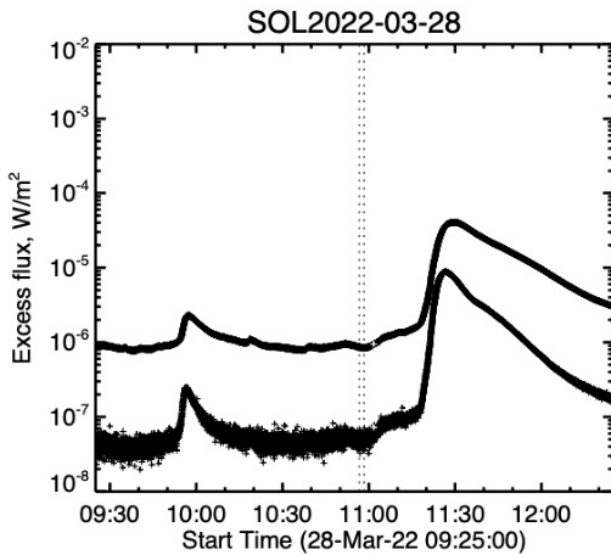# Active items, January 2024

- Eclipse project "SunSketcher.org"
- GOES X10-class flares (energy limit)
- EVE studies (eg, "hot prograde flows")
- RHESSI Nuggets (all are welcome)
- Consultation on IR flare observations
- Consultation on *Fermi* LAT γ-rays
- HOPE/FAI
  - basic physics of hot onsets
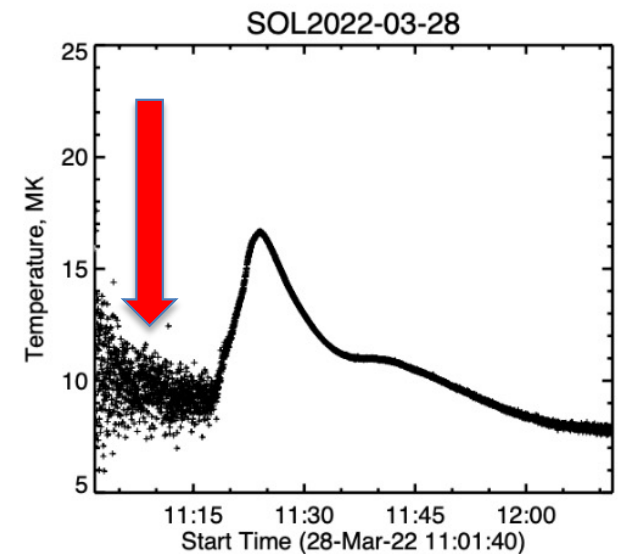 - flare alert via GOES signature

Hot Onset Precursor Event
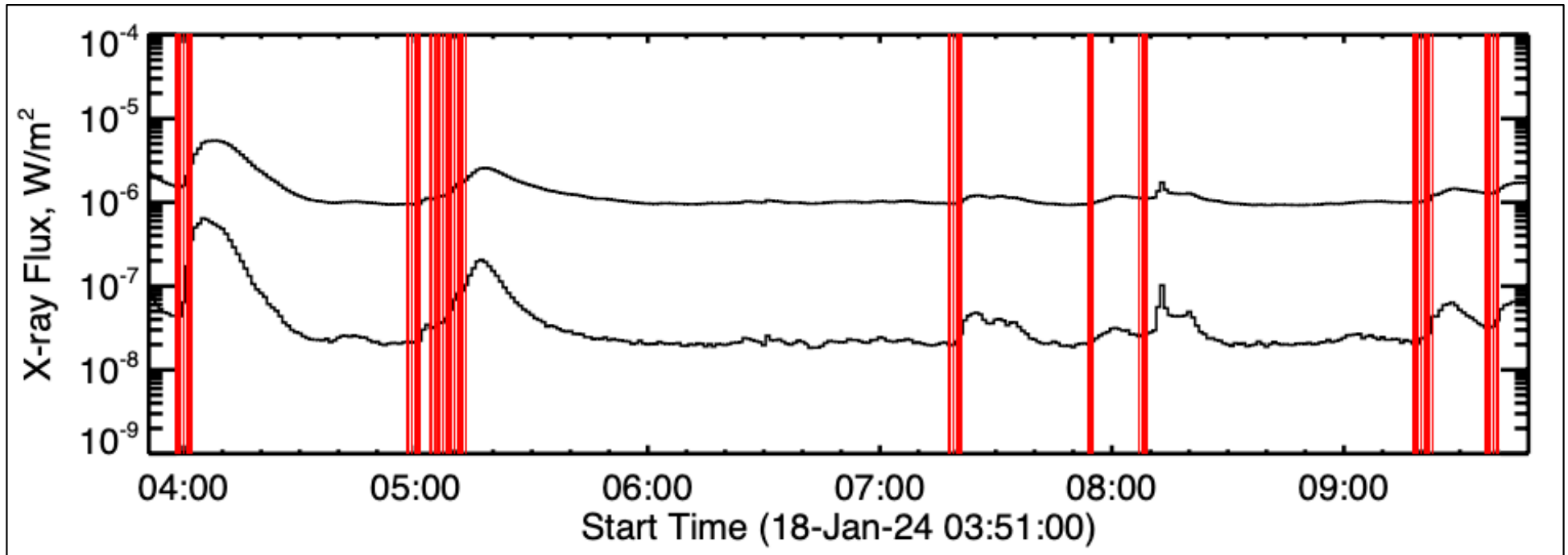

GOES fluxes, showing background interval
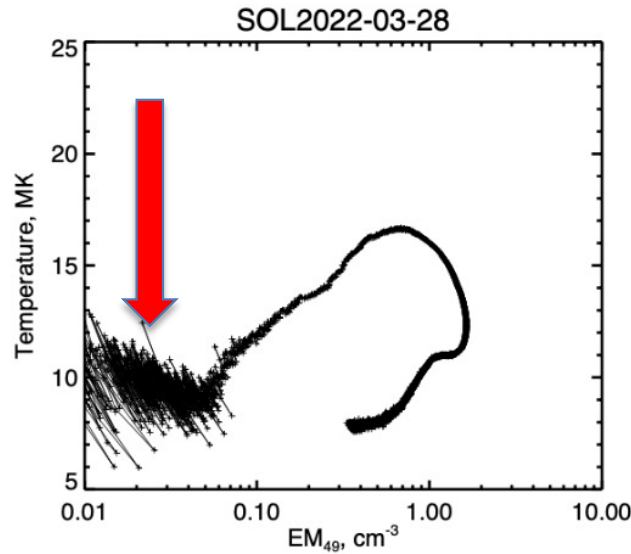
Correlation of T vs EM
(horizontal branch)

Isothermal temperature of flare excess vs time

- The HOPE is emission-measure growth at constant T
- All flares seem to show it, eruptive or not
- This flare is Galina Motorina's (see Nugget)

HOPE -> Flare Anticipation Index

- A simple algorithm recognizes the horizontal branch
- This invariably precedes hard X-rays or GOES max
- The FAI predicts flare magnitude (work in progress)
- This should be useful for campaign observations

# How the criteria work:
SOL2023-11-27T08:11 (C3.4) …
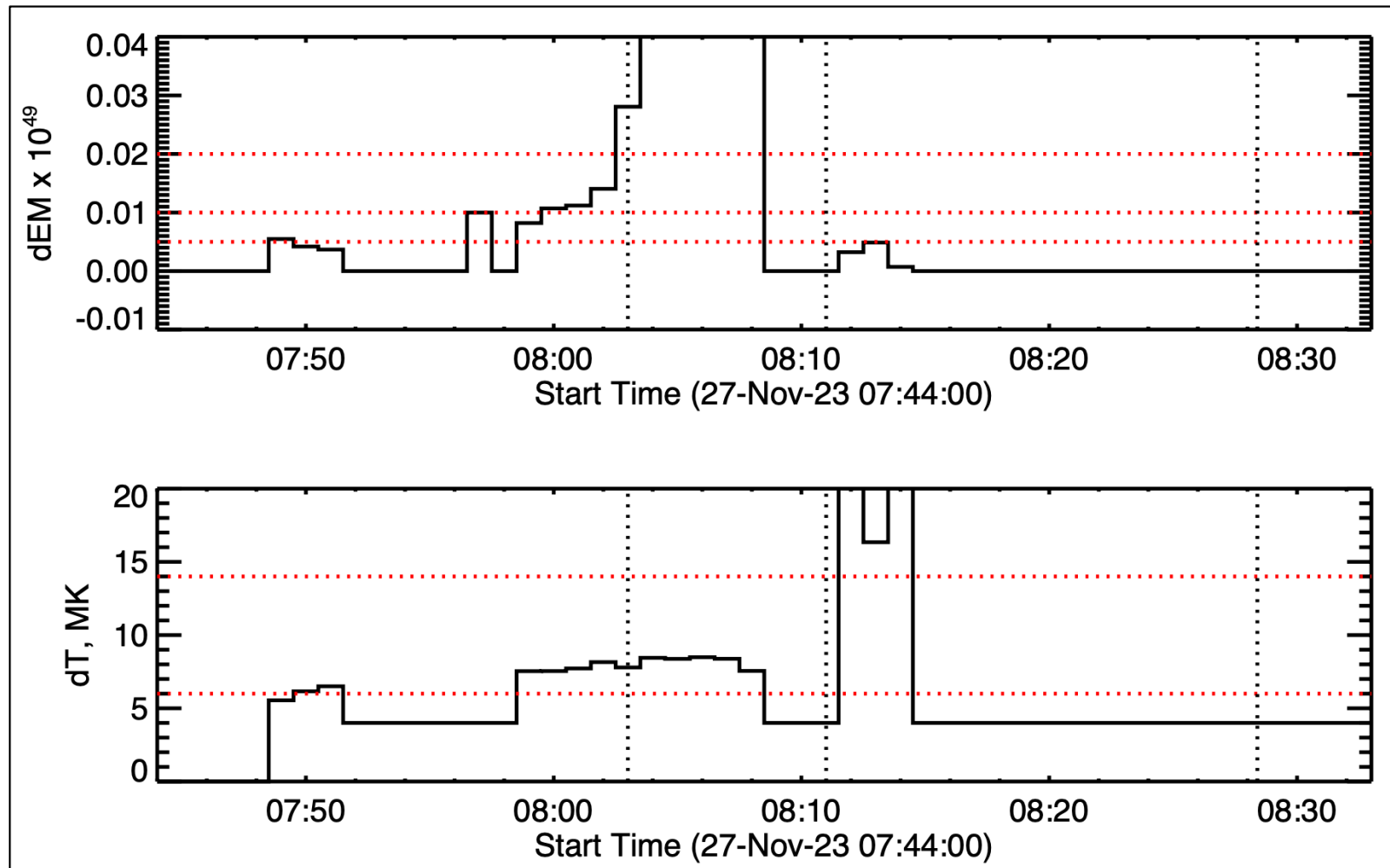
GOES event times (start, max, end) vertical …

HOPE image identification

• There has been no systematic image work, but a few examples suggest that HOPE consists of footpoint sources remote from the main flare development

• Eruptive flares may have other features:
SOL2012-03-13, Cheng et al. 2023ApJ...954L..47C
SOL2022-03-30, Yuankun Kou's movie

SOL2022-03-30 Event

AIA 131 Å Base Difference 30-Mar-2022 17:19:18
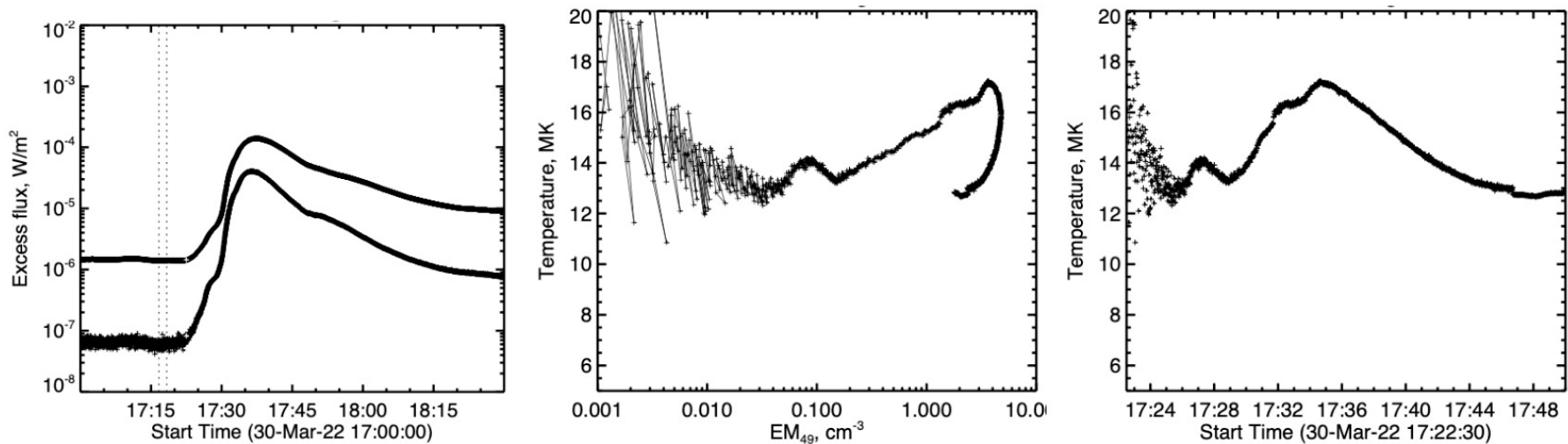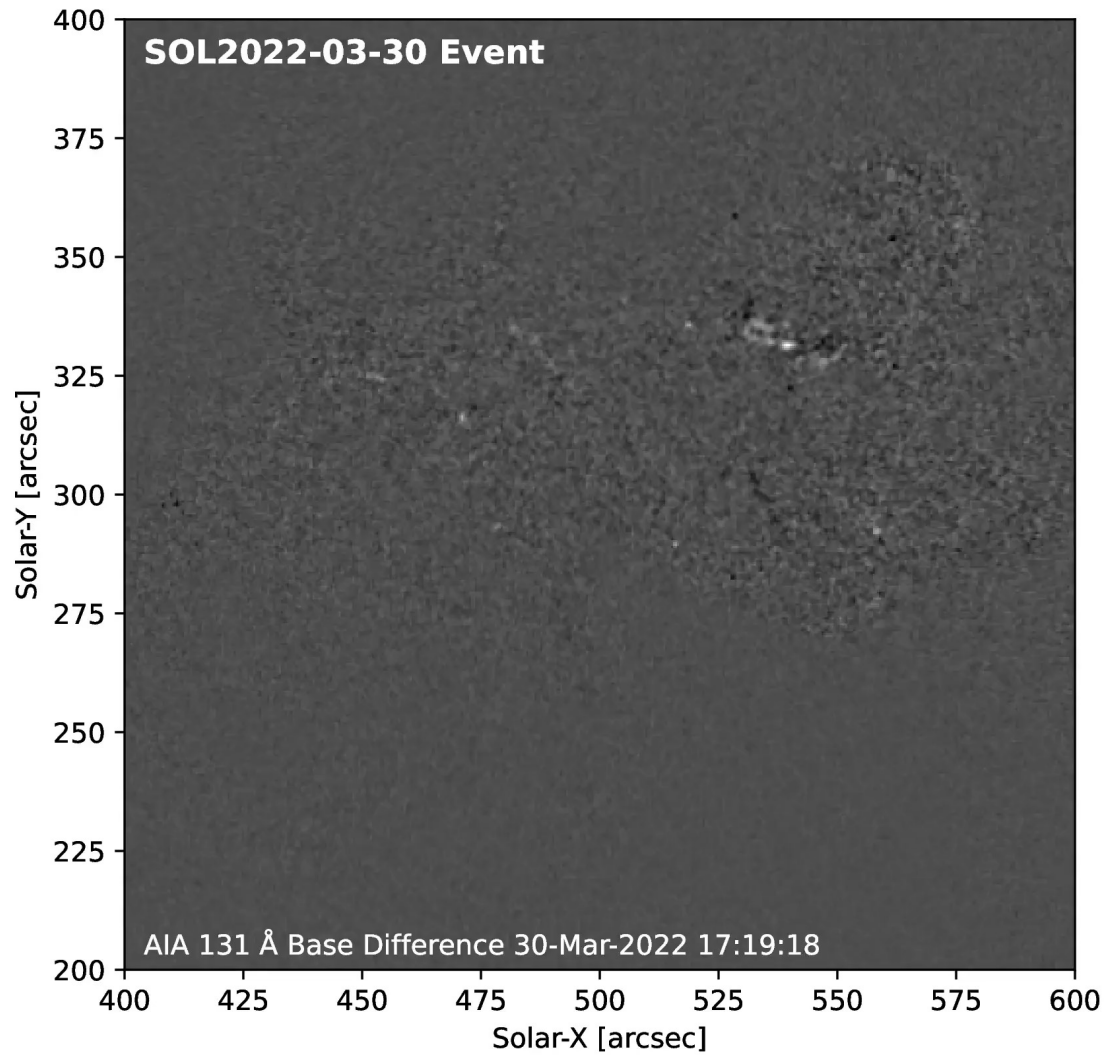
An X1 eruptive flare, thanks to Yuankun!
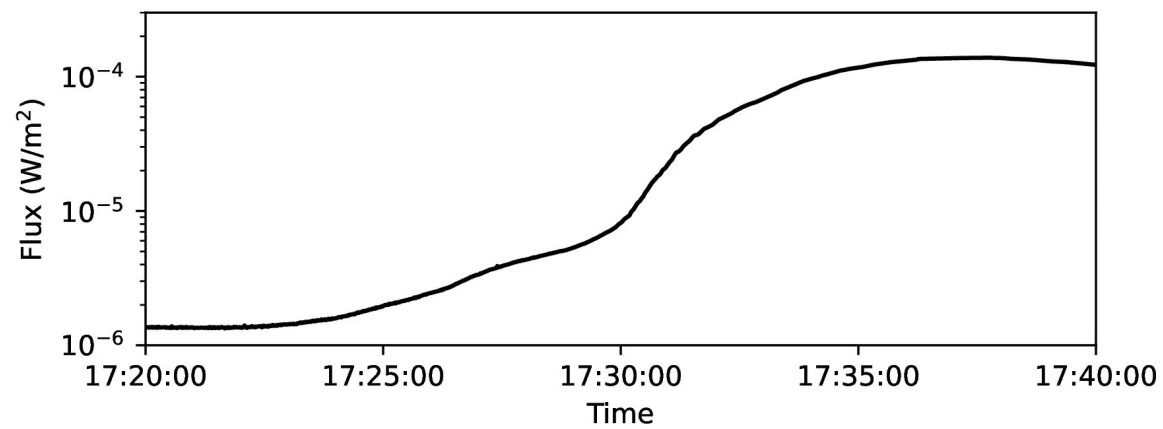
Conclusion

- The HOPE/FAI development is exciting
- Yuankun's movie confirms my suspicion that AIA image analysis (or other data, eg STIX-grade soft X-ray imaging) can "anticipate" a flare even before the GOES signature does