HELMHOLTZ ASSOCIATION

ROBEX Alliance

ROBEX[1] Sensorworkshop

Date: Thursday April 27, 2017

Venue: Arcotel Kaiserswasser, Wagramer Str. 8, 1220 Wien

Full day – Time 09:00 – 17:00 (incl. lunch)

(The workshop is organized back-to back to the EGU General Assembly)

Credit: NASA-JPL

Workshop goals

- Cross fertilization of ongoing sensor developments and exploration in the field of deep sea and planetary sciences
- Presentation of innovative observational concepts focusing on new sensors and instruments
- Specific, cross-cutting themes like modularity, standardization in both mechanical and electronic design will be addressed
- Preparation of an executive summary report/note of the workshop results in a well-known journal like EOS (https://eos.org).

[1]ROBEX brings together space and deep sea research - http://www.robex-allianz.de/en/

Background

The workshop is organized as a thematically crosscutting event where space and ocean scientist come together to present state-of-the-art and future technologies, such as sensor systems and sample retrieving instruments as well as observation systems. The presentations shall provide a platform and stimulate discussions across the two disciplines.

Specific technological topics like modularization/standardization within the mechanical and electrical realisation that help making the measuring campaigns more cost efficient shall be discussed.

New contacts and cooperation opportunities shall evolve from the exchange of ideas.

The results of the workshop shall be compiled in a report that can be published in journals as EOS (https://eos.org)

Topic I

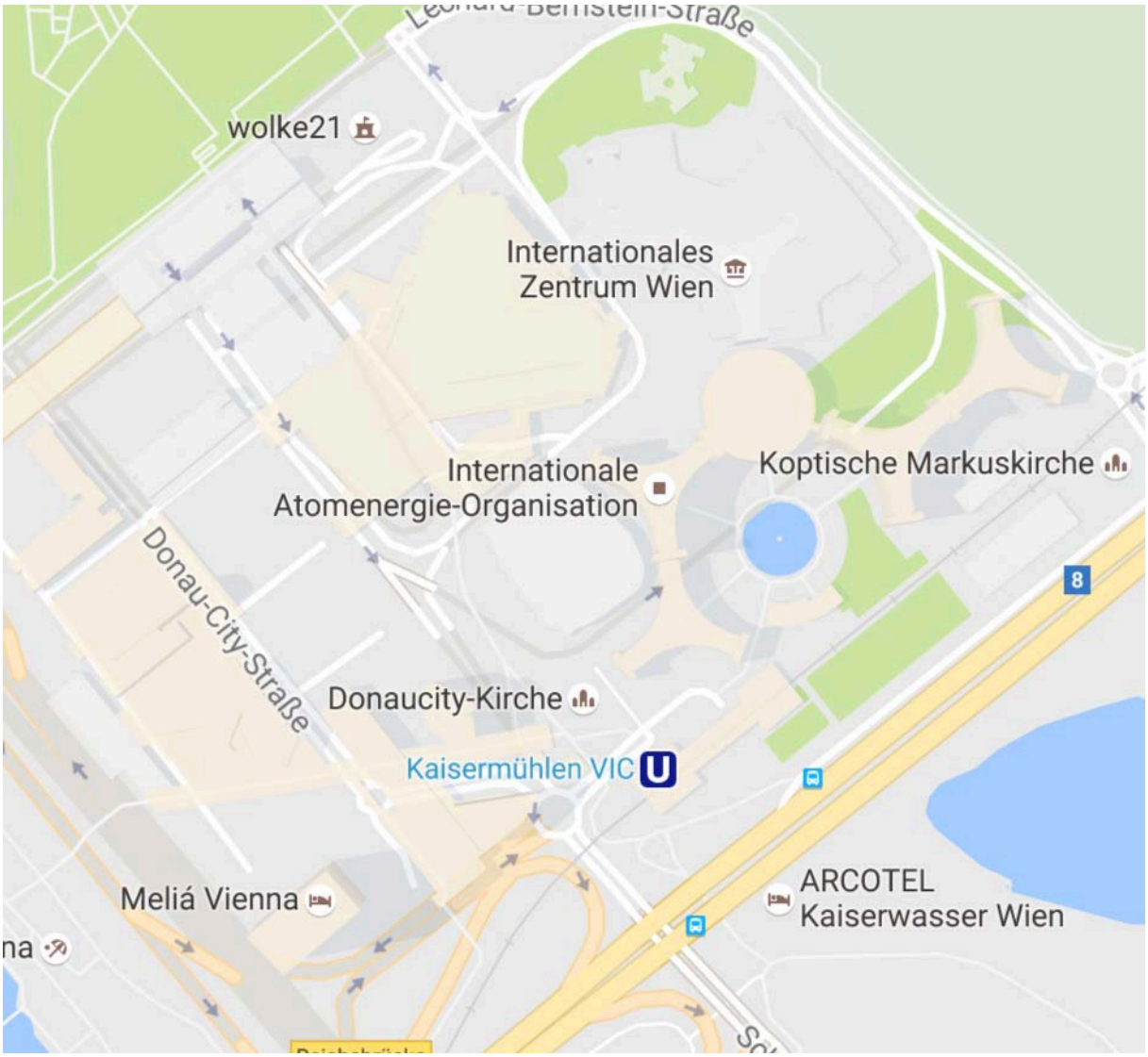
Innovative methods to support subsurface investigations to explore geophysical and biochemical processes: for instance autonomous/remotely operated drills

In both communities, space and deep sea sciences, the investigation of the structure of and the processes inside the solid earth including the topography is of paramount importance. Both communities can benefit from the exchange as the complete understanding of processes on earth has to be carried out in a broader context.

Topic II

Novel exploratory observation concepts for investigating unknown extreme environments: for instance Integrated Sensor Systems

In marine sciences and planetary research, a strong need exists towards developing the capability for in-situ investigations on Earth and other planetary bodies' life. Key objectives are to understand the physico-chemical, geological and biological boundary conditions for life in the deep ocean and other bodies in the solar system. This includes studies on the origin of life, e.g. at deep-sea hydrothermal vents, and to explore the nature of life in extreme environments of the ocean and other planets.
Habitability and the presence and ecological feedback mechanisms of organisms in any extreme habitat must be established by multiple supporting lines of evidence. A step-wise approach and a combination of a variety of new and emerging techniques are required and shall be discussed in this session.



Site map

Organisational Committee

Christoph Waldmann, MARUM
Frank Wenzhoefer, AWI
Stefan Sommer, GEOMAR
Martina Wilde, AWI
Anko Boerner DLR – OS
Lars Witte, DLR RY

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27.4.16	ROBEX Sensor Workshop	
9.00 – 9.20	**Plenary**	
9.00 – 9.10	Welcome and ROBEX Introduction	Martina Wilde, AWI
9.10 – 9.20	Workshop Goals and introduction	Christoph Waldmann, MARUM
9.20-11.00	**Topic 1** Innovative methods to support subsurface investigations to explore geophysical and biochemical processes	
	Presentations (15 min+5 min discussions each) • **About penetrators and penetration method** • ***In situ* measurements with microsensors in microbial mats and sediments of deep sea seeps** • **Miniaturized LIBS-Raman Spectrometer for in-situ Exploration** • **The Penetrating Mole of the InSight Mars Mission** • **Platforms for biogeochemical measurements**	Jurek Grygorczuk, Polish Academy of Sciences Dirk de Beer, MPI Anke Schröder, DLR Marco Scharringhausen, DLR Frank Wenzhöfer, AWI
11.00-11.30	**Coffee break**	
11.30-13.00	**Topic 2** Novel exploratory observation concepts for investigating unknown extreme environments	
	Presentations (15 min+5 min discussions each) • **Space exploration of icy moons with undersurface oceans** • **Monitoring of processes in the Arctic with autonomous robots** • **Novel coastal ecosystem observation capabilities with the EnMAP satellite system** • **Raman analyses of space exposed samples**	Athena Coustenis, Paris Observatory Sandra Tippenhauer, AWI Mathias Schneider, DLR Mickel Baque, DLR
13.00-13.50	**Lunch break**	

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13.50-15.30	**Topic 2** Novel exploratory observation concepts for investigating unknown extreme environments and overarching themes Presentations (15 min+5 min discussions each) • **Probing Marine Biogeochemistry Through in situ Mass Spectrometric Characterization of Dissolved Volatiles: Lessons from the Past and Future Directions** • **Time series observations of biogeochemical processes at the Koljoe Fjord observatory** • **Geophysical Monitoring Stations For Deployable Networks** • **Implementing the OGC standard Sensor Web Enablement** • **Best practices for ocean sensors**	Daniel Hoer, Harvard Anders Tengberg, UGOT Marco Scharringhausen, DLR Simon Jirka, 52 North Jay Pearlman, IEEE
15.30-16.00	**Coffee break**	
16.00 – 17.00	**Summary, discussion, and further actions**	