Data Description

This page summarizes information about the selected resource and its origin based on SPASE metadata.

Table of Contents

1. Product
   - Helios 1 Merged Plasma and Magnetic Field
2. Repository
   - VHO and VMO Data Repository at NASA/GSFC
3. Instruments
   - Fluxgate Magnetometer for Field Fluctuations
   - Helios 1 E1 Plasma Experiment
4. Observatory
   - Helios 1
5. Persons
   - Dr. Helmut R. Rosenbauer
   - Prof. Fritz M. Neubauer
   - Dr. Rainer Schwenn
   - Dr. D. Aaron Roberts
   - Jan Merka
   - Dr. James H. Trainor
   - Dr. Herbert Porsche

Numerical Data Product: Helios 1 Merged Plasma and Magnetic Field

Resource ID	spase://VHO/NumericalData/Helios1/Combined/PT40.5S XML
Name	Helios 1 Merged Plasma and Magnetic Field
Description	Merged solar wind plasma and magnetic field measurements from the Helios 1 spacecraft. Variable time resolution (2-10 minutes) Calibrated science quality data.
Additional information	Max Planck Institute for Solar System Research Helios Project page — A website describing the Helios mission and its instruments
Acknowledgement	User will acknowledge the Helios plasma instrument PI Dr. Helmut Rosenbauer and the magnetometer PI Prof. Fritz M. Neubauer.

Contact

	Role	Person
1.	Principal investigator	Dr. Helmut R. Rosenbauer XML
2.	Principal investigator	Prof. Fritz M. Neubauer XML
3.	Data producer	Dr. Rainer Schwenn XML
4.	Data producer	Dr. D. Aaron Roberts XML

Release date	2008-08-26 22:20:12

Repository

Name	VHO and VMO Data Repository at NASA/GSFC XML	
Availability	Online	
Access rights	Open	
URL	Download of Helios 1 merged plasma and magnetic field data	Repository of the Helios 1 data
Format	Text	

	Encoding ASCII
Provider resource name	Helios 1 Merged Plasma and Magnetic Field
Provider version	1
Instruments	Fluxgate Magnetometer for Field Fluctuations XML Helios 1 E1 Plasma Experiment XML
Measurement type	Ephemeris Magnetic field Thermal plasma
Temporal description	**Start date** 1974-12-12 01:21:38 **Stop date** 1985-09-04 09:52:10 **Cadence** PT40.5S
Observed regions	Heliosphere.Inner
Caveats	Fundamental cadence of 40.5 sec with numerous gaps
Keywords	Magnetic field Solar Wind Plasma

Physical Parameters

Parameter #1

Name	Year
Parameter key	Field 1
Description	Year of the observation
Parameter type	Temporal

Parameter #2

Name	Day
Parameter key	Field 2
Description	Day of year of the observation
Parameter type	Temporal

Parameter #3

Name	DecimalHour
Parameter key	Field 3
Description	Decimal Hour of the observation
Parameter type	Temporal

Parameter #4

Name	Hour
Parameter key	Field 4
Description	Integer Hour of the observation
Parameter type	Temporal

Parameter #5

Name	Minute
Parameter key	Field 5

Description	Minute of the observation
Parameter type	Temporal

Parameter #6

Name	Second
Parameter key	Field 6
Description	Second of the observation
Parameter type	Temporal

Parameter #7

Name	RadDist
Parameter key	Field 7
Description	Heliocentric radial distance of the s/c from the Sun
Units	AU
Conversion to SI units	1.495979e-11>m
Parameter type	Positional

Parameter #8

Name	EarthSunSCAng
Parameter key	Field 8
Description	Earth-Sun-S/C Angle
Units	degree
Conversion to SI units	1.745329e-2rad
Parameter type	Positional

Parameter #9

Name	CarrLong
Parameter key	Field 9
Description	Carrington longitude of the s/c
Units	degree
Conversion to SI units	1.745329e-2>rad
Parameter type	Positional

Parameter #10

Name	CarrLat
Parameter key	Field 10
Description	Carrington latitude of the s/c
Units	degree
Conversion to SI units	1.745329e-2rad
Parameter type	Positional

Parameter #11

Name	HGILong
Parameter key	Field 11
Description	HGI Longitude of the s/c

Units	degree
Conversion to SI units	1.745329e-2rad
Coordinate system	Spherical HGI
Parameter type	Positional

Parameter #12

Name	Br
Parameter key	Field 12
Description	Br magnetic field component in RTN coordinates.
Units	nT
Conversion to SI units	1.0e-9>T
Coordinate system	Cartesian RTN
Quantity	Magnetic field
Qualifier	Component X

Parameter #13

Name	Bt
Parameter key	Field 13
Description	Bt magnetic field component in RTN coordinates.
Units	nT
Conversion to SI units	1.0e-9>T
Coordinate system	Cartesian RTN
Quantity	Magnetic field
Qualifier	Component Y

Parameter #14

Name	Bn
Parameter key	Field 14
Description	Bn magnetic field component in RTN coordinates.
Units	nT
Conversion to SI units	1.0e-9>T
Coordinate system	Cartesian RTN
Quantity	Magnetic field
Qualifier	Component Z

Parameter #15

Proton

Name	Vp1R
Parameter key	Field 15
Description	Proton velocity R component in RTN coordinates from the E1/I1A sensor
Caveats	These RTN coordinates assumed the spacecraft to be in the ecliptic
Units	km/s
Conversion to SI units	1.0e3>m/s
Coordinate system	Cartesian RTN
Particle type	
Quantity	Velocity

Qualifier	Component X

Parameter #16

Proton

Name	Vp1T
Parameter key	Field 16
Description	Proton velocity T component in RTN coordinates from the E1/I1A sensor
Caveats	These RTN coordinates assumed the spacecraft to be in the ecliptic
Units	km/s
Conversion to SI units	1.0e3>m/s
Coordinate system	Cartesian RTN
Particle type	
Quantity	Velocity
Qualifier	Component Y

Parameter #17

Proton

Name	Vp1N
Parameter key	Field 17
Description	Proton velocity N component in RTN coordinates from the E1/I1A sensor
Caveats	These RTN coordinates assumed the spacecraft to be in the ecliptic
Units	km/s
Conversion to SI units	1.0e3>m/s
Coordinate system	Cartesian RTN
Particle type	
Quantity	Velocity
Qualifier	Component Z

Parameter #18

Name	CarrRot
Parameter key	Field 18
Description	Carrington rotation number of the s/c
Parameter type	Positional

Parameter #19

Proton

Name	Np1
Parameter key	Field 19
Description	Proton number desnity from the E1/I1A sensor
Units	cm^-3
Conversion to SI units	1.0e-6>m^-3
Particle type	
Quantity	NumberDensity
Qualifier	Moment

Parameter #20

Proton

Name	Vp1
Parameter key	Field 20
Description	Proton speed (scalar) from the E1/I1A sensor
Units	km/s
Conversion to SI units	1.0e3>m/s
Particle type	
Quantity	Velocity
Qualifier	Magnitude

Parameter #21

Proton

Name	Tp1
Parameter key	Field 21
Description	Proton scalar temperature from the E1/I1A sensor
Units	K
Particle type	
Quantity	Temperature
Qualifier	Scalar

Parameter #22

Proton

Name	Vp1az
Parameter key	Field 22
Description	Proton velocity azimuth flow angle in SSE coordinates from the E1/I1A sensor
Units	deg
Conversion to SI units	1.745329e-2>rad
Coordinate system	Spherical SSE
Particle type	
Quantity	Velocity
Qualifier	Component Phi

Parameter #23

Proton

Name	Vp1el
Parameter key	Field 23
Description	Proton velocity elevational flow angle in SSE coordinates from the E1/I1A sensor
Units	deg
Conversion to SI units	1.745329e-2>rad
Coordinate system	Spherical SSE
Particle type	
Quantity	Velocity
Qualifier	Component Theta

Parameter #24

Name	Bx

Parameter key	Field 24
Description	Bx magnetic field component in SSE coordinates.
Units	nT
Conversion to SI units	1.0e-9>T
Coordinate system	Cartesian SSE
Quantity	Magnetic field
Qualifier	Component X

Parameter #25

Name	By
Parameter key	Field 25
Description	By magnetic field component in SSE coordinates.
Units	nT
Conversion to SI units	1.0e-9>T
Coordinate system	Cartesian SSE
Quantity	Magnetic field
Qualifier	Component Y

Parameter #26

Name	Bz
Parameter key	Field 26
Description	Bz magnetic field component in SSE coordinates.
Units	nT
Conversion to SI units	1.0e-9>T
Coordinate system	Cartesian SSE
Quantity	Magnetic field
Qualifier	Component Z

Parameter #27

Name	sBx
Parameter key	Field 27
Description	One standard deviation of Bx magnetic field component in SSE coordinates.
Units	nT
Conversion to SI units	1.0e-9>T
Coordinate system	Cartesian SSE
Quantity	Magnetic field
Qualifier	Component X Standard deviation

Parameter #28

Name	sBy
Parameter key	Field 28
Description	One standrd deviation of By magnetic field component in SSE coordinates.
Units	nT
Conversion to SI units	1.0e-9>T
Coordinate system	Cartesian SSE

Quantity	Magnetic field
Qualifier	Component Y Standard deviation

Parameter #29

Name	sBz
Parameter key	Field 29
Description	One standard deviation of Bz magnetic field component in SSE coordinates.
Units	nT
Conversion to SI units	1.0e-9>T
Coordinate system	Cartesian SSE
Quantity	Magnetic field
Qualifier	Component Z Standard deviation

Parameter #30

AlphaParticle

Name	Na1
Parameter key	Field 30
Description	Alpha number desnity from the E1/I1A sensor
Units	cm^-3
Conversion to SI units	1.0e-6>m^-3
Particle type	
Quantity	NumberDensity
Qualifier	Moment

Parameter #31

AlphaParticle

Name	Va1
Parameter key	Field 31
Description	Alpha speed (scalar) from the E1/I1A sensor
Units	km/s
Conversion to SI units	1.0e3>m/s
Particle type	
Quantity	Velocity
Qualifier	Magnitude

Parameter #32

AlphaParticle

Name	Ta1
Parameter key	Field 32
Description	Alpha scalar temperature from the E1/I1A sensor
Units	K
Particle type	
Quantity	Temperature
Qualifier	Scalar

Parameter #33

Proton

Name	Np2
Parameter key	Field 33
Description	Proton number desnity from the E1/I1B sensor
Units	cm^-3
Conversion to SI units	1.0e-6>m^-3
Particle type	
Quantity	NumberDensity
Qualifier	Moment

Parameter #34

Proton

Name	Vp2
Parameter key	Field 34
Description	Proton speed (scalar) from the E1/I1B sensor
Units	km/s
Conversion to SI units	1.0e3>m/s
Particle type	
Quantity	Velocity
Qualifier	Magnitude

Instrument: Fluxgate Magnetometer for Field Fluctuations

Instrument ID	spase://SMWG/Instrument/Helios1/E2 XML
Name	Fluxgate Magnetometer for Field Fluctuations
Alternate names	Helios 1 E2 Helios 1 MGB
Description	The instrument (E2) consisted of a triaxial fluxgate magnetometer mounted on a 2.75-m boom to make magnetic field measurements up to 4 Hz. Data from each axis were first sent through a low-pass filter with the 3 dB attenuation point at 4 Hz. Depending on the telemetry format and bit rate, the data were fed either into a time-averaging computer or directly connected to telemetry. When there were discontinuities in the variations of the ambient magnetic field, a shock-identification computer triggered the storage of rapid-rate data in the spacecraft memory. Two measurement ranges were used, plus or minus 100 and 400 nT with resolutions of plus or minus 0.2 and 0.8 nT, respectively. The instrument was equipped with a flipper mechanism, which re-oriented each sensor by 90 deg periodically. For detailed information, see p. 232 of Raumfahrtforschung, v. 19, n. 5, 1975.
Acknowledgement	User will acknowledge the Helios 1 MGB PI F. B. Neubauer in any publication resulting from the use of these data.
Contact	**Role** / **Person** 1. Data producer — Dr. Rainer Schwenn XML 2. Principal investigator — Prof. Fritz M. Neubauer XML
Release date	2008-06-18 19:19:59
Instrument type	Magnetometer
Investigation name	E2 Fluxgate Magnetometer

Observatory	Helios 1 XML

Instrument: Helios 1 E1 Plasma Experiment

Instrument ID	spase://SMWG/Instrument/Helios1/E1 XML
Name	Helios 1 E1 Plasma Experiment
Alternate name	Helios 1 E1
Description	The E1 plasma experiment aboard the Helios solar probes consists of four independent instruments designed to investigate the solar wind plasma. By measuring the velocity distribution functions of the different kinds of particles, all important hydrodynamic parameters of the solar wind plasma can be derived. Three instruments (I1a, I1b, and I3) analyze the positive components (protons and heavier ions with energy-per-charge values from 0.155 to 15.32 kV) of the solar wind. Two of them allow for an angular resolution in both directions of incidence. The experiment employed a combination of a hemispherical, a quadrispherical, and a sinusoidally-shaped electrostatic analyzer. All detectors were mounted normal to the spin axis. One instrument (I2) measures electrons in the energy range from 0.5 the 1660 eV with one-dimensional angular resolution using a hemispherical electrostatic analyzer. For more detailed information see p. 226 of Raumfahrtforschung, v. 19, n. 5, 1975.
Acknowledgement	User will acknowledge the Helios 1 Plasma Experiment PI F. H. R. Rosenbauer in any publication resulting from the use of these data.
Contact	**Role** / **Person** 1. Data producer — Dr. Rainer Schwenn XML 2. Principal investigator — Dr. Helmut R. Rosenbauer XML
Release date	2008-06-18 19:19:59
Instrument type	ElectrostaticAnalyser
Investigation name	E1 Plasma Experiment
Observatory	Helios 1 XML

Observatory: Helios 1

Observatory ID	spase://SMWG/Observatory/Helios1 XML
Name	Helios 1
Alternate name	Helios-A
Description	This spacecraft was one of a pair of deep space probes developed by the Federal Republic of Germany (FRG) in a cooperative program with NASA. Experiments were provided by scientists from both FRG and the U.S. NASA supplied the Titan/Centaur launch vehicle. The spacecraft was equipped with two booms and a 32-m electric dipole. The payload consisted of a fluxgate magnetometer; electric and magnetic wave experiments, which covered various bands in the frequency range 6 Hz to 3 MHz; charged-particle experiments, which covered various energy ranges starting with solar wind thermal energies and extending to 1 GeV; a zodiacal-light experiment; and a micrometeoroid experiment. The purpose of the mission was to make pioneering measurements of the interplanetary medium from the vicinity of the earth's orbit to 0.3 AU. The spin axis was normal to the ecliptic, and the nominal spin rate was 1 rps. The outer spacecraft surface was dielectric, effectively (because of the sheath potential) raising the low-energy threshold for the solar wind plasma experiment to as high as 100 eV. Also, sheath-related coupling caused by the spacecraft antennae produced interference with the wave experiments. The spacecraft was capable of being operated at bit rates from 4096 to 8 bps, variable by factors of 2. While the spacecraft was moving to perihelion, it was generally

	operated from 64 to 256 bps; and near 0.3 AU, it was operated at the highest bit rate. Because of a deployment failure of one axis of the 32-m, tip-to-tip, dipole antenna, one axis was shorted, causing the antenna to function as a monopole. The major effect of this anomaly was to increase the effective instrument thresholds, and to introduce additional uncertainties in the effective antenna length. Instrument descriptions written by the experimenters were published (some in German, some in English) in Raumfahrtforschung, v. 19, n. 5, 1975.
Additional information	NSSDC's Master Catalog Information about the Helios-A mission
Contact	**Role** **Person** 1. Project scientist Dr. James H. Trainor XML 2. Project scientist Dr. Herbert Porsche XML
Release date	2008-05-20 17:59:52
Prior ID	spase://vspo/observatory/43 XML
Observatory group	HELIOS
Location	**Region** Heliosphere.Inner

Person: Dr. Helmut R. Rosenbauer

Name	Dr. Helmut R. Rosenbauer
Organization	Max-Planck-Institut fur Aeronomie
Person ID	spase://SMWG/Person/Helmut.R.Rosenbauer XML

Person: Prof. Fritz M. Neubauer

Name	Prof. Fritz M. Neubauer
Organization	Universitat zu Koln
Person ID	spase://SMWG/Person/Fritz.M.Neubauer XML

Person: Dr. Rainer Schwenn

Name	Dr. Rainer Schwenn
Organization	Max-Planck-Institut fur Aeronomie
Person ID	spase://SMWG/Person/Rainer.Schwenn XML

Person: Dr. D. Aaron Roberts

Name	Dr. D. Aaron Roberts
Organization	GSFC-Code 692
Person ID	spase://SMWG/Person/D.Aaron.Roberts XML

Person: Jan Merka

Name	Jan Merka
Organization	NASA Goddard Space Flight Center
Address	Code 672, Greenbelt, MD 20771, USA
Email	jan.merka@nasa.gov
Phone	1-301-286-8751

Person ID	spase://SMWG/Person/Jan.Merka XML
Release date	2007-08-09 22:02:24

Person: Dr. James H. Trainor

Name	Dr. James H. Trainor
Organization	Deceased - formerly at GSFC
Person ID	spase://SMWG/Person/James.H.Trainor XML
Release date	2003-10-20 00:00:00

Person: Dr. Herbert Porsche

Name	Dr. Herbert Porsche
Organization	DLR
Phone	+1-49-8153-28-505
Person ID	spase://SMWG/Person/Herbert.Porsche XML
Release date	2003-01-31 00:00:00

Repository: VHO and VMO Data Repository at NASA/GSFC

Repository ID	spase://SMWG/Repository/NASA/GSFC/VHO-VMO XML	
Name	VHO and VMO Data Repository at NASA/GSFC	
Description	Data repository co-located with the VHO and VMO at NASA Goddard Space Flight Center.	
Additional information	NASA/GSFC VHO/VMO Data Repository	The top-level directory of VHO/VMO data repository. (vho.nasa.gov server)
	NASA/GSFC VHO/VMO Data Repository	The top-level directory of VHO/VMO data repository. (vmo.nasa.gov server)

Contact

	Role	Person
1.	General contact Technical contact	Jan Merka XML

Release date	2008-08-26 21:16:21
Prior ID	spase://VMO/Repository/VHO-VMO XML

SPASE version 1.3.0