

Visual Schema for JSON files submitted to the SEP Scoreboard

NOTE: naming convention for files submitted:

ModelShortName.PredictionWindowStartTime.IssueTime.json

JSON key	Type	Boundaries	Description	Corresponding command line argument for helper script
sep_forecast_submission				
contacts				
		>1 allowed, required	Model developer/administrator points of contact	
name	string	required	Contact name in case of datastream issues or model questions.	contact-name
email	string	required	Contact email	contact-email
model				
		required	Model information	
short_name	string	required	Short name (e.g. acronym) of model to appear on scoreboard. Consider including version number with acronym if distinction needed. 16 character limit.	model-short-name
spase_id	string	required	Link to URL of full model description metadata in CCMC metadata registry in SPASE format (contact CCMC to register your model).	spase-id
issue_time				
	datetime*	required	Forecast issue time (e.g. model run is complete and forecast is created)	issue-time
mode	string	required	allowed values: forecast, historical Provide if forecast is issued based on a trigger. This can be expanded. Contact CCMC to add your trigger if it is missing.	mode
triggers				
cme		optional		
start_time	datetime*	required, if cme used	Timestamp of 1st coronagraph image CME is visible in	cme-start-time
liftoff_time	datetime*	optional	Timestamp of coronagraph image with 1st indication of CME liftoff (used by CACTUS)	cme-liftoff-time
lat	float	optional	CME latitude (deg)	cme-lat
lon	float	optional	CME longitude (deg)	cme-lon
pa	float	optional	CME plane-of-sky position angle (measured from solar north in degrees counter-clockwise)	cme-pa
half_width	float	optional	CME half-width (deg)	cme-half-width
speed	float	optional	CME speed (km/s)	cme-speed
acceleration	float	optional	CME acceleration (km/s ²)	cme-acceleration
height	float	optional	CME height at which the above parameters were derived (solar radii from Sun center)	cme-height
time_at_height	datetime*	optional	CME time at specified height	
time	datetime*	required, if time_at_height used		cme-time-at-height-time
height	float	required, if time_at_height used		cme-time-at-height-height
coordinates	string	required, if lat or lon used	Coordinate system for CME lat/lon parameters (e.g. HEEQ or Carrington)	cme-coordinates
catalog	string	optional	Name of catalog where CME information was pulled from. allowed values: ARTEMIS, DONKI, HELCATS, JHU APL, CACTUS_NRL, CACTUS_SIDC, CORIMP, SEEDS, SOHO_CDAW, STEREO_COR1 (contact us to add a new catalog name)	cme-catalog
catalog_id	string	required if catalog=DONKI, otherwise optional	ID that uniquely identifies this CME data in the catalog	cme-catalog-id
urls	string	> 1 allowed, optional	List of urls where CME information can be found, or information was pulled from	cme-urls
flare				
		optional		
last_data_time	datetime*	required, if flare used	Last time data timestamp that was used to create forecast (relevant for forecasts issued before flare end times)	flare-last-data-time
start_time	datetime*	optional	Flare start time	flare-start-time
peak_time	datetime*	optional	Flare peak time	flare-peak-time
end_time	datetime*	optional	Flare end time	flare-end-time
location	string	optional	Flare location in Stonyhurst coordinates. N00W00/S00E00 format	flare-location
intensity	float	optional	Flare intensity (W/m ²)	flare-intensity
integrated_intensity	float	optional	Flare integrated intensity (J/m ²)	flare-integrated-intensity
noaa_region	integer	optional	Associated NOAA active region number (including the preceding 1)	flare-noaa-region
urls	string	> 1 allowed, optional	List of urls where flare information can be found, or information was pulled from	flare-urls
cme_simulation				
model	string	required, if cme_simulation used	Model name	cme-sim-model
simulation_completion_time	datetime*	optional	Simulation completion time	cme-sim-completion-time
urls	string	> 1 allowed, optional	List of urls where simulation information can be found, or information was pulled from	cme-sim-urls
particle_intensity				
observatory	string	required, if particle_intensity used	Name of observatory/spacecraft data are from	pi-observatory
instrument	string	required, if particle_intensity used	Name of instrument data are from	pi-instrument
last_data_time	datetime*	required, if particle_intensity used	Last time data timestamp used to create forecast	pi-last-data-time
ongoing_events		> 1 allowed, optional	If an ongoing event triggers your forecast, list the properties you used	
start_time	datetime*	required, if ongoing_event used	start time	pi-ongoing-events-start-time
threshold	float	required, if ongoing_event used	threshold used to define the event in pfu	pi-ongoing-events-threshold
energy_min	float	required, if ongoing_event used	min of energy channel range in MeV	pi-ongoing-events-energy-min
energy_max	float	required, if ongoing_event used	max of energy channel range in MeV. -1 represented an unbounded integral channel	pi-ongoing-events-energy-max
inputs				
		optional		
magnetic_connectivity		optional, > 1 allowed	Provide if key model inputs are not represented in the triggers field. Provide if specific magnetic connectivity information was used to produce your forecast	
method	string	required, if magnetic_connectivity used	allowed values: Parker Spiral, PFSS-Parker Spiral, WSA, WSA-ENLIL, ADAPT-WSA-ENLIL (contact us to add your method to this format)	
lat	float	optional	latitude (deg) position of magnetic field line footpoint linking the observing spacecraft to the Sun (in Stonyhurst coordinates)	
lon	float	required, if magnetic_connectivity used	longitude (deg) position of magnetic field line footpoint linking the observing spacecraft to the Sun (in Stonyhurst coordinates)	
connection_angle		optional	angle between the related solar event and the foot point of the magnetic field line linking the observing spacecraft to the Sun.	
lat	float	optional	connection angle lat - solar event lat - magnetic connectivity footpoint lat	
lon	float	required, if connection_angle used	connection angle lon - solar event lon - magnetic connectivity footpoint lon	
solar_wind		optional	Use if a certain solar wind speed was assumed to compute the magnetic connectivity	
observatory	string	optional	Name of observatory/spacecraft data are from	
speed	float	required, if solar_wind used	Assumed solar wind speed to compute magnetic connectivity	
forecasts				
		> 1 allowed, at least 1 required	>1 allowed such that forecasts for multiple energy channels can be submitted in one file (if they have the same issue time)	
energy_channel		required	Each forecast is defined by the energy channel specified	
min	float	required	min of energy channel range	energy-min
max	float	required	max of energy channel range. -1 represented an unbounded integral channel	energy-max
units	string**	required	energy channel units	energy-units
species	string	required	allowed values: electron, proton, helium, helium3, helium4, oxygen, iron, ion	species
location	string	required	allowed values: mercury, venus, earth, mars, prp, stereo, stereob, dawn, juno, L1, L2, L4, L5	location
prediction_window		required	all forecast values provided are relevant only in this prediction window	prediction-window
start_time	datetime*	required	start of forecast prediction window (Note that the forecast issue time cannot be more than one hour after the start of forecast prediction window for "forecast" mode)	(first value given for 'prediction-window')
end_time	datetime*	required	end of forecast prediction window	(second value given for 'prediction-window')
peak_intensity		optional		
intensity	float	required, if peak_intensity used	forecast peak intensity value	peak-intensity
units	string**	required, if peak_intensity used	forecast peak intensity value units	peak-intensity-units
uncertainty	float	optional	forecast peak intensity uncertainty value (same units as peak intensity)	peak-intensity-uncertainty
time	datetime*	optional	forecast time for reaching peak intensity value	peak-intensity-time
peak_intensity_esp		optional		
intensity	float	required, if peak_intensity_esp used	forecast peak intensity value in the vicinity of shock passage	peak-intensity-esp
units	string**	required, if peak_intensity_esp used	forecast peak intensity units in the vicinity of shock passage	peak-intensity-esp-units
time	datetime*	optional	forecast time for reaching peak intensity value in the vicinity of shock passage	peak-intensity-esp-time
fluences				
		> 1 allowed, optional		
fluence	float	required, if fluence used	forecast fluence value (corresponds to event length)	fluence
units	string**	required, if fluence used	forecast fluence units	fluence-units
event_lengths				
		> 1 allowed, optional	must fall within prediction window	
start_time	datetime*	required	forecast energetic particle event start time ("onset" time)	event-length-start-time
end_time	datetime*	optional	forecast energetic particle event end time	event-length-end-time
threshold	float	required	threshold used to extract start and end times	event-length-threshold
threshold_units	string**	required	units of threshold	event-length-threshold-units
threshold_crossings		> 1 allowed, optional	multiple threshold_crossings can be provided for the same forecast energy channel	
crossing_time	datetime*	required, if threshold_crossings used	forecast threshold crossing time	thresh-crossing-times
uncertainty	float	optional	forecast crossing time uncertainty in hours	thresh-uncertainties
threshold	float	required, if threshold_crossings used	particle intensity threshold value crossing time refers to	crossing-thresholds
threshold_units	string**	required, if threshold_crossings used	units of threshold	crossing-threshold-units
probabilities		> 1 allowed, optional	multiple probabilities can be provided for the same forecast energy channel	
probability_value	float	required, if probabilities used	forecast probability value (range 0 to 1)	probabilities
uncertainty	float	optional	plus/minus error bar for probability value (in probability value units)	prob-uncertainties
threshold	float	required, if probabilities used	particle intensity threshold value probability forecast refers to	prob-thresholds
threshold_units	string**	required, if probabilities used	units of threshold	prob-threshold-units
all_clear				
		optional		
all_clear_boolean	boolean	required, if all_clear used	If you do not provide an all-clear forecast do not enter this key. There are three situations for setting all_clear_boolean=false: (1) for >10MeV energy channel, your forecast of peak intensity OR threshold crossing exceeds 10 pfu OR your probability forecast for a threshold of 10 pfu exceeds your custom probability threshold; (2) for the >10MeV energy channel, your forecast of peak intensity OR threshold crossing exceeds 1 pfu OR your probability forecast for a threshold of 1 pfu exceeds your custom probability threshold; (3) for your custom (non-integral) energy channel, your forecast peak intensity OR threshold crossing exceeds your custom threshold. Custom cases (2) are being stored but will not be used in the all-clear scoreboard display.	all-clear
threshold	float	required, if all_clear used	particle intensity threshold value all_clear_boolean refers to. Can be (1) 10 pfu for >10MeV channel (2) 1 pfu for >10MeV channel (3) custom	all-clear-threshold
threshold_units	string**	required, if all_clear used	units of threshold	all-clear-threshold-units
probability_threshold	float	optional	probability threshold value all_clear_boolean refers to. Must specify this threshold if setting all_clear_boolean based on probability forecast.	all-clear-probability-threshold
sep_profile				
		optional	Text file with 2 columns: datetime* string, predicted SEP intensity for this energy channel. Please name the file uniquely. To accomplish this, we suggest including your model name and issue time in the filename. Guideline: ModelShortName.PredictionWindowStartTime.IssueTime.EnergyChannel.txt	sep-profile
native_id	string	optional	Specify only if forecast has a native id from your model run	native-id

*datetime expected in UTC and in the format(s): "YYYY-MM-DDTHH:MM:SSZ"

**units string format: Example: "MeV^-1*s^-1*cm^-2*sr^-1". Another example: "pfu" where 1 pfu = 1 s^-1*cm^-2*sr^-1

JSON filename guideline: ModelShortName.PredictionWindowStartTime.IssueTime.json