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Performance evaluation: satisfaction survey of the research cruises



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1 Introduction

Eurofleets+ Work Package 4 is dedicated to Calls for proposals requesting the use of research vessels and marine equipment offered within the Eurofleets+ project. This work package is involved in preparation of the Eurofleets+ Access programmes, call dissemination, launching of the calls, the proposal evaluation handling, the selection procedures and post-cruise project evaluation.

The TNA developed in Eurofleets+ for easier and ‘free of charge’ access to research vessels and related marine infrastructure for European and international research teams, has created a unique opportunity to access a significant number of research infrastructures.

The SEA Programme Call “Oceans” gave access to 14 Research Vessels (RVs) in the North Atlantic Ocean, North-West/West Atlantic, Arctic Ocean, Mediterranean Sea/Atlantic Ocean and Pacific Ocean. Also, access was given to 10 pieces of Marine Equipment (ME), either together with a Eurofleets+ cruise or on board a non-Eurofleets+ cruise. The SEA Programme Call “Regional” provided access to 16 research vessels and 6 pieces of marine equipment in the North Atlantic Ocean, North-West/West Atlantic, Baltic Sea, North Sea, Mediterranean Sea, Atlantic Ocean, Black Sea, Arctic Ocean, Southern and Pacific Ocean. Marine equipment was provided either together with an EUROFLEETS+ cruise or on board a non-Eurofleets+ cruise.

The running calls: Co-Principal Investigator (Co-PI) and Remote Transnational Access (RTA) programmes opened on the 21st of November 2019. The Co-PI programme was open for the submission of proposals until 31st of January 2022, the RTA programme until 30th of September 2022.

Applicants to the Co-PI programme could apply for all 27 state-of-the-art research vessels (RVs) (13 Global/Ocean and 14 Regional) offered within Eurofleets+. If applicable, ME may be utilised if scheduled for a main cruise on an Eurofleets+ vessel. The programme provides the successful applicant with one to three days (maximum) access to a RV and ME. In the RTA programme, applicants were able to apply for remote access to all vessels offered within EUROFLEETS+, independent or attached to the scheduled cruises of the SEA Programme.

Following the scientific and logistic evaluation of the proposals, 23 projects from the SEA programme and 4 projects from the Co-PI programme were finally implemented (see D4.14 *Report on cruise implementation, post cruise assessment and lessons learned*).

After each cruise, a formal survey was conducted with each proposal Principal Investigator (PI), to evaluate if end-user requirements were met, and if the scientific cruise was successful overall. The aim of the survey was to gain experience from the cruise leaders to improve the transnational access system and to implement it in the future. In the end, the EUROFLEETS+ project aims to improve the experience of the participants in terms of cooperation with logistics and related processes for future TNA processes.

This deliverable provides the results of the survey for cruises of the SEA programme, and the Co-PI programme.

For the SEA programme cruise performance survey, we received 16 responses (70 % response). For the Co-PI cruise performance survey, we received 3 responses (75% response).

2 Structure of the satisfaction surveys

The satisfaction survey about the completed EUROFLEETS+ TNA cruises was divided into four sections. The first section was dedicated to the general information on the implemented projects with four questions gathering information about the PI, science team and future plans.

The second section was devoted to the cruise preparation, including formalities and administration, the logistic support by the operational panel or the infrastructure operator.

The third section addressed the cruise performance and the experience on board during the cruise. Questions asked about, for example, support from the crew, experience with sharing ship time or hosting a Co-PI project (if applicable), and if the scientific work could be performed.

The last, fourth section dealt with the PI’s impression about conducting a cruise through EF+, its procedures, and suggestions for improvements in future TNA programmes.

The proposal PIs were contacted by e-mail one month after completing their cruise, and asked to fill out the cruise performance survey at an online portal.

3 Results of the satisfaction surveys

3.1 General information

The first set of questions aimed at obtaining information about the PI of the implemented proposal. Overall, 29% of the proposal PIs were female, 71% male.

19 percent of the PIs were Early Career Researchers at the time they performed the cruise (Fig. 1). 83% of the PIs indicated that they plan similar style cruises in the near future, only 2 PIs do not plan to do so.

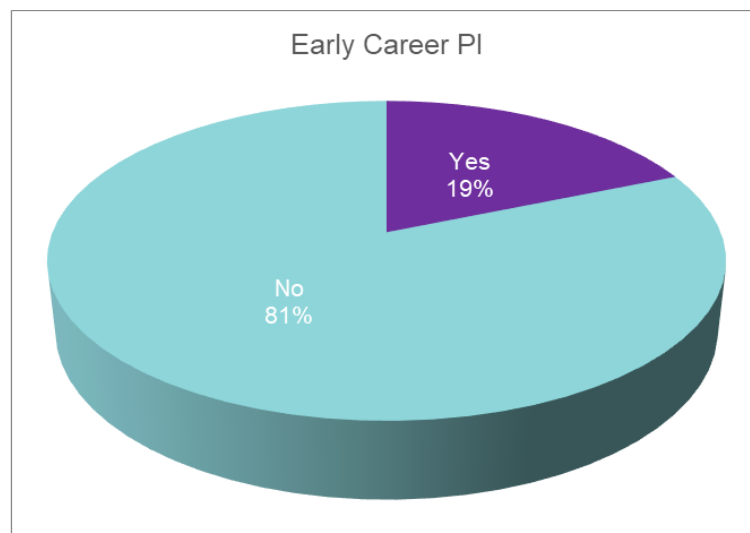


Figure 1. Career stage of the Principal Investigators

3.2 Cruise preparation

3.2.1 Information about logistics and administration

In this part of the survey we intended to evaluate the experience of the PIs when preparing their research cruise. It was important for us to verify if the information that was provided by the EF+ team was sufficient, and if there was enough support with administrative documents before the cruises. All PIs expressed in the comments the availability and help provided by the EF+ logistics office and infrastructure operators during the preparation of the campaigns.

As almost all EF+ campaigns were postponed by at least 1 year due to the Covid-19 pandemic, there were not too many comments on constraints and restrictions due to Covid-19 during the cruise preparation. In general, some PIs had more problems with the economic part of the TNA agreement or logistical requirements such as diplomatic clearance.

Generally, the PIs rated the information about the vessels/infrastructures on the EF+ website as excellent or very good (Fig. 2). The information on the EF+ website and from the vessel operator to judge interoperability of own and marine equipment was more variable and ranged from fair to excellent (Fig. 3). In terms of information about formalities, such as contracts, reimbursement, diplomatic clearance, EARS training or insurance, the responses were good or excellent overall, with two PIs rating this information as poor (Fig. 4).

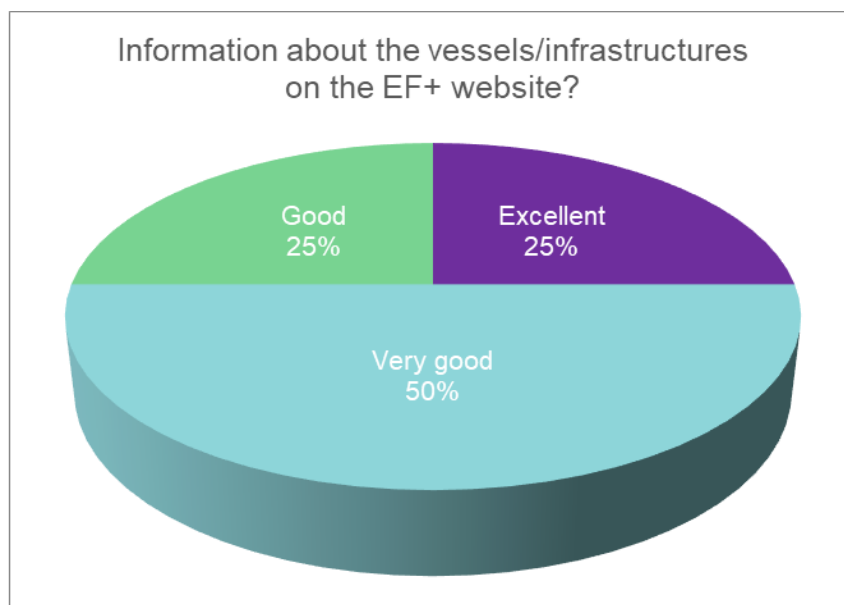


Figure 2. Statistics on the information provided about the infrastructures and interoperability

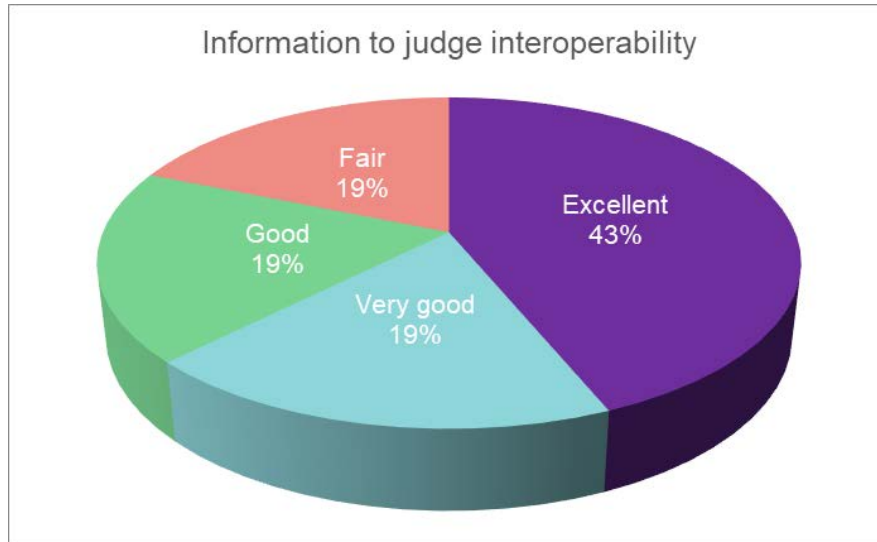


Figure 3. Statistics on the information provided about the infrastructures and interoperability

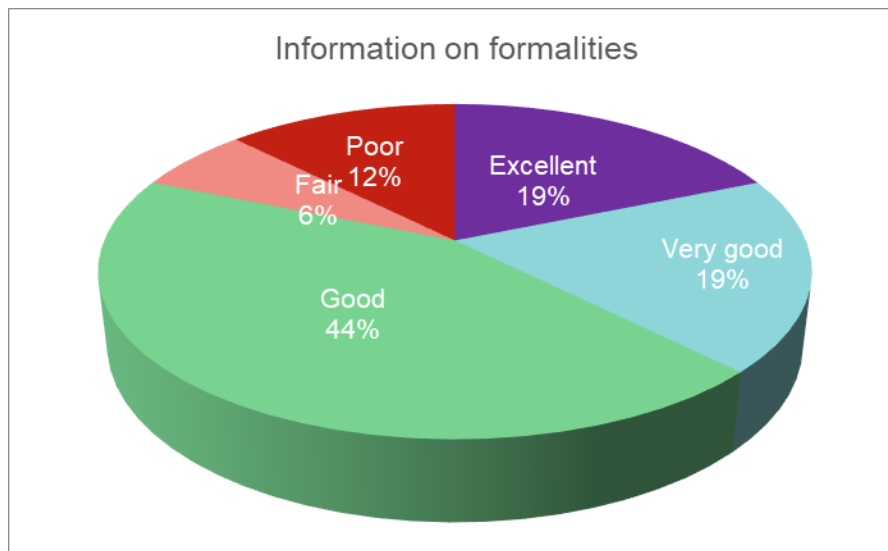


Figure 4. Statistics on the provided information for formalities

The PIs were also asked if they used other resources to find or get the information of vessel equipment and infrastructures. 63% of them responded with yes and listed the following other sources: web searching and website of the infrastructures/operating institutions, while most PIs used the direct contact with the crews or infrastructure operator via phone, videoconference or e-mail.

3.2.2 *Contact with and support by the logistics coordination office (MI) and infrastructure operators*

The majority of users agreed that questions regarding cruise preparation were answered clearly and timely by the logistics coordination office. In terms of the contract template, many of the PIs agreed

that it was well explained and clear what information is requested, yet others found the information not entirely clear (Fig. 5).

Some comments on the contract template were:

- *There were some details that were changed at the request of the UCSD lawyer and that went smoothly.*
- *Multiple adjustments needed to be agreed before our legal department would sign this contract. Our legal people did insist on reciprocity of liability in section 8. I guess this will be more widespread, and the format we agreed could easily be adopted in future. We needed several additions to cover what would happen if for some reason the cruise could not take place as planned.*
- *The economic part of the agreement is very complicated.*
- *Individual changes could be solved very fast*
- *Our situation was complicated with multiple institutions involved- a bit more guidance on the best way to navigate the insurance/contracts in this regard would have been useful*

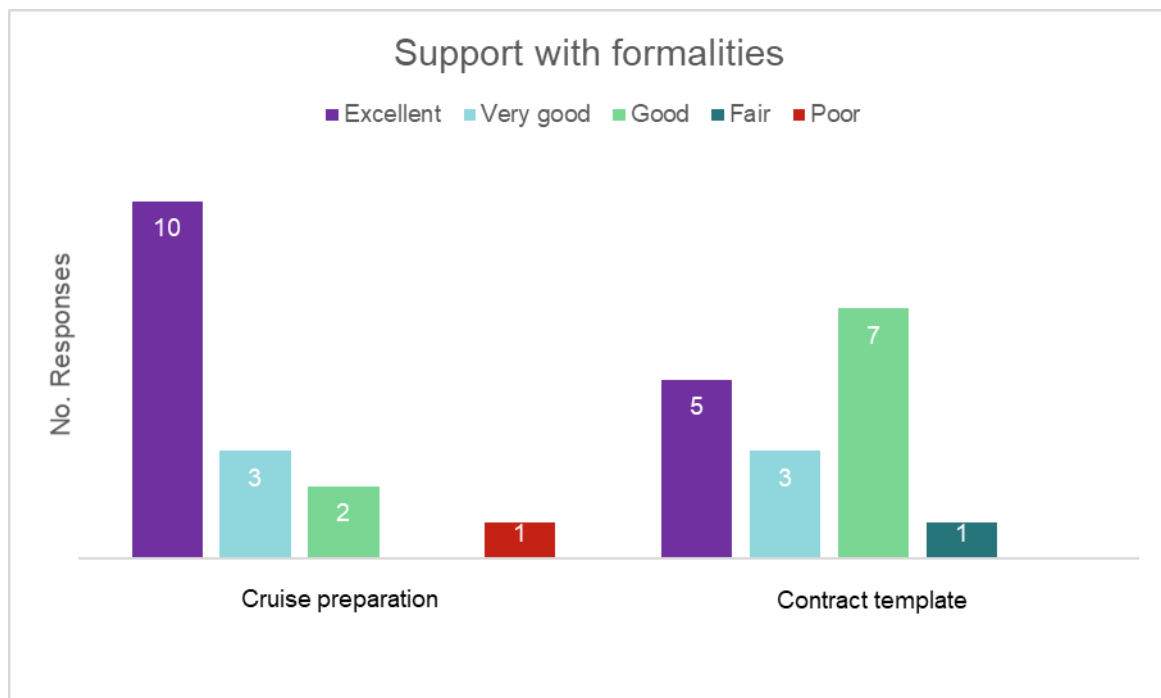


Figure 5. Support from the logistics coordination office with formalities during cruise preparation

3.2.3 Support from the infrastructure operator and crew

The support from the infrastructure operator during pre-cruise activities such as cruise planning, insurance, coordination and logistics was largely seen as excellent, with one exception. All PIs indicated that they received the required information about equipment and infrastructure by the infrastructure operator. The support from the crew and marine technicians during the time on board was extremely well-rated as excellent or very good (Fig. 6).

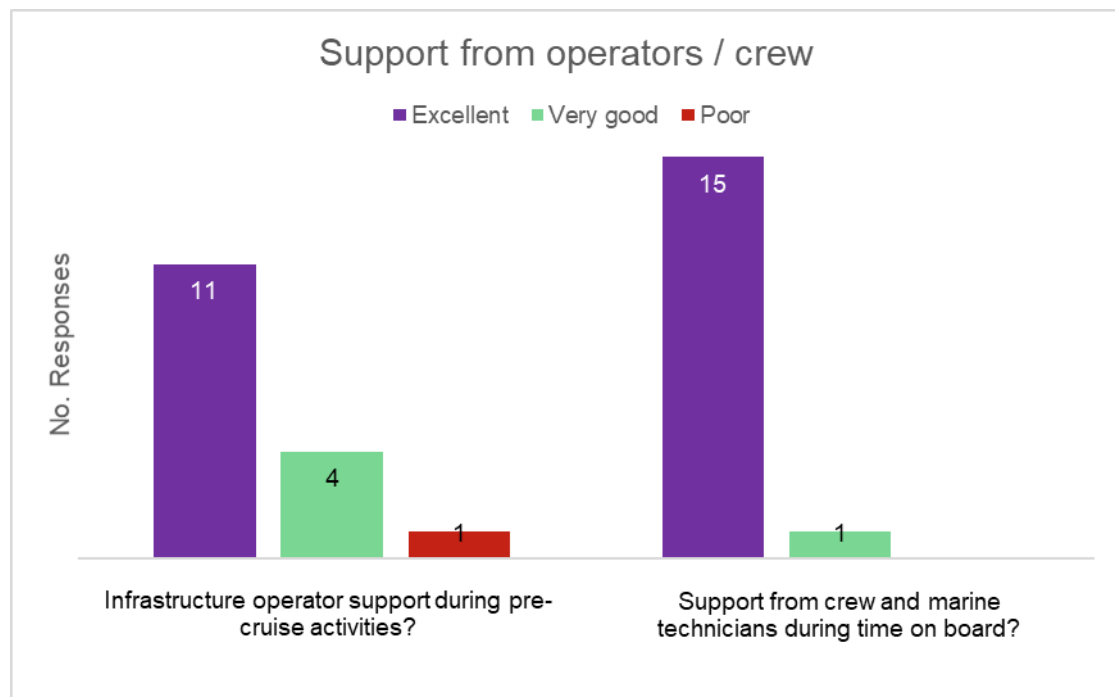


Figure. 6 Support from the infrastructure operator and crew/technicians during cruise preparation and time on board

The PIs listed the following issues in terms of communication or support from the infrastructure provider:

- *Infrastructure operator did not state requirements to empty grey waters tank three times a day, which involved transiting out of the work zone (Marine Protected Area).*
- *France has overlapping Exclusive Economic Zone claims with Spain, which was problematic and should be more widely known.*
- *I missed support from Eurofleets for cruise organization regarding EEZs, sampling permits and sample exportation permits. Fortunately I learnt most of this by directly contacting the ship operators, which were excellently helpful.*
- *I had a problem with the infrastructure operator in the run-up to the expedition. However, our cooperation improved significantly over the course of the expedition.*

Nonetheless, the users commented that there was excellent support pre, during and post cruise from infrastructure operators.

3.3 Cruise performance

3.3.1 Cruise conditions

All teams changed their on-board team compared to the planned team indicated in the application. The Evaluation Office and Logistics Coordination Office were notified about the changes.

Most of the teams (68 %) lost science days by e.g. weather, ship’s equipment problems or other circumstances. Nonetheless, the majority (81 %) of users stated that the offered days at sea were sufficient (Fig. 7).

All but one PI responded that the vessel was equipped as described and that equipment was available as needed (Fig. 8).

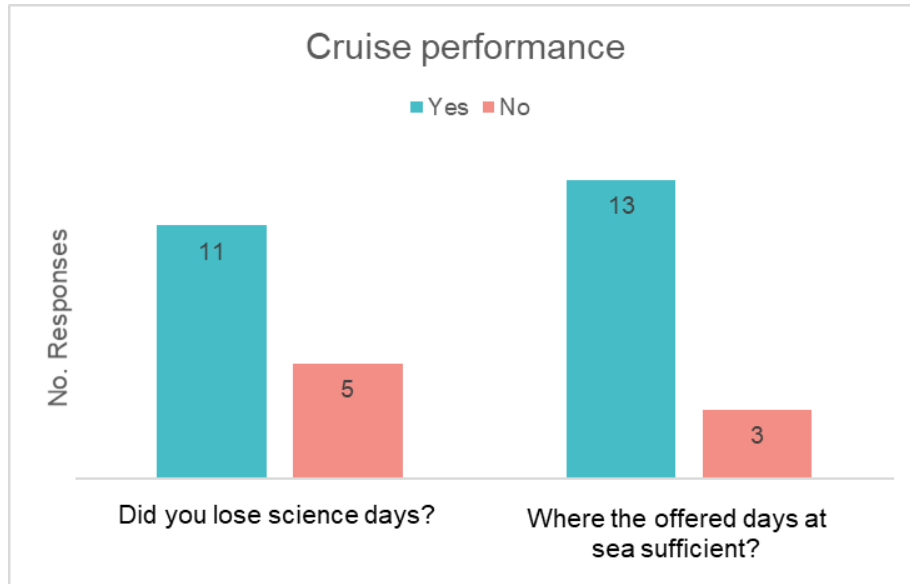


Figure 7. Experience with the cruise performance - days at sea.

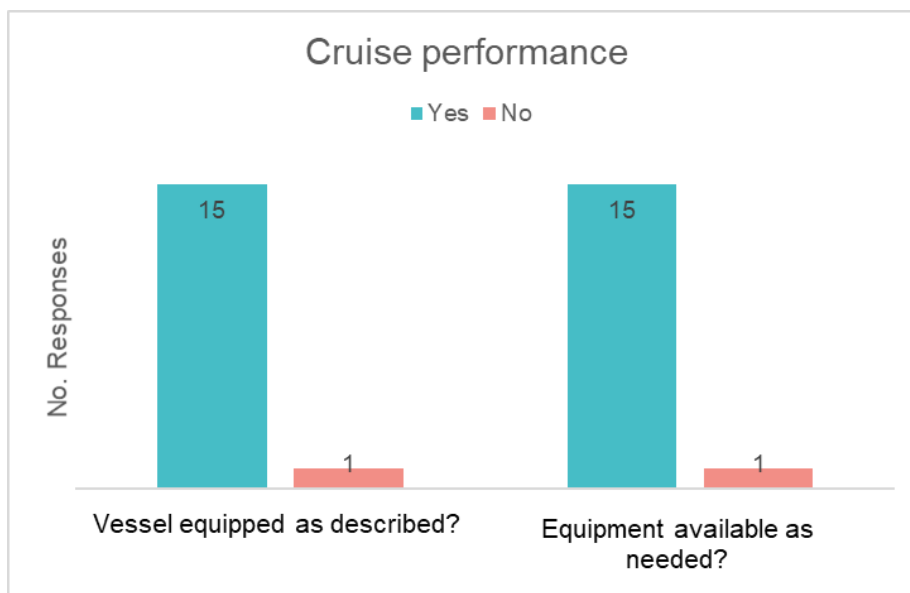


Figure 8. Vessel equipment and equipment availability

3.3.2 Data management & cruise report

The responses to the question related to data management and data collection reflected that many users were unsure which data to collect and how to feed it into EMODnet DIP, according to the EF+

data management guidelines. The majority also indicated that they could not create the Cruise Summary Report on the BSH website in time.

When it came to the cruise report as such, the majority of users found the template satisfactory, and time to prepare it sufficient. In fact, most of the cruise reports were submitted in time, and only one cruise report needed some revision, reflecting the clearly structured and well-explained template.

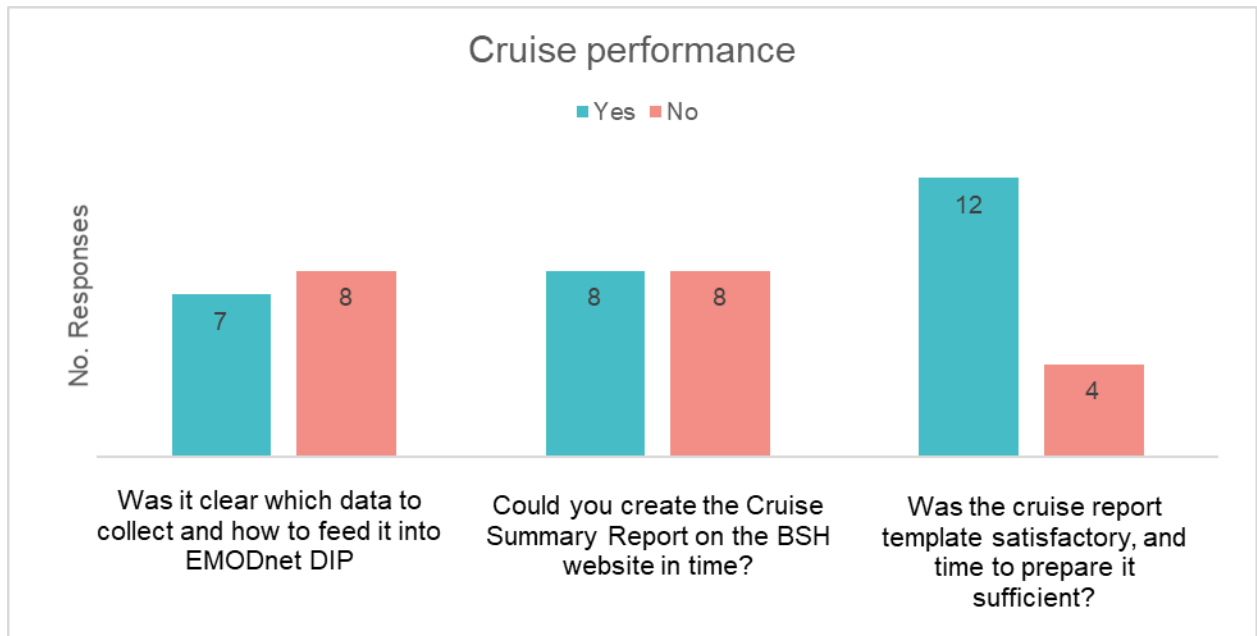


Figure 9. Data collection, cruise summary report and cruise report template.

3.3.3 Remote access

We asked the PIs if their ship-time included Remote Transnational Access to onshore participants, and if yes, what worked well and what challenges they did face.

The PIs responded the following:

- *Yes, COVID impacted the most. We had to plan in advance and contact the team in the University of Sydney to update them.*
- *Yes, we could not collect all the samples that were foreseen*
- *Internet access at sea was insufficient for the proposed real-time remote access activities. This was largely outside operator's control. It would have been better if the information available during proposal writing stage had been more realistic.*
- *Yes. Works well.*

The PIs had different ideas about whether they should utilise Remote Transnational Access in the future as a means of data or sampling or not, see Figure 10.

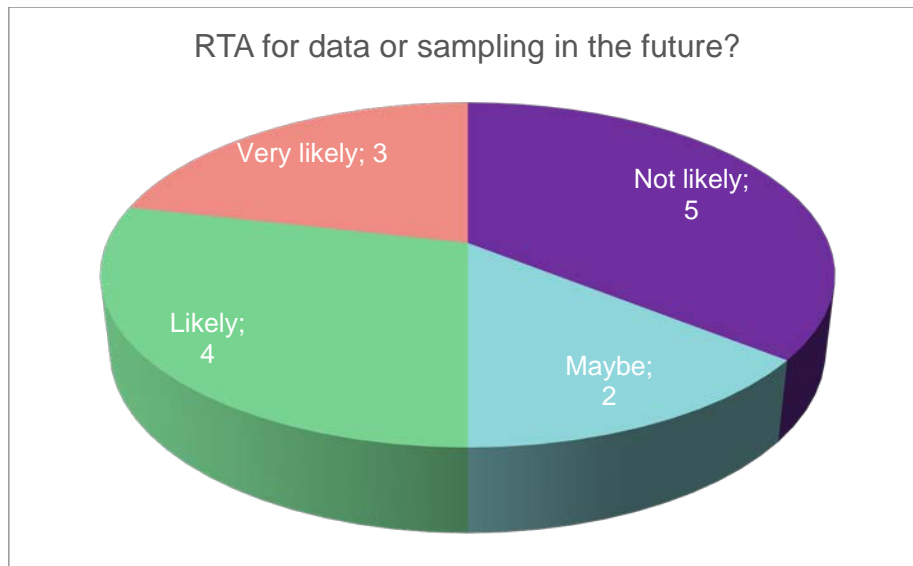


Figure 10. Remote Transnational Access as a means of data or sampling

3.3.4 Training and Co-PI

All of the PIs could consider hosting a Co-PI applicant on future funded expeditions.

The cruises that include any training of early career researchers provided some details of the expected impact of this training opportunity for them:

- *Three people were trained on how to operate underwater vehicles during the cruise, and how to work/operate around cranes and marine equipment.*
- *2 grad students and 1 technician were early career. One student was a modeller and gained his first at sea experience. The other student will use these data as the basis of a paper for his PhD. The technician is new in her job and gained lots of experience on deck.*
- *It was foreseen but the two students were not able to come on board at the very last moment. We also had a broadcasting session with a couple of primary school classes in Italy*
- *Our cruise contained lots of ECR, who received training in oceanographical and biological sampling. This will enhance their skillsets and CV, improving chances of employment of obtaining MSc/PhD/Post-doc placements.*
- *The original proposal had significant emphasis on early career researcher (ECR) training. The proposed training programme was based on a “floating university” model that has previously been used on EF and other cruises. However, the floating university model makes considerable demands on senior scientists’ time. Given the reduced science party owing to Covid, it was decided in the cruise planning stage to re-organise ECR training around the outreach objective. In this model, the ECRs learn the fundamentals of various subjects by interviewing the senior scientists and technicians, before summarising key points in a series of written and visual presentations for dissemination on social media. The outreach-based training model proved a more efficient and achievable way of providing early career researcher training than the programme originally proposed.*
- *We had a PhD student. She had the opportunity to participate in the preparation of the cruise, sailing and to use the samples that she collected for her PhD.*

- Yes, the proportion of early career ocean professionals on board was more than 60%. A total of 11 participants (including the PI) from 18 scientists a board. The median age of the cruise was 32.5 years.
- The students onboard and have matured their fieldwork knowledge along with the understanding and maturation of the scientific problem and questions behind their PhDs.
- Training included understanding how data are generated and what knowledge is required to rate information from other sources.
- It was the first experience of ECRs in a large research vessel and they were very engaged

3.3.5 Work programme

In terms of the proposed work programme of the implemented cruises, 6 of the PIs responded that they completed their work programme by 70-90% and / by 90-100%, respectively. Only 3 completed their work programme with 50-70%.

The scientific objectives were completed with 90-100% by 8 applicants, 70-90% by 6 applicants and only one with 50-70%.

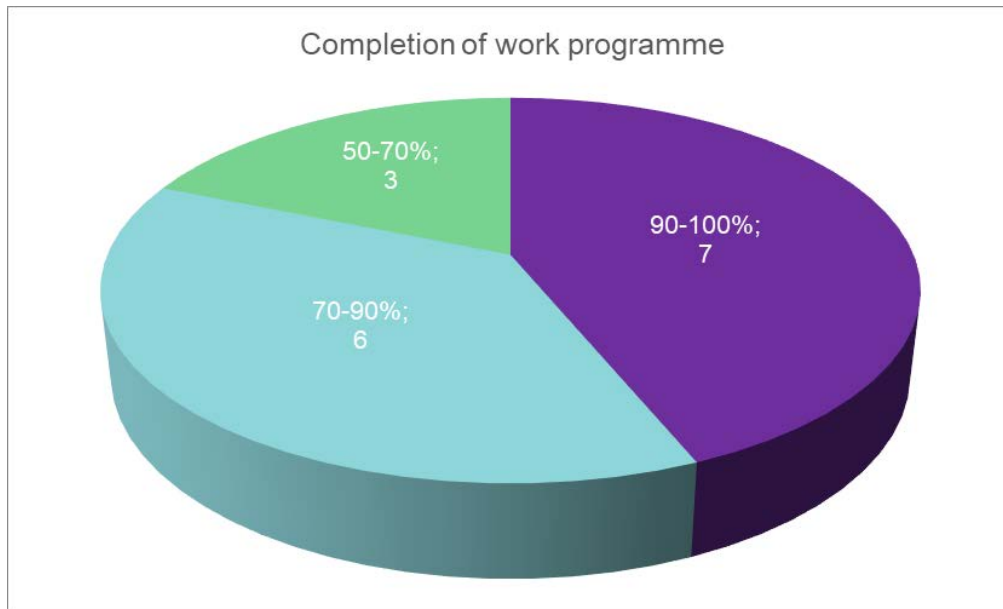


Figure 11. Achievement of Work programme

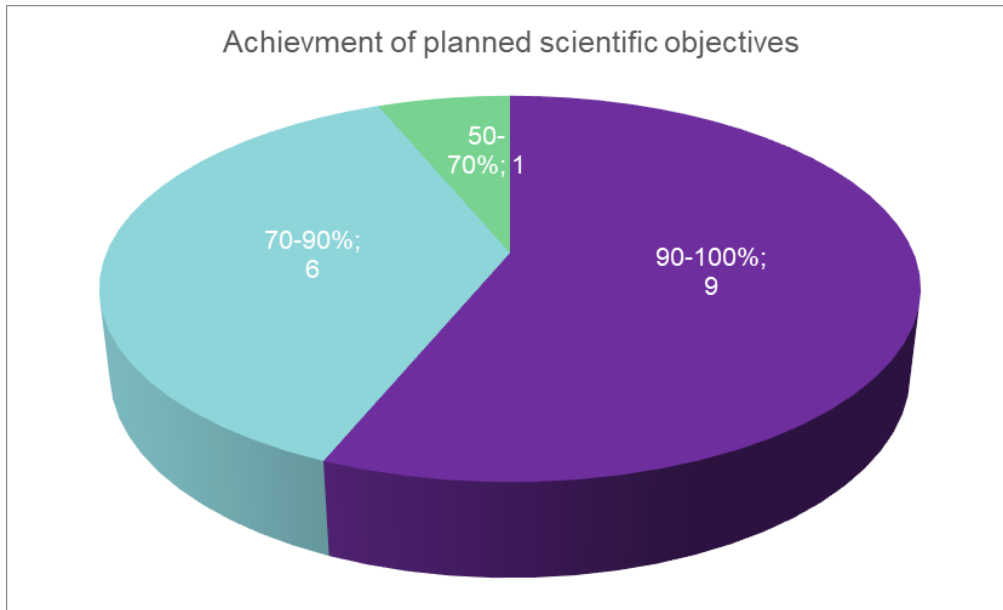


Figure 12. Achievement of scientific objectives

3.3.6 Feedback and user experience

Users had the opportunity to provide feedback about their general experience on board and list any potential negative experiences along the cruise implementation.

General experience on board:

- 11 PIs responded that the EF+ funded TNA was an excellent experience
- Crew were helpful and guided us on every task. The captain and first official were available to talk and advice on best practises.
- One of the best ships I've been on. The crew were very helpful and skilled.
- Great cruise. We had a lot of user-supplied seismic equipment. The technical team running this equipment said that the operator provided an excellent platform and support, and would be very happy to use the platform again.
- The crew and technicians of the RV were excellent, helpful and welcoming. They were flexible to our needs despite the harsh weather encountered. The technicians were really professional and effective, attending all our needs.

Negative experiences:

- The only negative experience was the unfavourable weather conditions that prevented to carry out the proposed work in the primary research area.
- An injury of the team member
- Dealing with the acoustics regulations in the planning stages was a lot of work for very little return in terms of marine mammal safety in the opinion of the cruise PI.
- Problems with the winch

- *Problems of communication between the scientific team, bridge and deck crew in a huge vessel. Improved by printing several plannings for the next day and distributing them everywhere.*
- *Misunderstandings between cruise participants, which were resolved in time*

What users liked most:

- *Having the opportunity to access ocean going platforms (not available in the Azores or Portugal)*
- *Access to equipment we otherwise do not get to use*
- *Excellent support by the EF+ office particularly during the turbulent pandemic period / straightforward guidelines and well organized workflow / great opportunity for basic research*
- *The program is very well lined up, information is clear and accessible. The application process is easy and the support from TNA makes it successful.*
- *With partnership between Eurofleets+ (time on Pelagia) and US ONR support, the Calypso project was able to carry out two-ship operations to sample quickly evolving fronts and how vertical motions at these fronts connects the surface ocean to the interior.*
- *The possibility to build a strong scientific international collaboration, by using high-quality infrastructures around Europe.*
- *The opportunity to access state-of-the-art and quality research vessels to progress my research goals. I also enjoyed providing students with invaluable experiences.*
- *Flexibility to combine with other funding sources to make an even bigger, better project. Opportunity to work with scientists from across the EU, in particular from countries with less of a track record of running big international expeditions.*
- *Any investigator having the opportunity to apply in to have ship time.*
- *An amazing experience for an Early Career. I apply during my first year as postdoc. That opportunity is unique in the current European TNA funding environment.*
- *It is a fast process and allows to propose small projects that are difficult to realize through other resources.*
- *The support from the EF+ coordination team*
- *A reasonably simple approach to a EU multi country collaboration that in our case has opened access to other sources of data and funding*

3.4 TNA facilitation and future

At the end of the survey, we wanted to hear from PIs about what they would like TNA to look like in the future and how it could facilitate this.

Facilitation to infrastructures

When asked what might facilitate researcher access to research vessels/maritime equipment in the future, PIs responded that more frequent and, especially, regular calls would be beneficial. It would also be helpful here if the data on the availability of the infrastructures were available at an early stage. This would allow the potential cruise PI to contact the infrastructure operator at an early stage and plan a cruise.

Several PIs also reported that insufficient funding, on the one hand for the cruise or shipping of equipment, but also for the analysis of the collected samples is a big problem, so that a significant amount of additional funding had to be acquired. This was also an issue for ECRs that wanted to test

and collect pilot data for the first time. In this context, one user mentioned that when additional funds need to be raised, there is a problem in coordinating multiple funding requests with different deadlines. In this regard, it would be helpful if EF access could be granted provisionally, provided that the additional funds are found within a time window of at least one year, preferably longer.

One comment was that the need for additional charges to operate sensors that are onboard should be avoided. It was also proposed that equipment that is only available in certain countries could be included in the offer to bring them on board.

Less bureaucracy and paperwork, and more flexibility in the operational area were also mentioned by some users. Furthermore, it was recommended to unify scientific questions and efforts and combine them on a single longer cruises.

We also got some very positive responses, stating that the Eurofleets+ scheme is already perfect for TNA and is much appreciated. Some also mentioned the accompanying good possibility to share the same infrastructure with thematically similar projects and suggested that also thematically different projects should share one infrastructure.

Future content and improvement of Eurofleets+

We asked the cruise PIs what a centralised access like Eurofleets+ should comprise in the future, and what should be improved compared to Eurofleets+.

The users emphasized that access should be given primarily to users who do not have access to such platforms/infrastructures. If something like EARS is to be used in the future, this would need to be improved. It was commented that raising funds for shipping was extremely difficult, and support in funding acquisition for shipping equipment would be beneficial.

It was also suggested to make the data logging software more user friendly and provide more training for this. In addition, the deadline for completing the reports should be extended.

One suggestion was that, as in the U.S., ship time be assigned to approved or funded projects so that scientists do not have to worry about both science and ship time being funded.

One user comment that the very broad range of platforms offered through EF+ is very positive and opens a good chance for smaller surveys that might be difficult to arrange with long-term schedules of other national vessels. Budget cuts of more than 10% of the proposed costs should be avoided as they will endanger the execution of the research.

Several of the PIs responded that their EF+ cruises were such a good experience that they had no recommendations for improvements, and they wished that something like EF+ would be established for the future. The diverse range of ships and locations and the opportunity for international cooperation should be continued, with additional ship-time.

4 Results of the Co-PI satisfaction survey

Of the total of 10 Co-PI applications submitted to EF+, 3 were implemented by EF+ and also responded to the cruise satisfaction survey for the Co-PI programme.

4.1 General information

The first set of questions aimed at obtaining information about the PI of the implemented proposal, and its team.

All three PIs were female and Early Career Researchers at the time they performed the cruise. Two of the projects had two team members each, and one had four team members.

4.2 Cruise preparation

4.2.1 Information provided for preparing the cruise

In this part of the survey we intended to evaluate the experience of the PIs when preparing their research cruise.

The information about the vessels/infrastructures on the EF+ website was rated as excellent, very good and good (Fig. 13). The information about the possibility to apply for a Co-PI project on board a vessel was also rated as excellent, very good and good (Fig. 14).

The information on the EF+ website and from the vessel operator about available marine equipment excellent was rated as excellent, good and fair (Fig. 15). Information about formalities such as contracts, reimbursement or diplomatic clearance, was evaluated as very good or fair (Fig. 16).

Information about the vessels/infrastructures on the EF+ website



Figure 13. Information provided for preparing the Co-PI cruise: infrastructures on EF+ website

Information about the possibility to apply for a Co-PI project on board a vessel



Figure 14. Information provided for preparing the Co-PI cruise: possibility to apply for Co-PI

Information EF+ website & operator about available marine equipment



Figure 15. Information provided for preparing the Co-PI cruise: information on website and from operator

The Co-PIs also used other resources to find or get the information of vessel equipment and infrastructures such as direct communication with the ship manager, the website about the research vessel, and direct email exchange with ship's technical team.

Information about formalities

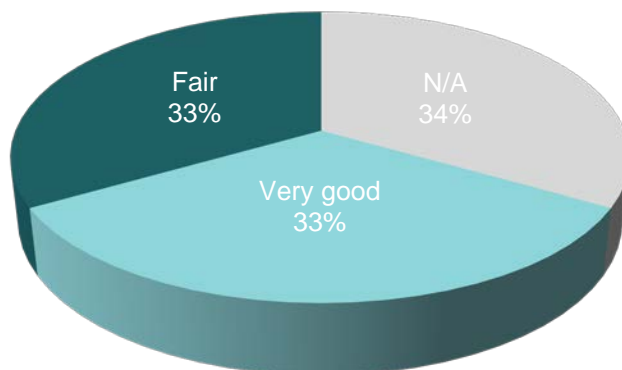


Figure 16. Information about formalities such as contracts, reimbursement or diplomatic clearance

4.2.2 Support by the logistics coordination office, infrastructure operators and SEA cruise PI

The Co-PIs responded differently concerning the support by the logistics coordination office. Some agreed and one rather disagreed that their questions regarding cruise preparation were answered clearly and timely by the logistics coordination office. Two of the Co-PIs answered that contract template was well explained and that it was clear what information was requested, one ranked the contract template as average (Fig. 17).

Support during cruise preparation and on board



Figure 17. Administrative support during cruise preparation

The support from the infrastructure operator & cruise PI support during pre-cruise activities such as cruise planning, insurance, coordination and logistics, was seen as excellent or very good.

All Co-PIs agreed that the infrastructure operator supplied sufficient equipment and infrastructure information for preparing the cruise (Fig. 17), and they received all necessary information for cruise preparation from the chief-scientist of the EF+ cruise.

Similarly, all Co-PIs appreciated the support from (scientific) crew and marine technicians during the time on board and rated it as excellent.

The Co-PIs listed the following difficulties during the preparation of their cruises:

- *The Eurofleets plus coordinator as well as the ship manager and the cruise PI were very helpful. There were some mild issues onboard, that were resolved due to very helpful crew (our project technician, has taken lead instead of me during the cruise was very grateful for all the support she received during the cruise).*

- *During the cruise we had some technical problems. From the beginning it was no possible to simultaneously acquire bathymetry and TOPAS sub-bottom profiles due to a synchronization problem between both instruments. Finally, the TOPAS sub-bottom profiling and the AUV had technical problems and stopped acquiring data. So, we spend much of our time acquiring bathymetric data with the hull-mounted sounder. Apart from the technical problems, for me it was a great experience from which I learned a lot.*

4.3 Cruise performance and follow up

4.3.1 Cruise performance

The third section of the survey asked the Co-PIs about the performance of their cruises as such.

All Co-PIs responded that they lost science days by e.g. weather, ship’s equipment problems or other issues (Fig. 18). Two of the Co-PIs stated that the number of offered days at sea was not enough for their projects.

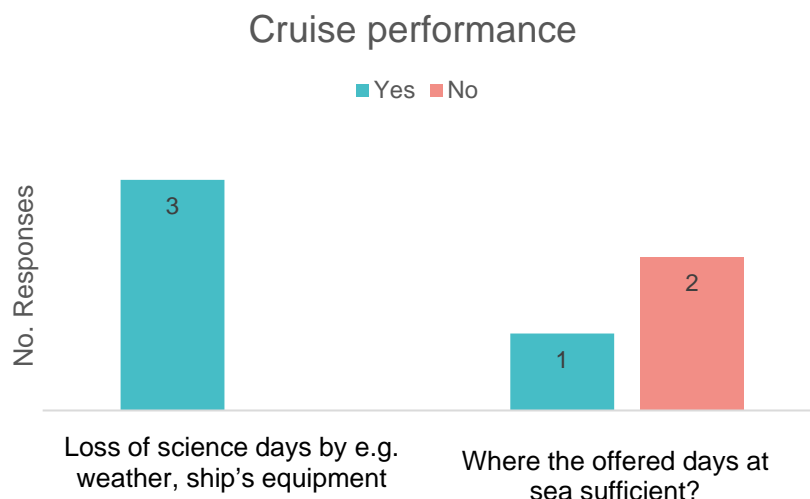


Figure 18. Experience with cruise performance

Concerning the research vessels and their equipment, all Co-PIs responded that the research vessel was equipped as described and two out of three that the equipment was available as they needed it (Fig. 19).

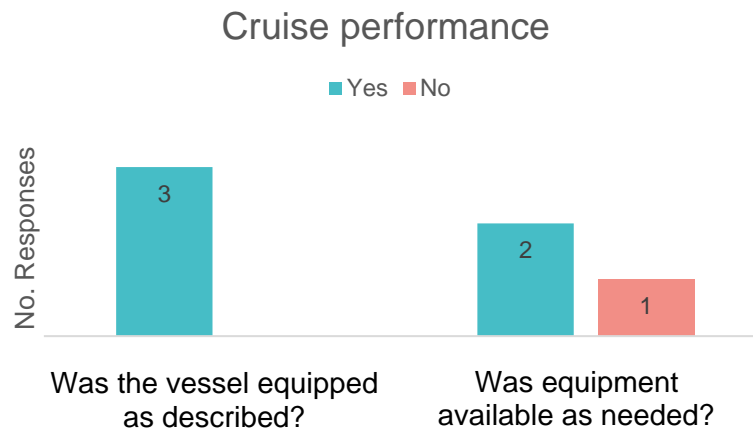


Figure 19. Experience with cruise performance

Most of the Co-PIs found it clear how to process data and feed them into the Data Management Plan of the cruise PI. Two of the Co-PIs felt that the time for preparing the cruise report was not sufficient (Fig. 20)

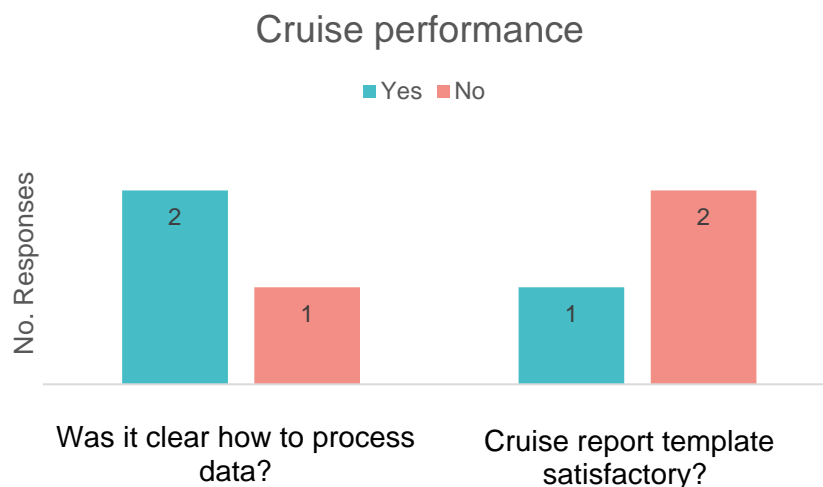


Figure 18. Experience with cruise performance – data & cruise report.

The experience of the Co-PIs in sharing ship-time with other (non-EF+) scientific teams was the following:

- *For me it has been a very positive experience. The only problem is that during our acquisition time we had a lot of technical problems, which naturally appeared as the cruise progressed.*
- *There was no non-EF+ teams onboard*
- *Excellent*

The Co-PIs also responded about what worked well and what challenges they faced during their cruises:

- *The stations were joined with other research groups, therefore our work was well coordinated*
- *Both scientific teams integrated perfectly. I would schedule the Co-PI acquisition time in the middle of the cruise.*
- *Ship-time limitation, shortage of scientific team onboard due to budget limitations*

4.3.2 Feedback and general experience

When asked about positive feedback, the Co-PIs responded the following:

- *The possibility to participate with own project (stand-alone), new collaborations and organizing of the international logistics*
- *The integration of both scientific teams and the unique opportunity of lead a part of a scientific cruise as an Early career researcher*
- *Having access to lead a first cruise-based project and co-lead for the first time an oceanographic cruise*
- *Continuation of the EUROFLEETS + programme is appreciated*

The feedback was very positive overall, and the CO-PIs stated that the EF+ cruises were a great experience. The only critical feedback was about the time pressure during the cruise do to a tight cruise schedule, and that the Call should be promoted better.

5 Final conclusions

The responses received reflected that the implementation of the 27 proposals on board the vessels of the EF+ consortium has been a success. Despite the problems that the COVID-19 pandemic generated from a logistical point of view, all projects were able to have appropriate logistics thanks to a well-organised workflow set up by EF+ and the collaboration and support of the operators. The infrastructures and technicians on board provided an excellent platform and support, and facilitated the planned activities and experiments. The advice and help with the installation and operation of the equipment, as well as the flexibility of the research vessel crews, was much appreciated.

Some users were uncertain about how to feed their collected data into EMODnet DIP according to the data management guidelines and had difficulties in completing the Cruise Summary Report in time.

Lastly, the possibility to build a strong scientific international collaboration, by using high-quality infrastructures around Europe was seen as very positive by the researches. The opportunity to access state-of-the art marine infrastructures, to which one would not normally have access, was undoubtedly seen as a major beneficial aspect of the EF+ programme.