

# NEWSLETTER ON ATMOSPHERIC ELECTRICITY

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INTERNATIONAL COMMISSION ON ATMOSPHERIC ELECTRICITY  
(IAMAS/IUGG)

AMS COMMITTEE  
ON ATMOSPHERIC  
ELECTRICITY

AGU COMMITTEE ON  
ATMOSPHERIC AND  
SPACE ELECTRICITY

EUROPEAN  
GEOPHYSICAL  
SOCIETY

SOCIETY OF ATMOSPHERIC  
ELECTRICITY OF JAPAN

The Newsletter on Atmospheric Electricity being now sent by e-mail, those colleagues needing a paper version should contact Tomoo Ushio: (tomooushio@gmail.com) or Daohong Wang: (wang@gifu-u.ac.jp). They will receive the Newsletter by regular mail. Those knowing anybody who needs such a paper version are also welcome to contact us. On the other hand, the easiest way to communicate being now electronic mail, we would be grateful to all of those who can help us complete the “atmospheric electricity” list of email addresses already available. All issues of this Newsletter are available on the website of the International Commission on Atmospheric Electricity:

<http://www.atmospheric-electricity.org/>

## SPECIAL ISSUE ICAE 2018

Due to the proximity of the 16th International Conference on Atmospheric Electricity, this spring issue of the NEWSLETTER is devoted to the final program of the conference and to the general information about this quadrennial event which will be held at Nara Kasugano International Forum / IRAKA 17 - 22 June, 2018.



**16<sup>th</sup> International Conference on  
Atmospheric Electricity**

**Final Program**



Photographs Courtesy Of OTOWA Electric Co., Ltd.

Nara Kasugano International Forum / IRAKA  
June 17 - 22, 2018

ICAE2018 NARA, JAPAN



*Society of Atmospheric Electricity of Japan*

日本大気電気学会

# **16<sup>th</sup> International Conference on Atmospheric Electricity**

Nara Kasugano International Forum / IRAKA

June 17 - 22, 2018

ICAE2018 NARA, JAPAN

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## **Welcome Message from ICAE2018 Chairs**

It is a pleasure and great honor for us to welcome you warmly to the 16th International Conference on Atmospheric Electricity (ICAE2018).

Since the time of the 1<sup>st</sup> ICAE held in 1954, roughly once every four years, our ICAE colleagues from many countries, come together to present latest discoveries, exchange ideas, become reacquainted with colleagues and make new friends. This time we come together in Nara, Japan.

Thanks to various recent observational techniques, studies in many areas of atmospheric electricity are rapidly advancing. For this conference, we received 302 submissions, besides 4 invited keynote lectures. If you take a look at the Conference Program, you will agree that this conference is going to be busy and productive. We hope that each of you will enjoy the conference.

To have such a conference involves considerable effort. Let us take this opportunity to thank all the participants, especially those of you coming from overseas, for joining us and sharing your valuable results and ideas. We would also like to thank the local organizing committee for their countless and diligent efforts in organizing this conference, the International Commission on Atmospheric Electricity for their dedicated scientific review of all the submissions, the institutions and companies listed in this document for their financial support.

A successful international conference benefits from an attractive and interesting setting. We are proud to say that Nara, established in the year 710 as Japan's first permanent capital, is such a setting. Nara is full of historic treasures, including some of Japan's oldest and largest temples, such as Todaiji Temple, the world's largest wooden building. Here you may also see a number of deer, chasing you for "deer-crackers". From Nara, if you like, you can undertake day trips to Kyoto and Osaka easily. We also wish each of you much enjoyment in visiting these ancient and modern cities of Japan.

Zen Kawasaki (Honorary Chair)  
Daohong Wang, and Tomoo Ushio (Co-chairs)

## ICAE History

The International Conference on Atmospheric Electricity is the most important scientific event in the area of atmospheric electricity and lightning in the world. The conference, organized by the International Commission on Atmospheric Electricity every four years since 1954, provides a unique opportunity for scientists, engineers and all users of lightning information to present and discuss the latest results and the state of the art of atmospheric electricity research.

### **First Conference**

Portsmouth, United States, May 1954  
Chairman: Robert E. Holzer

### **Second**

Portsmouth, United States, May 1958  
Chairman: Leslie G. Smith

### **Third**

Montreux, Switzerland, May 1963  
Chairman: Samuel C. Coroniti

### **4<sup>th</sup>**

Tokyo, Japan, May 1968  
Chairman: Samuel C. Coroniti

### **5<sup>th</sup>**

Garmisch-Partenkirchen, Germany, Sept. 1974  
Chairman: Reinhold Reiter

### **6<sup>th</sup>**

Manchester, England, July 1980  
Chairman: John Latham

### **7<sup>th</sup>**

Albany, United States, June 1984  
Chairman: Richard Orville

### **8<sup>th</sup>**

Uppsala, Sweden, June 1988  
Chairman: Stig Lundquist

### **9<sup>th</sup>**

St. Petersburg, Russia, June 1992  
Chairman: E. Borisenkov

### **10<sup>th</sup>**

Osaka, Japan, June 1996  
Chairman: Katsuhiro Kikuchi

### **11<sup>th</sup>**

Guntersville, United States, June 1999  
Chairman: Hugh Christian

### **12<sup>th</sup>**

Versailles, France, June 2003  
Chairman: Pierre Laroche

### **13<sup>th</sup>**

Beijing, China, August 2007  
Chairman: Xiushu Qie

### **14<sup>th</sup>**

Rio de Janeiro, Brazil, August 2011  
Chairman: Osmar Pinto

### **15<sup>th</sup>**

Norman, United States, June 2014  
Chairman: Donald MacGorman, Edward Mansell

# International Commission on Atmospheric Electricity

*President* **Daohong Wang**

Professor

Gifu University, Japan

(China)

*Secretary* **Tomoo Ushio**

Professor

Tokyo Metropolitan University, Japan

(Japan)

## *Members of the commission*

E. Avila (*Argentina*)

V. Cooray (*Sweden*)

E. Defer (*France*)

J.E. Dye (*USA*)

P. Krehbiel (*USA*)

D.R. MacGorman (*USA*)

E. Mareev (*Rusia*)

J. MontanyÀ (*Spain*)

C. Price (*Israel*)

X. Qie (*China*)

V.A. Rakov (*USA*)

M. Saba (*Brazil*)

D. Smith (*USA*)

S. Soula (*France*)

M. Stolzenburg (*USA*)

T. Ushio (*Japan*)

D. Wang (*China*)

## *Honorary Members*

H. Christian (*USA*)

E.P. Krider (*USA*)

P. Laroche (*France*)

J. Latham (*UK*)

S. Michnowski (*Poland*)

L.H. Runhke (*USA*)

H. Tammet (*Estonia*)

E. Williams (*USA*)

## **ICAE2018 Local Organizing Committee**

**Honorary Chair:**

Zen Kawasaki

**Co-chairs:**

Daohong Wang

Tomoo Ushio

**Committee Members:**

Eiichi Yosikawa  
Ting Wu  
Katsumi Hattori  
Yasuhide Houbara  
Katsuhiro Nagano  
Mitsuteru Sato  
Masashi Kamogawa  
Fumiaki Kobayashi

Kazuhiko Miura  
Takeshi Morimoto  
Hiroshi Kikuchi  
Koichiro Michimoto  
Takeshi Kudo  
Tomoyuki Suzuki  
Yoshitaka Nakamura  
Toru Miki

and

**Society of Atmospheric Electricity of Japan**

## Time Table of ICAE2018 Technical Sessions

	June 17	June 18	June 19		June 20	June 21	June 22	
TIME	SUNDAY	MONDAY	TUESDAY	TIME	WEDNESDAY	THURSDAY	FRIDAY	TIME
07:45 AM				07:45 AM	Deer gathering			07:45 AM
08:00 AM				08:00 AM				08:00 AM
08:15 AM				08:15 AM				08:15 AM
08:30 AM		Registration	Registration	08:30 AM	Registration	Registration	Registration	08:30 AM
08:45 AM				08:45 AM				08:45 AM
09:00 AM		Opening Ceremony	Keynote Lecture - lightning meteorology - (Donald MacGorman)	09:00 AM	Keynote Lecture - lightning physics - (Paul Krehbiel)	Keynote Lecture - GLM - (Hugh Christian)	Keynote Lecture - Energetic Radiation - (David Smith)	09:00 AM
09:15 AM				09:15 AM				09:15 AM
09:30 AM		Oral-1 Global Electric Circuit	Oral-4 Thunderstorm Electrification and Microphysics	09:30 AM	Oral-6 Lightning Physics	Oral-7 Satellite measurements	Oral-10 Lightning Effects on the Middle and Upper Atmosphere	09:30 AM
09:45 AM				09:45 AM				
10:00 AM		Break		10:00 AM				10:00 AM
10:15 AM				10:15 AM				10:15 AM
10:45 AM		Oral-2 Fair Weather and Atmospheric Ions	Break	10:45 AM	Break	Break	Break	10:45 AM
11:00 AM				11:00 AM				11:00 AM
11:15 AM		Break		11:15 AM	Oral-6 (Cont.) Lightning Physics	Oral-8 Lightning and Thunderstorm Detection Technologies	Oral-11 Energetic Radiation from Lightning and Thunderstorms	11:15 AM
11:30 AM				11:30 AM				
11:45 AM				11:45 AM				11:45 AM
12:00 PM		Oral-3 Lightning Hazards and Mitigation, Related Topics	Oral-5 Lightning and Meteorology	12:00 PM				12:00 PM
12:15 PM				12:15 PM				12:15 PM
12:30 PM				12:30 PM				12:30 PM
12:45 PM				12:45 PM				12:45 PM
01:00 PM				01:00 PM				01:00 PM
01:15 PM		Lunch	Lunch	01:15 PM	Lunch	Lunch	Lunch	01:15 PM
01:30 PM				01:30 PM				01:30 PM
01:45 PM				01:45 PM				01:45 PM
02:00 PM				02:00 PM				02:00 PM
02:15 PM				02:15 PM				02:15 PM
02:30 PM				02:30 PM				02:30 PM
02:45 PM		Posters-1&2 Global Electric Circuit Fair Weather and Atmospheric Ions	Posters-4&5 Thunderstorm Electrification and Microphysics, Lightning and Meteorology	02:45 PM	Excursion	Oral-9 Meteorological Applications of Lightning Data, Lightning Climatology and Chemical Effects	Posters-9,10&11 Met. Applications, Lightning Climatology and Chem. Effects, Lightning Effects on the Middle and Upper Atmosphere, Energetic Radiation	02:45 PM
03:00 PM	Registration (starting 01:00PM)			03:00 PM				
03:15 PM				03:15 PM				03:15 PM
03:30 PM				03:30 PM				03:30 PM
03:45 PM				03:45 PM				03:45 PM
04:00 PM		Break	Break	04:00 PM		Break	Break	04:00 PM
04:15 PM				04:15 PM				04:15 PM
04:30 PM		Posters-3&6 Lightning Hazards and Mitigation, Related Topics, Lightning Physics	Posters-6 (Cont.) Lightning Physics	04:30 PM		Posters-7&8 Satellite measurements, Lightning and Thunderstorm Detection Technologies	Closing Ceremony	04:30 PM
04:45 PM				04:45 PM				
05:00 PM				05:00 PM				05:00 PM
05:15 PM				05:15 PM				05:15 PM
05:30 PM				05:30 PM				05:30 PM
05:45 PM				05:45 PM				05:45 PM
06:00 PM	Welcome Reception	committee meeting	committee meeting	06:00 PM				06:00 PM
06:15 PM				06:15 PM				06:15 PM
06:30 PM				06:30 PM				06:30 PM
06:45 PM				06:45 PM				06:45 PM
07:00 PM				07:00 PM		Banquet		07:00 PM
5				5				5
08:30 PM				08:30 PM				08:30 PM

### Opening Ceremony:

18 June, Monday AM8:45-  
'Reception Room (Oral Presentation Room)'

### Closing Ceremony:

22 June, Friday PM4:30-  
'Reception Room (Oral Presentation Room)'

## Keynote Lectures

**19 June, Tuesday AM 8:45 – AM 9:15**

**‘Meteorological Aspects of Lightning and Thunderstorm Electrification’**

**Prof. Donald MacGorman**

NOAA/National Severe Storms Laboratory

Norman, OK, United States

**20 June, Wednesday AM 8:45 – AM 9:15**

**‘Continued Mysteries of Lightning Studies’**

**Prof. Paul Krehbiel**

New Mexico Tech, NM, United States

**21 June, Thursday AM 8:45 – AM 9:15**

**‘The Geostationary Lightning Mapper: Its Design, Performance and Capabilities’**

**Prof. Hugh Christian**

University of Alabama in Huntsville, AL, United States

**22 June, Friday AM 8:45 – AM 9:15**

**‘Energetic Radiation in Thunderstorms and Lightning’**

**Prof. David Smith**

University of California, Santa Cruz, CA, United States

# Technical Programme

## Oral Sessions

### Monday, 18 June

#### 09:15 (Monday) Oral 01: **Global Electric Circuit**

**Chairs:** Earle Williams and Masashi Kamogawa

09:15	O-01-01: <a href="#">Recent progress in global electric circuit modeling</a> <i>Evgeny A. Mareev, Nikolay N. Slyunyaev, Evgeny M. Volodin</i>
09:30	O-01-02: <a href="#">Implementation of thunderstorm generators operating in different regimes in global electric circuit models</a> <i>Nikolay N. Slyunyaev, Evgeny A. Mareev, Alexey V. Kalinin, Artem A. Zhidkov</i>
09:45	O-01-03: <a href="#">Comparative Behavior of the DC and AC Global Circuits</a> <i>Earle R. Williams, Robert Boldi, Ralph Markson, Michael Peterson</i>
10:00	O-01-04: <a href="#">The Link Between the Schumann Resonances and Biological Systems</a> <i>Gal Elhalel, Colin Price, Asher Shainberg, Dror Fixler</i>

#### 10:45 (Monday) Oral 02: **Fair Weather and Atmospheric Ions**

**Chairs:** Colin Price and Evgeny Mareev

10:45	O-02-01: <a href="#">Droplet charging in stratiform clouds</a> <i>Keri Nicoll, R. Giles Harrison</i>
11:00	O-02-02: <a href="#">Measurement of electric potential of isolated vertical conductive wires pulled by a drone under fair weather conditions</a> <i>Joan Montanya, Victor March, Oscar van der Velde, Jesus A. Lopez, David Romero, Pol Fontanes, Michele Urbani</i>
11:15	O-02-03: <a href="#">Responses of air ions to variations in atmospheric radioactivity in the lower atmosphere</a> <i>Xuemeng Chen, Veli-Matti Kerminen, Jussi Paatero, Susana Barbosa, Antti Makela, Tuukka Petaja, Markku Kulmala</i>
11:30	O-02-04: <a href="#">Electrical state formation of mid-latitude planetary boundary layer over land</a> <i>Sergei Vasilevich Anisimov, Sergei V. Galichenko, Konstantin V. Aphinogenov, Aleksey V. Guriev, Alina S. Koz'mina, Aleksandr A. Prokhorchuk</i>

**12:00 (Monday) Oral 03: Lightning Hazards and Mitigation, Related Topics**

**Chairs:** Daohong Wang and Yasuhide Hobara

12:00	O-03-01: <a href="#">The Research of Damage Influence Factors on Ancient Building Timber Subjected to Lightning Strike</a> <i>Jing Xiao Li, Xiaoqing Zhang, Jing Li, Rujian Li, Pingjian Song</i>
12:15	O-03-02: <a href="#">Intense positive atmospheric electric field due to snow blizzard electrification at Antarctica</a> <i>Masashi Kamogawa, Yasuhiro Minamoto, Akira Kadokura, Mitsuteru Sato</i>
12:30	O-03-03: <a href="#">Lightning Parameters Relating to Damage to Wind Turbines Around the Coast of the Japan Sea</a> <i>Kazuo Yamamoto, Tsubasa Kai, Shinichi Sumi</i>
12:45	O-03-04: <a href="#">Appearance of lightning strokes to power distribution lines</a> <i>Shigeru Yokoyama, Tomoyuki Sato, Yasuji Hongo</i>
13:00	O-03-05: <a href="#">Laboratory Modeling of Sprites</a> <i>Andrey A. Evtushenko, Sergey V. Korobkov, Askold V. Strikovskiy, Michael E. Gushchin, Evgeny A. Mareev</i>

# Technical Programme

## Oral Sessions

### Tuesday, 19 June

#### 08:45 (Tuesday) Keynote Lecture 01: **Lightning Meteorology**

Chairs: *James Dye and Yoav Yair*

08:45	<b>O-K-01: Meteorological Aspects of Lightning and Thunderstorm Electrification</b> <i>Donald MacGorman</i>
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#### 09:15 (Tuesday) Oral 4: **Thunderstorm Electrification and Microphysics**

Chairs: *James Dye and Yoav Yair*

09:15	O-04-01: <b>Microphysical Structure and Lightning Initiation in Hokuriku Winter Clouds</b> <i>Tsutomu Takahashi, Soichiro Sugimoto, Tetsuya Kawano</i>
09:30	O-04-02: <b>In Situ Microphysical Observations and Local Electric Fields inside Severe Convection during DC3</b> <i>Sean Michael Waugh, Conrad Ziegler, Donald MacGorman</i>
09:45	O-04-03: <b>Observations of Electrification in Deep, Precipitating Stratiform Clouds</b> <i>James E. Dye, Aaron Bansmer</i>
10:00	O-04-04: <b>The Effect of Dry-Air Entrainment on Charge Structure in Cellular Thunderstorms</b> <i>Vanna C. Chmielewski, Eric C. Bruning, Brian C. Ancell</i>
10:15	O-04-05: <b>Electric field measurements during snowstorms on Mt. Hermon, Israel</b> <i>Yoav Yair, Yuval Reuveni, Baruch Ziv, Shai Katz, Colin Price, Roy Yaniv</i>
10:30	O-04-06: <b>Electrification and lightning in idealized simulations of steady state, weakening and intensifying tropical cyclones</b> <i>Alexandre O Fierro, Edward R. Mansell</i>

#### 11:15 (Tuesday) Oral 5: **Lightning and Meteorology**

Chairs: *Donald MacGorman and Namiko Sakurai*

11:15	O-05-01: <b>Flash Attributes and the Kinematic, Microphysical, and Electrical Structure of a Multicell Thunderstorm Observed during DC3</b> <i>Elizabeth A. DiGangi, Donald R. MacGorman, Conrad L. Zeigler, Michael Biggerstaff</i>
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11:30	O-05-02: <a href="#">Influence of three tall structures with different heights on cloud-to-ground lightning in their vicinities</a> <i>Weitao Lyu, Changxiu Zhang, Ying Ma, Lyuwen Chen, Qi Qi, Zhiguo Su, Yijun Zhang, Yanan Zhu</i>
11:45	O-05-03: <a href="#">The coupling of thunderstorm kinetic and electrical energetics</a> <i>Eric C. Bruning, Vicente Salinas, Cameron Nixon, Samantha Berkseth, Matthew Brothers, Edward R. Mansell, Vanna C. Chmielewski</i>
12:00	O-05-04: <a href="#">Automated analysis and statistics of lightning leader speed, local flash rates and electric charge structure in thunderstorms</a> <i>Oscar A. van der Velde, Joan Montanya, Jesus A. Lopez</i>
12:15	O-05-05: <a href="#">Lightning Activity in Different Convection Area of a Severe Squall Line with Cell Merging Process</a> <i>Xiushu Qie, Yan Xu, Shanfeng Yuan, Zhixiong Chen, Dongfang Wang, Abhay Srivastava, Ye Tian</i>
12:30	O-05-06: <a href="#">Spatial-temporal Relationship between Precipitation Cores and Lightning Channels Observed by Phased Array Weather Radars and BOLT</a> <i>Yukie Moroda, Kazuhisa Tsuboki, Shinsuke Satoh, Katsuhiro Nakagawa, Tomoo Ushio, Hiroshi Kikuchi</i>
12:45	O-05-07: <a href="#">High-resolution Study on Lightning and Precipitation Activity by EM Observations in Toyama, Japan</a> <i>Takeshi Morimoto, Makoto Tojyo, Yoshitaka Nakamura, Fumiya Beniya, Hideo Sakai, Masahito Shimizu, Kodai Nagata</i>
13:00	O-05-08: <a href="#">Lightning rate and its relationship with intensity of typhoons over the Northwest Pacific</a> <i>Dongjie Cao, Feng Lu, Xiaohu Zhang, Zhiqing Zhang, Qinghua Liu</i>

# Technical Programme

## Oral Sessions

### Wednesday, 20 June

#### 08:45 (Wednesday) Keynote Lecture 02: **Lightning Physics**

**Chairs:** *Maribeth Stolzenburg and Xuan-Min Shao*

08:45	<b>O-K-02: Continued Mysteries of Lightning Studies</b> <i>Paul Krehbiel, Caitano da Silva, Steven Cummer</i>
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#### 09:15 (Wednesday) Oral 6: **Lightning Physics**

**Chairs:** *Maribeth Stolzenburg and Xuan-Min Shao*

09:15	O-06-01: <b>Lightning Initiation Observations in Mississippi Thunderstorms</b> <i>Thomas C. Marshall, Sampath Bandara, Sumedhe Karunarathne, Nilmini Karunarathne, Ray Siedlecki, Maribeth Stolzenburg</i>
09:30	O-06-02: <b>Correlation between Current and Luminosity in the Air Gap Discharge</b> <i>Yongyin Lu, Mi Zhou, Jianguo Wang, Yadong Fan, Rui Su, Yutong Xiao, Shoupeng Wang, Shimin Su</i>
09:45	O-06-03: <b>Characteristics of a spider lightning and its indication on lightning propagation properties</b> <i>Rubin Jiang, Xiushu Qie, Shanfeng Yuan, Yunjiao Pu, Dongfang Wang, Mingyuan Liu, Gaopeng Lu, Zhuling Sun</i>
10:00	O-06-04: <b>An analysis of acoustic and infrasonic sources within lightning flashes recorded in Southern France</b> <i>Arthur Lacroix, Thomas Farges, Regis Marchiano, Francois Coulouvrat</i>
10:15	O-06-05: <b>Two Inception Modes of Subsequent Stepped Leaders in Lightning</b> <i>Maribeth Stolzenburg, Thomas C. Marshall, Sumedhe Karunarathne, Richard E. Orville</i>
10:30	O-06-06: <b>Experimental Investigation of Streamer Zone of Positive Leader</b> <i>Nikolay A. Bogatov, Alexander Yu. Kostinskiy, Vladimir S. Syssoev, Mikhail G. Andreev, Marat U. Bulatov, Dmitry I. Sukharevsky, Evgeny A. Mareev, Vladimir A. Rakov</i>

#### 11:15 (Wednesday) Oral 6 (Cont.): **Lightning Physics**

**Chairs:** *Joan Montanya and Lyu Weitao*

11:15	O-06-07: <b>Optical Progression Features of the Step Formation of Two Negative Stepped Leaders</b> <i>Haitao Huang, Daohong Wang, Ting Wu, Nobuyuki Takagi</i>
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11:30	O-06-08: <a href="#">Space stem precursors</a> <i>Alejandro Malagon-Romero, Alejandro Luque</i>
11:45	O-06-09: <a href="#">Characteristics of upward connecting leaders initiated from Tokyo Skytree</a> <i>Mikihisa Saito, Toru Miki, Takatoshi Shindo, Masaru Ishii, Takeo Sonehara</i>
12:00	O-06-10: <a href="#">Characteristics of positive cloud-to-ground flashes during SHATLE</a> <i>Zhuling Sun, Xiushu Qie, Mingyuan Liu, Yunjiao Pu, Zhixiong Chen, Yu Wang</i>
12:15	O-06-11: <a href="#">Leader Polarity-Reversal Feature and Charge Structure of Upward Bipolar Lightning Flash</a> <i>Dongdong Shi, Daohong Wang, Ting Wu, Ronald J. Thomas, Harald E. Edens, William Rison, Nobuyuki Takagi, Paul R. Krehbiel</i>
12:30	O-06-12: <a href="#">Observations of precursor process during the initial stage of a rocket-and-wire-triggered lightning discharge</a> <i>Yang Zhang, Paul Ray Krehbiel, Yijun Zhang, Dong Zheng, Weitao Lv</i>
12:45	O-06-13: <a href="#">Measurement of underground magnetic field pulses during the initial stage of rocket-triggered lightning</a> <i>Xiao Li, Gaopeng Lu, Yanfeng Fan, Rubin Jiang, Hongbo Zhang, Yongping Wang</i>
13:00	O-06-14: <a href="#">Attachment Processes of Lightning Flashes Striking Transmission Lines and Low Structures</a> <i>Megumu Miki, Toru Miki, Mikihisa Saito, Koudai Nagata, Masahito Shimizu, Takeshi Morimoto, Fukumune Suzuki</i>

# Technical Programme

## Oral Sessions

### Thursday, 21 June

**08:45 (Thursday) Keynote Lecture 03: Geostationary Lightning Mapper (GLM)**

**Chairs:** *Pierre Laroche and Tomoo Ushio*

08:45	<b>O-K-03: The Geostationary Lightning Mapper: Its Design, Performance and Capabilities</b> <i>Hugh Christian</i>
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**09:15 (Thursday) Oral 7: Satellite measurements**

**Chairs:** *Pierre Laroche and Hugh Christian*

09:15	O-07-01: <a href="#">Simultaneous Space-based Observations of Terrestrial Gamma-ray Flashes and Lightning Optical Emission</a> <i>Hugh J. Christian, Samer Al-Nussirat</i>
Withdrawn	O-07-02: <a href="#">Performance assessment and validation of the FY-4A Lightning Mapping Imager</a> <i>Dongjie Cao</i>
09:45	O-07-03: <a href="#">Meteosat Third Generation (MTG) Lightning Imager (LI)</a> <i>Marcel Dobber</i>
10:00	O-07-04: <a href="#">The Atmosphere-Space Interactions Monitor (ASIM) on the International Space Station</a> <i>Torsten Neubert, Victor Reglero, Nikolai Ostgaard</i>
Withdrawn	O-07-05: <a href="#">Mapping Lightning from Space with OTD, LIS, and GLM</a> <i>Michael J. Peterson, Scott D. Rudlosky, Larissa Antunes Da Silva</i>
10:30	O-07-06: <a href="#">Saturn lightning after Cassini</a> <i>Georg Fischer, William S. Kurth, Donald A. Gurnett, George B. Hospodarsky, Philippe Zarka, Ulyana A. Dyudina, Marc Delcroix</i>

**11:15 (Thursday) Oral 8: Lightning and Thunderstorm Detection Technologies**

**Chairs:** *Paul Krehbiel and Tomoo Ushio*

11:15	O-08-01: <a href="#">Geostationary Lightning Mapper Operations during Year One</a> <i>Scott D. Rudlosky, Steven J. Goodman, Richard J. Blakeslee, William J Koshak, Douglas M. Mach, Francis Padula</i>
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11:30	O-08-02: <a href="#">Fly's Eye GLM Simulator: Multi-band radiometric observations of lightning from high-altitude aircraft</a> <i>Mason G. Quick, Hugh Christian, Richard Blakeslee, Katrina Virts, Michael Stewart, Scott Podgorny, David Corredor</i>
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11:45	O-08-03: <a href="#">An analysis of TLE-associated discharges using the data recorded by a new broadband ELF receiver</a> <i>Janusz Mlynarczyk, Andrzej Kulak, Martin Popek, Rafal Iwanski, Slawomir Klucjasz, Jerzy Kubisz</i>
12:00	O-08-04: <a href="#">Development of Fast Antenna Lightning Mapping Array (FALMA) and preliminary results</a> <i>Ting Wu, Daohong Wang, Nobuyuki Takagi</i>
12:15	O-08-05: <a href="#">Earth Networks ELF Magnetic Array</a> <i>Michael Stock, Jeff Lapierre, Saiadithya Cumbulam Thangaraj, Veronika Wrede</i>
12:30	O-08-06: <a href="#">Infrasound Measurement of Lightning, Sprites and Thunderstorms</a> <i>David Applbaum, Colin Price, Yoav Yair</i>
12:45	O-08-07: <a href="#">LMA Campaign for the Observation of Upward Lightning at the Santis Tower During Summer 2017: Preliminary Results</a> <i>Amirhossein Mostajabi, Nicolau Pineda, Antonio Sunjerga, David Romero, Mohammad Azadifar, Oscar van der Velde, Joan Montanya, Gerhard Diendorfer, Marcos Rubinstein, Farhad Rachidi</i>
13:00	O-08-08: <a href="#">Application of sensitive low-frequency magnetic sensor to rocket-triggered lightning experiments</a> <i>Gaopeng Lu, Yanfeng Fan, Rubin Jiang, Hongbo Zhang, Mingyuan Liu, Xiushu Qie</i>

**14:30 (Thursday) Oral 9: Meteorological Applications of Lightning Data, Lightning Climatology and Chemical Effects**

**Chairs:** *Xiushu Qie and Takeshi Morimoto*

14:30	O-09-01: <a href="#">Lightning Frequency and 2017 Atlantic Hurricane Intensity and Landfall</a> <i>Kristin M. Calhoun, Darrel M. Kingfield, Alexandre O. Fierro, P. Adrian Campbell, Anthony Reinhart, Matthew Mahilik, Andrea Schumacher, Eric Bruning</i>
14:45	O-09-02: <a href="#">Development of lightning indices using TOKLMA and X-band polarimetric radar network during the summer season in Tokyo metropolitan area</a> <i>Namiko Sakurai, Shingo Shimizu, Koyuru Iwanami, Takeshi Maesaka, Yasushi Uji, Kouichi Hasegawa, Paul Krehbiel, Willian Rison, Daniel Rodeheffer</i>
15:00	O-09-03: <a href="#">Lightning Observation Operators at the Convective Scale: Objective Calibration and Evaluation</a> <i>Olivier Caumont, Eric Defer, Jean-Pierre Pinty, Christophe Bovalo, Christelle Barthe, Sylvain Coquillat, Dominique Lambert</i>
15:15	O-09-04: <a href="#">Assimilation of Lightning Data through Comprehensively Nudging Water Contents at Cloud-resolving Scale in the WRF Model</a> <i>Zhixiong Chen, Xiushu Qie, DongXia Liu, Yajun Xiong, Dongjie Cao</i>
15:30	O-09-05: <a href="#">Spatio-temporal analysis of lightning activity in Congo basin</a> <i>Serge Soula, Jean Kasereka Kigotsi, Jean-Francois Georgis, Christelle Barthe</i>
15:45	O-09-06: <a href="#">Long Term Trends in the Number and Area of Thunderstorms over Africa</a> <i>Maayan Harel, Colin Price</i>

## Technical Programme

### Oral Sessions

### Friday, 22 June

#### 08:45 (Friday) Keynote Lecture 04: Energetic Radiation

Chairs: Serge Soula and Mitsuteru Sato

08:45	O-K-04: Energetic Radiation in Thunderstorms and Lightning <i>David Smith</i>
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#### 09:15 (Friday) Oral 10: Lightning Effects on the Middle and Upper Atmosphere

Chairs: Serge Soula and Mitsuteru Sato

09:15	O-10-01: On the polarity and magnitude of parent strokes for red sprites and halo events observed in the vicinity of North America <i>Gaopeng Lu, Bingkun Yu, Anjing Huang, Steven A. Cummer, Alfred B. Chen, Fei Liu, Rue-Ron Hsu, Han-Tzong Su</i>
09:30	O-10-02: Evolution of Gigantic Jets at high temporal and spatial resolution <i>Oscar A. van der Velde, Joan Montanya, Jesus A. Lopez</i>
Withdrawn	O-10-03: The characteristics parameters of F2 layer of Ionosphere over a local thunderstorm systems in Yunnan, China <i>Xiangzhen Kong, Jin Wang, Yang Zhao, Xiaoqi Xin, Yiran Xie</i>
10:00	O-10-04: Characteristics of thunderstorm structure and lightning activity causing negative and positive sprites <i>Jing Yang, Ningyu Liu, Mitsuteru Sato, Gaopeng Lu, Yu Wang, Guili Feng</i>

#### 11:00 (Friday) Oral 11: Energetic Radiation from Lightning and Thunderstorms

Chairs: David Smith and Teruaki Enoto

11:00	O-11-01: Reconsidering the friction curve for cold electron runaway <i>Gabriel Sousa Diniz, Casper Rutjes, Ute Ebert, Ivan Soares Ferreira</i>
11:15	O-11-02: Calculations of energy spectra of electrons and gamma rays coming from thunderclouds <i>Levon Vanyan, Ashot Chilingaryan, Hripsime Mkrtchyan</i>
11:30	O-11-03: Is the physical mechanism of thunderstorm-generated long-burst gamma-ray explained by relativistic runaway electron avalanche or modulation of spectrum hypotheses? <i>Masashi Kamogawa, Tatsuo Torii, David Smith, Gregory Bowers</i>

11:45	O-11-04: <a href="#">Radio-frequency emissions from streamer collisions: implications for high-energy processes</a> <i>Alejandro Luque</i>
12:00	O-11-05: <a href="#">X-Ray Radiation in High-Voltage Discharges in the Open Air</a> <i>Yu.V. Shlyugaev, F.A Kuterin, E.K. Svechnikova, V.A. Rakov, V.S. Sysoev</i>
12:15	O-11-06: <a href="#">Ground-Based Observations of Terrestrial Gamma Flashes Associated with Downward-Directed Lightning Leaders</a> <i>John W. Belz, Rasha Abbasi, Paul R Krehbiel, Ryan LeVon, Jackson Remington, Daniel Rodeheffer, William Rison, Ronald J Thomas</i>
12:30	O-11-07: <a href="#">Multi-point Measurement Campaigns of Gamma Rays from Thunderclouds and Lightning in Japan</a> <i>Teruaki Enoto, Yuuki Wada, Yoshihiro Furuta, Kazuhiro Nakazawa, Takayuki Yuasa, Kazufumi Okuda, Kazuo Makishima, Mitsuteru Sato, Yousuke Sato, Toshio Nakano, Daigo Umemoto, Harufumi Tsuchiya, Masashi Kamogawa, Gregory Bowers, David Smith, Takeshi Morimoto, Yoshitaka Nakamura, Daohong Wang</i>
12:45	O-11-08: <a href="#">Insights from the Connection Between In-Cloud Lightning and Terrestrial Gamma-Ray Flashes</a> <i>Steven A. Cummer, Fanchao Lyu, Michael S. Briggs, Eric Cramer, Matthew Stanbro, Oliver Roberts, David M. Smith</i>
13:00	O-11-09: <a href="#">Understanding the global TGF/lightning ratio asymmetry</a> <i>Ferran Fabro, Joan Montanya, Oscar van der Velde, Earle Williams</i>

# Technical Programme

## Poster Sessions

### Monday, 18 June

#### 14:30 (Monday) Posters 1&2: Global Electric Circuit Fair Weather and Atmospheric Ions

Chair: R. Giles Harrison

14:30	P-01-01: On the variation of the atmospheric electric field in South America: The AFINSA Network <i>Jose Carlos Tacza Anaya, Jean-Pierre Raulin, Adolfo Marun, German Fernandez</i>
14:30	P-01-02: Penetration of nonstationary ionospheric electric fields into lower atmospheric layers in the global electric circuit model <i>Vladimir Nicolaevich Morozov</i>
14:30	P-01-03: Ionospheric Potential Shielding by the Cloud Layer <i>Maria Shatalina, Vladimir Klimenko, Eugeny Mareev</i>
14:30	P-01-04: On the number of lightning discharges from the GLD 360 network and the atmospheric electric field Ez in polar and middle latitude regions <i>Marek Kubicki, Marek Gokowski, Piotr Baraski</i>
14:30	P-01-05: Depletion of Atmospheric electric field during Solar Proton Events over South Polar Cap region <i>Jeni Victor Nepolian, Frank Kamenetsky A. V., Manu S, Panneerselvam C</i>
Withdrawn	P-01-06: The effect of solar events on the fair weather E-field in Israel <i>Roy Yaniv, Yoav Yair, Colin Price, Shai Katz</i>
14:30	P-01-07: Towards monitoring the global atmospheric potential gradient - GLOCAEM <i>Keri Nicoll, R. Giles Harrison</i>
Withdrawn	P-01-08: Atmospheric electric field variation in different altitudes <i>Hripsime Mkrtychyan</i>
14:30	P-01-09: Contribution of conduction current to Global Electric Circuit during thunderstorms <i>Gopalakrishnan V, Sunil D. Pawar, Dipjyoti Mudliar, Manoj Domkawale</i>
Withdrawn	P-01-10: Features of numerical modeling of the global electric circuit <i>Fedor A. Kuterin, Nikolai N. Slyunyaev, Nikolay V. Ilin</i>
14:30	P-01-11: Atmospheric electricity changes possibly related around the 2011 off the Pacific coast of Tohoku Earthquake <i>Katsumi Hattori, Kaori Oyama, Chie Yoshino, Ryuichi Furuya</i>

14:30	P-01-12: <a href="#">A Comparison of the Predictive Powers of Various Uniform Cavity Models: A Comparison of 25 years of data collected at Rhode Island, USA</a> <i>Robert Boldi, Earle Williams, Anirban Guha</i>
14:30	P-01-13: <a href="#">The Ranking of Africa in Daily Global Lightning Activity</a> <i>E. Williams, A. Guha, Y. Liu, R. Boldi, E. Pracser, R. Said, G. Satori, T. Bozoki, J. Bor, M. Atkinson, C. Beggan, S. Cummer, F. Lyu, B. Fain, Y. Hobara, A. Koloskov, A. Kulak, R. McCraty, J. Mlynarczyk, J. Montanya, R. Moore, M. Neska, P. Ortega, C. Price, R. Rawat, M. Sato, A. Sinha, Y. Yampolski</i>
14:30	P-02-01: <a href="#">Variability of ground-based high altitude atmospheric electric field measurements</a> <i>Jose Carlos Tacza Anaya, Jean-Pierre Raulin, Adolfo Marun, German Fernandez</i>
14:30	P-02-02: <a href="#">Variability of the near earth's atmospheric layer electrical conductivity at middle latitudes</a> <i>Konstantin V. Aphinogenov, Sergey V. Anisimov, Sergey V. Galichenko, Alexey V. Guriev</i>
Withdrawn	P-02-03: <a href="#">High resolution measurements of the vertical ionization rate in the planetary boundary layer using drones</a> <i>Yuval Reuveni, Yoav Yair, Colin Price, Boaz Ben-Mosh</i>
14:30	P-02-04: <a href="#">Frequency and time analysis of the effect of sunrise in the electric field of the surface layer of the atmosphere</a> <i>Sergey Ed. Smirnov</i>
14:30	P-02-05: <a href="#">Manifestation of space weather effects in atmospheric electric parameter variations at a mid-latitudinal observatory</a> <i>Sergey Ed. Smirnov</i>
14:30	P-02-06: <a href="#">Effects of atmospheric boundary layer turbulence on variations in fair-weather electric field</a> <i>Sergey V. Galichenko, Sergey V. Anisimov, Konstantin V. Aphinogenov, Aleksandr A. Prokhorchuk</i>
Withdrawn	P-02-07: <a href="#">Experimental Profiles of Atmospheric Electrical Characteristics in the Surface Layer Depending Upon Significant Factors: Mixing, Radon, Aerosols</a> <i>Galena G. Petrova, Anatoly I. Petrov, Irina N. Panchishkina, Evgeny V. Egorov</i>
Withdrawn	P-02-08: <a href="#">Results of Expedition Research of Thermodynamic Conditions Impact in Atmosphere on Charge Transfer under the Influence of Mechanical Forces</a> <i>Irina N. Panchishkina, Galena G. Petrova, Anatoly I. Petrov</i>
14:30	P-02-09: <a href="#">Factors in fair weather selection of surface atmospheric electricity data</a> <i>R Giles Harrison, Keri A. Nicoll</i>
14:30	P-02-10: <a href="#">Miniaturized atmospheric ionization detector</a> <i>Karen L Aplin, Aaron A Briggs, Adam Baird, Peter Hastings, R Giles Harrison, Graeme J. Marlton</i>
14:30	P-02-11: <a href="#">Possible sources of aerosol and meteorological parameters over Alaknanda Valley Garhwal Himalaya Uttarakhand, India</a> <i>Alok Sagar Gautam</i>

14:30	<p>P-02-12: <a href="#">Characteristics of Atmospheric Parameter Change at Asahi Station, Boso Peninsula, Japan ~Observational Study on Lithosphere-Atmosphere-Ionosphere Coupling ~</a>  <i>Junpei Omura, Peng Han, Chie Yoshino, <u>Katsumi Hattori</u>, Michikuni Shimo, Toshiharu Konishi, Ryuichi Furuya</i></p>
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**16:30 (Monday) Posters 3&6: Lightning Hazards and Mitigation, Related Topics, Lightning Physics**

**Chair:** *Megumu Miki*

16:30	<p>P-03-01: <a href="#">Optimization of lightning risk assessment system</a>  <i><u>Xia Li</u>, Nannan Song, Yunlong Li</i></p>
16:30	<p>P-03-02: <a href="#">The Nature of Winter thunderstorms and Lightning Strikes to Aircraft around the Hokuriku coastal area of Japan</a>  <i><u>Koichiro Michimoto</u></i></p>
16:30	<p>P-03-03: <a href="#">Extreme Thunderstorms in South America</a>  <i><u>Carlos A. Morales</u></i></p>
16:30	<p>P-03-04: <a href="#">Experimental Study in High Voltage Laboratory for The Effect of Atmospheric Electric Field to The Corona Current</a>  <i><u>Sharifah Sakinah Tuan Othman</u>, Jasronita Jasni, Mohd Nazim Mohtar, Norhafiz Azis, Mohd Zainal Abidin Ab Kadir</i></p>
16:30	<p>P-03-05: <a href="#">Research on the Index of MOV in Single and Multi Pulse Test Environment</a>  <i><u>Zhongjiang Yang</u>, Jia-yi Lou, Tian-qi yang</i></p>
16:30	<p>P-03-06: <a href="#">Design and development of polarimetric C-band phased array weather radar</a>  <i>Tomoaki Kida, Hiroshi Kikuchi, Taku Suezawa, <u>Tomoo Ushio</u></i></p>
16:30	<p>P-03-07: <a href="#">Visualizing lightning and turbulence through a combined art-science exhibit</a>  <i><u>Eric C. Bruning</u>, Tina Fuentes, Samantha Berkseth, Vicente Salinas</i></p>
16:30	<p>P-03-08: <a href="#">Description of the Volcanic Activity of Puyehue - Cordon Caulle in 2011 Based on its Electrification and Meteorological Parameters</a>  <i>Daiana Baissac, <u>Gabriela Nicora</u>, Eldo Avila, Gabriela Badi</i></p>
16:30	<p>P-03-09: <a href="#">Initial observation of the Ku-band Broadband Dual-polarization Radar</a>  <i><u>Yoshitaka Nakamura</u>, Keitaro Asai, Eiichi Yoshikawa, Hiroshi Kikuchi, Tomoaki Mega, Tomoo Ushio, Takeshi Morimoto</i></p>
16:30	<p>P-03-10: <a href="#">Space Stem as candidate for Ball Lightning</a>  <i><u>Satoshi Kawano</u></i></p>
16:30	<p>P-03-11: <a href="#">Experimental Study of the Frequency Dependence of Soil Parameters and its Effect on the Lightning Response of Grounding Electrodes</a>  <i><u>Donghui Luo</u>, Wenxia Sima, Tao Yuan, Chengchen Xian, Potao Sun, Xiaochuan Li, Qian Tang</i></p>
16:30	<p>P-03-12: <a href="#">Space elevator and atmospheric electricity</a>  <i>Takeshi Kudo, <u>Masashi Kamogawa</u>, Yasuaki Kasai, Naotatsu Ishimaru, Yoji Ishikawa, Kiyotoshi Otsuka, Yasuhiro Fuchita</i></p>

16:30	P-06-01: <a href="#">Recent Progress in Studying Lightning Initiation, Propagation, and Attachment</a> <i>Vladimir A. Rakov, <u>Evgeny A. Mareev</u>, Manh D. Tran, Nikolay A. Bogatov, Alexander Yu. Kostinskiy, Vladimir S. Syssoev</i>
16:30	P-06-02: <a href="#">Numerical simulation of the effect of horizontal distribution forms of space charge in thunderstorms on lightning discharge</a> <i><u>Yongbo Tan</u>, Hui Lin</i>
16:30	P-06-03: <a href="#">The Lightning Attachment Process and its Relation to Ball Lightning Creation and Disappearance</a> <i><u>Herbert Friedrich Boerner</u></i>
16:30	P-06-04: <a href="#">Three dimensional feature of Regular Pulses Bursts</a> <i><u>Wang Yanhui</u>, Wang Tuo, Zhang Guangshu, Li Yajun</i>
16:30	P-06-05: <a href="#">Characteristics of continuing current in lightning flashes</a> <i><u>Megumu Miki</u>, Toru Miki, Mikihisa Saito, Koudai Nagata, Masahito Shimizu, Fukumune Suzuki, Takeshi Morimoto</i>
16:30	P-06-06: <a href="#">Observation of Multiple Ground Termination Storke Using High-speed Digital Camera Systems</a> <i><u>Megumu Miki</u>, Toru Miki, Mikihisa Saito, Koudai Nagata, Masahito Shimizu, Takashi Morimoto, Fukumune Suzuki</i>
16:30	P-06-07: <a href="#">Description of the GrAnada Lightning Ultrafast Spectrograph (GALIUS)</a> <i><u>Francisco J. Gordillo-Vazquez</u>, Maria Passas, Justo Sanchez, Ny Kieu</i>
16:30	P-06-08: <a href="#">Preliminary GALIUS spectra of sparks produced by a small electrostatic generator</a> <i><u>Ny Kieu</u>, Maria Passas, Justo Sanchez, Francisco J. Gordillo-Vazquez</i>
16:30	P-06-09: <a href="#">Bipolar lightning currents observed around Mt. Ogami in winter</a> <i><u>Noriyasu Honma</u>, Noriyasu Suzuki, Yasuji Hongo, Takaaki Konno</i>
16:30	P-06-10: <a href="#">Designation of M-component characteristics in time and time-frequency domain on the basis of cloud-to-ground lightning flash electric field signatures recorded by the new autonomous detection station in Rzeszow</a> <i>Grzegorz Karnas, Grzegorz Maslowski, <u>Piotr Baranski</u></i>
16:30	P-06-11: <a href="#">The Luminous Properties of Natural Cloud-to-ground Lightning Return Strokes and M-components</a> <i><u>Xuejuan Wang</u>, Ping Yuan, Guorong Liu, Bin Fan</i>
16:30	P-06-12: <a href="#">The conduction characteristic of return stroke channel obtained by lightning spectra</a> <i><u>Bin Fan</u>, Ping Yuan, Yanling Su, Jianyong Cen, Xuejuan Wang, Jinhao Wang</i>
16:30	P-06-13: <a href="#">Analysis of the high-speed time-resolved spectra and current of a triggered lightning flash</a> <i><u>Yijun Zhang</u>, Huaming Zhang, Weitao Lyu, Yang Zhang, Dong Zheng, Yanfeng Fan</i>
16:30	P-06-14: <a href="#">Characteristics of Upward Lightning on Canton Tower in 2016</a> <i><u>Qi Qi</u>, Weitao Lyu, Bin Wu, Luwen Chen, Ying Ma, Zhiguo Su, Changxiu Zhang</i>
16:30	P-06-15: <a href="#">Recoil leader progress in an upward lightning flash on Canton tower</a> <i><u>Bin Wu</u>, Weitao Lyu, Qi Qi, Ying Ma, Luwen Chen, Zhiguo Su</i>

16:30	P-06-16: <a href="#">3D simulations of long and branching streamer discharges</a> <i>Behnaz Bagheri Varnousfaderani, Jannis Teunissen, Ute Ebert</i>
16:30	P-06-17: <a href="#">Investigating streamer initiation related to lightning inception</a> <i>Shahriar Mirpour, Sander Nijdam</i>
16:30	P-06-18: <a href="#">Towards microscopically-based models of lightning coronas</a> <i>Miguel Boaventura Teixeira Gomes, Marta Gonzalez, Francisco Jose Gordillo Vazquez, Alejandro Luque Estepa</i>
16:30	P-06-19: <a href="#">Lightning attachment process of rocket triggered return strokes observed by using LAPOS 5</a> <i>Yamada Hideyuki, D. Wang, T. Wu, N. Takagi, D. Jordan, and M. A. Uman</i>
16:30	P-06-20: <a href="#">Stochastic discharge inception near ice particles and other dielectric objects</a> <i>Casper Rutjes, Jannis Teunissen, Ute Ebert</i>
16:30	P-06-21: <a href="#">Comparison of optical emission from Cloud-to-Ground Lightning observed by High-Speed Camera and Geostationary Lightning Mapper (GLM)</a> <i>Larissa Antunes da Silva, Osmar Pinto Jr., Scott Rudlosk, Michael J. Peterson, Antonio Carlos Varela Saraiva</i>
16:30	P-06-22: <a href="#">Sub-Microsecond Radio Emission from Thunderclouds</a> <i>Anatoly N. Karashtin, Yury V. Shlyugaev, Aleksey A. Bulatov, Olga S. Karashtina, Fedor A. Kuterin, Petr A. Mikryukov</i>
16:30	P-06-23: <a href="#">Generation of Stems in Streamer Corona of Negative Leader</a> <i>Dmitry I. Iudin, Artem A. Syssoev, Nikolay A. Popov</i>

# Technical Programme

## Poster Sessions

### Tuesday, 19 June

#### 14:30 (Tuesday) Posters 4&5: **Thunderstorm Electrification and Microphysics, Lightning and Meteorology**

Chair: Eiichi Yoshikawa

14:30	P-04-01: <a href="#">Thunderstorm electrification studies based on electric field- mill measurements, dual-pol radar data and simulations from cloud electrification model</a> <i>Kleber Pinheiro Naccarato, Flavio Carvalho Magina, Andre A. R. Morais</i>
14:30	P-04-02: <a href="#">Environmental Conditions Producing Thunderstorms with Anomalous Vertical Polarity of Charge Structure</a> <i>Alexander J. Eddy, Donald R. MacGorman, Cameron R. Homeyer, Earle Williams</i>
14:30	P-04-03: <a href="#">Charging Regions in an Anomalously Electrified Supercell</a> <i>Vanna C. Chmielewski, Donald R. MacGorman, Conrad Ziegler, Elizabeth DiGangi, Daniel Betten, Michael Biggerstaff</i>
14:30	P-04-04: <a href="#">Analysis of Electric Field Soundings through Simulated Storms</a> <i>Edward R. Mansell, Alexandre O. Fierro, Donald R. MacGorman, Maribeth Stolzenburg, Thomas C. Marshall, Conrad L. Ziegler</i>
14:30	P-04-05: <a href="#">Comparison between the electrostatic equilibrium on aircraft flying in convective cloud and the local total water content</a> <i>Aurelie Bouchard, Pierre Laroche, Philippe Lalande, Patrice Blanchet, Magalie Buguet, Arnaud Chazottes</i>
14:30	P-04-06: <a href="#">Suppression of bag mode of drop breakup in horizontal electric fields</a> <i>Rohini Vilas Bhalwankar, C.G. Deshpande, A. K. Kamra</i>
14:30	P-04-07: <a href="#">Research on the Evolution Characteristics of Hydrometeors in Thunderstorm Cell with X-band Dual-polarimetric Radar</a> <i>Yunjun Zhou, Xiaomin Li, Hui Xiao</i>
14:30	P-04-08: <a href="#">Characteristics of Lightning Flash Size in a Supercell Storm</a> <i>Dong Zheng, Zhixiao Zhang, Yijun Zhang, Gaopeng Lu</i>
14:30	P-04-09: <a href="#">Classification of electric field potential gradient variations during the passage of isolated air mass cumulonimbus clouds</a> <i>Konstantin Nikolaevich Pustovalov, Peter Michailovich Nagorskiy</i>

14:30	P-04-10: <a href="#">The Analysis on a Type of Negative Cloud-to-ground Flash Predominate Thunderstorm in the Qinghai-Tibet Plateau</a> <i>Yajun Li, Guangshu Zhang, Yanhui Wang, Bin Wu</i>
14:30	P-04-11: <a href="#">An Updated Balloon-Borne Disdrometer for High Resolution Microphysical Observations in Severe Convection</a> <i>Sean Waugh, Conrad Ziegler</i>
14:30	P-04-12: <a href="#">The feedback effect of electric field force on electrification and charge structure in thunderstorm</a> <i>Ling Sun, Xiushu Qie, Edward R. Mansell, Zhixiong Chen</i>
14:30	P-04-13: <a href="#">Relay Electrical Conductivity of Intracloud Media due to Small-Scale Stochastic Discharges</a> <i>Stanislav S. Davydenko, Dmitry I. Iudin, Alexey A. Emelyanov, Vitaly Yu. Klimashov</i>
14:30	P-04-14: <a href="#">Effects of Turbulence on Thunderstorm Electrification</a> <i>Svetlana Dementyeva, Evgeny Mareev</i>
Withdrawn	P-04-15: <a href="#">Effects of Lightning discharges on precipitation rates in severe Thunderstorms</a> <i>Dipjyoti Mudliar, Sunil D. Pawar, Anupam Hazar, Manoj Kumar Srivastava, Bhupendra Nath Goswami</i>
14:30	P-04-16: <a href="#">Inverted Polarity thunderstorms observed over India</a> <i>Sunil D. Pawar, Gopalakrishnan Venkatachalam, Manoj Domkawale, Dipjyoti Mudliar</i>
14:30	P-04-17: <a href="#">Radar-Observed Characteristics of Single-Cell thunderstorms in the UK</a> <i>Benjamin Courtier, Thorwald Stein, Giles Harrison, Kirsty Hanley, Jonathan Wilkinson</i>
14:30	P-04-18: <a href="#">Simulation of electrification and lightning on a thunderstorm over Brazil using the Meso-NH model with observational data comparison.</a> <i>Morais A. A. R., K. P. Naccarato, C. Barthe, R. R. Azambuja</i>
14:30	P-04-19: <a href="#">Storm morphology and thunderstorm electrification during CHUVA and SOS-CHUVA field campaigns</a> <i>Rachel Albrecht, Camila Lopes, Raidiel Puig, Luiz Machado, Edmilson Freitas, Isabela Siqueira, Ana Avila, Thiago Biscaro, Allan Calheiros, Izabelly Costa, Tiago Ifanger, Kleber Naccarato</i>
14:30	P-04-20: <a href="#">The Influence of Hail on Severe Storms Electrification</a> <i>Camila Lopes, Rachel Ifanger Albrecht</i>
14:30	P-04-21: <a href="#">Environmental Influences on the Lightning of Continental Cumulonimbus Clouds</a> <i>Vaughan Phillips</i>
14:30	P-05-01: <a href="#">Numerical simulation of 23 June 2016 Yancheng City EF4 tornadic supercell and analysis of lightning activity</a> <i>Fengxia Guo, Li Yang, Huang ZhaoChu, Wang ManFei, Zeng FanHui, Lian ChunHao, Mu YiJun</i>
14:30	P-05-02: <a href="#">Dynamic and electric charge structure of thunderclouds obtained from the WRF_ELEC model and related to electric field signatures of lightning strokes recorded by the Local Lightning Detection Network in the Warsaw region during thunderstorm season in 2017</a> <i>Piotr Baranski, Jakub Guzikowski, Marek Kubicki, Marek Morawski, Andrzej Skrzynski</i>

14:30	P-05-03: <a href="#">Development of lightning model for a next generation library for weather and climate model, SCALE</a> <i>Yousuke Sato, Hirofumi Tomita</i>
Withdrawn	P-05-04: <a href="#">The evolution and extratropical transition of tropical cyclones during the 2017 hurricane season from a GLM, ISS LIS and GPM perspective</a> <i>Patrick N. Gatlin, Lena Huescher, Walter A. Petersen, Daniel J. Cecil, Chuntao Liu</i>
14:30	P-05-05: <a href="#">Lightning Characteristics of Tropical Storm Bebinca (2013) and Super Typhoon Rammasun (2014)</a> <i>Fangcong Zhou, Tinglong Zhang, Yi Gao, Hai Yu</i>
14:30	P-05-06: <a href="#">Lightning Characteristics in Japan Observed by the JLDN from 2001 to 2015</a> <i>Akiko Sugita, Michihiro Matsui</i>
14:30	P-05-07: <a href="#">Relationship between Winter Lightning and Snowfall Modes in Japan</a> <i>Fumiya Beniya, Yoshitaka Nakamura, Takeshi Morimoto, Hiroki Motoyoshi, Hideo Sakai</i>
14:30	P-05-08: <a href="#">Relationship Between Lightning Charge Transfer and Atmospheric Conditions in winter in Tohoku</a> <i>Kazuki Akiyama, Koji Michishita, Shigeru Yokoyama, Nobuyuki Honjo</i>
Withdrawn	P-05-09: <a href="#">Characteristics of Cloud-to-Ground Lightning over Guangdong Province, South China based on the continuous LLS observation during 2004-2015</a> <i>Yu Wang, Shanqiang Gu, Biwu Yan, Juntian Guo</i>
14:30	P-05-10: <a href="#">Characteristics of total lightning associated with recent hazardous weather events in Japan</a> <i>Yasuhide Hobara, Shintaro Kono, Tetsuya Ogawa, Stan Heckman, Michael Stock, Charlie Liu</i>
14:30	P-05-11: <a href="#">First analysis of IC initial leaders in the tropical atmosphere</a> <i>Jesus A. Lopez, Joan Montanya, Oscar van der Velde, David Romero</i>
14:30	P-05-12: <a href="#">Initiation altitude of lightning flashes and its relation to the Radar reflectivity</a> <i>Abhay Srivastava, Shanfeng Yuan, Dongfang Wang, Zhuling Sun</i>
14:30	P-05-13: <a href="#">A Review of Contributions by W. David Rust to Atmospheric Electricity</a> <i>A. Connor Madden, Donald R. MacGorman</i>
14:30	P-05-14: <a href="#">Observations of thunderstorm kinematics: Characteristics of lightning in turbulent environments</a> <i>Vicente Salinas, Eric C. Bruning, Samantha Berkseth</i>
14:30	P-05-15: <a href="#">Finding correlations between lightning activity and radar data using machine learning</a> <i>Nikolay V. Ilin, Fedor A. Kuterin</i>
14:30	P-05-16: <a href="#">Analysis of environmental conditions related to thunderstorms developed over different regions of Bulgaria</a> <i>Boryana D. Tsenova, Boryana Markova, Rumjana Mitzeva</i>
14:30	P-05-17: <a href="#">The relationship between lightning activities and aerosol over different regions in China</a> <i>Zheng Shi, Tan Yongbo, Du Sai</i>
14:30	P-05-18: <a href="#">Lightning activity in the two most active areas of Equatorial Africa</a> <i>Jean Kigotsi, Serge Soula, Jean-Francois Georgis</i>

14:30	P-05-19: <a href="#">Lightning Climatology Study over Central Himalayala Uttarkhand</a> <i>Alok Sagar Gautam, Penki Ramesh Kumar</i>
14:30	P-05-20: <a href="#">Spatial Relationship between the Return strokes of Cloud-to-ground Lightning Flashes in Stratiform Region and the Bright Band</a> <i>Fei Wang, Yijun Zhang, Hengyi Liu</i>
14:30	P-05-21: <a href="#">Observed Downward and Upward Lightning Strikes at Tokyo Skytree during 2012 to 2017</a> <i>Toru Miki, Mikihisa Saito, Soichiro Sugimoto, Takatoshi Shindo, Masaru Ishii</i>

**16:30 (Tuesday) Posters 6 (Cont.): Lightning Physics**

**Chair:** Yoshitaka Nakamura

16:30	P-06-24: <a href="#">Modeling the Stepping Mechanism of Development of Negative Lightning Leader</a> <i>Artem A. Syssoev, Dmitry I. Iudin, Stanislav S. Davydenko, Vladimir A. Rakov</i>
16:30	P-06-25: <a href="#">Collective Dynamics of Charged Hydrometeors in Thunderclouds and Lightning Initiation</a> <i>Dmitry I. Iudin, Vladimir A. Rakov, Nikolay A. Popov, Artem A. Syssoev, Alexey A. Bulatov, Masashi Hayakawa</i>
16:30	P-06-26: <a href="#">Comparative Analysis of Correlations between Channel-Bottom Light Intensity and Channel-base Current for Rocket-triggered Lightning Flashes</a> <i>Mi Zhou, Daohong Wang, Jianguo Wang, Nobuyuki Takagi, Haitao Huang, Yongyin Lu, Martin A. Uman, Douglas Max Jordan</i>
16:30	P-06-27: <a href="#">Preliminary Discussion on the Electrical Environment Characteristics for the Initiation of Upward Lightning in thunderstorm model</a> <i>Tianxue Zheng, Yongbo Tan, Jiechen Zhou</i>
16:30	P-06-28: <a href="#">Influencing Factors on lightning Attachment Process of Lightning Rods</a> <i>Zhang Yunfeng, Chen Jiawen, Ren Huan</i>
16:30	P-06-29: <a href="#">Analyzing the transmission structures of long continuing current processes from negative ground flashes on the Qinghai-Tibetan Plateau</a> <i>Fan Xiangpeng, Zhang Yijun, Zhang Guangshu</i>
16:30	P-06-30: <a href="#">Fractal Model of Structure and Electromagnetic Emission of Compact Intracloud Discharges</a> <i>Stanislav S. Davydenko, Dmitry I. Iudin</i>
16:30	P-06-31: <a href="#">Broadband VHF Interferometry Observations at the Kennedy Space Center</a> <i>Mark A. Stanley, William Rison, Julia Tilles, Paul R. Krehbiel, Robert G. Brown, Jennifer G. Wilson, Ningyu Liu</i>
16:30	P-06-32: <a href="#">Why Do Statistical Distributions of Lightning Peak Currents Appear to Be Lognormal?</a> <i>Evgeny A. Mareev, Nikolay N. Slyunyaev, Vladimir A. Rakov, Georgy S. Golitsyn</i>
16:30	P-06-33: <a href="#">Characteristics of Positive Cloud-to-ground Flashes Triggering Upward Lightning from high Tower</a> <i>Shanfeng Yuan, Rubin Jiang, Dongfang Wang, Zhuling Sun, Mingyuan Liu, Xiushu Qie</i>
16:30	P-06-34: <a href="#">Griffiths and Phelps Lightning Initiation Model, Revisited</a>

	<i>Paul R. Krehbiel, Caitano da Silva, Alex Attanasio</i>
16:30	P-06-35: <a href="#">Characteristics of lightning current at wind power generation facilities</a> <i>Junya Sawada, Nobuyuki Takagi, Daohong Wang, Ting Wu</i>
16:30	P-06-36: <a href="#">Initial Electric Field Change of Positive Cloud to Ground Lightning Discharges</a> <i>Ariadi Hazmi, Reni Desmiarti, Primas Emeraldi, Nobuyuki Takagi</i>
16:30	P-06-37: <a href="#">Acoustic Observation of Lightning Attachment to Wind Turbine</a> <i>Jinxin Cao, Jianguo Wang, Hui Qin, Jianguo Dai, Rui Su, Li Cai</i>

# Technical Programme

## Poster Sessions

### Thursday, 21 June

**16:30 (Thursday) Posters-7&8: Satellite measurements, Lightning and Thunderstorm Detection Technologies**

**Chair:** *Ting Wu*

16:30	P-07-01: <a href="#">Satellite cloud anomaly observed before Japan strong earthquakes</a> <i>Guangmeng Guo, Yixuan Li</i>
16:30	P-07-02: <a href="#">ULF electromagnetic field in the upper ionosphere excited by lightning</a> <i>Vyacheslav Pilipenko, Evgeniy Fedorov, Nikolay Mazur</i>
16:30	P-07-03: <a href="#">MicroCameras and Photometers (MCP) on board the TARANIS satellite</a> <i>Thomas Farges, Philippe Hebert, Fanny Le Mer-Dachard, Karen Ravel, Stephanie Gaillac</i>
16:30	P-07-04: <a href="#">Comparisons of optical lightning observations on JEM-GLIMS with radio observations from the ground</a> <i>Hiroshi Kikuchi, Mitsuteru Sato, Tomoo Ushio, Takeshi Morimoto, Atsushi Yamazaki, Makoto Suzuki, Zen Kawasaki</i>
16:30	P-07-05: <a href="#">Flash Optical Energy from the Geostationary Lightning Mapper</a> <i>William Koshak, Phillip Bitzer, Steve Goodman</i>
16:30	P-07-06: <a href="#">Lightning Imaging Sensor on the International Space Station: Assessments and Results from First Year Operations</a> <i>Richard J. Blakeslee, Hugh J. Christian, Douglas M. Mach, Katrina S. Virts, Dennis E. Buechler, T. Daniel Walder, William J. Koshak, William T. Ellett, Michael F. Stewart</i>
16:30	P-07-07: <a href="#">Latitudinal, Regional, and Seasonal Dependences of IC/CG Ratio Derived from JEM-GLIMS and Ground-based Lightning Network Data</a> <i>Kittanapat Bandholnopparat, Mitsuteru Sato, Toru Adachi, Tomoo Ushio, Yukihiro Takahashi</i>
Withdrawn	P-07-08: <a href="#">Characteristics of lightning activity in China using FY-4A Lightning Mapping Imager</a> <i>Dongjie Cao</i>
16:30	P-07-09: <a href="#">Pre-seismic whistler wave intensity attenuation: Comparison between DEMETER satellite and WWLLN data</a> <i>Masashi Kamogawa, Jean-Jacques Berthelier, Shoho Togo, Tatsuo Onishi, Tetsuya Kodama, Toshiyasu Nagao</i>

16:30	P-07-10: <a href="#">Using Ground-based Laser Beacons to Assess GLM Geolocation Accuracy</a> <i>Dennis Edward Buechler, Tom Varghese, Dave McCormick, James Bremer, Pete Armstrong, Donald Chu, Jon Fulbright, Steve Goodman, <u>Douglas Mach</u></i>
16:30	P-07-11: <a href="#">Search for Optical Lightning Flash with Orbiter and Ground Telescope</a> <i>Yukihiro Takahashi, Masataka Imai, Mitsuteru Sato, Ralph Lorenz</i>
16:30	P-07-12: <a href="#">Simple Models of Lightning Clustering at the Planetary Scale: Implications for Remote Sensing Surveys</a> <i>Ralph D. Lorenz, Yukihiro Takahashi, Mitsuteru Sato, Kozo Yamashita</i>
16:30	P-08-01: <a href="#">Monitoring Lightning Activity and Other Earth System Variables from Space Using Nanosatellite Technology</a> <i>Kleber Pinheiro Naccarato, Manoel Cardoso, Ronan Arraes, Candido O. de Moura, Walter A. dos Santos</i>
16:30	P-08-02: <a href="#">Improving the cloud-to-ground flash density data in Brazil</a> <i>Ana Cristina Marotti, <u>Kleber Pinheiro Naccarato</u>, Osmar Pinto Junior</i>
16:30	P-08-03: <a href="#">Analysis and Application of Lightning Waveform Detected on the Overhead Transmission lines</a> <i>Shanqiang Gu, Biwu Yan, Yu Wang</i>
16:30	P-08-04: <a href="#">Ground validation of Geostationary Lightning Mapper(GLM) using VHF broadband interferometer</a> <i>Ami Kudo, Michael Gordon Stock, Tomoo Ushio</i>
16:30	P-08-05: <a href="#">Analysis of Location Accuracy of ToA-Based Lightning Location Systems in Mountainous Terrain</a> <i>Dongshuai Li, Marcos Rubinstein, Farhad Rachidi, Gerhard Diendorfer, Wolfgang Schulz</i>
16:30	P-08-06: <a href="#">A Study of Earth's Curvature Effect on LEMP Propagation Over Distances Ranging from 100 to 1000 km</a> <i>Thang H. Tran, Yoshihiro Baba, Vladimir A. Rakov</i>
16:30	P-08-07: <a href="#">Observation and Prediction of Damaging Winds by a High Dense Ground Surface Observation Network (POTEKA)</a> <i>Hisato Iwashita, Toshiaki Morita, Koji Shibata, Fumiaki Kobayashi</i>
16:30	P-08-08: <a href="#">Electric field measurements of atmospheric discharges: on-board and ground based instruments developed in frame of CNES TARANIS space mission</a> <i>Elena Seran, Michel Godefroy</i>
16:30	P-08-09: <a href="#">Optimizing Clustering and Filtering Techniques to Produce Better Lightning Datasets from the Geostationary Lightning Mapper</a> <i>Douglas Michael Mach, Monte Bateman</i>
Move to Tue. as P-06-37	<del>P-08-10: <a href="#">Acoustic Observation of Lightning Attachment to Wind Turbine</a></del> <i>Jinxin Cao, Jianguo Wang, Hui Qin, Jianguo Dai, Rui Su, Li Cai</i>
16:30	P-08-11: <a href="#">A method of measuring thunderstorm electric field by using a pair of wire-attached electrodes and</a>

	<p><a href="#">LMA</a> <i>Junpei Kurachi, Daohong Wang, Ting Wu, Nobuyuki Takagi</i></p>
16:30	<p>P-08-12: <a href="#">Creation Storm Ring automatic meteorological system and first obtained results on its basis</a> <i>Konstantin Nikolaevich Pustovalov, Alexey Anatolevich Kobzev, Vladimir Aleksandrovich Korolkov, Peter Mikhailovich Nagorskiy, Alexey Evgenyevich Tel'minov</i></p>
Withdrawn	<p>P-08-13: <a href="#">A 3D lightning mapping system operated simultaneously at LF and VHF bands</a> <i>Yoshihiro Shima, Takashi Sugiura, Nobuyuki Takagi, Ting Wu, Daohong Wang</i></p>
16:30	<p>P-08-14: <a href="#">Radio Frequency Interferometer with Small Base as a Lightning Mapping Array for Close Lightning Studying</a> <i>Anatoly N. Karashtin, Yuri V. Shlyugaev, Aleksey A. Bulatov, Olga S. Karashtina, Fedor A. Kuterin, Petr A. Mikryukov</i></p>
16:30	<p>P-08-15: <a href="#">The Design of a Sounding System with Electrical Field and Precipitation Particles in thunderstorm</a> <i>Hai Yu, Tinglong Zhang, Fangcong Zhou, Jie Chen</i></p>
16:30	<p>P-08-16: <a href="#">Influence of Detection Efficiency of Lightning Locating System on Ground Lightning Current Distribution in Guangxi</a> <i>Xia Xuezhi, Li Han, Yu Jianhui, Zhou Wenjun, Xiong Zehao</i></p>
16:30	<p>P-08-17: <a href="#">GLM - ENTLN Comparison and Fusion</a> <i>Jeff Lapierre, Michael Stock, Saiadithya Cumbulam Thangaraj</i></p>
16:30	<p>P-08-18: <a href="#">Using Lightning Cell Characteristics to generate Earth Network Dangerous Thunder Storm Alerts (DTA)</a> <i>Saiadithya Cumbulam Thangaraj, Michael Stock, Jeff L. Lapierre, Mark Hoekzema</i></p>
16:30	<p>P-08-19: <a href="#">Locating narrow bipolar events with low-frequency magnetic field measurement</a> <i>Hongbo Zhang, Gaopeng Lu, Xiushu Qie, Rubin Jiang, Mingyuan Liu, Zhixiong Chen</i></p>
16:30	<p>P-08-20: <a href="#">VHF electromagnetic radiation from thunderclouds generated by continuing current</a> <i>Masahito Shimizu, Kodai Nagata, Fukumune Suzuki, Hiroki Tsuji, Megumu Miki, Takeshi Morimoto</i></p>
16:30	<p>P-08-21: <a href="#">Analysis of the initiation phase in negative lightning flashes exhibiting an intense return stroke peak current</a> <i>Stephane Pedeboy, Eric Defer, Ivana Kolmasova, S. Coquillat, P. De Guibert, D. Lambert, J.-P. Pinty, S. Prieur, Ondrej Santolik, Radek Lan, Ludek Uhlir</i></p>
16:30	<p>P-08-22: <a href="#">Lightning early warning systems based on ground-based field mill network</a> <i>Takeshi Kudo, Masashi Kamogawa</i></p>
16:30	<p>P-08-23: <a href="#">A lightning location system in Zhanhua of China</a> <i>Mingyuan Liu, Xiushu Qie, Rubin Jiang, Zhuling Sun, Zilong Ma, Tianxue Zheng</i></p>
16:30	<p>P-08-24: <a href="#">Lightning characteristics with charge moment change over eastern part of Japan by ELF and LLS observations</a> <i>Yasuhide Hobara, Junpei Yamashita, Ryo Murai, Tomomi Narita, Hiroaki Mitsuzuka</i></p>
16:30	<p>P-08-25: <a href="#">Recent improvements in the Earth Networks Lightning Network</a></p>

	<i>Saiadithya Cumbulam Thangaraj, Michael Stock, Jeff Lapierre</i>
Withdrawn	P-08-26: <a href="#">New methods and algorithms for automatic identification of atmospheric discharges based on continuous measurements of electric fields in the VLF band</a> <i>Zenon Nieckarz, Piotr Baraski, Rafa Iwaski, Jerzy Kubisz, Micha Ostrowski</i>
16:30	P-08-27: <a href="#">Lightning Distance Estimation Using LF Lightning Radio Signals Via Machine-Learned Models</a> <i>Andre Lucas Antunes de Sa, Robert Andrew Marshall</i>

# Technical Programme

## Poster Sessions

### Friday, 22 June

**14:30 (Friday) Posters-9,10&11: Met. Applications, Lightning Climatology and Chem. Effects, Lightning Effects on the Middle and Upper Atmosphere, Energetic Radiation**

**Chair:** *Hiroshi Kikuchi*

14:30	P-09-01: <a href="#">Lightning warning method and characteristic of lightning electricfield in Huangshan Mountain scenic area</a> <i>Wang Kai, Zhu Hao, Cheng Xiang-yang</i>
14:30	P-09-02: <a href="#">Development of Lightning Observation Network in the Western Pacific Region for the Intensity Prediction of Severe Weather and Tropical Cyclone</a> <i>Mitsuteru Sato, Yukihiro Takahashi, Hisayuki Kubota, Kozo Yamashita, Junichi Hamada, Joel J. Marciano</i>
Withdrawn	P-09-03: <a href="#">Evaluation of thunderstorm warnings in Belgium</a> <i>Dieter Roel Poelman, Laurent Delobbe, Pascal Mailier, Fabian Debal</i>
14:30	P-09-04: <a href="#">Study of the seismic static electricity precursor anomaly information based on Lightning observation</a> <i>Xiaobing Jin, Liang Zhang, Li Ma, Junwei Bu</i>
Withdrawn	P-09-05: <a href="#">Ground Lightning enhancement associated with topography in Baishe area, China</a> <i>Han Li</i>
14:30	P-09-06: <a href="#">AeroRayos Project</a> <i>M. Gabriela Nicora, Juan Lucas Bali, Nicolas Rivaben, Eldo E. Avila, Maximiliano Sacco, Pablo Martin Vasquez, Raul D Elia, Alejandro Acquesta</i>
14:30	P-09-07: <a href="#">Study of the Atmospheric Electrical Activity through Lightning Jump in the central Argentina</a> <i>Constanza I. Villagran Asiares, M. Gabriela Nicora, Juan Lucas Bali, Eldo E. Avila</i>
14:30	P-09-08: <a href="#">Real-time Monitoring of 2017 Tropical Cyclones with Lightning: Storm Intensification and Reconstructed Microwave Imagery</a> <i>Natalia N. Solorzano, Jeremy N. Thomas, Connor Bracy</i>
14:30	P-09-09: <a href="#">Feasibility Study of Weather Information for Aircraft Lightning Avoidance</a> <i>Eiichi Yoshikawa, Tomoo Ushio, Hiroshi Oikawa, Atsushi Senoguchi, Masashi Kamogawa</i>
14:30	P-09-10: <a href="#">Thunderstorm patterns that may be useful to warn about lightning threats to wind turbines and</a>

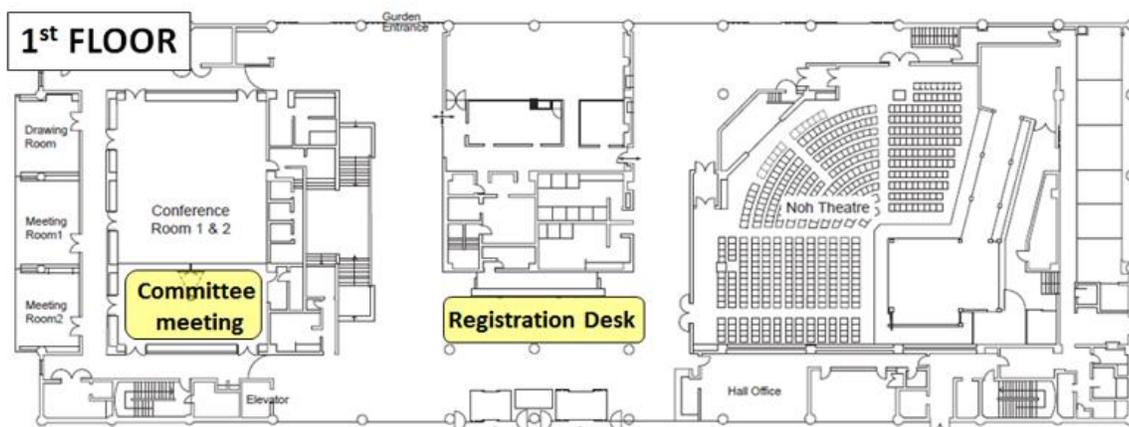
	<p><a href="#">other tall structures</a>  <u>Albert Salvador</u>, <u>Nicolau Pineda</u>, <u>Joan Montanya</u>, <u>Gloria Sola</u>, <u>Oscar van der Velde</u></p>
14:30	<p>P-09-11: <a href="#">Statistical study of the relationship between total lightning and heavy rainfall</a>  <u>Tetsuya Ogawa</u>, <u>Yasuhide Hobara</u>, <u>Hiroyuki Iwasaki</u>, <u>Stan Heckman</u>, <u>Michael Stock</u></p>
14:30	<p>P-09-12: <a href="#">A comparative study of lightning characteristics over the Tibetan Plateau and the Arabian Sea</a>  <u>Adarsh Kumar Kamra</u>, <u>P. Ramesh Kumar</u></p>
14:30	<p>P-09-13: <a href="#">A Climatology of Total Lightning Flashes Mapped by the Oklahoma Lightning Mapping Array 2003-2012</a>  <u>Donald R. MacGorman</u>, <u>Stephanie Weiss</u>, <u>Eric Bruning</u>, <u>Vanna Chmielewski</u></p>
14:30	<p>P-09-14: <a href="#">Contribution of Tropical Cyclone to Lightning Climatology over the Northwest Pacific</a>  <u>Wenjuan Zhang</u>, <u>Yijun Zhang</u>, <u>Dong Zheng</u>, <u>Weitao Lyu</u></p>
14:30	<p>P-09-15: <a href="#">Higher Resolution Lightning Climatology in South America based on STARNET measurements</a>  <u>Carlos A. Morales</u></p>
14:30	<p>P-09-16: <a href="#">Global Lightning Climatology</a>  <u>Robert H Holzworth</u>, <u>Katrina S. Virts</u></p>
14:30	<p>P-10-01: <a href="#">Chemical impact and optical signatures of halos and elves triggered by CG and IC lightning discharges</a>  <u>Francisco J. Perez-Invernon</u>, <u>Alejandro Luque</u>, <u>Francisco J. Gordillo-Vazquez</u></p>
14:30	<p>P-10-02: <a href="#">A Ray-Theory-based Earth-Ionosphere Waveguide Model for Lightning Sferic Study and its Comparison with the Full-wave Finite Difference Time Domain Model</a>  <u>Zilong Qin</u>, <u>Mingli Chen</u>, <u>Steven A. Cummer</u>, <u>Ya-ping Du</u>, <u>Fanchao Lu</u></p>
14:30	<p>P-10-03: <a href="#">Sprite possibly produced by two distinct positive cloud-to-ground lightning flashes</a>  <u>Jing Yang</u>, <u>Gaopeng Lu</u>, <u>Ningyu Liu</u>, <u>Mitsuteru Sato</u>, <u>Guili Feng</u>, <u>Yu Wang</u>, <u>Jung-Kuang Chou</u></p>
14:30	<p>P-10-04: <a href="#">Analysis of a Mesoscale Convective System that Produced a Single Sprite</a>  <u>Jing Yang</u>, <u>Gaopeng Lu</u>, <u>Ningyu Liu</u>, <u>Haihua Cui</u>, <u>Yu Wang</u>, <u>Morris Cohen</u></p>
14:30	<p>P-10-05: <a href="#">Observations of red sprites from space in the vicinity of lightning mapping networks</a>  <u>Gaopeng Lu</u>, <u>Anjing Huang</u>, <u>Feifan Liu</u>, <u>Steven A. Cummer</u>, <u>Fanchao Lyu</u>, <u>Alfred B. Chen</u></p>
14:30	<p>P-10-06: <a href="#">Horizontal distance between winter sprites and cloud-to-ground lightning</a>  <u>Tomoyuki Suzuki</u>, <u>Masashi Kamogawa</u>, <u>Terunori Miyoshi</u>, <u>Yuzaburo Takamura</u>, <u>Tsutomu Minami</u>, <u>Masayuki Yamamoto</u>, <u>Kenichi Kusunoki</u></p>
14:30	<p>P-10-07: <a href="#">When do summer sprites occur during the evolution of storm system?</a>  <u>Tomoyuki Suzuki</u>, <u>Masashi Kamogawa</u>, <u>Kenichi Kusunoki</u></p>
14:30	<p>P-10-08: <a href="#">How did the summer storm system produce gigantic jets in Japan?</a>  <u>Tomoyuki Suzuki</u>, <u>Masashi Kamogawa</u></p>
14:30	<p>P-10-09: <a href="#">Ionospheric responses to thunderstorm in the Indonesian sector of the Asian Equatorial/low latitude Region</a>  <u>Babalola Olasupo Ogunsua</u>, <u>Xiushu Qie</u>, <u>Jianchun Bian</u>, <u>Srivastava Abhay</u>, <u>Dongfang Wang</u></p>

14:30	P-10-10: <a href="#">Detailed analysis of two cases of dancing sprites</a> <i>Serge Soula, Janusz Mlynarczyk, Martin Fullekrug, Nicolau Pineda, Jean-Francois Georgis, Oscar van der Velde, Joan Montanya, Ferran Fabro</i>
14:30	P-10-11: <a href="#">Studying TLEs using a massive all-sky camera network designed to detect meteors</a> <i>Matthieu B. Garnung, Sebastien Celestin, Francois Colas, Chiara Marmo, Brigitte Zanda, Sylvain Bouley</i>
14:30	P-11-01: <a href="#">Investigating Radio Emissions Associated with Terrestrial Gamma-ray Flashes using NLDN, GLD360 and Fermi-GBM</a> <i>Bagrat Mailyan, Amitabh Nag, Martin Murphy, Ryan K. Said, Michael S. Briggs, Joseph R. Dwyer, Eric Cramer, Oliver J. Roberts, Matthew Stanbro, Hamid K. Rassoul, <u>Naomi Watanabe</u></i>
14:30	P-11-02: <a href="#">Peak power and electromagnetic field of the cloud-to-ground lightning core current channel</a> <i>Guorong Liu, Ping Yuan, Jianyong Cen, Xuejuan Wang, Tingting An</i>
14:30	P-11-03: <a href="#">Thunderstorm Ground Enhancement (TGE) and Cloud Electrification</a> <i>Ashot A. Chilingarian</i>
14:30	P-11-04: <a href="#">Broadband RF interferometric and polarization observations of lightning discharges correlated with gamma flux detection</a> <i>Xuan-Min Shao, Cheng Ho, Gregory Bowers, William Blaine, Brenda Dingus, Michael Caffrey, Paul Graham, Brian Haynes, David Smith, Michael Schneider, HAWC collaboration</i>
14:30	P-11-05: <a href="#">ULF electromagnetic field in the upper ionosphere excited by lightning</a> <i>Vyacheslav A. Pilipenko, Evgeniy N. Fedorov, Nikolay G. Mazur</i>
14:30	P-11-06: <a href="#">Improved scattering cross-sections for particle models of high-energy emissions from lightning</a> <i>Anthony Schmalzried, Alejandro Luque</i>
Withdrawn	P-11-07: <a href="#">The possible detection of high-energy photons from ball lightning by the GROWTH experiment</a> <i>Mikhail L. Shmatov</i>
Withdrawn	P-11-08: <a href="#">Initial acceleration of electrons of some ball lightning and TGFs with a hard spectrum</a> <i>Mikhail L. Shmatov</i>
14:30	P-11-09: <a href="#">Implications of a Multi-pulse, Downward Terrestrial Gamma-ray Flash from a Winter Thunderstorm in Japan</a> <i>David M Smith, Gregory S. Bowers, Masashi Kamogawa, Michael Stock, Zen Kawasaki, Yasuhide Hobara, Tomoo Ushio, Daohong Wang, Stan Heckman, Steven A. Cummer, XuanMin Shao, Joseph R. Dwyer</i>
14:30	P-11-10: <a href="#">Simulation of the High Altitude Water Cherenkov (HAWC) Observatory &amp; Gamma-ray Observations During Overhead Thunderstorms (GODOT) Instrument Response to Relativistic Runaway Electron Avalanche (RREA) Gamma-ray Enhancements</a> <i>Gregory Bowers, William Blaine, Xuan-Min Shao, Brenda Dingus, Michael McCarthy, David Smith, Michael Schneider, HAWC Collaboration</i>
14:30	P-11-11: <a href="#">The Light and Fast TGF Recorder</a> <i>John Sample, David Smith</i>

14:30	P-11-12: <a href="#">Terrestrial Gamma-Ray Flashes (TGFs) Measurements in Southern China and Southeast Asia</a> <i><u>Hongbo Zhang, Gaopeng Lu, Fanchao Lyu, Xiushu Qie</u></i>
14:30	P-11-13: <a href="#">Electron Acceleration Mechanisms in Streamers and Leaders</a> <i><u>Andy Martinez Nieto, Casper Rutjes, Ute Ebert</u></i>
14:30	P-11-14: <a href="#">High-energy events in the atmosphere and their relationship to the electrical structure of the cloud</a> <i><u>Ekaterina Konstantinovna Svechnikova, Nikolay Vladimirovich Ilin, Evgeny Anatol'evich Mareev, Ashot Chilingarian</u></i>
14:30	P-11-15: <a href="#">Simultaneous X-ray and microwave emissions from natural lightning and in high voltage laboratory sparks</a> <i><u>Joan Montanya, Michele Urbani, Ferran Fabro, Oscar van der Velde, Jesus A. Lopez, Victor March</u></i>
14:30	P-11-16: <a href="#">Geomagnetic effects on the beaming geometry of TGFs</a> <i><u>Sebastien Celestin</u></i>

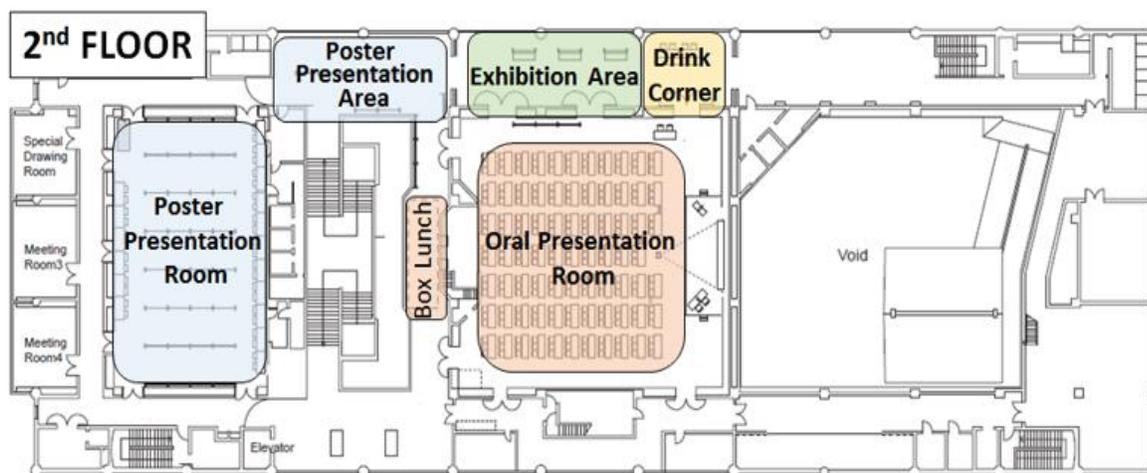
## Conference Venue & Internet (Free Wi-Fi)

### Whole map



**SMOKING AREA**

**\*1<sup>st</sup> FLOOR : Do not eat or drink**



### Internet (Free Wi-Fi)

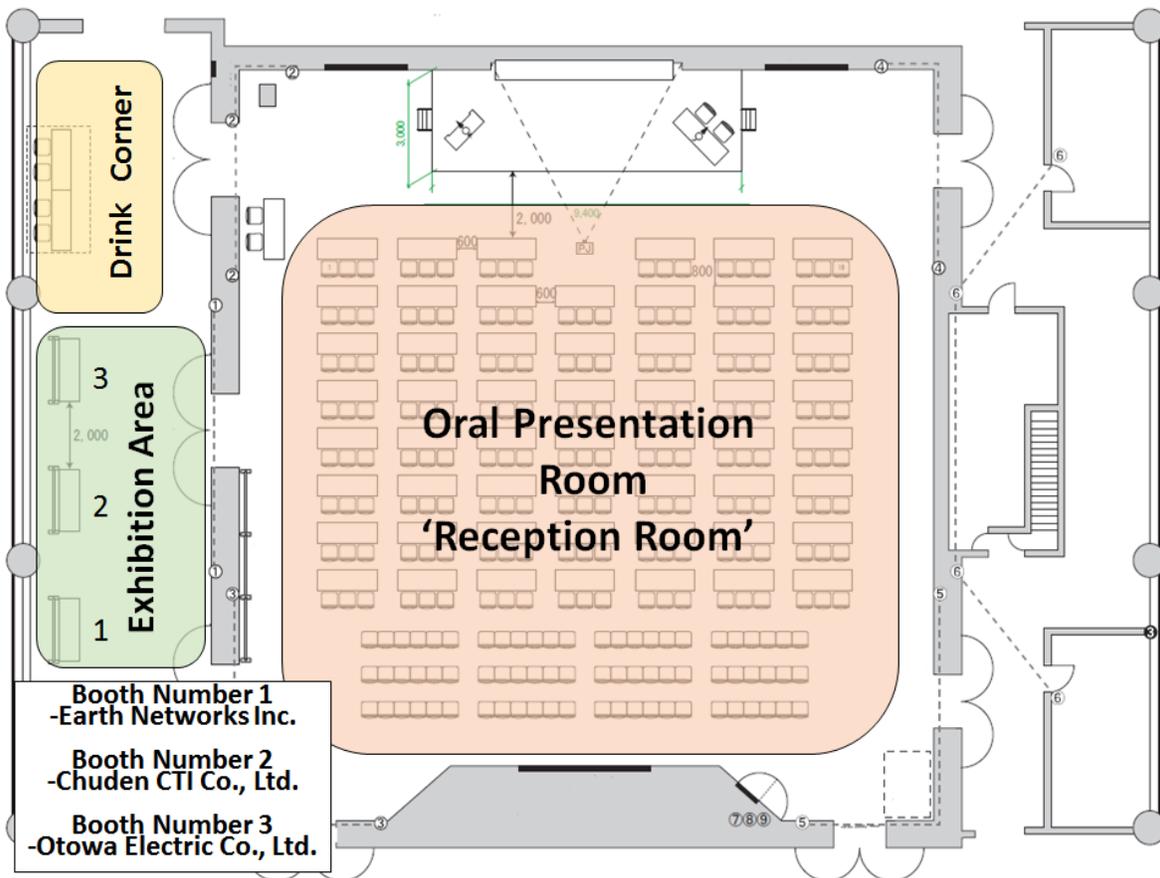
At Nara Kasugano International Forum / IRAKA, you can use our free Wi-Fi everywhere in the building, and meeting room and on the terraces.

①SSID : iraka-free

②SSID : iraka-free2

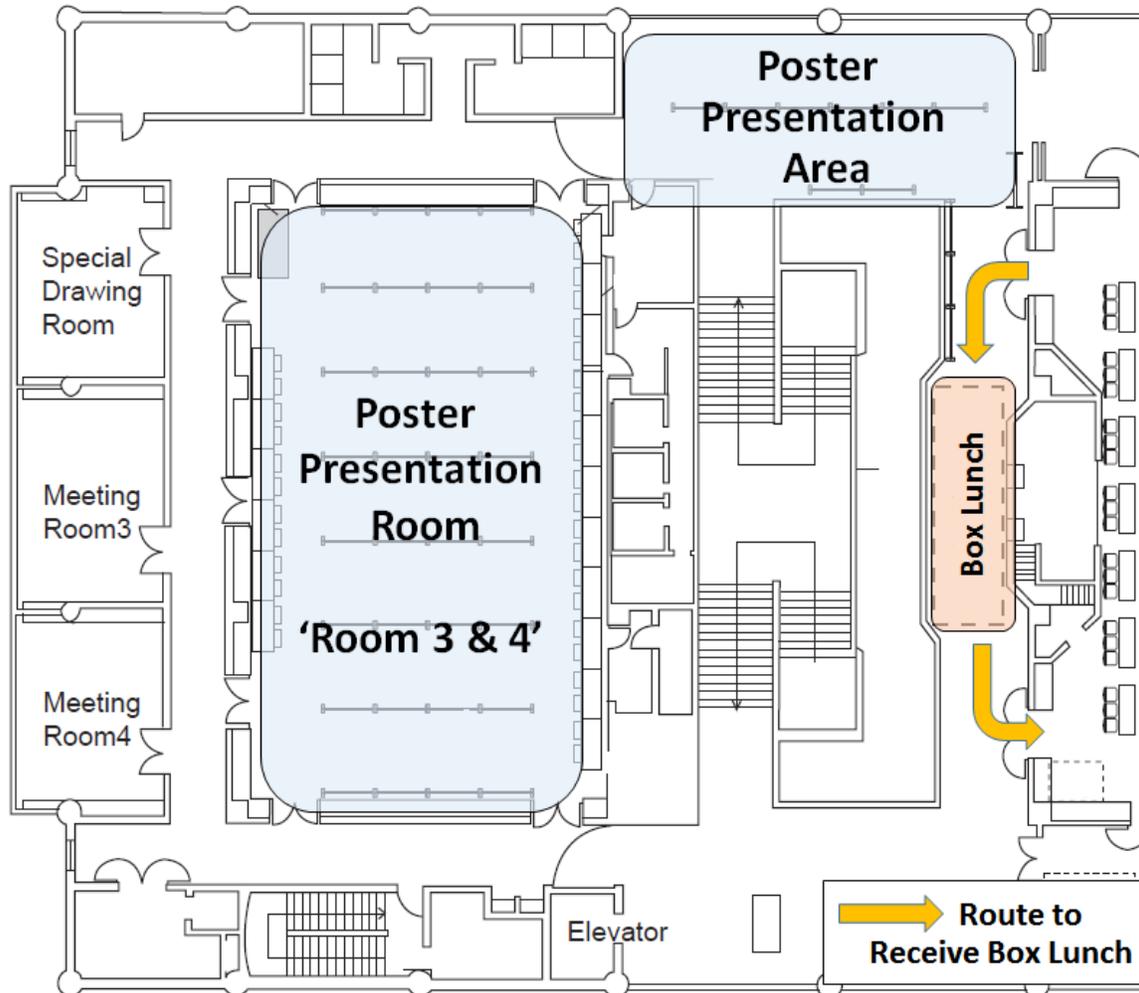
# ICAE2018 Floor Plan

## Oral Presentation Room: 'Reception Room'



## ICAE2018 Floor Plan

### Poster Presentation Room: 'Room 3 & 4, and Lobby' And Receiving Box Lunch



\*If you requested a box lunch, please follow the directions and pick up your favorite box lunch after the morning sessions.

## Registration Hours

**Admission to all sessions and hosted functions requires identification. Please wear your name badge at all time.**

■ 17 June, 2018 (Sun.)  
From 1:00 pm to 6:30 pm

■ 18 June, 2018 (Mon.)  
From 8:15 am to 4:00 pm

■ 19 June, 2018 (Tue.)  
From 8:15 am to 4:00 pm

■ 20 June, 2018 (Wed.)  
From 8:15 am to 2:30 pm

■ 21 June, 2018 (Thu.)  
From 8:15 am to 4:00 pm

■ 21 June, 2018 (Fri.)  
From 8:15 am to 4:00 pm

# Speaker Guides

## Regular Oral presentations

### Presentation Time

12 minutes of presentation + 3 minutes of discussion (each)

### Setup

- Please bring your own laptop for presentation and check the connection with the projector before the session starts.
- Please arrive early enough to meet the session chair and to tell him/her your name, affiliation and the title of your paper before the session starts.
- Secretariat will prepare a Mini D-sub 15 pin PC cable connector. If your PC is not compatible with this cable connector, please bring an adaptor to connect your PC to the Mini D-sub 15 pin PC cable connector.
- Secretariat will prepare a laptop PC (Windows 10 & Microsoft Power Point 2013). If you cannot prepare your own PC, please use the secretariat's PC, copying your presentation file by your USB memory.
- The presentation time is 15 minutes. This includes speaker transition, setting up your computer, and question & answers (3min.). So each speaker will have to finish his/her talk within 12 minutes to have an enough time for question & answers

# Speaker Guides

## Poster presentations

Maximum Poster Dimensions: 1.2 meters high by 1.8 meters wide. Each presenter will be provided a posterboard 1.2 meters high by 1.8 meters wide.

### Core Time

2:30P.M. – 4:00 P.M. (Poster Session: 1,2,4,5, 9,10,11)

or

4:30 P.M. – 6:00 P.M. (Poster Session: 3,6,7,8)

In the core time shown above, that is including coffee break time, all the poster presenters must stand in front of their posters to make explanations and discussions.

### Setup

Please find a poster board which the final four digits of your final paper number is marked on.

- ✓ Posters should be set up between 9:00 A.M. and 2:30 P.M. on the day of your presentation. Pins can be picked up at the poster presentation room ('Room 3 & 4').
- ✓ Posters must remain up the entire day. Do not remove posters before 6:00 P.M. (4:00 P.M. on Friday).

### Removal

Posters **MUST be removed** by 6:30 P.M. on the day of the presentation (5:00 P.M. on Friday).

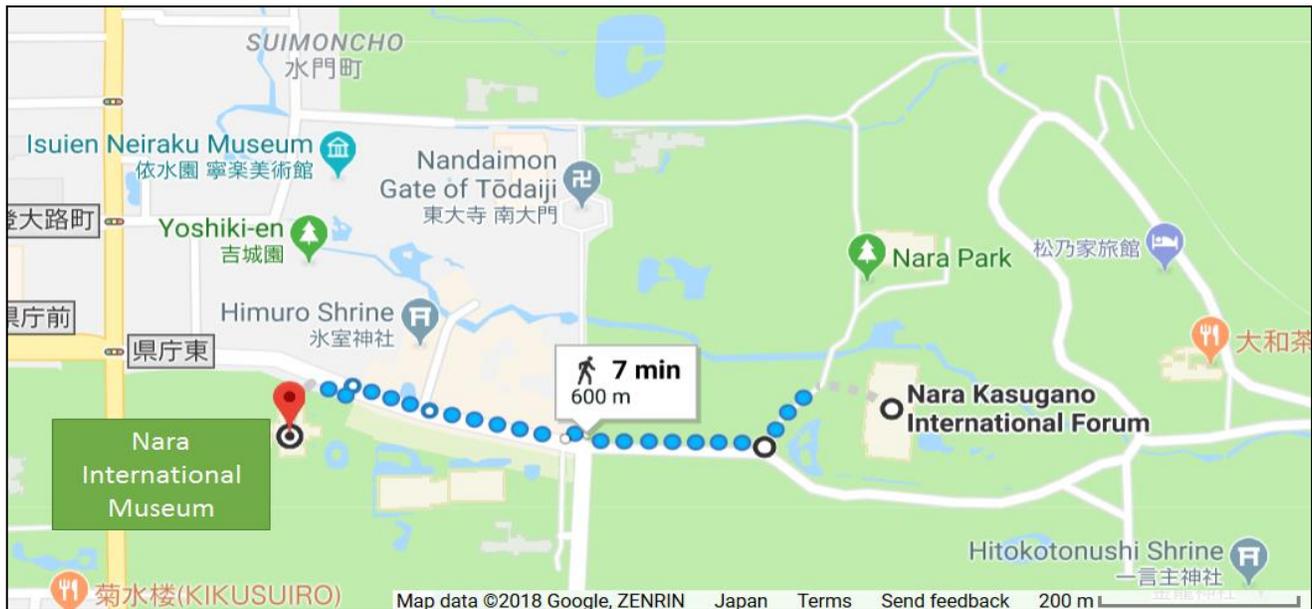
The poster hall closes at 6:30 P.M. every day, so you will be unable to enter the room after this time. Posters remaining up after this time will be removed and recycled every evening.

# Banquet Dinner

21 June, Thursday

From 6:30 pm to 8:30 pm

‘Restaurant (Half Time), Nara International Museum’



## Excursion

### (A) Bus Tour to Horyuji Temple

Bus tour to Horyuji temple, World's Oldest Wooden Building

Start at 13:30, with box-lunch

[\\*Application has closed.](#)

### (B) Guided Walking Trail around Historic Monuments of Ancient Nara

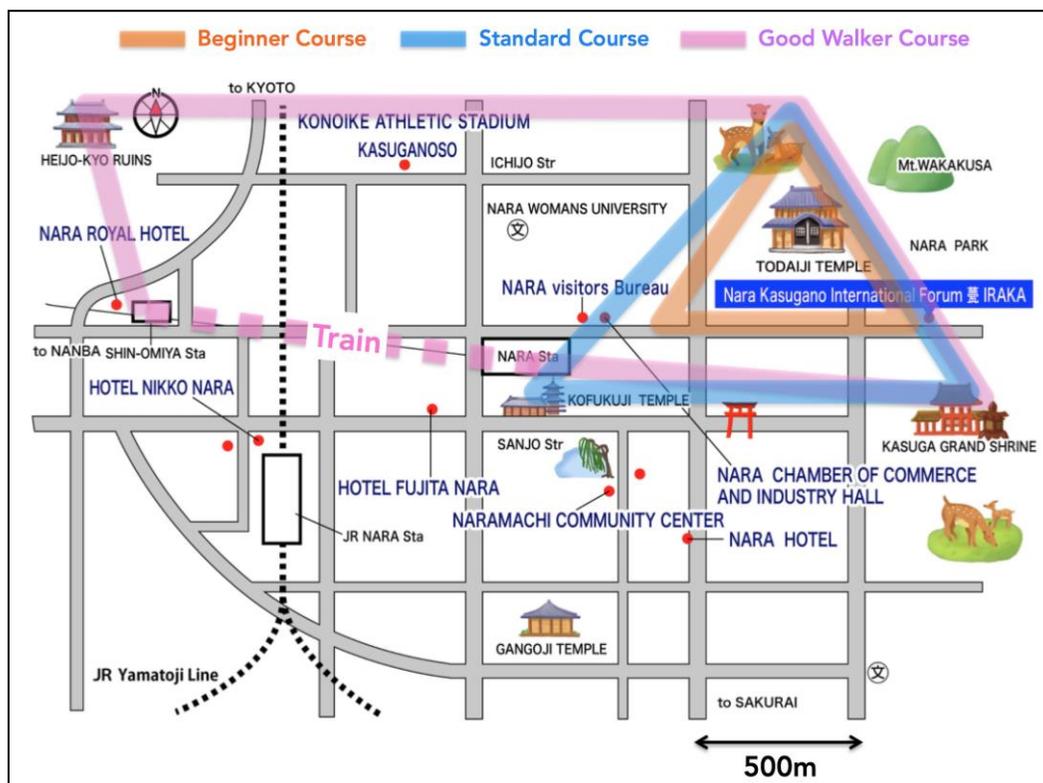
Guided walking trail around historic monuments of ancient Nara (UNESCO world heritage site)

Three walking trail courses are planned.

(1) **Beginner course** : Todaiji Temple(Great Buddha) (2 or 3 kilometers walk)

(2) **Standard course** : Todaiji Temple(Great Buddha), Kofukuji Temple and Kasuga Shrine (>4 kilometers walk)

(3) **Good walker course** : Todaiji Temple(Great Buddha), and Kintetsu railway, walking to Heijyokiyusi (Ancient capital of Nara period) (>10 kilometers walk)



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- Kansai Research Foundation for Technology Promotion
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