

1. Project Information

Proposal reference number¹	JS3_CALL_2_4042_LASE_NOPAH
Project Acronym (ID)²	LASE-NOPAH
Title of the project³	Levels and air-sea exchange of nitrated and oxygenated polycyclic aromatic hydrocarbons in the marginal sea of Europe
Host Research Infrastructure⁴	HCMR
Starting date - End date⁵	1 January 2022 – 31 December 2022
Name of Principal Investigator⁶ Home Laboratory Address	Gerhard Lammel RECETOX, Masaryk University Kamenice 5 /D29, 62500 Brno, Czech Republic
E-mail address	gerhard.lammel@recetox.muni.cz
Telephone	+420-54949-4106

2. Project objectives⁷ (250 words max.)

Determination of levels of nitrated and oxygenated polycyclic aromatic hydrocarbons in surface waters of the Mediterranean and in the atmosphere, and determination of the direction of diffusive air-sea exchange and related fluxes.

This research is part of a study on sources and atmospheric fate of NPAHs and OPAHs in the source region Europe and the background marine atmosphere.

¹ Reference number assigned to the proposal by the TA-Office.

² User-project identifier used in the proposal.

³ Title of the approved proposal. The length cannot exceed 255 characters

⁴ Name of the installation/infrastructure accessed with this project. If more than one installations/infrastructures are used by the same project, please list them in the box.

⁵ Specify starting and end date of the project (including eventual preparatory phase before the access).

⁶ Fill in with the full contact of the Principal Investigator (user group leader).

⁷ Write the short-term, medium and long-term objectives of the project. Use no more than 250 words.

3. Main achievements and difficulties encountered (250 words max.)⁸

Deployments of passive air and water samplers was done at 2 JERICO stations during 3 seasons, (in total 2x3x2 months) as planned. The sampling periods covered fall and winter 2021/22 and spring 2022. The samples were collected along with field blanks, and shipped within few days to the trace laboratory.

4. Dissemination of the results⁹

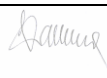
Results will be included in a project report to a national funding agency (Czech Science Foundation) and are planned to be published in the scientific literature together with other data sets from other marine or continental background sites. The data will be publicly available through the GENASIS environmental data repository (<https://www.genasis.cz/index-en.php>).

5. Technical and Scientific preliminary Outcomes (2 pages max.)¹⁰

Elevated levels of polycyclic aromatic compounds were confirmed in surface seawater and surface air above (0.3-0.6 and 0.2-0.4 ng/m³, respectively) in summer and fall at the moderately polluted marine site POSEIDON HCB and the remote marine background site POSEIDON E1-M3A, both in the Aegean Sea. At these off-shore sites, water pollution by the polycyclic aromatic compounds is understood to be dominated by atmospheric depositions, which are probably strongest during summer. A water pollution gradient between these two sites was found in fall (no direct comparison in summer), with contaminants concentrations typically a factor of 2 (but for some substances up to a factor of 10) higher at HCB. The directions of diffusive air-sea mass exchange of 18 nitrated and 13 oxygenated PAHs were determined. The results indicate that several 3-4 ring compounds have been approaching phase equilibrium, and several 2-3 ring compounds, namely the nitronaphthalenes, 5-nitroacenaphthene and 9-fluorenone, were net volatilisation during the measurement period i.e., were returned to the atmosphere from the surface seawater.

These results are preliminary. Seasonal variation can only be assessed once the results of chemical analysis of samples collected in winter and spring will be accomplished.

Brno, 27 January 2023



Location and date

Signature of principal investigator

⁸ Describe briefly the main achievements obtained and possible impacts, as well as possible difficulties encountered during the execution of the project. Use no more than 250 words.

⁹ Describe any plan you have to disseminate and publish the results resulting from work carried out under the Transnational Access activity in JERICO -S3: scientific articles, books - or part of them -, patents, as well as reports and communication to scientific conferences, meetings and workshops. Highlight peer-reviewed publications. **Note that any publications resulting from work carried out under the JERICO -S3 TA activity must acknowledge the support of the European Commission – H2020 Framework Programme, JERICO -S3 under grant agreement No. 871153.**

¹⁰ Describe in detail results and main findings of your experiment at the present stage.