Developing a Better Understanding of the FUNdamental Nature of CMEs

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Monday Summary

- All other topics in the Decadal Survey focus on furthering fundamental physics (discover/determine) but only on improving CME predictions as related to space weather forecasts.

- Recent missions are described as transformative but our current models are based on the same physical underlying assumptions as decade(s) ago.

- We’ve observed ~6000 CMEs remotely and ~1000 in situ but research focuses on the same 10 events, most of which are eXtreme.
Monday Discussion

• We create reconstructions from in situ measurements. Is this an accurate local description? Does this relate to the global properties? To what extent?

• Do we even have the observations we need to answer these questions?

• Our eruption models are far more complex than our in situ models. Is this physically justified or simply a byproduct of the relative quality/quantity of observations?
Looking Ahead - Thursday 2:00 pm

• How do we fill the gap between remote and in situ observations? Who’s at fault, theorists or observers? All of the above?

• What new data do we need to get a sense of the global structure of a CME at in situ distances? Can we do anything with the data we have?

• Are our physical models incomplete?

• What’s the point? Do we care about the underlying physics or should we just be content with incremental forecast improvements?

Come ready for discussion