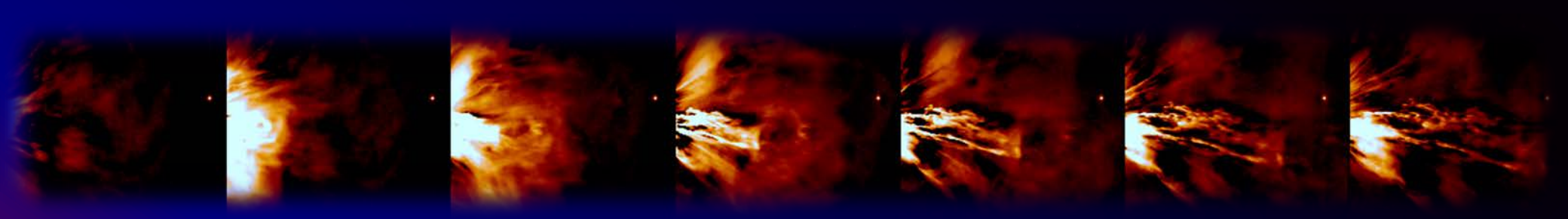

WP3: Deriving/cataloguing the kinetic properties of STEREO/HI CMEs based on geometrical and forward modelling

WP3.1: Geometrical modelling of STEREO/HI CMEs (STFC, UNIGRAZ, UGOE)

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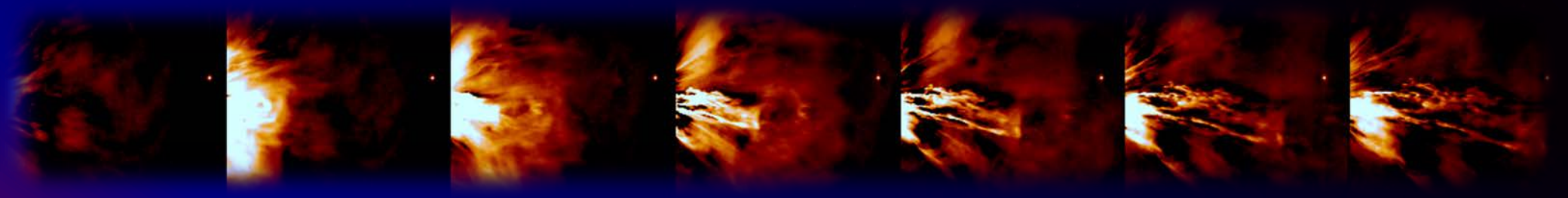

The objective of Task 3.1 is to perform geometrical modelling of the STEREO/HI CMEs, identified and catalogued in WP2, to derive their kinematic properties. This allows us to project back to the Sun and forward to specified solar system locations. From time-elongation maps (J-maps) generated from the HI data, the time-elongation profile of each CME will (where possible) be extracted and analysed using a range of single-spacecraft and stereoscopic geometric models (see Davies et al. 2012) to provide estimates of CME propagation speed, direction and potentially size; the STEREO/HI catalogue will be augmented with this information.

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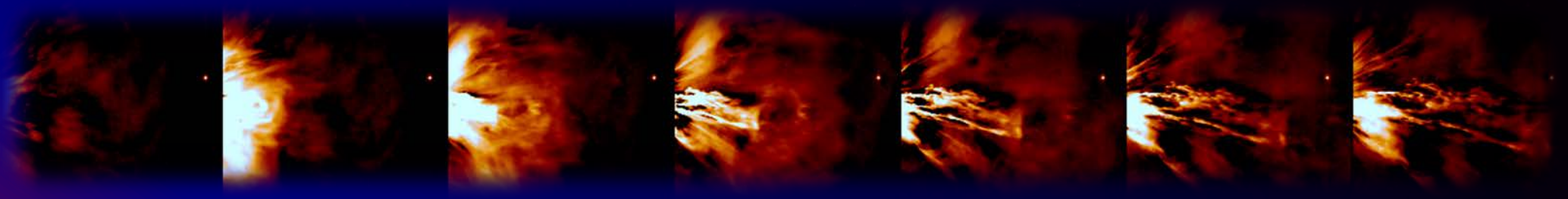

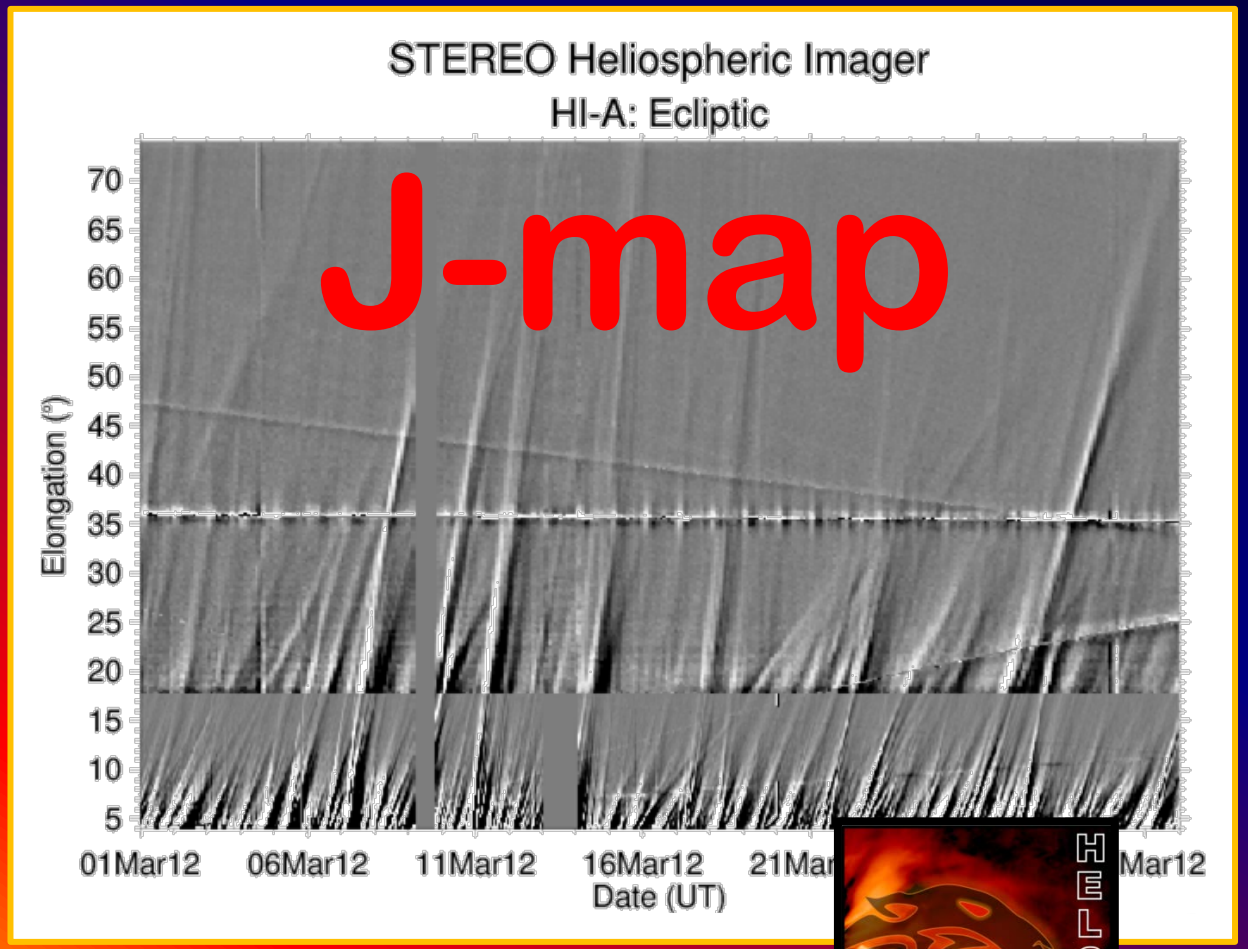

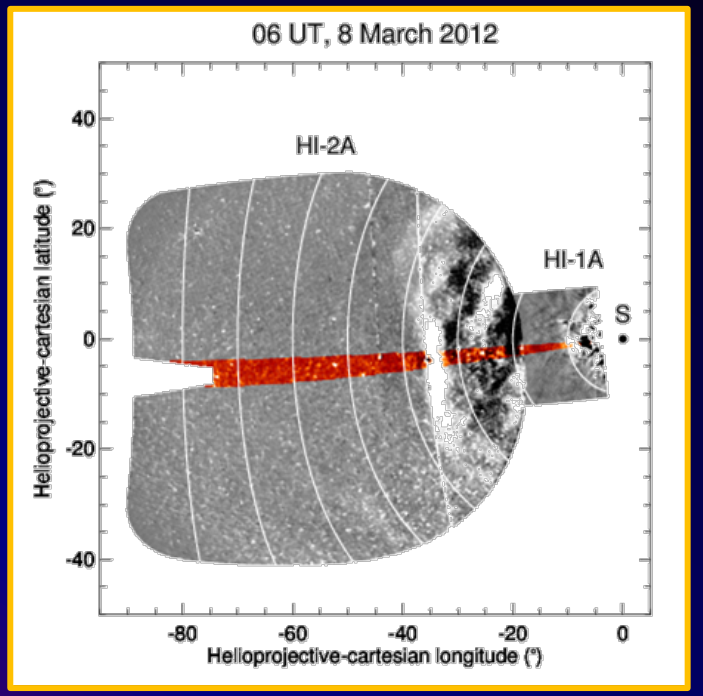

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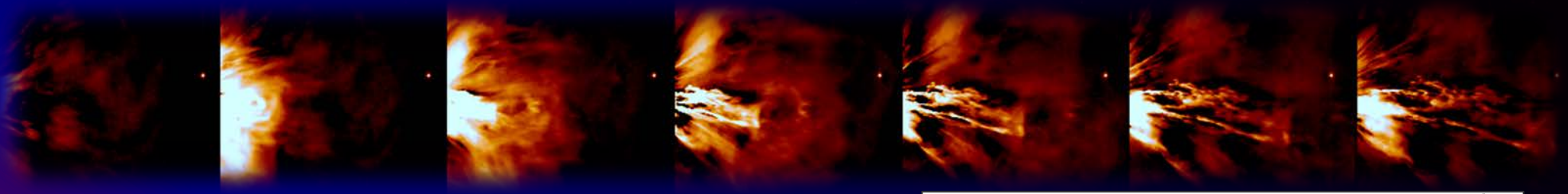
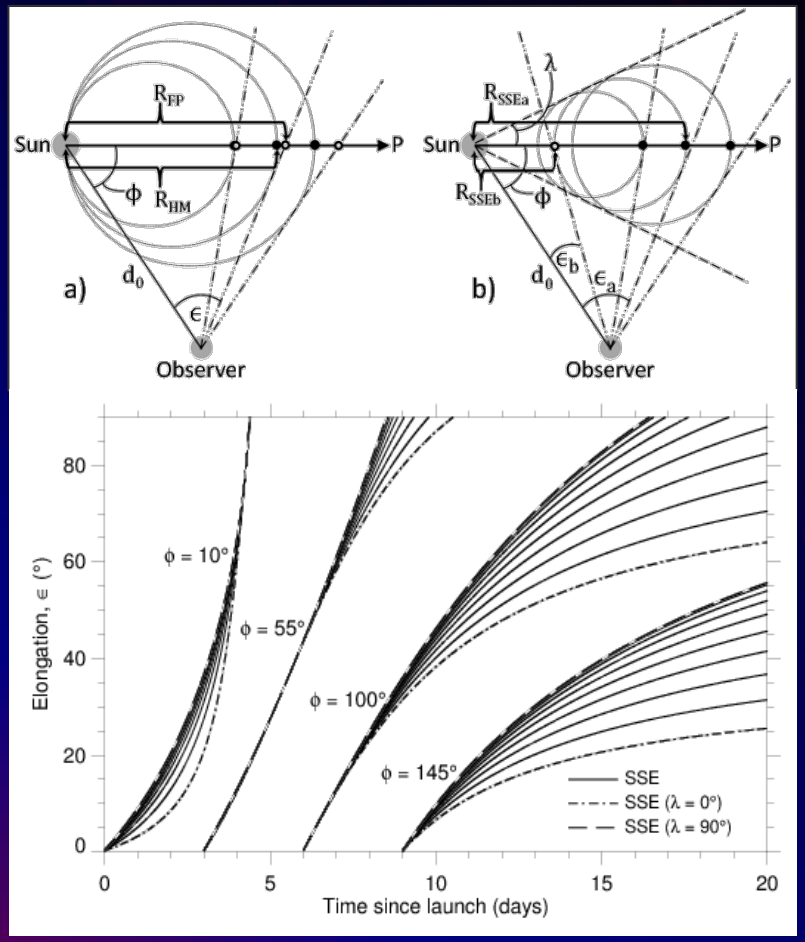


Single-spacecraft time-elongation profile fitting

This requires a model of the transient's cross-sectional geometry:

- **Fixed-Phi Fitting (FPF):**
  point-like transient
- **Harmonic Mean Fitting (HMF):**
  circular transient fixed to Sun-centre.
- **Self-Similar Expansion Fitting (SSE):**
  generalisation of above into a single geometry



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STEREO-A_CME_LIST.txt - Notepad

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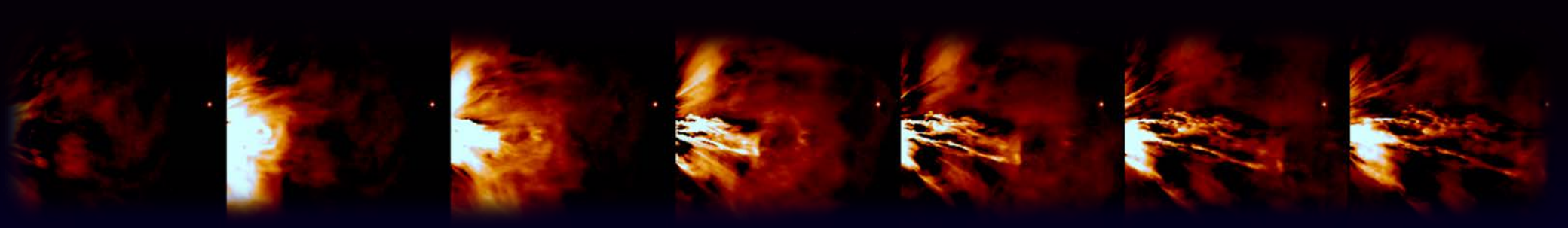

For each tracked CME, we currently include in the catalogue:

- Filename of time-elongation profile;
- Radial speed;
- HEEQ longitude;
- Carrington longitude;
- HEEQ latitude.

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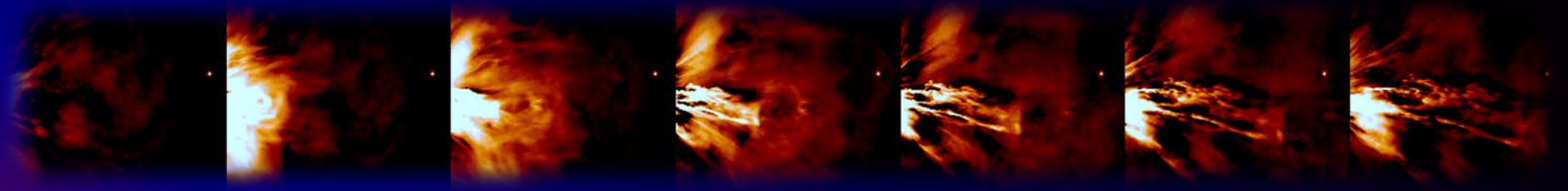

Geometrical modelling techniques

As well as kinematic properties, back-projected CME launch time/location, derived from the geometrical modelling, will be incorporated into the catalogue.

- This enables potential source signatures associated with CME onset to be identified (WP4.1).
- The in-situ observations of CMEs will be compared to their white-light counterparts (WP4.2).

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