Type IV source catalog

Catalog

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139 sources. Within LASCO data era: 1996 - 2023/04
Combined satellite observations: 77
Wind only: 62

Covers:

- Metric DS checked
- SWPC event entry checked
    - If not then STA STB presence ensured
    - If faint in STB STA, then 304 Å or 195 Å loop view ensured
- Source location ensured to be within reasonable range.

Features:

- **Includes events in LASCO data gaps.**
- **Complete with regard to earlier catalogs:**
    - Type IV and type II lists of STEREO mission page
    - DH type II list events
    - Previous type-IV lists
    - SWPC metric type IVs

Catalog compiling process:
DH DS from Wind , STEREO A & B are obtained for times when

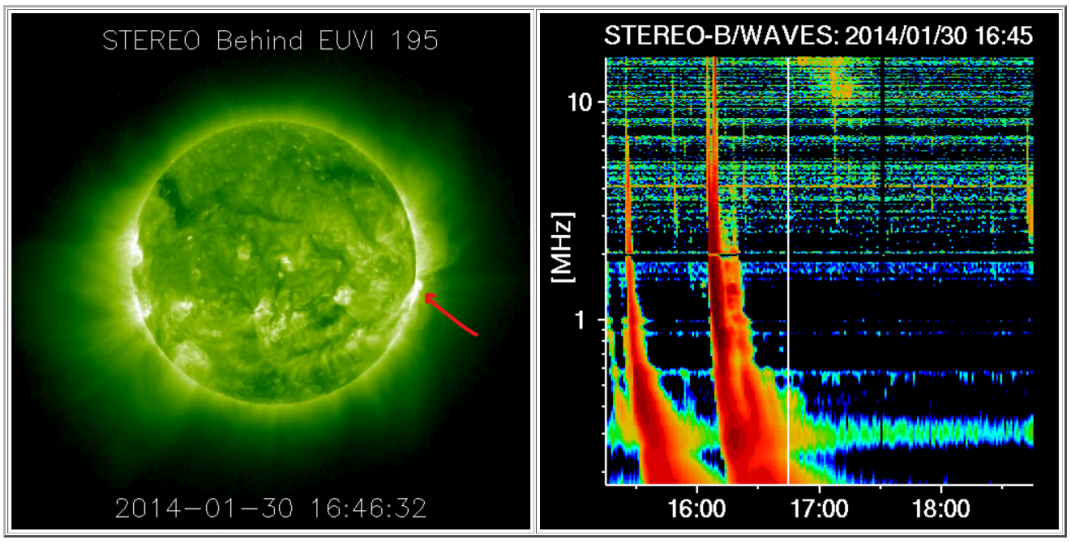
1. LASCO CME reported
2. DH type II reported
3. Metric type IV (SWPC) reported
4. Existing compilation of DH type IV bursts by various sources

Criteria:

1. Only events which start after the flare/typeIII are chosen
2. Long duration events, esp. over days and ones that appear before the flare and extending across flares are not chosen - to remove ambiguity in flare-association.
3. Metric counterparts are ensured for all events.

a. Drifting narrow band-time width features are not chosen to avoid type-II contamination, unless metric band gives a clue of type IV association.

4. Wide viewing angle (>90 deg) type-IV features are chosen if in respective satellite viewpoints in EUV 304/195A we see a loop rising across the limb in flare phase. Eg: below



DH type-IV Catalog Columns:

CME Date, CME Time, Flare loc: Date , time and location of the CME associated with the type-IV event as per LASCO CME catalog.

Dur 14 MHz (min): Duration in minutes of the type-IV event at 14 MHz as seen by the satellite that recorded the longest duration event.

End freq (MHz): The lowest frequency up to which the type-IV extends as seen by the spacecraft which observed the event the furthest below in frequency.

M/S: Moving/ Stationary type-IV. If any one spacecraft saw it moving, then this is marked as moving type-IV

Best view spacecraft: Satellite that observed the event to the furthest down in frequency and for the longest duration.

STB-Earth Angle (deg): Separation between Earth and STEREO B spacecraft

STA-Earth Angle (deg): Separation between Earth and STEREO A spacecraft

Wind M/S: Notes if the event in Moving (M) or stationary (S) type-IV in Wind/WAVES data

STA M/S: Notes if the event in Moving (M) or stationary (S) type-IV in STEREO A/SWAVES data
STB M/S: Notes if the event in Moving (M) or stationary (S) type-IV in STEREO B/SWAVES data
Spacecraft: Lists the satellites that recorded the event
Src in Wind FoV (deg): The source location along the solar azimuth as seen by Wind
Src in STA FoV (deg): The source location along the solar azimuth as seen by STEREO A
Src in STB FoV (deg): The source location along the solar azimuth as seen by STEREO B
Solar cycle: solar cycle number
DH type-II event: Is there a DH type-II event attached? Yes (Y) or No (N)
Event Quality, Data Quality: Quality indices

We introduce 2 quality indices:
Event quality: Sx**I**y → S: Shape ; I: Intensity. (x,y)∈ [1,2,3]
1 - 3 : increasing order of quality of the event as seen in DH dynamic spectrum.
Data quality: Wx**A**y**B**z → W,A,B → Wind,STA,STB. (x,y)∈ [0,1,2]
0: No data; 1: data exists but not good, 2: Good data
CME properties:
Date, Time : As reported by SOHO LASCO CME catalog (https://cdaw.gsfc.nasa.gov/CME_list/)
Flare_loc: Flare source on the sun.
V_mean: Apparent CME speed in km/s