



# Using High-Level Data Search Capability of Virtual Wave Observatory

SM21A-1994

**Abstract** - Wave data span most Heliophysics domains and contain an abundance of distinct wave phenomena of multidisciplinary interest. The goal of the Virtual Wave Observatory (VWO) is to make Heliophysics wave data searchable, understandable and usable by the scientific community. This presentation will focus on the latest development of the VWO data-querying capabilities to search for multi-platform data. Using the VWO Query Builder, users can search for wave data from multiple missions and use a variety of filters to search data not only by time, but also by satellite location, magnetospheric state conditions, as well as instrument and measurement types. These search capabilities will enable researchers to easily locate available wave data products to support their scientific studies.

**VWO Query Builder**  
 Restrict your query to the following available Data Sources then press Apply This Condition button

**Satellite Orbit Location Query for Wave Data**  
 Select Orbiting the following satellite(s) to continue with the location search.  
 Satellites that are grey are available, but not for your chosen time range.

**Magnetospheric State**  
 Activate the MS25 fields by checking the box next to an option and then press Apply These Conditions button.

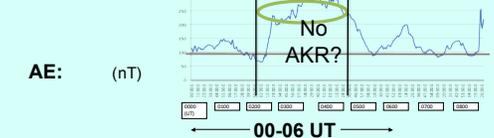
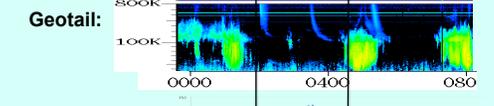
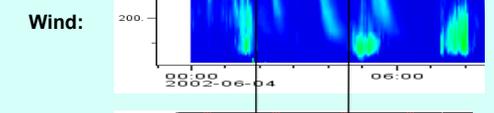
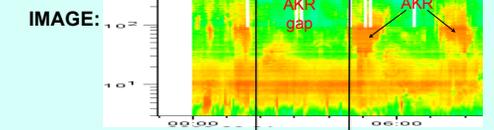
**Magnetospheric Conditions**  
 The Magnetospheric States are currently available for the date range: 1975-01-01T00:00:00.000Z - 2009-06-30T23:59:59.999Z

**Solar Activity Parameters:**  
 # of Time Intervals: 9  
 # of Time Intervals: 0

**Solar Wind Parameters:**  
 # of Time Intervals: 9  
 # of Time Intervals: 0

**Science Use Example:**  
 Is there an AKR-AE Relationship [e.g., Voots et al., 1977]?  
**VWO Query: Multiple s/c wave data when AE > 100 nT**

06/04/2002



Orbital positions in SM coordinates: 00-06 UT

Satellite	X	Y	Z	Latitude	Longitude
IMAGE	-3.4 to -0.53	4.14 to 3.01	4.19 to 6.73	38.16 to 65.55	129.1 to 100.0
Geotail	-9.5 to -10.2	26.2 to 28.4	10.15 to 4.31	20.02 to 8.13	109.9 to 109.7
Wind	-2.94 to 26.6	291.9 to 311.0	122.28 to 50.32	22.73 to 9.16	90.6 to 85.1

Similar **AKR gaps** observed *simultaneously* by IMAGE, Geotail and Wind (all having different local times and latitudinal variations) during periods of elevated AE (> 100 nT) suggest that the previously established AKR-AE relationship may need more detailed examination.

**Summary**

- The Virtual Wave Observatory (VWO) is being developed as a component of the Heliophysics Data Environment (<http://hpde.gsfc.nasa.gov/>).
- Data search is supported by the SPASE metadata model ([www.spase-group.org](http://www.spase-group.org)).
- VWO has implemented high-level data search by magnetospheric-state conditions, spacecraft location, keyword, etc.
- High-level data search capabilities will allow users to pose science-based data/information queries catered to science analyses.
- In the above example, a search for AKR could be made for specific AE conditions in order to investigate/validate the previously established AKR-AE relationship.

**Virtual Wave Observatory**

<http://vwo.nasa.gov>

**VWO Query Builder**  
 Restrict your query to the following available Data Sources then press Apply This Condition button

**Time Range**  
 Start: 2002-06-01T00:00:00.000Z  
 Stop: 2002-06-06T00:00:00.000Z

**Measurement Type**  
 Passive  
 Active  
 Frequency Range - From: 0 To: 0 kHz

**Data Set Selection**  
 VWO  VHO  VMO  VSO  VIRBO  VITMO  VMR

**Instrument**  
 Geotail Plasma Wave Investigation (PWI)  
 ISIS-1  
 ISIS-2  
 POLAR  
 STEREO-A  
 STEREO-B  
 Ulysses

**Data Product**  
 Geotail Plasma Wave Investigation (PWI)  
 PWI 2 hour dynamic spectrograms  
 PWI 24 hour dynamic spectrograms  
 IMAGE Radio Plasma Imager (RPI)  
 RPI Daily Dynamic Spectrogram Plot  
 RPI Dynamic Spectrogram data in CDF at NASA CDAWeb  
 RPI Plasmapan Plots  
 STB Aquilone Coring Spherule SPM (Searchcoil Magnetospheric Spectrograms)  
 Ulysses Unified Radio and Plasma Waves (URAP)  
 URAP Daily Core Dynamic Spectrograms  
 URAP Radio Astronomy Instrument electric field intensities 144-second Data

**VWO Registered Data Sets**

Dataset	Platform	Process	Start Time	Stop Time
ISIS-1	Geotail	ISIS-1 Plasma Wave Investigation (PWI)	1985-1987	1987-02
ISIS-2	Geotail	ISIS-2 Plasma Wave Investigation (PWI)	1987-03	1987-02
ISIS-3	Geotail	ISIS-3 Plasma Wave Investigation (PWI)	1987-03	1987-02
ISIS-4	Geotail	ISIS-4 Plasma Wave Investigation (PWI)	1987-03	1987-02
ISIS-5	Geotail	ISIS-5 Plasma Wave Investigation (PWI)	1987-03	1987-02
ISIS-6	Geotail	ISIS-6 Plasma Wave Investigation (PWI)	1987-03	1987-02
ISIS-7	Geotail	ISIS-7 Plasma Wave Investigation (PWI)	1987-03	1987-02
ISIS-8	Geotail	ISIS-8 Plasma Wave Investigation (PWI)	1987-03	1987-02
ISIS-9	Geotail	ISIS-9 Plasma Wave Investigation (PWI)	1987-03	1987-02
ISIS-10	Geotail	ISIS-10 Plasma Wave Investigation (PWI)	1987-03	1987-02
ISIS-11	Geotail	ISIS-11 Plasma Wave Investigation (PWI)	1987-03	1987-02
ISIS-12	Geotail	ISIS-12 Plasma Wave Investigation (PWI)	1987-03	1987-02
ISIS-13	Geotail	ISIS-13 Plasma Wave Investigation (PWI)	1987-03	1987-02
ISIS-14	Geotail	ISIS-14 Plasma Wave Investigation (PWI)	1987-03	1987-02
ISIS-15	Geotail	ISIS-15 Plasma Wave Investigation (PWI)	1987-03	1987-02
ISIS-16	Geotail	ISIS-16 Plasma Wave Investigation (PWI)	1987-03	1987-02
ISIS-17	Geotail	ISIS-17 Plasma Wave Investigation (PWI)	1987-03	1987-02
ISIS-18	Geotail	ISIS-18 Plasma Wave Investigation (PWI)	1987-03	1987-02
ISIS-19	Geotail	ISIS-19 Plasma Wave Investigation (PWI)	1987-03	1987-02
ISIS-20	Geotail	ISIS-20 Plasma Wave Investigation (PWI)	1987-03	1987-02
ISIS-21	Geotail	ISIS-21 Plasma Wave Investigation (PWI)	1987-03	1987-02
ISIS-22	Geotail	ISIS-22 Plasma Wave Investigation (PWI)	1987-03	1987-02
ISIS-23	Geotail	ISIS-23 Plasma Wave Investigation (PWI)	1987-03	1987-02
ISIS-24	Geotail	ISIS-24 Plasma Wave Investigation (PWI)	1987-03	1987-02
ISIS-25	Geotail	ISIS-25 Plasma Wave Investigation (PWI)	1987-03	1987-02
ISIS-26	Geotail	ISIS-26 Plasma Wave Investigation (PWI)	1987-03	1987-02
ISIS-27	Geotail	ISIS-27 Plasma Wave Investigation (PWI)	1987-03	1987-02
ISIS-28	Geotail	ISIS-28 Plasma Wave Investigation (PWI)	1987-03	1987-02
ISIS-29	Geotail	ISIS-29 Plasma Wave Investigation (PWI)	1987-03	1987-02
ISIS-30	Geotail	ISIS-30 Plasma Wave Investigation (PWI)	1987-03	1987-02
ISIS-31	Geotail	ISIS-31 Plasma Wave Investigation (PWI)	1987-03	1987-02
ISIS-32	Geotail	ISIS-32 Plasma Wave Investigation (PWI)	1987-03	1987-02
ISIS-33	Geotail	ISIS-33 Plasma Wave Investigation (PWI)	1987-03	1987-02
ISIS-34	Geotail	ISIS-34 Plasma Wave Investigation (PWI)	1987-03	1987-02
ISIS-35	Geotail	ISIS-35 Plasma Wave Investigation (PWI)	1987-03	1987-02
ISIS-36	Geotail	ISIS-36 Plasma Wave Investigation (PWI)	1987-03	1987-02
ISIS-37	Geotail	ISIS-37 Plasma Wave Investigation (PWI)	1987-03	1987-02
ISIS-38	Geotail	ISIS-38 Plasma Wave Investigation (PWI)	1987-03	1987-02
ISIS-39	Geotail	ISIS-39 Plasma Wave Investigation (PWI)	1987-03	1987-02
ISIS-40	Geotail	ISIS-40 Plasma Wave Investigation (PWI)	1987-03	1987-02
ISIS-41	Geotail	ISIS-41 Plasma Wave Investigation (PWI)	1987-03	1987-02
ISIS-42	Geotail	ISIS-42 Plasma Wave Investigation (PWI)	1987-03	1987-02
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ISIS-45	Geotail	ISIS-45 Plasma Wave Investigation (PWI)	1987-03	1987-02
ISIS-46	Geotail	ISIS-46 Plasma Wave Investigation (PWI)	1987-03	1987-02
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ISIS-48	Geotail	ISIS-48 Plasma Wave Investigation (PWI)	1987-03	1987-02
ISIS-49	Geotail	ISIS-49 Plasma Wave Investigation (PWI)	1987-03	1987-02
ISIS-50	Geotail	ISIS-50 Plasma Wave Investigation (PWI)	1987-03	1987-02
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ISIS-55	Geotail	ISIS-55 Plasma Wave Investigation (PWI)	1987-03	1987-02
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ISIS-59	Geotail	ISIS-59 Plasma Wave Investigation (PWI)	1987-03	1987-02
ISIS-60	Geotail	ISIS-60 Plasma Wave Investigation (PWI)	1987-03	1987-02
ISIS-61	Geotail	ISIS-61 Plasma Wave Investigation (PWI)	1987-03	1987-02
ISIS-62	Geotail	ISIS-62 Plasma Wave Investigation (PWI)	1987-03	1987-02
ISIS-63	Geotail	ISIS-63 Plasma Wave Investigation (PWI)	1987-03	1987-02
ISIS-64	Geotail	ISIS-64 Plasma Wave Investigation (PWI)	1987-03	1987-02
ISIS-65	Geotail	ISIS-65 Plasma Wave Investigation (PWI)	1987-03	1987-02
ISIS-66	Geotail	ISIS-66 Plasma Wave Investigation (PWI)	1987-03	1987-02
ISIS-67	Geotail	ISIS-67 Plasma Wave Investigation (PWI)	1987-03	1987-02
ISIS-68	Geotail	ISIS-68 Plasma Wave Investigation (PWI)	1987-03	1987-02
ISIS-69	Geotail	ISIS-69 Plasma Wave Investigation (PWI)	1987-03	1987-02
ISIS-70	Geotail	ISIS-70 Plasma Wave Investigation (PWI)	1987-03	1987-02
ISIS-71	Geotail	ISIS-71 Plasma Wave Investigation (PWI)	1987-03	1987-02
ISIS-72	Geotail	ISIS-72 Plasma Wave Investigation (PWI)	1987-03	1987-02
ISIS-73	Geotail	ISIS-73 Plasma Wave Investigation (PWI)	1987-03	1987-02
ISIS-74	Geotail	ISIS-74 Plasma Wave Investigation (PWI)	1987-03	1987-02
ISIS-75	Geotail	ISIS-75 Plasma Wave Investigation (PWI)	1987-03	1987-02
ISIS-76	Geotail	ISIS-76 Plasma Wave Investigation (PWI)	1987-03	1987-02
ISIS-77	Geotail	ISIS-77 Plasma Wave Investigation (PWI)	1987-03	1987-02
ISIS-78	Geotail	ISIS-78 Plasma Wave Investigation (PWI)	1987-03	1987-02
ISIS-79	Geotail	ISIS-79 Plasma Wave Investigation (PWI)	1987-03	1987-02
ISIS-80	Geotail	ISIS-80 Plasma Wave Investigation (PWI)	1987-03	1987-02
ISIS-81	Geotail	ISIS-81 Plasma Wave Investigation (PWI)	1987-03	1987-02
ISIS-82	Geotail	ISIS-82 Plasma Wave Investigation (PWI)	1987-03	1987-02
ISIS-83	Geotail	ISIS-83 Plasma Wave Investigation (PWI)	1987-03	1987-02
ISIS-84	Geotail	ISIS-84 Plasma Wave Investigation (PWI)	1987-03	1987-02
ISIS-85	Geotail	ISIS-85 Plasma Wave Investigation (PWI)	1987-03	1987-02
ISIS-86	Geotail	ISIS-86 Plasma Wave Investigation (PWI)	1987-03	1987-02
ISIS-87	Geotail	ISIS-87 Plasma Wave Investigation (PWI)	1987-03	1987-02
ISIS-88	Geotail	ISIS-88 Plasma Wave Investigation (PWI)	1987-03	1987-02
ISIS-89	Geotail	ISIS-89 Plasma Wave Investigation (PWI)	1987-03	1987-02
ISIS-90	Geotail	ISIS-90 Plasma Wave Investigation (PWI)	1987-03	1987-02
ISIS-91	Geotail	ISIS-91 Plasma Wave Investigation (PWI)	1987-03	1987-02
ISIS-92	Geotail	ISIS-92 Plasma Wave Investigation (PWI)	1987-03	1987-02
ISIS-93	Geotail	ISIS-93 Plasma Wave Investigation (PWI)	1987-03	1987-02
ISIS-94	Geotail	ISIS-94 Plasma Wave Investigation (PWI)	1987-03	1987-02
ISIS-95	Geotail	ISIS-95 Plasma Wave Investigation (PWI)	1987-03	1987-02
ISIS-96	Geotail	ISIS-96 Plasma Wave Investigation (PWI)	1987-03	1987-02
ISIS-97	Geotail	ISIS-97 Plasma Wave Investigation (PWI)	1987-03	1987-02
ISIS-98	Geotail	ISIS-98 Plasma Wave Investigation (PWI)	1987-03	1987-02
ISIS-99	Geotail	ISIS-99 Plasma Wave Investigation (PWI)	1987-03	1987-02
ISIS-100	Geotail	ISIS-100 Plasma Wave Investigation (PWI)	1987-03	1987-02