Saskatchewan Geological Society Lecture

Thursday, April 4th, 2019

Animals at work: The trace-fossil record of substrate modification in space and time.

Dr. Luis A. Buatois

(abstract & bio below)

Bushwakker Brewing Company,
2206 Dewdney Avenue, Regina

Lunch: 11:45 am
Meeting Talk: 12:15 to ~1:00 pm
For lunch, the cost is:
S.G.S Members: $15.00
Student Members: $5.00
Non-members: $20.00

For those members not having lunch, the talk is free.
Please contact **Alec Pollard alexander.pollard@gov.sk.ca or 306-787-6116**
by 10:00 am, **Monday, April 1st.** if you plan on having lunch.

Abstract

Substrates and landscapes are strongly affected by biogenic activity. Ichnology, the multidisciplinary science that studies organisms-substrate interactions, has experienced an explosive development during the last decades. Tracking the effects of animal activity along the depositional profile through geologic time is essential to understand the role of geobiological processes in macroevolution. Matgrounds were instrumental as substrates for interactions with early bilaterians during the Ediacaran and earliest Cambrian, although sediment bulldozing was first manifested close to the Ediacaran-Cambrian transition, resulting in increased disturbance of the sea bottom. The appearance of novel ways of interaction with the substrate during the Cambrian Explosion represents an evolutionary breakthrough of the highest level. In particular, a major shift in benthic ecologic structure consisted in a marked increase in sediment mixing due to bioturbation, the establishment of a suspension-feeder infauna, increased complexity of the trophic web, and coupling of benthos and plankton during the early Cambrian. The Cambrian Explosion displayed a remarkable increase in trace-fossil diversity, but was restricted to bioturbation structures. In contrast, the Great Ordovician Biodiversification Event was associated to evolutionary innovations in bioerosion as well. The Mesozoic Marine Revolution was a more protracted event with ichnodiversity increases in the Early Jurassic and Late Cretaceous. This episode was conducive to further increases in depth of bioturbation, a marked increase in the utilization of the infaunal ecospace and profound modification of marine substrates. Overall increases in the degree of bioturbation and ichnodiversity did not occur in all marine settings at the same time, but in a diachronic fashion, progressing from environments between fair-weather and storm wave bases along the depositional profile both seawards towards deeper-marine settings and landwards towards brackish-water marginal marine settings. Ichnology is emerging as a multidisciplinary science which is able to yield insights into the deep history of the biosphere.

Luis Buatois Biography:

Luis Buatois obtained his degree in Geology at the University of Buenos Aires and got his PhD at the same institution. In 1994, he received a degree in Philosophy, with a focus on Philosophy of Sciences (University of Tucuman). From 1994-1998 he was a postdoctoral fellow with the Kansas Geological Survey. He returned to Argentina in 1998 becoming a Researcher at the Argentinean Research Council. In 2004, he joined the University of Saskatchewan, where he is a Professor. He specializes in paleoenvironmental, stratigraphic, and evolutionary aspects of ichnology. He has been Vice-President of the International Palaeontological Association and President of the International Ichnological Association. He has carried out field and subsurface work worldwide. Luis has published six books, edited three journal special issues, and is the author of approximately 250 scientific papers. He has supervised over twenty graduate students and postdoctoral fellows. He is Co-Editor of Ichnos and a member of the editorial board of a number of journals, including Scientific Reports, Sedimentary Geology, Marine and Petroleum Geology, Lethaia, Ichnos, Ameghiniana, Revista de la Asociacion Geologica Argentina, Journal of Iberian Geology and Spanish Journal of Paleontology. Luis is a Voting Member of the International Subcommission on Ediacaran Stratigraphy (IGCP).

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