

## EDITORIAL

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## Editorial: Reviewer selection process and new areas of expertise in GEMS

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**Abstract** One method of selecting potential reviewers for papers submitted to the *Journal of Geophysical Research Space Physics* is to filter the user database within the Geophysical Electronic Manuscript System (GEMS) by areas of expertise. The list of these areas in GEMS can be self selected by users in their profile settings. The Editors have added 18 new entries to this list, an increase of 33% more than the previous 55 entries. All space physicists are strongly encouraged to update their profile settings in GEMS, especially their areas of expertise selections, and details of how to do this are provided.

### 1. Peer Reviewer Selection Process

As one of the journals of the American Geophysical Union (AGU), the *Journal of Geophysical Research Space Physics* uses the Geophysical Electronic Manuscript System (GEMS) for the submission, review, and the editorial processing of papers. When a new manuscript is submitted, the assigned Editor has the responsibility of selecting several people from the research community as potential reviewers. We greatly value the investment of time and intellectual effort committed by space physicists to conduct these reviews and the willingness of so many people to accept promptly these requests. We rely on this volunteer effort to keep the Journal running smoothly.

Regarding the selection of these reviewers, the assigned Editor strives to pick knowledgeable and reasonable experts in the topic addressed by the manuscript. Each Editor typically chooses six people for this task, with the desire to have two of them actually serve as reviewers for the paper. The first three or four on the list are immediately contacted, with the remaining potential reviewers contacted only if the first set declines or is nonresponsive. One of the reasons for declining is that the topic of the paper is not in the specialty of the potential reviewer. We try to minimize this by selecting people who we know to be experts in the subject, but we do not know everyone in the community. This is exacerbated when a paper assigned to an Editor is outside of the area of expertise of that Editor, which can happen for editorial load balancing or avoiding conflicts of interest.

The assigned Editor has several tools available to aid in the selection of qualified potential reviewers. One is the author-supplied names of suggested reviewers. We scrutinize this list very carefully to see if the authors are suggesting recent coauthors on other papers, regular collaborators, or those at the same or nearby institutes as any of the authors. Plus, they are often the most eminent names in the field and could already be busy with another review. On rare occasions we can get five potential reviewers from these suggestions, but usually it is one or two. These names are very useful, however, because they remind the Editor of other potential reviewers and help the Editor understand, from the viewpoint of the author, the expertise necessary to adequately review the manuscript.

Another tool is a fairly new feature to GEMS: Related manuscripts. GEMS automatically generates a list of similar papers that were recently processed through the system (within the last three years, across all AGU journals) based on matching language in the Abstract. It is usually pretty good and shows us the authors and reviewers of these manuscripts. Note that the system is careful to exclude papers on which the assigned Editor is a coauthor, in order to avoid revealing reviewer names and breaching confidentiality. This is very useful, but we have to closely check the expertise of the authors of these papers to ensure that they are qualified to review the new submission.

The Editor can also go outside of GEMS to find similar papers. We often go to AGU's Earth and Space Index (EASI) search engine, <http://onlinelibrary.wiley.com/agu/search/easi/results>, to search for authors of papers with matching keywords in recently published papers. Another useful database is the Smithsonian/NASA Astrophysics Data System (ADS), [http://adsabs.harvard.edu/abstract\\_service.html](http://adsabs.harvard.edu/abstract_service.html), for such searches, or the Thomson-Reuters Web of Science, <http://ThomsonReuters.com/WebOfScience>. Each has its own strength.

### Areas of Expertise in GEMS for *JGR Space Physics*

Aurora and Airglow	Jupiter, Saturn, and Other Magnetized Planets	Plasmasphere
Auroral and Polar Ionosphere	Kinetic Waves and Instabilities	Radar Observations
Co-Rotating Interaction Regions	<b>Kinetic/Hybrid Simulation</b>	Radiation Belt
Coronal Mass Ejections and ICMEs	<b>Laboratory Plasma Experiments</b>	<b>Radiative Transport</b>
Cusp	Lightning and Atmospheric Electrodynamics	Radio Observations
<b>Dusty Plasmas</b>	Magnetic Reconnection	Ring Current
<b>Earth-Upper Atmosphere Coupling</b>	Magnetic Storms	Shocks
Electric Fields and Convection	Magnetopause and Boundary Layer	<b>Small Celestial Bodies</b>
<b>Electrostatic Structures</b>	Magnetosheath	Solar Corona
Equatorial Ionosphere	Magnetosphere-Ionosphere Coupling	Solar Energetic Particles
<b>Exoplanet Space Weather</b>	Magnetospheric Configuration	Solar Flares
Field-Aligned Currents	Magnetospheric Interactions with the Solar Wind	Solar Wind: Sources, Structure and Dynamics
<b>Galactic Cosmic Rays</b>	Magnetotail, Plasma Sheet, and Lobe	<b>Space Climatology</b>
GPS Techniques	<b>Mesosphere and Stratosphere</b>	<b>Space Physics Instrumentation</b>
Gravity Waves and Tides	MHD/Fluid Simulation	Spacecraft Charging and Wakes
Ground Magnetometer Observations	Mid-Latitude Ionosphere	Substorms
Hard X-rays and Gamma Rays	<b>Outer Heliosphere and Heliopause</b>	<b>Theoretical Plasma Physics</b>
Imaging: Optical, UV, X-rays	Particle Acceleration and Transport	<b>Thermosphere</b>
Interplanetary Neutral Gas and Dust	Planetary Ionospheres and Atmospheres	Turbulence
<b>Interstellar Medium</b>	<b>Planetary Rings</b>	ULF, ELF, and VLF Waves
<b>Ionization Processes</b>	Plasma and Radio Waves	Unmagnetized Planets
Ionosphere-Atmosphere Interactions	Plasma Composition	<b>Upper Atmospheric Chemistry</b>
Ionospheric Electrodynamics	Plasma Interactions with Moons, Asteroids and Comets	Wave-Particle Interaction
Ionospheric Instabilities and Irregularities	Plasma Simulation	
Ionospheric Structure and Dynamics	Plasma Transport	

**Figure 1.** Areas of Expertise list in GEMS for *JGR Space Physics*. The new entries are listed in bold red text, the modified entry is listed in bold blue text, and previous existing entries are given in black.

While EASI only filters through AGU journals, this can be very useful for finding authors that have recently published in *JGR Space Physics*, *Geophysical Research Letters*, *Radio Science*, or *Space Weather*, and therefore might be more willing to accept a review request from us.

The Editor can search the GEMS author-reviewer database and filter according to institution, country, or any other parameter saved in the user profiles of GEMS. This can be very helpful when we know of the existence of a research group at some organization but cannot remember all of the people there.

There are two fields in the GEMS database called Areas of Expertise. One of these is a free-form entry window where users can type keywords related to their research specialty. The other one is a list of predefined topics, from which users can select one or more entries. While the free-form keywords can be useful, the predefined list is often very helpful for identifying additional potential reviewers. When the current editorial board began, this list had 53 items in it, as listed as the black-colored entries in Figure 1. This list has developed over the 15 years that GEMS has been in use. Most of the entries were created by the editorial board at the time of the switch in 2002, and a few tweaks to the list have been made with each new editorial board since then.

Editors can select not just one but several of the predefined Areas of Expertise to filter the GEMS user database. For example, for a manuscript on plasma injections from Saturn's tail region into the inner magnetosphere, the

Editor could select these three Areas of Expertise: “Jupiter, Saturn, and Other Magnetized Planets,” “Plasma Transport,” and “Ring Current.” This would filter the database to only those people that have selected all three of these listings in their profile. At the moment, this particular example set finds 12 people. This is clearly not everyone in the world who specializes in this topic, but it is a useful list from which to choose potential reviewers and a helpful starting place to expand the search in several other directions, using the methods described above.

## 2. Updating the GEMS Areas of Expertise List

It was noticed that there were some subjects within space physics that were not well represented by the Areas of Expertise list in GEMS. While it was useful for many manuscript submissions, the list had gaps for certain categories of papers. We want the Areas of Expertise listing to be robust yet not overwhelmingly long and therefore burdensome. It needed to be a longer list, but the new entries had to be carefully vetted and optimized for maximum usefulness.

The search began with the author-selected AGU Index Terms for recent papers in the journal. Most of the top index terms were covered by existing Areas of Expertise listings, but a few were not. We also surveyed our Associate Editors and informally polled the research community as we met with people over the last six months.

In particular, it was felt that the list was lacking in entries that adequately covered the neutral upper atmosphere, the heliosphere, universal physical processes, and research methodologies. We developed a list of 18 new Areas of Expertise that we have just added to GEMS. We did not delete any entries from the list, but one existing entry was renamed. Figure 1 presents the full list of Areas of Expertise for *JGR Space Physics*, with the previously existing entries in black, the new entries in red, and the modified entry in blue. Here is an explanation of each of the new entries, in alphabetical order.

*Dusty Plasmas.* Dust exists throughout the solar system, especially in cometary tails and planetary ring regions. While there was already an entry for “Interplanetary Gas and Dust,” this was not broad enough to encompass the general topic of dusty plasmas.

*Earth-Upper Atmosphere Coupling.* We get a number of submissions each year on solid Earth and lower atmosphere coupling to the upper atmosphere. With the advent of high-resolution networks of GPS receivers capable of inferring total electron content, the field of ionospheric interactions is a growing interdisciplinary topic. The existing entry of “Gravity Waves and Tides” partially covers this subject but not entirely, especially earthquake, volcano and cyclone effects on the space environment, or vertical coupling from geospace to the troposphere and stratosphere.

*Electrostatic Structures.* There are some fundamental physical processes that did not fit well into the previous list, and localized electric fields such as double layers were one of those. We chose a more general name that can encompass small-scale as well as large-scale phenomena, but note that it is different from the existing “Electric Fields and Convection” listing, which focuses on the large-scale convection pattern in geospace.

*Exoplanet Space Weather.* The Journal’s scope already includes planetary space environments, and with the discovery of many exoplanets and the emergence of new fields of study pertaining to them, it is natural for the journal to include studies that examine the space weather effects around exoplanets.

*Galactic Cosmic Rays.* There were already entries for “Hard X-Rays and Gamma Rays” and “Solar Energetic Particles,” so the list needed a complementary entry for the high-energy particles originating from outside of the solar system.

*Interstellar Medium.* With Voyager now entering this space and with the IBEX remotely sensing the very local interstellar medium, it was time to make this its own category. There was no good home for this topic among the earlier entries, except perhaps within “Heliopause” or “Interplanetary Neutral Gas and Dust.”

*Ionization Processes.* This is another of the fundamental physical processes that was deemed large and cross disciplinary enough to warrant its own category. While this was, in some sense, included in the “Solar Corona” and the various “ionosphere” entries, having this separate will allow refinement of potential reviewer searches for papers addressing this particular aspect of upper atmospheric physics.

*Kinetic/Hybrid Simulation.* There was an entry for “MHD/Fluid Simulation” so it was only natural to create a complementary listing for those simulations resolving velocity space.

*Laboratory Plasma Experiments.* Analogues of space plasma physics have long existed in the laboratory, and such papers regularly get submitted to the journal. Searching for potential reviewers, however, was usually limited to the particular space physics topic being addressed, rather than filtering for other laboratory experimentalists.

*Mesosphere and Stratosphere.* This topic straddles this journal and *JGR Atmospheres*, and a roughly equal number of papers in this field are submitted to each journal. This listing will help us identify experts willing and able to review middle atmosphere studies.

*Planetary Rings.* This topic straddles this journal and *JGR Planets*, with the plasma-oriented studies coming to *JGR Space Physics*. The existing category of “Jupiter, Saturn, and Magnetized Planets” was not specific enough to isolate experts in inner magnetospheric ring-plasma interactions, so a new listing was deemed necessary.

*Radiative Transport.* Another of the universal physical processes identified for inclusion in the list, photons move and interact with tenuous atmospheres and plasma throughout the solar and planetary space environments. Identifying researchers knowledgeable in this subject will greatly assist in the selection of appropriate reviewers.

*Small Celestial Bodies.* The previous list had the planets covered but not the space environments around comets, asteroids, or moons. Many processes are common across these small celestial bodies.

*Space Climatology.* This is a discipline within space physics that has grown tremendously in the past decade, as data sets extend over several solar cycles and numerical models are capable of simulating very long time intervals. This listing focuses on both the physics addressed by climatological investigations as well as the research techniques used in long-baseline studies of the space environment.

*Space Physics Instrumentation.* Sensors developed to measure the space environment often have cross-disciplinary uses, and experts in the development of instrumentation sometimes find themselves building detectors for a field that is far removed from their usual research specialty. *JGR Space Physics* is not trying to be a space instrumentation journal, but it does have a “Methods” paper type, and some initial results papers devote a significant portion of the manuscript to the description and calibration of the sensor.

*Theoretical Plasma Physics.* Some researchers in space physics specialize in analytical derivations of a new equation set. While the assumptions and applications are often highly focused on a particular phenomenon, the basic approach of advancing theoretical understanding of the space environment is a universal research technique.

*Thermosphere.* While there were existing entries for various aspects of the upper atmosphere, they were mainly focused on ionospheric physics. The closest ones were “Ionosphere-Atmosphere Interactions,” “Gravity Waves and Tides,” and “Planetary Ionospheres and Atmospheres.” Numerous manuscripts address the Earth’s thermosphere and a separate category for identifying experts in this research area would be highly beneficial for selecting appropriate potential reviewers.

*Upper Atmospheric Chemistry.* Similarly, this category was deemed needed because there are quite a few submissions focused on chemistry rather than dynamics of the space environment.

There is also a modification to one existing entry to the list, expanding “Heliopause” to “Outer Heliosphere and Heliopause.” Here is the reasoning behind this alteration.

*Outer Heliosphere and Heliopause.* With the Voyager spacecraft sampling the outermost extent of our star’s region of influence and New Horizons beyond Pluto, this field has grown substantially over the last decade. While “Solar Wind” included both the inner and outer heliosphere, it was time to broaden the scope of the heliopause entry to include not only the edge of the heliosphere but also the entirety of outer heliospheric research.

### 3. Call to Action: Updating Your GEMS Profile

There are 18 new entries to the Areas of Expertise list for *JGR Space Physics* in GEMS, bringing the total to 73. This is a 34% increase from the previous set. This is a significant expansion and therefore we want to bring this new set of Areas of Expertise to your attention and ask for your assistance in making the new set a useful addition to the GEMS system.

That is, these Areas of Expertise are only helpful for selecting knowledgeable potential reviewers if the members of the space physics community maintain a relevant selection of these listings in their GEMS profile. These listings for each user are self selected; the Editors and AGU staff cannot do it for you, nor would we want to. This part of the system works best when individuals identify their own areas of expertise, essentially indicating a willingness to consider reviewing papers in this topic. Without your help, the reviewer selection process could slow down due to requests sent to people that will decline due to the subject being outside of their research specialty.

Plus, updating your Areas of Expertise selections in your GEMS profile is a good thing to do periodically. People branch into new research areas, shifting their expertise as their careers progress and their interests develop. If you have not checked your listing in a few years, then it probably needed to be done anyway.

We would like everyone in the space physics community to update their selections of Areas of Expertise in GEMS. Please log in into your account at the *JGR Space Physics* GEMS (<http://jgr-spacephysics-submit.agu.org/>) and click on the "Modify Profile/Password" link near the bottom of the page. On this page, near the bottom is a box listing the Areas of Expertise. You can control-click (command-click for Mac) to select more than one.

Thank you in advance for your attention to this request, and thank you once again for your service to *JGR Space Physics* and to the research community.