

Book of Abstracts

Volume 1

The Québec City
Convention Centre

ISC2018.ORG

20th international
sedimentological congress

From 13 to 17 August 2018, Québec, Canada

A SEDIMENTARY JOURNEY THROUGH
3 BILLION YEARS IN THE NEW WORLD



20th international sedimentological congress
From 13 to 17 August 2018, Quebec City, Canada
A sedimentary journey through 3 billion years in the
new world

BOOK OF ABSTRACTS

Volume 1

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TABLE OF CONTENTS

General Theme 1 – The carbonate depositional system

1.1 Carbonate record of ocean acidification and upwelling	2
--	----------

Benoit Beauchamp (University of Calgary, Canada)

1.2 Biosedimentation during major Microbe–Metazoan Transitions (MMTs) in geologic past.....	7
--	----------

Zhong-Qiang Chen (China University of Geosciences, Wuhan, China); Chuanming Zhou (Chinese Academy of Sciences, Nanjing, China); Stephen Kershaw (Brunel University, Uxbridge, UK)

1.3 Carbonate slopes: Sedimentology, stratigraphic architecture, and utility in paleoclimatic reconstruction	16
---	-----------

John W. Counts and Stephan J. Jorry (Institut Français de Recherche pour l'Exploration de la Mer (IFREMER), France); Simon Courgeon (University of Geneva, Switzerland)

1.4 Microbial carbonates: challenges and opportunities	23
---	-----------

Christophe Dupraz (Stockholm University, Sweden); Robert Riding (University of Tennessee, USA); Emmanuelle Vennin (Université de Bourgogne, France)

1.5 Carbonate platforms as sedimentary archives of sea level and paleoceanographic changes: insights from the Mesozoic record.....	50
---	-----------

Gianluca Frijia (University of Ferrara, Italy); Alexis Godet (University of Texas at San Antonio, USA); Stefan Huck (University of Hannover, Germany)

1.6 Paleozoic Evolutionary Biosedimentology	67
--	-----------

Fritz Neuweiler (Université Laval, Québec, Canada) and Yuefeng Shen (School of Resource and Environmental Engineering, Hefei University of Technology, China)

1.7 Deep-water resedimented carbonates: sedimentation patterns, controls and models	72
--	-----------

Angel Puga-Bernabéu (Universidad de Granada, Spain); Christian Betzler (Universität Hamburg, Germany); John Reijmer (King Fahd University of Petroleum and Minerals, Saudi Arabia); Jody M. Webster (University of Sydney, Australia)

1.8 Carbonate mounds through time and space: from organisms to giant sedimentary structures	84
--	-----------

Elias Samankassou (University of Geneva, Switzerland); Dierk Hebbeln (University of Bremen, Germany)

1.9 Open session on carbonates and bioconstructions	93
--	-----------

Stephen Lokier (Visiting Academic at Bangor University, UK); Marco Brandano (Universita di Roma, Italy); Cees van der Land (Newcastle University, UK); Joanna Pszonka (Polish Academy of Sciences, Krakow, Poland); Chelsea Pederson (Ruhr-Universität Bochum, Germany)

General theme 2. The clastic depositional system

2.1 Fluvial facies models: recent and future developments	152
--	------------

Massimiliano Gino Ghinassi (University of Padova, Italy); Alessandro Ielpi (Laurentian University, Sudbury, Canada); Luca Colombera; Nigel P. Mountney (University of Leeds, UK)

2.3 Deep-water sedimentation patterns in clastics and carbonates.....	195
--	------------

Angel Puga-Bernabéu (Universidad de Granada, Spain); John Reijmer (King Fahd University of Petroleum and Minerals, Saudi Arabia); Thierry Mulder (University de Bordeaux, France); Joris Eggenhuisen (Universiteit Utrecht, Netherlands)

2.4 Lacustrine sedimentology: recent progress and new perspectives	219
---	------------

Chen Qilin and Pan Shuxin (Petro China, Lanzhou, China); Carlos Zavala (GCS Argentina, Universidad Nacional del Sur, Argentina); Liu Huaqing (Petro China, Lanzhou, China)

2.5 Aeolian systems and desert basins.....	283
---	------------

Juan Pedro Rodriguez-Lopez (Spain); Gonzalo Veiga (Universidad de La Plata, Argentina); Claiton Scherer (Universidade Federal do Rio Grande do Sul, Brasil); Nigel Mountney (University of Leeds, UK); Nick Lancaster (Desert Research Institute, USA)

2.6 Advances in shale sedimentology and stratigraphy	292
<i>Juergen Schieber (Indiana University, Bloomington, USA); Kevin Bohacs (Exxon Mobil, Houston, USA); Joao Trabucho-Alexandre (Utrecht University, Utrecht, Netherlands)</i>	
2.7 Open session on clastic depositional environments	311
<i>Catherine Russell (Leicester University, UK); Alina Shchepetkina (Instituto de Investigación en Paleobiología y Geología, Argentina); Michel Malo (INRS, Canada)</i>	
2.8 Pre-vegetated depositional landscapes and analogies with modern and extra-terrestrial systems analogues	340
<i>Alessandro Ielpi (Laurentian University, Sudbury, Canada); Giorgio Basilici (UNICAMP - Brazil); Darrel Long (Laurentian University, Sudbury, Canada); Patrick Fuhr Dal Bó (UFRJ - Brazil); Rob Rainbird, (Geological Survey of Canada, Ottawa, Canada); Renato Paes de Almeida (USO- Brazil)</i>	

General theme 3. Paleo-environments and Paleo-climates

3.1 The sedimentary record of glaciations: from the Proterozoic to the Quaternary...350	
<i>Emmanuelle Arnaud (University of Guelph, Canada), Pierre Dietrich (University of Johannesburg, South Africa), Chris Fielding (University of Nebraska at Lincoln, USA), Jean-François Ghienne (Université de Strasbourg, France), Patrick Lajeunesse (Université Laval, Québec, Canada)</i>	
3.3 New frontiers in ichnology applied to facies analysis and sequence stratigraphy.....373	
<i>Luis A. Buatois and Gabriela Mangano (University of Saskatchewan, Saskatoon, Canada)</i>	
3.5 Reading the sedimentary record to understand Precambrian paleoenvironments	390
<i>Galen Halverson (McGill University, Montréal, Canada); Elizabeth Turner (Laurentian University, Sudbury, Canada); Andrey Bekker (University of California, Riverside, USA)</i>	
3.6 Sedimentary records of wind fields in deep time	406
<i>Zaixing Jiang (China University of Geosciences, Beijing, China); Mathieu Schuster (Institut de Physique du Globe, Strasbourg, France)</i>	
3.7 Mesozoic-Cenozoic terrestrial environments and climates.....	410
<i>Xianghui Li (Nanjing University, China); Greg Ludvigson (University of Kansas, USA)</i>	
3.9 Open session on Paleo-environments and Paleo-climates	447
<i>Sebastian Richiano (CONICET-CENPAT, Argentina); Romain Vaucher (CICTERRA, Argentina); Stéphanie Larmagnat (Geological Survey of Canada, Canada)</i>	
3.10 Extreme events in lake sediments – possibilities and limitations in reconstructing records	478
<i>Marc De Batist (Ghent University, Belgium); Jasper Moernaut (University of Innsbruck, Austria); Guillaume Jouve (CEREGE, France); Léo Chassiot (Institut national de la recherche scientifique, Québec, Canada)</i>	

WELCOMING WORDS

The Local Organizing Committee is very happy to welcome you for the 20th International Sedimentological Congress in Québec City from August 12 to 17, 2018. The congress of the International Association of Sedimentologists (IAS) is back in Canada more than 30 years after its last stop in Hamilton (Ontario), and this time we are pleased to acknowledge the collaboration and participation, for the first time, of our sister organization, the Society for Sedimentary Geology (SEPM).

We are delighted to welcome over 1000 participants and exhibitors from 53 countries from all over the World. This conference will provide great opportunities for everyone to communicate their latest research, discuss new trends, approaches and frontiers in all aspects of sedimentology. The program includes 50 exciting scientific sessions with over 500 oral presentations and as many posters, providing the geoscience foundation of the congress. We are pleased to offer 13 field trips covering many aspects of sedimentary geology in Canada, as well as 6 short courses and workshops. We are sure that you will all enjoy the 7 outstanding plenary lectures in our program, and our social events including the conference banquet that will be held at the sumptuous Manège Militaire de Québec along the edge of the Plains of Abraham, an historical and prestigious park at the heart of Québec.

Québec City was founded in 1608, one of the first European establishments in the New World. It is a vibrant modern city with its Old Quebec District recognized as a UNESCO World Heritage Center. The city will provide every participants a unique experience of hospitality, exquisite dining possibilities and animated night life.

We are certain that the 20th International Sedimentological Congress will be remembered by all participants as one of their most outstanding scientific and social gatherings. Welcome and enjoy !!

The Organizing Committee

Pierre FRANCUS, Denis LAVOIE, Patrick LAJEUNESSE, Stéphanie LARMAGNAT, Michel MALO, Fritz NEUWEILER and Alexandre NORMANDEAU

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CYCLOSTRATIGRAPHY AND ECCENTRICITY TUNING OF THE TELYCHIAN STAGE (EARLY SILURIAN): ORBITAL CONTROL ON CYCLICAL PRIMARY PRODUCTIVITY AND BENTHIC ANOXIA

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The identification of quasi-periodic oscillations in the Earth-Sun position on the Palaeozoic stratigraphic record represents an open research frontier in cyclostratigraphy and astrochronology¹. In this work, we focus our attention to the Telychian Stage (Llandovery, Silurian), for which we construct a floating astronomical time scale (ATS) by means of cyclostratigraphic analysis. Digitized and image-processed photographs of a continuous core drilled through the Silurian Pasłek Formation in the Baltic Basin (Poland) served as the basis for the analysis of the studied interval². The lithological rhythmicity of the analysed record, characterized by the repetitive alternation of greenish-grey mudstones and dark-grey-to-black mudstones, reflects the cyclical variation in redox conditions at the sediment-water interface³. Spectral density estimation by means of the multitaper method (MTM) reveals significant peaks rising above the 95% red noise confidence level that we interpret as the 405-kyr long-eccentricity, short-eccentricity, obliquity and precession components. The MTM evolutive power spectral analysis (EPSA), used to evaluate the stationarity of the cycles, shows a gradual variation in the sedimentation rate from 5.03 m/Myr in the lowermost interval to 5.48 m/Myr towards the uppermost part of the studied sequence. Accurate acritarch biostratigraphy allowed to calibrate the orbital tuning of the studied interval, that resulted in a duration of about 5.46 Myr. Furthermore, thanks to the cyclostratigraphic analysis, we can postulate that the observed cycles reflect orbitally-driven climatic variations from stable wet conditions to monsoon-like high seasonal contrasts that affected weathering intensity, runoff and nutrient supply. These cyclical variations led to rhythmic variations in organic matter fluxes and benthic anoxic conditions. In the analysed record, orbital precession influenced the repetitive deposition of the greenish-grey mudstone and dark-grey-to-black mudstone couplets, while eccentricity modulated the relative predominance of one facies over the other. Observed periodicities resemble those of Cenozoic and Mesozoic orbitally controlled records, thus suggesting that during the Silurian the orbital eccentricity forcing on the carbon flux acted in the same way as in the Cenozoic and Mesozoic.

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