

A Fully Automated CME Simulation Pipeline

Developed by the CLEAR Space Weather Center of
Excellence

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Supplementary Material

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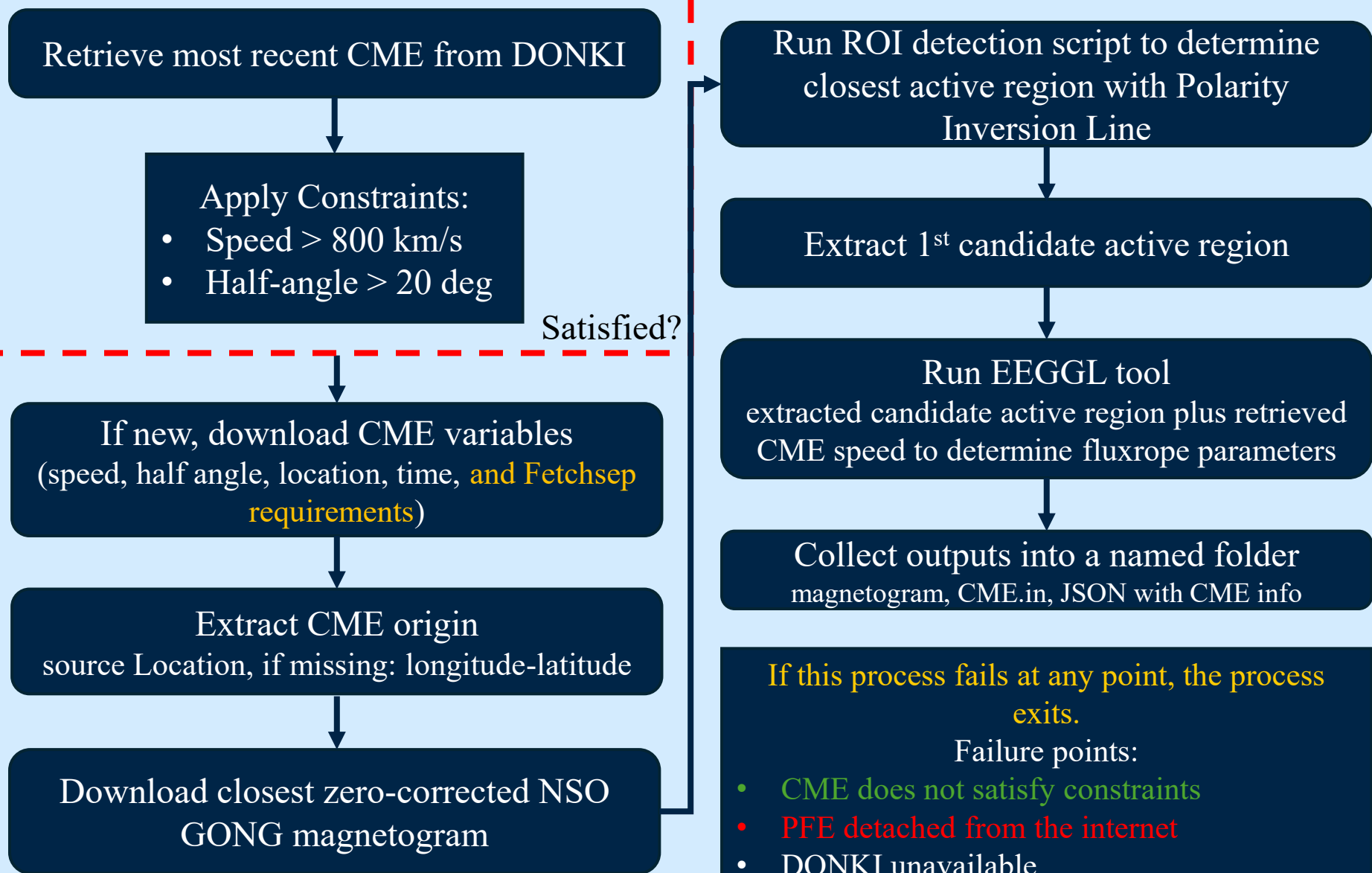
Automatic EEGGL pipeline

Running every 5 minutes as a cronjob on Pleiades

<https://kauai.ccmc.gsfc.nasa.gov/DONKI/>

<https://github.com/ktindiana/fetchsep>

<https://gong.nso.edu/data/magmap/QR/zqs/>

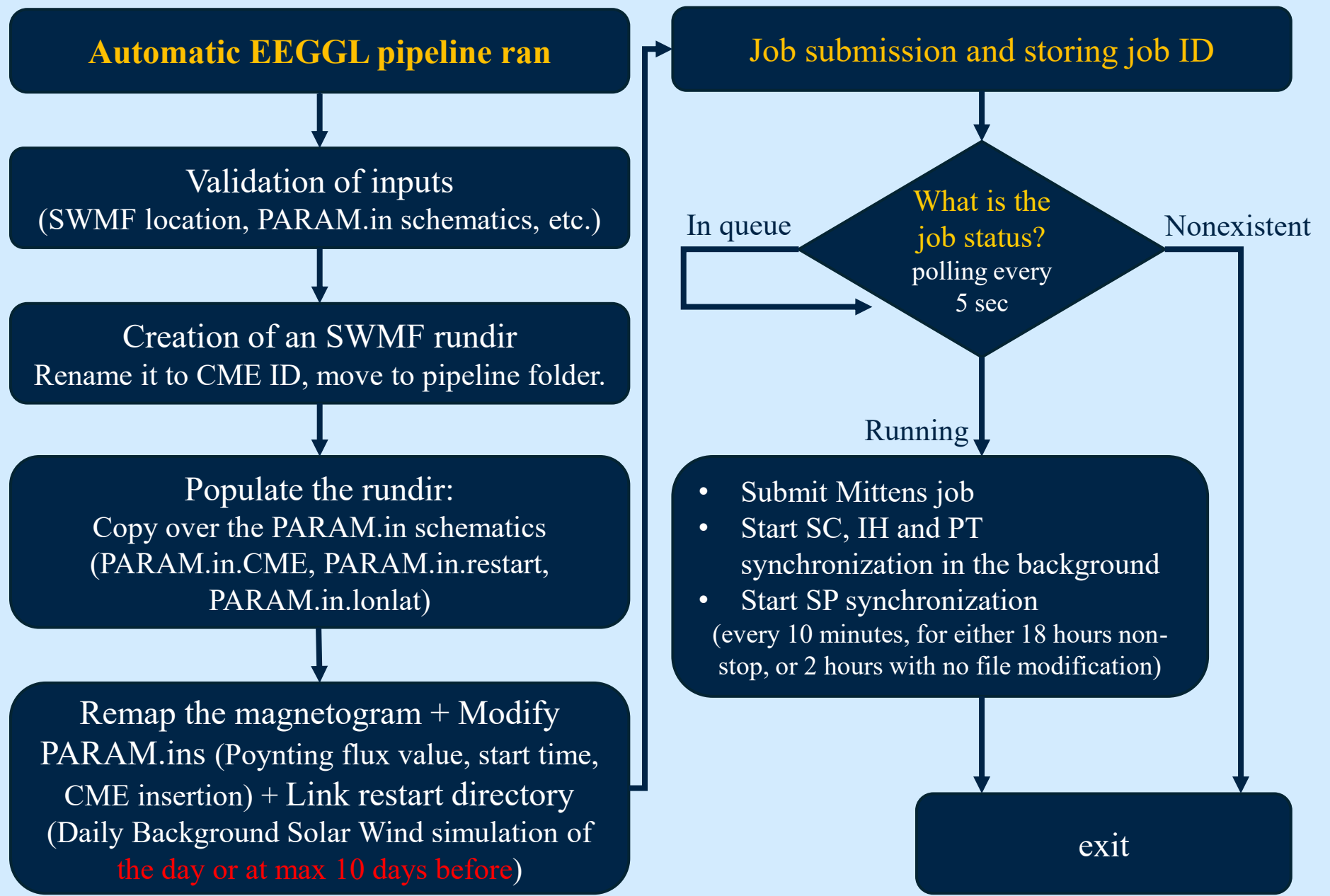


Automatic CME pipeline

Reliant on the automatic EEGGL outputs.

For the PlanB pipeline: both the automatic EEGGL and the CME simulation set-up and submission are handled by the same c shell script.

For the realtime pipeline: Gergely is monitoring the automatic EEGGL output folder every 5 minutes for new CMEs through a cronjob.



Failure point leading to erroneous launch:
Restart directory nonexistent

Failure point leading to simulation stop:
Te negative; hardware; bugs

Automatic Postprocessing

Every postprocessing is run on solsticedisk (the university diskfarm) through my crontabs.

Every 5 minutes:

- PlanB SP
- Realtime SP
- PlanB IH
- Realtime IH
- PlanB SC
- Realtime SC
- Mittens through PlanB
- Mittens through Realtime

Different shell scripts for SP, SC/IH, and Mittens.

Monitoring the pipeline folder for a new CME folder without Fig subfolder

Load CME metadata from CME json (needed for FetchSep) + set up environment

Run relevant plotting scripts
M-FLAMPA plotting scripts were provided by Weihao
MITTENS plotting scripts & style files were provided by Alex
Plasma data comparison script was provided by Gergely

Move latest outputs to the bucket-synchronized location

Store timestamped figures in the CME folder

If video: compress and re-encode for browser compatible format

Store number of files and monitor for X (8) consecutive 10-minute intervals without change

For the M-FLAMPA postprocessing, fetchsep is also ran during every iteration.

Current failure point:

After 8 x ~ 10 minutes of no file number change, postprocessing is considered finished.

If the simulation is restarted after this time period, the way to trigger postprocessing is to manually move / delete / rename the Fig folder.