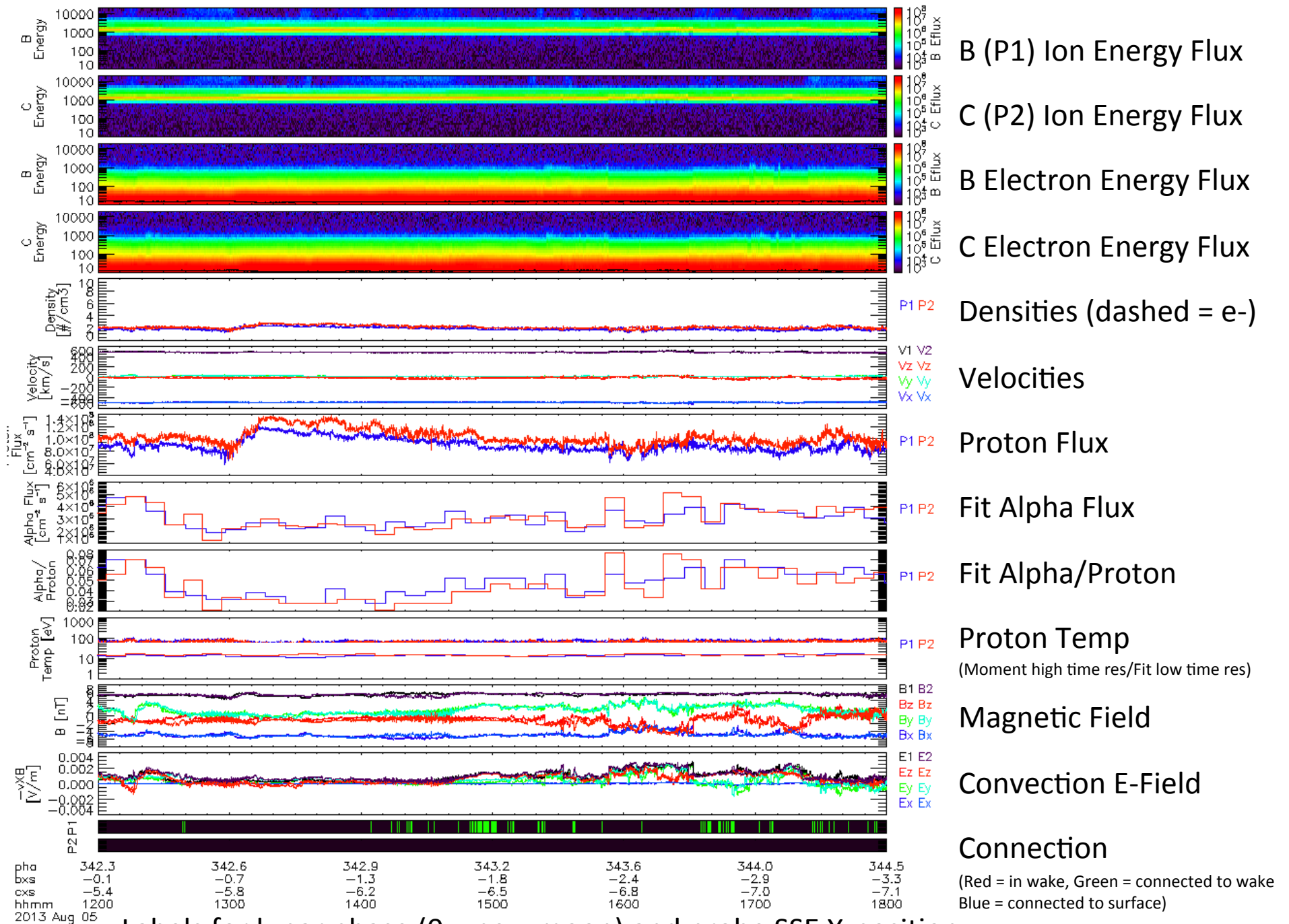


ARTEMIS Summary Plots for LADEE

J.S. Halekas



Caveats

- Ion beam is often not perfectly resolved
 - Proton temperature moment no good in solar wind, iffy in magnetosheath, okay in magnetosphere
 - If the proton temperature is very cold, we can underestimate the ion density, and the electron density is a better measure
- Alpha/proton properties determined from two-component fit to measured distribution
 - Also gives proton temperature (plot both on same panel)
 - Fit quantities good to factor of ~ 2 or better in solar wind
 - Fits do not work in magnetosphere, where the distribution is too hot to separate the components
- Plasma monitoring not possible when a probe is in the wake (but hopefully the other one is upstream!)

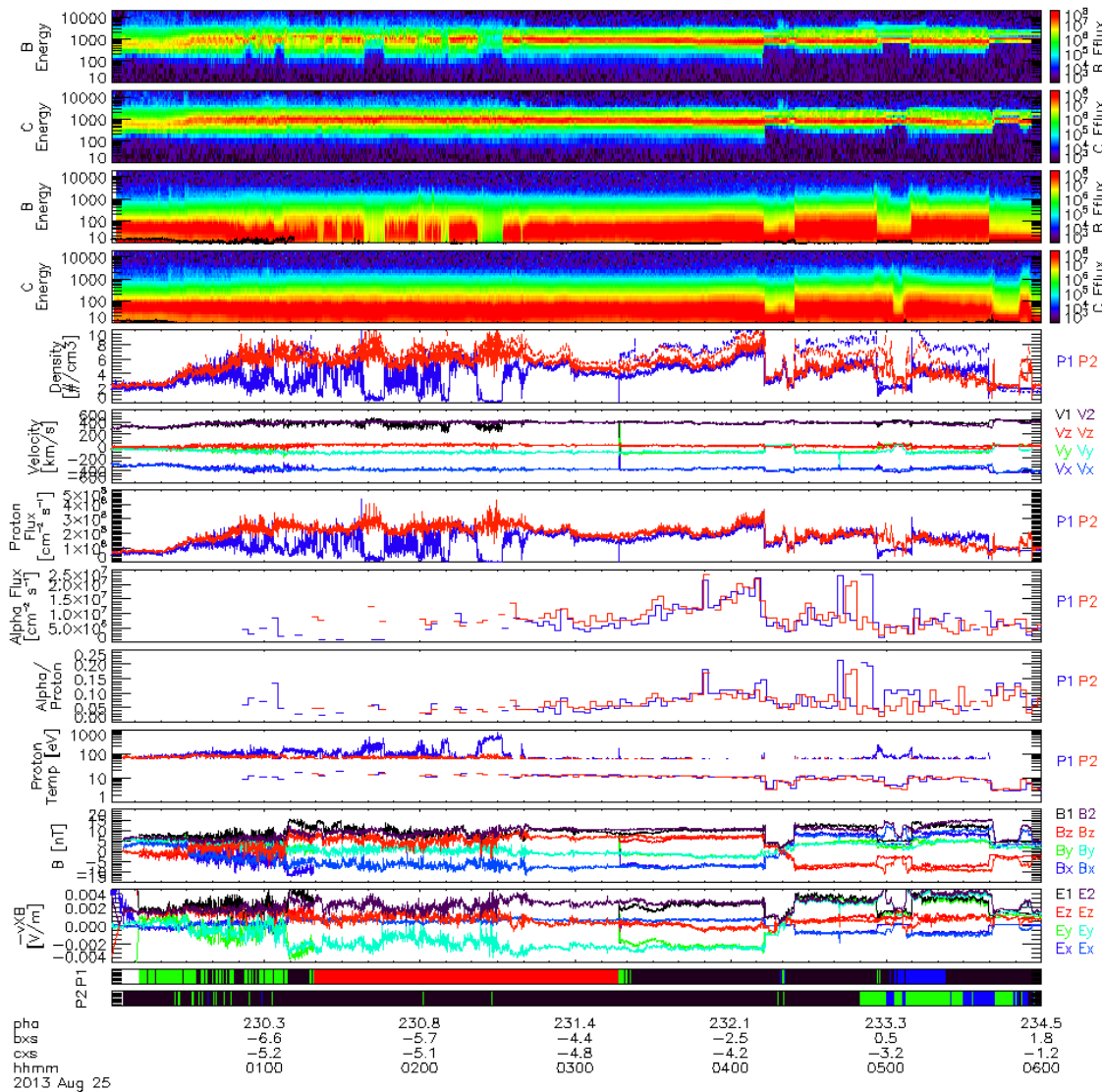
Using these plots (I)

- Great care needed in using some quantities, especially proton temperature
 - Moment never good below ~ 50 eV temperature, and only sometimes above that
 - Generally good in plasmashet and often in lobe
 - Fit only good when alphas and protons cold enough to be separated
 - Generally good in the solar wind, not elsewhere
 - Fit and moment will never agree, they work in different regimes
- Small-scale structure in the magnetosphere means that sometimes neither probe is a good monitor
 - Look for times when quantities diverge: This indicates a measurement problem or small-scale structure (or lunar effects)

Using these plots (II)

- Lots more summary plots (not lunar-tailored) available
 - <http://artemis.ssl.berkeley.edu/summary.shtml>
- Come to us if you have a question, no matter how big or small
 - Run things by us before publishing anything based on these data
 - Let us make sure there is not a problem with the data or our processing
- Normal ARTEMIS rules of the road should be followed for data attribution
 - <http://artemis.ssl.berkeley.edu/roadrules.shtml>

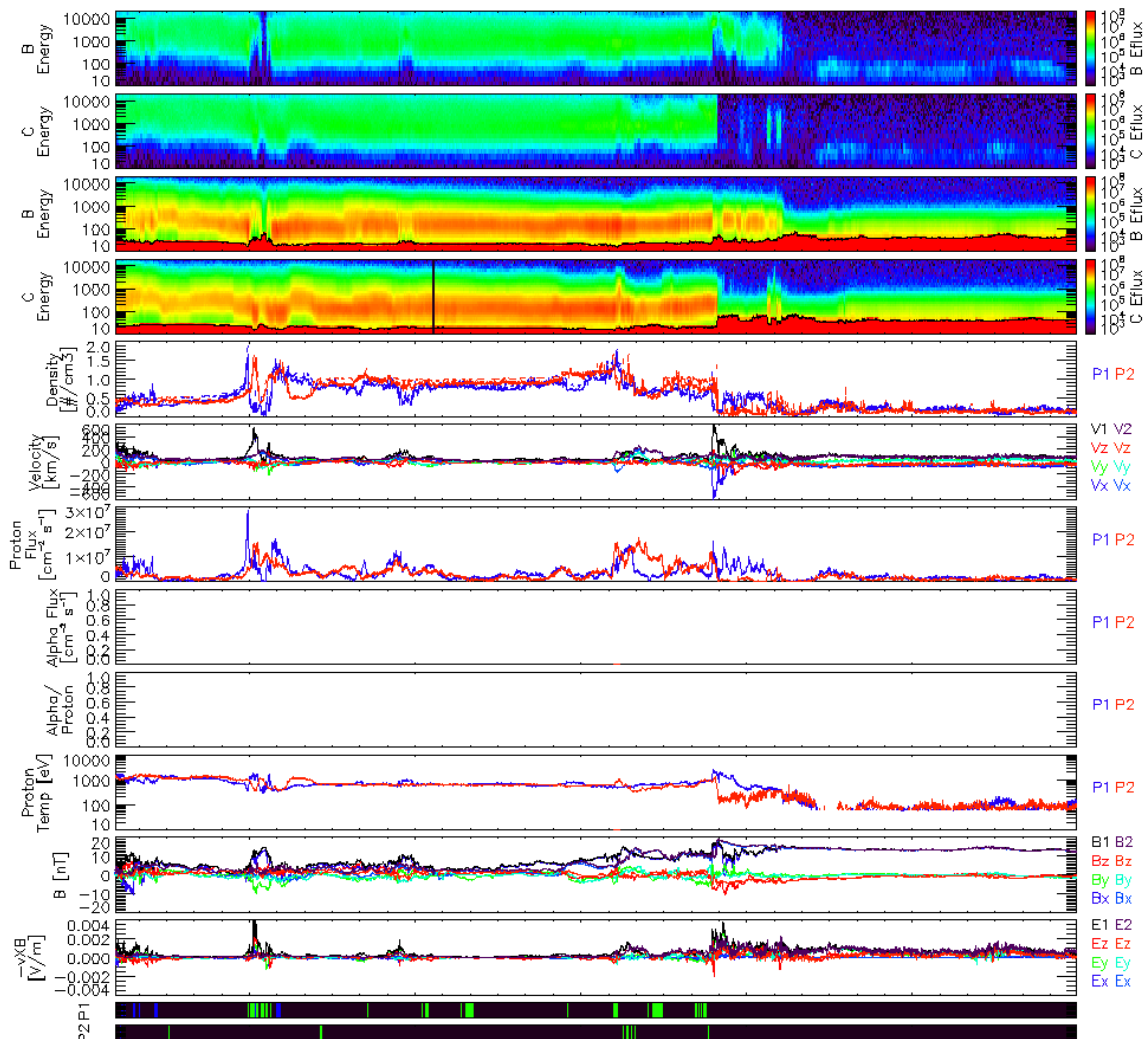
Magnetosheath Exit Example



Alpha/proton fits only good as we come out into the solar wind

Temperature moment okay in sheath, fit better in solar wind

Magnetosphere Example



Plasmasheet transition into lobe

No good alpha/proton fits

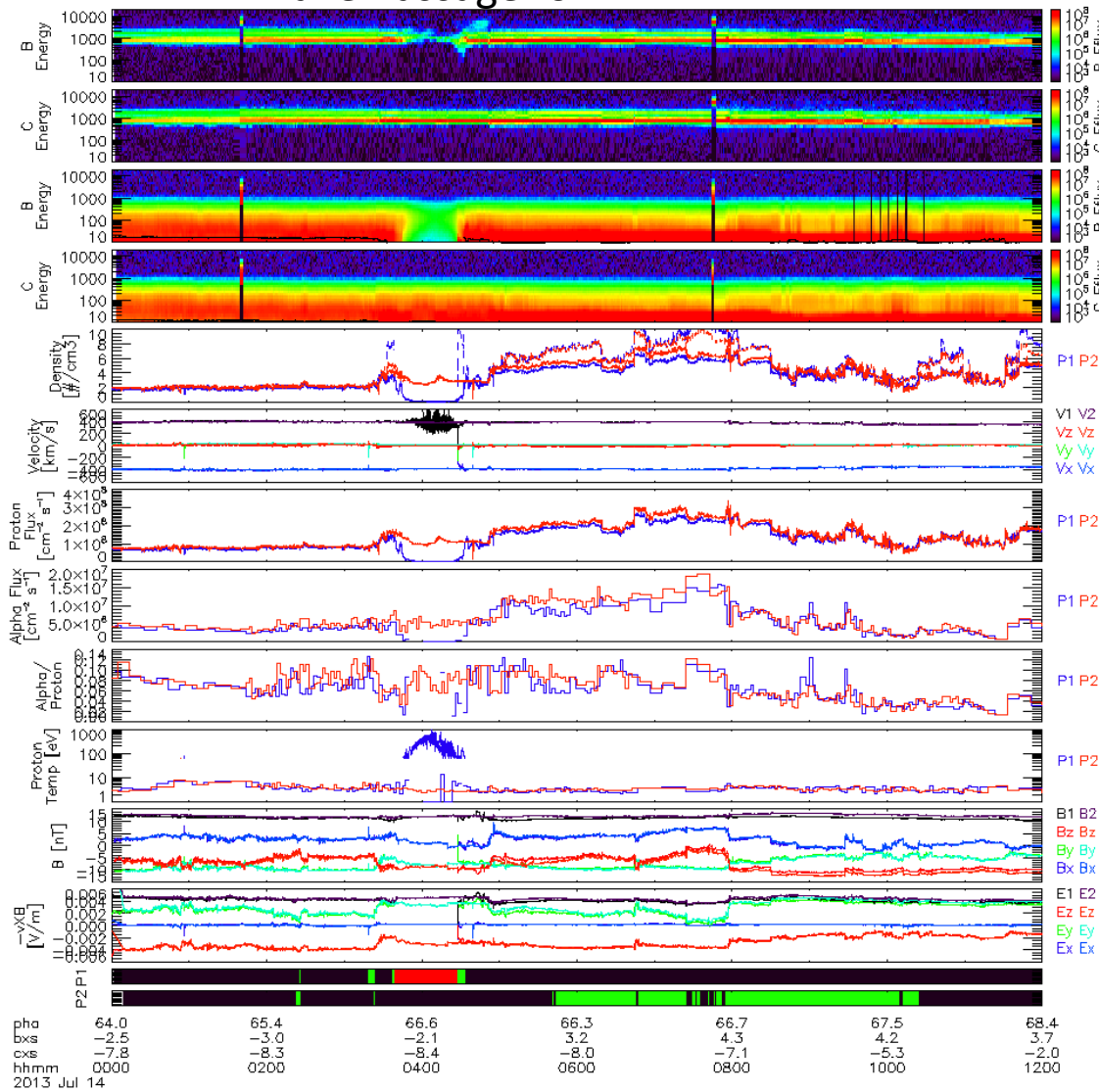
Temperature moments good

pha	180.3	181.4	182.3	183.1	183.9
bxs	1.6	0.8	-0.0	-0.9	-1.7
cxs	0.2	-0.5	-1.1	-1.7	-2.3
hhmm	0100	0200	0300	0400	0500

2013 Aug 21

Cold Dense Solar Wind

Wake Passage for P1



Ion/electron density moments diverge when distribution cold

Alpha rich period

pha	64.0	65.4	66.6	66.3	66.7	67.5	68.4
bxs	-2.5	-3.0	-2.1	3.2	4.3	4.2	3.7
cxs	-7.8	-8.3	-8.4	-8.0	-7.1	-5.3	-2.0
hhmm	0000	0200	0400	0600	0800	1000	1200
2013 Jul 14							