

Program and Abstracts

CSWM

CAWSES International Workshop
on Space Weather Modeling

SOC

K. Shibata (Co-chair, Kyoto University, Japan)
K. Kusano (Co-chair, The Earth Simulator Center, JAMSTEC, Japan)
J. Buechner (Max-Planck Institut für Sonnensystemforschung, Germany)
T. I. Gombosi (The University of Michigan, USA)
N. Gopalswamy (NASA, Goddard Space Flight Center, USA)
M. Hesse (NASA, Goddard Space Flight Center, USA)
J. U. Kozyra (The University of Michigan, USA)
J. Lin (Yunnan Astronomical Observatory, China; Harvard-Smithsonian Center for Astrophysics, USA)
T. Ogino (Nagoya University, Japan)
B. Sanahuja (Universitat de Barcelona, Spain)
S. T. Wu (University of Alabama in Huntsville, USA)

LOC

M. Fujimoto (JAXA/ISAS)	S. Hirose (ESC/JAMSTEC)
M. Hoshino (U. Tokyo)	K. Kusano (ESC/JAMSTEC)
T. Miyoshi (Hiroshima U.)	T. Obara (NiCT)
M. Oka (Kyoto U.)	Y. Omura (Kyoto U.)
T. Sakurai (NAOJ)	K. Shibata (Kyoto U.)
T. Sugiyama (ESC/JAMSTEC)	S. Tsuneta (NAOJ)
M. Ugai (Ehime U.)	T. Yokoyama (U. Tokyo)

Sponsorship

Grant-in-Aid of the MEXT of Japan for Creative Scientific Research
"The Basic Study of Space Weather Prediction"
CAWSES/SCOSTEP
Solar-Terrestrial Environment Laboratory, Nagoya University
Research Institute for Sustainable Humanosphere (RISH), Kyoto University

Cover: Aurora image reproduced in the Earth Simulator. The MHD-PIC connection model is first applied to the study of the auroral arc formation process. Both the Alfvén wave resonance instability and the electron acceleration in the double layer structure formed by the ion-acoustic instability are calculated simultaneously. This image is a visualized using the intensity of the ionized particles obtained from the velocity distribution function in PIC. The aurora was drawn by using the volume rendering method. (Provided by Advanced Perception Research Group / the Earth Simulator Center)

CSWM Session Table

DATE		AM1		AM2		PM1		PM2		
Nov.13		Time & Chairperson (tentative)						16:00–17:30		
								Registration & Welcome Reception at Guest House, JAMSTEC		
Nov.14	8:50–9:20	9:20–10:40 T. Sakurai		11:00–12:40 T. Obara		14:00–16:10 T. Yokoyama		16:10–17:40	17:40–18:40	
	Registration	Opening K. Kusano (10)	break (20)	F. R. Toffoletto (40)	lunch (80)	V. Archontis (40)	Short Oral Presentation for POSTER I (30)	POSTER I (90)	Virtual Conference (60)	
		S. Tsuneta (30)		H. Shinagawa (20)		H. Kurokawa (20)				
		Y. Katsukawa (20)		H. Fujiwara (40)		N. Gopalswamy (20)				
		H. Hara (20)				S. Pohjolainen (20)				
Nov.15	9:00–10:20 T. Terasawa		10:40–12:40 S. Machida		14:00–15:40 K. Maezawa		16:00–17:00	17:00–18:00	18:00–20:00	
Nov.15		T. Wiegmann (35)	break (20)	W. B. Manchester (40)	lunch (80)	G. Li (40)	break (20)	ES Tour (60)	Bus Transportation	Banquet
		Y. Yan (25)		D. Odstrcil (40)		N. V. Nitta (20)				
		H. He (20)		K. Hayashi (20)		M. Oka (20)				
				T. Miyoshi (20)		I. Shinohara (20)				
Nov.16	9:00–10:40 M. Ugai		11:00–12:40 M. Hoshino		14:00–16:10 Y. Omura		16:10–17:40	17:40–18:40		
	T. Amari (40)	break (20)	T. Onsager (40)	lunch (80)	M. Fok (40)	Short Oral Presentation for POSTER II (30)	POSTER II (90)	Virtual Conference (60)		
	B. Kliem (40)		J. Raeder (40)		R. Kataoka (20)					
	D. Shiota (20)		T. Ogino (20)		H. Shimazu (20)					
					S. Fujita (20)					
Nov.17	9:00–10:40 (TBD)		11:00–12:40 T. Kikuchi		14:00–15:40 (TBD)		16:00–17:00 K. Shibata			
	M. Rempel (40)	break (20)	T. B. Welsch (40)	lunch (80)	K. Kusano (40)	break (20)	SUMMARY Y. Kamide (30) Discussion & Closing (30)			
	T. Magara (20)		T. K. Suzuki (20)		T. Sugiyama (20)					
	H. Wang (20)		D. Nagata (20)		T. Umeda (20)					
	A. Asai (20)		Y. Katoh (20)		K. Fujimoto (20)					

Contents

Session Table	i
November 14	1
AM1 (Chair: T. Sakurai)	
Opening (9:20 – 9:30)	
K. Kusano	
S. Tsuneta: (9:30 – 10:00 : invited)	
”Hinode”; A New Solar Observatory in Space - Current Status -	3
Y. Katsukawa: (10:00 – 10:20)	
First Light of Solar Optical Telescope (SOT) on <i>HINODE</i>	4
H. Hara: (10:20 – 10:40)	
<i>Hinode</i> X-ray Telescope and EUV Imaging Spectrometer	5
~~ break ~~	
AM2 (Chair: T. Obara)	
F. R. Toffoletto: (11:00 – 11:40 : invited)	
Magnetosphere-Ionosphere Coupling: A Modeler’s Per- spective	6
H. Shinagawa: (11:40 – 12:00)	
Development of the NICT real-time thermosphere-ionosphere simulator	7
H. Fujiwara: (12:00 – 12:40 : invited)	
GCM simulations of the thermaospherer/ionosphere . . .	8
~~ lunch ~~	
PM1 (Chair: T. Yokoyama)	
V. Archontis: (14:00 – 14:40 : invited)	
Emergence and eruptions of magnetic flux in the solar atmosphere	9
H. Kurokawa: (14:40 – 15:00)	
Observational Evidences of Emerging Twisted Magnetic Flux Ropes in Strong Flare Regions	10

N. Gopalswamy: (15:00 – 15:20)	
Coronal Mass Ejections and Adverse Space Weather . . .	11
S. Pohjolainen: (15:20 – 15:40)	
Tracing CMEs from the corona to 1 AU in radio emission	12

Poster I (Chair: T. Yokoyama)	
Short Oral Presentation: (15:40 – 16:10)	
Core Presentation Time: (16:10 – 17:40)	

Virtual Conference I (17:40 – 18:40)

November 15 **13**

AM1 (Chair: T. Terasawa)	
T. Wiegmann: (9:00 – 9:35 : invited)	
Nonlinear force-free field modeling of the solar coronal magnetic field	15
Y. Yan: (9:35 – 10:00 : invited)	
Nonlinear Force-Free Field Modeling of Solar Coronal Magnetic Fields	16
H. He: (10:00 – 10:20)	
Non-linear force-free magnetic field extrapolation scheme based on the direct boundary integral formulation	17

~~ break ~~

AM2 (Chair: S. Machida)	
W. B. Manchester: (10:40 – 11:20 : invited)	
Simulations of the Sun-Earth System: Modeling the Hal- loween Events with SWMF	18
D. Odstrcil: (11:20 – 12:00 : invited)	
Numerical Modeling of May 1998 Interplanetary CME Events	19
K. Hayashi: (12:00 – 12:20)	
MHD simulation of solar corona and solar wind and the sub-Alfvenic boundary treatments to utilize the measure- ment data.	20
T. Miyoshi: (12:20 – 12:40)	
A positively conservative scheme for MHD in space plasma simulations	21

~~ lunch ~~

PM1 (Chair: K. Maezawa)	
G. Li: (14:00 – 14:40 : invited)	
Particle acceleration and transport in large SEP events . . .	22
N. V. Nitta: (14:40 – 15:00)	
SEP Properties and Magnetic Field Connection of the Source Region	23
M. Oka: (15:00 – 15:20)	
Particle Acceleration by Shocks and the Whistler Critical Mach Number	24
I. Shinohara: (15:20 – 15:40)	
Electron acceleration via magnetic island coalescence . . .	25

~~ break ~~

”The Earth Simulator” Tour (16:00 – 17:00)
 Bus Transportation (17:00 – 18:00)
 Banquet (18:00 – 20:00) at China Town, Yokohama

November 16 **27**

AM1 (Chair: M. Ugai)	
T. Amari: (9:00 – 9:40 : invited)	
.	29
B. Kliem: (9:40 – 10:20 : invited)	
Mechanisms and Kinematics of Coronal Mass Ejections . . .	30
D. Shiota: (10:20 – 10:40)	
Three dimensional Magnetohydrodynamic modeling of Coro- nal Mass Ejections	31

~~ break ~~

AM2 (Chair: M. Hoshino)	
T. G. Onsager: (11:00 – 11:40 : invited)	
Scientific Model Developments Needed to Mitigate Space Weather Impacts	32
J. Raeder: (11:40 – 12:20 : invited)	
Progress and Challenges Modeling the Geospace Envi- ronment	33
T. Ogino: (12:20 – 12:40)	
An MHD Simulation of the Solar Wind-Magnetosphere Interaction on Substorms and Magnetospheric Storms . . .	34

~~ lunch ~~

PM1 (Chair: Y. Omura)	
M. Fok: (14:00 – 14:40 : invited)	
Modeling the Inner Magnetosphere	35
R. Kataoka: (14:40 – 15:00)	
MHD and ring current simulations of a superstorm on 20 November 2003	36
H. Shimazu: (15:00 – 15:20)	
Real-time global MHD simulation of the solar wind in- teraction with the earth’s magnetosphere	37
S. Fujita: (15:20 – 15:40)	
A numerical simulation of an overshielding effect of the magnetospheric convection electric field	38
 Poster II (Chair: Y. Omura)	
Short Oral Presentation: (15:40 – 16:10)	
Core Presentation Time: (16:10 – 17:40)	
 Virtual Conference II (17:40 – 18:40)	

November 17 **39**

AM1 (Chair: TBD)	
M. Rempel: (9:00 – 9:40 : invited)	
Modeling and predicting solar cycles using a flux-transport dynamo	41
T. Magara: (9:40 – 10:00)	
Photospheric and coronal activities dynamically produced by flux emergence	42
H. Wang: (10:00 – 10:20)	
Correlation between Solar Flare Procutivity and Pho- tospheric Magnetic Field Properties	43
A. Asai: (10:20 – 10:40)	
Anemone Structure and Geo-Effective Flares/CMEs	44

~~ break ~~

AM2 (Chair: T. Kikuchi)

B. T. Welsch: (11:00 – 11:40 : invited)	
Forecasting Space Weather with Dynamic Coronal Models	45
T. K. Suzuki: (11:40 – 12:00)	
Forecasting Solar Wind Speeds	46
D. Nagata: (12:00 – 12:20)	
Solar wind control of plasma number density in the near-Earth plasma sheet: Coordinated study of WIND-ACE/GEOTAIL observations	47
Y. Katoh: (12:20 – 12:40)	
Particle simulation of VLF triggered emissions - roles of the nonlinear cyclotron resonant interaction in the wave generation process	48

~~ lunch ~~

PM1 (Chair: TBD)

K. Kusano: (14:00 – 14:40 : invited)	
Predictability of Solar Flare Onset and Multi-scale Modelings for Space Weather Dynamics	49
T. Sugiyama: (14:40 – 15:00)	
MHD-PIC Interlocked Simulation Model for Magnetic Reconnection	50
T. Umeda: (15:00 – 15:20)	
Polynomial interpolation for hyperbolic conservation laws (PIC) scheme: Application to Vlasov Simulations	51
K. Fujimoto: (15:20 – 15:40)	
Magnetic Reconnection in Large and Fully Kinetic System	52

~~ break ~~

Summary (Chair: K. Shibata)

Y. Kamide: (16:00 – 16:30)	
Toward the success of space weather predictions	53
Discussion & Closing (16:30 – 17:00)	
K. Shibata	

November 14

Short Oral Presentation: (15:40 – 16:10)

Core Presentation Time: (16:10 – 17:40)

P1-01	K. K. Reeves: Expected Performance and Science Modes of the X-Ray Telescope on Solar B	57
P1-02	T. Yamamoto: Forecast of the Solar Flare Magnitude from the Photospheric Magnetic Field	58
P1-03	K. Nagashima: The trigger mechanism of flares occurred in the most flare-productive active region during Solar Cycle 23	59
P1-04	K. Hori: Coronal Transient Activities Observed with Norikura Green-line Imaging System "NOGIS"	60
P1-05	T. Matsumoto: MHD modeling for global corona	61
P1-06	T. Yokoyama: Study of the Energy Build-up Process in Solar Active Regions by Using the Longitudinal Magnetic Field Observations	62
P1-07	S. Ueno: Investigation of the Spatial Correlation between Solar Flare Kernels and Photospheric Magnetic Field Configurations by using the SMART at Hida Obs.	63
P1-08	S. Yashiro: X-class Flares without Coronal Mass Ejections during Solar Cycle 23	64
P1-09	K. Nishida: An MHD model for impulsive flares focused on a correlation between plasmoid speed and reconnection rate	65
P1-10	K. Hakamada: The relationships among Solar Wind Speed, Coronal Magnetic Field, and Photospheric Magnetic Field	66
P1-11	K. Tsubouchi: Processes of the Alfvén wave compression by high-speed solar winds	67
P1-12	K. G. Tanaka: Study of reconnection layer structure with density asymmetric current sheet	68
P1-13	T. Shimizu: MHD Study of Three-Dimensional Instability in the Spontaneous Fast Magnetic Reconnection	69

P1-14	R. Yamazaki:	
	Full particle simulation of a perpendicular collisionless shock: A shock-rest-frame model	70
P1-15	Y. Fujita:	
	Visualization and Analysis of Three Dimensional Shock Surfaces formed in MHD Simulation of Magnetic Loop	71
P1-16	S. S. Ghosh:	
	Electron acoustic dromions in auroral plasma	72
P1-17	M. S. Nakamura:	
	Study of plasma environment at geosynchronous orbit of the real-time magnetosphere simulation for spacecraft charging forecast as space weather services	73
P1-18	T. Minoshima:	
	Fokker-Planck modeling of the non-thermal electrons in a solar flare – numerical simulation and comparison with the observations –	74
P1-19	K. Fukazawa:	
	Relation of the aurora activity with the magnetospheric dynamics in the rapid rotational planets	75
P1-20	S. Tanaka:	
	New MHD simulation codes with a higher-order non-oscillatory scheme	76
P1-21	T. Miyake:	
	Three-dimensional full-particle simulations of ion beam instability	77
P1-22	K. T. Murata:	
	Solar-Terrestrial data Analysis and Reference System Based on Web Service and RSS1.0	78

Note for poster presenters

1. Short Oral Session for POSTER I and II will be held just before each Poster Session. In these sessions, poster presenters should talk about the summary of each poster within 1min using one sheet of PowerPoint (ppt) file. The ppt file used in these sessions have to be sent to cswm_abst@jamstec.go.jp until noon of Nov. 13.
2. Poster presenters should stand by their posters during the core presentation time of assigned session (POSTER I or II).
3. All posters can be displayed during all four days of workshop.
4. Each poster board is 120cm wide and 175cm height.
5. Pushpins to affix posters on the board are available in the poster session area.

November 16

Short Oral Presentation: (15:40 – 16:10)

Core Presentation Time: (16:10 – 17:40)

P2-25	L. L. Lundquist: Calibration of the X-Ray Telescope on Solar-B	81
P2-26	K. Otsuji: The measurement of ascent speed of the ephemeral active regions using the cloud model	82
P2-27	P. Antolin: Nanoflare and Alfvén wave heating models, predicting differ- ences in the observational signatures	83
P2-28	Y. Yamauchi: Comparison between Characteristics of Filament Eruptions and Magnetic Flux Ropes	84
P2-29	J. C. Santos: Studying the evolution of plasma and magnetic field over active regions associated to flares and CMEs	85
P2-30	J. C. Santos: Determining the photospheric plasma flow from photospheric magnetic field measurements	86
P2-31	H. Isobe: MHD simulations of solar emerging flux regions using the Earth Simulator	87
P2-32	S. Inoue: Three-Dimensional Flux Tube Dynamics in the Solar Corona	88
P2-33	S. Inoue: The Extrapolation of Three-Dimensional Magnetic Field in the Solar Corona	89
P2-34	S. Notoya: The process of the flux-rope formation and eruption triggered by the emerging flux	90
P2-35	S. Watari: High speed solar wind and coronal holes near solar minimum	91
P2-36	A. K. Jadeja: CORONAL MASS EJECTIONS OF 28 OCTOBER 2003 & 14 NOVEMBER 2003 AND ASSOCIATED SPACE WEATHER EFFECTS	92
P2-37	A. Nakata: The current wedge in Magnetohydrodynamics simulation of fast reconnection model	93
P2-38	K. Kondoh: Study of Fast Convection Flow by Three Dimensional MHD Sim- ulations	94

P2-39	Y. Matsumoto:	
	Turbulent transport of cold and dense solar wind plasma into the magnetosphere by 3-D evolution of the Kelvin-Helmholtz instability	95
P2-40	T. Amano:	
	Effect of Shock Angle on Fast and Direct Acceleration of Electrons in High Mach Number Quasi-Perpendicular Shocks	96
P2-41	N. Nishizuka:	
	The test of the Fermi acceleratoion of the plasmoids passing through the fast shock	97
P2-42	Y. Ebihara:	
	Dynamics of the ring current during severe magnetic storms . .	98
P2-43	R. Kombiyil:	
	Storm-time equivalent currents derived from a meridional magnetometer chain and the investigation of associated dynamics . .	99
P2-44	N. Terada:	
	Numerical modeling of the circulation of ionospheric and solar wind particles in the magnetosphere	100
P2-45	S. Shima:	
	Super-Droplet Method: a Particle-Based Cloud Microphysics Coupled with Nonhydrostatic Model	101
P2-46	A. Kawano:	
	Macro-micro Interlocked Simulation of Gas Detonation	102