Dinner Meeting

Westchase Hilton • 9999 Westheimer Social Hour 5:30–6:30 p.m. Dinner 6:30–7:30 p.m.

Cost: \$28 Preregistered members; \$35 non-members & walk-ups

To guarantee a seat, you must pre-register on the HGS website and pre-pay with a credit card.

Pre-registration without payment will not be accepted.

You may still walk up and pay at the door, if extra seats are available.

Dr. Bilal Haq

Director for Marine Geosciences Programs at National Science Foundation (NSF)

A Chronology of Paleozoic Sea-Level Changes

Aglobal synthesis of Paleozoic sequence-stratigraphic data has led to new insights into the nature, amplitude, and causes of

base-level changes for this era. A "modal mean" Paleozoic sealevel curve is proposed based on "reference districts" from around

the world, corroborated with data from ancillary sections. Estimating the ampli-

Accurate estimates of the magnitude of sea-level changes from stratigraphy remain a challenge.

tude of sea-level changes in the Paleozoic involves two separate measures: 1) long-term envelope of the sealevel changes driven by long-term tectonic processes, and 2) shorter-term third- and higher-order eustatic sealevel changes driven by glacial and other, unknown, processes that can be widely documented.

For the long-term envelope, a consideration of the global continental flooding estimates with epeirogenic corrections, stacked regional sea-level data, and modeling results for mean age of the oceanic crust seem to yield consistent results. For the shorter-term eustatic changes, sea-level rise and fall estimates from "reference districts" for various time slices is considered the best approach. Reference districts are localities where tectonic quiescence prevailed and thus the "modal mean" signal is more likely to be preserved.

Nevertheless, accurate estimates of the magnitude of sea-level changes from

HGS General Dinner

continued on page 21

				0			1			
YEARS IN MA	GLACIAL	PERIODS	EPOCHS		STANDARD STAGES AND COMMON USAGE		LANDWARD		SEQUENCE BOUNDARY AGE IN MA (Relative Mag.)	SEA-LEVEL CHANGES (m above PD)
-440	İ	SILU	IR	RHUDDANIAN				8 8		100 100 0m
=0		JILO					Authorities and a second	443.7(3)	1	
-	1		LATE	HIRNANTIAN		ASHGILL	<u>ئ</u> ے ا		* 445.7(3) 446.3(1) 447.3(1)	5
450		Z		KATIAN			3,		448(1) 449(2) * 450(2)	8
		V				CARADOC			452(1)	P
Ē		_					2	ă .	455.5(1) + 456.2(2) + 458.2(2)	
460		C		SA	INDBIAN		5		400 000	E
E		ORDOVICIAN	MIDDLE	DARRIWILIAN		LLANVIRN	>		461.8(2) 462.8(2) 464(3)	B
470		\(\)	ĭ¤		3		1	~	* 467(2)	
		0	Σ	DA	PINGIAN	ARENIG		==	* 471(3) 471.8(2) 473(3)	ong-term
F			L	F	LOIAN		, ,		475(3) 475(3) 476(1) 477(3)	
- 480		\propto					,		477(3)	
-		0	EARLY	TREMADOCIAN			2	~481(2)	RI	
E		39.50	550					483.8(3)	K	
490			¥	ST	AGE 10	WERENDIAN DATSONIAN PAYNTONIAN		<u>_</u>	* 486.8(3)	-
		CAMBRIAN	SERIES 3 FURONGIAN	S	TAGE 9	IVERIAN	1	ج	492(2)	R
500					AIBIAN	IDAMEAN			495(3) 499(2) 501(2) 502(3)	
					HANGIAN	MINDYALLAN	ģ	2=		Short-Term
				DF	RUMIAN	MAYAN	l ä T	==	504(3)	B°
510				S	TAGE 5	AMAGAN	뿔	==	* ~506(1) 507(2) 507.5(3) 508(1)	
			SERIES 2	S	TAGE 4	TOYONIAN BOTOMIAN ATDABANIAN	KNOWN HIGH-FREQUENCY CYCLES	2	511.5(3)	5
								==	514(3) 515.5(2)	B
-520				S	TAGE 3			=3	514(3) 515.5(2) 517(3) \$ 517.8(2) \$ 518.8(2)	
5020		2				TOMMOTIAN	1	7-	521(3)	R
530		A	Ā				İ	7	524(2)	K
		O	3	S	TAGE 2	NEMAKIT- DALDYNIAN		7_	528(2)	
			ENE					7—	* -533(2)	
E			TERRENEUVIAN	E0.	RTUNIAN	DALDITAN		==	~535(2) ~536(2) * ~538(2)	
540			F	FU	TONIAN			7-	~540(2)	
E			DDECAMORIAN					E	542(3) ~544(2) 545.5(2)	
Ē		PI	ΚE	CAMBRIAN			* Known Condensed Sections 548(2)			
550	-							7	049(2)	1-

Cambrian-Ordovician sea-level changes. The time scale and standard and regional stages are modeled.

HGS General Dinner continued from page 18

stratigraphy remain a challenge. As for the causes of short-term sea-level changes, nearly 38% of the Paleozoic experienced some or significant glaciation and thus a glacio-eustatic cause can be invoked for those intervals. For the remaining time, when there is no known evidence of ice accumulation, the trigger for sea-level changes is as yet unknown and remains one of the major mysteries of the earth sciences.

Biographical Sketch

Dr. BILAL HAQ has served as the director for Marine Geosciences Programs at National Science Foundation (NSF) since 1988. He received his PhD and DSc degrees in marine geology from the University of Stockholm in Sweden. Before coming to the NSF, he carried out research at Woods Hole Oceanographic Institution in Massachusetts and Exxon Research Labs in Houston, Texas in several fields of geosciences. He has participated in four ocean drilling expeditions in the Pacific, Indian, and Southern Oceans, the latter two as co-chief scientist. He has been an American Association of Petroleum Geologists distinguished lecturer and a recipient of the Francis Shepard medal for "excellence in marine geology." He



also received the NSF's Antarctic medal and was elected a fellow by the American Association for the Advancement of Science in

> the year 2000. In 2004, he was awarded American Geophysical Union's Ocean Sciences award for "outstanding and sustained contributions" to marine sciences. He has published extensively on a wide variety of topics, including sequence stratigraphy and global sea-level changes of the past, paleoclimatology, paleobiogeography, paleoceanography, natural gas hydrates, and global warming and its impacts on maritime economies. Dr. Haq has also held assignments with the World Bank and the White House in Washington DC.



Crozon Fieldtrip