HESPERIA REleASE

Developers: (Original:) Arik Posner (Current:) Olga Malandraki, Patrick Kuehl, Michail Karavolos

SRAG POCs: Janet Barzilla
M2M POCs: Anna Chulaki, Chris Stubenrauch

Description

HESPERIA REleASE forecasts proton intensity by its correlation to real-time electron intensity. Since electrons are smaller and arrive prior to protons, the forecast gives a 30-90 minute advanced warning time.

Inputs

Electron Intensity: From ACE/EPAM at a 5 minute cadence, or from SOHO/EPHIN at a 1 minute cadence.

Outputs

Proton Intensity: For two energy ranges: 15.8-39.8 MeV and 28.2-50.1 MeV, two input sources: ACE/EPAM and SOHO/EPHIN, and 3 forecast windows: 30-min, 60-min, and 90-min.

Input Source	Energy Range (MeV)	Forecast Window (min)
ACE/EPAM	15.8-39.8	30
		60
		90
	28.2-50.1	30
		60
		90
SOHO/EPHIN	15.8-39.8	30
		60
		90
	28.2-50.1	30
		60
		90

Forecast Lag Time

Inputs: 5 minutes from ACE/EPAM, or 1 minute from SOHO/EPHIN

Run Time: Less than 1 minute.

Validation

	H	FAR	TSS	HSS
EPAM	0.63	0.35		
EPHIN	0.63	0.29		

Interpretation and Caveats

Not Time Profile: The proton intensity forecast should not be interpreted as a time profile of the predicted event, but rather as a warning of when a threshold crossing may be observed.

ACE Trigger: ACE/EPAM electron flux needs to be > 19 pfu to trigger the ACE version.

Data Reliability: ACE/EPAM and SOHO/EPHIN may suffer from data outages and unreliable data due to instrumental effects. These affect predictions and are seen as gaps in the forecast or as sparse, spurious forecast points.

Energy Range: Predicted intensity is only for the 15.8-39.8 MeV and 28.2-50.1 MeV ranges and therefore not directly comparable to any GOES integral channels.

Heat Map: REleASE is not included on the intensity or All-clear heat maps because the energy range (15.8-50.1 MeV) differs from the >10 MeV and >100 MeV energy range of the heat maps.

Event Types: REleASE is more applicable to gradual events more than impulsive events.

Additional Links

iSWA Data Tree

CCMC REleASE Description

Developer Website