

Surfactants Meeting Report

The purpose of this meeting was to discuss current understanding of the role of naturally-occurring surfactants in air-sea gas exchange and how scientific understanding might be developed further. The meeting was supported by COST Action 735 and was held at the Royal Corinthian Yacht Club, Plymouth, UK. The participants were:

Bill Asher (USA); Tom Bell (UK); Joanna Dixon (UK); Blazenka Gasparovic (Croatia); Peter Liss (UK); Phil Nightingale (UK); Ingrid Obernosterer (France); Jacek Piskozub (Poland); Rob Upstill-Goddard (UK); Matt Salter (UK); Alexei Soloviev (USA); and David Woolf (UK). Unfortunately, due to last minute changes in circumstance, Christoph Garbe (Germany) and Stan Pogorzelski (Poland) were unable to attend.

The meeting involved a number of presentations from the meeting participants (see agenda below), covering the group's range in expertise regarding the physical, chemical and biological aspects of surfactants, including how they might be produced, their influence on the micro-layer and air-sea exchange. Each presentation was followed by an in-depth discussion on that topic. Particular topics of discussion were the current understanding of surfactants (i.e. techniques for sampling, sources, modification, composition, spatial and temporal variability, physico-chemical properties and their biological reactivity), how they are thought to affect gas exchange (both theoretical and lab/field studies) and how these effects may extrapolate to a global level where they can be seen using remote sensing. Following on from this, it was discussed how the research field could be further developed. Ideas focussed on the potential for technique standardisation, laboratory experiments using monocultures for the production of surfactants, and field experiments involving the release of soluble surfactants and measurements of air-sea gas exchange. Such field experiments could also be coupled with aircraft studies to further develop the potential links with global satellite measurements.

Toward the end of the meeting, it was identified that a useful product to the research community would be a review paper (now in preparation) discussing in detail the topics noted above.

COST 735 Meeting on The role of surfactants in air-sea gas transfer

Wed 18th March

- 09:00 Welcome, Introductions and Aims of Workshop Phil Nightingale
Peter Liss
- Session 1: Surfactants and gas transfer
- 10:00 Invited Speaker: How do surfactants influence gas transfer? Bill Asher
- 10:45 Discussion
- 11:15 Coffee
- 11:30 How important are surfactants in air-sea interaction? Jacek Piskozub
- 12:00 The influence of surfactants on air-sea gas exchange during DOGEE Matt Salter
- 12:30 Discussion
- 13:00 Lunch
- Session 2: How are surfactants cycled/produced?
- 14:00 Near-surface and microlayer biology Jo Dixon
- 14:30 Biogeochemistry and microbial ecology of the microlayer Ingrid Obernosterer
- 15:00 Discussion
- 15:30 Coffee
- Session 3: What are surfactants and how do we measure them?
- 16:00 Invited Speaker: Methods for the physico-chemical qualitative and quantitative characterization of sea-surface microlayer surfactants Blazenka Gasparovic
- 17:00 Discussion

Thurs 19th March

- Session 4. Field experiments & parameterisations
- 09:30 Lab and field experiments Rob Upstill-Goddard
- 10:00 Effects of surfactants on the sea surface roughness and implications for the parameterization of air-sea gas exchange Alex Soloviev
- 10:30 Discussion
- 11:00 Coffee
- 11:30 What can we do from space? David Woolf
- 12:00 Discussion
- 12:30 Lunch
- 13:30 Where next – discussion following initial talk Phil Nightingale
- 17:00 End of formal meeting