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## Visit of Prof. Boyko Ranguelov to Maldives National University

## (in the frame of CABARET Project cooperation and the management of WP7)

Short Term Scientific Missions (STSM)

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After the Conference of the CABARET Project and the 4<sup>th</sup> Steering committee meeting in Yangon (24-29<sup>th</sup> September, 2018), Prof. B. Ranguelov (MGU-Bulgaria), visited Maldivian National University (MNU) from 30<sup>th</sup> September to 5<sup>th</sup> October, 2018. The visit was in the frame of the international cooperation of the CABARET Project and the co-chairmanship of the Working Package (WP7) – Educational Platform and MOOC's of the CABARET Project.

During the visit a lot of activities have been performed:

- Meeting with the team of MNU participating in the CABARET Erasmus+ Project and discussions about the educational platform and the MOOC's content of WP7.
- Visit to the Maldives Meteorological Service (The Multihazards Early Warning System MHEWS located and functioning there) and shearing experience (book "Multihazards early warning systems Bulgarian expertise") donated to the team of MMS.
- Meeting with the Dean of the FEST (MNU) and shearing experience on natural hazards assessment
- Visit to the Male (capital with a monument of the victims of tsunami of 2004) and the island Viligilli.
- Meeting with the vice-chancellor of the MNU and shearing experience on Natural Hazards (book "Natural hazards nonlinearities and assessment" donated to the MNU)
- Public lecture "Maldives Mystery (an insight into geological formation of Maldives Archipelago) held in the Auditorium of MNU (visited by the deputy minister, vicechancellor, Dean of FEST, many specialists, teachers and student and more then 300 people), created large public interest and recorded by the local TV channels.
- Meeting and training with the staff of the Research Unit of MNU, etc.

The meetings and discussions were rather fruitful and some important conclusions have been extracted:

- Maldives islands are a unique formation of the double chain of coral atolls, an inside sea located between them, with a unique nature, location and specific problems.
- The sustainable development of the Republic of Maldives has many specifics, related to the position, coral composition of the islands and large concentration of people in Male.
- The country is rather isolated, which can create huge difficulties in case of a major disaster possibly affecting the Maldives. Large earthquakes, huge tsunamis, strong cyclones, etc., can create large destructions due to the low average elevation of the islands.
- In case of a major disaster, if the airports are damaged or destructed, the international help could be impossible due to the communication difficulties
- Sea transport, such as ferries or sea ambulance accessibility is possible but in larger interval of time and they can provide only service to the ports that are not affected by disaster.
- The natural protection walls in the sea are difficult to construct, due to the lack of stones, cement, etc.
- The natural protection by the mangrove forests is also limited, due to the specific soil conditions mangrove forests required to be planted.
- The problem with the wastes of the islands is also heavy and could create environmental crisis.

- The water supply is strongly dependent of the purification and desalinization factories, which in case of major disaster also could be damaged or destructed.

The Maldives are islands located in calm geodynamic environment, with lack of local earthquakes, active faults and other large natural disasters. Most of the hazards affecting Maldives are "imported" (tsunamis in the Indian Ocean, possible mega earthquakes, cyclones, ocean level oscillations – fast, due to the sea wind storms and slow, due to the climate change, etc.). Might be the only local potential disaster could be the coral reef collapse, but it needs really specific circumstances (mega earthquake, big blasts, etc.)

The cooperation between the MNU and MGU tends to be extended in the fields of environment protection, disaster's education and marine research. The MGU has well developed Department of Ecology, experience in the natural disasters and waste management as well as expertise in marine research, marine biology and fish industry.



With the Maldivian CABARET team



The multihazards early warning system office in the Maldives Meteorological Service (MMS)



The monument of the tsunami victims 2004



The meeting with the vice-chancellor of MNU and the Dean of FEST



The public lecture "The early origin of Maldives archipelago