The Community Coordinated Modeling Center

NASA AFMC AFOSR AFRL AFWA NOAA NSF ONR

CCMC

http://ccmc.gsfc.nasa.gov

Runs on Request System

Update

2003 vs. 2001

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Benefits of Runs on Request

- Provides **user-friendly** access to a variety of research models
- Supports the "Open Model Policy"
- Gives models more visibility and use
- Provides free access to science quality results
- Facilitates model validation
- Service to both research community and model developers

COMMUNITY COORDINATED MODELING CENTER

CCMC

How Does it Work ?

User Friendly Web Interface

Submit Request

View Results

Sends Requests For Execution

3 x 64 Node Beowulf

CCMC Web Server

- Processes Requests Submitted through User Interface
- Checks Submitted Inputs
- Sends Requests for Execution
- Runs Visualization Software

Reads Data

Data Storage

Available Models

2001

- RoR Online
  - BATSRUS
- RoR In Preparation
  - UCLA-GGCM
  - Fok Ring Current
  - SAMI2

2003

- RoR Online
  - BATSRUS
  - UCLA-GGCM
  - Fok Ring Current
  - SAMI2
  - CTIP
  - MAS Coronal Model
- RoR In Preparation
  - Fok Radiation Belt
  - IPS
  - PFSS
  - Exospheric Solar Wind

Areas of Improvement

2001

- **Simple Submission Interface**
  - SW parameters
  - Start time

2003

- **Flexible Submission Interface**
  - Simple submission with default setting is still available
  - User can modify default settings (e.g., Corotation, Dipole Orientation, Ionosphere Conductance)

Areas of Improvement

2001

- User provides SW input data in prescribed format (GM runs)

2003

- Input data generation tools provided
  - ACE solar wind data
  - WIND solar wind data
  - NOAA/POES hemispheric power data for CTIP
  - Magnetograms for MAS

Areas of Improvement

2001

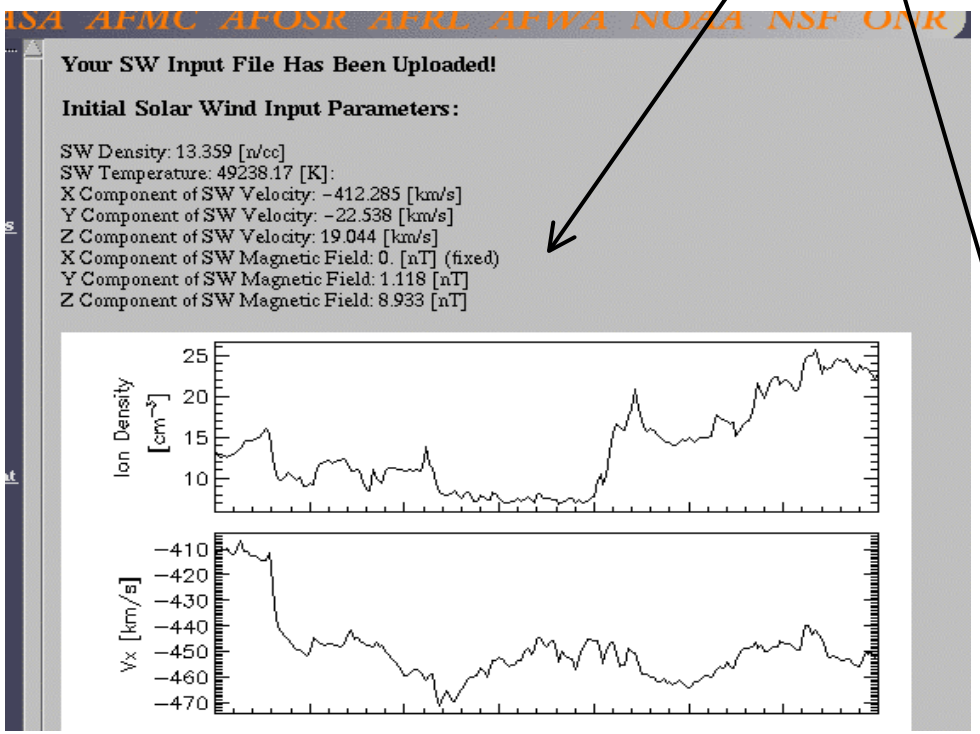
- One predefined low-resolution grid (0.5 Re max)
- Short Runs (< 2 hours)
- Special requests require email/phone contact

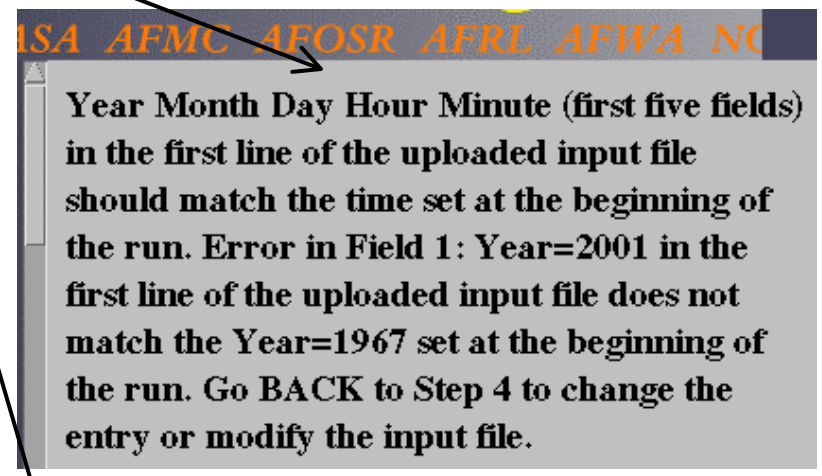
2003

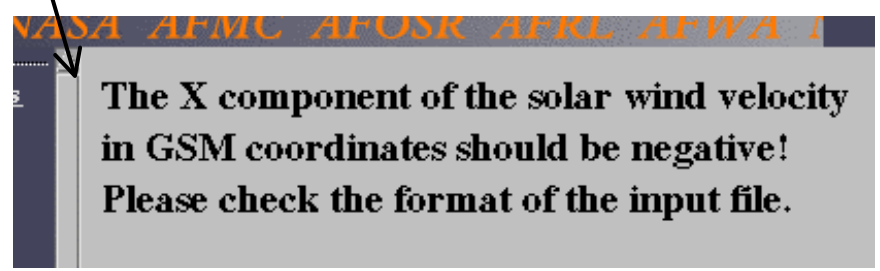
- High resolution grid is automatically selected for short runs (< 2 hours)
- Long runs are available (> 12 hours)
- On-line submission of Special Requests

Interactive Submission

- Input data verification with feedback to user







Interactive Submission

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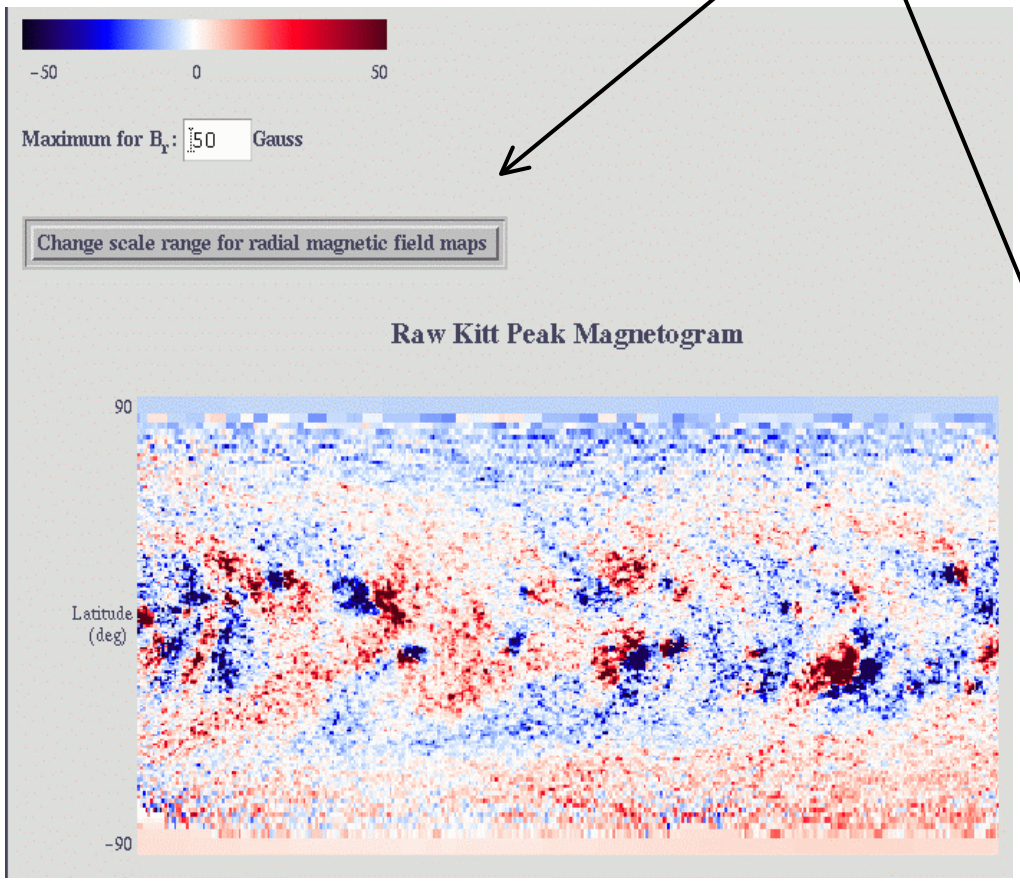
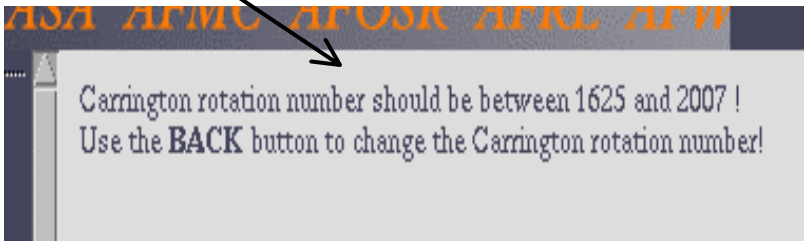
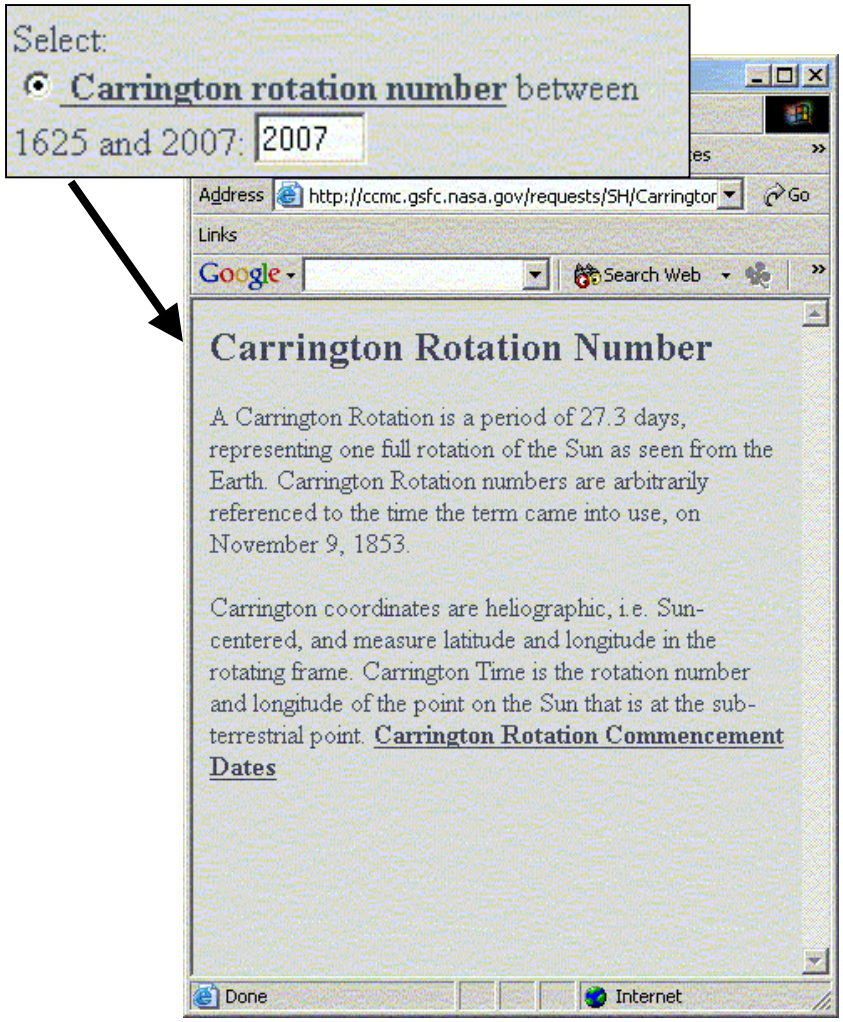




Interactive Submission

- Terminology definitions and explanations *within* submission procedure
- Educational and user-friendly



Database Handling

2001	**2003**
~30 Runs	>140 Runs

- More Runs ➔ Need Organizational Tools
- Database Allows Sort / Search Runs by:
  - Run Registration Number
  - Key Word
  - Model Name
  - Name of Run Originator
  - Event Date, Carrington Rotation
  - Physical Parameters

▶ Simulations With Modeled Conditions

Number of Runs Listed: 39

Sort The List by [Key Word] [Run Date] [Model] [IMF Clock Angle] [IMF Magnitude] [IMF Bz] [IMF By] [SW Density] [Dipole Tilt] [Name of Run Originator]

Run Number	Key Words	|B|	IMF Clock Angle	B_x	B_y	B_z	V_x	V_y	V_z	N	Temp.	Dipole Tilt (in X-Z Plane)	Dipole Tilt (in Y-Z GSE Plane)	Model
		[nT]	deg	[nT]	[nT]	[nT]	[km/s]	[km/s]	[km/s]	[cm^{-3}]	[K] ([eV])	deg	deg	
QG_Zong_041302_2	By < Bz	6.16	31	2	3	5	-400	0	0	40	182000(15.7)	0	0	BATSRUS
CISM_SummerSchool_070601_4	CISM Project2	1	0	0	0	1	-1000	0	0	30	232100(20)	0	0	BATSRUS
QG_Zong_041302_1	By > Bz	11.87	296.6	4	-10	-5	-400	0	0	30	182000(15.7)	0	0	BATSRUS
Brian_Anderson_050702_1	Stable IMF	6.54	304.6	-2.71	-4.9	-3.38	-386	0	0	11.7	182000(15.7)	0	0	BATSRUS
CISM_SummerSchool_070501_2	CISM Project1	5	180	0	0	-5	-1000	0	0	10	464200(40)	0	0	BATSRUS

- List Simulations of Real Events
- List Simulations With Modeled Condit
- List Runs on Request

Search Database For The String Storm

Search Simulation Results Database

Sort/Search Runs by
- Run Registration Number
- Key Word
- Model Name
- Name of Run Originator
- Event Date
- Physical Parameters (e.g., IMF Clock Angle, IMF Magnitude, SW Density, IMF Bz, IMF By, or Dipole Tilt at Start, …)

▶ Simulations of Real Events

Number of Runs Listed: 21

Sort The List by [Key Word] [Event Date] [Model] [Dipole Tilt at Start]

Event Date	Start Time (YYYY/MM/DD)	End Time (YYYY/MM/DD)	Key Words	Model	Model Version	Run Validation Level	Coordinate System for Input	Coordinate System for Output	Dipole Tilt (in X-Z Plane) at Start
	UT	UT						deg	deg
April 17 2002	2002/04/17 10:45	2002/04/17 22:45	Storm	BATSRUS	v7.42	0	GSM	GSM	10.49
November 6 2001	2001/11/06 01:00	2001/11/06 02:30	Storm	BATSRUS	v6.07	0	GSM	GSM	-22.73
October 22 2001	2001/10/22 12:00	2001/10/22 17:00		UCLA-GGCM	2.1-1	0	GSM	GSE	-7.84
March 31 2001	2001/03/31 04:30	2001/03/31 08:00	Storm	BATSRUS	v6.07	2	GSM	GSM	-7.5

Simulation Results Validation and Update

- Assigned each simulation a validation level
  - Level 0 (0) - Raw run results;
    Level 1 (1) - Output that passed any output analysis routines provided by the model developers (if such routines are available);
    Level 2 (2) - Output checked by Code Developers and/or CCMC staff
    Negative Level (-1) - Problems in output results are found. Simulations will be rerun with new input data and/or a new code version.
- Only Level 2 outputs should be used for scientific analysis or metrics studies. All users are encouraged to contact the code developers for the purpose of publication.
- Automatic upgrading of simulation with improved model versions

Continuing Plans

- Add new models interfaces to web
- Enhance data analysis tools / options
- Improve submission interface
- Develop more data input generation tools
- Expand web visualization features
- Respond to user requests