



MIGRATE MC/WG Meeting 2017

18th -19th Sep. 2017 (Mon-Tue)

MIGRATE Stakeholder workshop 20th Sep. 2017 (Wed)



Naval Academy "Nikola Vaptsarov"
Varna 9026, Bulgaria
73 Vasil Drumev str.

<http://www.naval-acad.bg/en/about-us/location>



Naval Academy

LOS Local organizer support MC/WG:
Atanas Vasilev
GSM: (359) 898 566 411
gasberg@mail.bg

Organizers: IO-BAS, NA, BEMF



Varna



Varna Cathedral

Varna is a port and seaside resort on the Black Sea. It's famous for the "Gold of Varna" 7,000-year-old Thracian jewelry.



Archaeological Museum

The Stone forest "Pobiti Kamani" is the only desert in Bulgaria, probably a Lower Eocene bubbling reef (anaerobic oxidation of methane)



Stone forest

WELCOME TO VARNA

Find ALL about Varna in:
<http://visit.varna.bg/en/index.html>

MIGRATE Meeting & Stakeholder Workshop will take place in the Simulation Center (SC) building:



MC/WG Meeting

September 18th (SC Hall 11)

- 09:30 Welcome and meeting tasks (Atanas Vasilev, Klaus Wallmann)
- 09:45 Presentation on new gas hydrate projects in France (Livio Ruffine)
- 10:30 Coffee break
- 11:00 Presentation on gas hydrate research in Morocco (Nadia Mhammdi, Ayoub Filali Zegzouti)
- 11:30 Presentation and discussion of the geological systems in the Black Sea and the upcoming cruise with MeBo200 (Matthias Haeckel, Atanas Vasilev)
- 13:00 Lunch
- 14:00 Presentation and discussion on environmental monitoring strategies (Peer Fietzek)
- 14:45 Presentation on MIGRATE's ETN/ITN plans and discussion of this new initiative (Judith Schicks)
- 16:00 Coffee break
- 16:30 Parallel meetings of WG1-WG3
 - WG1: SC Hall 11
 - WG2: SC Hall 12
 - WG3: SC Hall NATO
- 20:00 Dinner (restaurant information - Sep. 9th 2017)

September 19th

- 09:30 Parallel meetings of WG1-WG3 (same halls)
- 13:00 Lunch
- 14:00 Plenum Meeting (report of WG meetings, discussion and decision on next steps/priorities)
- SC Hall 11
- 15:30 End of Annual Meeting
- 15:30 Coffee break
- 16:00 MC Meeting

Stakeholder Workshop

September 20th

MIGRATE will present its latest findings on gas hydrate occurrences in the Bulgarian sector of the Black Sea and the potential of gas hydrates as indigenous resource of natural gas for Europe. We will invite officials from the Bulgarian parliament and ministries, Bulgarian members of the European Parliament, as well as Bulgarian media and leading energy experts.

Agenda:

14:00 Nature, spatial distribution and energy potential of the marine gas hydrates and main targets, tasks and obtained results of the EU Action COST MIGRATE.

Prof. Klaus Wallmann, Helmholtz Centre of Ocean Research GEOMAR, Kiel, Germany; Chairman of the Managing Committee of COST Action MIGRATE.

14:30 Marine gas hydrates – a chance for energy independence and economic prosperity of Bulgaria.

Dr. Atanas Vasilev, Institute of Oceanology – Bulgarian Academy of Sciences.

14:45 Environmental challenges and methods of environmental monitoring during marine gas hydrate exploration and production.

Dr. Valentin Georgiev, Bulgarian Energy and Mining Forum.

15:00 Work program for drilling exploratory works in the discovered potential deposits of marine gas hydrates in the EEZ of Bulgaria and Romania of the planned November-December 2017 cruise of the German research vessel "Meteor".

Dr. Matthias Haeckel, Helmholtz Centre of Ocean Research GEOMAR, Kiel, Germany.

15:20 Discussion.

15:30 Reception.

16:30 End of the meeting

MIGRATE MC/WG Meeting 2017
18th -19th Sep. 2017 (Mon-Tue)
Stakeholder workshop
20th Sep. 2017 (Wed)

Marine Gas Hydrates: An Indigenous Resource of Natural Gas for Europe

Gas hydrates accumulating in continental margin sediments are a promising new energy resource. The global inventory of gas bound in these ice-like solids exceeds the amount of gas in conventional deposits by one order of magnitude. Numerous countries (e.g. Japan, South Korea, USA, China, Taiwan, India, New Zealand) are investing in hydrate R&D to explore their coasts and national waters, constrain the resource potential, and develop technologies for gas production from gas hydrates. Several production tests conducted both onshore and offshore have proven that gas can be produced from these unconventional natural gas reservoirs. Production tests in May 2017 offshore Japan, China and USA highlight the growing global interest for gas hydrates as a future natural gas resource.

In contrast to shale gas and other unconventional resources, gas hydrates can be exploited without effecting the environment. Clean natural gas from indigenous gas hydrate deposits should play an important role in the future European energy system. It could i) enhance the security of energy supply, ii) contribute to the reduction of CO₂ emissions by replacing coal, and iii) complement renewable energies and stabilize the power grid by proving electricity during low-wind and/or low-light periods. Ultimately, gas hydrates could replace Europe's conventional gas that will be depleted within the next decades and mitigate the growing dependence of Europe on natural gas imports.

(Klaus Wallmann, COST "MIGRATE" Chair)

MIGRATE
Stakeholder workshop
Invitation

We have the pleasure to invite you (or your representative) to the Stakeholder Workshop

"Marine Gas Hydrates: a new resource of natural gas in Europe and Real Alternative for Energy independence of Bulgaria"

20th September 2017 14:00

The event will be held in the Naval Academy "Nikola Vaptsarov" (www.naval-acad.bg) in Varna at 14:00. Organizers of the workshop are the Management Committee of the European Action COST MIGRATE (<https://www.migrate-cost.eu/home>) focused on the energy potential of the gas hydrates in the European seas, the Institute of Oceanology – Bulgarian Academy of Sciences, the Bulgarian Energy and Mining Forum and the Naval Academy "Nikola Vaptsarov".

If you are interested in attending the workshop, please confirm your attendance (or attendance of your representative) until **5th of September 2017** at the latest. In case you wish to claim for reimbursement of your travel and/or accommodation expenses, please send us a request via e-mail until **24th July 2017** as we will then have to send you an official e-COST invitation.

Please provide your confirmation (and request) to the following addresses:

Astrid Ulbrich: aulbrich@geomar.de
 Atanas Vasilev: gasberg@mail.bg and

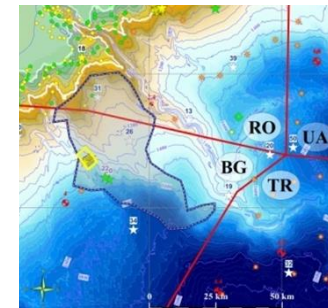
Organizing Committee of the COST MIGRATE Annual Meeting and Stakeholder Workshop



Bulgarian gas hydrates

"A raw extrapolation for the BSR area 60x20 km shows a total volume of methane trapped in GH of 3,400 bcm and 130 bcm (STP) in the free gas zone.

These reserves are ~50 times greater than for Domino – the biggest conventional gas field in the Black Sea (Romanian EEZ); ~15% of the North Dome (Qatar) – the world biggest (25,466 bcm); ~9% of the Black Sea GHDs." – *Vasilev, 2016*



MSM34, SUGAR project

A roadmap for Europe

Europe should set out to develop its gas hydrate deposits as an indigenous resource of natural gas and support maritime industry in providing gas hydrate technologies for the global market. A roadmap for this endeavour should include the following key elements:

Exploration and resource assessment

- evaluate existing seismic and geological data
- improve exploration technologies and strategies
- conduct geophysical surveys, drilling, and sampling in selected key areas
- apply site-specific and large scale basin modeling

Environmental risk assessment and monitoring

- assess environmental risks associated with gas production from gas hydrate deposits
- improve environmental monitoring techniques and strategies

Production technologies and field test

- develop low-cost, safe, and environmentally sound technologies and strategies for gas production from marine gas hydrate deposits
- perform a long-term production test in European waters

BULGARIA

CURRENCY: BGN - Bulgarian "Lev"(lion).

1 BGN ≅ 1/2 € (1BGN = 0.51 €; 1 € = 1.96 BGN)

POWER: The power sockets are of type F - Schuko.

The standard is 230 V 50 Hz.



AIRPORTS

VARNA airport is really close to the town (15 min). Next close airport is BOURGAS (2 hours; 110 km; bus to Varna every hour). PLOVDIV is 375 km from Varna (4 hours; 2 buses daily). SOFIA is 450 km from Varna (7 hours; bus every 2nd hour; 2 night trains). And there are 3+ flights per day Sofia-Varna.

Ordered by international flights number the Bulgarian airports are: Sofia, Bourgas, Varna, Plovdiv.

VARNA

HOW TO GET TO NAVAL ACADEMY FROM:

- Airport Varna – Bus № 409
- Railway station Varna – Bus № 9, № 51, №109
- Bus station Varna – Bus № 148

Varna buses traffic is visible online (centered to a bus stop near Naval Academy):

<https://www.varnatraffic.com/Station/Index/85>

HOTELS

In a close distance to Naval Academy is the 2nd best hotel in Varna - the 4★ "Dimyat Swiss-Belhotel" ~70 €/night. The 1st best is the 5★ "Graffit Gallery" (~80 €; in 15 min walking distance). Half hour from the Naval Academy is the 2★ "Odesos" (~30 €). Between Graffit and Odesos is the highest hotel in Varna 4★ "Black Sea". The last 2 hotels are close to the Central beach, the central entry of the Marine Garden, the Festival Complex and many restaurants.