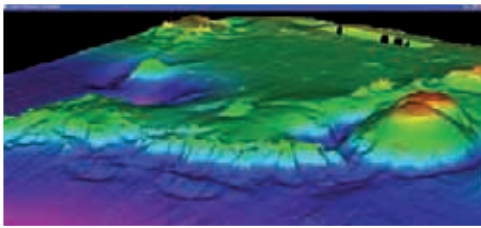


Cocarde Workshop and Field Seminar

Recent and Ancient Carbonate Mounds in Morocco

Rabat, Morocco,
24-30 October 2011



Organized by:

Faculty of Sciences, Mohammed V - Agdal University, Rabat
Renard Centre of Marine Geology, Ghent University, Belgium
Ibn Battuta Center, Cadi Ayad University, Marrakech,
International University of Rabat
ONHYM, Rabat

Under the auspices of:

IOC-UNESCO and The Research Foundation Flanders (FWO, Cocarde-ICA)
The European Science Foundation (ESF, Cocarde-ERN)

Honorary committee

Prof. Waiil BENJELLOUN	President of Mohammed V - Agdal University, Rabat
Prof. Abdellatif MIRAOUI	President of Cadi Ayad University, Marrakech
Prof. Nouredine MOUADDIB	President of International University of Rabat
Prof. Said AMZAZI	Dean of the Faculty of Sciences, Rabat

Participating Institutions

Belgium	Ghent University Leuven University
France	IOC-UNESCO, Paris TOTAL Exploration & Production, Pau Université de Provence, Marseille Université Paul-Sabatier, Toulouse
Germany	MARUM, Bremen University IFM-GEOMAR, Kiel
Ireland	University College Cork
Italy	Bologna University Milano-Bicocca University Pescara University
Morocco	Cadi Ayad University, Marrakech, Faculty of Sciences Semlalia and Faculty of Sciences and Technics Gueliz Hassan II Mohammedia-Casablanca University, Faculty of Sciences Ben Msik Ibn Battuta Center, Marrakech Ibn Tofail University, Kenitera, Faculty of Sciences International University of Rabat Mohammed V - Agdal University, Rabat, Faculty of Sciences ONHYM
South Africa	Johannesburg University
Switzerland	Fribourg University Geneva University
The Netherlands	VU University Amsterdam TU Delft

Conveners of the Workshop (Rabat, October 24-25)

Dr. Amane FETTHALLAH	International University of Rabat, Head of the department of continuing education
Prof. Naima HAMOUMI	Mohammed V - Agdal University, Rabat, Chair GBCP-Morocco Consortium (IOC-UNESCO Geosphere-Biosphere Coupling Processes Programme).
hon. Prof. Jean-Pierre HENRIET	Ghent University, Belgium, Coordinator Cocarde – ICA
Dr. Idriss HILALI	International University of Rabat, Head of the department of innovation and renewable energy
Dr. Haddou JABOUR	ONHYM, Rabat
Dr. Andres RÜGGEBERG	Cocarde-ICA support officer (workshop scientific and financial management)

Objectives of the Workshop

Some 10 years after the first reporting of Recent carbonate mounds off Morocco, the 2011 Cocarde workshop in Rabat offers an opportunity to assess achievements of past oceanographic cruises and to exchange views about prospective actions in the future.

In coherence with Cocarde's capacity building and its vision on a holistic approach of carbonate mounds through geological time as a key to fundamental and applied insights and breakthroughs, the workshop is introduced by a full-day, open-access tutorial event, conceived as a voyage through time, space and Geosphere-Biosphere coupling processes in Recent and Ancient carbonate factories in Morocco.

The second day will be available for targeted strategic meetings, to discuss possibly innovative approaches in carbonate mound research in Morocco on Recent and Ancient mounds - offshore and onshore - and to review opportunities of international collaboration.

Organizers of the Field Seminar (High Atlas and Tafilalt, October 26-30)

Prof. Roberto BARBIERI	Bologna University, Italy
Prof. Driss CHAFIKI	Cadi Ayad University, Marrakech
Dr. Barbara CAVALAZZI	University of Johannesburg, South Africa
Prof. Naima HAMOUMI	Mohammed V - Agdal University, Rabat
Prof. Gian Gabriele ORI	Annunzio University, Pescara, and Ibn Battuta Center, Marrakech
Prof. Kamal TAJ-EDDINE	Cadi Ayad University, Marrakech

Objectives of the field seminar

A task group of Moroccan and European scientists, with a mix of senior scientists and PhD and postdoctoral researchers, will visit a number of field outcrops of carbonate mounds and carbonate factories from Ordovician to Jurassic ages in the Central High Atlas and eastern Anti-Atlas. An objective is the assessment of the documentation – in a collaborative effort – of a potential “Moroccan mound reference route” for capacity building and international outreach purposes.

Programme of Workshop – Monday, 24.10.2011

Mohammed V - Agdal University,
Faculté des Sciences, Avenue Ibn Batouta Agdal, Rabat

Time

<i>Chair: Naima Hamoumi and Amane Fethallah</i>		
9:00	Opening Session	Prof. W. Benjelloun, President of Mohammed V - Agdal University, Rabat – <i>Welcome</i>
		Dr. Alexei Suzyumov, IOC-UNESCO – <i>Welcome</i>
9:15		Jean-Pierre Henriet <i>Recent and Ancient Carbonate Mounds in Morocco: objectives and structure of the workshop</i>
<i>Chair: Touria Hsaïda and Alexei Suzyumov</i>		
9:30	A voyage through time	Naima Hamoumi <i>The Ordovician system of Morocco: sedimentation controls and paleogeography</i>
9:50		Roberto Barbieri <i>Silurian seep carbonates of the Moroccan Meseta: paleobiological issues and problems of interpretation</i>
10:10		Fulvio Franchi <i>Overview of the geology of the Devonian Kess-Kess mounds of the Anti-Atlas, Morocco</i>
10:30	COFFEE BREAK	
<i>Chair: Silvia Spezzaferri and Rachid Essamoud</i>		
11:00	A voyage through time	Elias Samankassou <i>Late Palaeozoic carbonate mounds: Architecture and controlling factors</i>
11:20		John J.G. Reijmer <i>Jurassic carbonate platforms in Morocco</i>
11:40		Joseph Canérot <i>Cretaceous mudmounds of the Pyrénées</i>
12:00		Dierk Hebbeln <i>Recent Mounds on the Moroccan margin: distribution, forcing from glacial/interglacial to actual times</i>
12:20		General discussion
12:35	LUNCH	
<i>Chair: Bodil Lauridsen and Kamal Taj Eddine</i>		
14:00	Zooming in on processes and methods	Silvia Spezzaferri <i>Foraminifera as significant components of Recent and sub-recent carbonate mounds</i>
14:20		Anneleen Foubert <i>Paleo-environmental fingerprint and diagenetic overprint in the Plio-Pleistocene carbonate mound record</i>
14:40		Philippe Léonide <i>Shallow burial carbonate-silica diagenesis in a Middle Jurassic stromatolite carbonate mud-mound, SE France</i>
15:00		Andres Rüggeberg <i>Proxy studies: how to proceed from Recent to Past</i>
15:20		General discussion
15:35	COFFEE BREAK	
<i>Chair: Anneleen Foubert and Haddou Jabour</i>		
16:00	Zooming out - scientific drilling, industry perspective and planetary outlook	Tim Freudenthal <i>Coring and drilling at sea and on land</i>
16:20		Patrice Imbert <i>Carbonate mounds vs. seep carbonates: processes and petroleum implications</i>
16:40		Philippe Lapointe <i>Hydrothermal karst process-like modeling of Palaeozoic complex mounds</i>
17:00		Gian Gabriele Ori <i>Mud volcanoes in the geologic record of Mars - the role of methane and carbon dioxide in geological processes</i>
17:20		General discussion
	Poster	Driss Chafiki <i>Palaeoenvironment and geodynamic setting of the Jurassic carbonate buildups on the Midelt Errachidia section (Central High Atlas, Morocco)</i>

Programme of Workshop – Tuesday, 25.10.2011

Time	ONHYM
9:00	<p style="text-align: center;">Round Table @ ONHYM Salle DG Campus, ONHYM, 3A Avenue Al Fadila, Yaakoub Al Mansour, Rabat</p> <p style="text-align: center;">Collaborative Scientific Drilling</p>
10:30	

International University of Rabat, Rocade Rabat Salé

Chair: Driss Chafiki and Patrice Imbert

14:00	Naima Hamoumi	<i>Geological overview of the High Atlas (Kamal Taj-Eddine) and eastern Anti-Atlas</i>
14:20	Barbara Cavalazzi	<i>The Hollard Mound: a very special Devonian conical mound of the Anti-Atlas, Morocco</i>
14:40	Flash presentations (3 slides / 5 min.) of the COCARDE Grantees:	
	Boris Dorschel	<i>Internal tides and cold-water coral mounds</i>
	Awatif Habid	<i>Palynological studies (dinoflagellate cysts) in the Essaouira Basin</i>
	Fulvio Franchi	<i>The Kess-Kess conical mounds and their potential as terrestrial analogues of Martian buildups</i>
	Abdelhafid El Ghini	<i>Carbonates dating by U/Th method</i>
	Helen Hamaekers	<i>In vitro bio-reactor experiments to understand early diagenesis in cold-water carbonate mounds</i>
	Rachid Lakbouchi	<i>Stages of the Triassic sedimentation basin "Benslimane, Berrechid, El Gara - BenAhmed" in the Western Meseta</i>
	Bodil Lauridsen	<i>Danian cool-water coral mounds from Faxe, Denmark – Reconstruction of the ecosystem</i>
	Keltoum Abazine	<i>Monitoring the environmental radiation</i>
	El Houssaine El Kabous	<i>The Ordovician of the SW Anti-Atlas: petrology, facies and sedimentary environments, sequence stratigraphy</i>
	Claudio Stalder	<i>Foraminifera associated to cold-water coral ecosystems</i>
	Mohamed El Amine Hazim	<i>Stratigraphy and sedimentary environment of carbonate mounds in the Gulf of Cadiz</i>
	Agostina Vertino	<i>Modern and past cold-water coral mounds from the Mediterranean: a close look at the carbonate biofacies</i>

15:30 COFFEE BREAK

16:00	<p style="text-align: center;">Round Table @ UIR</p> <p style="text-align: center;">Collaborative Ocean Science and Reservoir Research</p>
17:30	

Programme of the Field Seminar

Wednesday 26 October: Rabat – Errachidia, Liassic sponge mounds

Overview of the geology of the High Atlas. Jurassic carbonate mound sites along the transect Midelt -Errachidia: Liassic sponge mound Nzala (Stop 1), Foug Tillich (Stop 2) and Tizi n'Firest (Stop 4) sections: stratigraphic, sedimentological and geodynamic context (Driss Chafiki). Bajocian buildups Assemeur n'ait Fergane (Stop 3), Tunnel de la Legion (Stop 5) sections (Abdellah Ait Addi). Call of the day.

Thursday 27 October: Errachidia – Erfoud, Ordovician stratigraphy and Devonian Kess Kess mounds

Ordovician bryozoan biostrome near Erfoud (Naima Hamoumi). Devonian Kess Kess mounds and Hollard Mound in the Hamar Laghdad, Tafilalt platform, hydrothermal activity (Roberto Barbieri, Kamal Taj-Eddine, Barbara Cavalazzi and Fulvio Franchi). Cretaceous red beds (dinosaurs site) (Gian Gabriele Ori and Kamal Taj-Eddine). Call of the day.

Friday 28 October: Maider Basin, Guelb el Maharah Kess Kess and Aferdou el Makrib reef

Maider Basin and underway stratigraphic sites (Naima Hamoumi and Kamal Taj-Eddine). Guelb el Maharah Kess Kess (Roberto Barbieri), Aferdou el Makrib Devonian reef (Kamal Taj-Eddine). Erg Chebbi at dusk. Call of the day.

Saturday 29 October: Ordovician Alnif bryozoan build-ups, Ibn Battuta Mars missions test site

Alnif Upper Ordovician bryozoans mounds in a ramp setting, controlled by glacio-eustatic variations and detritic fluxes (Naima Hamoumi). Ibn Battuta site for testing human operations on Mars (ESA, NASA, Geobiology programmes, ExoMars mission 2016) (Gian Gabriele Ori). Rissani. Call of the day.

Sunday 30 October: Erfoud – Rabat, M'irt chemosynthetic deposits

Return to Rabat and underway visit of the oldest chemosynthetic deposits on Earth – the M'irt chemosynthetic body (Roberto Barbieri and Gian Gabriele Ori) and Silurian stratigraphy and paleogeography of Central Morocco (Naima Hamoumi)

Participants list

Workshop contributors

Keltoum Abazine
Benbouziane Abdelmjid
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Roberto Barbieri
Waiil Benjelloun
Kahlid Bouziane
Joseph Canérot
Barbara Cavalazzi
Driss Chafiki
Ida Dell'Arciprete
Boris Dorschel
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Claudio Stalder
Alexei Suzyumov
Kamal Taj-Eddine

Hssaida Touria
Agostina Vertino
+ Licence and Master students of the universities:

- Hassan II Mohammedia–Casablanca
- Ibn Tofail Kenitera
- Mohammed V–Agdal Rabat

Field Seminar task group

Abdellah Ait Addi
Roberto Barbieri
Joseph Canérot
Barbara Cavalazzi
Driss Chafiki
Ida Dell'Arciprete
Boris Dorschel
Abdelhafid Elghini
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Gian-Gabriele Ori
John Reijmer
Andres Rüggeberg
Elias Samankassou
Claudio Stalder
Kamal Taj-Eddine
Agostina Vertino
+ 6 drivers 4WD

Travel and accomodation

Air travel via Casablanca.

Direct rail link between Casablanca airport and Rabat Agdal station.

Recommended hotel: Hôtel Ibis Moussafir, place de la Gare de l'Agdal (next Rabat Agdal station):

Single room (BB): 653 DH – *approx.* € 57,-

Double room (BB): 725 DH – *approx.* € 63,- (1 DH = 0.08725 EUR, July 2011)

Field seminar logistics

All participants should care for their own insurance. The field party will leave early in the morning from Rabat October 26 and will be back late in the evening of October 30. Therefore an extra night will have to be booked in Rabat (return flights October 31st). Hotel accommodation is booked in Erfoud. Lunch bags will be provided and consumed in the field. All transport, both on road and off road, will happen with 4WD vehicles, hence personal luggage should be minimal (soft bags). Participants should be prepared to long transfers on paved roads and to some rough off-road driving. Some walks will be needed to visit outcrops, hence good hiking boots are necessary. Hats, sunglasses and skin protection are compulsory. Heavy showers may occur.

Contacts

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