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## ABOUT THIS BULLETIN

It's been more than two years since the CFDSC published a Bulletin, and so this is an attempt to restart the tradition. Since it's been a while, we're catching up: in these pages you'll find messages from the current and a past President, and summaries of the last three conferences.

**CFD2011  
MONTREAL  
APRIL 27-29**

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# Société canadienne de Society of Canada

## President's Message

When one begins his career, he rarely thinks about professional societies, let alone presiding over one of them. But as I will detail later, professional societies like our CFD Society of Canada play an important role in bringing our communities together.

I want to thank the Directors and Members for entrusting me with the responsibilities of President. As such, I assume the responsibilities and have the pleasure of leading the Society for the benefit of our members.

The CFDSC was founded by a dynamic and very engaged group of talented and forthcoming individuals, and is preparing to celebrate its 20th year. Its primary strength is the annual conference, recognized by students, institutions and industries.

The conference offers students the chance to present in a positive environment, in front of a supportive audience. It also allows foreign students the opportunity to travel to Canada and see for themselves the great talent we have in our country. Often, these individuals will find an opportunity to fill a position in the field of CFD within Canada, whether by studying at one of our universities or working in industry.

University professors can spend quality time with their students and

research team travelling to/from the conference venue, which rotates among our provinces.

Professors, researchers and industry members alike enjoy the Canadian signature of our conference format. It provides an efficient means of disseminating scientific advances and discussing possible future collaborations.

I stress the importance of our national relationships, because they contribute to our global competitiveness, both in the engineering and economic realms. Without them, technological advances in our country would simply not match what is being achieved in other parts of the world.

The idea underlying the previous paragraph is one that is likely to be easily understood, but may be extremely difficult to achieve. It explains wholly why I accepted this position: I truly feel that this was understood by past presidents who served this Society, and because I am assured of having a strong Board of Directors to work with me. I thereby welcome the newly elected BoD members, as well as those serving their terms, for the time and effort they contribute to the success of your CFD Society.

Our Society is willing to grow beyond its main conference event, and I suggest you read the message from

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The CFD Society of Canada (CFDSC) is pleased to announce that its 19th Annual Conference will be held in Montreal, Quebec, Canada, from Wednesday April 27, 2011 until Friday April 29, 2011. The conference will be held in conjunction with the 14th Canadian Aeronautics and Space Institute (CASI) Aerodynamics Symposium, at the Delta Centre-Ville Hotel. The co-location of these two important conferences will permit an all day joint CFDSC-CASI session on April 28<sup>th</sup>, allowing for unique cross-disciplinary interactions between the two organizations. The conference will span two whole days and will feature two keynote speakers. The conference will also feature a student paper competition and banquet; the latter being held on April 28<sup>th</sup>, 2011.

### Scope:

The goal of the CFD Society of Canada is to promote Computational Fluid Dynamics and to provide a framework for communication and collaboration between researchers, developers and practitioners, in industry, government and academia. Our annual conferences bring together researchers in CFD to highlight recent advances, as well as the challenges faced in a broad spectrum of application areas and to facilitate scientific and technical exchanges. The theme of this year's conference will be CFD and the Environment: The role that CFD has been playing, and must continue to play, in the

## 19<sup>th</sup> Annual Conference of the CFD Society of Canada, in Montreal, April 27-29, 2011

development of a green future. Paper submissions are encouraged in all topics of current interest in the field of CFD. Topics of interest include, but are not limited to: compressible and incompressible flows; multi-phase and free surface flows; reacting flows and combustion, including alternate fuels and emissions modeling; environmental flows, including wind energy; biological flows; turbulence and turbulence modeling; aero-elastic and aero-acoustics; CFD-dominated multi-disciplinary analysis and optimization; algorithm and solver development; mesh generation and mesh adaptation; error estimation and control and large-scale parallel computing.

### Abstract Submission:

Papers will be selected based upon extended abstracts. Authors are requested to submit extended abstracts in pdf format by uploading the documents to the conference web site: [www.cfdsc.ca](http://www.cfdsc.ca), on or before January 21<sup>st</sup>, 2011. The extended abstract is to be a minimum of three pages long and a maximum of four pages long. All abstracts will be peer reviewed. An electronic version of the conference proceedings will be produced. Please visit the web site for complete information and instructions related to abstract submission and to download templates for abstract preparation.

### Venue:

The 19<sup>th</sup> Annual Conference of the CFD Society of Canada will be held at the Delta Centre-Ville Hotel. Delta Centre-Ville is located in the heart of our magnificent city, where Old Montreal and new Montreal blend seamlessly. Our hotel is adjacent to the shops, boutiques and galleries of

### KEY DEADLINES:

Abstract submission: Jan 21, 2011.  
Notification of acceptance: February 21, 2011.  
Early registration: March 25, 2011  
Final paper submission: April 14, 2011.

Old Montréal. It is right where you always want to be, near major attractions, festivals and Montreal's vibrant nightlife. Located in the heart of Montreal.



### Conference Chair:

The conference will be chaired by Dr. Pierre Gauthier (Rolls-Royce Canada and Concordia University). All inquiries can be made directly to the conference chair by email at [pierre.gauthier@rolls-royce.com](mailto:pierre.gauthier@rolls-royce.com)

(continued from page 1)

Professor W.G. Habashi, the President of the Society from 2007-09, who worked hard to formalize our aspirations. The BoD discusses these topics every time they meet, and members are encouraged to contribute their thoughts via our website, at [www.cfdsc.ca](http://www.cfdsc.ca). We will make all messages available to our BoD.

I wish you a successful academic year, and hope to see you in great number at our 2011 conference in Montreal. Visit our website ([www.cfdsc.ca](http://www.cfdsc.ca)) for more details on the venue in the months to come.

Eric Laurendeau  
President, CFDSC, 2010 - 2011

## From a Previous President

*This letter was written May 12, 2009, when Professor W.G. Habashi completed his two-year presidency. It is printed here with his permission.*

As I have just completed my two year mandate as President of the CFD Society of Canada I would like to thank the Directors and Members for their trust and for having given me this unique opportunity. I invite them to offer the same enthusiastic support they gave me during these two years to the incoming President, Professor Clinton Groth of the University of Toronto, UTIAS. I know that Dr. Groth is accepting this position because he has had the CFDSC at heart for a long time, and I am confident that his tenure will help build an even more successful Society.

I would like to take this opportunity to review with the membership the progress we made in my two years as President, and which I hope we will continue to build on. While we set out to tackle many issues, one must realize that the CFDSC Board of Directors is run by busy individuals and that action items, even if adopted enthusiastically, sometimes take a long time to execute

simply because of the lack of time and resources. As any responsible President, I will list items as I had proposed to accomplish them at the beginning of my term, and briefly comment on where we are in terms of each, owning up to each success and to each delay.

**Strategic Plan** – short-, medium- and long-term: this has been discussed thoroughly at the level of the BoD, and its broad lines adopted, while a few specific actions have been postponed. I am assured by the current BoD that the CFDSC will still be guided by the global lines we have traced in terms of this Strategic Plan. The implementation will depend on individual circumstances, and as usual, the availability of resources and finances.

**Invigorated Board of Directors** – We have increased the size of the Board, not by necessity, but by the availability of excellent motivated candidates. We have also assigned to each member of the Board a task and ensured that, in addition, another member of the Board is co-responsible, in such a way that actions items do not fall between the cracks. It was also decided to increase student Directors to two, and to take advantage of their skills in terms of website, communications and database maintenance.

**Expanded Membership** – We are all in agreement that the CFDSC should enlarge its membership in a cumulative way, rather than continue its tradition of a one-year membership solely based on attendance at the last CFDSC conference. Under such circumstances, there is no permanent roll. Thus, the goal, under this new approach, will be at least to double the current membership, making it a more permanent one.

**National and International Collaboration** – We have made contacts with sister societies such as ERCOFTAC (Europe), JSME (Japan) and the CFD Standards Committee of the AIAA. ERCOFTAC has informed us

## ABOUT THE CFDSC

**Objectives** – The Computational Fluid Dynamics Society of Canada (CFDSC) promotes the application of CFD to provide a better understanding of fluid dynamic processes in all applicable areas and thereby supports the competitiveness of Canadian industry and advances knowledge in the field. These objectives are met by (1) establishing a network of CFD practitioners and developers from industry, government and universities, (2) identifying national needs and priorities for research in CFD, (3) promoting research in CFD and related areas, (4) enhancing industry capabilities in CFD by the education and training of professionals, (5) promoting the use and increasing the availability of computational tools for CFD, (6) promoting communication and exchange within CFD and related disciplines (e.g. environment, biology and chemistry), (7) organizing conferences and seminars, and (8) representing Canada at international forums.

**Bulletin** – The Bulletin of the CFDSC is published twice a year to provide members with information on current CFD issues. The published articles express the views and opinions of their respective authors and do not necessarily represent those of the CFDSC.

that its workshops are open internationally and we have encouraged our membership to attend and report. The CFDSC Bulletin (spring, 2008) was graced with an exceptional article by Professor Charles Hirsch. For the AIAA, it has been decided that Professor Dominique Pelletier (École Polytechnique) will represent the CFDSC officially on this committee. Dominique has a distinguished track record in Verification and Validation, as he amply demonstrated in his keynote address to CFD2009. The JSME invited me to their annual meeting in Tokyo at the end of 2008 and I gave a keynote address that I believe was well received. That also gave me the opportunity to lecture at Chuo University and Kokoguin University, both in Tokyo, and at JAXA in Chufu. We held discussions concerning collaboration, and identified names of individuals suitable for the Advisory Board of the IJCFD, and perhaps as Regional Editor to replace soon to retire Professor Mutsuto Kawahara. As a consequence of the visit we have invited Dr. Shigefumi Tatsumi, Director, Civil Aircraft Engineering Department, MHI Nagoya Aerospace Systems Works, to speak at CFD2009 in Kanata. Unfortunately, at the last minute MHI did not permit him to travel due to the swine flu.

**Enhancing the Bulletin** – A project that has started but that, I am very positive, will soon flourish. We will require the membership to provide news and we will also cross advertise the activities of sister societies and contact reports from delegates who will be attending their activities.

**Updating the Logo and Website** – The CFDSC now has beautiful and distinctive logo, and the website was rebuilt completely and will further be enhanced.

**Supercomputing Platforms for CFDers** – we now have two people in charge of this dossier. It is also appropriate that the new President, Clinton Groth, is involved in SciNet, and

can keep an ear to the ground concerning what is happening in HPC.

**Scholarships for Students** – We explored the idea of increasing the number of annual scholarships to 4. The current global economic crisis makes it impossible to do so, as money we receive from conference sponsors has been very low this year.

**Database of Canadian CFD Practitioners and Codes** – Postponed, as not crucial.

**National Summer School for CFD** – We have explored the idea thoroughly, defined how it ought to be done, but the timing was not appropriate to get it funded through MITACS and the member universities. This is one project that I hope will continue, as I believe we can best benefit from the deep but widely spread teaching expertise in this country, only by such a mechanism.

**Relationship with the International Journal of CFD** – it continues, but the IJCFD no longer publishes conference proceedings, but only special issues that have a common focus. As such, we are giving the opportunity to professor Nadarajah (McGill), the CFD2009 co-Chair, to do two things: identify a theme (what could be better than Aviation in the Next 100 Years) and collect from CFD2009 a few relevant papers that can be complemented by an internationally invited one. At the same time, Professor Nadarajah will select the best papers from the conference and encourage their submission, in an expanded format, to the IJCFD for regular publication.

**Relationship between Academia-Industry-Government** – is one of the subjects that was put on hold due to lack of resources to create a permanent infrastructure. Projects such as the recently announced Canadian Aerospace Industry GARDN (Green Aviation Research & Development Network) ought to involve the CFDSC as an entity in its planning, and not just its members as individual researchers. Only

## LA SCCFD EN BREF

**Objectifs** – La Société canadienne de CFD (SCCFD) fait la promotion des applications de simulation numérique afin de fournir une meilleure compréhension de la dynamique des fluides et contribue ainsi au développement de la compétitivité industrielle canadienne et à l'avancement des connaissances dans le domaine. Ces objectifs sont atteints en (1) établissant un réseau d'utilisateurs et de développeurs de CFD dans les industries, les gouvernements et les universités, (2) identifiant les besoins nationaux et les priorités de recherches en CFD, (3) faisant la promotion de la recherche en CFD et les domaines reliés, (4) rehaussant les capacités en CFD des industries par la formation et l'éducation des professionnels, (5) faisant la promotion de l'utilisation et en augmentant la disponibilité d'outils informatiques en CFD, (6) faisant la promotion de la communication et des échanges en CFD avec les disciplines reliées (par exemple, en environnement, en biologie et en chimie), (7) organisant des conférences et des séminaires, (8) représentant le Canada dans les forums internationaux.

**Bulletin** – Le bulletin de la SCCFD est publié deux fois par année afin de fournir aux membres de l'information sur les grands courants reliés à la CFD au Canada. Les articles publiés représentent les opinions des auteurs respectifs et ne représentent pas nécessairement celles de la SCCFD.



in this way will the CFDSC be able to achieve a larger say.

**NSERC Recognition of CFD and CFDSC** – postponed.

**Creation of a Network of Centers of Excellence** – examined and abandoned.

In May of this year, the Society held, uninterrupted, its 17th annual conference at the beautiful Brookstreet Resort in Kanata. What was so special this year was that, under the encouragement and stewardship of Dr. Eric Laurendeau (BoD and Bombardier), the conference was scheduled to coincide with that of CASI and had a common day where our guest speakers and lectures were of common interest to both societies. This is a step in the right direction, to collaborate within our borders as well as outside. Aviation in the Next 100 years was the underlying theme and Dr. Siva Nadarajah did a great job organizing the conference, helped locally by Dr. Mahmood Khalid.

It is time for me to “tírer ma révérence” as is said in French. I will always be available for any duties that the CFDSC needs of me. Good-bye, thank you and let us keep this marvelous organization alive and well.

Wagdi G. Habashi, FRSC, FCAE, FASME  
President, CFDSC, 2007 - 2009



Professor W.G. Habashi receiving the 2010 AIAC James C. Floyd award (photo - Audrey Bond)

## Graduate Scholarships

The CFDSC will award two or more scholarships per year, valued at \$2,000 each, to applicants conducting exceptional research work in computational fluid dynamics. The field of study may involve the development of CFD techniques and/or the use of CFD techniques to solve important problems.

The applicant must be a full-time student enrolled in a Masters or Ph.D. level program at an accredited Canadian University, and be a member of the CFDSC.

The application form and instructions are posted on the Society website ([www.cfdsc.ca](http://www.cfdsc.ca)). Applications are due March 1, 2011. Winners will be announced at the 20th Annual Conference of the CFDSC, Montreal, April 28-29.

## Call for Nominations - Lifetime Achievement Award

The CFD Society of Canada invites nominations for the presentation of its Lifetime Achievement Award, presented to an exceptional Canadian scientist recognized for seminal and longstanding work in Computational Fluid Dynamics.

This award is an exceptional one and is not offered regularly.

For information regarding eligibility criteria and nomination procedures please visit our website at [www.cfdsc.ca](http://www.cfdsc.ca).

## Summary - CFD2010, London

The 18th Annual Conference of the CFD Society of Canada was held on the beautiful campus of the University of Western Ontario, May 17 - 19, 2010. The conference was organized by UWO Professors A.G. (Tony) Straatman and Kamran Siddiqui.

**Overview** – The conference was attended by 115 participants, including 77 students. 84 technical papers were delivered in four parallel sessions on May 18th and 19th.

**Keynote Speakers** – CFD2010 featured two plenary lectures by distinguished speakers. Dr. Marian Nemeč of the ELORET Corporation presented "Error Estimation and Adaptive Mesh Refinement in Complex Geometry Problems." Prof. Andrew Pollard of Queens University presented "Flow in the Upper Human Airway - A Kaleidoscope of Flow Physics."

**Student Paper Competition** – Student participants were encouraged to have their papers/presentations judged and considered in the student paper competition. Judging of the papers was conducted by several regular conference participants from both industry and academia. The winners of the 2010 student paper competition were:

First place (\$500 and a plaque): Lana Olaque (Institute for Aerospace Studies, University of Toronto), for "Three-Dimensional Aerodynamic Shape Optimization Using a Newton-Krylov Discrete-Adjoint Algorithm."

Second place - tie (\$200 and a plaque): Nimeesha Kuntawala (Institute for Aerospace Studies, University of Toronto), for "Preliminary Aerodynamic Shape Optimization of a Blended-Wing-Body Aircraft Configuration", and

Second place - tie (\$200 and a plaque): Pradeep Kumar Jha (Institute for Aerospace Studies, University of Toronto), for "Tabulated Chemistry Techniques: Comparison of Flame Prolongation of ILDM and Laminar Flamelet Methods for Laminar Flames."

**Sponsors** – The conference organizers are grateful to the following sponsors, all of whom provided financial support support: COMSOL Inc., Newmerical Inc., Bombardier Canada, ANSYS, Pratt & Whitney, Rolls Royce, Maya Inc., SHARCnet, MITACS, the UWO Faculty of Engineering, and UWO Research Services.

## Summary - CFD2009, Ottawa

The 17th Annual Conference of the Computational Fluid Dynamics Society of Canada was held May 3-5, 2009, at the Brookstreet Hotel, Kanata, just 15 minutes west of Ottawa. This four-diamond luxury hotel at the heart of Ottawa's Tech Center is a leading conference, golf, spa, and fine dining destination in Ottawa. The conference was co-hosted with the 13th Canadian Aeronautics and Space Institute (CASI) Aerodynamics Symposium, enabling an historic joint CASI-CFDSC meeting on May 5. This day-long session promoted cross-discipline interactions among the two organizations as well as celebrated 100 years of manned flight in Canada. The conference was co-chaired by Professor Sivakumaran Nadarajah (Department of Mechanical Engineering, McGill University) and Mahmood Khalid (Institute for Aerospace Research, National Research Council).

**Overview** – The conference was attended by 110 professors, graduate students, and researchers from Canada and abroad. The conference began with a welcome reception hosted by Professor Sivakumaran Nadarajah on Sunday evening in the Mulligan Room overlooking the Brookstreet Hotel's beautiful championship Marshes Golf Course. The technical sessions encompassed 85 papers (122 papers were received), spanning four full parallel sessions on day one and five parallel sessions on day two. Day one concluded with a banquet in the Brookstreet's Grand Ballroom. The second day began with a plenary session with three distinguished speakers: Antony Jameson, Stanford University; Cord-Christian Rossow, Deutsches Zentrum für Luft- und Raumfahrt (DLR); and Fassi Kafyeke, Bombardier Aerospace. The topic of the plenary session was "Designing the Aircraft of the Future," and it was attended by well over 250 people, combining registrants of both the CFDSC and the CASI Conference. The speakers received a model of the Silver Dart, as a token of appreciation.

**Keynote Speakers** – CFD2009 featured two plenary lectures given by prominent speakers. Professor Antony Jameson (Thomas V. Jones Professor of Engineering, Stanford University) lectured on "Computational Fluid Dynamics and Airplane Design: Its Current and Future Impact." Professor Dominique Pelletier (Canada Research Chair in Analysis, Characterization and Optimization of Complex Flows, École Polytechnique de Montréal, ) reviewed his recent advances on "Verification, Validation, and Uncertainty in CFD."

**Student Paper Competition** – 24 students participated in the annual Student Paper Competition. First prize for the best student paper presented at the conference was awarded to Jean-Sébastien Cagnone (McGill University), who presented a paper titled, "An Implicit Non-Linear Frequency Domain-Spectral Difference Scheme For Periodic Euler Flow". Second prize went to Jason Hicken (University of Toronto), who presented a paper titled "Algorithms for Efficient Aerodynamic Optimization."

**Sponsors** – The conference organizers are grateful to the major sponsors of the conference (Bombardier Aerospace, AMEC NSS, Pratt & Whitney Canada, Cray Inc., and Newmerical Technologies) as well as to McGill University which provided both financial and secretarial support. The efforts of the local organizing committee, mostly drawn from faculty and staff of the Department of Mechanical Engineering at McGill, were instrumental in making this event a success.

## Summary - CFD2008, Saskatoon

The 16th Annual Conference of the CFD Society of Canada was held on the campus of the University of Saskatchewan in the prairie city of Saskatoon from June 9 - 11, 2008. The conference was co-chaired by Professors Donald Bergstrom (Mechanical Engineering) and Ray Spiteri (Computer Science).

**Participants** – The conference attendance was approximately 95 persons coming from both within Canada and abroad. The technical sessions encompassed 76 papers and were scheduled using three parallel sessions spanning two days. Participants were provided with a booklet of abstracts, and a CD compilation of the full papers. The conference event began with a welcome reception Monday evening hosted in the atrium of the Geology Building, which features some life-size replicas of the dinosaurs which once inhabited western Canada. The conference concluded with a banquet on Wednesday evening at the Delta Bessborough, a historic railway hotel located on the banks of the South Saskatchewan River in downtown Saskatoon.

**Keynote Speakers** – CFD2008 featured three plenary lectures given by prominent keynote speakers: Prof Tom Gatski (Université de Poitiers, France) discussed modeling and simulation approaches to turbulent flows; Prof Jennifer Sinclair Curtis (University of Florida, USA) reviewed recent advances in modeling fluidized particulate flows; and Prof Spencer Sherwin (Imperial College, UK) described multiple scale modeling of flow in the cardiovascular system.

**Short Course** – Following the conference, Professors Spencer Sherwin (Imperial College) and Mike Kirby (University of Utah) presented a short-course entitled: "A Hands-On Approach to Implementing and Using Spectral/hp Elements". The course spanned one and one-half days (June 12-13) and included lab sessions which made use of the Nektar++ open

source software library. The short course was an exceptionally well structured introduction to this computational technique.

#### **Student Paper Competition –**

Twenty students participated in the annual student papers competition. First and second prize for the best student papers presented at the conference were awarded to Babak Emami (University of Toronto) and Chris DeGroot (University of Western Ontario), respectively.

**Sponsors –** The conference organizers are grateful to the major sponsors of the conference (Bombardier Aerospace, Bell Helicopter, IBM Canada, SGI, Pratt & Whitney Canada) as well as the University of Saskatchewan which provided both financial support and access to its buildings. Finally, the efforts of the local organizing committee, mostly drawn from faculty and staff of the Department of Mechanical Engineering, were instrumental to making this event a success.

## **News from the CFD Community**

The 23rd Canadian Congress of Applied Mechanics will be held in Vancouver, BC, June 5-9, 2011. Papers may be submitted in any branch of thermofluid science and engineering to the fluids technical track. 4-page paper proposals are due December 1, 2010. More information at [cancam2011.dal.ca](http://cancam2011.dal.ca).

Announcing the Minisymposium on Computational Radiative and Convective Heat Transfer, in honor of Prof. George D. Raithby, to be held at the 11th US National Congress on Computational Mechanics, Minneapolis, USA, July 25-29, 2011.

This minisymposium is dedicated to Prof. George Raithby, in recognition of his many seminal contributions to computational heat transfer and fluid dynamics. In addition to honoring Prof. Raithby, the minisymposium will provide a forum for the exchange of ideas,

methods and results in computational radiative and convective heat transfer. Targeted topics include: Modeling and simulation techniques dealing with radiation and/or convection heat transfer; Radiative and/or convective heat transfer in heterogeneous systems and multi-scale problems; Radiative transfer modeling in gases; Inverse methods in radiative heat transfer; Combined heat and mass transfer problems; Emerging technologies and applications involving radiation and/or convection.

Abstracts on all aspects of computational radiative and/or convective heat transfer are invited for oral presentations, and should be submitted via the [conference website](#) by January 31, 2011.

## **CFDSC BOARD OF DIRECTORS**

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