

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 Serge Chauzy: (serge.chauzy@aero.obs-mip.fr) or Pierre Laroche: (Pierre.Laroche@onera.fr). 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 2003

Due to the proximity of the 12th 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 close to the castle of Versailles 9-13 June 2003.

Final program

12^{ème} Conférence Internationale d'Electricité Atmosphérique

Organisée par
la Commission
Internationale
d'Electricité
Atmosphérique
(ICAE/IAMAP/IUGG)

12th International Conference on Atmospheric Electricity

Organized by
the International
Commission on
Atmospheric Electricity
(ICAE/IAMAP/IUGG)



ICAE

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Versailles

9 - 13 June 2003

Palais des Congrès - Versailles, France

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

12th International Conference on Atmospheric-Electricity

June 9-13, 2003
Versailles
France

Organized by:

International Commission on Atmospheric Electricity

Sponsored by:

Centre National d'Etudes Spatiales
Délégation Générale pour l'Armement
France Télécom
International Assembly for Meteorology and Atmospheric Sciences
Institut National des Sciences de l'Univers
Society of Atmospheric Electricity of Japan
Météorage
Office National d'Etudes et de Recherches Aérospatiales
Région Ile de France
Université Paul Sabatier
Vaisala

Conference Chairman:

P.Laroche (ONERA)

International Commission:

S. Anisimov (*Russia*), M. Brook (*USA*), S. Chauzy (*France*), H. Christian (*USA*), H. Dolezalek (*USA*), C. M. Guo (*China*), J. Hughes (*USA*), M. Ishii (*Japan*), S. Israelsson (*Sweden*), R. Jayaratne (*Bostwana*), Z. Kawasaki (*Japan*), N. Kitagawa (*Japan*), P. Krebhiel (*USA*), P. Laroche (*France*), J. Latham (*UK*), S. Michnowski (*Poland*), M. Nakano (*Japan*), V. Rakov (*USA*), L. Ruhnke (*USA*), D. Rust (*USA*), C. Saunders (*UK*), H. Tammet (*Estonia*), E. Williams (*USA*).

Local Organizing Committee:

S. Chauzy (*L.A. Toulouse*), P. Auriol (*Ecole Centrale de Lyon*), G. Berger (*CNRS*), P. Blanchet (*ONERA*), A. Bondiou-Clergerie (*ONERA*), S. Coquillat (*LA Toulouse*), A. Delannoy (*ONERA*), S. Gaultier (*ONERA*), P. Lalande (*ONERA*), P. Laroche (*ONERA*), F. Montariol (*Météo-France*), S. Paban (*Météo-France*), F. Roux (*L.A. Toulouse*), S. Soula (*LA Toulouse*), A. Zeddani (*France Télécom*)

Webmaster:

S. Gaultier (*ONERA*), assisted by F. Buevoz (*ONERA*)

Make-up composition:

C. Laroche (*ONERA*)

Conference Address

10 rue de la Chancellerie 78 000 Versailles
FRANCE
Tel + 33 1 30 97 89 02

Format of the Conference

Papers are presented as oral or poster. Each session has a Chairman briefing session, organized the morning of the session.

Oral presentation

The duration of each oral presentation is 15 minutes including discussion (the presentation itself should not last more than 10 minutes). The duration of each keynote presentation is 30 minutes including discussion.

An overhead projection system is available for presentations with standard transparencies.

Numerical presentations will be preferably given by video projection using Powerpoint™ or similar software (for PC Windows 2000 or less O.S). Authors are requested to deliver the day before their presentation a CD or diskette of their presentation. For those authors scheduled for the first session on Monday June 9th, their file should be delivered on Sunday evening.

Poster paper

The pannels are available to hang up the posters from June 8 (Sunday) 16h00 (4:00 pm). Authors are requested to leave their posters exhibited during the whole conference. They will have to be removed on Friday (June 13) afternoon. Pannel are 1 m wide and 2.50 m high. However, each poster should display the following reasonable maximum dimensions: *width 1 m (mandatory), height up to 2 m (approximate)*. All equipment necessary to hang up the posters (velcro tape) will be provided at the reception desk. The position of each poster is indicated on a map on the information panel

On site registration

On site registration is possible at the following rate :

| | |
|------------------------|-------|
| Full registration* | 580 € |
| Student* | 300 € |
| One day registration** | 225 € |
| Acompanying person*** | 100 € |

Payment is possible in cash (Euros) or by Credit Card.

*Includes social events, proceedings (Paper and CD), and access to the conference.

**Includes proceedings (Paper and CD), and access to the conference.

***Includes only social events.

Weather

June is a fair weather period in Paris area. Temperature : low 12°C (54°F) high 22°C (72°F), occasionally low precipitation. Consult <http://www.meteo.fr>

Social Events

A welcome cocktail party is organized at the Conference Center on Monday 9th June 18h00-19h00. The banquet of the conference will be held at the Versailles City Hall on Wednesday 11th June at 19h.

Benjamin Franklin Exhibition

The organization committee for the 12th ICAE conference wishes to open and follow the congress with an exhibition dedicated to Benjamin Franklin. By enlarging the scope of his work beyond his decisive discovery within the field of atmospheric electricity, the purpose of the project is to bring to light a few aspects of Franklin's life and personality: modernity of his scientific approach, research of immediate applications for his discoveries, and finally his first rank political role witnessed by his embassy to the Versailles court.

The course of the exhibition will be focused around three centres. The first one will illustrate the diversity but also the consistency of Franklin's work which is well anchored into the Age of Enlightenment as a result of his humanistic concern. The second pole will focus on the experiences demonstrating the electrical nature of lightning which were carried out in 1752 on both sides of the Atlantic. While presenting this major experience, the fruitful (but slow and risky) exchanges between the mid-XVIIIth century scientists will also be illustrated. The last pole will be dedicated to the invention of the lightning rod by a scientist anxious to put his discoveries to everyone's service. Within this frame, the theological quarrels, superstitious fears and various disputes of any nature which followed the diffusion of this remarkable invention will also be mentioned.

Accompanying persons

The Versailles Congres Center is very close to Versailles Caslte, a famous historical place which visit may take more than one day. Paris downtown is very close from Versailles. Any place of Paris is at a short reach by train. The Versailles Tourist Office can propose guided tour in the area. To know more about the possibilities of the area consult <http://www.versailles-tourisme.com> for Versailles and <http://www.paris-touristoffice.com> for Paris. Each morning, A Versailles Tourist Office representative will be at registration desk to provide information (10h to 11h30)

Travel

Versailles can be reached by air from Orly Airport or Charles de Gaulle Airport. There is train from both airports to Paris and Versailles. For airline time schedule consult <http://www.adp.fr>

Train is a fast and convenient mean of transportation in Europe. To reach Paris and Versailles by train consult <http://www.sncf.com>. For Local transportation consult <http://www.citefutee.com/orienter/plans.php#> and <http://www.ratp.fr>

Versailles can be reached easily by road: see included map of the area

Accommodation

You will find maps and information on the best way to reach Versailles and the Conference Center easily on the following website: <http://www.congresversailles.com/english/cadres.htm> The booking agency www.netbba.com/bbaicai2.htm is in charge of hotel booking and negotiated hotel price list for ICAE.



Map1 Versailles downtown



Map2 Road and train to Versailles



Map of the restaurant close to Versailles Congres Center

PROGRAM

Monday 9th June

8:30 **OPENING CEREMONY**

9:00 **Session B1 Electrical Activity and Meteorology I**

Chairpersons: O. Pinto and E. Williams

9:00 S. Goodman

Keynote: Atmospheric Electrical Activity and the Prospects for Improving Short-term Weather Forecasting

9:30 W. A. Petersen and D. J. Boccippio

Variability of Lightning Activity as a Function of Tropical Easterly Wave Phase

9:45 M. S. Gilmore, A. Fierro, E. R. Mansell, L. J. Wicker, and J. M. Straka

The influence of local environmental conditions upon supercell kinematics, microphysics, electrification, and lightning

10:00 Y. Maekawa, S. Ogata, Y. Shibagaki, Y. Sono, M. Teshiba, H. Hashiguchi, and S. Fukao

Multi-wavelength Radar Observations of Wintertime Thunder Clouds Related to the Polarity of the Lightning Discharges

10:15 G. K. Manohar and A. P. Kesarkar

Climatology of Thunderstorm Activity over Indian Region: A Study of East-West Contrast

10:30 *Coffee Break*

11:00 **Session B2 Electrical Activity and Meteorology II**

Chairpersons: V. Stasenko and W. Petersen

11:00 W. R. Burrows and C. Price

Statistical Models for 1-2 Day Lightning Prediction for Canada and the Northern United States

11:15 S. Soula, S. Coquillat, S. Chauzy, J.-F. Georgis, and Y. Seity

Surface precipitation electric current produced by convective rains during MAP

11:30 J. E. Dye, J. C. Willett, W. D. Hall, E. Defer, S. Lewis, D. Mach, M. Bateman, H. Christian, C. A. Grainger, P. Willis, and F. J. Merceret

The Decay of Electric Field in Anvils: Observations and Comparison with Model Calculations

11:45 M. G. Bateman, D. M. Mach, S. Lewis, J. E. Dye, E. Defer, C. A. Grainger, P. T. Willis, H. J.

Christian, and F. J. Merceret

Comparison of in-situ Electric Field and Radar Derived Parameters for Stratiform Clouds in Central Florida

12:00 Y. Seity, S. Soula, and P. Tabary

Relationships between lightning flash production and microphysics observed in European thunderstorms

12 :15 Qie Xiushu, Zhang Guangshu, Kong Xiangzhen, Wang Huibin, Zhang Tong, Zhou Yunjun and Zhang Yijun

Observation on the Lightning Discharges in the Northeastern Verge of Tibetan Plateau

12:30 lunch

14:00 Session B3 Electrical Activity and Meteorology III (poster)

Chairperson: S. Goodman

S. J. Goodman, R. Blakeslee, H. Christian, D. Boccippio, W. Koshak, J. Bailey, J. Hall, M. Bateman, E. McCaul, D. Buechler, W. Petersen, C. Darden, and T. Bradshaw

The North Alabama Lightning Mapping Array: Recent Results and Future Prospects

E. W. McCaul Jr., S. J. Goodman, D. Buechler, R. Blakeslee, H. Christian, D. Boccippio, W. Koshak, J. Bailey, J. Hall, M. Bateman, W. Petersen, C. Darden, and T. Bradshaw

A Total Lightning Climatology for the Tennessee Valley Region

N. W. S. Demetriades and M. J. Murphy

Normal polarity severe thunderstorms dominated by negative CG lightning in the Dallas-Fort Worth area

T. Suda, T. Shindo, and A. Wada

Lightning activity observed with lightning location systems of electric utilities in Japan 1992-2001

S. Heckman

What Does The Lightning Flash Rate Measure?

M. O. Domingues, O. Mendes Jr., C. Sin Chan, and C. A. A. Beneti

A discussion on atmospheric parameters related to lightning activities: events from the Interdisciplinary Pantanal Experiment (2nd. Data campaign), Brazil

Z. Kawasaki, S. Yoshida, and T. Morimoto

National wide SAFIR network in Japan

V. Mushtak, E. Williams, and D. Boccippio

Latitudinal Variation of Cloud Base Height and Lightning Parameters in the Tropics

K. P. Naccarato, O. Pinto Jr., and I. R. C. A. Pinto

Lightning activity over large urban areas of the southeastern Brazil

16:00 Session B4 Electrical Activity and Meteorology IV (poster)

Chairperson: R. Blakeslee

O. Altaratz, Z. Levin, Y. Yair, and B. Ziv

Differences in Winter Lighting Activity over Land and Sea across the Eastern Coast of the Mediterranean

R. J. Blakeslee, J. C. Bailey, O. Pinto, A. Athayde, N. Renno, and C. D. Weidman

The Rondonia lightning detection network: network description, science objectives, data processing/archival methodology, and results

N. W. S. Demetriades, M. J. Murphy, and P. Richard

The advantages of total lightning over CG lightning for thunderstorm cell identification and tracking and its complement to radar reflectivity

S. Dossou-Gbété and S. Pedeboy

A dynamic and evolutive classification method based on self generating cells: an application to the identification of storm cells

N. Dotzek, B. Rabin, and R. Holle

Lightning evolution in the severe storms in Texas on 7 April 2002

A. Frank-Kamenetsky, O. Troshichev, V. Morozov, G. Burns, M. Fuellekrug, and A. Rogers

Relationship between variations of the atmospheric electric field in the southern polar region and thunderstorm activity

I. R. C. A. Pinto, O. Pinto Jr., M. A. S. Santos, F. J. Miranda

Lightning research in Brazil: recent results. Indirect measurements

C. Price and B. Murphy

Positive Lightning Activity During an Intense Derecho

J. T. Rompala, R. J. Blakeslee, and J. C. Bailey

Detection Efficiency Contours for Regions Serviced by Lightning Detection Networks of Limited Scope

V. N. Stasenko, S. M. Galperin, and G. G. Shchukin

Severe storm lightning evolution pattern and associated weather hazards

18:00 *end of the session*

Tuesday 10th June

8:30 **SESSION A1 Storm Electrification I**

Chairpersons: T. Takahashi and J. Latham

8:30 D. MacGormann

Keynote: Recent advance on storm electrification observation and modeling

9:00 C. P. R Saunders, H. Norman, and E. E Avila

Laboratory studies of the effect of cloud conditions on charge transfer in thunderstorm electrification

9:15 T. Takahashi

Lightning and In-Cloud Ice Phases in the East Asian Monsoon

9:30 E. R. Mansell, D. R. MacGorman, J. M. Straka, and C. L. Ziegler

Electrification and Lightning in Simulated Storms

9:45 E. A. Mareev, D. I. Iudin, A. E. Sorokin, V. Yu. Trakhtengerts, T. C. Marshall, and M. Stolzenburg

Fine Structure of Thunderstorm Electric Field: Spectra from Soundings and Significance for Charge Generation Mechanisms

10:00 O. Altaratz, Z. Levin, T. Reisin and Y. Yair

Simulation of the Development and Structure of the Electric Field in a 3-Dimensional Electrically Active Cloud Field using the RAMS Model

10:15 C. Barthe, J-P. Pinty, G. Molinié, and F. Roux

Development and first results of an explicit electrical scheme in the 3D French mesoscale model "MésosNH"

10:30 Coffee Break

11:00 **SESSION A2 Storm Electrification II**

Chairpersons: C. Saunders and D. Rust

11:00 W. D. Rust, D. R. MacGorman, P. R. Krehbiel, R. Thomas, E. Bruning, and S. Stroman

The Status of our Search for Inverted-Polarity Electrical Structures in Thunderstorms

11:15 M. Stolzenburg, T. C. Marshall, L. M. Coleman, P. R. Krehbiel, R. J. Thomas, W. Rison, and T. Hamlin

Evolution of Electric Charge and Lightning Type in Developing Thunderstorms

11:30 R. J. Blakeslee, C. L. Croskey, M. D. Desch, W. M. Farrell, R. A. Goldberg, J. G. Houser, H. S. Kim, D. M. Mach, J. D. Mitchell, and J. C. Stoneburner

The Altus Cumulus Electrification Study (ACES): A UAV-Based Science Demonstration

- 11:45 P. Krehbiel, W. Rison, R. Thomas, T. Hamlin, J. Harlin, and Y. Zhang
Thunderstorm Observations with the Lightning Mapping Array
- 12:00 M. Ishii, M. Saito, J-I. Hojo, and K. Kami
Location of charges associated with cloud-to-ground flashes in winter
- 12:15 T. Morimoto, T. Shimura, and Z. Kawasaki
Three-dimensional lightning observations and consideration to charge distribution inside thunderclouds using the broadband interferometer
- 12:30 *Lunch*
- 14:00 **Session A3 Storm Electrification III (poster)**
Chairperson: S. Coquillat
- A. G. Amiranashvili and A. G. Nodia
Some Results of Investigation of IL-14 Airplane Electrization in Clouds and Atmosphere
- P. Baranski, P. Bodzak, and A. Maciazek
The complex discharge lightning events observed simultaneously by the SAFIR, radar, field mill and Maxwell current antenna during thunderstorms near Warsaw
- W. H. Beasley, F. W. Gallagher, A. R. Bansemer, L. G. Byerley, J. A. Swenson, and I. G. Bogoev
Simulations of Spatial and Temporal Variations of Electric-Field Contours at the Surface Beneath Thunderstorms as Would Be Observed by a Network of Solar-Powered Electric-Field Meters
- A. M. Blyth and J. Latham
Corona emission thresholds for graupel-graupel collisions close to the 0°C isotherm in thunderclouds
- D. E. Buechler, D. M. Mach, and R. J. Blakeslee
Relationships between Electrical and Radar Characteristics of Thunderstorms Observed During ACES
- L. M. Coleman, M. Stolzenburg, T. C. Marshall, P. R. Krehbiel, R. J. Thomas, W. Rison, and T. Hamlin
The Effects of Charge and Electrostatic Potential on Lightning Propagation
- S. Coquillat, M. P. Boussaton, S. Chauzy, S. Soula, and F. Gangneron
A new videosonde for in situ observation of precipitation particles
- A. Delannoy, A. Broc
Modeling of a Wintry Wave-forced Deep Convection over the North of Shetland Islands and Simulation of the Subsequent Cloud Electrification
- J. A. Dovgaluk, L. V. Kashelva, T. A. Pershina, Y. P. Ponomarev, A. A. Sinkevich, V. D.

Stepanenko, and N. E. Veremei

Role of electrical discharges in cloud microphysics and electrical field strength changers

T. Hamlin, P. Krehbiel, Y. Zhang, R. Thomas, W. Rison, and J. Harlin

Electrical Structure and Storm Severity Inferred by 3-D Lightning Mapping Observations During STEPS

P. H. Handel

Proof of Cloud Instability with Respect to the Formation of Several Horizontal Space Charge Layers

S. Kolev

Numerical simulations with the inductive mechanisms using some published data

K. M. Kuhlman, E. R. Mansell, C. L. Ziegler, J. M. Straka, and D. R. MacGorman

Dynamical, Microphysical and Electrical Simulations of the 29 June 2000 STEPS Supercell

D. MacGorman, D. Rust, O. van der Velde, M. Askelson, P. Krehbiel, and R. Thomas

Lightning Relative to Precipitation and Tornadoes in a Supercell Storm

D. M. Mach and W. J. Koshak

General Matrix Inversion Technique of the Calibration of Electric Field Sensor Arrays on Aircraft Platforms

J. Margerit and C. Nicolis

A reaction-diffusion-advection model of the early stages of cloud electrification

16:00 Session A4 Storm Electrification IV (poster)

Chairperson: J. Dye

T. C. Marshall, M. Stolzenburg, L. M. Coleman, P. R. Krehbiel, W. Rison, and R. J. Thomas
Using Balloon Measurements to Verify and Quantify Radar and LMA Inferences About Thunderstorms

Y. Michalowski

"Warm thunderstorm"- myth or reality

Y. Michalowski

Errors during aircraft measurements of the electric field and ways to reduce them

K. Michimoto, T. Shimura, T. Suzuki and T. Hanada

A Study of Winter Thunderstorms in the Hokuriku Coastal Area, Japan

R. P. Mitzeva, B. D. Tsenova, and C. P. R. Saunders

A modelling study of the effect of cloud supersaturation on non-inductive charge transfer

Y. Muhong, S. Anping, and Z. Yijun

Numerical Study on Impact of Electrical Structure on Dynamic Development in Thunderstorm

P. Jungwirth, D. Rosenfeld and V. Buch

A possible new molecular mechanism of thundercloud electrification

A. A. Sinkevich, J. A. Dovgaluk, and V. D. Stepanenko

Corona discharge in clouds (overview)

Y. Sonoi, Y. Maekawa, Z-I. Kawasaki, and S. Fukao

Correlation Coefficients between Disturbance Indexes and Updraft associated with Lightning Discharges Observed by Two kinds of Radars and SAFIR

A. E. Sorokin

Charge Spectra of Colliding Ice Crystals and Graupels

A. E. Sorokin

Selective ion charging of droplets in thunderstorms under arbitrary oriented electric field

J. M. Straka, E. R. Mansell, C. L. Ziegler, D. R. MacGorman, and M. S. Gilmore

Electrification, lightning and microphysics in a simulated, 'bow echo' severe storm

T. Ushio, S. Heckman, H. Christian, Z-I. Kawasaki, and K. Okamoto

Vertical Development of Lightning Activity observed by the LDAR system-Lightning Bubbles

J. S. Wettlaufer and J. G. Dash

Positive and Negative Cloud-to-Ground Lightning

K. C. Wiens, S. A. Tessendorf, and S. A. Rutledge

STEPS June 29, 2000 Supercell: Observations of Kinematic, Microphysical, and Electrical Structure

J. C. Willett and J. E. Dye

A Simple Model to Estimate Electrical Decay Times in Anvil Clouds

C. Ziegler, E. Mansell, D. MacGorman, and J. Straka

Electrification and lightning in a simulated tornadic, supercell storm

18:00 *End of Session*

Wednesday 11th June

8:30 **Session G1 Fair Weather Electricity I**

Chairpersons: A. G. Amiranashvili and E. Mareev

- 8:30 H. Tammet
Keynote: Atmospheric Ions
- 9:00 S. V. Anisimov, E. A. Mareev, A. E. Sorokin, N. M. Shikhova, and M. Dmitriev
Electrodynamic of the fog
- 9:15 R. Markson
Ionospheric Potential Variation from Temperature Change over the Continents
- 9:30 U. Horrak, J. Salm, and H. Tammet
Diurnal variation in the concentration of air ions of different mobility classes at a rural area
- 9:45 M. Kubicki, S. Michnowski, S. Warzecha, and B. M. Laurikainen
Long term variations of some atmospheric electricity, aerosol, and extra terrestrial elements at Swider Observatory, Poland
- 10:00 S. Michnowski, M. Kubicki, J. Drzewiecki, S. Israelsson, N. Kleimenova, N. Nikiforova, and O. Kozyreva
Variations of the Atmospheric Electricity Elements in Polar Regions Related to the Solar Wind Changes
- 10:30 Coffee Break*
- 11:00 Session E1 Middle Atmosphere Electrical Events I**
Chairpersons: C. Price and E. Blanc
- 11:00 U. Inan
Keynote: Lightning-Driven Electrodynamics of the Middle Atmosphere
- 11:30 J. Rai, D. K. Sharma, M. Israil, P. Subrahmanyam, P. Chopra, and S. C. Garg
Effect of lightning on the ionospheric temperatures
- 11:45 E. Blanc, T. Farges, R. Roche, D. Brebion, and T. Hua
Observations of Lightning and Sprites at the Nadir from the International Space Station
- 12:00 Y. Hobara, M. Hayakawa, K. Ohta, H. Fukunishi, and E. R. Williams
ELF Transient and Ionospheric Disturbances in Association with Sprites and Elves
- 12:15 Y. Yair, C. Price, Z. Levin, J. Jospheh, A. Devir, B. Ziv, M. Moalem, P. Israelevich, and S. Clodman
Coordinated Observations of Sprites and other TLE from the Space Shuttle and from the Ground during the MEIDEX
- 12:30 Lunch*

14:00 Session E2 Middle Atmosphere Electrical Events II (poster)

Chairperson: U. Inan

S. Clodman, Y. Yair

TLE Detection by Instrument and by Proposed Human Vision System for Space-Based Missions

W. M. Farrell, R. A. Goldberg, M. D. Desch, J. G. Houser, J. D. Mitchell, C. L. Croskey, R. J. Blakeslee, D. M. Mach, and J. C. Bailey

Aces : A unique platform for electrodynamic studies of upward currents into the middle atmosphere

Y. Goto, Y. Sato, and Y. Ohba

The optical and spectral measurements of low pressure air discharges as sprite models

L. Hale

Some Lightning Interactions with the Earth and Ionosphere

14:30 Session D Lightning Protection (poster)

Chairperson: A. Zeddam

G. A. Dias, F. V. Sonalio, L. C. F. da Silva, H. L. Blauth, A. Eybert-Berard, and J. Pissolato Fo
Lightning protection of special towers in Amazonia

D. A. Palmer, R. Anderson, G. Houghton, and W. Nelson

Investigation into the Feasibility of Triggering Lightning with High-Pressure Conductive Water Jets

A. Rousseau and P. Gruet

What is a suitable lightning earth ?

Y. Zhang and X. Liu

Experiment of Artificially Triggered Lightning to Lightning Rod and Semiconductor Lightning Eliminator

A. Zeddam, S. Person, C. F. Barbosa, and J. A. Rossi

Experiments with telecommunication lines at the lightning experimental site of Cachoeira Paulista - Brazil

C. Price, M. Asfur, W. Lyons, and T. Nelson

An improved ELF/VLF Method for Globally Geolocating Sprite-producing Lightning

15:00 Session G2 Fair Weather Electricity II (poster)

Chairperson: A. Retalis

A. G. Amiranashvili, L. L. Kalajeva, N. D. Karauli, A. T. Khunjua, and A. G. Nodia
Statistical Characteristics of Air Electric Conductivity in Dusheti

K. L. Aplin

A novel technique to determine atmospheric ion mobility spectra

G. Bowker and H. C. Crenshaw

The possible role of fair weather electricity on the charging of wind-dispersed pollen

L. Delgado, L. Rivas Soriano, F. de Pablo and E. Garcia Diez

Relationship between the atmospheric electric field (A.E.F.) and air pollution in the lower levels of the atmosphere

A. P. Fews, N. K. Holden, P. A. Keitch and D. L. Henshaw

Corona ion emission from high voltage powerlines-measurement using a novel high resolution ion spectrometer

K. Iinuma and S. Uchida

Analysis of composite mobility peak for multiple atmospheric ions in equilibrium

J. Kirkby and R. G. Harrison

Cosmic rays and atmospheric ions: their importance for clouds and climate

Z. Kobylinski and S. Michnowski

On the atmospheric response to solar cosmic ray events

M. Noppel, M. Kulmala, and H. Vehkamäki

Ion - induced nucleation of sulphuric acid and water: The effect of hydration

K. Nagaraja, B. S. N. Prasad, N. Srinivas, and M. S. Madhava

Electrical conductivity near the Earth's surface: Ion - aerosol model

D. Retalis, P. Nastos, and A. Retalis

Variations of large ions concentration in the air above Athens

V. V. Smirnov and A. V. Savchenko

The evolution of large ion stream in atmospheric boundary layer

V. V. Smirnov and J. M. Mäkelä

Ultrafine nucleus in ionized air

H. Tammet

Method of inclined velocities in the air ion mobility analysis

16:30 Session G3 Fair Weather Electricity III (poster)

Chairperson: S. Israelsson

A. G. Amiranashvili, V. A. Chikhladze, R. A. Gambashidze, A. T. Khunjua, and A. G. Nodia
Preliminary Results of Investigations of Variations of Atmospheric Electric Parameter Peculiarities Over Tectonic Fractures and During Earthquakes

S. V. Anisimov and E. M. Dmitriev

Aeroelectrical constituent in the database of Borok Geophysical Observatory

S. V. Anisimov, E. A. Mareev, N. M. Shikhova,
Structures and Spectra of Turbulent Pulsations of Electric Field in the Atmosphere

E. P. Borisenkov, V. A. Filippov, E. N. Kobzareva, I. A. Krushatina, L. N. Nikiforova, Y. M. Shvarts, and V. G. Uspenskaya
Wide variations of atmospheric electric field potential gradient near the ground and meteorotropic reactions in cardiac patients

M. Kamogawa, H. Fujiwara, H. Ofuruton, J. Y. Liu, Y. J. Chuo, and H. Tanaka
Seismo - atmospheric disturbance observed by anomalous transmission of VHF electromagnetic waves

G. Kupovykh, V. Morozov, and Y. Shvartz
Electrode Effect under Alpine Conditions

R. Markson
Atmospheric Electrical Thermal Detection for Sailplanes

T. Nagao, K. Hattori, K. Sayanagi, S. Uyeda, and M. Kamogawa
The Latest Aspects of Seismo-electromagnetic Observations in Japan

A. I. Petrov, G. G. Petrova, and I. N. Panchishkina
Statistic structure of variations of vertical "atmosphere-earth" currents

N. Takagi, D. Wang, T. Watanabe, K. Yamaguchi and M. Kobori
Development of space charge sensing system

S. N. Tripathi, R. G. Harrison
Radioactive aerosols in the environment

B. S. N. Prasad, K. Nagaraja, M. S. Chandrashekara, L. Paramesh, and M. S. Madhava
Diurnal and seasonal variations of radioactivity and electrical conductivity near the surface for a continental location Mysore (12 N, 76 E), India

Z. Moroza, C. Kownacki, B. Myslek-Laurikainen, M. Matul, S. Mikolajewski, H. Trzaskowska, M. Kubicki, and Z. Preibisz
Neural networks and wavelet analysis of the atmospheric ⁷Be radioactivity changes and its relation to ground level air conductivity

18:00 *End of Session*

19:00 **Banquet of the Conference at the Versailles City Hall**

Thursday 12th June

8:30 **Session C1 Physics of Lightning I**

Chairpersons: X. Qie and P. Krider

- 8:30 N. L. Aleksandrov, E. M. Bazelyan and Y. P. Raizer
keynote: Initiation and Development of Lightning Discharge: Physical Mechanism and Problems
- 9:00 N. S. Khaerdinov, A. S. Lidvansky, and V. B. Petkov
Effect of the Electric Field of thunderclouds on Cosmic Rays and evidence for pre-lightning acceleration of electrons
- 9:15 H. E. Tierney, R. A. Roussel-Dupré, E. M. D. Symbalisty, and L. Triplett
Runaway Breakdown and Lightning Initiation
- 9:30 A. Larsson, A. Delannoy and P. Lalande
The voltage gradient along a lightning channel during strikes to aircraft
- 9:45 J-P. Pinty, G. Molinié, C. Barthe, and F. Roux
A semi-deterministic scheme to produce IC/CG lightnings in a 3D cloud resolving model
- 10:00 W. Rison, P. Krehbiel, R. Thomas, T. Hamlin, and J. Harlin
Lightning Mapping and Radar Observations of Bolts from the Blue
- 10:15 J. C. Willett, G. Park, D. M. Le Vine
Lightning Return-Stroke Current Waveforms Aloft, From Measured Field Change, Current, and Channel Geometry
- 10:30 *Coffee Break*
- 10:30 **Session C2 Physics of Lightning II**
Chairpersons: P. Krehbiel and N. Aleksandrov
- 11:00 V. Kodali, V. A. Rakov, M. A. Uman, K. J. Rambo, G. H. Schnetzer, J. Schoene, and D. E. Crawford
Lightning Properties Inferred from Measurements of Very Close Electric Fields
- 11:15 M. Miki, T. Shindo, V. A. Rakov, M. A. Uman, K. J. Rambo, G. H. Schnetzer, G. Diendorfer, M. Mair, F. Heidler, W. Zischank, and R. Thotappillil
Characterization of pulses superimposed on the initial continuous current of upward lightning
- 11:30 O. Pinto Jr., I. R. C. A. Pinto, and M. M. F.Saba
Lightning research in Brazil: recent results on Direct Measurements
- 11:45 M. A. Stanley, A. R. Jacobson, and X-M. Shao
The VHF Power Spectrum of Lightning

12:15 *Lunch*

14:00 Session C3 Physics of Lightning III (poster)

Chairperson: V. Rakov

M. P. Boussaton, S. Coquillat, and S. Chauzy

Influence of Water Conductivity on microdischarges from raindrops in strong electric fields

V. Cooray

The effect of corona space charge layer at ground level below thunderclouds on peak return stroke currents

Dong Wansheng, Zhang Yijun, and Liu Xinsheng

The Broadband Interferometer Observations of Lightning in Tibet

P. H. Handel, M. Grace, J. F. Leitner, A. B. Timofeev, and A. V. Zvonkov

Ball lightning Discharge Fed by an Atmospheric Maser

M. Kamogawa, H. Ofurton, H. Tanaka, and Y-H. Ohtsuki

Study of ball lightning generated by electromagnetic wave localization

Z. Kawasaki and T. Morimoto

Bi-directional leader concept and VHF observations

V. Mazur and L.H. Runhke

Determining Leader Potential in Cloud-to-Ground Flashes

Mingli Chen, Yaping Du, John Burnett, and Wansheng Dong

The Electromagnetic Radiation from Lightning in the Interval of 5 kHz to 60 MHz

M. Nakano, S. Sumi, and K. Miura

The polarity effect of the production of nitrogen oxides by a long spark

Nguyen Manh Duc

On some physical processes of lightning discharge in a thundercloud

M. Petitdidier and P. Laroche

Lightning observations at UHF and VHF with wind-profiler radars in Puerto Rico

V. A. Rakov, M. A. Uman, and K. J. Rambo

A Review of Ten Years of Triggered-Lightning Experiments at Camp Blanding, Florida

M. M. F. Saba, N. N. Solórzano, O. Pinto Jr., and A. Eybert-Berard

Characteristics of triggered lightning flashes observed in Brazil

J. Schoene, M. A. Uman, V. A. Rakov, K. J. Rambo, J. Jerauld, V. Kodali, and G. H. Schnetzer

Triggered Lightning Electric and Magnetic Fields at 15 and 30 m: Measurements and Implications for Return Stroke Modeling

N. N. Solórzano, M. M. F. Saba, O. Pinto Jr., and A. Eybert-Berard
Comparisons between triggered and natural lightning observed in Brazil

X-M. Shao, A. Jacobson and T. J. Fitzgerald
VHF radiation beam pattern of return strokes

V. D. Stepanenko and S. M. Galperin
About of possibility formation lightning electromagnetic re-emission by several form of clouds

A. G. Temnikov
Dynamics of electric field formation inside the artificially charged aerosol cloud and in a space near its boundaries

A. G. Temnikov, I. P. Vereshchagin, A. V. Orlov, and M. V. Sokolova
Investigation of the main stage of a discharge between an artificially charged water aerosol cloud and a grounded electrode

A. Wada, A. Asakawa, T. Shindo, and S. Yokoyama
Leader and return stroke speed of upward -initiated lightning

D. Wang, N. Takagi, T. Watanabe, V. A. Rakov, M. A. Uman, K. J. Rambo, and M. V. Stapleton
A Comparison of Channel-Base Currents and Optical Signals for Rocket-Triggered Lightning Strokes

Ping Yuan, Xinsheng Liu, and Yijun Zhang
Spectral properties of lightning return stroke

Y. Zhou, X. Qie, M. Yan, and G. Zhang
Ground observation of NO_x generated by lightning in thunderstorm weather

16:00 Session C4 Physics of Lightning IV (poster)

Chairpersons: T. Marshall and W. Rison

G. Baffou, E. P. Krider, N. D. Murray, and J. C. Willett
dE/dt and E waveforms radiated by leader steps just before the onset of first return strokes striking seawater

W. H. Beasley, C. M. M. Noble, T. E. Light, D. M. Suszcynsky, and B. C. Edgar
Coincident Observations of lightning by Ground-Based and Satellite-Borne Location and Mapping Systems: inferences for Lightning Physics

A-L.Brasseur, P.Laroche, C.Théry
A New Lightning NO_x Production Parameterization

E. Defer, P. Laroche, J. E. Dye a, and W. Skamarock
Use of total lightning lengths to estimate NO_x Production in a Colorado Storm

A. K. Erickson, P. R. Krehbiel, and W. K. Hocking

Three-Dimensional Imaging of Lightning Channels using a 35 MHz Interferometric Radar: Preliminary Results

T. Fehr, N. Dotzek, and P. Laroche

Characteristics of lightning activity in EULINOX storms

L. Grcev, F. Rachidi, and V. Rakov

Comparison of Electromagnetic Models of the Lightning Return Stroke Using Current and Voltage Sources

J. Harlin, T. Hamlin, P. Krehbiel, R. Thomas, and W. Rison

Using the NMIMT LMA to Determine Which Model of Lightning Initiation Fits Best with Measured Results

M. J. Heavner, D. M. Suszcynsky, and D. A. Smith

LF/VLF Intracloud Waveform Classification

D. I. Iudin, V. Y. Trakhtengerts, A. Grigoryev, and M. Hayakawa

Electric charge fractal transport and electromagnetic high frequency radiation on the lightning discharge preliminary stage

J. Jerauld, M. A. Uman, V. A. Rakov, K. J. Rambo, D. M. Jordan, and G. H. Schnetzer

Multiple -Station Measurements of Close Electric and Magnetic Fields and Field Derivatives from Natural Lightning

W. J. Koshak, R. J. Solakiewicz, R. J. Blakeslee, S. J. Goodman, D. J. Boccippio, H. J.

Christian, J. M. Hall, J. C. Bailey, M. G. Bateman, D. M. Mach, E. W. McCaul, M. F. Stewart, D. E. Buechler, and W. A. Petersen

Error Analyses of the North Alabama Lightning Mapping Array (LMA)

A. K. Kamra and S. D. Pawar

Recovery curves of the lightning discharges initiated from the lower positive charge pocket in thunderstorm

P. Lalonde, P. Blanchet, P. Laroche, S. Laik, S. Luque, J.-A. Rouquette, H. Poirot, P.-N.

Gineste, F. Hoeppe, A. Ulmann, and P. Dimnet

ALISDAR: an Automatic Lightning System Detection and Recording

O. Mendes Jr., M. O. Domingues, E. E. N. Macau, and A. P. dos Santos

Studies on lightning flashes by using fractal analyses and methods of geometrical statistics

O. Mendes Jr., M. O. Domingues, J. C. Thomaz, and D. F. da Silva

Analysis of some lightning features based on the numerical stepped leader path simulation

F. J. de Miranda, O. Pinto Jr., and M. M. F. Saba

Advances in electric field and light measurements of lightning in Brazil

J. Montanya, J. Bergas, and B. Hermoso
Ceprum application to electrostatic field on lightning prediction

N. D. Murray, E. P. Krider, and J. C. Willett
Multiple Pulses in the Electric Field Derivative, dE/dt , During the Onset of First Return Strokes in Lightning Striking

W. Rison, W. P. Winn, and S. J. Hunyady
Initial Results from a Compact, High Time Resolution, Lightning Mapping System

M. A. Stanley and M. J. Heavner
Tall structure lightning induced by sprite-producing discharges

T. Suzuki, T. Shimura, and K. Michimoto
Design of Lightning Flash Observation and Ranging System

R. Thomas, P. Krehbiel, W. Rison, T. Harlin, J. Hamlin and N. Campbell
The LMA Flash Algorithm

T. J. Tuomi
IMPACT-SAFIR comparisons in Finland

Y. Zhang, P. Krehbiel, T. Hamlin, J. Harlin, R. Thomas, and W. Rison
Observations of radiations from airplane during STEPS

18:00 End of Session

Friday 13th June

8:30 Session F1 Global Lightning and Climate I
Chairpersons: H. Christian and D. Suszcynsky

8:30 E. Williams
Keynote: Lightning and Climate: A review

9:00 Z. Kawasaki, T. Ushio, S. Yoshida, and Y. Satoh
What we have learned by TRMM/PR and LIS

9:15 H.J.Christian
Global Lightning Activity

9:30 A. R. Jacobson and G. Molinie
Relationship between lightning-storm characteristics, and both power and rate of lightning-discharge RF emissions observed by FORTE

- 9:45 A. M. Blyth, H. J. Christian, A. Gadian, and J. Latham
Derivation of Thundercloud Ice Hydrometeor Characteristics from Satellite Observations of Lightning
- 10:00 C. Price and M. Asfur
Global Lightning and Climate Variability
- 10:15 D. M. Mach, R. J. Blakeslee, J. C. Bailey, W. M. Farrell, R. A. Goldberg, M. D. Desch and J. G. Houser
Optical Pulse and Electric Field Lightning Statistics from Storm Overflights During the Altus Cumulus Electrification Study
- 10:30 Coffee Break*
- 11:00 Session H1 Global Electrical Circuit**
Chairperson: S. Davydenko and R. Harrison
- 11:00 S. Anisimov
keynote: Global Electric Circuit and lower Atmospheric Electricity
- 11:30 S. S. Davydenko, E. A. Mareev, T. C. Marshall, and M. Stolzenburg
On the Calculation of Electric Fields and Currents of Mesoscale Convective Systems and Their Influence on the Global Electrical Circuit
- 11:45 E. A. Kasatkina, O. I. Shumilov, and A. G. Struev
Heliogeomagnetic effects on atmospheric electricity at high latitudes
- 12:00 R. G. Harrison
Climate change and long-term variations in the atmospheric electrical system
- 12:15 E. A. Mareev and S. V. Anisimov
Global electric circuit as an open dissipative system
- 12:30 Lunch*
- 14:00 Session F2 Global Lightning and Climate II (poster)**
Chairperson: G. Molinié
- A. G. Amiranashvili, V. A. Amiranashvili, B. S. Beritashvili, I. P. Mkurnalidze and Z. A. Chumburidze
Some Characteristics of a Thunderstorm Activity in Georgia
- R. Barreto Biasi Gin, C. Beneti
Cloud-to-ground lightning flashes in South and Southeastern Brazil in 2001: case study
- D. J. Boccippio
Automated classification of storm flashing/non-flashing condition from microphysical and environmental observations

W. L. Boeck, A. R. Jacobson, H. J. Christian, and S. J. Goodman

Multi-Satellite Observations of Oceanic Lightning

R. Barreto Biasi Gin, C. Beneti

Cloud-to-ground lightning flash density in South and Southeastern of Brazil:1999-2002

V. Gorbatenko, A. Dulzon, I. I. Ippolitov, M. V. Kabanov, S. V. Loginov and T. V. Ershova

The structure of long-term series of number of thunderstorm days

S. S. Kandalgaoonkar, M. I. R. Tinmaker, and A. Nath

Characteristics of lightning flashes over the Indian region

P. Lalande, A. Bondiou-Clergerie, P. Blanchet, F. Roux, and S. Chauzy

ORAGES: A micro-satellite to detect and locate the lightning VHF emissions from space

T. E. Light , S. M. Davis, W. Boeck, A. R. Jacobson, and D. M. Suszcynsky

Global optical lightning flash rates determined with the Forte Satellite

P. Ortéga, M. Rodière, V. Laurent

Lightning activity, stability indices and climatic anomalies over Tahiti Island

G. Sàtori and B. Zieger

Areal Variations of the Worldwide Thunderstorm Activity on Different Time Scales as Shown by Schumann Resonances

G. Sàtori

On the Dynamics of the North-South Seasonal Migration of Global Lightning

D. M. Suszcynsky, T. J. Fitzgerald, M. J. Heavner, A. R. Jacobson, T. E. Light, M. B. Pongratz, and C. T. Rhodes

The detection of VHF lightning from GPS orbit

G. Strandberg, S. Israelsson and U. Andersson

Lightning discharges in Sweden and along the Swedish coast line

X. Qie and R. Toumi

Lightning Activities on Tibetan Plateau as Observed by Lightning Imaging Sensor

E. Williams, V. Mushtak, and D. Boccippio

Another Look at the Dependence of Lightning Flash Rate on the Temperature of Boundary Layer Air in the Present Climate

15:30 Session H2 Global Electrical Circuit II (poster)

Chairperson: G. G. Shchukin

S. V. Anisimov and E. A. Mareev

Fine structure of the global Electric Circuit

V. I. Ermakov and Y. I. Stozhkov

Thunderclouds in the solar -terrestrial weather climate relationship

R. G. Harrison, K. L. Aplin

Nineteenth century air pollution in Paris inferred from Potential Gradient measurements made on the Eiffel Tower

J. M. Mäkelä, J. Salm, V. V. Smirnov, I. Koponen, J. Paatero and A. A. Pronin

Measurement of the mobility of air ions as a source of information for the study of aerosol generation

L. V. Grunskaya, V. A. Efimiv, V. V. Isakevich, and I. N. Gavrillov

Atmospherical electrical field and its interaction with global geophysical and astrophysical processes

V. N. Morozov

The model of nonstationary electric field in the lower atmosphere

T. Otsuyama, D. Sakuma, and M. Hayakawa

FDTD analysis of Schumann resonances for realistic subionospheric waveguide models

O. I. Shumilov, E. A. Kasatkina, O. M. Raspopov, and A. G. Struev

Atmospheric electric field effects due to the April 2001 solar proton event

B. Tinsley

Outstanding problems concerning the global electric circuit

16:15 **CLOSING CEREMONY**

17:15 **End of the Conference**

17:30 *Removal of posters*





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