

Development of an analysis system of the global magnetospheric environment based on precise estimation of plasma wave parameters

Publicly

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Project Area

Solar-Terrestrial Environment Prediction as Science and Social Infrastructure

Project/Area Number

18H04441

Research Category

Grant-in-Aid for Scientific Research on Innovative Areas (Research in a proposed research area)

Allocation Type

Single-year Grants

Research Institution

Kanazawa University

Principal Investigator

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Project Period (FY)

2018-04-01 - 2020-03-31

Project Status

Completed (Fiscal Year 2019)

Budget Amount [*help](#)

¥3,900,000 (Direct Cost: ¥3,000,000、Indirect Cost: ¥900,000)

Fiscal Year 2019: ¥1,950,000 (Direct Cost: ¥1,500,000、Indirect Cost: ¥450,000)

Fiscal Year 2018: ¥1,950,000 (Direct Cost: ¥1,500,000、Indirect Cost: ¥450,000)

Keywords

磁気圏・電離圏 / 超高層物理学 / 自然現象観測・予測 / リモートセンシング / 電波伝搬

Outline of Annual Research Achievements

科学衛星は、地球周辺プラズマ（地球磁気圏）環境の直接計測に大変有用であるが、「その場」観測であるため、プラズマ環境の時間・空間変化の識別や、グローバルな描像の把握が困難である。これに対し本研究は、地球磁気圏内を伝搬するELF/VLF帯のプラズマ波動の伝搬特性を活用し、限られた数の科学衛星による疎な観測情報から地球磁気圏プラズマ環境の全体像を掌握する技術の確立を目的として研究を遂行した。具体的には、

(1) 内部磁気圏衛星「あらせ」等で測定したELF/VLF帯プラズマ波の伝搬パラメータ解析ツールの開発：あらせ衛星で測定したChorusや雷ホイスラ波を抽出し、そのスペクトル形状を自動分類する方法や、波動の特性周波数を検出して衛星軌道に沿った電子密度を求めるなど、観測波動からシステムティックに伝搬パラメータを抽出する手法を開発した。またプラズマ環境に依存する電界センサを厳密に較正するために、プラズマ波の屈折率の実測値と、観測点のプラズマパラメータから導出した理論値を比較することで、電界センサ特性のプラズマ密度依存性を定量的に示した。

(2) 波動の伝搬通路の理論計算（レイトレイシング）と観測結果に基づくプラズマ密度分布の推定：同一波源から伝搬してきたと考えられるコーラスや雷起源ホイスラ波を、あらせ衛星とVan Allen Probes衛星で同時観測した観測事例について、波動の到来方向と伝搬遅延時間を求め、レイトレイシングと合致するための電子密度の空間分布推定を複数例について適用し、その有効性を実証した。

Research Progress Status

令和元年度が最終年度であるため、記入しない。

Strategy for Future Research Activity

令和元年度が最終年度であるため、記入しない。

Report (2 results)

2019 Annual Research Report

2018 Annual Research Report

Research Products (245 results)

All	2021	2020	2019	2018	Other
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All Int'l Joint Research (4 results)

Journal Article (48 results) (of which Int'l Joint Research: 42 results, Peer Reviewed: 48 results, Open Access: 48 results)

Presentation (193 results) (of which Int'l Joint Research: 164 results, Invited: 30 results)

[Int'l Joint Research] Univ. of Iowa/Univ. of Minnesota(米国)	▼
[Int'l Joint Research] The Czech Academy of Sciences/Charles University(チェコ)	▼
[Int'l Joint Research] Univ. of Iowa/Univ. of Minnesota(米国)	▼
[Int'l Joint Research] The Czech Academy of Sciences/Charles University(チェコ)	▼
[Journal Article] Study of Spatiotemporal Development of Global Distribution of Magnetospheric ELF/VLF Waves Using Ground-Based and Satellite Observations, and RAM-SCB Simulations, for the March and November 2017 Storms	2021 ▼
[Journal Article] Multievent Study of Characteristics and Propagation of Naturally Occurring ELF/VLF Waves Using High-Latitude Ground Observations and Conjunctions With the Arase Satellite	2021 ▼
[Journal Article] Active auroral arc powered by accelerated electrons from very high altitudes	2021 ▼
[Journal Article] Extremely Collimated Electron Beams in the High Latitude Magnetosphere Observed by Arase	2021 ▼
[Journal Article] Investigation of Small-Scale Electron Density Irregularities Observed by the Arase and Van Allen Probes Satellites Inside and Outside the Plasmasphere	2021 ▼

[Journal Article] Multi-Event Analysis of Plasma and Field Variations in Source of Stable Auroral Red (SAR) Arcs in Inner Magnetosphere During Non-Storm-Time Substorms	2021	▼
[Journal Article] Over-Darkening of Pulsating Aurora	2021	▼
[Journal Article] Data-Driven Simulation of Rapid Flux Enhancement of Energetic Electrons With an Upper-Band Whistler Burst	2021	▼
[Journal Article] Conjugate Observations of Dayside and Nightside VLF Chorus and QP Emissions Between Arase (ERG) and Kannuslehto, Finland	2020	▼
[Journal Article] Comprehensive Observations of Substorm-Enhanced Plasmaspheric Hiss Generation, Propagation, and Dissipation	2020	▼
[Journal Article] Multiple time-scale beats in aurora: precise orchestration via magnetospheric chorus waves	2020	▼
[Journal Article] ULF modulation of energetic electron precipitation observed by VLF/LF radio propagation	2020	▼
[Journal Article] Arase Observation of the Source Region of Auroral Arcs and Diffuse Auroras in the Inner Magnetosphere	2020	▼
[Journal Article] Oxygen torus and its coincidence with EMIC wave in the deep inner magnetosphere: Van Allen Probe B and Arase observations	2020	▼
[Journal Article] Plasma Waves Causing Relativistic Electron Precipitation Events at International Space Station: Lessons From Conjunction Observations With Arase Satellite	2020	▼
[Journal Article] Spatial Extent of Quasiperiodic Emissions Simultaneously Observed by Arase and Van Allen Probes on 29 November 2018	2020	▼
[Journal Article] Plasma and Field Observations in the Magnetospheric Source Region of a Stable Auroral Red (SAR) Arc by the Arase Satellite on 28 March 2017	2020	▼
[Journal Article] Detection of UHR Frequencies by a Convolutional Neural Network From Arase/PWE Data	2020	▼
[Journal Article] An Ephemeral Red Arc Appeared at 68° MLat at a Pseudo Breakup During Geomagnetically Quiet Conditions	2020	▼
[Journal Article] First Direct Observations of Propagation of Discrete Chorus Elements From the Equatorial Source to Higher Latitudes, Using the Van Allen Probes and Arase Satellites	2020	▼
[Journal Article] Pitch-Angle Scattering of Inner Magnetospheric Electrons Caused by ECH Waves Obtained With the Arase Satellite	2020	▼
[Journal Article] EMIC waves converted from equatorial noise due to M/Q=2 ions in the plasmasphere: Observations from Van Allen Probes and Arase	2019	▼
[Journal Article] Response of the Ionosphere-Plasmasphere Coupling to the September 2017 Storm: What Erodes the Plasmasphere so Severely?	2019	▼
[Journal Article] Automatic Detection of Lightning Whistlers Observed by the Plasma Wave Experiment Onboard the Arase Satellite Using the OpenCV Library	2019	▼
[Journal Article] Direct comparison between magnetospheric plasma waves and polar mesosphere winter echoes in both hemispheres	2019	▼
[Journal Article] Remote Detection of Drift Resonance Between Energetic Electrons and Ultralow Frequency Waves: Multisatellite Coordinated Observation by Arase and Van Allen Probes	2019	▼
[Journal Article] Automatic Electron Density Determination by Using a Convolutional Neural Network	2019	▼
[Journal Article] Strong Diffusion of Energetic Electrons by Equatorial Chorus Waves in the Midnight-to-Dawn Sector	2019	▼
[Journal Article] A Systematic Study in Characteristics of Lower Band Rising-Tone Chorus Elements	2019	▼
[Journal Article] Visualization of rapid electron precipitation via chorus element wave?particle interactions	2019	▼
[Journal Article] The Space Physics Environment Data Analysis System (SPEDAS)	2019	▼

[Journal Article] Transient ionization of the mesosphere during auroral breakup: Arase satellite and ground-based conjugate observations at Syowa Station	2019	▼
[Journal Article] Tracking the Region of High Correlation Between Pulsating Aurora and Chorus: Simultaneous Observations With Arase Satellite and Ground-Based All-Sky Imager in Russia	2019	▼
[Journal Article] The ERG Science Center	2018	▼
[Journal Article] Geospace exploration project ERG	2018	▼
[Journal Article] Impulsively excited nightside ultralow frequency waves simultaneously observed on and off the magnetic equator	2018	▼
[Journal Article] Temporal and Spatial Variations of Storm Time Midlatitude Ionospheric Trough Based on Global GNSS-TEC and Arase Satellite Observations	2018	▼
[Journal Article] Deformation of Electron Pitch Angle Distributions Caused by Upper Band Chorus Observed by the Arase Satellite	2018	▼
[Journal Article] Coincident Observations by the Kharkiv IS Radar and Ionosonde, DMSP and Arase (ERG) Satellites, and FLIP Model Simulations: Implications for the NRLMSISE-00 Hydrogen Density, Plasmasphere, and Ionosphere	2018	▼
[Journal Article] Density Depletions Associated With Enhancements of Electron Cyclotron Harmonic Emissions: An ERG Observation	2018	▼
[Journal Article] Longitudinal structure of oxygen torus in the inner magnetosphere: Simultaneous observations by Arase and Van Allen Probe A	2018	▼
[Journal Article] Spatial Distribution of Fine-Structured and Unstructured EMIC Waves Observed by the Arase Satellite	2018	▼
[Journal Article] Hectometric Line Spectra Detected by the Arase (ERG) Satellite	2018	▼
[Journal Article] Energetic Electron Precipitation Associated With Pulsating Aurora Observed by VLF Radio Propagation During the Recovery Phase of a Substorm on 27 March 2017	2018	▼
[Journal Article] Microscopic Observations of Pulsating Aurora Associated With Chorus Element Structures: Coordinated Arase Satellite-PWING Observations	2018	▼
[Journal Article] Electrostatic Electron Cyclotron Harmonic Waves as a Candidate to Cause Pulsating Auroras	2018	▼
[Journal Article] Temporal and Spatial Correspondence of Pc1/EMIC Waves and Relativistic Electron Precipitations Observed With Ground-Based Multi-Instruments on 27 March 2017	2018	▼
[Journal Article] Instantaneous Frequency Analysis on Nonlinear EMIC Emissions: Arase Observation	2018	▼
[Presentation] Pi2 pulsations observed by the Arase satellite inside and outside the plasmasphere	2020	▼
[Presentation] Perpendicular heating of cold ions and fast magnetosonic waves in the inner magnetosphere observed by Arase	2020	▼
[Presentation] The low-energy electron instrument onboard ERG and its observation results	2020	▼
[Presentation] Spatial Distributions of EMIC Waves Depending on Geomagnetic Conditions During the Van Allen Probes and ERG era	2020	▼
[Presentation] Direct detection of nonlinear generation process of electromagnetic ion cyclotron emissions observed by the Arase spacecraft	2020	▼
[Presentation] Evaluation of wave normal and Poynting vector for whistler mode waves observed by the waveform capture (WFC) on board the Arase	2020	▼
[Presentation] Collaborative Study on Plasma Waves Simultaneously Observed by Arase and Van Allen Probes	2020	▼
[Presentation] Wide energy electron precipitations by chorus waves: Arase-EISCAT coordinated observations	2020	▼
[Presentation] Multi-Point Measurements of Whistler Mode Waves in the Outer Van Allen Belt	2020	▼

[Presentation] Strong Diffusion of Energetic Electrons by Equatorial Chorus Waves in the Midnight-to-Dawn Sector	2020	▼
[Presentation] Characteristics of ELF/VLF Emissions from Multi-Point Ground and Space Conjugated Events	2020	▼
[Presentation] Direct detection of nonlinear generation process of electromagnetic ion cyclotron emissions observed by the Arase spacecraft	2020	▼
[Presentation] Pitch Angle Scattering by Electrostatic Electron Cyclotron Harmonic Waves Based on Arase Observations	2020	▼
[Presentation] Observations of Triggered EMIC Emissions by ARASE: 2017/11/14 and 2017/10/24 case studies	2020	▼
[Presentation] Spatial Distributions of EMIC Waves Depending on Geomagnetic Conditions during the Van Allen Probes and ERG era	2020	▼
[Presentation] Relative Contribution of ULF and Chorus Waves to the Radiation Belt Variation	2020	▼
[Presentation] Pi2 pulsations observed by the Arase satellite inside and outside the plasmasphere	2020	▼
[Presentation] Conjugate Observations of Pc1 Waves on the Ground and Onboard ERG and Van Allen Probes and Related Variations of Energetic Ion Flux	2020	▼
[Presentation] Arase observation of electron pitchangle scattering by Electrostatic Cyclotron Harmonic waves	2020	▼
[Presentation] Medium Frequency Broadcasting Waves and Other Emissions Observed by the Arase Satellite (Hectometric Line Spectra)	2020	▼
[Presentation] Relativistic electron precipitation associated with pulsating aurora observed by VLF radio propagation: A case study	2020	▼
[Presentation] Correlations of low- energy electrons with chorus emissions observed by ERG: An event study	2020	▼
[Presentation] Field-Aligned Electron Density Distribution in the Inner Magnetosphere Obtained From Coordinated Observations of Arase and Van Allen Probes	2020	▼
[Presentation] Isolated Electrostatic Potential Structures Observed by the Arase Satellite	2020	▼
[Presentation] Evaluation of Automatic Electron Density Determination by using a Convolutional Neural Network	2020	▼
[Presentation] Statistical analysis of spatial distribution of wave spectra observed by PWE/OFA on board the Arase	2020	▼
[Presentation] Flash-type auroral model using chorus-ray tracing analysis	2020	▼
[Presentation] Detection of auroral kilometer radiation from the northern and southern hemispheres using the ERG satellite	2020	▼
[Presentation] Statistical Properties of Auroral Kilometer Radiation	2020	▼
[Presentation] A Direction finding Method Considering Different Signal to Noise Ratio among Sensors	2020	▼
[Presentation] Perpendicular heating of low-energy ions by fast magnetosonic waves observed by Arase (ERG) satellite	2020	▼
[Presentation] Arase observation of the source region of auroral arcs and diffuse auroras in the inner magnetosphere	2020	▼
[Presentation] Statistical survey of Energetic Electron Precipitation events using coordinate observations from Arase and ground Riometer network	2020	▼
[Presentation] Energetic electron precipitations associated with pulsating aurora: statistical analysis of low altitude satellite and VLF subionospheric propagation	2020	▼
[Presentation] Evening side EMIC waves and related proton precipitation induced by a substorm	2020	▼
[Presentation] On the origin of equatorward detachment of auroral arc inferred from conjugate space _要 ground observations and the BATS-R-US-CIMI model	2020	▼

[Presentation] Relative Contribution of ULF Waves and Whistler-mode Chorus to the Radiation Belt Variation during the May 2017 Storm	2020 ▾
[Presentation] The characteristics of EMIC (ElectroMagnetic Ion Cyclotron) waves in the magnetosphere using the Van Allen Probes and Arase observations	2020 ▾
[Presentation] Statistical analyses on low energy ion heating by electromagnetic ion cyclotron waves via wave-particle interaction analyses: Arase observations	2020 ▾
[Presentation] Statistical investigation of cross energy coupling during magnetic storms; Arase observations	2020 ▾
[Presentation] Active auroral arc powered by accelerated electrons from very high altitudes	2020 ▾
[Presentation] Identifying the Physical Mechanisms to Explain the Extreme Plasmaspheric Erosion for the September 2017 Storm	2020 ▾
[Presentation] Relationship between the locations of the mid-latitude trough and plasmopause using GNSS-TEC and Arase satellite observation data	2020 ▾
[Presentation] Ground-based ELF-VLF observations at Kannuslehto during two years of ARASE	2019 ▾
[Presentation] Pulsating aurora from electron scattering by chorus waves	2019 ▾
[Presentation] A Systematic Study of Lasting Time and Sweep Rate for Lower Band Rising Tone Chorus Elements	2019 ▾
[Presentation] Different flux evolutions of relativistic electrons of the outer belt associated with high-speed coronal hole streams; Arase and Van Allen Probes observations	2019 ▾
[Presentation] Atmospheric responses in both hemispheres to relativistic electron precipitation	2019 ▾
[Presentation] Conjugate observation of EMIC waves by Arase and RBSP with associated POES and AARDDVARK detected electron precipitation	2019 ▾
[Presentation] Over-darkening pulsating aurora: simultaneous observations with Arase and an all-sky camera in Scandinavia	2019 ▾
[Presentation] Deformation of electron pitch angle distributions caused by chorus waves observed by the Arase satellite	2019 ▾
[Presentation] Electron scattering by isolated chorus elements observed near the magnetospheric equator	2019 ▾
[Presentation] Origin of energetic electron precipitation with fast fluctuation: Data-driven simulations using the ERG plasma wave observations	2019 ▾
[Presentation] George Hospodarsky, Conjugated quasi-periodic ELF/VLF emissions between the ARASE satellite and both Van Allen Probes	2019 ▾
[Presentation] Instantaneous Frequency Analysis on Nonlinear EMIC Emissions: Arase Observation	2019 ▾
[Presentation] Plasmaspheric EMIC waves excited through mode conversion from equatorial noise under existence of $M/Q=2$ ions	2019 ▾
[Presentation] Magnetic field disturbances associated with the magnetic dipolarization observed by Arase (ERG) in the inner magnetosphere	2019 ▾
[Presentation] Multiple Satellite Observations of Oxygen Torus in the Inner Magnetosphere	2019 ▾
[Presentation] Evaluation of wave normal and Poynting vector analysis for whistler mode waves observed by the waveform capture(WFC) on board the Arase	2019 ▾
[Presentation] Calibration of electric fields dedicated to the measurement of the S-WPIA of the Arase Satellite	2019 ▾
[Presentation] Enhancement of whistler-mode chorus in association with Pc 4-5 ULF waves and related variation of high energy electrons	2019 ▾
[Presentation] Sudden enhancements of electron cyclotron harmonic waves observed by the Arase satellite	2019 ▾

[Presentation] Correlation between pulsating aurora and electrostatic electron cyclotron harmonic waves obtained from coordinated Arase and ground data	2019 ▼
[Presentation] Automatic determination of Upper Hybrid Resonance Frequencies by Convolutional Neural Network	2019 ▼
[Presentation] Study of global spatio-temporal development of magnetospheric ELF/VLF waves for the 26-30 March 2017 storm based on ground and satellite observations and the RAM simulations	2019 ▼
[Presentation] First simultaneous observation of a SAR arc at subauroral latitudes using a ground all-sky camera and the Arase satellite in the inner magnetosphere	2019 ▼
[Presentation] Pi2 pulsations observed by the Arase satellite inside and outside the plasmapause	2019 ▼
[Presentation] An extreme erosion of the plasmasphere during the 7-10 September 2017 storm	2019 ▼
[Presentation] Relative contribution of ULF and chorus waves to the radiation belt variation: Comparison between multi-point observations and BATSRUS+CRCM simulation	2019 ▼
[Presentation] Spatiotemporal characteristics on the source region of flash aurora using ray tracing analysis	2019 ▼
[Presentation] Mass dependence of penetration depth of multi-energy ions in the inner magnetosphere during magnetic storms: Arase observations	2019 ▼
[Presentation] Correlation Analysis of Lightning Whistlers Simultaneously Observed by Arase and Van Allen Probes	2019 ▼
[Presentation] Plasmaspheric Emic Waves Excited Through Mode Conversion from Equatorial Noise Under Existence of $M/q=2$ Ions	2019 ▼
[Presentation] Characteristics of Temporal and Spatial Evolutions of the Ionosphere and Plasmasphere During Major Geomagnetic Storms Observed by Gns-tec and Arase Observations	2019 ▼
[Presentation] Different Flux Evolutions of Relativistic Electrons of the Outer Belt Associated with High-speed Coronal Hole Streams; Arase and Van Allen Probes Observations	2019 ▼
[Presentation] Spatial Distribution of Fine-Structured and Unstructured EMIC Waves Observed by the Arase Satellite	2019 ▼
[Presentation] Electron scattering by chorus waves generating pulsating aurora	2019 ▼
[Presentation] Multi-point Observations of Chorus Properties and Propagation in the Inner Magnetosphere Using Conjunctions Between Arase and Van Allen Probes	2019 ▼
[Presentation] Automatic Detection and Statistical Analysis of Lightning Whistlers Observed by the Plasma Wave Experiment (PWE) onboard the Arase Satellite	2019 ▼
[Presentation] Multiple Roles of Plasma Waves in Geospace and Radiation Belts: Arase Observations	2019 ▼
[Presentation] Severely Eroded Plasmasphere During a Moderate Space Weather Storm	2019 ▼
[Presentation] Evaluation of the calibration method of waveform data measured by the PWE/WFC on board the Arase satellite	2019 ▼
[Presentation] Propagation characteristics of whistler mode chorus waves deduced from the observations by PWE/OFA onboard the Arase satellite	2019 ▼
[Presentation] Study on the propagation characteristics of lightning whistlers simultaneously observed by the Arase and Van Allen Probes	2019 ▼
[Presentation] Mesospheric ionization during a substorm: A case study of PANSY and Arase satellite observations	2019 ▼
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[Presentation] Statistical survey of Energetic Electron Precipitation events using coordinate observations from Arase and ground Riometer network	2019 ▼

[Presentation] Multi-point Investigations of Chorus Propagation with Van Allen Probes/ARASE Conjunctions, and Chorus Microburst Generation using VAP/Firebird Conjunctions	2019 ▾
[Presentation] Source region of auroral arcs and diffuse auroras in the inner magnetosphere observed by Arase on 11 September 2018	2019 ▾
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[Presentation] Pulsating aurora from electron scattering by chorus waves	2019 ▾
[Presentation] Direct detection of nonlinear generation process of electromagnetic ion cyclotron emissions observed by the Arase spacecraft	2019 ▾
[Presentation] Low Energy Electron Precipitation Caused by Electrostatic Electron Cyclotron Harmonic Waves Based on Arase Observations	2019 ▾
[Presentation] Propagation characteristics of whistler mode chorus waves deduced from the observations by PWE/OFA onboard the Arase satellite	2019 ▾
[Presentation] Evaluation of the calibrated waveform data observed by the plasma wave experiment on board the Arase satellite	2019 ▾
[Presentation] Electron cyclotron harmonic waves observed by the Arase satellite: identification of their wavelengths and phase speeds	2019 ▾
[Presentation] Spatial extent of quasi-periodic emission simultaneously observed by Arase and Van Allen Probes on November 29, 2018	2019 ▾
[Presentation] Relative contribution of ULF and chorus waves to the radiation belt variation: Comparison between multiple observations and BATSRUS + CRCM simulation	2019 ▾
[Presentation] Comparative study on chorus waves and energetic electron variations during CIR-driven storms between the Arase observations and RAM-SCB and electron hybrid simulations	2019 ▾
[Presentation] Comparison of electromagnetic ion cyclotron (EMIC) wave distributions between the magnetic equator and higher magnetic latitudes using the Van Allen Probes and ERG satellite	2019 ▾
[Presentation] ジオスペース探査衛星（あらせ）の最新成果	2019 ▾
[Presentation] ERG(あらせ)衛星の荷電粒子計測とその科学成果	2019 ▾
[Presentation] Highlights from plasma wave observation by Arase (ERG)	2019 ▾
[Presentation] Highlights from plasma wave observation by Arase (ERG)	2019 ▾
[Presentation] あらせ衛星とPWING連携観測より得られたフラッシュオーロラの時空間特徴	2019 ▾
[Presentation] Spatiotemporal development of pulsating auroral patch associated with discrete chorus elements: Arase and PWING observations	2019 ▾
[Presentation] Geospace Exploration Mission Arase(ERG) : Highlights from the prime mission observations	2019 ▾
[Presentation] Electric Field Detector (EFD) of Plasma Wave Experiment (PWE) aboard ARASE: Evaluation status & results - Qualifications of the status of Wire Probe Antennas -	2019 ▾
[Presentation] Antenna Impedance Measurement of Wire Probe Antenna (WPT) on board Arase	2019 ▾
[Presentation] Lightning whistlers Simultaneously observed by Arase and Van Allen Probes	2019 ▾
[Presentation] Energetic electron precipitation associated with pulsating aurora observed by VLF radio propagation during the recovery phase of a substorm on 27 March 2017	2019 ▾
[Presentation] Nonlinear wave particle interaction between EMIC waves and ions in the inner magnetosphere observed by the Arase satellite	2019 ▾

[Presentation] Temp0 and Spatial Correspondence of Pc1/EMIC Waves and Relativistic Electron Precipitations Observed with Ground-Based Multi-Instruments on 27 March 2017	2019 ▾
[Presentation] Direct measurement of the energy exchange through wave-particle interactions in planetary magnetospheres: whistler-mode chorus and EMIC waves	2019 ▾
[Presentation] Whistler mode chorus wave packets observed by Van Allen Probes, Arase, and Cluster	2019 ▾
[Presentation] Propagation characteristics of chorus waves deduced from the statistical analysis of Arase observation	2019 ▾
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[Presentation] あらせプラズマ波動観測から探るプラズマ圏のサイエンス	2019 ▾
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[Presentation] GNSS-TECとあらせ衛星観測データを用いた磁気嵐時のプラズマ圏・電離圏におけるグローバルな電子密度変動特性について	2019 ▾
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[Presentation] Energetic electron acceleration and precipitations associated with chorus waves; Arase observations	2018 ▾
[Presentation] Evaluation of Direction Finding Methods based on Spectral Matrix	2018 ▾
[Presentation] VLF Conjugate events between Arase (ERG) and Kannuslehto: differences between cases on the noon and midnight sides	2018 ▾
[Presentation] Analysis of whistler, hiss and other magnetospheric plasma waves observed simultaneously during a series of conjunctions between ARASE (ERG) and Van Allen Probes	2018 ▾
[Presentation] Evaluation of the Wire Probe Antenna (WPT) and Electric Field Detector (EFD) of Plasma Wave Experiment (PWE) aboard ARASE: The data qualifications and cautions from the first-year observations	2018 ▾
[Presentation] Hectometric Line Radiation found by the Arase (ERG) satellite	2018 ▾
[Presentation] Development of Ray Tracing Applicable for Whistler Mode Waves in the Inner Magnetosphere	2018 ▾
[Presentation] Calibration of Waveform Data Measured by the Plasma Wave Experiment (PWE) on board the ARASE (ERG) Satellite	2018 ▾
[Presentation] Characteristics of temp0 and spatial variations of mid-latitude ionospheric trough during a geomagnetic storm based on global GNSS-TEC and Arase satellite observations	2018 ▾
[Presentation] Study of the relationship between whistler-mode chorus emissions and Pc5 ULF waves based on the ERG satellite observation	2018 ▾
[Presentation] Statistical Analysis of EMIC Waves Observed by Plasma Wave Experiment (PWE) aboard Arase	2018 ▾
[Presentation] Calibration and observation mode of High Frequency Analyzer onboard ARASE	2018 ▾
[Presentation] Relationship between lower-band chorus, electrostatic electron cyclotron harmonic waves and pulsating aurora based on conjunction between Arase and ground-based imager	2018 ▾
[Presentation] Flux evolutions of relativistic electrons of the outer radiation belt as seen from the first year observation of Arase	2018 ▾
[Presentation] Contribution from proton and oxygen ions to plasma pressure in the Earth's inner magnetosphere: Arase (ERG) observations	2018 ▾
[Presentation] Initial results of EMIC observation by MGF/Arase	2018 ▾

[Presentation] Strategy of EMIC Wave Observation by Arase/PWE and its Initial Results	2018 ▾
[Presentation] Instantaneous Frequency Analysis on Nonlinear EMIC Emissions: Arase Observation	2018 ▾
[Presentation] Arase (ERG) Observations of Electron Scattering by Chorus Waves near the Magnetospheric Equator	2018 ▾
[Presentation] Properties of quasi-periodical VLF emissions from ground-space conjunctions and multi-point observations	2018 ▾
[Presentation] Temp0 and spatial variations of midlatitude ionospheric trough during a geomagnetic storm based on global GNSS-TEC and Arase satellite observations	2018 ▾
[Presentation] Propagation characteristics of the VLF waves observed by the plasma wave experiment (PWE) on board the Arase - Collaborative observations with the Van Allen Probes	2018 ▾
[Presentation] Lightning Whistler Observed by the WFC on board the Arase Satellite in the Earth's Plasmasphere	2018 ▾
[Presentation] Relationship Between Lower-Band Chorus, Electrostatic Electron Cyclotron Harmonic Waves and Pulsating Aurora Based on Conjunction Between Arase and Ground-Based Imager	2018 ▾
[Presentation] Flux Enhancement of Relativistic Electrons of the Outer Belt Through Resonance with the Fast Mode Waves	2018 ▾
[Presentation] Statistical Analysis of EMIC Waves Observed by Plasma Wave Experiment (PWE) Aboard Arase	2018 ▾
[Presentation] Geomagnetic Storms Based on Global, GNSS-TEC and Arase Satellite Observations	2018 ▾
[Presentation] Energetic Electron Acceleration and Precipitations Associated with Chorus Waves; Arase Observations	2018 ▾
[Presentation] Multipoint Measurements of Whistler Mode Chorus in the Radiation Belts	2018 ▾
[Presentation] Observations of the Inner Magnetosphere from the Arase Satellite	2018 ▾
[Presentation] Onboard Processing on Plasma Wave Experiment (PWE) aboard the Arase Satellite	2018 ▾
[Presentation] Study on Direction Finding of Plasma Waves Measured by the Waveform Capture (WFC) on Board the Arase Satellite	2018 ▾
[Presentation] Software-type Wave-particle Interaction Analyzer on Board the Arase Satellite: Implementation and Data Processing	2018 ▾
[Presentation] Development of Signal Processing Modules for Plasma Waveform Measurements in Space Plasma	2018 ▾
[Presentation] Propagation characteristics of whistler mode chorus waves deduced from the first-year observations by the Arase satellite	2018 ▾
[Presentation] Instantaneous frequency analysis on nonlinear EMIC emissions: Arase observation	2018 ▾
[Presentation] あらせ(ERG)で観測されたヘクトメータ線スペクトル	2018 ▾
[Presentation] Multi-event study of ELF/VLF propagation using Kannuslehto and Arase conjunctions	2018 ▾
[Presentation] Density depletions associated with enhancements of ECH emissions observed by ERG	2018 ▾
[Presentation] Electrostatic electron cyclotron harmonic waves as a candidate to cause pulsating auroras	2018 ▾
[Presentation] コロナホール流に伴う放射線帯外帯電子増加 : あらせ観測	2018 ▾
[Presentation] Flash aurora as manifestation of the nonlinear resonant interactions between single chorus element and electrons	2018 ▾
[Presentation] One-to-one correspondence between relativistic electron precipitation and pulsating aurora observed on 27 March 2017	2018 ▾

[Presentation] Investigation of small-scale electron density perturbations observed by the ARASE satellite near the plasmopause: Initial Results	2018	▼
[Presentation] あらせ衛星とGNSS-TEC観測データを用いた磁気嵐時のプラズマ圏・電離圏の時空間変動について	2018	▼
[Presentation] Plasma Density Distributions along the Magnetic Fields: The Coordinated Observation of Arase and Van Allen Probes	2018	▼
[Presentation] Wire Probe Antenna and Electric Field Detector of Plasma Wave Experiment aboard ARASE: Evaluation results - II	2018	▼
[Presentation] Contribution of ULF and chorus waves to the radiation belt dynamics based on Arase observations and BATSRUS+CRCM simulation	2018	▼
[Presentation] Pc4-5帯トロイダルモードULF波動とホイッスラーモード・コーラス放射の強度変動との対応に関する研究	2018	▼
[Presentation] プラズマポーズ近傍でのプラズマ密度変動とホイッスラーモード・コーラス放射との対応	2018	▼
[Presentation] Arase衛星S-WPIA解析におけるプラズマ波動電界較正に関する評価	2018	▼
[Presentation] あらせ衛星プラズマ波動観測データにおける波動伝搬方向推定	2018	▼
[Presentation] 探査衛星あらせのデータを用いた突発性電子サイクロトロン高調波の解析	2018	▼
[Presentation] Characteristics of temp0 variation of AKR and Pi 2 observed by ARASE and MAGDAS/CPMN: Initial results	2018	▼
[Presentation] Correlation analysis of plasma waves simultaneously observed by Arase and Van Allen Probes	2018	▼
[Presentation] A Machine Learning Approach for the Determination of Upper Hybrid Resonance Frequencies Observed by Arase	2018	▼
[Presentation] Instantaneous frequency analysis on nonlinear EMIC emissions: Arase observation	2018	▼
[Presentation] Flux evolution of relativistic electrons of the outer radiation belt associated with coronal hole streams: Arase observations	2018	▼
[Presentation] Deformation of electron pitch angle distributions caused by upper-band chorus observed by the Arase satellite	2018	▼
[Presentation] Multi-point measurements and ray-tracing stimulations of chorus wave packets	2018	▼
[Presentation] Investigation of Small Scale Electron Density Perturbations Observed by the ARASE Satellite Near the Plasmopause	2018	▼
[Presentation] Characteristics of temp0 and spatial variations of storm-time midlatitude trough based on Arase satellite and GNSS-TEC observation data analysis	2018	▼
[Presentation] Electron density spatial distribution and ion mass from coordinated observation of Arase and Van Allen Probes	2018	▼
[Presentation] Contribution of ULF and chorus waves to the radiation belt dynamics based on Arase observations and BATSRUS+CRCM modeling	2018	▼
[Presentation] Pulsating aurora associated with temp0 structures of chorus elements: Coordinated Arase satellite and PWING observations	2018	▼
[Presentation] Quantifying propagation of ELF/VLF waves using Kannuslehto and Arase conjunctions	2018	▼
[Presentation] Precipitation of radiation belt electrons in a broad energy range from keV to MeV by whistler chorus bursts: Data driven simulation using the ERG plasma wave observations	2018	▼
[Presentation] Collaborative measurements of VLF waves by the Arase and the Van Allen Probes	2018	▼
[Presentation] Prompt acceleration of relativistic electrons associated with the solar wind pressure pulse: Comparative study between a code-coupling simulation and Arase observations	2018	▼

