



## 19th ERVO Annual Meeting

June 12<sup>th</sup> - 14<sup>th</sup>, 2017 – Helsinki, Finland

v.11.06.18 – final

The 19<sup>th</sup> ERVO (European Research Vessels Operators) Annual Meeting was organized by the Finnish Environment Institute (SYKE), Helsinki (Finland) from Monday the 12<sup>th</sup> to Wednesday the 14<sup>th</sup> of June 2017.

Monday 12<sup>th</sup> June 2017

19:30 – 21:00 – Icebreaker cocktail on board RV Aranda – Helsinki western harbor

Tuesday 13<sup>th</sup> June 2017

09:45 - 13:00 – Regional focus: To foster more regional cooperation among ERVO members regarding the Baltic Sea

This was the second time that a half-day meeting was planned before the annual ERVO meeting concerning the region where the meeting was organized. The objective is to foster more regional cooperation among ERVO members and to discuss issues and opportunities.

Agenda:

- New Finnish container system (sampling, laboratory, office & lab)
- New Norwegian icebreaker “Kronprins Haakon”
- BONUS Website

Klas Lackschewitz (GEOMAR) presented the activities of GEOMAR’s vessels in the Baltic Sea, this includes:

- RV Poseidon cruises in late summer & autumn using JAGO, ROVs, etc.
- RV Elisabeth Mann Borgese cruises
- RV Alkor cruises
- RV Littorina cruises
- Boknis Eck with a longtime monitoring station, now an underwater observatory

Klas also made a reference to the BONUS project (budget: 100 M€ of which 50% provided by the EU & 50% provided by the participating countries of which 25% via in-kind contributions). In the follow-up BONUS project there should be more integration of the Vessel & Infrastructure coordination. For some ship operators the in-kind contribution, as used in the BONUS project, can be a problem since it is too expensive, on the other hand participation is a good advertisement for the provided vessel. The BONUS project foresaw lots of training for students. In the future the BONUS project will include a North Sea chapter (incl. France, Netherlands, & Belgium). Additionally, at the end of the morning session the BONUS website was presented by Meelis Serendis.

Juha Flinkman (SYKE) presented the planned RV Aranda refit and the use of the new Finnish container system. The refit of RV Aranda, planned from July 2017 to January 2018, will foresee in: an extension of the vessel (4.5 m mid & 1.5 m AFT), a newly installed drop keel and new trawling and hydro-acoustic capabilities. During the refit, the monitoring obligations will be performed via replacement vessels using the new Finnish lab container system which includes its own electric gantry and winch. Juha pointed out that the Botnic Gulf is a good area to train for arctic work. He also pointed out that it is possible, via SYKE, to get into contact with our Russians colleagues.

Johny Ytreland (IMR) presented the new RVIB Kronprins Haakon. The new Norwegian PC-3 icebreaker will be silent based on an adapted ICES 209 curve and will have an adaptation for bubble sweep down. The propulsion will be foreseen by Z-drives (no azipods). The ship will have a maximum autonomy of 90 days (15,000 nm) of which 65 days with 55 persons in 38 cabins. The crew will exist out of 15-17 members.

During the regional focus session there was also some attention given to the Swedish fleet of 5 RVs that mainly focus on monitoring and fishery research.

For the future it would be interesting to get the International Council for the Exploration of the Sea (ICES) and the European Marine Board (EMB) involved for long-term planning. There is clearly a need to organize/coordinate cruise requests and vessel availability.

For future regional focus sessions, an agenda with more fixed presentations should be foreseen to enhance discussions and cooperation.

For more details, see the presentations at <http://www.ervo-group.eu/np4/np4/42.html>

## *Minutes 19th ERVO meeting*

13:00 - 14:30 – Lunch

14:00 – ERVO General Assembly

14:00 – Opening of the 19<sup>th</sup> ERVO meeting – Olivier Quédec (IFREMER, France)

The 19<sup>th</sup> ERVO meeting was officially opened by the Chair, Olivier Quédec, and subsequently he presented the introduction to the 19<sup>th</sup> ERVO meeting.

In the introduction Oliver gave an overview of:

- The ERVO Group
- The objectives
- The meetings
- The main achievements
- The 2017 actions
- The 2017-2018 upcoming actions

After the introductory presentation, the new Chair Klas Lackschewitz was instated and the new Vice-Chair was proposed. After a unanimous vote Lieven Naudts (RBINS-OD Nature, Belgium) was selected to be the Vice-Chair for 2017-2018 and Chair for 2019-2020.

The ERVO 2016 minutes were revised and approved without any comments. They will be put on the ERVO website by EurOcean.

Since all meeting participants were present during the morning regional focus session no report was made to the ERVO group.

For more details, see the presentation at <http://www.ervo-group.eu/np4/np4/42.html>

14:15 – ERVO future – Klas Lackschewitz (GEOMAR, Germany)

Klas Lackschewitz gave, as new ERVO Chair, an overview of the future of ERVO.

The ExCom will consists of less people (from 8 to 6 persons), i.e. the Chair, the Vice-Chair, the ex-Chair, Per Nieuwejaar, Juanjo Dañobeitia and Juha Flinkman. Aodhan Fitzgerald stays one year, as Eurofleets+ coordinator. Erica Koning, Dré Cattrijsse and Giuseppe Magnifico were thanked for their work in the ExCom. Olivier Quedec was thanked for being the Vice-Chair and Chair of ERVO during the last 4 years. From now on the Chair and Vice-Chair will be appointed as treasurers. The yearly 300 euro per country will be used for the EurOcean support of ERVO and some of the organization costs of the ExCom meetings.

The most important upcoming action for ERVO is to update The Ocean Research Fleets Working Group Report (OFWG), EMB position paper 10. During the last 10 years a lot of things have changed in relation to RVs, therefore ERVO proposed to the EMB to update the position paper. The EMB agreed enthusiastically which also emphasizes the important contribution that ERVO can and will need to bring to the future of the European fleet of RVs.

For more details, see the presentation at <http://www.ervo-group.eu/np4/np4/42.html>

14:45 – ERVO new website – Ned Dwyer (EurOcean, Portugal)

Ned Dwyer presented the new ERVO website and logo and introduced the update of the governance and members section on the website. The website received over 700 users and almost 1000 visits, of which 74% new visits and 26% returning visits. The meetings section needs to be updated and mention the upcoming meeting (e.g. link to registration, etc.).

For more details, see the presentation at <http://www.ervo-group.eu/np4/np4/42.html>

15:00 – Welcome address by the director of the Marine Research Center – Paula Kankaanpää (SYKE, Finland)

The ERVO group was warmly welcomed to Helsinki by Director Paula Kankaanpää. She introduced the Marine Research Center of the Finnish Environment Institute (SYKE).

Paula started her presentation with a reference to the UN Ocean conference that she attended. The take home message of the conference was alarming with regard to the situation of the seas and oceans. There is a better link needed between research and policy; therefore the need for marine infrastructure and the importance of the ERVO group is clear and increasing!

The Marine Research Center of SYKE has a yearly budget of 9 M€ of which 5 M€ for research. The center is dependent on 70% external funding. The center has 95 staff members, whereas SYKE has a grand total of 550 staff members. The center works in the framework of international and European cooperation and focusses on the research of ecosystems, the effects of human actions on the marine environment and the development of methods. Open sea monitoring, continuous data collection, lab research, pooling of national marine infrastructure, remote sensing and environmental emergency response are the main activities of the center

The refit of RV Aranda will be an important step for the research center and will cost ca. 11 M€

For more details, see the presentation at <http://www.ervo-group.eu/np4/np4/42.html>

*Theme 1: New members/guests introductions*

15:15 – New member introductory presentation - Umeå University/Umeå Marine Sciences Centre – Anna Palmbo Bergman (Umeå University, Sweden)

Anna Palmbo Bergman gave an introduction to the Umeå Marine Sciences Centre of the Umeå University. The Umeå Marine Sciences Centre (UMF) is located in Norrbyn, 40 km south of Umeå and was established 1989. It is part of the Umeå University and part of the Swedish Institute for the marine environment. UMF has a field station with open water en coastal research vessels, laboratories, conference rooms, offices, accommodations, workshop and a modern mesocosm facility (salt/brackish water; in the future also ice). Researchers from universities all over the world are welcome to apply for using the facilities. The main activities of the center are Research, Environmental monitoring and Information provision. Anna introduces the center's RVs: the RV Lotty (which will replace RV Botnica that is used

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up to 150 days per year), the RV KBV 181 (used for 50 days per year for monitoring, even in ice) and some smaller boats.

For more details, see the presentation at <http://www.ervo-group.eu/np4/np4/42.html>

### 15:40 – Coffee break and national update posters

The following posters were presented during the meeting:

- Germany - German Research Vessels
- Spain - Research Vessels operated by CSIC
- Italy - CNR Update
- Belgium - RV Belgica activity 2016
- Norway - IMR Update
- Romania - GeoEcoMar Update
- France - French Oceanographic Fleet activity report 2016
- Iceland - Marine and Freshwater Research Institute Update

For more details, see the presentations at <http://www.ervo-group.eu/np4/np4/42.html>

### 16:25 – New member introductory presentation - Swedish University of Agricultural Sciences – Mattias Sköld (Swedish University of Agricultural Sciences, Sweden)

Matthias Sköld gave an introduction to the Swedish University of Agricultural Sciences (SLU) and the new Swedish RV for fishery and oceanography. SLU is a green university and does a lot of MSFD work nowadays incl. fish stock assessments with a focus on marine and fresh water fishery research. In the past they used RV Argos (°1976 – 61 m) which was scrapped in 2012 due to age and asbestos problems. For the moment SLU uses the Danish RV Dana for their work. They charter the vessel for the 65-70 days per year. The government decided in April 2015 that a new Swedish RV needs to be build and that SLU needs to take the lead, even though the board of SLU was skeptic to take the ownership at first. The new vessel (69.5 m), designed by the Norwegian Naval Architect and Marine Engineering company Skipsteknisk AS, will be built by Spanish shipyard Astilleros Armon and will be delivered in April 2019.

For more details, see the presentation at <http://www.ervo-group.eu/np4/np4/42.html>

### 16:55 – New guest introductory presentation – Arctia Ltd. – Sampo Viheriälehto (Arctia Ltd., Finland)

Sampo Viheriälehto gave an introduction to the Arctia company. The Arctia Group is 100% owned by the State of Finland, est. 12/2009. Its basic task is icebreaking in the Baltic Sea, ice management, offshore services, oil spill preparedness and response globally. Arctia has the largest fleet of icebreakers in the world with 8 active icebreakers. The vessels can also be used by researchers when they foresee in costs/fee.

For more details, see the presentation at <http://www.ervo-group.eu/np4/np4/42.html>

17:20 – IRSO update – Erica Koning (NIOZ, the Netherlands)

Erica Koning gave an update for IRSO. The upcoming IRSO meeting will take place in Japan from 16-19 October 2017 and will be organized by Jamstec.

For more details, see the presentation at <http://www.ervo-group.eu/np4/np4/42.html>

17.30 – End of day 1

19:00 – ERVO Social Dinner – Restaurant “Café Bistrot” on Island fortress “Suomenlinna”

Wednesday 14<sup>th</sup> June 2017

*Theme 2: RV builds, Modifications and Performance*

09:35 – Experiences with RV Sonne – Tina Knuth (University Hamburg, Germany)

Tina Knuth gave an overview of the new RV Sonne. The ship was build and put into service in less than 2 years of which 3 months for testing of equipment etc. Tina highlighted the strong capabilities of the vessel, the positive points and the challenges ahead (waste concept, lack of storage and other 250 proposed improvements). RV Sonne is mainly operated in the Pacific and Indian Ocean.

For more details, see the presentations at <http://www.ervo-group.eu/np4/np4/42.html>

09:50 – Construction process of new Swedish 50 m regional class RV Skagerak – Michael Klages (Lovén Centre, Sweden)

Michael Klages gave an overview of the construction of the new Swedish RV Skagerak, replacing the old Skagerak build in 1968 and acquired in 1993. The new ship is being built at the Polish shipyard Nauta which was selected from the 6 received offers. During construction several problems popped up. The weight of the ship increased to 1000 ton instead of the planned 850 ton and the ship was lengthened from the planned 44 m to the actual 49 m. As a result all documentation had to be redone, recalculated, etc. This finally resulted in a delay of 2 years. There were other problems with the lack of project management in the yard, particles in the engines, bad quality of welding. In total the delivery was delayed by 2 years. The new ship will be able to handle the new 2000 m rated ROV and 3000 m rated AUV.

For more details, see the presentations at <http://www.ervo-group.eu/np4/np4/42.html>

10:05 – New Swedish fisheries research vessel – Mattias Sköld (SLU, Sweden)

Matthias Sköld gave an overview of the new Swedish fishery research vessel to be built for SLU by the Astilleros Armon shipyard in Spain. The new 69.5 m vessel will be silent (ICES209), green (use of HV oils, etc.) with a focus on fishery research (incl. bottom and

pelagic trawling, hydro acoustics, oceanography). The ship will be active all year round, mainly in the Skagerrak, Kattegat and the Baltic but also in the North Sea and in the Norwegian Sea. Delivery is planned for April 2019.

For more details, see the presentations at <http://www.ervo-group.eu/np4/np4/42.html>

**10:20 – Problems on RV Belgica - RV Belgica 2 project, new steps – Lieven Naudts (RBINS-OD Nature, Belgium)**

Lieven Naudts gave an overview of the problems RV Belgica had to face in the last years and the new steps forward for her replacement. Besides the flooding incident of 2015, RV Belgica faced another mayor problem during the obsolescence maintenance in 2016. One of the bearings on the propulsion line kept overheating and for months no solution could be found, leading to 10 months of lost ship time. These problems have pushed the replacement process of the vessel, for which an open European tender was prepared and is ready to be published. The new ship will be a multidisciplinary, silent, ice-strengthened, DP-2 vessel that is planned to be delivered in 2020. The ship will be able to embark all large mobile European marine research infrastructure.

For more details, see the presentations at <http://www.ervo-group.eu/np4/np4/42.html>

**10:35 – RV Simon Stevin: URN measurements – Dré Cattrijsse (VLIZ, Belgium)**

Dré Cattrijsse gave overview of the history of the URN measurements of the RV Simon Stevin. Just after build, RV Simon Stevin was « silent » (cfr. ICES209) up to 10 knots. Five years later the same noise measurement were recorded to see the influence of age (wear&tear, stronger vibrations, new blister, new water intake, etc.). During the new measurements, ringing of the propeller was recorded which also caused extra vibration at the AFT deck. To solve this, the propeller will need to be grinded in the future. Interestingly, it seems that the propeller was also grinded during the build, but this was not officially reported or planned.

For more details, see the presentations at <http://www.ervo-group.eu/np4/np4/42.html>

**10:50 – IMR fleet update: new RVs Kronprins Haakon and Dr. Fridtjof Nansen – new project to build a 35 m coastal research vessel – Johny Ytreland (IMR, Norway)**

Johny Ytreland gave an overview of the IMR fleet evolution (new builds, upgrades, etc.). As for the previous presentation noise testing and measurements of the new RV Fridtjof Nansen resulted in extra maintenance. There were problems with the structure-borne noise and with singing of the propeller. Possible enhancements for the structure-borne noise can possibly be provided by changing some of the flexible piping connections in machine room. To remove the singing and cavitation, the original propeller was replaced but tests after with the new propeller showed even more singing and some cavitation. It was only after underwater grinding of the new propeller that the singing and the cavitation disappeared.

In the meanwhile the old RV Fridtjof Nansen has been refitted and renames as RV Kristin Bonnevie. Since the vessel was planned to work in arctic conditions problems in relations to

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the ship's stability were discovered. To resolve this, the weight was reduced by removing paint, useless equipment, etc. and 55 tons of ballast were added.

Finally, Johnny gave an overview of the refit of the bridge and the new hybrid propulsion for the RV Johan Hjort.

For more details, see the presentations at <http://www.ervo-group.eu/np4/np4/42.html>

### **11:15 – Coffee break & national update posters – Group picture**

See the list of posters on page 5 of these minutes.

For more details, see the presentations at <http://www.ervo-group.eu/np4/np4/42.html>

### **11:45 – French Polar Pod project – Olivier Quédec (IFREMER, France)**

Olivier Quedec gave an overview of the new French Polar Pod project. The project will put a «vertical ship» on a circumantarctic expedition and will focus on monitoring of the Southern Ocean (air-sea exchange, biodiversity, anthropogenic impacts, etc.). The ship will have a total vertical length of 140 m and a horizontal width of 22 m and will engage in a 2 years expedition which is split in legs of 2-3 months and will house 7 people. IFREMER will contribute technically (construction, equipment, data management, etc.) and scientifically to the project. The first expedition is planned in autumn 2019.

For more details, see the presentations at <http://www.ervo-group.eu/np4/np4/42.html>

### **11:55 – Marine and underwater technology products and systems: MacArtney DK – Ole Mikkelsen (MacArtney, Denmark)**

Ole Mikkelsen gave an overview of the marine and underwater products, systems and services of MacArtney. MacArtney is worldwide active via sales representatives in 26 locations and with 500 employees. It is a marine systems solution provider active in all marine and maritime branches. Ole gave an overview of the needs RVs have and how MacArtney could fill in these needs via its products (e.g. winches, LARS, A-frames, etc.).

For more details, see the presentations at <http://www.ervo-group.eu/np4/np4/42.html>

## ***Theme 3: Manning, Safety and Training***

### **12:15 – EUROFLEETS2: Training through Marine Research and Floating Universities – Aodhan Fitzgerald (Marine Institute, Ireland)**

Aodhan Fitzgerald gave an overview of the training that has been provided by the Eurofleets 2 project. The goal was to build on the experience of Eurofleets 1 and to prepare the next generation of marine scientists by giving them access to a broad pool of marine infrastructure and thus to allow capacity building. Eurofleets 2 organized preparatory workshops for young



upcoming scientists to successfully participate to the Trans National Access (TNA) calls for ship time and the use of other marine infrastructure. There were also 3 onboard and hands-on training courses on RV Urania, RV Bios II & RV Salme and a 2-week floating university course on RV Dana. Finally Eurofleets also provided an access program with teachers at sea, young co-chief scientists and training through research surveys.

For more details, see the presentations at <http://www.ervo-group.eu/np4/np4/42.html>

**12:30 – Operations on board: Training video tutorials - Under keel clearance Vs operations - Navigation in hazardous areas – Remy Balcon (Genavir, France)**

Remy Balcon gave an overview of the infrastructure managed by Genavir, the new training video tutorials and navigation in hazardous areas. Genavir is trying to provide video tutorials for all heavy deck operations and procedures to provide easy access information for newcomers and to allow more correct risk assessments. Remy also talked about the under keel clearance in relation to the different activities and used equipment.

For more details, see the presentations at <http://www.ervo-group.eu/np4/np4/42.html>

#### ***Theme 4: Scientific technology***

**12:45 – Observing systems – Juanjo Dañobeitia (CSIC, Spain)**

Juanjo Dañobeitia gave an overview of EMSO-ERIC European-scale distributed Research Infrastructure with a focus on seafloor & water-column observations. He started his presentation by giving an overview of all large infrastructure consortiums in Europe. Juanjo indicated that there are a lot of new EU infrastructure consortiums, but there seems to be a lack of communication with the (marine) infrastructure operators. Juanjo also pointed out that for installing cabled ocean observatories there is a need for supply vessels/cabling laying vessels but also for research vessels. Which is of course also true for all other marine observatories. It is important that new RVs have the capabilities to support moored stations/observation systems; “overcapacity” of new vessels (if there is) can be used for these new infrastructure projects. Juanjo ended his presentation with an overview of the possible links between RVs and these new EU infrastructure consortiums (cfr. activities, needs, etc.).

For more details, see the presentations at <http://www.ervo-group.eu/np4/np4/42.html>

#### ***Theme 6: Cooperation and Outreach***

**14:00 – EUROFLEETS+ project proposal – Aodhan Fitzgerald (Marine Institute, Ireland)**

Aodhan Fitzgerald gave a very brief introduction to the EUROFLEETS+ project proposal for which he will be the coordinator. The project will probably have a worldwide focus but excluding polar areas to not conflict with the new Arctic Research Icebreaker Consortium (ARICE) project. The main focus will be on the Trans National Access (TNA) of research vessels.

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For more details, see the presentations at <http://www.ervo-group.eu/np4/np4/42.html>

### *Theme 2: RV builds, Modifications and Performance*

#### *14:05 – Modernization of RV Aranda – Jukka Pajala (SYKE, Finland)*

Jukka Pajala gave an overview of the modernization of the RV Aranda. The RV Aranda will be lengthened, the stern will be modified, a drop keel will be put in place, the laboratories will be refitted and 400 kW of DP power will be added. The refit is expected to result in better overall performance, reduced emission and reduced underwater noise. Testing and training of the refitted RV Aranda should be finalized in 2019.

For more details, see the presentations at <http://www.ervo-group.eu/np4/np4/42.html>

### *Theme 5: Legal and Insurance*

#### *14:30 – Polar code: IRSO workshop in Muggiano report – Johny Ytreland (IMR, Norway)*

Johny Ytreland gave an overview of the IRSO Polar Code workshop that was held in Muggiano, Italy. The workshop was a great success and allowed the 35 participants to discuss the IMO Polar Code and to visit the new Norwegian PC-3 icebreaker RV Kronprins Haakon. After reviewing the Polar Code, there seem to be several shortcomings in the Polar Code in relation to research vessels and its activities (e.g. working on ice, helicopter operations, deploying gear in icy waters, etc.). It is clear that these common issues for RVs and the research activities should be tackled and solved by the RV operators together and not individually. A new Polar Code workshop will probably be planned in the coming year.

For more details, see the presentations at <http://www.ervo-group.eu/np4/np4/42.html>

#### *14:45 – Maritime Labor Convention, 2006 (MLC): Researchers are not "passengers" neither "maritime"... what are they? – Mauro Del Sette (SO.PRO.MAR., Italy)*

Mauro Del Sette gave an overview of the Maritime Labor Convention and the implications for researchers working on research vessels. Mauro first gave an overview of SO.PRO.MAR.'s research vessels and infrastructure. Secondly, he discussed the certification of deck equipment (e.g. davits, rescue boats, etc.), cyber security threats and the status of seagoing researchers. Seagoing research could possibly be threatened as industrial personnel. It is clear that in the future a lot of new requirements seem to be needed to safeguard/certify the work of researchers on RVs.

For more details, see the presentations at <http://www.ervo-group.eu/np4/np4/42.html>

#### *15:00 – Insurance of sea-going equipment – Ronald Boening (AKP, Germany)*

Ronald Boening gave an overview of the issues related to the insurance of sea-going equipment. Ronald first gave some insights on cargo insurance and all issues (e.g. perils not

covered, etc.) related to the transport of general cargo. To insure marine instruments specific clauses need to be taken up in the cargo insurance policy (e.g. transport to, on, off the RV, the operational use of the equipment, etc.). Ronald also gave some examples on how to apply for a cargo insurance for your sea-going equipment and the possible cost for such an insurance including a possible claim procedure. He finalized his presentation with an overview of the benefits of a good cargo insurance for marine equipment and a comparison with a Forwarders Liability Insurance.

For more details, see the presentations at <http://www.ervo-group.eu/np4/np4/42.html>

#### *Theme 6: Cooperation and Outreach*

*15:30 – EUROFLEETS2 project legacy/Interest for ERVO – Valérie Mazauric (IFREMER, France)*

Valérie Mazauric gave an overview of the EUROFLEETS 2 project and the interest of ERVO for its legacy. Valéry presented the EF2 project that ran from 2013 to 2017 and involved 31 partners from 20 countries. The EF2 project provided access to 22 European research vessels over the last 4 years covering areas from the Arctic to the Antarctic. In total, 24 research projects got access to 17 research vessels. Besides the TNA, EF2 delivered a lot of useful reports in relation to RVs (design, data management, operations, etc.) which could be handed over to ERVO. ERVO should decide which reports it wants to use, maintain and even further expand. Finally, Valérie gave an overview of the 7 most important themes in the EF2 legacy.

For more details, see the presentations at <http://www.ervo-group.eu/np4/np4/42.html>

#### *15.45 – Coffee break & national update posters*

See the list of posters on page 5 of these minutes.

For more details, see the presentations at <http://www.ervo-group.eu/np4/np4/42.html>

*16:10 – EuroGOOS, EOOS (by Skype) – Vincente Fernandez (EuroGOOS, Brussels)*

Vincente Fernandez gave an introduction to EuroGOOS and European Ocean Observing System (EOOS). EuroGOOS is an association promoting and implementing Operational Oceanography to ensure sustained observations and models which are made in European seas by underpinning a suite of fit-for-purpose products and services for marine and maritime end-users. EuroGOOS has 41 members and 48 additional Regional Operational Oceanographic Systems (ROOS) members. Vincente gave an overview of the objectives, structure of EuroGOOS and the link to other marine data initiatives. Secondly, Vincente introduced EOOS which is a new flexible coordination network that aims to unite the dispersed community of ocean observing systems within Europe and to assess the different gaps (spatial, temporal, parameters, etc.) in the existing marine observations in Europe. Additionally, Vincente gave a brief review of the results of the EOOS consultation. Finally, he stated that it is important to include ERVO in the EOOS framework.

For more details, see the presentations at <http://www.ervo-group.eu/np4/np4/42.html>

**16:35 – ERVO/EUROCEAN agreement – Ned Dwyer (EurOcean, Portugal)**

Ned Dwyer gave an update of the ERVO/EuroOcean agreement which is in place since January 2014. EurOcean fulfils a multitude of duties for ERVO (e.g. maintaining the ERVO website, updating members list, support of the ERVO Chair, etc.). For these duties ERVO pays an annual membership fee of 3000 euro to EurOcean. This fee is paid by the ERVO members via a yearly contribution per institution/country.

For more details, see the presentations at <http://www.ervo-group.eu/np4/np4/42.html>

**Theme 2: RV builds, Modifications and performance**

**16:40 – Update on RV Cefas Endeavour – James Parker (CEFAS, UK)**

James Parker gave an update of the activities of the RV Cefas Endeavour and the recent/upcoming upgrades. The vessel will be fitted with among others a new VSAT system, EM2040 MBES, new sea-bed imaging systems, etc. The vessel is not only used for UK research and monitoring work but also has been deployed in the framework of international cooperation/charter agreements, e.g. for IMARES (2015-2016) & for IMR (2017). James indicated that in 2019 there is still ship time available and that people can contact CEFAS for further inquiries.

For more details, see the presentations at <http://www.ervo-group.eu/np4/np4/42.html>

**16:45 – Topics, date & place ERVO 2018 – Klas Lackschewitz (GEOMAR, Germany)**

Klas Lackschewitz introduced the 2018 meeting in Malta. The meeting will be hosted by Aaron Micallef of the University of Malta and will take place from the 12<sup>th</sup> - 14<sup>th</sup> of June 2018.

For more details, see the presentations at <http://www.ervo-group.eu/np4/np4/42.html>

**16:55 – Closing 19th ERVO meeting – Klas Lackschewitz (GEOMAR, Germany)**

Klas Lackschewitz thanked all meeting participants for the good job done during this meeting and the team of SYKE for the excellent organization.

**17.00 – End 2017 ERVO meeting**

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