

Visual Schema for JSON files submitted to the CME Scoreboard (v20260923)

NOTE: naming convention for files submitted:

ModelShortName.PredictionWindowStartTime.IssueTime.json

JSON key				Type	Boundaries	Description
forecastSubmission				object	required	
	method			object	required	Model/method information
		displayName		string	required	Display name (e.g. acronym) of model to appear on scoreboard display. Consider including version number with acronym, if distinction needed. 16 character limit.
		registeredID		string	required	Before submitting a prediction under a method/model, the method must be registered with the CCMC Earth CME SB (contact CCMC to register your method)
	submitter			object	required	
		name		string	required	can use generic forecaster name
		affiliation		string	required	
	submissionTime			datetime*	required	forecast submission time (generally the same as your forecast issue time)
	issueTime			datetime*	required	Forecast issue time (e.g. model run is complete and forecast file is created)
	forecasts			array of objects	>= 1 allowed, optional	>1 allowed such that forecasts for multiple CME arrivals could be submitted as an array
		cme		array of objects	>=1 allowed, required if forecasts block is provided	(limit to 1 for multiple forecast blocks, 1 per CME. if merged CMEs, this would list both. on cme scoreboard will need to figure out if putting this in 2 CME tables)
			startTime	datetime*	required, if cme block is provided	Used to identify the CME in the scoreboard. Timestamp of 1st coronagraph image CME is visible in - must correspond to at least one startTime in modelInputs block
			cmeID	string	optional	If the CME has an existing ID in a catalog
		overallForecastConfidence		integer	optional	Subjective assessment of overall forecast confidence. Allowed values: 1, 2, 3 for 3-low, 2-medium, 1-high
		forecastNote		string	optional	
		arrivals		array of objects	>= 1 allowed, required if forecast block is provided	list of arrivals allowed for forecasts at multiple locations, or multiple arrival times at one location
			location	string	required if arrivals block is provided	allowed values: Earth, Mars, STEREO-A (please contact us to add more strings)
			isArrivalPredicted	boolean	required if arrivals block is provided	true/false. Select true if you are forecasting that your CME will arrive
			arrivalConfidence	double	optional	confidence/likelihood that the CME will arrive and be a hit, in percent
			arrivalDetails		object	required, if isArrivalPredicted=true
			arrivalType	string	required, if isArrivalPredicted=true	allowed values: shock, cloud
			arrivalTime	datetime*	required, if isArrivalPredicted=true	predicted arrival time of the CME cloud or shock/discontinuity
			arrivalEndTime	datetime*	optional	predicted end time of CME cloud
			arrivalTimeUncertaintyLow	double	optional	Lower-bound uncertainty on arrivalTime in hours as a positive number (e.g. 6.0 for -6 hours)
			arrivalTimeUncertaintyHigh	double	optional	Upper-bound uncertainty on arrivalTime in hours as a positive number (e.g. 8.0 for +8 hours)
			maxV	double	optional	Forecasted maximum CME speed after arrival in km/s

				maxB	double	optional	Max value of magnitude of magnetic field within the cloud in nT (e.g. 15 for 15 nT)
				minBz	double	optional	Min Bz value of southward magnetic field within the cloud in nT (e.g. -12 for -12 nT)
				geomagneticImpact	object	all optional	
				maxKp	double	optional	predicted max Kp
				maxKpTime	datetime*	optional	start time of 3hr Kp window maxKp prediction is for
				maxKpLowerRangeValue	double	optional	predicted max Kp range lower value (e.g. 5.33)
				maxKpUpperRangeValue	double	optional	predicted max Kp range upper value (e.g. 7.33)
				minDst	integer	optional	predicted Min Dst (nT)
				minDstTime	datetime*	optional	predicted Min Dst timestamp
				minDstUncertaintyLow	double	optional	Lower-bound uncertainty on Dst min in nT as a positive value (e.g., 40 for -40 nT)
				minDstUncertaintyHigh	double	optional	Upper-bound uncertainty on Dst min in nT as a positive value (e.g., 75 for +75 nT)
				stormDuration	double	optional	length of geomagnetic storm (by measure of Kp, Dst, or other) in hours
		modelInput			object	all optional	
			modelCompletionTime		datetime*	optional	
			modelRunID		string	optional	
			modelMetadataFilename		string	optional	Filename for the metadata in the model's native format
			cme		array of objects	>= 1 allowed, optional	
			startTime		datetime*	required, if cme block is provided	Used to identify the CME in the scoreboard. Timestamp of 1st coronagraph image CME is visible in - at least one start_time in forecasts block must correspond to this list
			liftoffTime		datetime*	optional	Timestamp of coronagraph image with 1st indication of CME liftoff (used by CACTUS)
			lat		double	optional	CME latitude (deg)
			lon		double	required, if cme block is provided	CME longitude (deg)
			pa		double	optional	CME plane-of-sky position angle (measured from solar north in degrees counter-clockwise)
			halfWidth		double	optional	CME half-width (deg)
			speed		double	required, if cme block is provided	CME speed (km/s)
			acceleration		double	optional	CME acceleration (km/s^2)
			height		double	optional	CME height at which the above parameters were derived (solar radii from Sun center)
			timeAtHeight		object	optional	CME time at specified height
				time	datetime*	required, if timeAtHeight used	
				height	double	required, if timeAtHeight used	in solar radii
			coordinates		string	required, if lat or lon used	Coordinate system for CME lat/lon parameters (e.g. HEEQ or Carrington)
			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, SWPC, MLSO_KCOR (contact us to add a new catalog name)

			<i>catalogID</i>		string	required if catalog=DONKI, otherwise optional	id that uniquely identifies this CME data in the catalog
			<i>urls</i>		array of strings	> 1 allowed, optional	List of urls where CME information can be found, or information was pulled from
			<i>derivationTechnique</i>		object	optional	
				process	string	required if <i>derivationTechnique</i> used	automated/manual
				method	string	required if <i>derivationTechnique</i> used	SWPC_CAT, StereoCAT, Plane-of-sky, FlareDerived
				measurementType	string	optional	allowed values: LE (leading edge), TE (Trailing Edge), RHB (Right Hand Boundary), LHB (Left Hand Boundary), BW (Black White Boundary), COR (Prominence Core), DIS (Disconnection Front), SH (Shock Front)
			magnetogram		array of objects	> 1 allowed, optional	Provide if a magnetogram was used to produce your forecast
			observatory		string	required, if magnetogram used	Name of observatory/spacecraft data are from
			instrument		string	required, if magnetogram used	Name of instrument data are from
			<i>products</i>		array of strings	> 1 allowed, optional	List of the name of data products used

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

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

JSON filename guideline: ModelShortName.PredictionWindowStartTime.IssueTime.json

filename timestamp guidance: YYYYMMDD_HHMMSS e.g. 20260101_124300