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CHARACTERIZATION OF ORGANIC MATTER IN MARINE AEROSOLS NEAR EUTROPHIC SEAWATER ECOSYSTEM (ROGOZNICA LAKE, CENTRAL DALMATIA) DURING WINTER SEASON

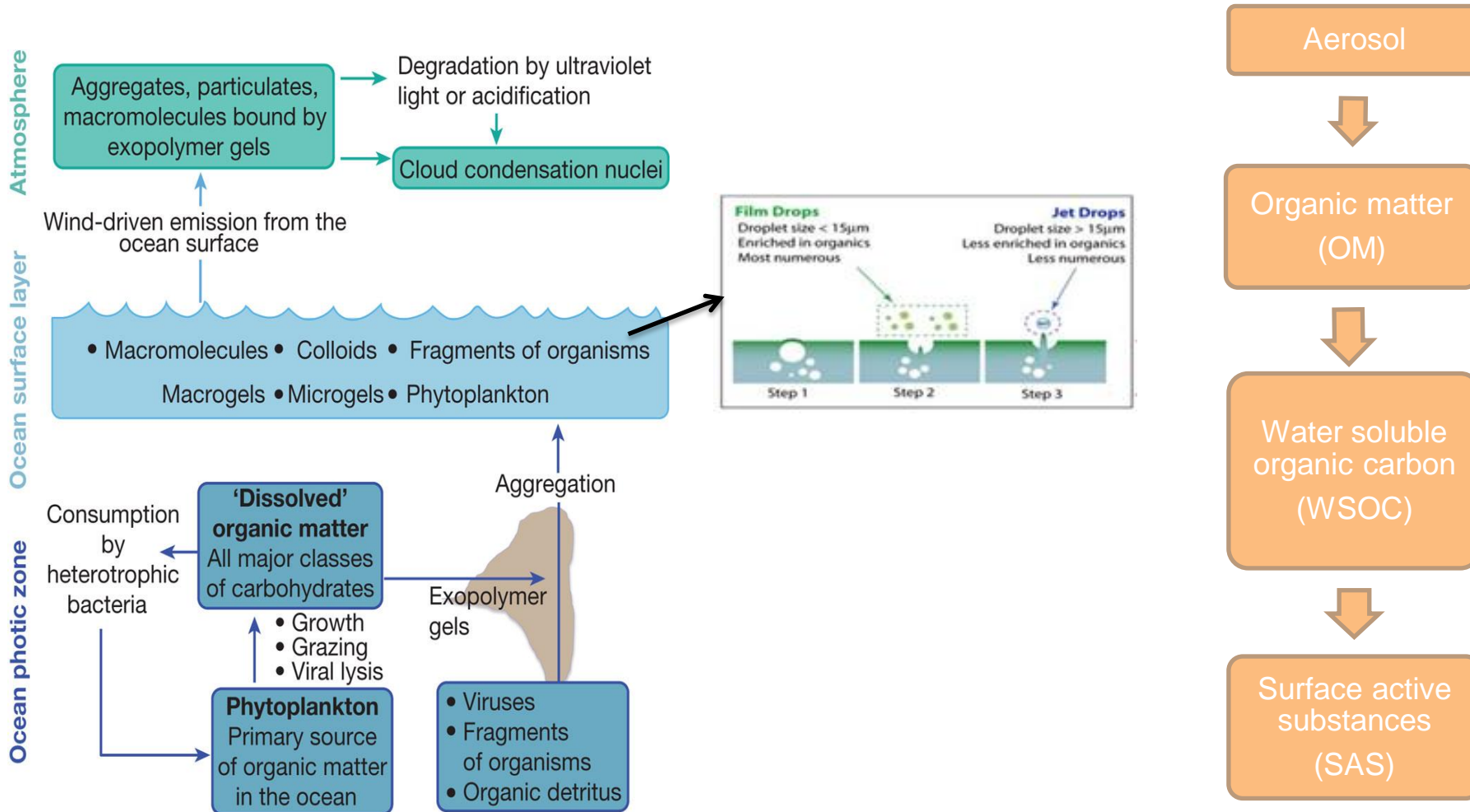
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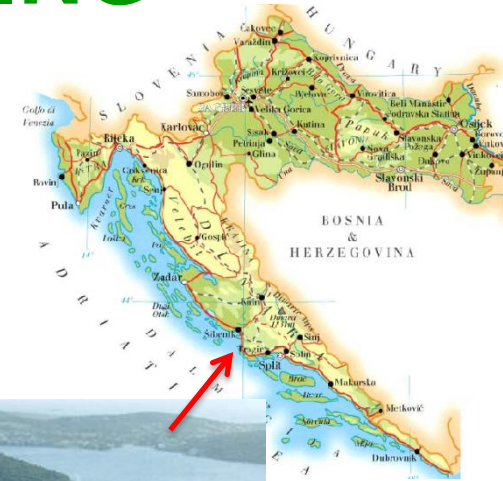


ORGANIC MATTER IN MARINE AEROSOLS



STUDY SITE AND SAMPLING

- Rogoznica Lake in central Dalmatia (43°32'N 15°58'E)
- Samples:
 - ☁ Marine aerosol
 - ▲ Sea surface microlayer (SML)
 - ▼ Underlying water (ULW)



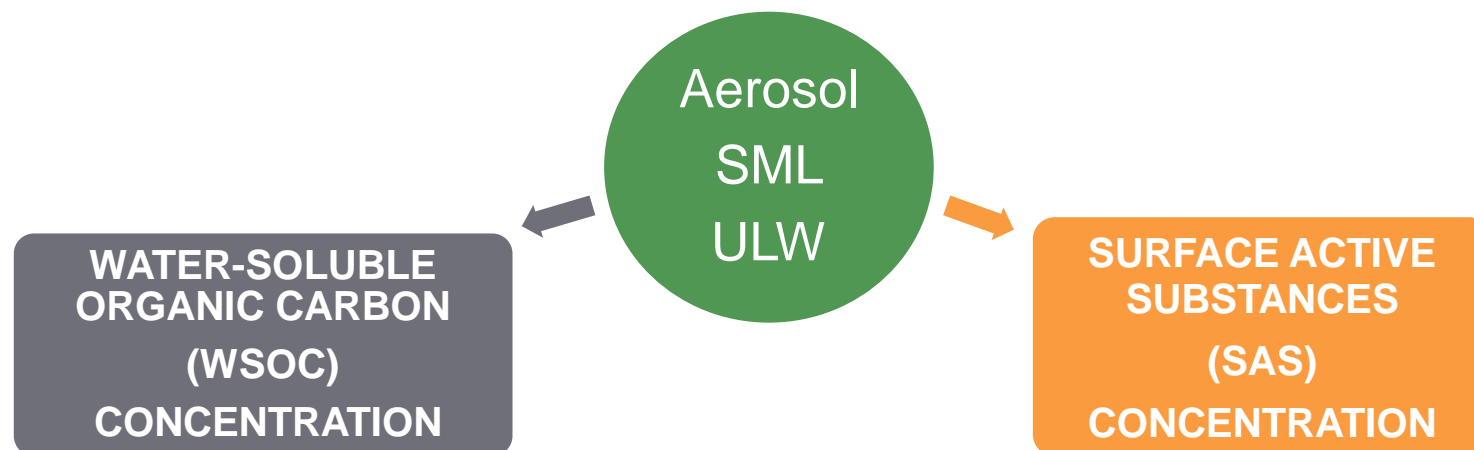
Position of the aerosol sampler

SML (Garrett stainless steel method) and ULW sampling site

☁ Marine aerosol	
Sampler	SEQ 47/50 Low volume (2.3 m ³ /h)
Period of sampling	24 h
Aerodynamic diameter of aerosol particles	2.5 μm
Filters	GF/F (47 mm)



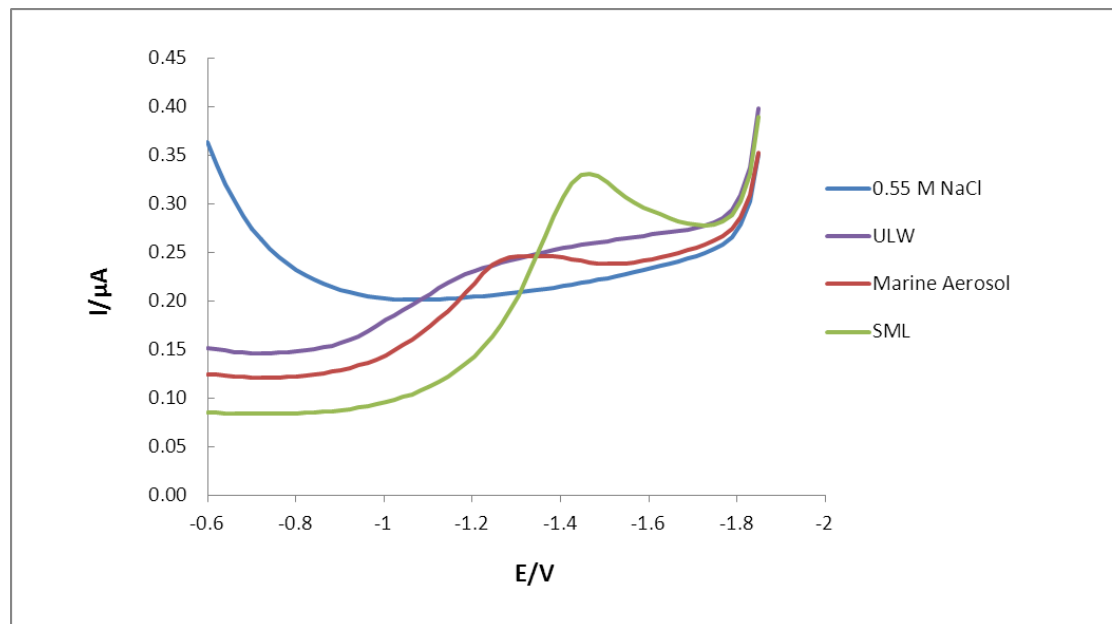
SAMPLE ANALYSIS



- Water-soluble aerosol fraction was extracted from the samples in high purity deionised water (MQ) for 24 h and filtered through 0.7 μm GF/F filters.
- WSOC was determined by high temperature catalytic oxidation (HTCO) technique on a TOC-VCPH analyser (Shimadzu, Japan) with a non-dispersive infrared detector for CO_2 .

- Characterization of SAS in the WSOC was performed with an electrochemical analyser $\mu\text{Autolab}$ (Metrohm, Netherland) (with a three-electrode system: hanging mercury electrode as a working electrode; Ag/AgCl as a reference and a graphite as a auxiliary electrode).
- Phase sensitive ac. voltammetry (out-of-phase) was used for quantification of SAS.
- Surfactant activity is expressed as the equivalent amount of the selected standard T-X-100 compound.

RESULTS AND DISCUSSION

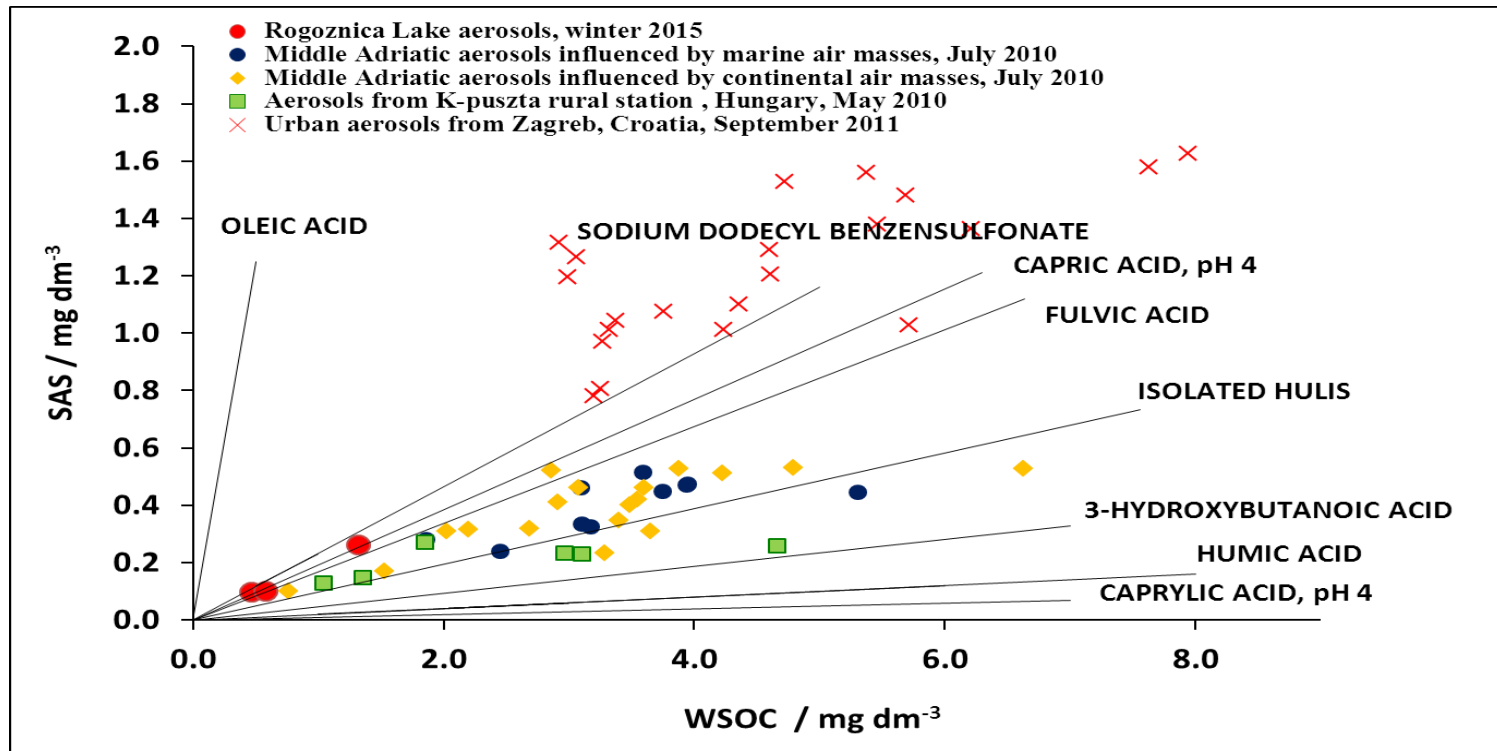


AC voltammetric curves of Aerosol, SML and ULW samples collected from the Rogoznica Lake in winter 2015.

Seawater samples	WSOC (mg dm ⁻³)	SAS (mg dm ⁻³)
▲ SML (1:1)	11.48	0.344
▼ ULW (1:1)	1.52	0.141

Marine Aerosol sample	WSOC (μg m ³)	SAS (mg dm ⁻³)
☁ Aerosol sample 20.02.2015.	4	0.262

RESULTS AND DISCUSSION



The correlation of SAS and WSOC for aerosol samples from different locations was compared with relevant model substances.

- The SAS/WSOC ratio for Rogoznica Lake water samples shows the dominant presence of a more hydrophilic material which can be attributed to humic substances and polysaccharide type of OM.

CONCLUSIONS

- Preliminary results show the presence of more hydrophilic material in WSOC fraction of marine aerosol samples in Rogoznica Lake in winter and previous research also pointed out to the more hydrophilic material present in summer months at the same location. This is in contrast to the strongly hydrophobic surfactant material present in urban aerosols in winter and autumn period.
- Preliminary results pointed out to the dominant presence of humic like material in aerosols from coastal region and minimal influence of anthropogenic urban air masses during investigated period at that region.

Future perspectives

- ➡ additional characterization of aerosol samples by chromatography techniques
- ➡ improving extraction of WSOC from aerosol samples

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