

Topical Discussion Meeting report

A Topical Discussion Meeting aims at active participation or interaction between the participants. The participants work and discuss on a predefined theme or problem heading towards an outcome or target. A working meeting is a 1h 15min informal afternoon meeting with NO abstract submission form and therefore NO poster contributions.

Name of the meeting: [CHALLENGES IN UNDERSTANDING AND PREDICTING GEOMAGNETIC STORMS WITHOUT CLEAR SIGNATURES ON OR NEAR THE SUN](#)

Conveners: **Nariaki Nitta, Tamitha Mulligan, Emilia Kilpua, Benjamin Lynch, Marilena Mierla, Jennifer O’kane, Paolo Pagano, Erika Palmerio, Jens Pomoell, Ian Richardson, Luciano Rodriguez, Alexis Rouillard, Nandita Srivastava, Dana-Camelia Talpeanu, Stephanie Yardley, Andrei Zhukov**

Secretary /Main Chair: **Erika Palmerio**

Data – Time – Room: **Monday 5th November 2018, 17:15–18:30, MTC 00.10 (Large lecture room)**

Nr of participants: **about 50**

Objective of the TDM

The objective of the TDM was to raise awareness about the problem of forecasting stealth CMEs. A CME is considered stealthy if it lacks the usual low-coronal signatures in observational data. Stealth CMEs might erupt “silently” and still cause significant geomagnetic disturbances at Earth. The main goals for the TDM were to:

- Give a possible new classification for CMEs according to their degree of “stealthiness”
- Showcase recent advances in observing and modelling stealth CMEs
- Encourage dialogue between speakers and audience, and amongst all the TDM participants in general

Some discussion highlights

The TDM started with 4 oral presentations (~10 minutes each, titles and presenters are listed in the “Annexes” section) followed by open discussion with the audience. The first issue that was raised after the presentations were over was that, as a forecaster, these stealthy events are very problematic. Accordingly, the discussion focused on what can be done in order to improve our current forecasting capabilities regarding stealth CMEs (Do these events highlight the need for a coronagraph for space weather operations? And is a coronagraph at L1 enough or do we need multiple viewpoints, e.g. L5? Are there viable alternatives, e.g. radio? Would EUV imaging with an extended field of view help identify source regions?)

Main conclusion of the meeting

The main conclusion of the TDM was about reaching two main points of consensus:

- Coronagraph observations are really important, and for forecasting these problematic events viewpoints that are away from the Sun-Earth line are very useful
- Stealth CMEs seem to be not different from other CMEs, and the difficulties in forecasting them arise from current observational limitations

Annexes

Presented material:

- Andrei Zhukov: An observational classification for stealth CMEs
- Jennifer O’kane: Studying stealth CMEs using advanced imaging analysis techniques
- Dana-Camelia Talpeanu: Initiation of stealth CMEs: clues from numerical modelling and in-situ comparisons
- Benjamin Lynch: Observations and modeling of a high-latitude, extended filament channel eruption