HANAMI

# HPC ALLIANCE FOR APPLICATIONS AND SUPERCOMPUTING INNOVATION: THE EUROPE – JAPAN COLLABORATION

Funded by the European Union

EuroHPC Joint Undertaking

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# D3.2

# High-level events and travel grants- Second-year

| | |
|---|---|
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| | |
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## Dissemination Level

| | |
|---|---|
| x | PU: Public |
| | SEN: Sensitive – limited under the conditions of the Grant Agreement |
| | EU-RES. Classified Information: RESTREINT UE (Commission Decision 2005/444/EC) |
| | EU-CON. Classified Information: CONFIDENTIEL UE (Commission Decision 2005/444/EC) |
| | EU-SEC. Classified Information: SECRET UE (Commission Decision 2005/444/EC) |

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# Version History

| Revision | Date | Editors | Comments |
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| 0.1 | 01.01.2026 | Fabio Affinito | First draft |
| 0.2 | 20.02.2026 | France Boillod-Cerneux, Christophe Calvin | Complete with HLS2 figures |
| 1.0 | 25.02.2026 | Paula Rodrigues | Include the communication campaign for HLS2 and S2 |
| 1.1 | 26.02.2026 | France Boillod-Cerneux | Modifying the format of the document |
| 1.2 | 24.03.2026 | France Boillod-Cerneux | Finalizing the document |

# Glossary of Terms

| Item | Description |
|---|---|
| AI | Artificial Intelligence |
| HLS | High-Level Symposium |
| HPC | High-Performance Computing |
| TVG | Travelling Grants |
| WP3 | Work Package 3 |

# Executive Summary

The second HANAMI High-Level Symposium was a three-day event held in Chamonix from 9 to 11 December 2025, dedicated to advancing High-Performance Computing to address global challenges within the framework of EU–Japan collaboration.
The symposium brought together keynote presentations and interactive discussions, offering a forum to strengthen synergies and help shape the future of science and technology through EU–Japan cooperation in Climate Modelling, Biomedical Applications, and Materials Science.
The event convened both early-career and senior researchers from European and Japanese institutions. This document also reports on the travelling grants use within the second year of HANAMI.

# Table of Contents

# 1. Introduction

Within the HANAMI project, the Work Package 3 (WP3), *"Scientific and technological networking and community building"*, implements a set of actions aimed at fostering scientific and technological networking among high-level European and Japanese researchers.

The main objectives of WP3 are to reinforce and enhance the visibility of existing collaborations and to support the establishment of new collaborations with high added value. Among the key activities of WP3 is the organisation of three annual high-level symposia.

This report covers the second high-level symposium, which was held in Chamonix from 9 to 11 December 2025. The organisation of the second high-level symposium was led by the French Alternative Energies and Atomic Energy Commission (CEA), in close coordination with the WP2 and WP7 coordinators, INESC TEC and CSC, respectively. Work Packages 4, 5, and 6 also contributed to the organisation by defining the programmes of the parallel scientific tracks and by identifying the keynote speakers.

In addition to the description of the symposium, the subsequent section provides an overview of the allocation of the travel grant budget across partners and work packages, as well as its use during the second phase of the project.

# 2. Travel grants

To foster and support scientific collaboration between Japanese and European researchers, the HANAMI consortium has allocated dedicated resources to travel grants for the full three-year duration of the project. A total budget of EUR 200,000 was allocated for this purpose.
While this budget was initially managed by CEA, it is intended to support mobility activities across all HANAMI partners. The travel grants are designed to facilitate research visits and secondments of European scientists and engineers to Japan, with particular emphasis on longer-term stays that enable sustained joint research activities.
In this context, WP3 organised an internal call for travel grants within the HANAMI consortium, as detailed in Deliverable D3.1. The objective of the call is to allocate the available travel grant budget in a transparent and structured manner. While the full procedures and eligibility criteria are described in D3.1, the following section provides an overview of the overall distribution of the travel grant budget per work package, as agreed in mid-2024.

| WP3 | WP4 | WP5 | WP6 | WP7 |
|---|---|---|---|---|
| 12k€ | 70k€ | 27k€ | 45k€ | 42k€ |

Following the allocation of the travel grant budget, the partners are authorised to implement the approved mobility activities. Eligible travel costs are reimbursed by CEA through amendments to the Grant Agreement at Months 26 (M26) and 36 (M36). Reimbursement is strictly limited to travel activities that have been effectively carried out.

All scientists and engineers supported under the HANAMI project are required to submit a brief report describing their research stay in Japan. These individual reports, together with a comprehensive list of the supported mobility activities, will be provided in a separate deliverable. The reports are included in the annex to the present document.

## Travelling grants spent in 2024

We present in this paragraph travels executed between march 2024 and December 2024. Due to the starting phase of the project, only few travels took place in 2024.

- Kai Keller from BSC made a travel in 2024 for an amount of 6 500 euros. This travel took place within the work package 4 framework (climate).
- Laure Caruso, Edouard Audit and France Boillod-Cerneux from CEA made several travels in 2024 for a total amount of 7 621 euros. This travel took place in the work package 7 framework (sustainability).
- Maijastiina Arvola from CSC made a travel in 2024 for a total cost of 1 284 euros. This travel took place in the work package 7 framework (sustainability).

In 2024, a total of 15 405 euros for travel grants has been spent, which represents 7.7% of the total travelling grant budget. The corresponding reports for the travelling grants consumed in 2024 are given in annex.

## Travelling grants spent in 2025

In this paragraph we focus on travels executed between January 2025 and December 2025.

| | TVG |
|---|---|
| BSC | 18 000,0 |
| CEA | 14 027,4 |
| CNR | 7 233,6 |
| CNRS | 7 670,0 |
| CSC | 8 035,0 |
| FZJ | 2 822,5 |
| INESC TEC | 8 614,0 |
| UW | 1 719,0 |
| TOTAL | 68 121,6 |

During 2025, 34% of the global HANAMI budget for the traveling grant has been spent. Among all the travels, 9 young researchers were sent (PhD and Postdoc hired by HANAMI). 16 permanent researchers have also received a travelling grant during 2025. Permanent researchers stayed approximately one week in Japan, while the young researchers usually stayed from 2 weeks to more than a month.

HANAMI has successfully completed, in 2025, its mission of sending young researchers in priority to Japanese laboratories and universities.
The corresponding reports are given in annex, and led to blog posts and/or news on the hanami website, such as:

- https://hanami-project.com/2025/07/25/is-it-possible-to-collaborate-across-continents-and-cultures-in-science/
- https://hanami-project.com/2025/01/29/a-month-in-japan-hanamis-workflow-development/

The notable results of these travels (especially the young researchers) is the creation of new links between the research organisms. Young researchers (Postdocs for example) have created connections and will foster them within their next position (after HANAMI). This has also led to job opportunities for 1 postdoc within work package 6 (material science).
In the reports, researchers have notified if the travelling grants was completed by external funds (either from another project and/or in-kind contributions). About 4 visits were indeed completed by in-kind money from the research organisms (either from HANAMI itself, or sometimes, from Japan).
The majority of the travelling grants were used by the scientific work packages (respectively 4, 5 and 6 – climate, biomedical and material science).

# 3. The Symposium

## 3.1 Objectives and Purpose

The primary objective of the three HANAMI high-level symposia is to foster sustained networking between European and Japanese researchers throughout the duration of the project, thereby supporting the continuity and consolidation of the scientific community over the three-year period.

In line with this objective, the symposia focus on the exchange of results and ongoing work carried out under Work Packages 4, 5, and 6, in particular in the areas of benchmarking, application optimisation and portability, and the development of complex workflows combining High-Performance Computing (HPC) and Artificial Intelligence (AI) on EuroHPC and Japanese supercomputing infrastructures. During the second edition of the symposium, held at Month 22 (M22) of the project, the scientific teams presented progress achieved to date as well as perspectives for future work, including activities extending beyond the project's duration.

## 3.2 Logistics

The organisation of the second HANAMI high-level symposium was led by the French Alternative Energies and Atomic Energy Commission (CEA), in close cooperation with the coordinators of all work packages. CEA was responsible for the selection of the venue and for arranging accommodation for non-local participants. The event was held at the Hotel Le Prieuré in Chamonix.

The venue was selected based on its accessibility and suitability for hosting an international scientific event. Its proximity to Geneva International Airport, with direct flight connections from Japan and multiple European destinations, facilitated participant travel. In addition, the venue provided adequate meeting facilities, technical infrastructure, and on-site support, as well as accommodation and catering services for participants. Co-located activities associated with the symposium, including meetings of the Scientific Advisory Board and the Strategic Dialogue, were also organised at the same venue.

The symposium was implemented as a hybrid event, as defined by CEA, to ensure broad participation from both current and potential collaborators. Online access was provided for all sessions, supported by appropriate on-site technical arrangements to guarantee the smooth conduct of the event.

## 3.3 Agenda

The second high-level symposium was organised as a three-day, invitation-only hybrid event. The programme started on Monday, 8 December 2025, with a welcome reception for participants. The introductory plenary session took place on Tuesday, 9 December 2025, and featured keynote presentations delivered by six senior researchers nominated by the HANAMI scientific pillars. Each pillar proposed two invited keynote speakers, one from Europe and one from Japan. In line with the recommendations of WP1, particular attention was paid to achieving gender balance in the selection of keynote speakers.

The scientific programme was structured around three thematic sessions—Climate, Materials, and Biomedical applications. For each session, one or two researchers from the HANAMI consortium were invited to introduce the topic, followed by a presentation from an early-career HANAMI researcher (PhD candidate or postdoctoral researcher recruited within the framework of the project) presenting their work. Each session concluded with keynote presentations by two senior experts, one from Japan and one from Europe.

The introductory plenary covered the three scientific pillars in HANAMI, starting with the biomedical session, opened by Berk Hess from KTH and Oleksandr Krochak from FZJ. Andrea Schillaci (post doc within HANAMI) presented his biomedical research developed in the context of HANAMI. It was then followed by Dr. Ai Shinobu, which presentation was focused on protein-protein interactions. Then Dr. Mario Rüttgers presented his research on CFD applied to medical applications, leading to personalized surgery. Both keynote speakers have presented synergies with Artificial Intelligence within their frameworks.

The Climate session was opened by Joachim Biercamp and Mario Acosta, followed by Marta Alerany, a young post doc within HANAMI who presented her work (focused on Data analytics) and her stay in Japan (thanks to HANAMI). Dr. Helene Hewitt presented the international coordination within Climate Modelling. Professor Tomita then presented how next generation dynamical core can be re-designed in the context of complex architectures integrating HPC, QC and AI.

Professor Taisuke Boku, member of the HANAMI scientific advisory board presented the advanced HPC-AI Research and Development Support Center which coordinates the migration of the Japanese applications to GPU architectures.

The plenary session ended with the material science session, opened by Daniele Varsano & Edoardo Di Napoli. Costanza Borghesi presented her work (done within HANAMI) focused on simulations done with the YAMBO applications (applied to Perovskite). Professor Yabana presented the development of first principles

computations for extreme light matter interactions. The session was closed with Dr. Blasé presentation on electronic properties of condensed matter systems in material science.

The biographies of the keynote speakers are given here.

During Wednesday 10 and Thursday 11 morning, there were three breakout sessions: one per scientific pillar. Attendees chose between the Climate modelling, Biomedical applications, and Materials Science tracks. The full version of the agenda (plenary session) can be found here, while the breakout sessions agendas are given in annex (they were not released online).

#### 3.3.1. Co-located activities

The HANAMI consortium leveraged the organisation of the second high-level symposium to hold co-located activities that benefited from the on-site presence of several partners and external collaborators.

- The HANAMI Scientific Advisory Board meeting #1 (hybrid): Wednesday 10 December. This meeting will be detailed within D1.5 as this action belongs to WP1.
- The Second HANAMI Sustainability workshop (hybrid): Thursday 11 December (link here). Thisworkshop will be detailed within D7.3 as it belongs to the WP7.

## 3.4 Keynote speakers

WP3 coordinators proposed to count on the scientific pillars' suggestions to identify keynote speakers to participate in the introductory and final plenaries of the symposium.

For the introductory plenary, each pillar coordinators were asked to identify six potential speakers from their scientific field: three from Europe and three from Japan, catering for gender balance. WP3 invited the speakers in the order proposed by the pillars. Some invited speakers declined the invitation due to conflicting schedules.

- **WP4** – Climate modelling track
  - **Dr. Helene Hewitt** (Met Office)
  - **Professor Hirofumi Tomita** (R-CCS)
- **WP5** - Biomedical applications track
  - **Dr. Ai Shinobu** (PRIME University)
  - **Dr. Mario Rüttgers** (Inha University, Incheon)
- **WP6** - Materials Science track
  - **Professor Kazuhiro Yabana** (University of Tsukuba)

- **Dr. Xavier Blasé** (University Grenoble Alpes)

– **Transversal track**
  - **Professor Taisuke Boku** (University of Tsukuba)

## 3.5 Attendees

The second HANAMI High-Level Symposium was a hybrid event, offering participants the possibility to connect remotely and attend all sessions. However, most of the participants (76%) were on-site.

| Scientific track | On-site participants | Online participants | Total |
|---|---|---|---|
| WP4 – Climate modelling | 17 | 3 | 20 |
| WP5 – Biomedical applications | 12 | 4 | 16 |
| WP6 – Materials Science | 22 | 5 | 27 |
| Coordinators & organisers | 11 | - | 11 |
| **Total** | **62** | **12** | **74** |

*Table 1. HANAMI symposium participants per participation mode*

Regarding the participants' gender distribution, the HANAMI consortium considers there is room for improvement. Despite the efforts carried out by WP leaders towards achieving a good gender balance, 13,5% of participants were female. The gender balance in terms of participation is not as good as what was observed in the first high level symposium. The figure is still better than what we observe within STEM (usually, 10% of women within STEM). However, for the speakers in the plenary session, HANAMI largely improved its gender balance with respect to the first high level symposium.

| Scientific track | Female | Male | Total |
|---|---|---|---|
| WP4 – Climate modelling | 2 | 15 | 17 |
| WP5 – Biomedical applications | 1 | 11 | 12 |
| WP6 – Materials Science | 2 | 20 | 22 |
| Coordinators & organisers | 5 | 6 | 11 |
| **Total** | **10** | **52** | **62** |

*Table 2. HANAMI symposium participants per gender for onsite persons*

As per the symposium participants' provenance, the HANAMI consortium considers this second event highly satisfactory. The symposium counted 4 keynote speakers from Japan (out of 7 speakers in total) and a good representation of Japanese colleagues at the scientific tracks, almost 15% of participants. The active participation of Japanese researchers at the event shows that the scientific collaborations fostered by HANAMI are well established, encouraging Japanese organisations to devote resources to support their researchers travelling to Europe.

| Scientific track | Europe | Japan | Total |
|---|---|---|---|
| WP4 – Climate modelling | 14 | 6 | 20 |
| WP5 – Biomedical applications | 10 | 6 | 16 |
| WP6 – Materials Science | 18 | 9 | 27 |
| Coordinators & organisers | 10 | 1 | 11 |
| **Total** | **52** | **22** | **74** |

*Table 3. HANAMI symposium participants by region*

## 3.6 Communication and dissemination strategy and results

The dissemination strategy was designed by WP2 and led by INESC TEC. This dissemination strategy considered the following communication tools and actions:

| Communication Tool | Communication Action |
|---|---|
| Digital Marketing | Website |
| | Social media channels (with paid campaign) |
| Advertising | Merchandising products |
| | Communication materials |
| | Other documents (badges, booklet, agenda, etc) |
| Public Relations | Press release |
| | News articles |
| Direct Marketing | Newsletters |

*Table 4 - Communication tools and actions*

Since this event was invitation-only, the registration form was not available through the HANAMI communication channels. The link to register was sent to invited participants by email.

The following sections address the communication actions before and after the event.

- **Communication actions before the event**

**Event page of the High-level Symposium**

A specific event page was created in the Events section on the HANAMI website. The page was created in March 2025, and during the past months, it was updated with the information provided by the HANAMI symposium organisation team.

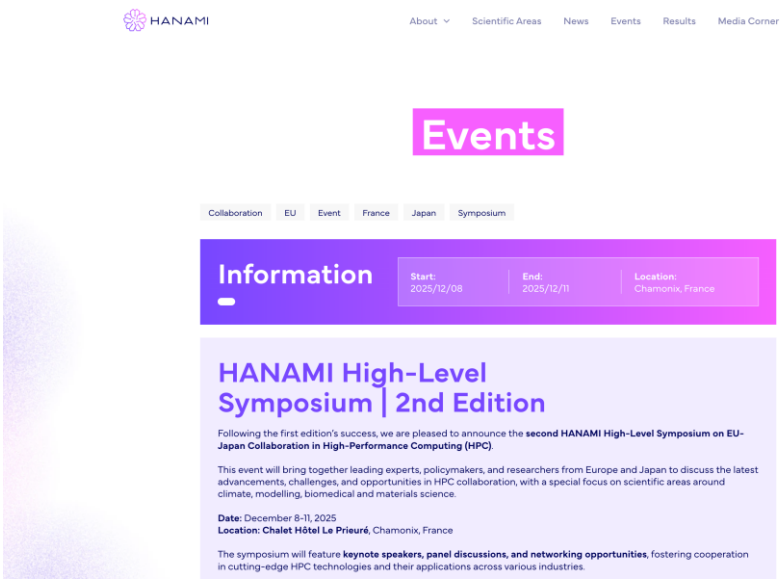



*Figure 1 - Event page of the HANAMI Symposium*

The event page has general information about the event, presents all the invited speakers of the symposium of each scientific area of the project, and displays the agenda, which is available for download.

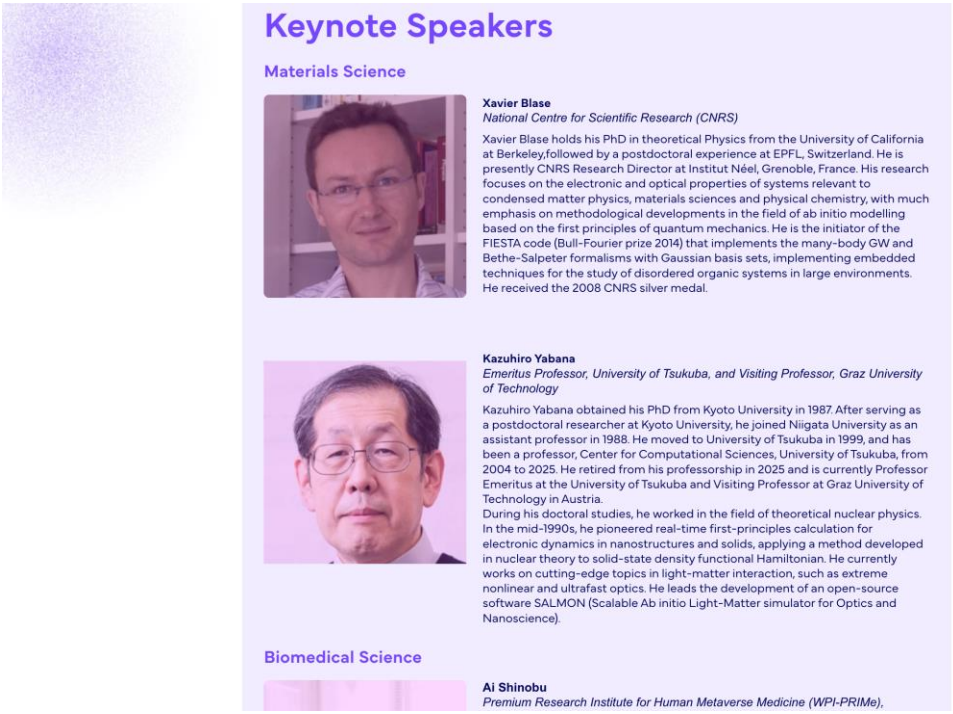



*Figure 2 - Invited speakers and agenda details*

Between March 2025 and January 2025, this page had 1,580 page views and is the second most visited page of the website.

## Event page of the Strategic Dialogue

This page was created in April 2025, and during the past months, it was updated with the information provided by the HANAMI symposium organisation team.

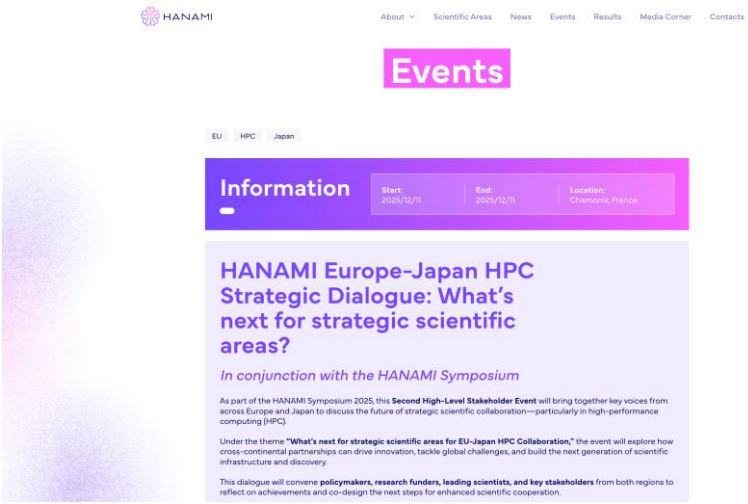



*Figure 3 - Event page of the HANAMI Symposium*

This page has general information about the event, presents all the invited speakers of the symposium of each scientific area of the project, and displays the agenda, which is available for download.

*Figure 4 - Invited speakers and agenda details*

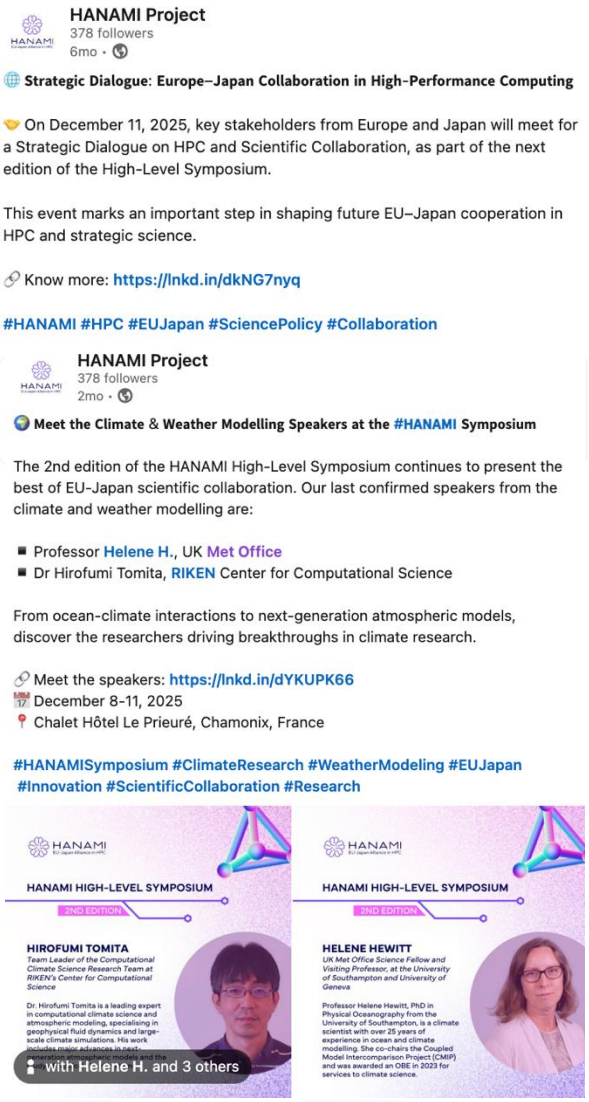
Between April 2025 and January 2025, this page had 538 page views and is the second most visited page of the website.

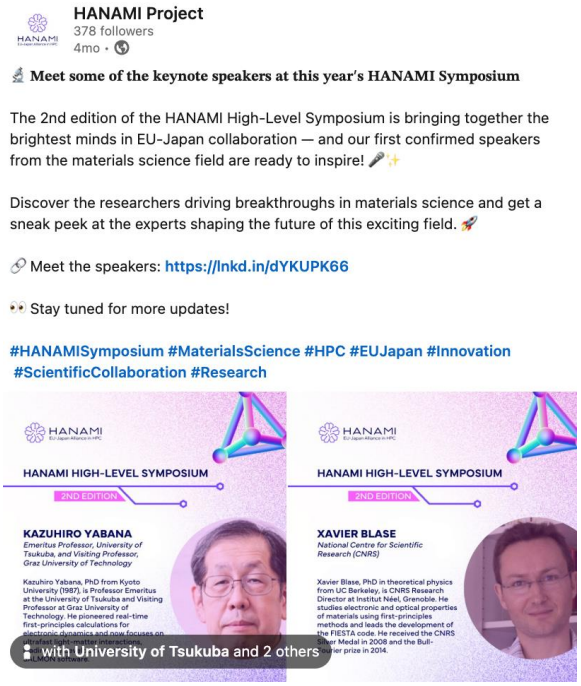
## Social media channels

Regarding social media posts, the HANAMI symposium was disseminated on LinkedIn, X, and Bluesky before the event.

These posts regarding the symposium and the strategic dialogue event received more than 200 reactions on social media.

- **LinkedIn**



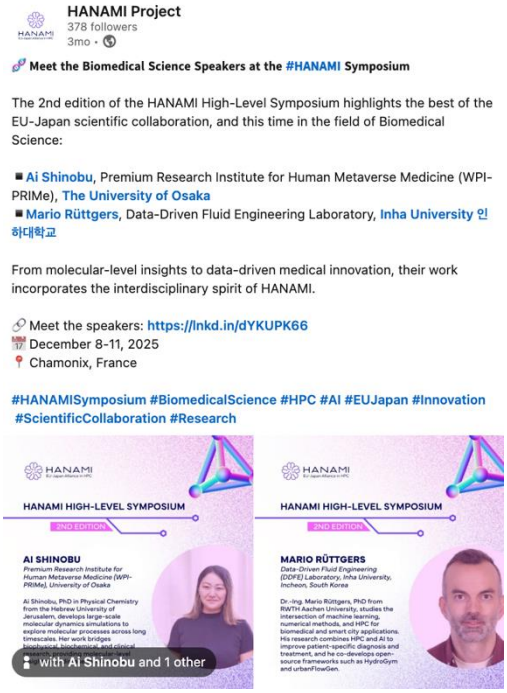
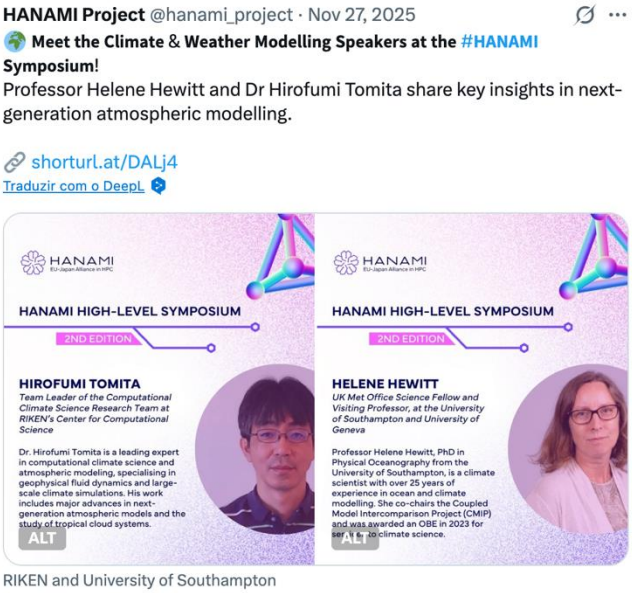
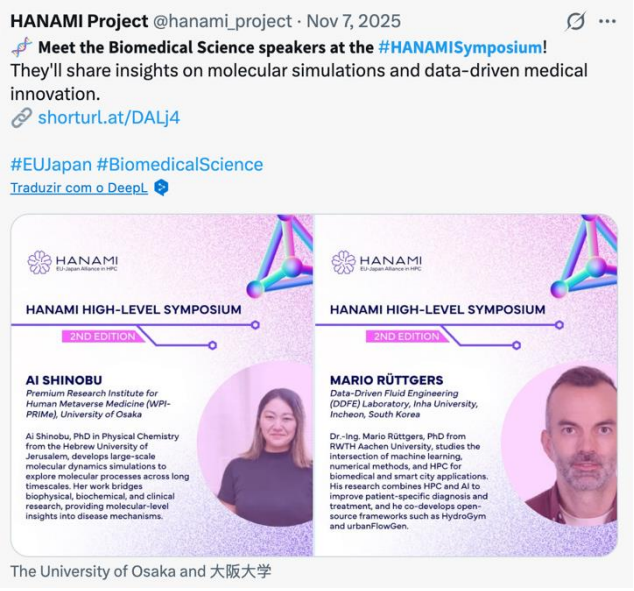




*Figure 5 – LinkedIn posts before the event*

- **X**



RIKEN and University of Southampton



The University of Osaka and 大阪大学



*Figure 6 - X posts before the event*

- **Bluesky**

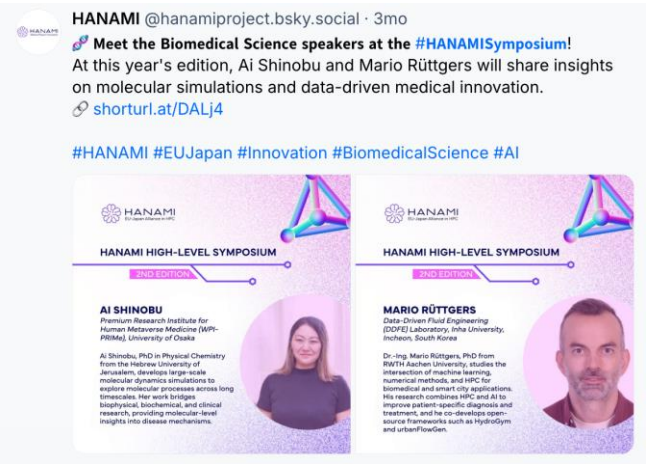
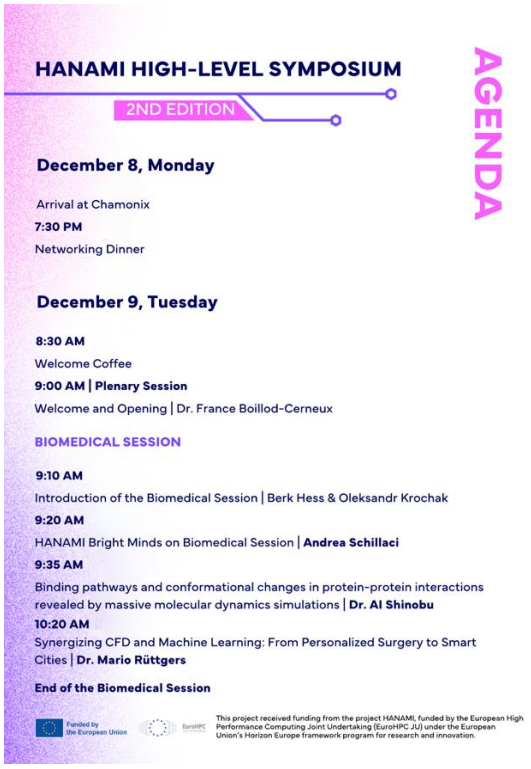





*Figure 7 - Bluesky post before the event*

## Merchandising products, communication materials and other documents

Different merchandising materials were used for the HANAMI symposium, such as bags, notebooks, pens, stickers, and flyers. Different roll-ups were produced for both events, along with badges for all participants, as shown in the figures below.

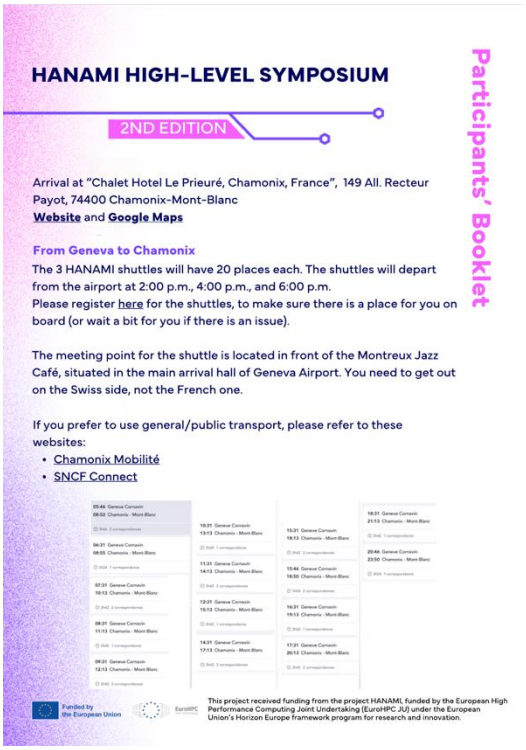




*Figure 8 - Merchandising, communication materials and other documents*

## Newsletters

Before the event, the HANAMI symposium and strategic dialogue event were mentioned in four different newsletters:

- https://mailchi.mp/d29f0843655f/welcome-to-the-hanami-project-11802814
  https://mailchi.mp/44b36acd2ef2/welcome-to-the-hanami-project-12864205
- https://mailchi.mp/6ba0da9ac319/2025-recap
- https://mailchi.mp/c5e873fd8e13/january-highlights-2026

These newsletters had an opening rate of 51,25%.

**Other actions**

The HANAMI Symposium was also disseminated through different contacts and communities interested in this field, such as the EU-Japan Centre for Industrial Cooperation newsletter.


*Figure 9 - Merchandising, communication materials and other documents*

**Dissemination actions during and after the event**

**News**

A news piece about the event was published on the HANAMI website with detailed information about this initiative as a whole.

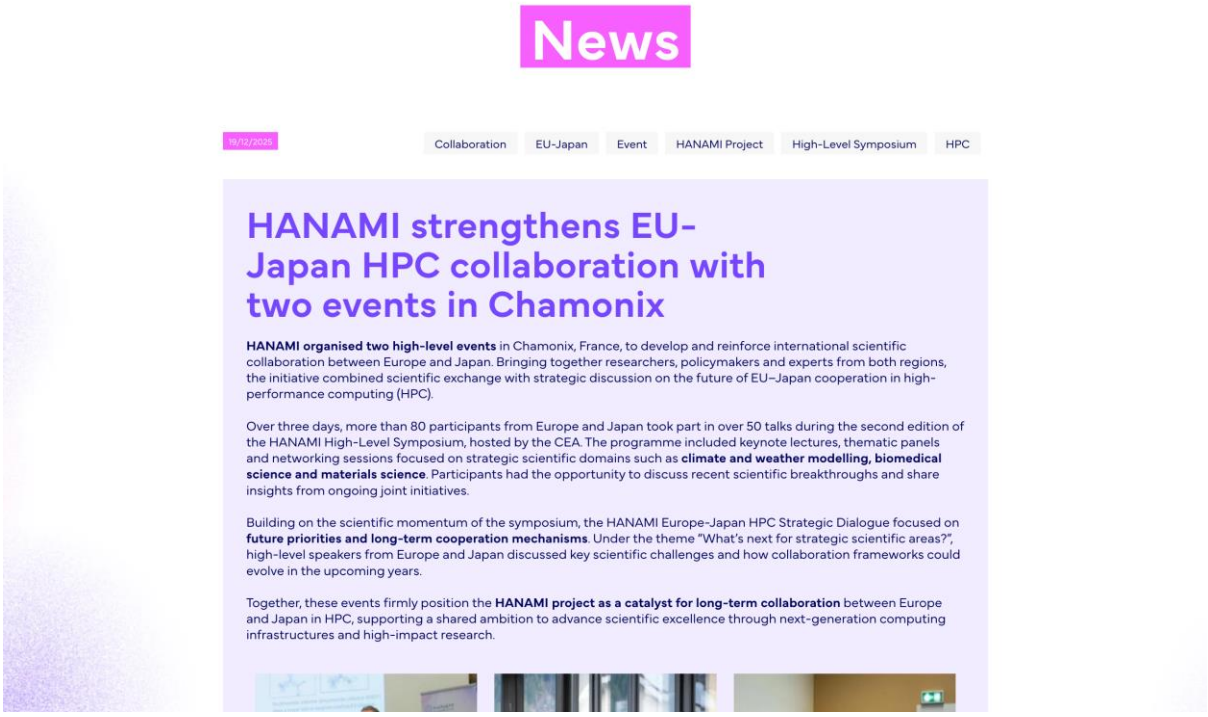



*Figure 10 - News on the News section*

## Blog

A blog post was written by the CEA and CSC about the strategic dialogue event. The blog post will be available on the website soon.

## Social media channels

Regarding social media posts, different photos of these events were published on social media channels during these events. Some posts were also published that focused on the symposium and the results of the strategic dialogue.

- **LinkedIn**

**HANAMI Project**
378 followers
2mo ·

**It's been a week, but our mind is still in Chamonix 🇫🇷!**

HANAMI brought together Europe and Japan's HPC communities for the 2nd edition of the High-Level Symposium and the Strategic Dialogue, focusing on the future of scientific collaboration.

Over three days, more than 80 researchers, policymakers and HPC experts attended 50 talks and shared ideas and joint challenges, highlighting how #HPC can accelerate impact in areas such as climate and weather modelling, biomedical science and materials science.

We're looking forward to the next edition!

👉 Read the full news article: https://lnkd.in/eTBXmsJn

#HANAMI #EUJapan #EUJapancollaboration
EuroHPC Joint Undertaking (EuroHPC JU)


**HANAMI Project**
378 followers
1mo ·

📎 **HANAMI on media**

Scientific Computing World, a specialised HPC media outlet, recently featured our High-Level Symposium and the Europe-Japan Strategic Dialogue held in Chamonix, focusing on the growing collaboration between Europe and Japan in HPC.

👉 Read the article: https://lnkd.in/eAXrk8ph

#HANAMI #HPC #EUJapan ##EUJapancollaboration

**Scientific Computing World**
2,017 followers
2mo ·

🇯🇵🇪🇺 Japan and the EU strengthen collaboration in high-performance computing ...more

**Japan and the EU boost collaboration on HPC**
scientific-computing.com

**HANAMI Project**
378 followers
2mo ·

The **2nd edition of the HANAMI High-Level Symposium has concluded**, and we thank everyone who joined us over these past days. ✨

Researchers, organisations and policymakers from Europe and Japan came together to share knowledge, align priorities and strengthen the foundations of cross-continental HPC cooperation.

Through scientific sessions and strategic discussions, participants helped shape the next steps for joint research in Climate and Weather Modelling, Materials Sciences and Biomedical Science.

Thank you to all speakers, contributors and attendees for your participation. We look forward to continuing this journey together! 🚀

#Hanami #HPC #EUJapan #EUJapancollaboration #ClimateModelling
#MaterialsScience #BiomedicalScience


**HANAMI Project**
378 followers
2mo ·

**It was the final day of the 2nd edition of the HANAMI Symposium, and today's activities brought together experts and stakeholders.**

Participants joined policymakers, research funders, leading scientists, and key stakeholders to reflect on the future of strategic scientific collaboration in HPC.

The session "Europe–Japan HPC Strategic Dialogue: What's next for strategic scientific areas?" explored future priorities for EU–Japan cooperation and how this partnership can drive innovation and impact across both regions.

👉 Stay connected as we wrap up our event!

#Hanami #HPC #EUJapan #EUJapancollaboration #ClimateModelling
#MaterialsScience #BiomedicalScience

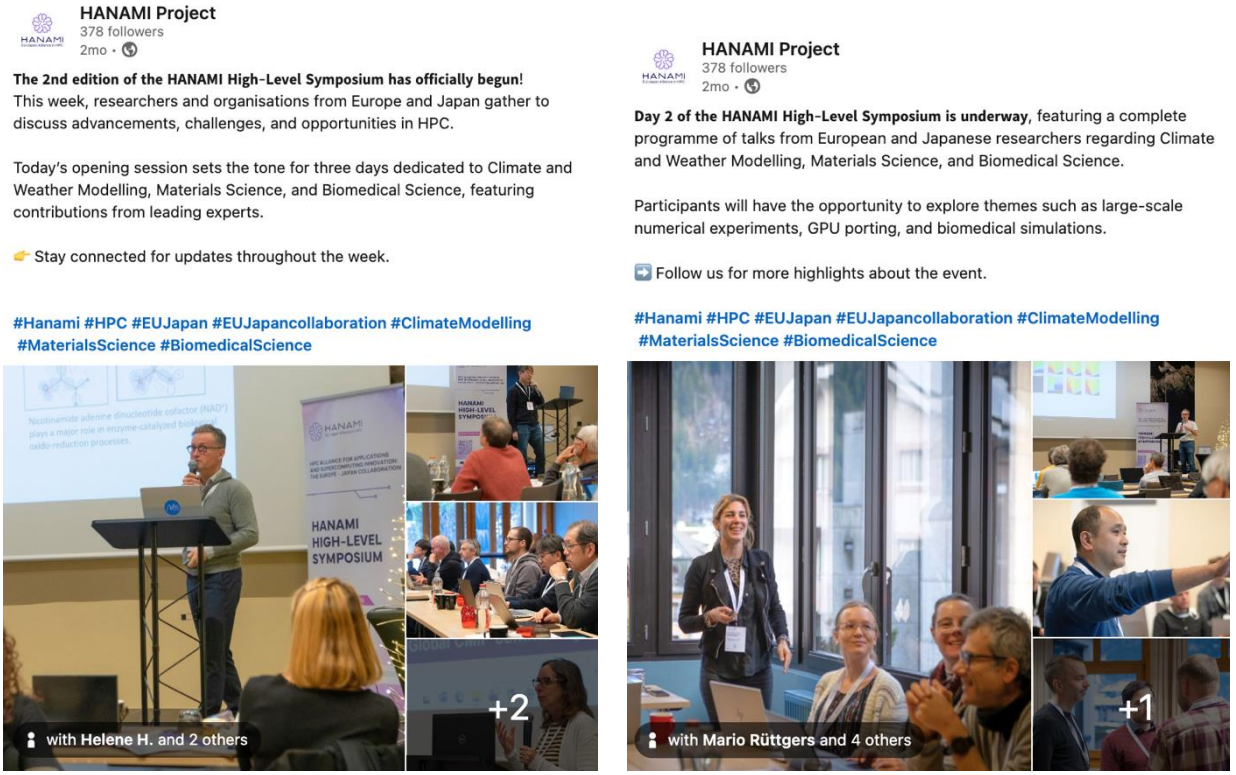



*Figure 31 - LinkedIn posts after the event*

More posts were published regarding this event, especially a post about the news and a blog post. All the posts can be found here, and these publications had 381 reactions.

- **X**

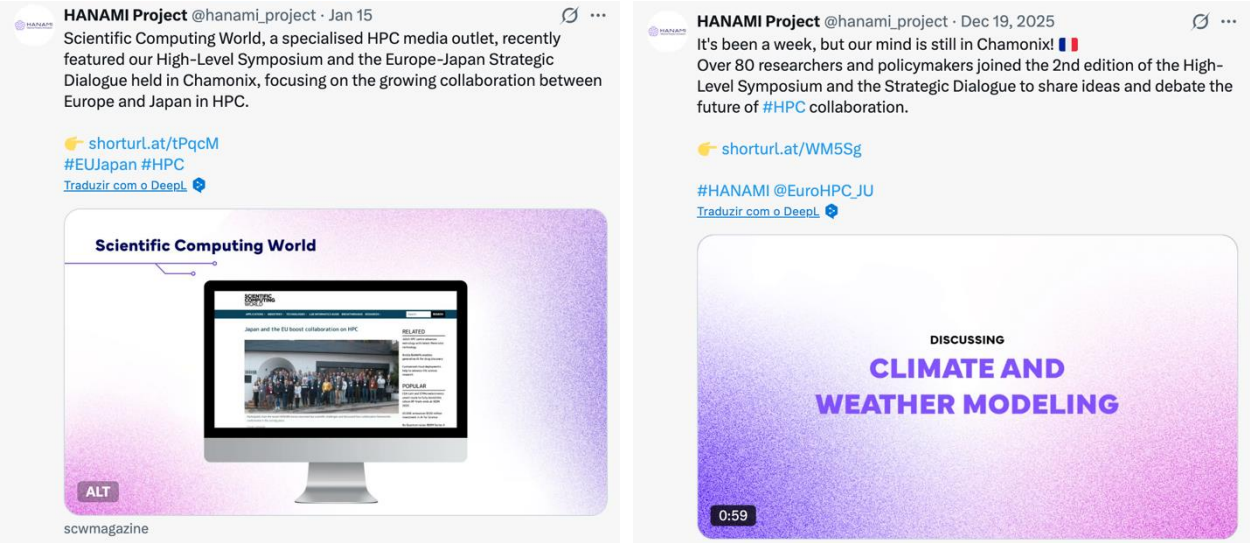



*Figure 12 - X posts after the event*

The eight social media posts after the event reached more than 287 impressions and 9 reactions.

- **Bluesky**

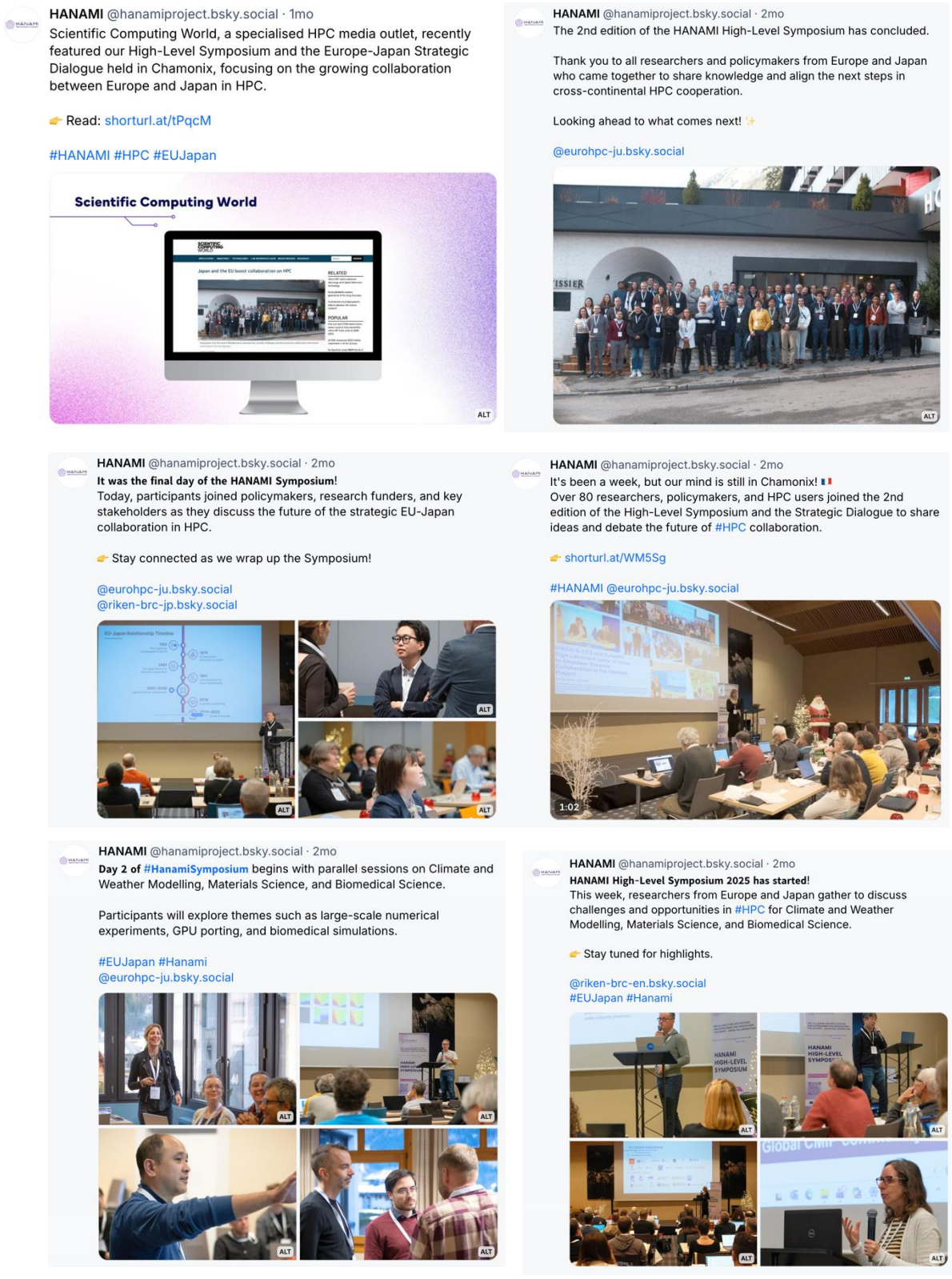



*Figure 13 - Bluesky posts after the event*

The six social media posts after the event reached more than 7 reactions.

## Media

Concerning media dissemination, an international press release was directly sent to the following media specialised in HPC:

- HPCWire
- HPCWire Japan
- Prace
- Nextplatfrom
- InsideHPC
- EuropaScience

The complete version can be read here.

**HANAMI STRENGTHENS INTERNATIONAL SCIENTIFIC COOPERATION WITH TWO HIGH-LEVEL HPC EVENTS**

**HANAMI, one of Europe and Japan's flagship initiatives in High-Performance Computing (HPC), strengthened international scientific cooperation by convening two high-level events in Chamonix, France. Bringing together leading researchers, policymakers and HPC experts from both regions, the events combined scientific exchange with strategic foresight to help shape the future of EU–Japan collaboration in strategic scientific areas.**

*Chamonix, France | 18 December 2025*

Over the course of three days, more than 80 participants from Europe and Japan attended over 50 talks, underscoring the importance of cross-continental cooperation in accelerating innovation in HPC-enabled research.

Organised by the HANAMI project and hosted by the CEA in Chamonix, France, the second edition of the HANAMI High-Level Symposium gathered leading scientists, policymakers and representatives from major European and Japanese institutions connected to different supercomputing centres.

**Promoting collaboration in key scientific areas**

During the High-Level Symposium, participants discussed recent scientific breakthroughs, shared insights from ongoing joint initiatives and explored new opportunities for deeper transcontinental collaboration. The programme featured keynote lectures, thematic panels, and networking sessions focused on strategic scientific domains, including Climate and Weather Modelling, Biomedical Science, and Materials Science.

By bringing together expertise from multiple disciplines, the symposium fostered the exchange of diverse scientific perspectives and strengthened connections between European and Japanese research communities.

Focusing on the biomedical domain, Ai Shinobu, from the University of Osaka, highlighted the value of direct interaction among researchers. "The interaction between the researchers provides new perspectives and helps anticipate how technologies can be transferred between Europe and Japan. Events like this make collaboration between the two regions more attractive and effective".

*Figure 4 - First page of the PR launched after the events*

As a result of this, a news article on Scientific Computing World was published here.

## Newsletter

After the event, different newsletters mentioned the symposium and the strategic dialogue:

- https://mailchi.mp/6ba0da9ac319/2025-recap
- https://mailchi.mp/c5e873fd8e13/january-highlights-2026

These newsletters had an opening rate of 47,2%.

# Conclusions

The second HANAMI High-Level Symposium effectively contributed to the project's core objective of strengthening and expanding scientific and technological collaboration between European and Japanese research communities. A key outcome of the event was the consolidation of collaborative activities within the three scientific work packages, as well as across transversal activities related to Artificial Intelligence (AI) and High-Performance Computing (HPC). The parallel scientific tracks played a central role in identifying shared interests and challenges, facilitating targeted discussions, and reaching common understandings to support the further development of the HANAMI project.

Participation data demonstrated a strong level of engagement from both European and Japanese researchers, with participants from Japan representing 15% of total attendance. This figure is considered satisfactory, given that HANAMI funding supports exclusively the European partners of the consortium.

The observed gender imbalance among participants identified an area for improvement. Despite this, the project's efforts towards promoting gender balance were positively acknowledged by the Scientific Advisory Board.

The participation of high-level keynote speakers from Europe and Japan significantly enhanced the quality and impact of the scientific exchanges. In addition, the dissemination of symposium outcomes through multiple communication channels increased the visibility of the event. Overall, the second HANAMI High-Level Symposium reinforced existing collaborations and initiated new cooperation opportunities, thereby contributing to the sustainability and long-term impact of EU–Japan collaboration in the fields of HPC and AI.

# Annexes

## Travelling grants reports for 2024

**Travel report from Kai Keller and Leo Arriola, from BSC in December 2024**

This traveling grant report concerns Kai Keller (BSC) and Leo Arriola (BSC), both from WP4.

**Arrival date (21.10.24 (both))**
**Departure date - 26.10.24 (Kai) and 01.12.24 (Leo)**

**Visited laboratory(ies) and researcher(s)**
The National Institute for Environmental Studies (NIES) in Tsukuba, Japan
The UTokyo's Information Technology Center (Supercomputer Miyabi) in Chiba, Japan
Hisashi Yashiro, senior NIES researcher and core NICAM developer
Chihiro Kodama, senior Japan Agency for Marine-Earth Science and Technology (*JAMSTEC*) Researcher and core NICAM developer

**Outcome of the visit**
Leo Arriola, along with BSC colleagues Kai Keller, Marta Alerany, and Mario Acosta, is developing an innovative workflow to test climate model replicability across high-performance computing systems, assess scientific accuracy, and optimize computational efficiency. This work centres on the Japanese coupled climate model NICOCO, a key tool for studying climate dynamics.
During his visit, Leo successfully ran NICOCO on Japan's Fugaku supercomputer and Spain's MareNostrum5, ensuring consistent performance across platforms to advance robust climate modelling techniques. He also presented initial findings on replicability workflows at the 53rd Advanced Supercomputing Environment (ASE) Seminar, hosted by UTokyo's Information Technology Center.
https://www.cc.u-tokyo.ac.jp/en/events/ase/53/53.php

**Travel report from France Boillod-Cerneux, Laure Caruso from CEA, and Maijistiina Arvola from CSC, in June 2024**

This traveling grant report concerns France Boillod-Cerneux (CEA), Laure Caruso (CEA) and Maijastiina Arvola (CSC), all from WP7.

**Arrival date (19.06.24 - Laure and France) – (18.06.24 – Maijastiina)**

**Departure date (20.06.24 - Laure and France and Maijastiina)**

**Visited laboratory(ies) and researcher(s)**

Desk Officer - Digital Diplomacy, EEAS; Ida Fallesen and Marco Bonetti

RIKEN - Toshiyasu Ichioka, RIKEN Europe director

Marco Canton, Senior executive at Fujitsu

**Outcome of the visit**

During this visit, we presented the HANAMI collaboration (missions, purpose, consortium, scientific projects). We specifically focused on the sustainability part as well as the cross access between the supercomputers. We invited the persons to our HLS1 event, as well as our sustainability event that takes place in January 2025 at Barcelona. we also have a perspective of a training, with a possible participation of Fujitsu but this is very prospective.

**Travel report from France Boillod-Cerneux, Laure Caruso and Edouard Audit from CEA, in December 2024**

This traveling grant report concerns France Boillod-Cerneux (CEA), Laure Caruso (CEA) and Edouard Audit (CEA), all from WP7. This travel has been funded partly by the CEA/RIKEN collaboration (in-kind).

**Arrival date - 9.12.24 - France, Edouard and Laure**
**Departure date - 13.12.24 – France & -18.12.24 - Laure & Edouard**

**Visited laboratory(ies) and researcher(s)**

- RIKEN Kobe RCCS teams (Kento Sato, Mohamed Wahib, Kengo Nakajima)
- CNRS office in Tokyo, Jacques Maleval, Philippe Codognet
- French Embassy, Jean Baptiste Bordes, responsible du HPC
- EU Commission at Tokyo - Peter Faltenig and Lee Wolgar
- DWIH Axel Karpenstein

**Outcome of the visit**

The CEA delegation visited several key offices to create awareness about HANAMI in Japan. We presented the overall project (missions, consortium, scientific areas and objectives) and made a specific focus on key points that are:

- Cross access to the supercomputers: we presented our progress here, especially regarding the MoU under preparation between EuroHPC and RCCS to open the acces to Fugaku to all HANAMI members
- Sustainability: we shared our vision and work plan regarding HANAMI sustainability (work package 7). We also invited all the persons we met to our first sustainability event, that took place in January 2025 at Barcelona (next to our high-level symposia). This was successful, as all of the persons we met attended to our event and shared opinions/advices.

.

## Travelling grants reports for 2025

**Traveling grant report Michele Casula Marco Cherubini, Abhishek Raghav (CNRS), from WP6**

**Arrival date - 30.04.2025**
**Departure date - 06.05.2025**

**Visited laboratory(ies) and researcher(s)**
NIMS: Kosuke Nakano (main host), Ryotaro Arita (from RIKEN but met at NIMS), Terumasa Tadano, and Atsushi Togo.
LINK - Laboratory for Innovative Key Materials and Structures IRL3629 CNRS – Saint Gobain – NIMS: Jean-Claude Crivello

**Outcome of the visit**
The visiting group was composed by Marco Cherubini, Abhishek Raghav (two postdocs in my group funded by HANAMI) and myself. We met with our Japanese hosts to discuss future collaborations in the realm of quantum Monte Carlo calculations for material science applications. In particular, we discussed the challenges and open questions related to the hydrogen physics and its fundamental features which make it an appealing material for its high-temperature superconductivity. I also took the opportunity to visit the LINK (Laboratory for Innovative Key Materials and Structures IRL3629 CNRS – Saint Gobain – NIMS), a collaborative entity between France and Japan that could be supportive for the follow-up of the present HANAMI collaboration.

**Traveling grant report for Rui Oliveira and António Sousa (INESC TEC), from Work Package 7**

**Arrival date - 10.04.2025**
**Departure date - 19.04.2025**

**Visited laboratory(ies) and researcher(s)**
Strategic meeting with the ROIS board, chaired by Professor Masaru Kitsuregawa, to present the HANAMI project, and discussions at RIKEN focusing on the integration of quantum computers into existing EuroHPC JU supercomputing systems. The latter involved presentations and discussions with prominent researchers Mitsuhisa Sato and Miwako Tsuji from Riken's Quantum HPC Hybrid Computing Platform Division.

At AIST, the team continued ongoing collaborative efforts with Jason Haga on optimising the performance and efficiency of HPC centres to meet the demands of I/O and energy-intensive AI workloads, further exploring these research activities under the HANAMI project.

A visit to Fujitsu's headquarters in Kawasaki, meeting Motohiro Yamada (Head of Business Strategy) and Masao Kondo (Director of Quantum Laboratory), allowed for further discussion of common perspectives for the hybridization of Quantum and

HPC systems, and provided insight into the recently announced 256-qubit superconducting quantum computer jointly developed with Riken.

Additionally, various promotional materials related to HANAMI were distributed at the International Post-Exascale (InPEx) workshop to raise awareness and interest in the project within this community.

**Outcome of the visit**
This mission reinforces INESC TEC's strategic objective to build lasting research and innovation bridges between Europe and Japan. Through the HANAMI project, we are laying the groundwork for collaborative breakthroughs in HPC and quantum computing, aligning expertise and vision across institutions from both regions

https://hanami-project.com/2025/05/23/hanami-strengthens-eu-japan-collaboration-with-a-strategic-visit-to-japan/

**Traveling grant report for Pihla Kauranen and Damien Lecarpentier (CSC), from Work Package 7**

**Arrival date - 28.06.25 (Damien) - 29.06.25 (Pihla)**
**Departure date - 03.07.25**

**Visited laboratory(ies) and researcher(s)**

- R-CCS / HPCI
  - Kengo Nakajima, Deputy Director (R-CCS)
- Japan Science and Technology Agency (JST)
  - Osamu Kobayashi, Director, Department of International Affairs
  - Atsushi Arakawa, Director, Office of ASPIRE, Department of International Affairs
  - Mutsuko Yasuda, Manager, Department of International Affairs
  - Masaki Sato, Senior Expert, Office of ASPIRE, Department of International Affairs
  - Takako Suzuki, Senior Program Coordinator, Department of International Affairs
  - Yuta Kawashima, Chief, Department of International Affairs
- EU Delegation to Japan
  - Peter Fatelnig, Minister Counsellor, Digital Economy Policy
  - Lee Woolgar, Senior Digital Policy Officer
- Embassy of Finland in Tokyo
  - Matti Karvanen, First Secretary
- NAOJ / Centre for Computational Astrophysics
  - Eiichiro Kokubo
  - Tomoya Takiwaki
  - Akihiro Suzuki (University of Tokyo)
- University of Hyogo
  - Shin-ichiro Shima, Professor, Graduate School of Information Science
- RIKEN / Center of Biosystems Dynamics Research

- Eliott Jacopin

**Outcome of the visit**
During the visit, we met with key stakeholders in Japan to provide an introduction and updates on the current activities and progress of the HANAMI collaboration. We discussed with the policymaker and funder contacts the future sustainability of the collaboration and explored mutual mechanisms and channels through which the collaboration might continue, including mobility of researchers and engineers and cross-access between European and Japanese supercomputers. We also conducted interviews with Japanese researchers to gather their views on the current collaboration and its potential future avenues and fields. We welcomed the contacts to future HANAMI events, including the HLS2, the second sustainability event, and the HANAMI workshop at SCA26.

**Traveling grant report for Mario Acosta (BSC) from WP4.**

Funded by HANAMI and partially funded by Inpex initiative, a workshop is hosted by the RIKEN Center for Computational Science (R-CSS), with the support of the French program NumPEx (Numeric for Exascale).

**Arrival date - 13.04.25 ; Departure date - 19.04.25**

**Visited laboratory(ies) and researcher(s)**
The RIKEN Center for Computational Science in Tokyo, Japan
The Inpex 2025 workshop in Kadagawa, Japan
Mohamed Wahib (Ph.D.), High Performance Artificial Intelligence Systems Research Team leader

**Outcome of the visit**
Mario Acosta in collaboration with other members of WP4, project 2, are developing the innovative HPCW benchmark for weather and climate applications. This benchmark represents the best approach to test and represent the weather and climate community in Europe, and now also in Japan with the integration of the climate model Nicam, including also the porting to EuroHPC and Fukagu machines. During his visit, Mario engaged with RIKEN members to introduce the HPCW benchmark and outline new collaboration goals for the next steps of Project 2 within WP4. The HPCW was also presented as the only use case representing the weather and climate community in the post-Exascale initiative of Inpex. Mario participated as a speaker in the workshop and contributed to numerous discussions that will allow the work of HANAMI to be integrated into strategic initiatives at the European, Japanese, and American levels.
Photographs taken during the event were shared with the HANAMI communication team and disseminated through the project's official channels.

https://inpex.science/workshop/2025-inpex-workshop/

**Traveling grant report for Oleksandr Krochak (Jülich Supercomputing Centre), from WP5.**

**Arrival date - 12.06.2025 ; Departure date - 26.06.2025**
**Visited laboratories and researchers**
Mr. Krochak visited R-CCS Collaborative Research Laboratory, stayed there for 2 weeks to compile and test m-AIA multiphysics simulation tool on Fugaku.
Mr. Krochak also visited Kobe University to give a presentation on "Data-Driven Closure Modelling for Navier-Stokes Momentum Equations". Met with Prof. Makoto Tsubokura and Dr. Junya Onishi as well as other members of Prof. Tsubokura's "Complex Phenomena Unified Simulation Research Team" team.

**Outcome of the visit**
During this research visit, research results and methodology were exchanged between the "Complex Phenomena Unified Simulation Research Team" (Complex Team), headed by Prof. Makoto Tsubokura from Kobe University, and "Simulation and Data Lab Fluids & Solids Engineering" (SDL FSE) headed by Dr. Andreas Lintermann from the Jülich Supercomputing Centre.
In particular, multiphysics simulation tool m-AIA, that was developed at RWTH Aachen University and is currently used at SDL FSE, was compiled and tested for use on Fugaku computational nodes featuring Fujitsu A64FX microprocessors, distinct architecture from previously used HPC machines on which m-AIA was deployed.
Additionally, research results and methodology from the Complex Team related to COVID-19 were presented and discussed. As there is an overlap between SDL FSE's research into nasal cavity flows simulation, few initial collaboration ideas were discussed related to the use of AI for simulation results post-processing as well as use of AI model to predict the likelihood of inhalation of the viral particles. An additional simulation case concerning the acoustics of a flat plate with a square cavity was provided by Dr. Junya Onishi to be solved using the m-AIA code for validation and comparison with their own CUBE solver.
https://www.r-ccs.riken.jp/en/research/labs/cpusrt/
https://www.fz-juelich.de/en/ias/jsc/about-us/structure/simulation-and-data-labs/sdl-fluid-solid-engineering

**Traveling grant report for Giacomo Giorgi and Costanza Borghesi (CNR), from WP6**

**Arrival date**
**Giorgi 19/06/2025 (18/06 from Fiumicino airport)**
**Borghesi 30/06/2025 (29/06 from Fiumicino airport)**

**Departure date**
**Giorgi 17/07/2025**
**Borghesi 28/07/2025 (arriving at Fiumicino airport on 29/07).**

**Visited laboratory(ies) and researcher(s)**
Japan Women University: Azusa Muraoka (main host)
University of Tokyo and Yokohama City University: Prof. Koichi Yamashita

Institute of Science Tokyo: Prof. Sergei Manzhos

**Outcome of the visit**

The visiting group was composed by Costanza Borghesi (the postdoc in my group funded by HANAMI) and myself. Costanza research period was 30/06/2025 (29/06 from Fiumicino airport) to 28/07/2025 (arriving at Fiumicino airport on 29/07). My activity during the stay was mostly related to developing common strategies for strengthening the collaboration between CNR-Nano/UniPG and the Japanese Woman University. Also, I had the chance to help supervise the activity of students in Muraoka's Lab, where I tried to give students the basic tools for the theoretical study of materials for energy-oriented applications, and at the same time I and Muraoka Sensei began the bureaucratic steps to establish a memorandum between the Institutions (initially UniPG/JWU) that would allow for the exchange of students and teaching staff between the two universities. In the same period, I similarly had the chance to meet Prof. Koichi Yamashita (University of Tokyo and Yokohama City University) and Prof. Sergei Manzhos (Institute of Science Tokyo) with whom I have been collaborating on research in recent years. In this regard, we are also developing further research activities.

Concerning Dr. Borghesi activity, she had the opportunity to collaborate closely with Japan Women's University (JWU) within the framework of the HANAMI Project. Her activity not only strengthened institutional ties but also allowed direct engagement with one of the most advanced high-performance computing environments in the world, Fugaku. During the stay, she indeed spent efforts to the optimization and use of the Yambo code on Fugaku, enabling large-scale GW calculations on lead-free 2D-perovskites. These simulations are of particular relevance for exploring the electronic properties of materials with potential applications in green energy technologies. This work demonstrated the feasibility of running highly demanding many-body perturbation theory calculations on Fugaku and established a solid foundation for future collaborative projects. Beyond the technical progress, the experience opened new perspectives for joint research, knowledge transfer, and the development of advanced computational approaches to materials for sustainable energy.

**Traveling grant report for Marco Ruscone (BSC), from WP5.**

**Arrival date - February 23, 2025 ; Departure date - March 12, 2025**

**Visited laboratory(ies) and researcher(s)**

Professor Ai Shinobu PRIME (Osaka University)
Professor Florence Tama RIKEN (Kobe)

**Outcome of the visit**

***Phase 1: PRIME, Osaka University (February 23 – March 7, 2025)***

The initial phase of the internship took place in the laboratory of Professor Ai Shinobu at PRIME, Osaka University. Professor Shinobu's group specializes in molecular dynamics (MD) simulations utilizing the GENESIS software. My main objectives during this period were twofold: exploring ways to bridge MD simulations with Boolean modelling, and disseminating the research methodologies employed at the Barcelona Supercomputing Center (BSC).

Given my limited prior experience with MD simulations, I actively participated in seminars and meetings organized by Prof. Shinobu to acquire foundational knowledge in molecular dynamics. I was granted access to Prof. Shinobu's computational cluster, where I successfully installed and began working with the Rosetta software. This allowed me to perform ligand-protein interaction simulations, specifically focusing on calculating binding affinities through the Flex ddG method (https://github.com/Kortemme-Lab/flex_ddG_tutorial).
This task required significant research into the relevant scientific literature, supported by regular meetings with Prof. Shinobu. By the conclusion of this phase, I had managed to successfully conduct multiple simulations centered on the EGFR receptor (https://www.rcsb.org/structure/5WB8) and had gained substantial familiarity with important MD databases, learning effective strategies for navigating and extracting relevant data.
In parallel, I also dedicated efforts towards disseminating multiscale modelling approaches utilized at BSC. To this end, I organized a hands-on training session on computational tools frequently used in our research group, including PhysiCell, MaBoSS, NeKo, and PhysiBoSS.
The training attracted significant interest and engagement, resulting in further requests from researchers at PRIME for additional discussions and assistance with software installations.
Additionally, in the second week, I delivered a seminar showcasing practical applications of these tools, highlighting specific examples from our research projects. Throughout my time at PRIME, I was invited to meet and exchange ideas with several research groups. Notably, I had productive interactions with Professor Mariko Okada's group at the Institute for Protein Research, as well as with Professor Imad Abugessaisa's team at PRIME. Finally, I also had the chance to meet with Professor Nishida, Director of PRIME.

***Phase 2: RIKEN, Kobe (March 10–11, 2025)***

The second and shorter phase of my internship was spent at RIKEN in Kobe, hosted by Professor Florence Tama, whose group similarly focuses on MD simulations. During my visit, I delivered a seminar about the PhysiBoSS modelling framework, building upon the earlier presentation at PRIME. The seminar facilitated engaging discussions, allowing me to connect with postdoctoral researchers from various groups and foster interdisciplinary exchanges. Finally, I had the opportunity to visit the Fugaku supercomputer facility.

***Conclusion***

The internship provided a valuable opportunity to foster collaborations between our research group at BSC and the teams at PRIME and RIKEN. It also served as an excellent dissemination platform for our modelling tools and research methodologies. Visiting the Fugaku supercomputer was particularly insightful, given our experience with MareNostrum 4 at BSC. For the HANAMI project, this internship has been instrumental in establishing the groundwork for future collaborative initiatives.

**Traveling grant report for Kai Keller (BSC), from WP4.**

This traveling grant report concerns Kai Keller (BSC), from WP4. This travel has been funded entirely by HANAMI.

**Arrival date 25.05.2025 ; Departure date 30.05.2025**

**Visited laboratory(ies) and researcher(s)**
R-CCS - Mohamed Wahib - https://hanami-project.com/portfolio-item/mohamed-wahib/
AICS/RIKEN Hirofumi Tomita (Computational Climate Science Research Team) - https://r-ccs-climate.riken.jp/members/tomita/index.html
Outcome of the visit
Overall, we identified 5 possible topics for collaboration. During the plenary of the workshop, Wahib (Riken - High Performance Artificial Intelligence Systems Research Team) presented two very interesting recent works:

(1) RAPTOR - a library to emulate reduced precision in floating point variables. This is a topic of huge interest in the climate modelling community, as many centers go to global Km-scale with the models, which becomes feasible with the new large clusters that came up and are planned in the near future. At BSC, we worked with a similar framework (AutoRPE), used to introduce mixed precision into NEMO. I think that certain people at the performance team in the earth science department will be interested in it.

(2) TADASHI - a nested loop optimizer. This library uses a mathematical formalism to decompose nested loops in small units and provides all possible representations of the loop. The mathematical basis of the algorithm ensures that all the derived loop representations are indeed identical with the loop they are derived from. Subsequently, AI or machine learning algorithms can be used to determine the most efficient and optimized representation of the loop. This could lead to an interesting collaboration with the AI team at the earth science department and with the performance team, to optimize climate model codes we are working with (OpenIFS, Monarch, NEMO, etc). Later, in the breakout session, we talked with Wahib, but mostly with Hirofumi Tomita (Computational Climate Science Research Team) and the members of his team, and identified two further possibilities for collaboration:

(3) Porting SCALE to the HANAMI workflow - The research in Tomita's group is mostly based on simulations with SCALE (https://scale.riken.jp/). SCALE is not a typical climate model, but rather a library for building such models. I am not sure how it works in detail, to be honest, however, it might be interesting to explore possibilities arising from its use inside a workflow. And beyond that, it might be worth exploring if SCALE can be of interest for other teams at the BSC.

(4) Hirofumi works on a new formulation of a dynamical core based on the icosahedral grid representation. In this context, he was very interested in Marta's and my work in HANAMI addressing model replicability and scientific model performance. Alongside with this development, he is planning to prepare a new model intercomparison project, addressing dynamical cores of atmospheric models. I believe this can be a very appealing collaboration addressing different fields of expertise such as

computational performance and model evaluation. It could lead to a joint project proposal between Riken and BSC (and perhaps others).

(5) Generative AI for code generation. About that one, I am actually not so sure if it can lead to anything. I still wanted to mention it. As I wrote before, Tomita is developing a new dynamical core. To date he still works in the mathematical formulation. Afterwards, he intends to leverage generative AI to generate the code for the dynamical core. Perhaps this could be something interesting for Amanda and her team. To give a timeline, Tomita plans to finalize a first prototype of the numerical implementation of a shallow water model using his new dynamical core within one year.

**Traveling grant report of Agnieszka Makulska (UW) and Piotr Dziekan (UW), WP4.**

This traveling grant report concerns Agnieszka Makulska (UW) and Piotr Dziekan (UW), WP4. Travel of Agnieszka Makulska was funded by Hanami. Travel of Piotr Dziekan was funded by UW.

**Arrival date: 23.09.2025 ; Departure date 03.10.2025**

**Visited laboratory(ies) and researcher(s)**
University of Hyogo, Kobe, Japan: research group of Shin-ichiro Shima (main host)

**Outcome of the visit**
During the visit, we discussed with our Japanese hosts ways of improving particle-based Lagrangian microphysics methods, which are used to simulate cloud microphysics in a LES model developed at UW (UWLCM). One of the subjects of our collaboration was modelling ice processes, which we plan to implement in UWLCM. Another subject was improving numerical efficiency of particle-based microphysics. Based on expertise of our Japanese colleagues, we plan to adopt adaptive sub stepping algorithms for different cloud processes. During the visit we also obtained access and compute time at the Fugaku supercomputer, on which we plan to benchmark UWLCM. Finally, we participated in a workshop about particle-based methods (https://s-shima-lab.sakura.ne.jp/en/events/ws_pbcm2509), with Agnieszka giving a talk and Piotr chairing a session.

**Traveling grant report of Marta Alerany (BSC), from WP4.**

This traveling grant report concerns Marta Alerany (BSC), from WP4. This travel has been funded entirely by HANAMI.

**Arrival date – February 23 2025 ; Departure date – March 12 2025**
**Visited laboratory(ies) and researcher(s)**
JAMSTEC & RIKEN

**Outcome of the visit**
***Phase 1: JAMSTEC (February 23 – March 7, 2025)***

As part of the HANAMI project, I am currently undertaking a 6-week research stay at JAMSTEC's center in Yokohama (Japan).

***Phase 2: RIKEN (February 23 – March 7, 2025)***

I had the opportunity to travel to Kobe, where RIKEN and BSC renewed their Memorandum of Understanding, ensuring the continuity of their ongoing collaboration and laying the groundwork for new opportunities. As part of this event, a dynamic and insightful workshop was held at the Japanese center. It brought together experts and leaders from both research institutions, as well as industry representatives, including BSC's spin-off Open chip. The workshop opened with keynote talks by the directors of both centers, Satoshi Matsuoka and Mateo Valero, who provided a comprehensive overview of current innovations and challenges in the field, outlining their visions for how the centers will continue to evolve.

A round of high-tech presentations followed, covering cutting-edge topics such as the role of AI within science. After a short lunch and networking break, a plenary session took place. During this session, I presented the structure and research lines of my department, contributing to a broader understanding of our capabilities and focus areas. Other colleagues from the HANAMI project also showcased their work, presenting on diverse topics ranging from AI algorithms that assess the impact of floating-point precision on models to simulations of population movement and cancer-cell processes. The workshop concluded with separate discussion groups divided by expertise areas, namely, Life Sciences and Earth Sciences. On our side, we engaged in constructive dialogue about the current challenges faced by each climate research group and helped establish practical pathways for future collaboration, including potential exchanges of software tools and technical expertise. Overall, it was a fruitful event that I believe will significantly strengthen the collaboration between the two-leading research centers.

**Traveling grant report of Fabrizio Gagliardi (BSC) and Mateo Valero Cortes (BSC), from WP3, WP7 and WP4.**

This traveling grant report concerns Fabrizio Gagliardi (BSC) and Mateo Valero Cortes (BSC), from WP3 and WP1 respectively. This travel has been funded partly by HANAMI.

**Arrival date - 27.05.2025 ; Departure date - 30.05.2025**

**Visited laboratory(ies) and researcher(s)**

Riken-CCS in Kobe, Professor Satoshi Matsuoka and Fujitsu, Kobe, Japan

**Outcome of the visit**

Mateo and Fabrizio visited Riken-CCS in Kobe, Japan, from May 27$^{th}$ till May 30$^{th}$ for essentially three events. On the 27$^{th}$, we met with Fujitsu for a presentation of their new processor Monaka, still based on ARM ISA.

Signature of a new MoU between BSC and Riken-CCS to cover another three years of collaboration after a first successful period where almost all BSC departments were involved. The signature was in presence of the Japanese and Catalonia authorities including President Illa. Good press and media coverage.

Technical talks organized by Accio Tokyo. Mateo and Satoshi Matsuoka presented the collaboration so far and major future research lines. The rest of the morning reserved for Japanese (Fujitsu) and Catalan (Open Chip) industry.
In the afternoon Fabrizio Gagliardi chaired a technical workshop focused on the Hanami collaboration. Three scientists from BSC (ES and LS) attended and met with about a dozen BSC colleagues.
Private discussions with Satoshi Matsuoka, director of Riken-CCS. We reviewed the plans for next year joint SCA26 and HPCA26 conferences with the following ACM ASIA HPC and AI school. Fabrizio Gagliardi was particularly pleased to have suggested ACM sponsor and brand the two conferences for the first time. They hope in Asia to grow these conferences to become the equivalent of ISC in Europe. Similarly, after 4 years of EU support for the HPC and AI school in ASEAN, we managed to elevate the school to an ACM international school for Asia. Most of the BSC departments have been involved in the previous editions of the school and hope they will also be in 2026 in Kobe. Mateo will be invited speaker at HPCA 2026 and hopefully will find time to lecture at the school as well.

**Traveling grant report of Alessandro Pecchia (CNR) from WP6**

This traveling grant report concerns Alessandro Pecchia (CNR), from Work Package 6. This travel has been funded entirely by HANAMI.

**Arrival date - 20.04.2025 ; Departure date - 19.04.2025**

**Visited laboratory(ies) and researcher(s)**
RIKEN R-CCS, Dr. Williams Dawson, Prof. Takahito Nakajima

**Outcome of the visit**
The main purpose of the visit was to start a collaboration with the group of Prof. Nakajima and Dr. Williams Dawson. The main objective is to create an interface between the code BigDFT and NTChem to the code libNEGF. The purpose of such an interface is to extend the capability of the quantum chemistry codes to quantum transport calculations. The BigDFT code is a tool based on Density-Functional Theory and wavelets basis set to represent the electronic wavefunction. On the other hand, libNEGF is a specialized library to solve many-body quantum-transport equations based on a Green's functions formulation of the problem. The final new tool will allow to compute ballistic and non-ballistic electronic currents across nanoscale devices, interfaces and systems, allowing to explore the properties of new materials, such as 2-dimensional heterostructures based on MoS_2 and WS_2 that are promising for light-harvesting and photovoltaics. It will also allow to study interfaces of perovskites and semiconductors or electrodes in order to evaluate the role of defects and charge injection.
During the visit technical details have been discussed and miniapp was created, able to drive BigDFT calculations, build and save the Hamiltonian and launch electronic transmission calculations with libNEGF. The work has continued after the visit and it is still in progress in order to arrive to a first useable interface.

**Traveling grant report of Edoardo Di Napoli (FZJ), from WP6.**

This traveling grant report concerns Edoardo Di Napoli (FZJ), from WP6. This travel has been funded entirely by HANAMI

**Arrival date - 03.10.2025 ; Departure date - 18.10.2025**

**Visited laboratory(ies) and researcher(s)**
RIKEN-CCS: Toshiyuki Imamura, William Dawson, Yuki Uchino, Kengo Nakajima, Asushi Suzuki

**Outcome of the visit**
Our visiting group was composed by Edoardo Di Napoli and Clement Richefort (both member of the Simulation and Data Laboratory Quantum Materials at Jülich Supercomputing Centre). We met with our Japanese hosts to discuss advancement in several topics included in the HANAMI Project 2 of WP6. In particular we have discussed the possibility of hacking into the ELSI interface as an easier way to design and implement and parallel framework as described by Task 6.4 of the HANAMI project. We have also discussed the possibility to acquire experience with the Ozaki-II scheme developed by two of the researchers in RIKEN (Uchino and Imamura). In particular we have started experimenting with the substitution of Ozaki-Gemm call within the Chebyshev filter of the ChASE library which is developed by our Simulation and Data Lab. This latter activity was especially supported by Yuki Uchino while the former was carried on with the close collaboration of William Dawson.

**Traveling grant report concerns Clement Richefort (FZJ), from WP6**

This traveling grant report concerns Clement Richefort (FZJ), from WP6. This travel has been funded entirely by HANAMI

**Arrival date - 14.10.2025 ; Departure date - 27.10.2025**

**Visited laboratory(ies) and researcher(s)**
Riken R-CCS : Toshiyuki Imamura, William Dawson, Yuki Uchino, Suzuki Atsushi

**Outcome of the visit**
The visiting group was composed of Edoardo Di Napoli and myself. We met with Dr. Toshiyuki Imamura and his team to initiate a collaboration on integrating the second version of the Ozaki Scheme into ChASE. This feature will enable emulating floating-point operations in Matrix-Matrix Multiplications using low precision arithmetic engines. In addition, one member of Imamura-sensei's team is actively working on a pivoting Cholesky QR algorithm that could enhance the convergence of ChASE when the search-space becomes badly conditioned. Lastly, we profited from the experience of Dr. William Dawson on the ELSI library in order to develop an interface aimed at redistributing the data in the transition from one MPI per CPU-core pinning to one MPI per GPU pinning. Lastly, we introduced our recent advances on expanding ChASE functionalities to solve for the pseudo-Hermitian Hamiltonians of excitonic physics.

**Traveling grant report of Muhammad Umair Sadiq (KTH) from WP5.**

This traveling grant report concerns Muhammad Umair Sadiq (KTH) from WP5. This travel has been funded entirely by HANAMI

**Arrival date - 20.07.2025 ; Departure date - 26.07.2025**

**Visited laboratory(ies) and researcher(s)**
Yokota Laboratory (Institute of Science Tokyo): Rio Yokota (main host), Jiamian Huang (One of the key authors of the new FMM implementation).

**Outcome of the visit**
The visiting person was myself, a Postdoc researcher from KTH. The visit to Yokota Laboratory provided an opportunity to engage in detailed technical discussions on the Fast Multipole Method (FMM) implementation with the hosts within the HANAMI project. We exchanged insights on current design choices, scalability considerations, and numerical accuracy, and critically examined existing bottlenecks in the implementation. Several potential optimization directions were identified, including algorithmic refinements and performance-oriented improvements, which will be evaluated in follow-up work. Overall, the visit strengthened the collaboration with the Japanese researchers and contributed to aligning future development efforts toward a scalable FMM implementation.

**Travelling grant report of Edouard Audit and Melissa Larbi (CEA) from WP7 and WP5**
This travelling grant report concerns Edouard Audit (CEA), from WP3 and WP7.

This travel has been funded entirely by HANAMI for Edouard, and entirely by the CEA and RIKEN for Melissa.

**Arrival date - 03.10.2025**

**Departure date - 24.10.2025**

**Visited laboratory(ies) and researcher(s)**
RIKEN-CCS Tokyo Branch, Mohamed Wahib Attia

**Outcome of the visit**
In the framework of Melissa Larbi's PhD, we visited the Riken-RCCS (Tokyo Branch) to work with Mohamed Wahib on the use of LLM type approach to analyse medical data. This long visit was extremely useful to design an LLM architecture adapted to tabular medical data. This visit was extremely fruitful, thanks to regular online preparation meetings and the collaboration is very active with a second PhD that might start in November.

**Travelling grant report of Thalia Diniaco (BSC) from WP5**

**Arrival date - 23.03.2025**

**Departure date - 27.03.2025**

**Visited laboratory(ies) and researcher(s)/**

Modern benchmarking: advancing computational methods in molecular biology. Congressi Stefano Franscini, Monte Verità, Ascona, Switzerland

**Outcome of the visit**
Presentation: Community Benchmark of Centre-Based Multiscale
Presenting this work was relevant for the HANAMI project because it focuses on benchmarking and evaluating PhysiBoSS, a key modeling framework used in Task 5.4 (Tumour Evolution Simulation Pipelines) of Work Package 5. Since PhysiBoSS is central to the development of multiscale tumour evolution simulations in HANAMI, research that assesses its performance, reproducibility, and methodological robustness directly supports the reliability of the simulation pipelines developed within the project. Moreover, benchmarking PhysiBoSS alongside other modelling tools provides a broader perspective on its strengths, limitations, and computational performance, helping ensure that the selected framework is robust and well-suited for large-scale tumour evolution simulations.Therefore, showcasing this work contributes to strengthening the scientific and technical foundations of the modelling approaches employed in HANAMI.

## Agendas of parallel tracks for the second high level symposium

# HANAMI HIGH-LEVEL SYMPOSIUM
## Climate and Weather Session

**Wednesday, Dec. 10th**

| Slot start (France) | Slot start (Japan) | Format | Speaker | |
|---|---|---|---|---|
| 09:15:00 | 17:15:00 | In person | **JoachimBiercamp** | **Welcome** |
| 09:30:00 | 17:30:00 | Online | **Manhal Alhilali** | Title tbd |
| 10:00:00 | 18:00:00 | Online | **Chihiro Kodama** | **Climate simulations with NICAM/NICOCO** |
| 10:30:00 | 18:30:00 | Online | **Valentina Sicardi** | **From Supercomputers to Climate Modelling: EC-Earth at BSC** |
| 11:00:00 | 19:00:00 | | **Break** | |
| 11:30:00 | 19:30:00 | In person | **Piotr Dziekan** | **Adaptive timestepping for condensational growth of droplets in numerical cloud models with Lagrangian microphysics** |
| 12:00:00 | 20:00:00 | In person | **Kai Keller** | **One workflow for all** |
| 12:30:00 | 20:30:00 | In person | **Marta Alerany** | **Evaluating the replicability and scientific skill of Earth System Models with pyhanami** |
| 13:00:00 | 21:00:00 | | **Lunch** | |
| 14:30:00 | 22:30:00 | In person | **Niclas Schroeter** | **HPCW: Update on the Latest Progress** |
| 15:00:00 | 23:00:00 | In person | **Hisashi Yashiro** | **Recent progress in NICAM development in the era of HPC-AI convergence** |
| 15:30:00 | 23:30:00 | In person | **Tomoro Yanase** | **Advancing the fundamental understanding of self-organization of clouds and moist convection in idealized climate systems through large-scale numerical experiments** |
| 16:00:00 | 00:00:00 | In person | **Sam Hatfield** | **High-Performance Numerical Weather Prediction at ECMWF** |

**Thursday, Dec. 11th**

| Slot start (France) | Slot start (Japan) | Format | Speaker |
|---|---|---|---|
| 10:00:00 | 18:00:00 | Hybrid | **WP4 Regular Meeting** |
| 11:00:00 | 19:00:00 | Hybrid | **Open discussion** |
| 12:00:00 | 20:00:00 | | **Lunch** |

# HANAMI – Biomedical work package (WP5) – Agenda for the HLS2 parallel session

| Time | Speaker (mode) | Title |
|---|---|---|
| 9:00<br>-----<br>9:30 | Rahul Bale - (remote) | **From droplets to infection: Multiscale modeling of airborne disease transmission** - Authors: R. Bale, A. Murga, M. Tsubokura |
| 9:30<br>----<br>10:00 | Andrea Schilacci (on site) | |
| 10:00<br>----<br>10:30 | Matthias Meinke<br>(on-site) | GPU porting / addressing multiphysics simulation challenges |
| 11:00<br>----<br>11:30 | Jeongmin (remote) | |
| 11:30<br>----<br>12:00 | Hadrien Calmet -<br>(on site) | |
| 12:00----<br>12:30 | Beatriz Eguzkitza - BSC<br>(online) | |

| Time | Speaker | Title |
|---|---|---|
| 14:00 - 14:30 | Muhammad Umair Sadiq | |
| 14:30 - 15:00 | Jose Carbonell | |
| 15:30 - 16:00 | Oleksandr Krochak | **Personalized medicine via CFD simulation with m-AIA solver** |
| 16:00 - 16:30 | Laxmana Yetukiri | |

# Materials Science Session

HANAMI Symposium – Chamonix

9–11 December 2025

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## List of Participants

| Name | Institution | Country |
|---|---|---|
| David Amblard | CINES, Montpellier | France |
| Florian Berberich | Jülich Supercomputing Centre - FZJ | Germany |
| Xavier Blase | CNRS, Institut Néel, Grenoble | France |
| Costanza Borghesi | CNR-NANO, Modena | Italy |
| Flavia Carafone | Univeristy of Tor Vergata, Rome | Italy |
| William Dawson | RIKEN R-CCS, Kobe | Japan |
| Edoardo Di Napoli | Jülich Supercomputing Centre - FZJ | Germany |
| Ivan Duchemin | CNRS Grenoble | France |
| Mads Engelund | EuroHPC | Luxembourg |
| Andrea Ferretti | CNR-NANO Modena | Italy |
| Giuseppe Fisicaro | CNR-IMM, Catania | Italy |
| Luigi Genovese | CEA Grenoble | France |
| Giacomo Giorgi | University of Perugia & CNR-NANO | Italy |
| Toshiyuki Imamura | RIKEN R-CCS, Kobe | Japan |
| Stefano Leoni | Cardiff University | UK |
| Sergei Manzhos | Institute of Science Tokyo | Japan |
| Alessandro Pecchia | CNR ISMN, Rome | Italy |
| Clément Richefort | Jülich Supercomputing Centre - FZJ | Germany |
| Maximilian Tandi | Jülich Supercomputing Centre - FZJ | Germany |
| Daniele Varsano | CNR-NANO Modena | Italy |
| Xavier Waintal | CEA Grenoble | France |
| Kazuhiro Yabana | University of Tsukuba | Japan |

## 9 December Plenary Session

| | |
|---|---|
| **08:30-09:00** | Welcome Coffee |
| **09:00-09:15** | France Boillod-Cerneux — *Welcome and Opening* |
| **09:15-11:15** | **Biomedical Session** |
| **11:15-11:30** | Coffee Break |
| **11:30-12:45** | **Climate Session** |
| **12:45-13:00** | Group photo, short break and moving to the lunch |
| **13:00-14:30** | Lunch Break |
| **14:30-15:15** | **Climate Session continued** |
| **15:15-** | **Materials Science Session** |
| **15:15-15:30** | Daniele & Edoardo - *Introduction of the material science session* |
| **15h30-15:45** | Costanza Borghesi (HANAMI bright minds on material session) *Quasiparticle and Excitonic Properties of Lead-Free 2D (DAN)$SnI_4$ Perovskite via YAMBO* |
| **15h45-16:30** | **Keynoye talk:** Professor Kazuhiro Yabana *Development of first-principles computations for extreme light-matter interactions* |
| **16h30-17:15** | **Keynoye talk:** Dr. Xavier Blase *Electronic properties of condensed matter systems in materials science: scaling down many-body perturbation theories* |
| **19:30–** | Networking Dinner |

## 10 December (Full Day)

**Morning Session**
*Chair: Giacomo Giorgi*

| | |
|---|---|
| **09:00–09:05** | Opening Remarks |
| **09:05–09:30** | Xavier Waintal — *Tensor Networks in the age of machine learning* |
| **09:30–09:55** | Sergei Manzhos (online) — *Data-driven kinetic energy functionals for orbital-free DFT: from ML to formulae* |
| **09:55–10:20** | William Dawson — *EU-Japan Collaborations on Materials Science - AI and HPC* |
| **10:20–10:45** | Toshiyuki Imamura — *Impact of MxP on Dense Eigenvalue Computation* |
| **10:45–11:05** | Coffee Break |
| **11:05–11:30** | Edoardo Di Napoli — *ChASE: advancing a modern GPU-distributed eigensolver library for applications in Materials Science* |
| **11:30–11:55** | Clement Richefort — *Expanding ChASE to solve for pseudo-hermitian Hamiltonians with applications to excitonic physics* |
| **11:55–12:20** | David Amblard — *Lessons learned from the cross-platform porting of the BigDFT's Poisson solver* |
| **12:20-12:45** | Luigi Genovese — *From Large-Scale DFT to a New Research Paradigm: The Complexity-Reduction Framework in BigDFT* |
| **13:00–14:30** | Lunch Break |

**Afternoon Session**
*Chair: Edoardo Di Napoli*

| | |
|---|---|
| **14:30–14:55** | Giuseppe Fisicaro — *Preventing lead leakage in perovskite solar cells with a sustainable titanium dioxide sponge* |
| **14:55–15:20** | Giacomo Giorgi — *Protective Role of Germania on (Sn,Ge)-Mixed Halide Perovskites* |
| **15:20–15:30** | Coffee Break |
| **15:30-18:00** | Scientific Advisory Board |
| **19:30–** | Networking Dinner |

## 11 December (Half Day)

**Morning Session**
*Chair: Daniele Varsano*

| | |
|---|---|
| **09:00–09:25** | Kazuhiro Yabana — *First-principles calculations for dephasing effects in laser-solid interactions* |
| **09:25-09:50** | Stefano Leoni — *Transformations and transport processes in the solid state: Static and dynamic aspects* |
| **09:50-10:15** | Alessandro Pecchia — *Electronic Transport in Two-dimensional Materials* |
| **10:15-10:40** | Flavia Carafone — *Towards a NEGF-Compatible Excitonic Self-Energy* |
| **10:40–11:00** | Coffee Break |
| **11:00–11:25** | Ivan Duchemin — *All-Electron GW and Bethe-Salpeter Calculations for Complex Systems* |
| **11:25–11:50** | Andrea Ferretti — *Ab initio many-body perturbation theory towards the exascale: Yambo on GPUs* |
| **11:50-12:15** | Short conclusion plenary - |
| **12:15** | Lunch and Departure |