VMR migrated to the CCMC

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9th CCMC Community Workshop

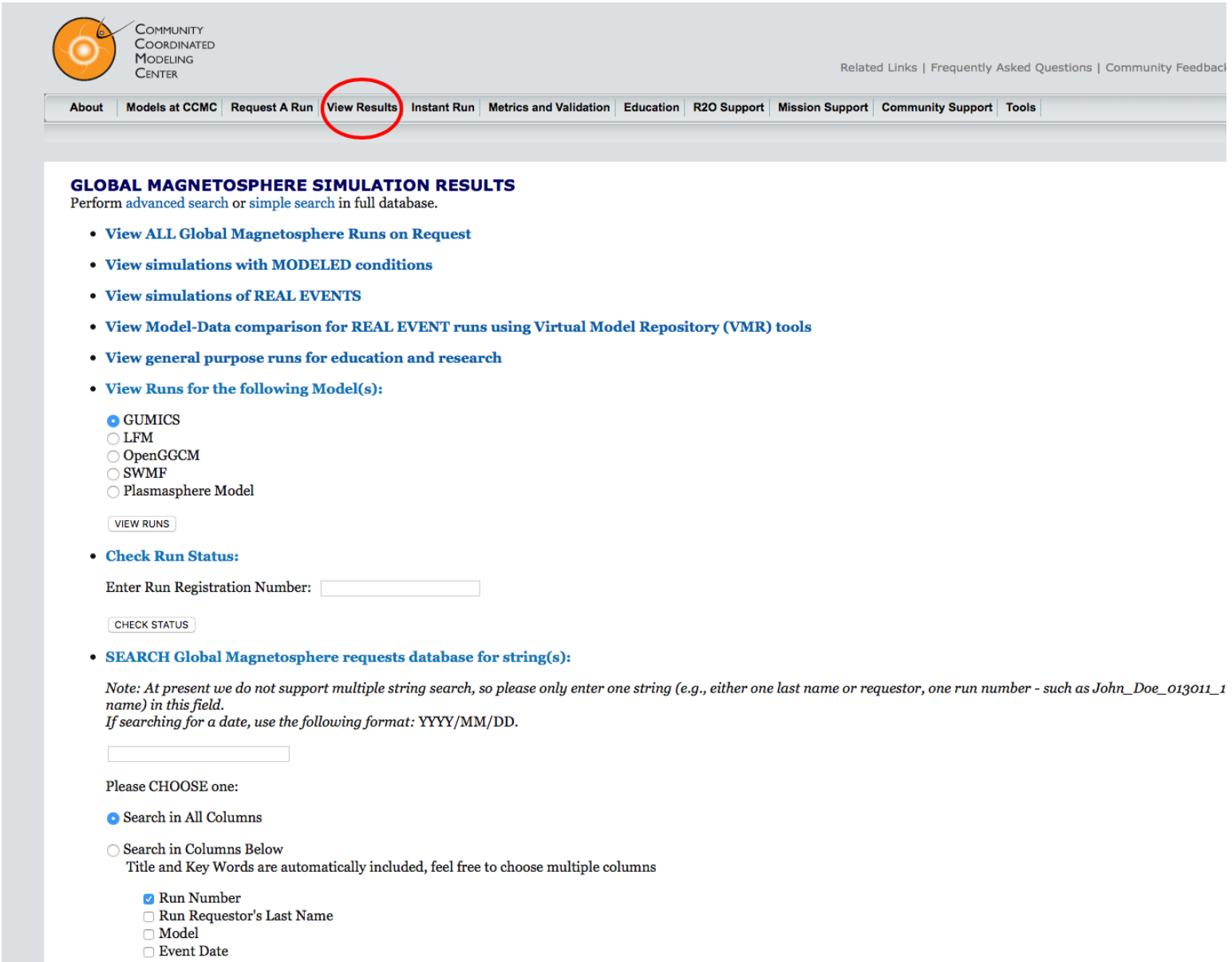
April 23-27, 2018

COMMUNITY
COORDINATED
MODELING
CENTER

VMR (Virtual Model Repository)

- The VMR was created to:
  - Make computational model results available to the general scientific community.
  - Provide intuitive data-model comparisons.
  - Enable open access to model output.
- The 1000s of CCMC model runs were a big focus of the VMR effort.
- CCMC related tools from the VMR are now incorporated directly into the CCMC website, with many updates.

Where can I find the new tools?



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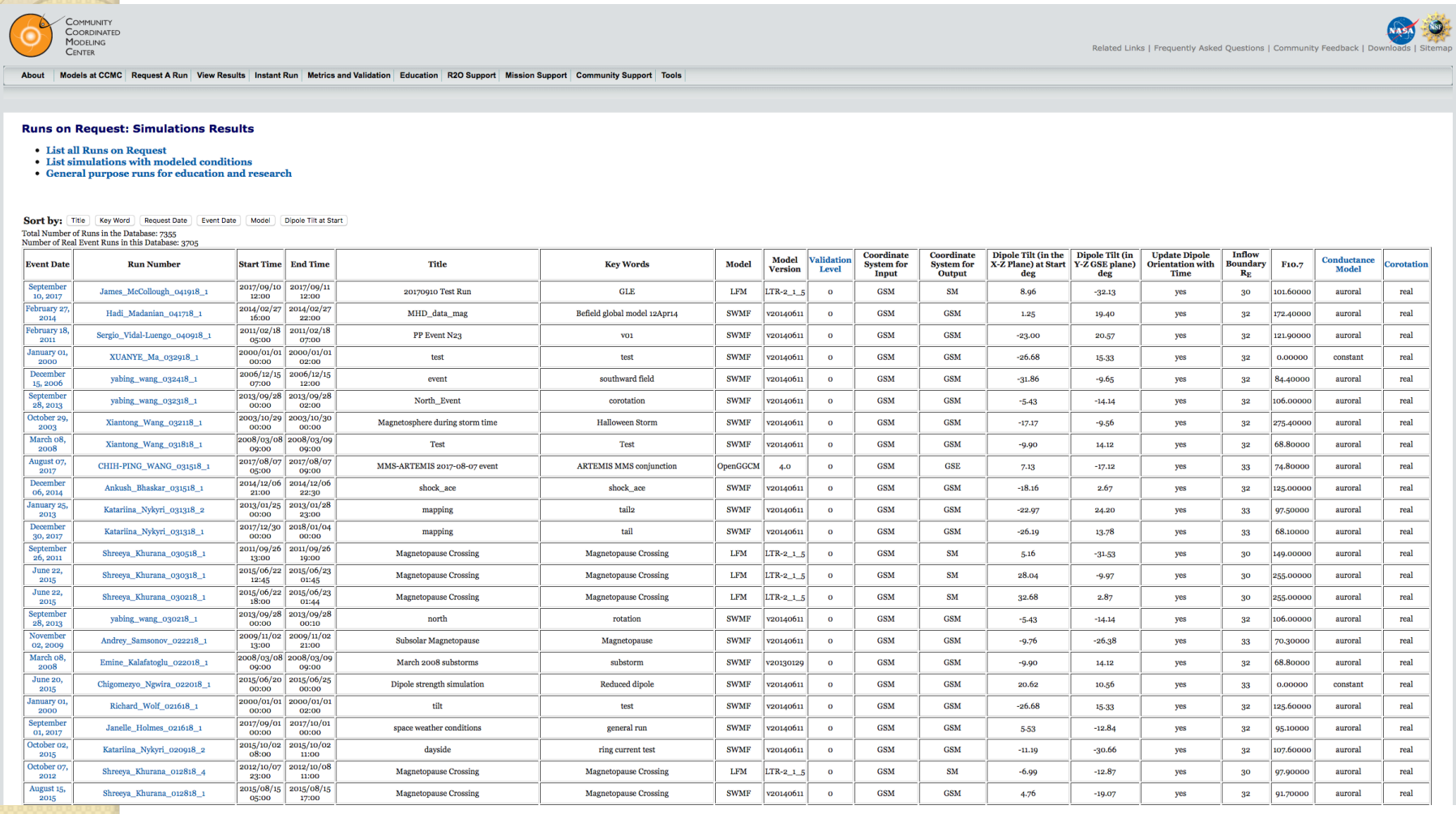
The standard CCMC page view



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Runs on Request: Simulations Results

- List all Runs on Request
- List simulations with modeled conditions
- General purpose runs for education and research

Sort by: Title | Key Word | Request Date | Event Date | Model | Dipole Tilt at Start

Total Number of Runs in the Database: 7355
Number of Real Event Runs in this Database: 3705

Event Date	Run Number	Start Time	End Time	Title	Key Words	Model	Model Version	Validation Level	Coordinate System for Input	Coordinate System for Output	Dipole Tilt (in the X-Z Plane) at Start deg	Dipole Tilt (in Y-Z GSE plane) deg	Update Dipole Orientation with Time	Inflow Boundary R_E	F10.7	Conductance Model	Corotation
September 10, 2017	James_McCollough_041918_1	2017/09/10 12:00	2017/09/11 12:00	20170910 Test Run	GLE	LFM	LTR-2_1_5	0	GSM	SM	8.96	-32.13	yes	30	101.60000	auroral	real
February 27, 2014	Hadi_Madanian_041718_1	2014/02/27 16:00	2014/02/27 22:00	MHD_data_mag	Befield global model 12Apr14	SWMF	v20140611	0	GSM	GSM	1.25	19.40	yes	32	172.40000	auroral	real
February 18, 2011	Sergio_Vidal-Luengo_040918_1	2011/02/18 05:00	2011/02/18 07:00	PP Event N23	v01	SWMF	v20140611	0	GSM	GSM	-23.00	20.57	yes	32	121.90000	auroral	real
January 01, 2000	XUANYE_Ma_032918_1	2000/01/01 00:00	2000/01/01 02:00	test	test	SWMF	v20140611	0	GSM	GSM	-26.68	15.33	yes	32	0.00000	constant	real
December 15, 2006	yabing_wang_032418_1	2006/12/15 07:00	2006/12/15 12:00	event	southward field	SWMF	v20140611	0	GSM	GSM	-31.86	-9.65	yes	32	84.40000	auroral	real
September 28, 2013	yabing_wang_032318_1	2013/09/28 00:00	2013/09/28 02:00	North_Event	corotation	SWMF	v20140611	0	GSM	GSM	-5.43	-14.14	yes	32	106.00000	auroral	real
October 29, 2003	Xiantong_Wang_032118_1	2003/10/29 00:00	2003/10/30 00:00	Magnetosphere during storm time	Halloween Storm	SWMF	v20140611	0	GSM	GSM	-17.17	-9.56	yes	32	275.40000	auroral	real
March 08, 2008	Xiantong_Wang_031818_1	2008/03/08 09:00	2008/03/09 09:00	Test	Test	SWMF	v20140611	0	GSM	GSM	-9.90	14.12	yes	32	68.80000	auroral	real
August 07, 2017	CHIH-PING_WANG_031518_1	2017/08/07 05:00	2017/08/07 09:00	MMS-ARTEMIS 2017-08-07 event	ARTEMIS MMS conjunction	OpenGGCM	4.0	0	GSM	GSE	7.13	-17.12	yes	33	74.80000	auroral	real
December 06, 2014	Ankush_Bhaskar_031518_1	2014/12/06 21:00	2014/12/06 22:30	shock_ace	shock_ace	SWMF	v20140611	0	GSM	GSM	-18.16	2.67	yes	32	125.00000	auroral	real
January 25, 2013	Katariina_Nykyri_031318_2	2013/01/25 00:00	2013/01/28 23:00	mapping	tail2	SWMF	v20140611	0	GSM	GSM	-22.97	24.20	yes	33	97.50000	auroral	real
December 30, 2017	Katariina_Nykyri_031318_1	2017/12/30 00:00	2018/01/04 00:00	mapping	tail	SWMF	v20140611	0	GSM	GSM	-26.19	13.78	yes	33	68.10000	auroral	real
September 26, 2011	Shreeya_Khurana_030518_1	2011/09/26 13:00	2011/09/26 19:00	Magnetopause Crossing	Magnetopause Crossing	LFM	LTR-2_1_5	0	GSM	SM	5.16	-31.53	yes	30	149.00000	auroral	real
June 22, 2015	Shreeya_Khurana_030318_1	2015/06/22 12:45	2015/06/23 01:45	Magnetopause Crossing	Magnetopause Crossing	LFM	LTR-2_1_5	0	GSM	SM	28.04	-9.97	yes	30	255.00000	auroral	real
June 22, 2015	Shreeya_Khurana_030218_1	2015/06/22 18:00	2015/06/23 01:44	Magnetopause Crossing	Magnetopause Crossing	LFM	LTR-2_1_5	0	GSM	SM	32.68	2.87	yes	30	255.00000	auroral	real
September 28, 2013	yabing_wang_030218_1	2013/09/28 00:00	2013/09/28 00:10	north	rotation	SWMF	v20140611	0	GSM	GSM	-5.43	-14.14	yes	32	106.00000	auroral	real
November 02, 2009	Andrey_Samsonov_022218_1	2009/11/02 13:00	2009/11/02 21:00	Subsolar Magnetopause	Magnetopause	SWMF	v20140611	0	GSM	GSM	-9.76	-26.38	yes	33	70.30000	auroral	real
March 08, 2008	Emine_Kalafatoglu_022018_1	2008/03/08 09:00	2008/03/09 09:00	March 2008 substorms	substorm	SWMF	v20130129	0	GSM	GSM	-9.90	14.12	yes	32	68.80000	auroral	real
June 20, 2015	Chigomezyo_Ngwira_022018_1	2015/06/20 00:00	2015/06/25 00:00	Dipole strength simulation	Reduced dipole	SWMF	v20140611	0	GSM	GSM	20.62	10.56	yes	33	0.00000	constant	real
January 01, 2000	Richard_Wolf_021618_1	2000/01/01 00:00	2000/01/01 02:00	tilt	test	SWMF	v20140611	0	GSM	GSM	-26.68	15.33	yes	32	125.60000	auroral	real
September 01, 2017	Janelle_Holmes_021618_1	2017/09/01 00:00	2017/10/01 00:00	space weather conditions	general run	SWMF	v20140611	0	GSM	GSM	5.53	-12.84	yes	32	95.10000	auroral	real
October 02, 2015	Katariina_Nykyri_020918_2	2015/10/02 08:00	2015/10/02 11:00	dayside	ring current test	SWMF	v20140611	0	GSM	GSM	-11.19	-30.66	yes	32	107.60000	auroral	real
October 07, 2012	Shreeya_Khurana_012818_4	2012/10/07 23:00	2012/10/08 11:00	Magnetopause Crossing	Magnetopause Crossing	LFM	LTR-2_1_5	0	GSM	SM	-6.99	-12.87	yes	30	97.90000	auroral	real
August 15, 2015	Shreeya_Khurana_012818_1	2015/08/15 05:00	2015/08/15 17:00	Magnetopause Crossing	Magnetopause Crossing	SWMF	v20140611	0	GSM	GSM	4.76	-19.07	yes	32	91.70000	auroral	real

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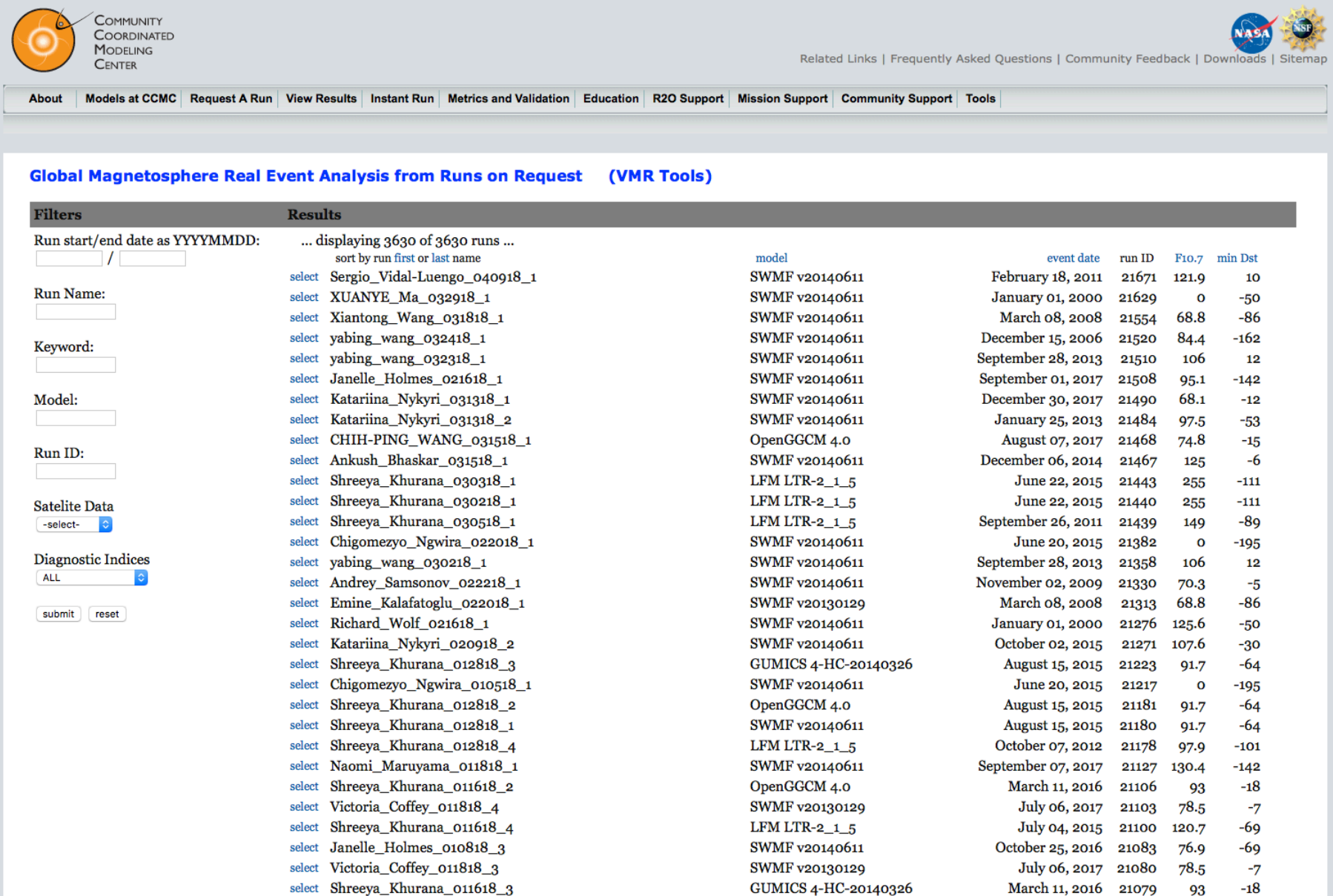
New VMR Tools page



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Global Magnetosphere Real Event Analysis from Runs on Request (VMR Tools)

Filters

Run start/end date as YYYYMMDD: /

Run Name:

Keyword:

Model:

Run ID:

Satelite Data: -select-

Diagnostic Indices: ALL

submit reset

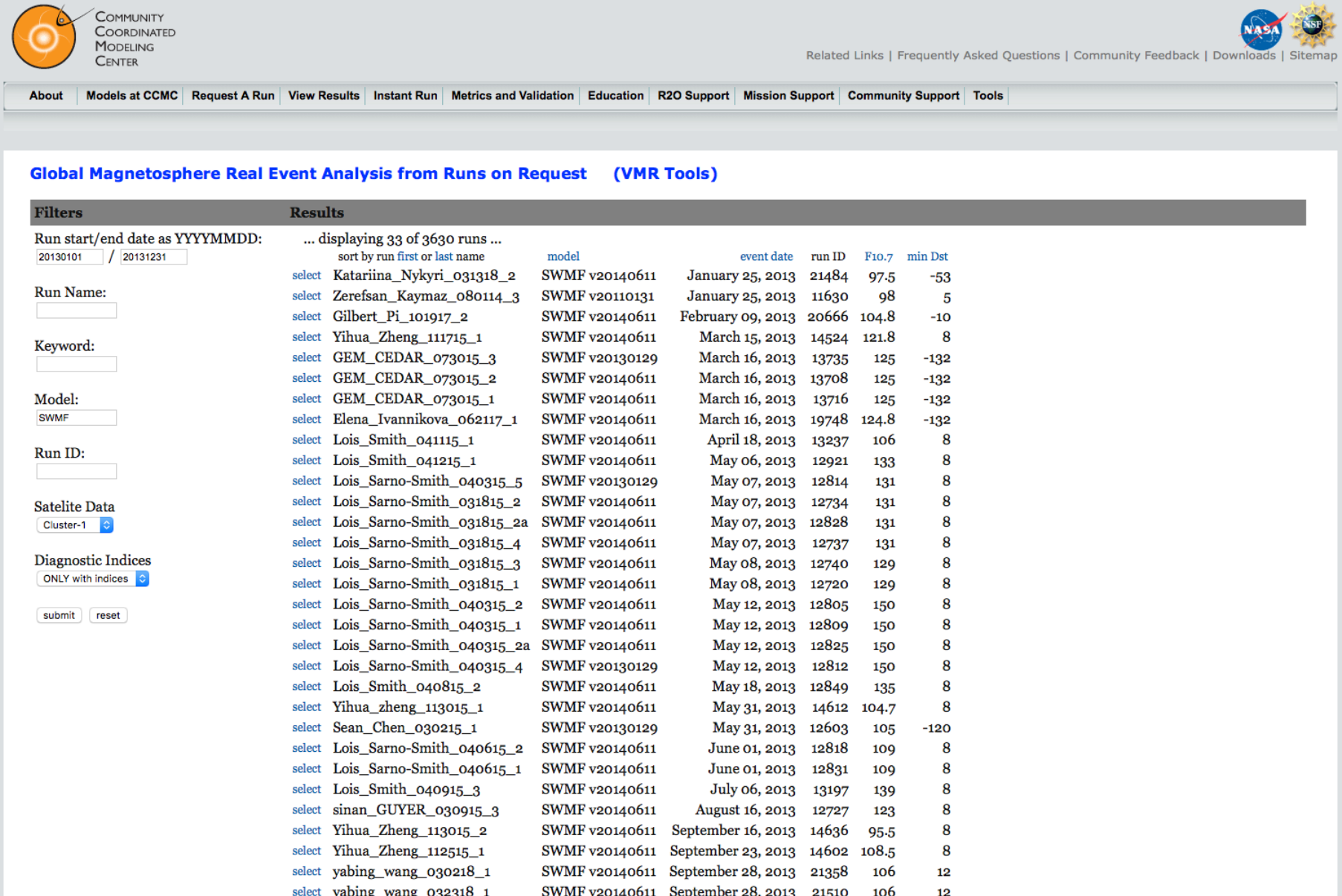
Results

... displaying 3630 of 3630 runs ...

sort by run first or last name

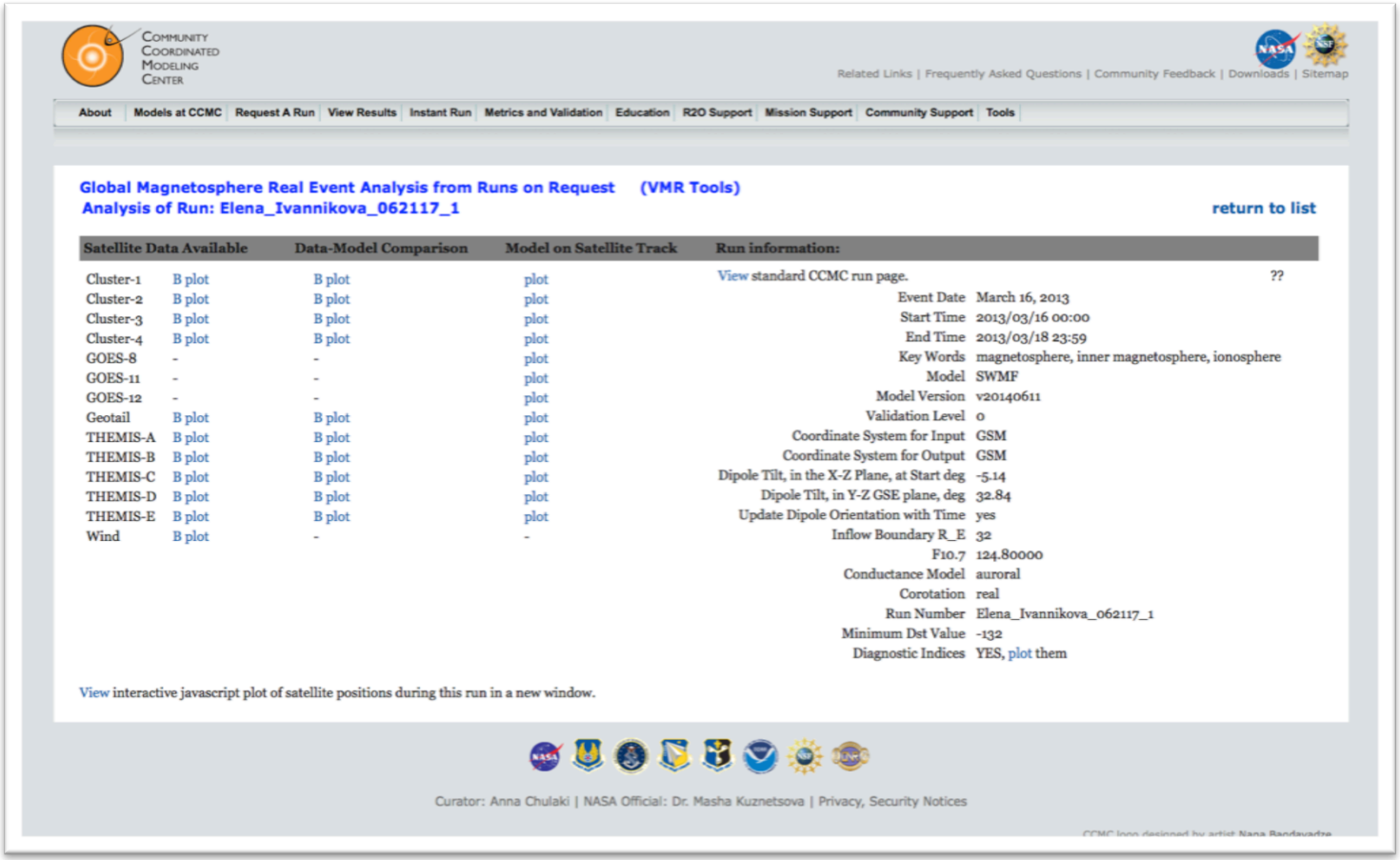
		model	event date	run ID	F10.7	min Dst
select	Sergio_Vidal-Luengo_040918_1	SWMF v20140611	February 18, 2011	21671	121.9	10
select	XUANYE_Ma_032918_1	SWMF v20140611	January 01, 2000	21629	0	-50
select	Xiantong_Wang_031818_1	SWMF v20140611	March 08, 2008	21554	68.8	-86
select	yabing_wang_032418_1	SWMF v20140611	December 15, 2006	21520	84.4	-162
select	yabing_wang_032318_1	SWMF v20140611	September 28, 2013	21510	106	12
select	Janelle_Holmes_021618_1	SWMF v20140611	September 01, 2017	21508	95.1	-142
select	Katariina_Nykyri_031318_1	SWMF v20140611	December 30, 2017	21490	68.1	-12
select	Katariina_Nykyri_031318_2	SWMF v20140611	January 25, 2013	21484	97.5	-53
select	CHIH-PING_WANG_031518_1	OpenGGCM 4.0	August 07, 2017	21468	74.8	-15
select	Ankush_Bhaskar_031518_1	SWMF v20140611	December 06, 2014	21467	125	-6
select	Shreeya_Khurana_030318_1	LFM LTR-2_1_5	June 22, 2015	21443	255	-111
select	Shreeya_Khurana_030218_1	LFM LTR-2_1_5	June 22, 2015	21440	255	-111
select	Shreeya_Khurana_030518_1	LFM LTR-2_1_5	September 26, 2011	21439	149	-89
select	Chigomezyo_Ngwira_022018_1	SWMF v20140611	June 20, 2015	21382	0	-195
select	yabing_wang_030218_1	SWMF v20140611	September 28, 2013	21358	106	12
select	Andrey_Samsonov_022218_1	SWMF v20140611	November 02, 2009	21330	70.3	-5
select	Emine_Kalafatoglu_022018_1	SWMF v20130129	March 08, 2008	21313	68.8	-86
select	Richard_Wolf_021618_1	SWMF v20140611	January 01, 2000	21276	125.6	-50
select	Katariina_Nykyri_020918_2	SWMF v20140611	October 02, 2015	21271	107.6	-30
select	Shreeya_Khurana_012818_3	GUMICS 4-HC-20140326	August 15, 2015	21223	91.7	-64
select	Chigomezyo_Ngwira_010518_1	SWMF v20140611	June 20, 2015	21217	0	-195
select	Shreeya_Khurana_012818_2	OpenGGCM 4.0	August 15, 2015	21181	91.7	-64
select	Shreeya_Khurana_012818_1	SWMF v20140611	August 15, 2015	21180	91.7	-64
select	Shreeya_Khurana_012818_4	LFM LTR-2_1_5	October 07, 2012	21178	97.9	-101
select	Naomi_Maruyama_011818_1	SWMF v20140611	September 07, 2017	21127	130.4	-142
select	Shreeya_Khurana_011618_2	OpenGGCM 4.0	March 11, 2016	21106	93	-18
select	Victoria_Coffey_011818_4	SWMF v20130129	July 06, 2017	21103	78.5	-7
select	Shreeya_Khurana_011618_4	LFM LTR-2_1_5	July 04, 2015	21100	120.7	-69
select	Janelle_Holmes_010818_3	SWMF v20140611	October 25, 2016	21083	76.9	-69
select	Victoria_Coffey_011818_3	SWMF v20130129	July 06, 2017	21080	78.5	-7
select	Shreeya_Khurana_011618_3	GUMICS 4-HC-20140326	March 11, 2016	21079	93	-18

Filter and sort views



Run detail view

- The original full table data is preserved



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Global Magnetosphere Real Event Analysis from Runs on Request (VMR Tools)
Analysis of Run: Elena_Ivannikova_062117_1

return to list

Satellite Data Available		Data-Model Comparison	Model on Satellite Track
Cluster-1	B plot	B plot	plot
Cluster-2	B plot	B plot	plot
Cluster-3	B plot	B plot	plot
Cluster-4	B plot	B plot	plot
GOES-8	-	-	plot
GOES-11	-	-	plot
GOES-12	-	-	plot
Geotail	B plot	B plot	plot
THEMIS-A	B plot	B plot	plot
THEMIS-B	B plot	B plot	plot
THEMIS-C	B plot	B plot	plot
THEMIS-D	B plot	B plot	plot
THEMIS-E	B plot	B plot	plot
Wind	B plot	-	-

Run information:

View standard CCMC run page. ??

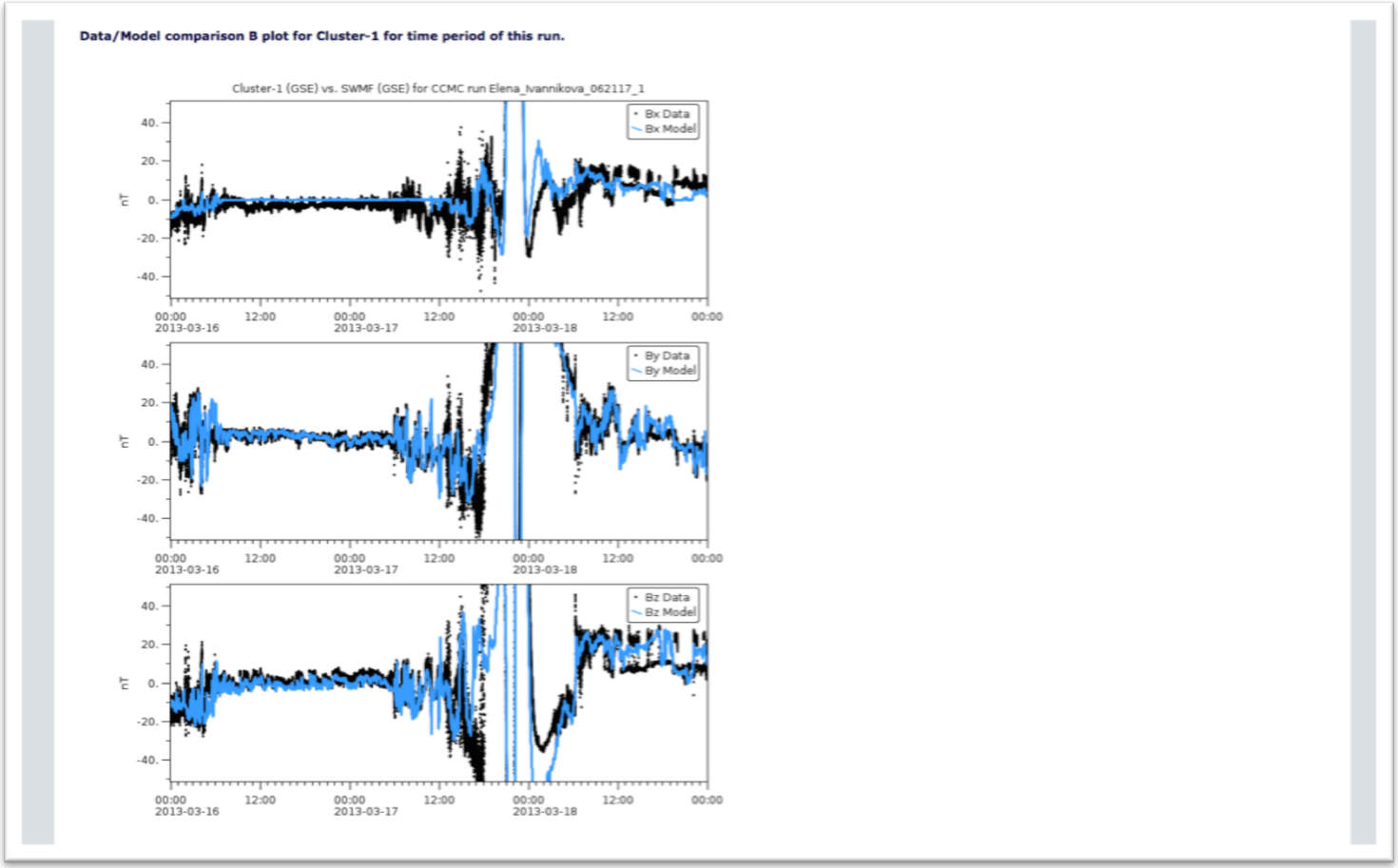
Event Date	March 16, 2013
Start Time	2013/03/16 00:00
End Time	2013/03/18 23:59
Key Words	magnetosphere, inner magnetosphere, ionosphere
Model	SWMF
Model Version	v20140611
Validation Level	0
Coordinate System for Input	GSM
Coordinate System for Output	GSM
Dipole Tilt, in the X-Z Plane, at Start deg	-5.14
Dipole Tilt, in Y-Z GSE plane, deg	32.84
Update Dipole Orientation with Time	yes
Inflow Boundary R_E	32
F10.7	124.80000
Conductance Model	auroral
Corotation	real
Run Number	Elena_Ivannikova_062117_1
Minimum Dst Value	-132
Diagnostic Indices	YES, plot them

View interactive javascript plot of satellite positions during this run in a new window.

Curator: Anna Chulaki | NASA Official: Dr. Masha Kuznetsova | Privacy, Security Notices

Data-model comparison

- In this case, Autoplot loads the CCMC satellite extraction and gets Cluster data from CDAWeb to generate the plot.



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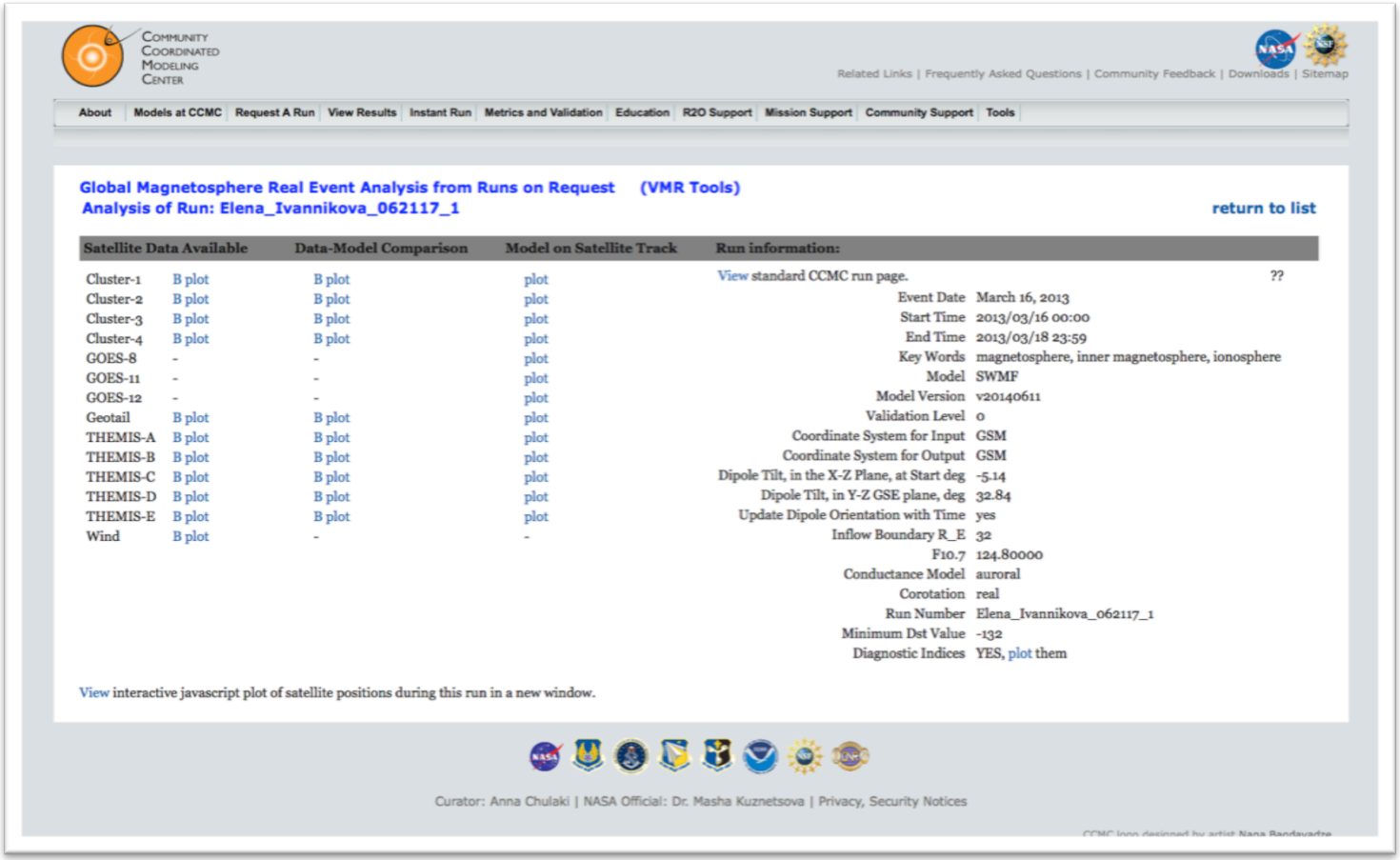
Run detail view



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return to list

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Cluster-1	B plot	B plot	plot
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Cluster-3	B plot	B plot	plot
Cluster-4	B plot	B plot	plot
GOES-8	-	-	plot
GOES-11	-	-	plot
GOES-12	-	-	plot
Geotail	B plot	B plot	plot
THEMIS-A	B plot	B plot	plot
THEMIS-B	B plot	B plot	plot
THEMIS-C	B plot	B plot	plot
THEMIS-D	B plot	B plot	plot
THEMIS-E	B plot	B plot	plot
Wind	B plot	-	-

Run information:

View standard CCMC run page. ??

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Start Time	2013/03/16 00:00
End Time	2013/03/18 23:59
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Model Version	v20140611
Validation Level	0
Coordinate System for Input	GSM
Coordinate System for Output	GSM
Dipole Tilt, in the X-Z Plane, at Start deg	-5.14
Dipole Tilt, in Y-Z GSE plane, deg	32.84
Update Dipole Orientation with Time	yes
Inflow Boundary R_E	32
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Corotation	real
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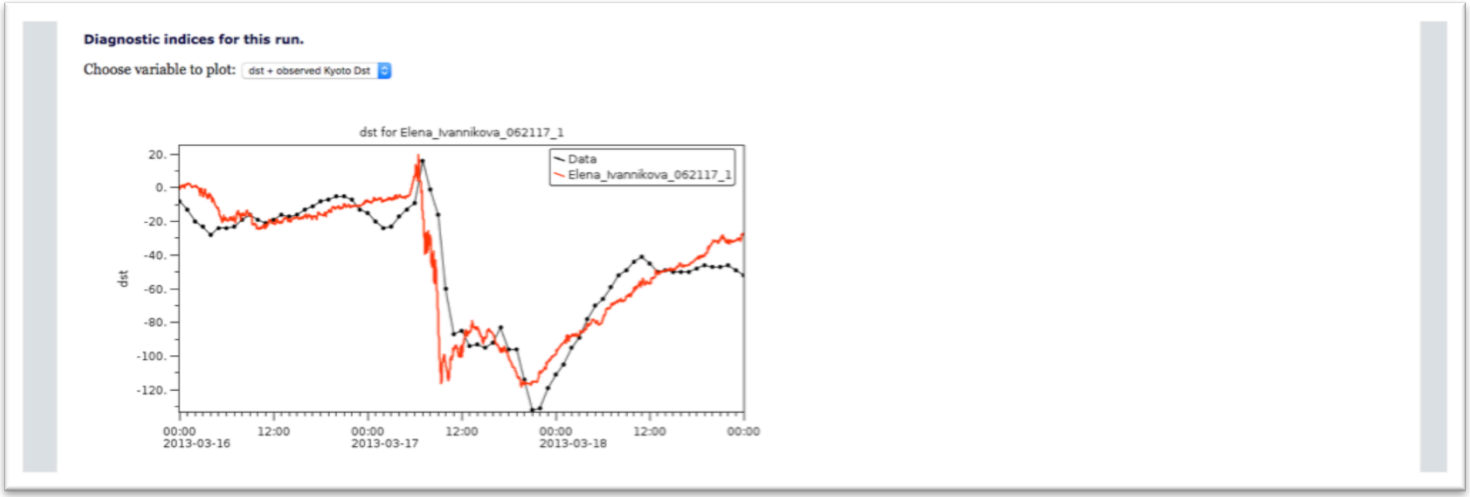
Diagnostic Indices

- Some models output additional diagnostic values that can also be viewed and compared to data
- Dst is one of values saved, and can be compared to Kyoto values for the run.



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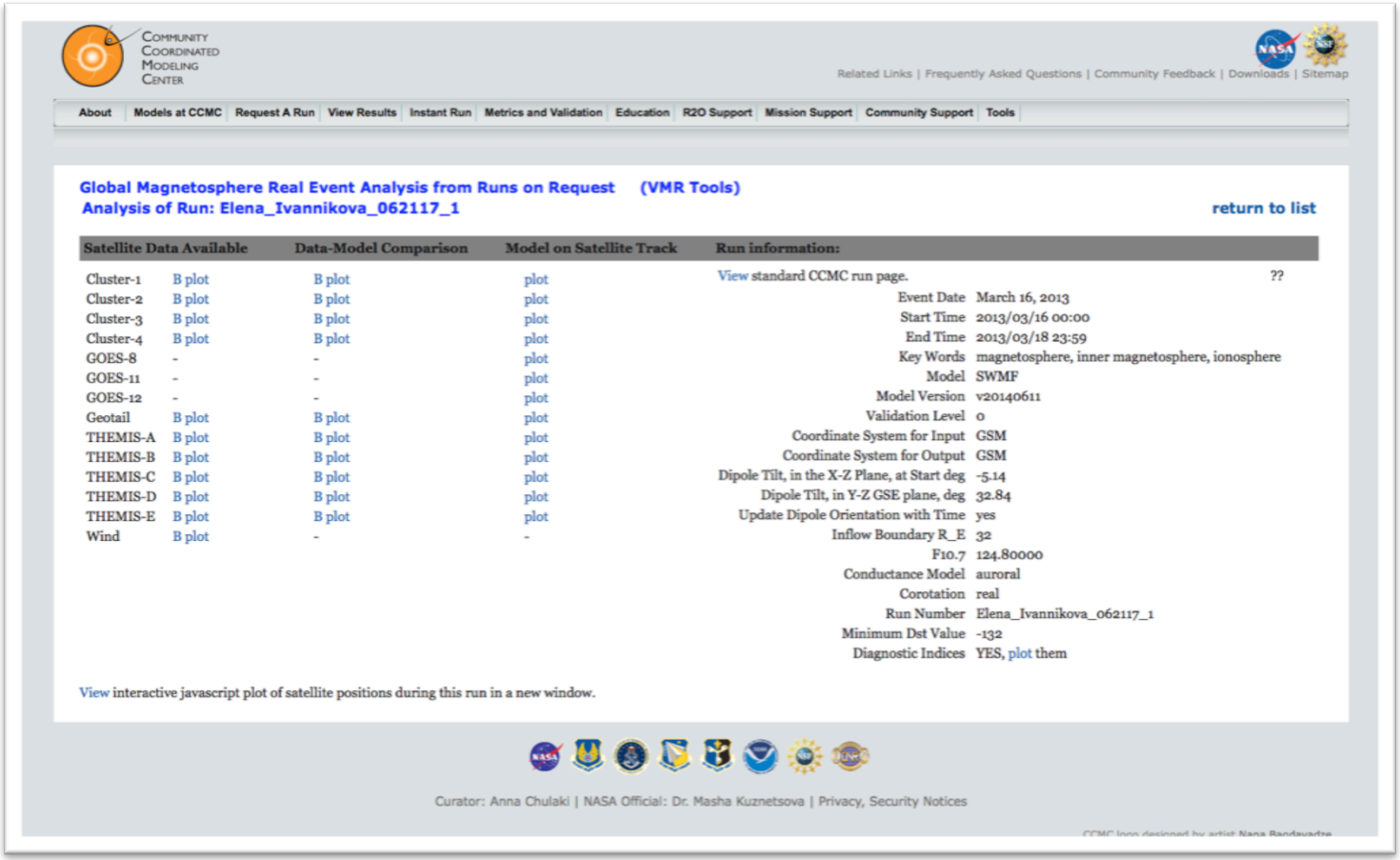
Run detail view



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Cluster-4	B plot	B plot	plot
GOES-8	-	-	plot
GOES-11	-	-	plot
GOES-12	-	-	plot
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THEMIS-A	B plot	B plot	plot
THEMIS-B	B plot	B plot	plot
THEMIS-C	B plot	B plot	plot
THEMIS-D	B plot	B plot	plot
THEMIS-E	B plot	B plot	plot
Wind	B plot	-	-

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Inflow Boundary R_E	32
F10.7	124.80000
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Corotation	real
Run Number	Elena_Ivannikova_062117_1
Minimum Dst Value	-132
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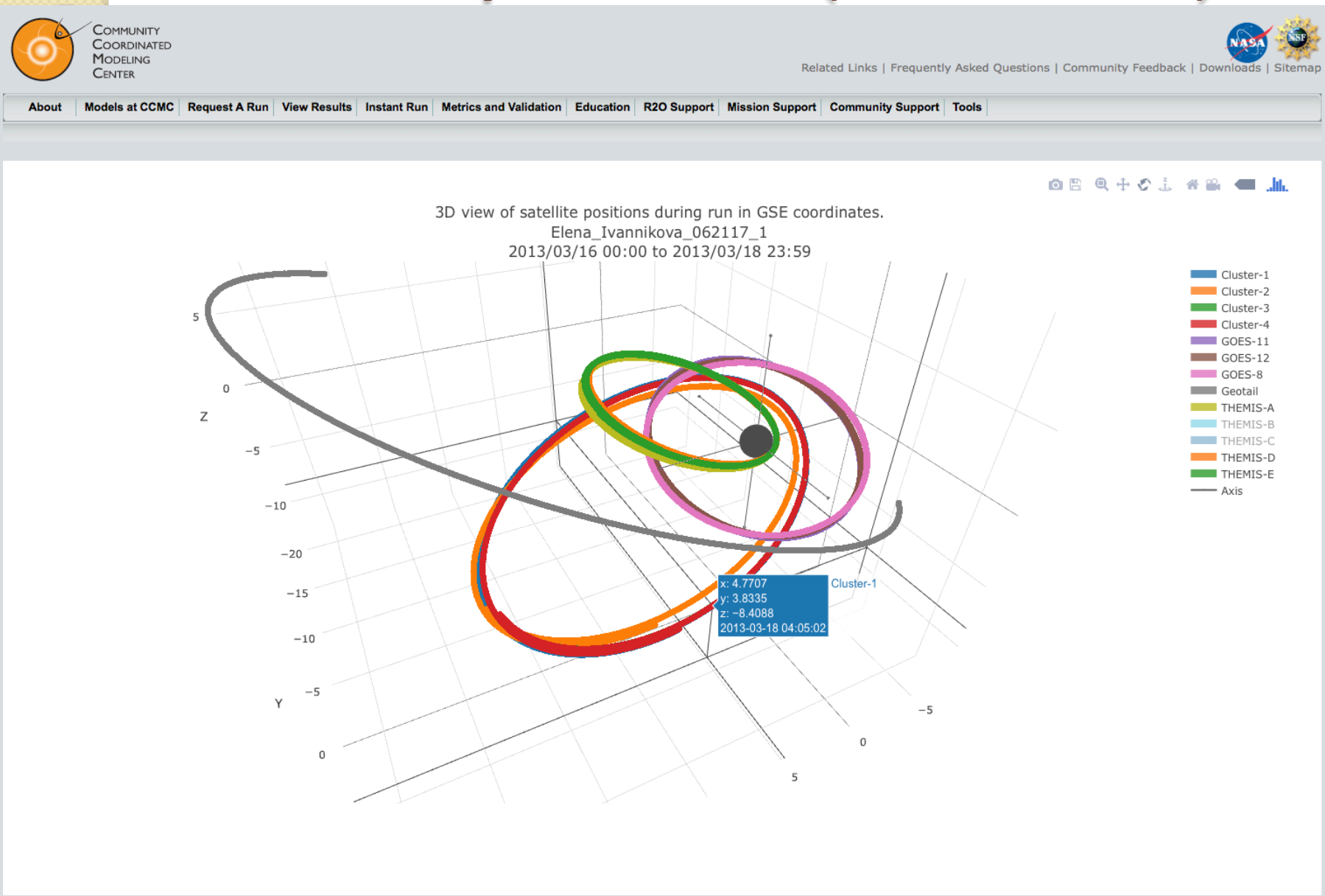
Satellite positions (interactive)



- These tools only work well with detailed and complete information about the runs in the database. Direct installation at the CCMC has made them much better.
- New tools and access will need to work from complete and accessible meta-data, which is why the SPASE standard, and it's implementation at the CCMC is so important.

Conclusions

- VMR tools have been added to the CCMC to provide alternative run discovery as well as additional analysis tools of the large collection of magnetosphere event simulations.
- Good meta-data makes better tools possible.

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