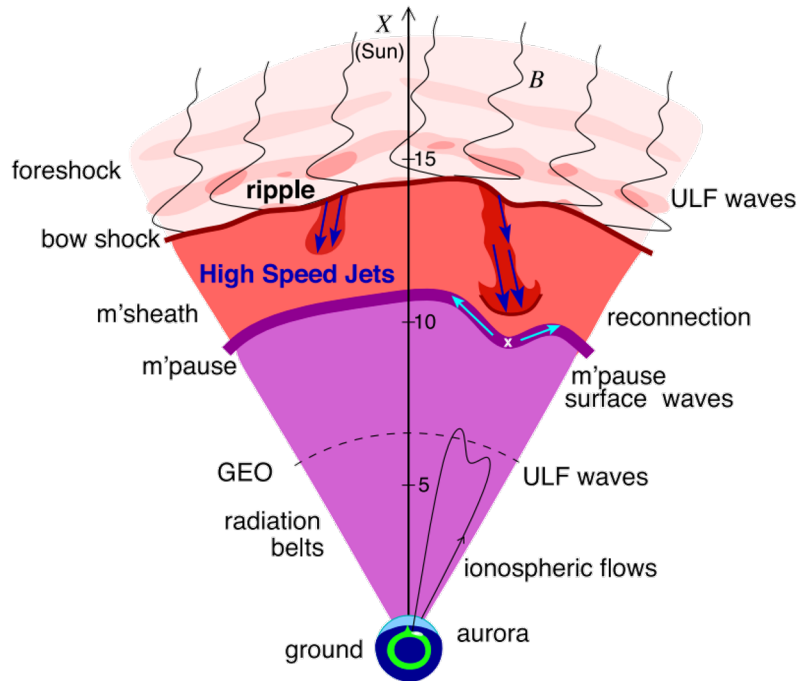


# Solar Wind Control of Magnetosheath Jet Formation and Propagation to the Magnetopause

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Jets can affect magnetospheric dynamics when they hit the magnetopause

...but most don't make it there.

## Data Set

- ~9000 hours of THEMIS magnetosheath time from 2008-2018.
- 13,096 jets identified.
- Jets selected where:  
 $P_{d,x_{MSH}} > 0.5 P_{d,x_{SW}}$
- All magnetosheath data associated with upstream solar wind conditions from OMNI.

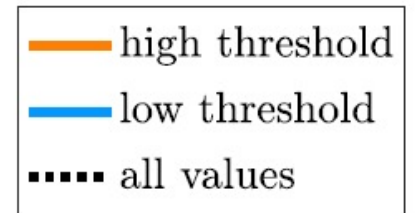
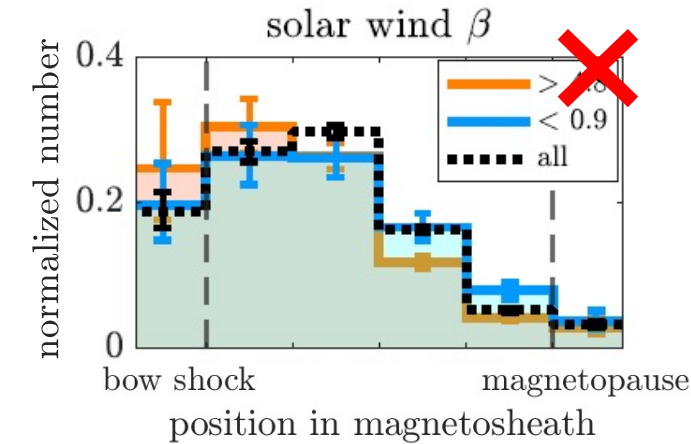
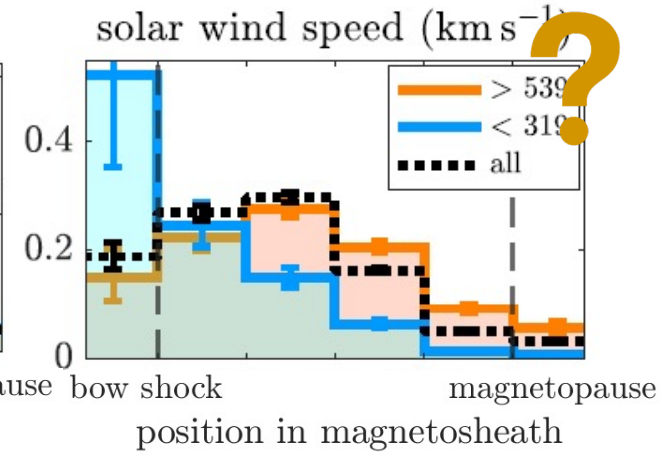
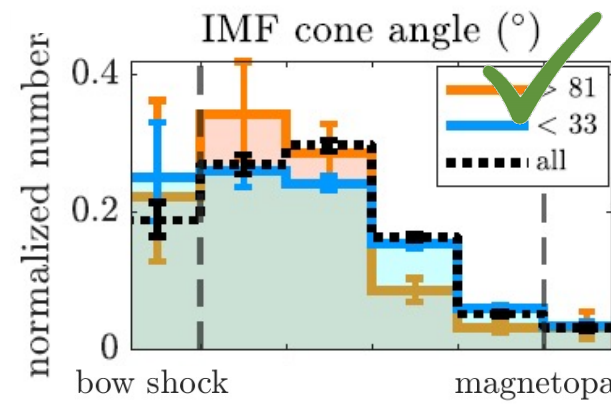
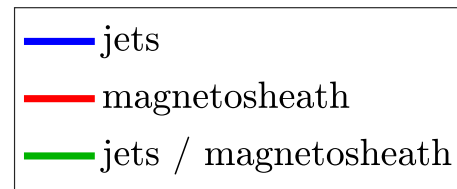
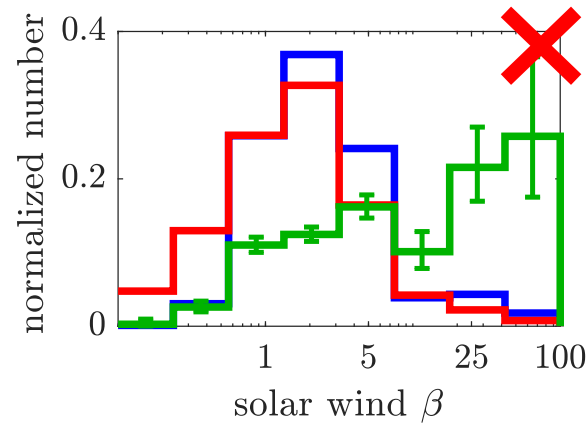
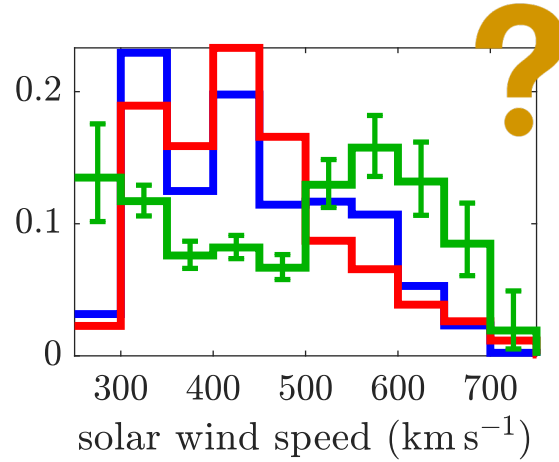
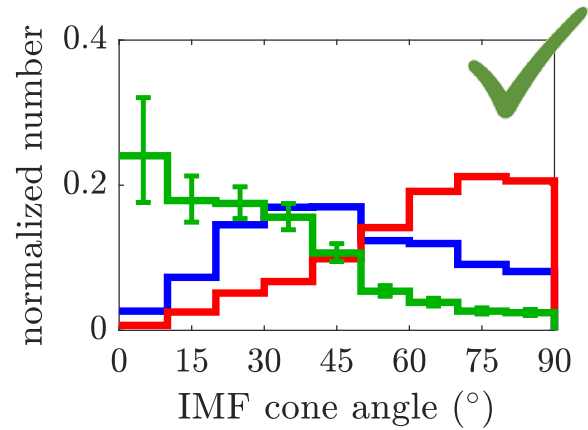
In order to forecast the effects of magnetosheath jets, we need to know:

1. What solar wind conditions control jet formation?
2. What solar wind conditions control jet propagation?
3. When will jets impact the magnetopause most often?

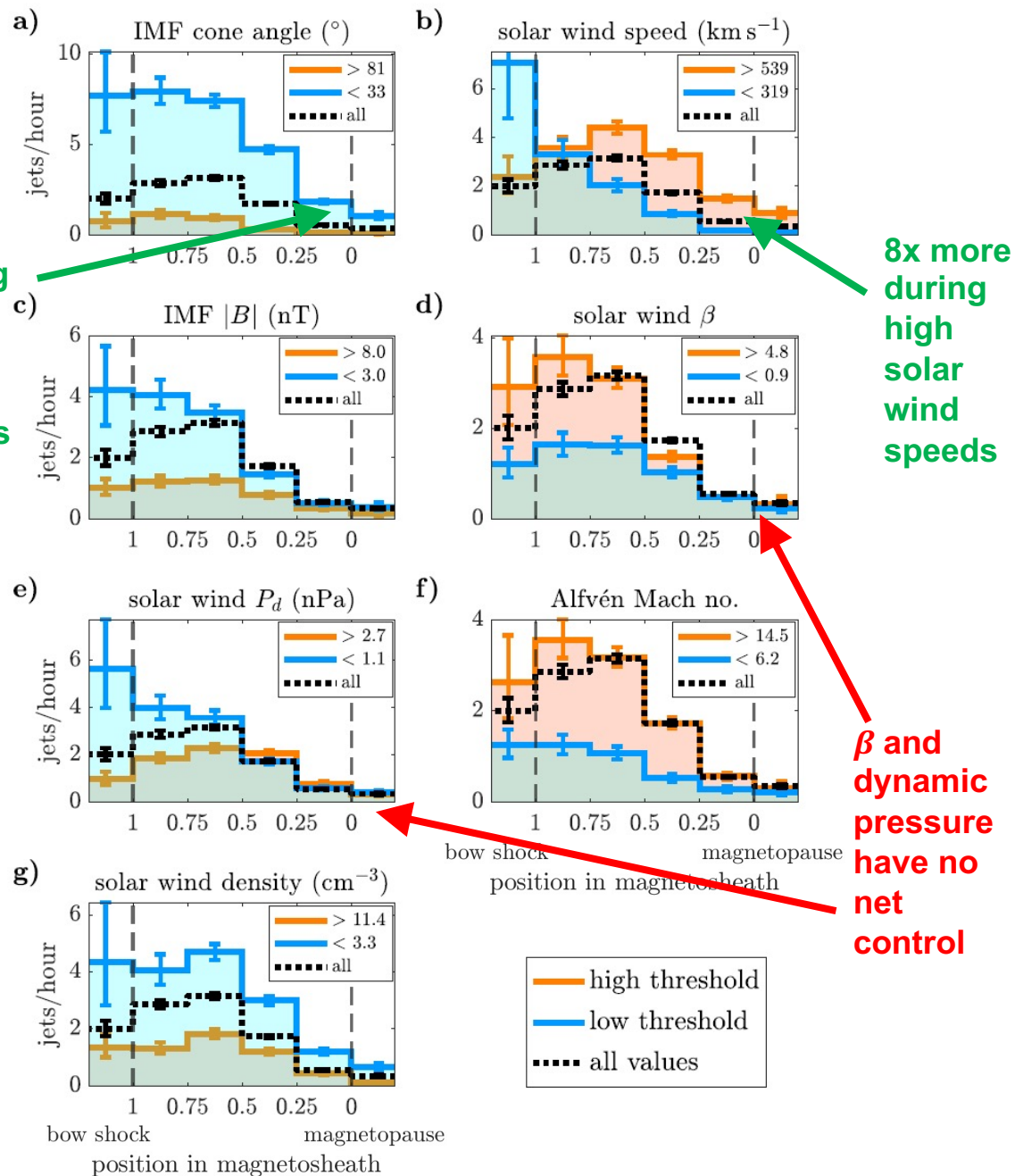
# Formation at bow shock

vs

# Propagation through magnetosheath



# When will jets hit the magnetopause most often?



## Conclusions and Implications

- Formation and propagation effects are independent.
- Jets are most likely to hit the magnetopause during fast-type solar wind.
- May have interesting implications for solar wind transients, e.g. CMEs and SIRs.
- We have made a step towards forecasting the effects of jets purely from measurements of the upstream solar wind.

