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LASP Interactive Solar IRradiance Datacenter (LISIRD)

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Laboratory for Atmospheric and Space Physics University of Colorado **Boulder**

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Standard datasets							
Datasets SDO EVE Solar Spectral Irradiance - Level 3, Accuracy, Irradiance,	Acknowledgments Source API						
Time Custom: 2010-01-01T00:00:00 to 2020-01-01T00:00:00	To programmatically access data from the LaTiS API C, use one of the following retrieval methods.						
Wavelength Entire available range	SDO EVE Solar Spectral Irradiance - Level 3						
Time format ISO: 2023-10-04T18:13:14	<pre>https://lasp.colorado.edu/lisird/latis/dap/sdo_eve_ssi_1nm_13.csv? time,wavelength,accuracy,irradiance,precision,stdev&time>=2010-01-01T00:00:00Z&time<=2020-01-</pre>						
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+ ADVANCED OPTIONS	SORCE Solar Spectral Irradiance						
All datasets Replace missing = NaN 😣	<pre>https://lasp.colorado.edu/lisird/latis/dap/sorce_ssi_l3.csv? time,wavelength,quality,irradiance,uncertainty&time>=2010-01-01T00:00:00Z&time<=2020-01- 01T00:00:00Z&formatTime(yyyy-MM-dd'T'HH:mm:ss)&replace_missing(NaN)&rename(time,t)</pre>						
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By downloading data, you agree to cite the data source in presentations or publications.	<pre>https://lasp.colorado.edu/lisird/latis/dap/tsis_ssi_24hr.csv? time,wavelength,additional_uncertainty,quality,instrument_uncertainty,irradiance,measurement_precision,me urement_stability&time>=2010-01-01T00:00:002&time<=2020-01-01T00:00:002&formatTime(yyyy-MM-</pre>						

Search	American Relative Sunspot Number - Daily	~	Sunspot Number	Jan 01, 1945	Oct 03, 2023		
	American Relative Sunspot Number - Monthly Averages	~	Sunspot Number	Dec 01, 1944	Oct 03, 2023		
Data type CLEAR			Magnesium II Index				
Solar spectral irradiance (51)	Bremen Composite Magnesium II Index	\sim	Uncertainty	Nov 07, 1978	Oct 03, 2023	280 nm	280 nm
Spectral bands (31)			Source ID				
Total solar irradiance (17)							
Composite (9)	Call K-Line	\sim	0 of 7 variables selected 💌	Nov 20, 1976	Sep 30, 2015		
Sunspot (8)							
Solar radio flux (7)	GLS Solar Radio Elux at 10.7 cm	\sim	0 of 8 variables selected	Nov 01 1951	Oct 03 2023	10.7 cm	10.7 cm
Solar images (6)	MAN MAINING ALMONDA AND A	28 - 940-283	o or o variables selected	100 01, 1901	001 00, 2020	10.7 611	10.7 611
Reference spectra (3)							
1-AU correction (2)	CLS Solar Radio Flux at 15 cm	\sim	0 of 8 variables selected 💌	Nov 01, 1951	Oct 03, 2023	15 cm	15 cm
 Update status CLEAR 	CLS Solar Radio Elux at 3.2 cm	~	0 of 8 variables selected	Nov 01 1951	Oct 03 2023	3.2 cm	3.2 cm
Ongoing data			o or o variables selected	100 01, 1991	001 00, 2020	5.2 611	5.2 611
Archival data							
A Date range CLEAR	CLS Solar Radio Flux at 30 cm	\sim	0 of 8 variables selected 💌	Nov 01, 1951	Oct 03, 2023	30 cm	30 cm
start date							
1610-01-01	CLS Solar Radio Flux at 8 cm	~	0 of 8 variables selected	Nov 01, 1951	Oct 03, 2023	8 cm	8 cm
2100-12-31	Composite Magnesium II Core-to-Wing Index	~	Magnesium II Index	Nov 06, 1978	Jul 15. 2013	280 nm	280 nm
		120000000					
			Irradiance				
	Composite Solar Lyman-alpha	~	Uncertainty	Feb 14, 1947	Oct 01, 2023	121 nm	122 nm

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Filterable catalog of over 120 datasets

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Acknowledgments



Intuitive and powerful plotting capabilities



Customizable data downloads

LaTiS

LaTiS is the data access library underlying LISIRD. LaTiS supports multiple service interfaces including HAPI I and DAP2 (OPeNDAP ID). The LaTIS API allows software programs to access most of the datasets in the data center. It mplements a Functional Data Model 🛯 to provide customizable data access via a query language that leverages LaTiS's functional algebra."



Interactive image dataset viewer

Clients can query LaTiS with URLs that:					
 Select a dataset Specify the desired variables Specify the desired range 					
 Pass the result through a number of other operations Specify an output format 	LaTiS usage				
LaTiS accesses data in real time from its source repository and a	https://lasp.colorado.edu/lisird/latis/dap/dataset.suffix?projection&selection&operation				
possible. The original source for data in LISIRD can be viewed by well as in the "Original files" tab on the Download page.	<i>dataset</i> The dataset to request (see <u>Available Datasets</u>)				
Because each dataset is accessed from its original source, its da the source is not operational.	suffix Type of output (see <u>Output Options</u>)				
Using LaTiS with Python	projection				
For a Jupyter notebook I example of how to use the LaTiS API in	Comma-separated list of variables to return. Default to all. The Dataset Descriptor Structure (DDS) will describe the variables for each dataset. Use the . <i>dds</i> suffix to get a dataset's DDS.				
https://mybinder.org/v2/gh/lasp/latis-notebooks/main?filepath=	selection				
	Zero or more relative constraints on a variable (e.g. &time<=2010-01-01T12:00 or &irradiance>1360). Each must be separated by an '&'.				
	operation				
	Zero or more other operations to be applied to the data (see <u>Operation Options</u>). Each must be separated by an '&'.				
	LaTiS URLs are also useful for accessing data from the command line (see Using LaTiS with wget and curl).				

Programmatic data access via the LaTiS and HAPI APIs

Overview

The LASP Interactive Solar IRradiance Datacenter (LISIRD) is

Key features

• Detailed metadata: LISIRD provides researchers with comprehensive metadata,

Next steps

• Continue refining metadata to aid

Contact us

a website that provides convenient, standardized access to solar data from a variety of missions, instruments, models, and laboratories.

The primary objectives of LISIRD include:

Details

Version: Processing leve

Publishers:

Update status:

Time range:

aboratory for Atmospheric and Space Physics (LASP)

- **Discoverability**: Make solar data more openly available.
- **Standardization**: Offer a common interface for otherwise disparate data.
- **Modernization**: Rethink how data can be accessed beyond just static files on a server.
- **Analyzability**: Offer data that is analysis-ready by removing preprocessing overhead.

- offering a wealth of contextual information that enriches the transparency, understanding, and utilization of each dataset.
- Interactive plotting capabilities: LISIRD offers an array of intuitive and robust plotting tools, enabling researchers to visualize and explore solar datasets effortlessly.
- **Collaborative analysis**: LISIRD facilitates the convenient saving and sharing of plot configurations, streamlining collaborative research efforts.
- **Customizable data downloads**: LISIRD empowers users to download data in various file formats, refine data acquisition by specifying temporal and spectral ranges of interest, and even apply minor operations like variable renaming and time format customization. This flexibility ensures that researchers receive data optimized for their specific workflow requirements.

long-term data discovery and reuse.

- Improve accessibility by integrating with tools like Python, Jupyter Notebooks, and SunPy.
- Run LISIRD in the cloud to allow for more dynamic scaling of resources when necessary. This will also allow LISIRD to support larger / higher-cadence datasets.
- Continue adding datasets to better serve the needs of the community.

lisird@lasp.colorado.edu

Feel free to contact us with any questions, feedback, or suggestions for datasets you'd like offered through LISIRD.

lasp.colorado.edu/lisird

