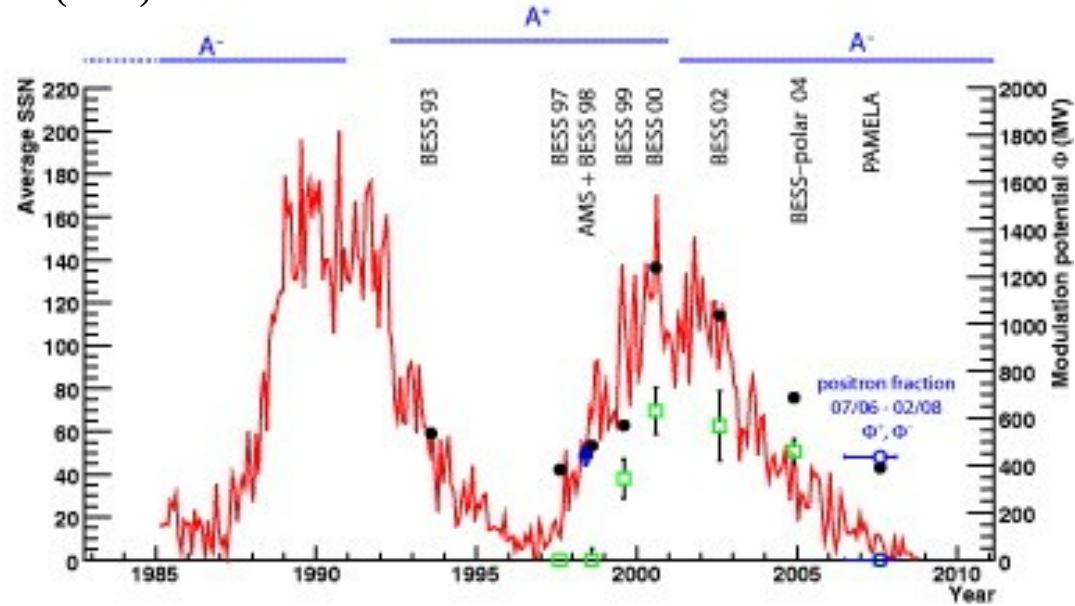
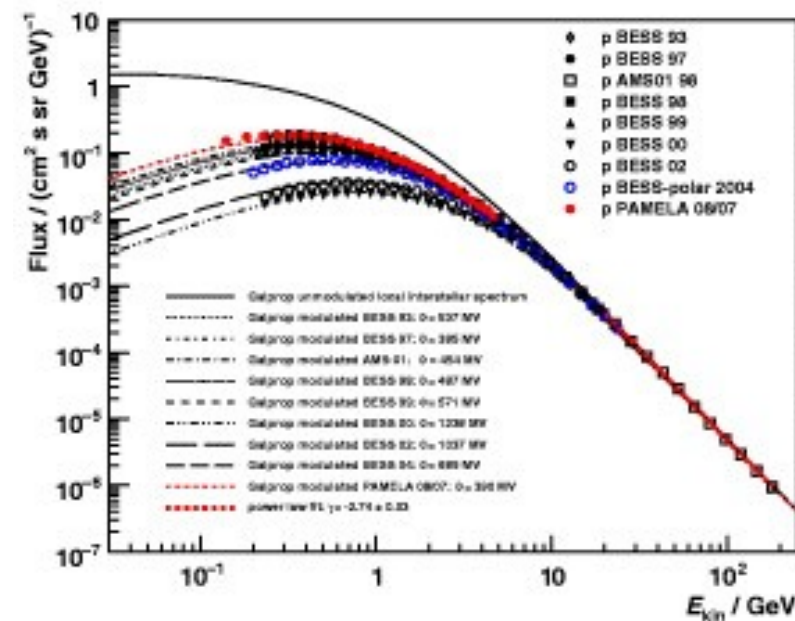


But we do not know all the details yet!



From Top-of-Atmosphere to Interstellar Flux: solar modulation models

Beischer et al., New J.
Phys. 11 (2009) 105021



Questions:

- What is the IS CR spectrum?
- Do we have a good enough Sol. Mod. Model in the AMS-02 area?

On Cosmic-Ray modulation beyond the Heliopause: where is the modulation boundary?

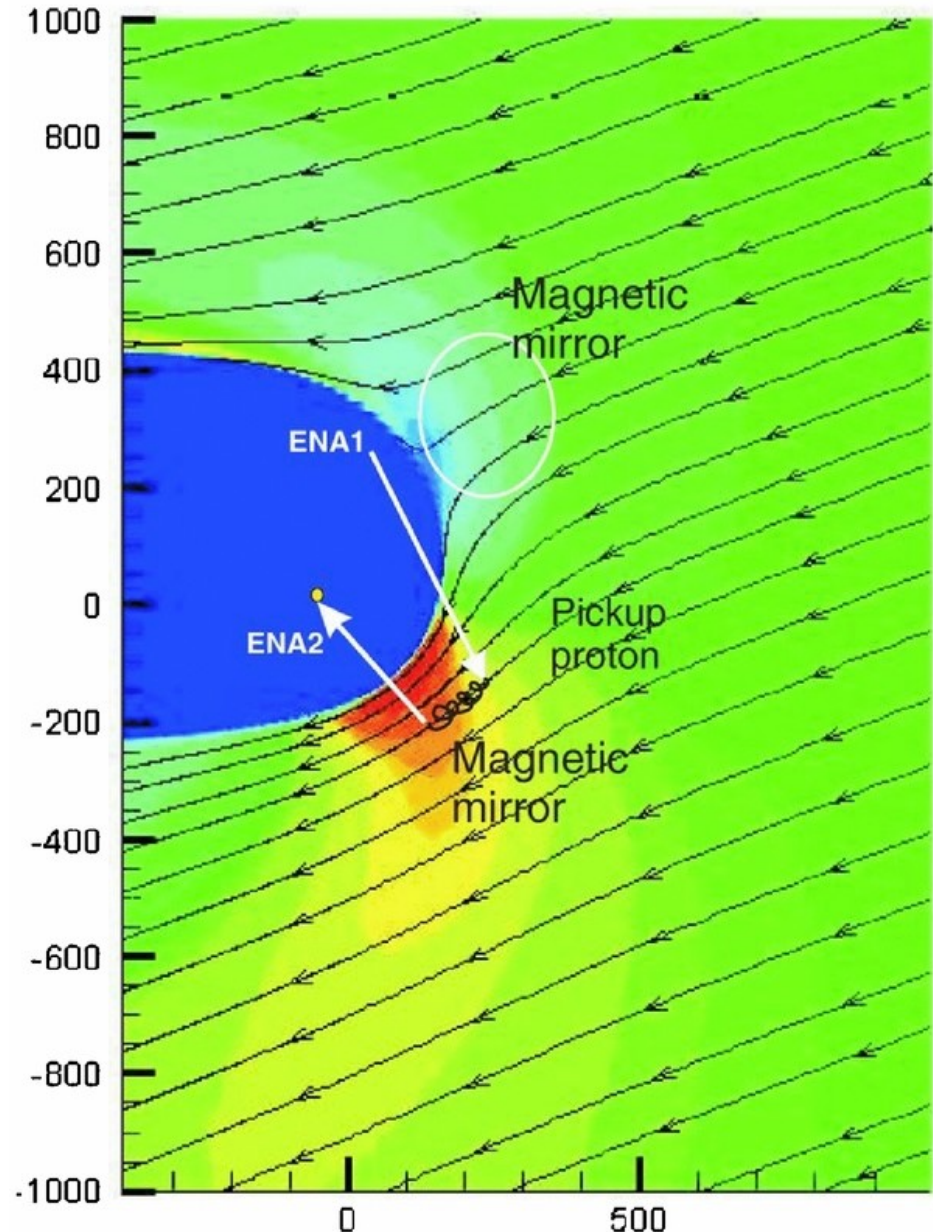
Astrophysical Journal
735 (2011) 128

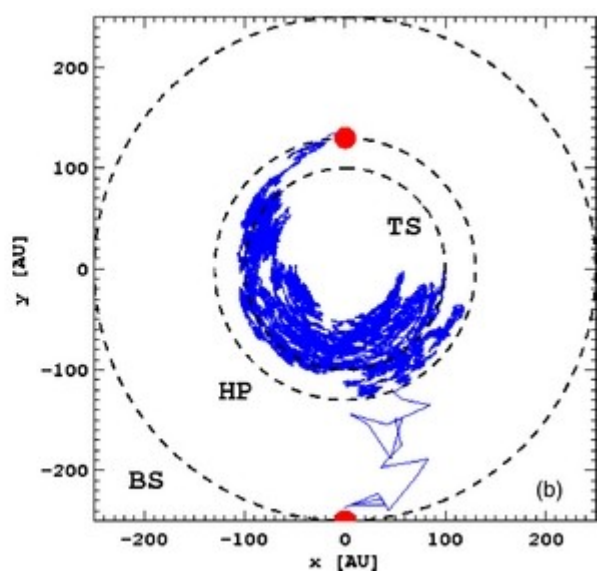
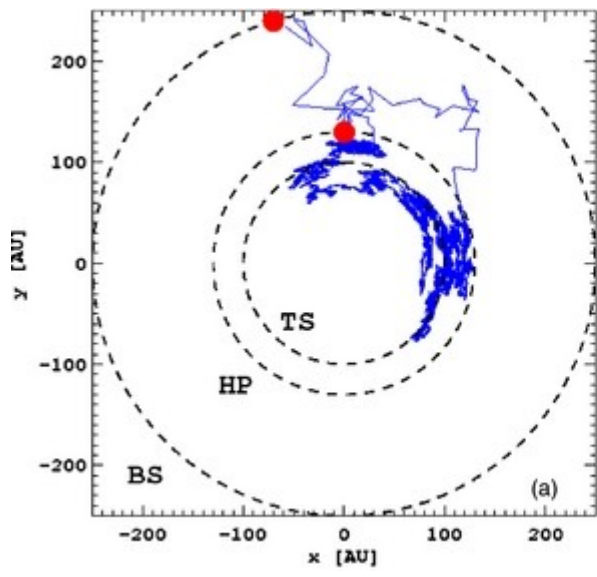
- => claim that “standard” modulation models are not adequate
- => Two-step modulation (Outer heliosheath + “standard”)
- => We do not have access to the IS flux!

(BV) plane, Magnetic Field, μG



0.5 1.5 2.5 3.5 4.0 4.4 4.5 4.8 4.9 5.2





BS: bow shock @ 250 AU
 HP: Heliopause @ 130 AU
 TS: Termination shock @ 100 AU

