

# SEP Working Team: Summary of Session Discussion

- Quantities to validate
  - Throughout heliosphere: **threshold crossing time, onset time, peak magnitude & timing, duration, fluence, include heavy ions**, energy spectrum, anisotropy, profile shape, ESP
- Observations
  - GOES (dataset cross-calibrated with IMP/GME), STEREO, SOHO, ACE, PAMELA, Wind, IMP-8, older missions?
- Models
  - Validation time period must include data for **model inputs**, including
    - Flare information, magnetograms, coronagraphs (CME speed/location), radio observations, in-situ SW speed, IPS.
  - Model tuning
    - Many physics based models are tuned for each event
    - Allow tuning for small set of events: best model performance
    - Require nominal model parameters of validation test set – no tuning: model performance without tuning

# SEP Working Team: Interaction with Other Teams

- We have had interaction with **SEE, Radiation for aviation, and Total dose** teams (joint session on Thursday)
- SEP working team will focus on SEPs in the heliosphere
- Radiation teams will focus on magnetosphere transport etc.
- User needs for these teams have some overlap. Discussion and input from users on their needs (SWPC, NASA KSC Weather, UK MetOffice, NASA JPL)
  - Choose a few **standard energy ranges** relevant to user groups (more than just GOES 10 MeV, 100 MeV protons)
  - Choose a few **standard thresholds** (to define SEP event, and duration time) relevant to **user groups**
  - Include **heavy ions**
  - Make sure a **few key metrics** amongst science metrics are targeting users
- Overlap some of validation test set time interval with **SEE, Radiation for aviation, Total dose, and CME arrival time & impact** working teams

# SEP Working Team: Issues or Problems Impeding Progress

- Validating SEP models is complex: rare event, variety of species, energy ranges, wide spatial range, limited observation locations
- Need more feedback from modelers
- Science of **acceleration mechanism** and **data availability**, focus still on case studies/**basic research**, less on forecasting
- Time-constraints of participants (\$\$\$)
- Coronagraph data availability limits prompt SEP prediction in real-time

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## SEP team plans for the rest of the week

- Thursday 10:45am – 12:00pm in Jamaica (main building)  
Joint Session: SEPs; SEEs; Radiation Effects for Aviation; Total Dose
  - Discussion of user needs for each team's topic area
  - Event selection, finding a common event period for initial study
  - Metrics discussion