CCMC Model Onboarding Questionnaire

|  |
| --- |
| By completing this questionnaire, you agree to the [CCMC DATA Collection Consent Agreement](https://ccmc.gsfc.nasa.gov/consent/). |

# 1. Model Developer Metadata

|  |  |
| --- | --- |
| **Contact Information** (add a copy of this table for each contact) | |
| **First name** |  |
| **Middle name** (optional) |  |
| **Last name** |  |
| **Organization Name** |  |
| **Email** (work/school) |  |
| **Role** (check all that apply) | Model Contact  Model Developer |

# 2. General Model Metadata

|  |  |
| --- | --- |
| **Model Name** (e.g., WSA) |  |
| **Model Full Name if applicable** (e.g., Wang-Sheeley-Arge Model) |  |
| **Model Release Date** |  |
| **Model Version** (e.g., 3.8) |  |
| **Code Languages** (e.g., IDL, Fortran, C++) |  |
| **Model Description** |  |
| **Change Log** (notable changes compared to previous version) |  |
| **Inputs Description** |  |
| **Outputs Description** |  |
| **Model Caveats** |  |
| **Model institution acknowledgement** (Optional. Add rows as needed) | |
| **Name** |  |
| **URL** |  |
| **Relevant Links, if any** (example: link to source code on Github, link to online documentation about the model): | |
| **Brief link name** |  |
| **URL** |  |
| **Long link Description** (optional) |  |
| **Publication(s)** (add rows as needed) | |
| **DOI** | **Title** |
|  |  |
|  |  |

# 3. Model and Science Use Metadata

*These are used to filter models on the CCMC website model catalog*

|  |  |
| --- | --- |
| **Simulation Type** (required; can select more than one):  Data Assimilation  Empirical  Ensemble  Physics-based  Physics-based.Kinetic  Physics-based.MHD  Post\_Processing\_Tools  **Model Run type** (multiple selections ok)  Runs-On-Request (RoR)  Real Time/Continuous Runs (CR)  Instant Runs (IR)    **Temporal Dependence Possible?** Can the results evolve with time?  True  False | **Model Domains** (required; can select more than one):  Solar  Heliosphere.Inner\_Heliosphere  Heliosphere.Outer\_Heliosphere  Geospace  Magnetosphere.Global\_Magnetosphere  Magnetosphere.Inner\_Magnetosphere.Plasmasphere  Magnetosphere.Inner\_Magnetosphere.RadiationBelt  Magnetosphere.Inner\_Magnetosphere.RingCurrent  Local\_Physics  Global\_Ionosphere  High\_Latitude\_Ionosphere/Auroral\_Region  Thermosphere |

|  |  |
| --- | --- |
| **Space Weather Impacts:**  Atmosphere variability (satellite/debris drag)  Galactic cosmic rays - GCRs (human exploration, aviation safety, aerospace assets functionality)  Geomagnetically induced currents - GICs (electric power systems)  Ionosphere variability (navigation, communications)  Near-earth radiation and plasma environment (aerospace assets functionality)  Solar energetic particles - SEPs (human exploration, aviation safety, aerospace assets functionality) | |
| **List of Phenomena (This is domain specific)**  **Solar List:**  Solar\_Magnetic\_Field  Coronal\_Holes  Coronal\_Mass\_Ejections  Solar\_Electromagnetic\_Emissions  Solar\_Energetic\_Particles  Solar\_Flares  Solar\_Spectral\_Irradiance  **Heliosphere List:**  Solar\_Energetic\_Particles  Ambient\_Solar\_Wind  Magnetic\_Connectivity  High\_Speed\_Stream  Stream\_Interaction\_Regions  Interplanetary\_Shocks  Heliospheric\_Current\_Sheet  Interplanetary\_Scintillation  Coronal\_Mass\_Ejections\_Propagation  Coronal\_Mass\_Ejection\_Arrival  **Global Magnetosphere List:**  Geomagnetic\_Storms  Geomagnetic\_Sub-storms  Magnetosphere\_Current\_Systems  Plasma\_Sheet  Magnetopause  Bow-shock  Cusp  Magnetosheath  Magnetic\_Mapping  Magnetotail\_Dynamics  Plasmoids  Magnetic\_Perturbations\_at\_Geosynchronous\_Orbit  Ground\_Magnetic\_Perturbations  Ultra\_Low\_Frequency\_Waves  Flux\_Transfer\_Events  Busty\_Bulk\_Flows  Kelvin-Helmholtz\_Instabilities  Distant\_Tail  Near-Earth\_Neutral\_Line  Magnetic\_Reconnection | **Inner Magnetosphere List:**  Ultra\_Low\_Frequency\_Waves  Whistler\_Chorus\_Waves  Plasmaspheric\_Hiss  Electromagnetic\_Ion\_Cyclotron\_Waves  Other\_Tyes\_of\_Waves  Wave-particle\_Interactions  Particle\_Dynamics  Plasmasphere/Plasmapause\_Dynamics  Inner\_Magnetosphere-ionosphere-thermosphere\_Coupling  Inner\_Magnetosphere\_and\_Outer\_Magnetosphere/Tail\_Coupling  Seed\_Population\_for\_the\_Ring\_Current\_and\_Radiation\_Belt/ Preconditioning  **Geospace List:**  Coupled\_Geospace\_System\_Response\_To\_Drivers  Magnetosphere-ionosphere\_Convection  Energy\_Distribution\_In\_Coupled Geospace\_System  **Ionosphere List:**  Variablility\_of\_Plasma\_Density  Ion\_Drift\_Velocity  Equatorial\_Anomaly  Traveling\_Ionospheric\_Disturbances  Ionospheric\_Scintillations  HF\_Signal\_Absorption  **Thermosphere List**:  Atmosphere\_Expansion  Neutral\_Composition\_Change  Neutral\_Wind\_Change  Traveling\_Atmospheric\_Disturbances  **High Latitude Ionosphere/Auroral Region List**:  Ionosphere\_Electrodynamics  Particle\_Precipitation  Energy\_Flow\_into\_Ionosphere  Joule\_Heating  Ionosphere\_Convection  Polar\_Wind  Ionosphere\_Particle\_Outflow  Field-aligned\_Currents  Cross-polarcap\_Electric\_Potential |

# 4. CCMC User Experience

|  |  |
| --- | --- |
| **How do you envision CCMC users interacting with your model?** | |
|  | |
| **Run submission web interface: Input Parameters**  List all input parameters to be made available for the user on the web interface during run submission (add rows as needed). *Note: CCMC will create the web interface for the model in consultation with the model developers.* | |
| **Input parameter name** | **Short description, default value, units, valid range.** |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
| **Do any input parameters need to be visualized for the user on the interface prior to the run submission? Please describe.** | |
|  | |
| **Submission interfaces can be customized to serve both beginner and advanced users.** Which model capabilities/parameter settings do you want to limit to beginner users and which do you want to expand for advanced users? | |
|  | |

# 5. Resources

What **hardware resources** does this model need? (List here or attach documentation)

|  |  |
| --- | --- |
| **Processors (CPUs)** |  |
| **Processors (GPUs)** |  |
| **Memory (RAM)** |  |
| **Disk space (for both input and output)** |  |
| **If your model produces a very large amount of output (> a few TB):** | |
| **Do you have a plan for data reduction, such as post-processing, saving, or visualizing a subset of the output?** |  |
| **Which inputs & outputs should be archived for long term storage?** |  |
| **Other innovative hardware resources** |  |
| **Does this model impact one hardware resource the most? For example, is it heavy on processing, memory use, or disk I/O?** |  |

What **software resources** does this model need including any **version dependency**? (List here or attach documentation)

|  |  |
| --- | --- |
| **Specialized/licensed software and toolkits** (e.g., IDL, Matlab) |  |
| **Compilers** (e.g., Intel, Nvidia, gcc) |  |
| **Container software** (e.g., Docker, Singularity) |  |
| **Libraries** |  |
| **Web server** (e.g., Apache) |  |
| **Other** (e.g., Python, Java) |  |
| List any **licensing info** for your model and any third-party open-source software used by your model |  |

Questions related to **build** instructions (list here or attach documentation)

|  |  |
| --- | --- |
| List any **compiler flags, Makefile and/or configure script options** that are needed to build the model |  |
| List any **environment variables** that are needed to build your model |  |
| Please provide your general subjective impression on the **difficulty level for reinstalling the model** on a similarly configured system |  |

Questions related to **execution** (list here or attach documentation)

|  |  |
| --- | --- |
| Does this model rely **on pre-processing tools/models/data streams** outside of the model itself (e.g., WSA, EEGGL, TdM Flux Rope Designer)? Please provide information on these. |  |
| List the **input files** needed to run |  |
| List any **environment variables** that are needed at run time |  |
| Does your model require a **cronjob**? |  |

**Web application delivery**

If you are delivering a web application with/as your model, please submit a 2nd copy of this questionnaire (or copy/paste the tables above), answering the questions in the Resources Section only, specifically for your web application.

**Guidelines:** If model developers prefer to build their own model submission interface or any web applications associated with the model, to integrate them into the CCMC web ecosystem more easily, CCMC recommends the following:

* Test/run web applications with the Apache HTTPD web server with ModSecurity module
* If a backend relational database is needed, consider using MySQL Database

Please provide information and documentation on how to build, install, configure, and execute any web applications including list of libraries/dependencies, third-party software including open-source software needed or used by the application. If applicable, please provide licensing info for our review.

You will be provided with access to an AWS web server/instance for your web application onboarding.  The application will only be available to certain IP addresses until it goes through security scan.   The web application cannot be made public until any scan items are addressed.

# 6. Guidelines for Model Delivery Package to CCMC

**Delivery package should include the following:**

* Model code
* Pre-and post-processing, visualization, validation, unit testing scripts/codes
* Documentation for model use and model installation (and any other documentation)
* Sample run(s) including scripts, inputs, outputs, and sample visualizations to test installations
* Example runs for the CCMC database to illustrate model potential to users