Report for the year 2021 and future activities

SOLAS FINLAND

compiled by: Lauri Laakso / Finnish meteorological institute,
reporting for

- Finnish Meteorological Institute (FMI)
- Finnish Environment Institute (SYKE)
- University of Helsinki (UH)
- University of Turku (UT): nothing to report
- Åbo Akademi University (ÅA): nothing to report
- Geological Survey of Finland (GTK)
- Natural Resources Institute Finland (LUKE): nothing to report

This report has two parts:

- **Part 1:** reporting of activities in the period of January 2021 - Jan/Feb 2022
- **Part 2:** reporting on planned activities for 2022 and 2023.

The information provided will be used for reporting, fundraising, networking, strategic development and updating of the live web-based implementation plan. As much as possible, please indicate the specific SOLAS 2015-2025 Science Plan Themes addressed by each activity or specify an overlap between Themes or Cross-Cutting Themes.

1. Greenhouse gases and the oceans;
2. Air-sea interfaces and fluxes of mass and energy;
3. Atmospheric deposition and ocean biogeochemistry;
4. Interconnections between aerosols, clouds, and marine ecosystems;
5. Ocean biogeochemical control on atmospheric chemistry;
Integrated studies of high sensitivity systems;
Environmental impacts of geoengineering;
Science and society.

**IMPORTANT:** This report should reflect the efforts of the SOLAS community in the **entire country** you are representing (all universities, institutes, lab, units, groups, cities).
First things first…Please tell us what the IPO may do to help you in your current and future SOLAS activities.

In general, lobby for suitable themes to EU- and national funding programs.

PART 1 - Activities from January 2021 to Jan/Feb 2022

1. Scientific highlight

Describe one scientific highlight with a title, text (max. 300 words), a figure with legend and full references. Please focus on a result that would not have happened without SOLAS, and we are most interested in results of international collaborations. (If you wish to include more than one highlight, feel free to do so).

FMI

Figure 1: Remote marine air-quality measurements show significant climate relevant methane emissions (methane slip) from ships using liquefied natural gas as a fuel.


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2. Activities/main accomplishments in 2021 (e.g., projects; field campaigns; workshops and conferences; model and data intercomparisons; capacity building; international collaborations; contributions to int. assessments such as IPCC; collaborations with social sciences, humanities, medicine, economics and/or arts; interactions with policy makers, companies, and/or journalists and media).

**FMI**
- Completion of European Maritime Transport Environmental Report in cooperation with EMSA and EEA
- Joined the ICES WGSHIP group
- Participation in IMO MEPC, ISWG GHG meetings
- HELCOM reporting of Baltic Sea ship air emissions, discharges and underwater noise
- Traficom report of winter navigation impact on shipping GHG emissions in the Baltic Sea area.
- Presented the FMI work of underwater noise from shipping to TG NOISE

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3. List SOLAS-related publications published in 2021 (only PUBLISHED articles). If any, please also list weblinks to models, datasets, products, etc.
Publications related to the SOLAS topics, but without actual SOLAS acknowledged.

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[https://doi.org/10.3389/feart.2021.716416](https://doi.org/10.3389/feart.2021.716416) **THEME #1**

[https://doi.org/10.1016/j.ecss.2021.107369](https://doi.org/10.1016/j.ecss.2021.107369) **THEME #1**

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4. Did you engage any stakeholders/societal partners/external research users in order to co-produce knowledge in 2021? If yes, who? How did you engage?

**FMI**
- National management plan for the EU marine strategy (Merenhoidon TPO), expert group meeting participation
- SWAM, study to assess the quantities of exhaust gas cleaning system discharges in the OSPAR regions, report finalized and submitted to HASEC and EIHA (Apr 2022)
- ICES WGSHIP, regular meetings of the WGSHIP group
- Science support for Portuguese, British national research projects of ship emissions

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**GTK**
- Project funding by the Academy of Finland: GEOMEASURE - Foundations for green offshore energy production in Finland: from marine investigations to the numerical estimation of undrained shear strength of the seabed deposit layers under cycling loading. **THEME 5**
- Project funding by the Foundation for Research of Natural Resources in Finland: FeCoVERY - Recovery and sustainable use of Baltic Sea ferromanganese concretions as a resource of hi-tech metals. **THEME 5**
### PART 2 - Planned activities for 2022 and 2023

1. **Planned major national and international field studies and collaborative laboratory and modelling studies (incl. all information possible, dates, locations, teams, work, etc.).**

**FMI**
- Supporting EMSA through CAMS2-61 for ship emission reporting. Annual reporting of global and regional ship emissions to produce data for CAMS user groups, to be made available through ECMWF atmospheric data store.
- Annual HELCOM reporting of ship emissions to air, discharges to the sea and underwater noise emissions
- Scenario development for ship emissions, both Business As Usual and various policy scenarios to reduce air and water pollution from ships

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**GTK**
- Joonas Virtasalo will participate in the IODP Expedition 386 “Japan Trench Paleoseismology” in October-November 2022. **THEME 5**
- Joonas Virtasalo will participate in the cruise onboard r/v Electra of the Stockholm University in September 2022 to the southern Gulf of Finland. **THEME 5**

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2. **Events like conferences, workshops, meetings, summer schools, capacity building etc. (incl. all information possible).**

**FMI**
- *EGU2021; Fink, L., Matthias, V., Karl, M., Petri, R., Majamäki, E., Jalkanen, J.-P., Oppo, S., Kranenburg, R., The contribution of shipping to air pollution in the Mediterranean region*
– a model evaluation study, https://doi.org/10.5194/egusphere-egu21-8344; 2021; Vienna, Austria Online, co-author

- AGU2021; Soulie et al, Greenhouse Gases and Atmospheric Pollutants: a Global Emissions Dataset for the 2000-2021 Period; 2021; New Orleans, USA; Online, co-author

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<td>Hosted the IODP Magellan Plus workshop &quot;Mechanisms of rifting of large continental blocks – a case study at the Baltic Sea&quot;, 1-3 December 2021, Espoo, Finland. <strong>THEME 5</strong></td>
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3. **Funded national and international projects/activities underway.**

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| Academy of Finland Project: FERMAID - Ferromanganese Concretion-Archives of Ecosystem Variability, Climate Forcing and Anthropogenic Impact on the Baltic Sea. **THEME 5** |
| Academy of Finland Project: GEOMEASURE - Foundations for green offshore energy production in Finland: from marine investigations to the numerical estimation of undrained shear strength of the seabed deposit layers under cycling loading. **THEME 5** |
| Foundation for Research of Natural Resources in Finland Project: FeCoVERY - Recovery and sustainable use of Baltic Sea ferromanganese concretions as a resource of hi-tech metals. **THEME 5** |

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4. Plans / ideas for future national or international projects, programmes, proposals, etc. (please indicate the funding agencies and potential submission dates).

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<td>• GREEN RIVER, Horizon EU (in evaluation)</td>
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<td>• SUSTAINABLES, Swedish MISTRA call (in evaluation)</td>
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<td>• SHIPMONITOR, BSR Interreg (in evaluation)</td>
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5. Engagements with other international projects, organisations, programmes, etc.

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<td>• Cooperation with Portuguese EMISSHIP project</td>
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Comments
Most activities listed here have happened without active connection to SOLAS

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