



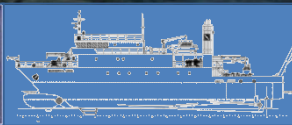
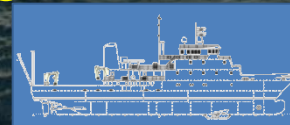
A.D. 2015: good times, bad times for C.N.R. and SO.PRO.MAR.



SO.PRO.MAR. S.p.A

was founded by Michele Tramontano in 1981 together with a group of specialists and technicians with a great experience in oceanographic research, naval equipping and ship handling.

From the first years of activity the Company was devoted to the armament of scientific and technological research vessels for public and private companies. Ever since, SO.PRO.MAR. has established a long and proficuous partnership with National Research Council – Consiglio Nazionale Delle Ricerche – CNR.



SO.PRO.MAR. S.p.A. fleet consists of the following vessels:

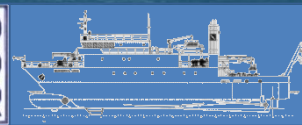
Urania: First Italian vessel designed and built for scientific and technological research.

Minerva Uno: Multipurpose vessel acquired in 2010; she can be used by public authorities and private companies.


Vettoria: Currently managed on behalf of Stazione Zoologica Anton Dohrn (Zoological Station Anton Dohrn).

Vega Uno: Specially fitted for coastal surveys and fast deployments (now under refitting).


Coastal motorboats **Urano** and **Mercurio** (under construction).




SO.PRO.MAR. ashore structure



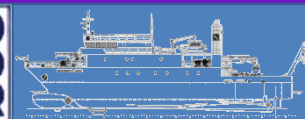
Maritime dept: takes care of ship handling with specific attention to personnel and ships safety and environment protection (SafetyManagement System), Work Health and Safety, Ship Security (ISPS Code).



Technical dept: is specialized in scientific instruments management and multidisciplinary surveys for private companies and public authorities. Procedures are certified under ISO 9001/2008 SO.PRO.MAR. manual.



Provision dept: is focused on food and technical supplies, administrative and harbour procedures. Procedures are certified under ISO 9001/2008 SO.PRO.MAR. manual.

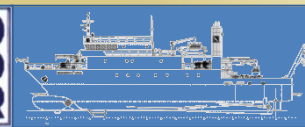
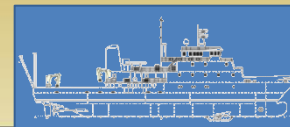


A SHORT REMINDER OF OUR PROJECTS

The projects were focused on the strengthening and enhancement of RV Urania and RV Minerva Uno, in order to let them become better naval platforms and state of the art vessels under scientific and technological point of view.

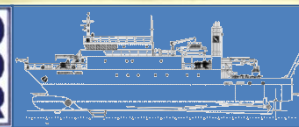
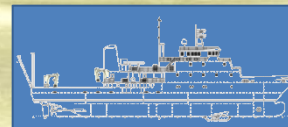
Why it was chosen to work on these vessels:

- ✓ Vessels were built especially for scientific and technological research;
- ✓ Great dimensional and prestational upside margins;
- ✓ Building features subjected to rigid SOLAS rules and management with ISM Code because of their more than 500 GRT tonnage;
- ✓ Great manouvering features;
- ✓ Present navigation and scientific equipments were a good work base;
- ✓ Comfortable accomodations for crew and scientists.



This is the third time that SO.PRO.MAR. S.p.A is present at an E.R.V.O. meeting to speak about the work with our long time partner C.N.R..

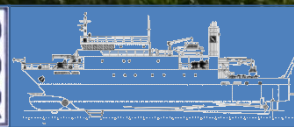
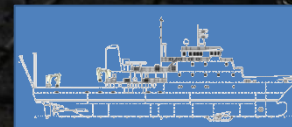
Barcelona 2014 was the first one. At that time improvement and enhancement projects of our ships, RV Urania and RV Minerva Uno were at their beginning.



Our second participation was in Galway.

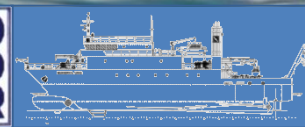
In June 2015, interventions on RV Minerva Uno were already finished and the ship was operational for C.N.R..

RV Urania project was on its road and running as planned.



It was supposed that 2016 E.R.V.O meeting would have been the occasion to speak about the results and the achievements of our vessels but...

...A.D. 2015 brought us bad times and good times, as the old Zeppelin song says.

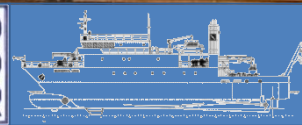
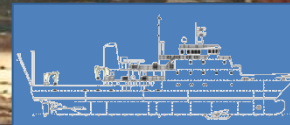


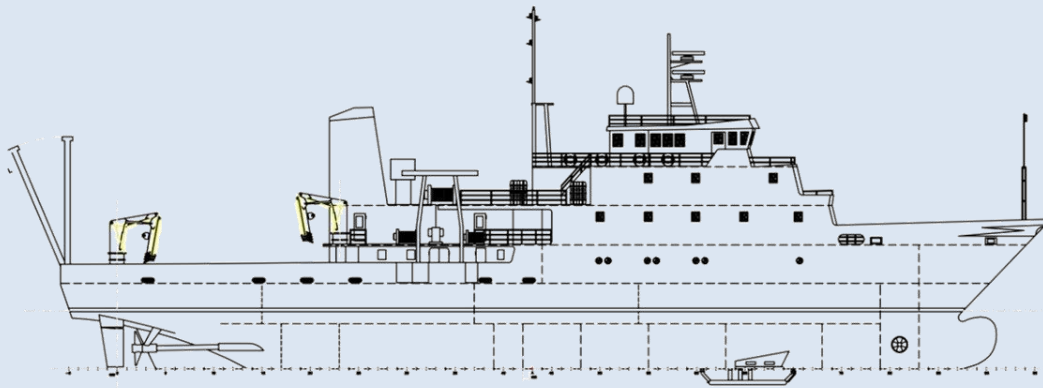


In a few slides you will understand what are the bad times related to RV Urania. For the ones who know what has happened, it maybe argued that it's useless to describe where the project had arrived, but I will do it anyway in order to honor the people involved and the vessel herself. As said before, the project involving RV Urania concerned her lenghtening, strenghtening and improvement as naval platform and as scientific research vessel.

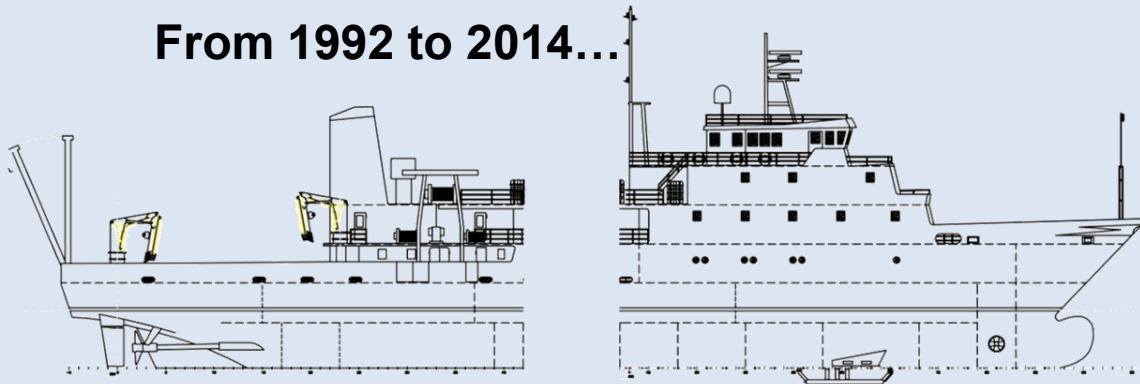


RV Urania entered service in 1993, being the first Italian research vessel planned and built specifically for scientific and technological research. Ever since, RV Urania has been used by C.N.R. while SO.PRO.MAR. has taken care of the technical and handling aspects.

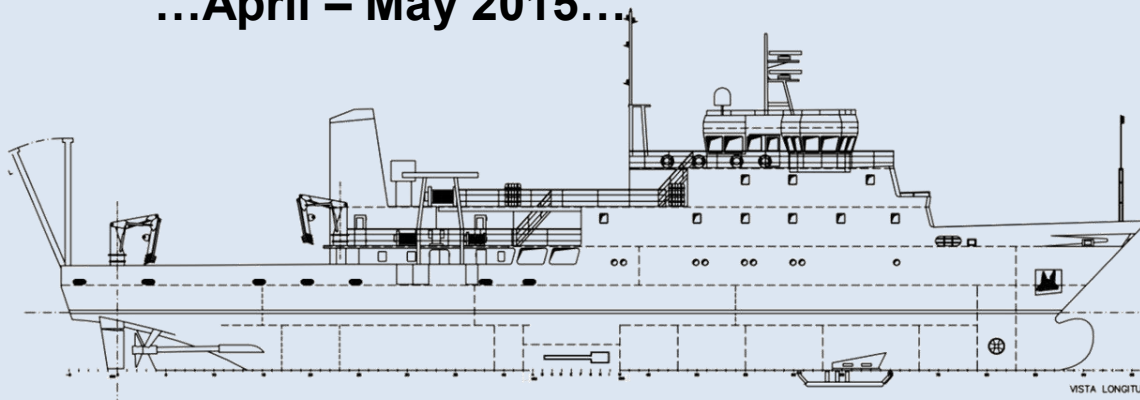




From 1992 to 2014...

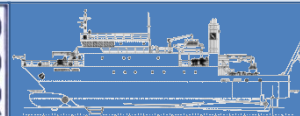


...April – May 2015...



...from May 2015.

The most visible intervention planned was the lengthening of the vessel with the insertion of a new 6 meters section.

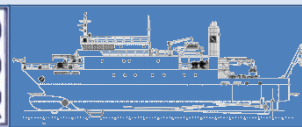
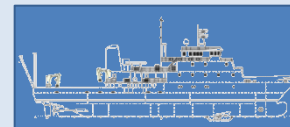
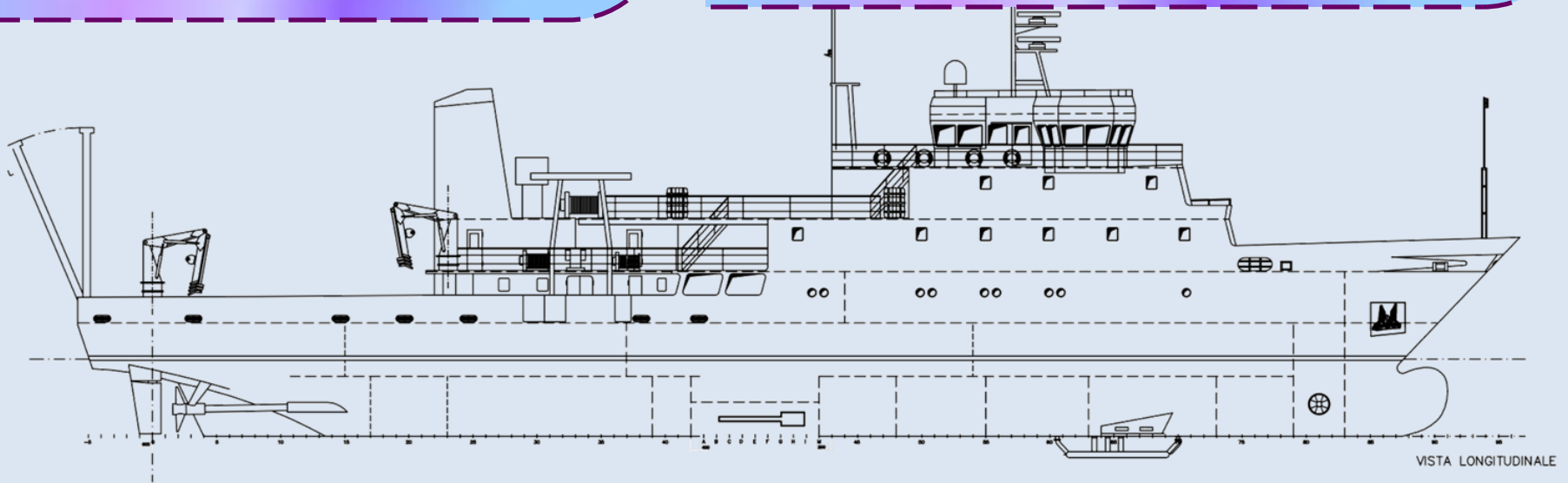


LENGHTENING MAIN FACTS:

- Four new cabins for scientists
- New recreation area
- Sanitary fittings overhaul
- Scientific refrigerators overhaul
- Scientific winches inspection
- Safety equipment adaptation to current rules
- Bigger labs and mass

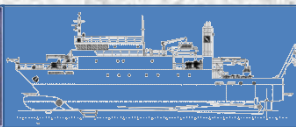
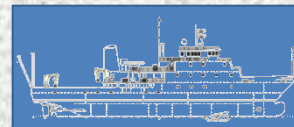
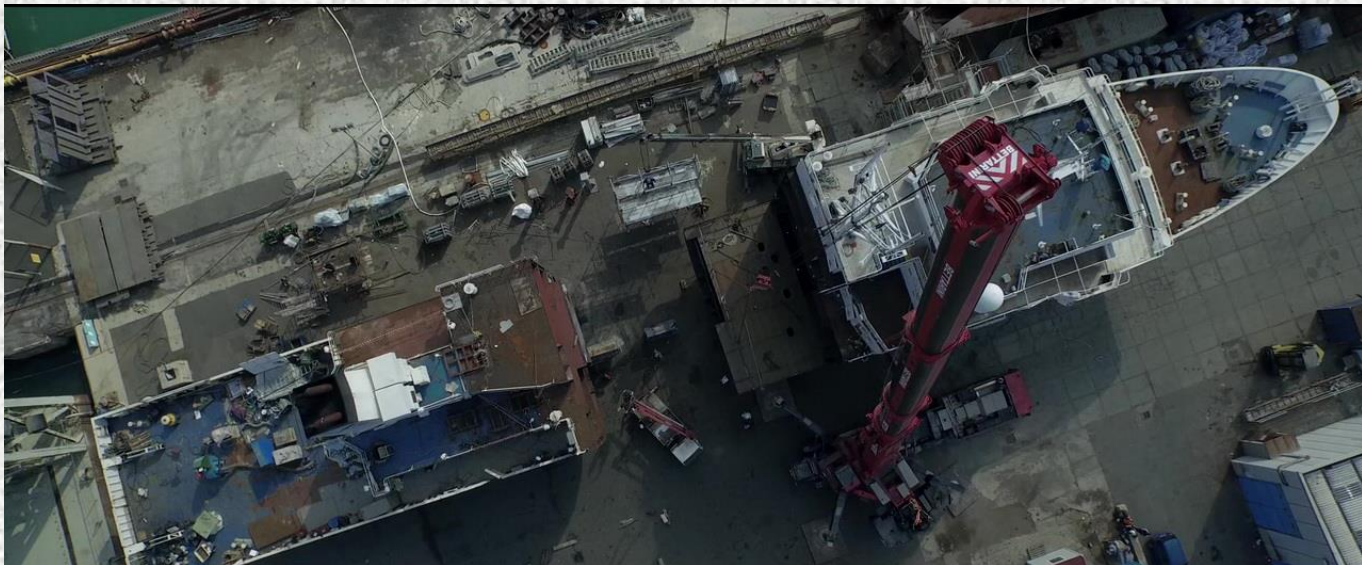
PLATFORM STRENGHTENING AND ENHANCEMENT MAIN FACTS:

- New DP1 system
- Steering gear adjustments to DP1
- New more powerful bow thruster
- Three newer and more powerful generators
- Power-plant noise insulation improvement
- Power-plant new monitoring
- Electric-plant new management system
- New stern A frame



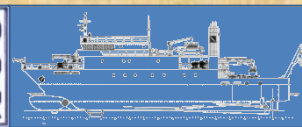
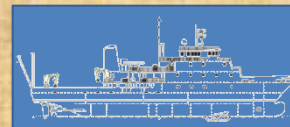


Different stages of the 6 meters section construction and fitting to RV Urania





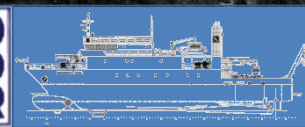
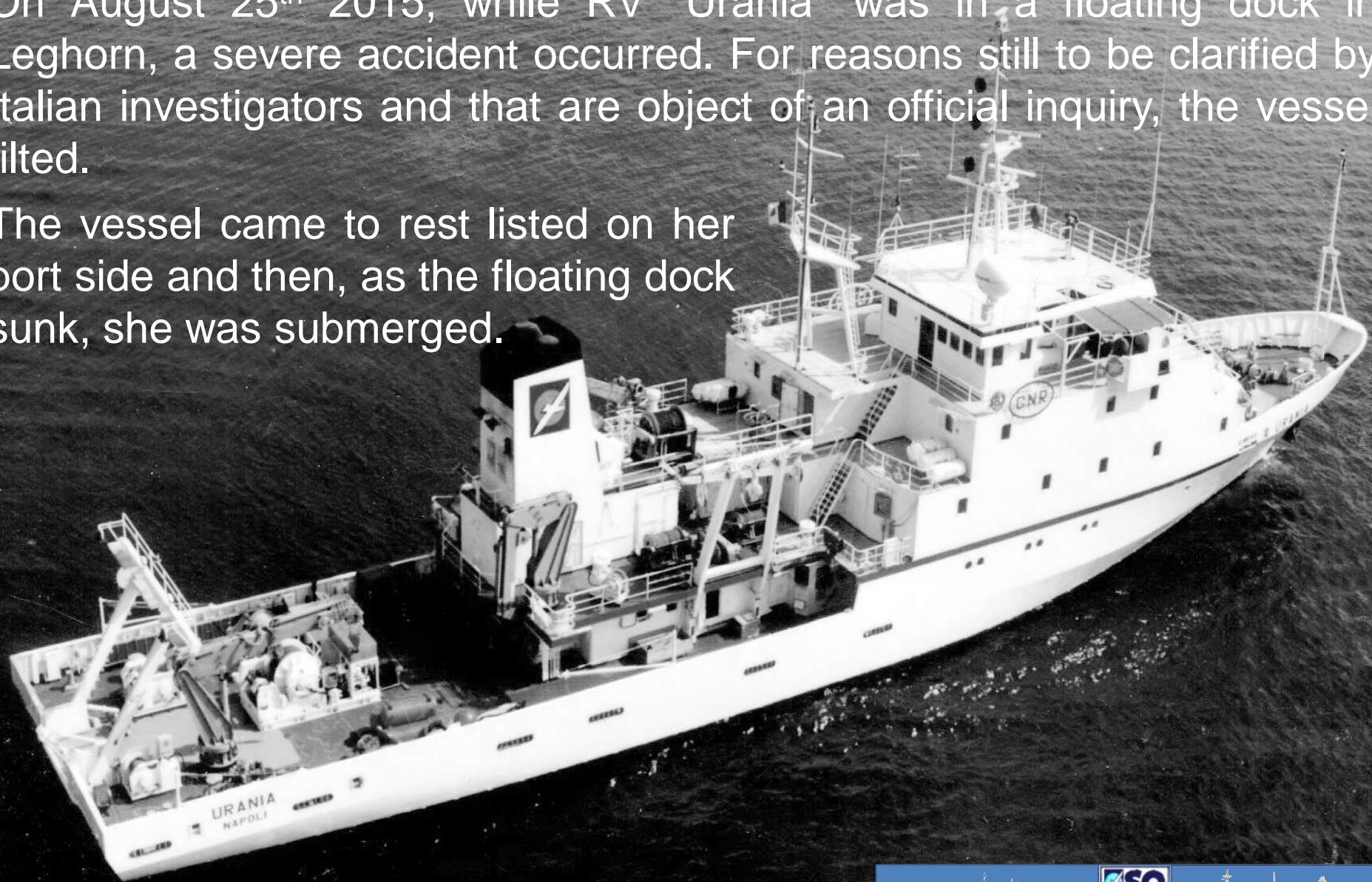
RV Urania after the welding of the new 6 meters section.



Bad times...

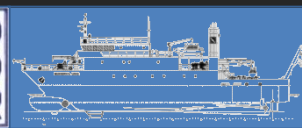
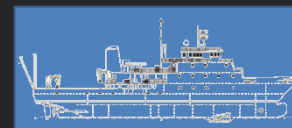
On August 25th 2015, while RV “Urania” was in a floating dock in Leghorn, a severe accident occurred. For reasons still to be clarified by Italian investigators and that are object of an official inquiry, the vessel tilted.

The vessel came to rest listed on her port side and then, as the floating dock sunk, she was submerged.



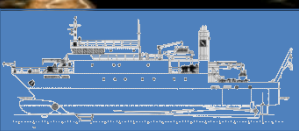


The commissioning was expected by November 2015 and works were at full speed. Notably, the most distinguishing part of interventions, the 6 meters hull lengthening, was already completed.



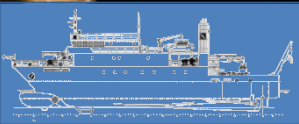
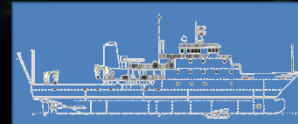


At the moment it's hard to assess the damages the hull and the equipment had suffered, because the vessel cannot be accessed due to the current inquiry.





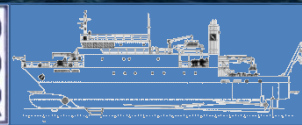
Considering that the engine room is still underwater after almost 8 months, it is likely that electrical devices and engines are irretrievably damaged, just like the DP and multibeam electronics. All of the scientific equipment transducers were located on a below the keel blister and, even in this case, it's very likely that they have been severely damaged.



This is the way we like to think about RV Urania, riding the waves on a bright sunny day, but we cannot change what has happened!



The accident has been a great blow for us all. But life still goes on and we MUST get to living without Urania...



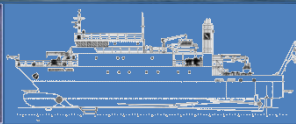
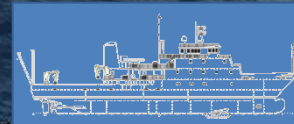
Good times!

...and life is RV Minerva Uno.

When the Urania accident occurred, RV Minerva Uno had already entered back in service after the end of the interventions.



C.N.R. and SOPROMAR managed to change the expected schedule so that Minerva Uno took the place of Urania. In this way there has been no pause in C.N.R. scientific activities, even if some cruises had to be postponed to better times.

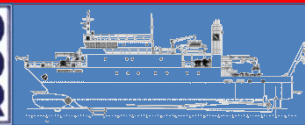
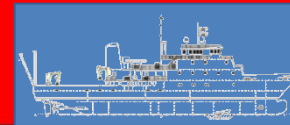


- Electricity grid improvements
- More powerful generators to meet new electricity requirements
- Air conditioning system enhancement
- Fuel purification system improvement
- Garbage management system renovation

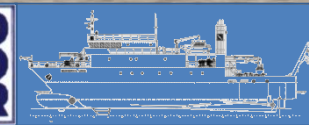
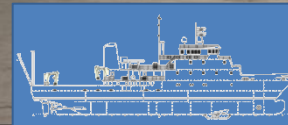
Main areas of intervention of the Minerva Uno project.

- ❖ Ship positioning system
- ❖ High resolution bathymorphologic system
- ❖ Geomorphic and bottom sampling system
- ❖ Magnetometric survey system
- ❖ Seismostratigraphic survey system
- ❖ Bottom visual inspection system

- ✓ New bow design to improve seakeeping
- ✓ New double seated cabin
- ✓ New refrigerators for samples storing
- ✓ DP1
- ✓ Bow thruster and stern thruster
- ✓ Fixed stabilizer fin
- ✓ New engine control system



Research vessel	Minerva Uno
Commissioning	2003
SO.PRO.MAR. service	2010
Lenght overall	46.6 m
Breadth	9.0 m
Gross register tonnage	615 GT
Operational speed	10.8 knots
Main engine (KW)	2x746
Endurance	30 days
Crew	12
Scientific personnel	13

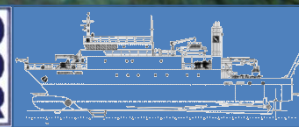




One of the most important activities carried out during the year has been the operational deployment of the SUPER MOHAWK R.O.V.. Even if the bad weather was a great obstacle during the survey, R.O.V. has been tested up to 1500 mt.

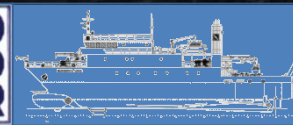
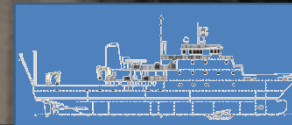


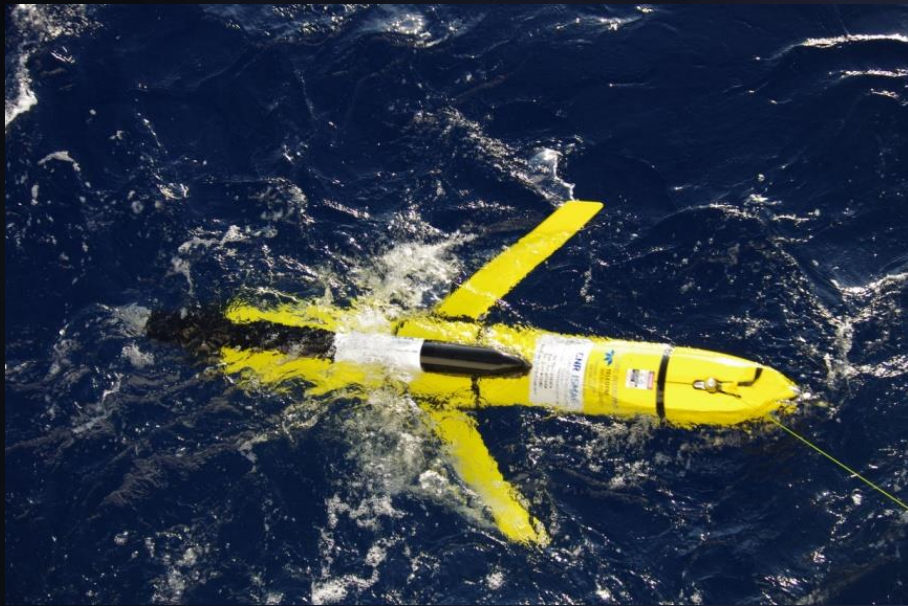
Unluckily the dive has been done on a flat and muddy zone, so no nice pictures to show!





Several sediment sampling surveys have been run, using both vibrocorer and gravity corer. Notably it has been installed onboard a 12 meter barrel gravity corer with excellent results.



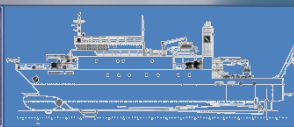
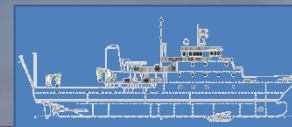


RV Minerva Uno has also been used as a platform for testing a glider between Sardinia and Spain ...

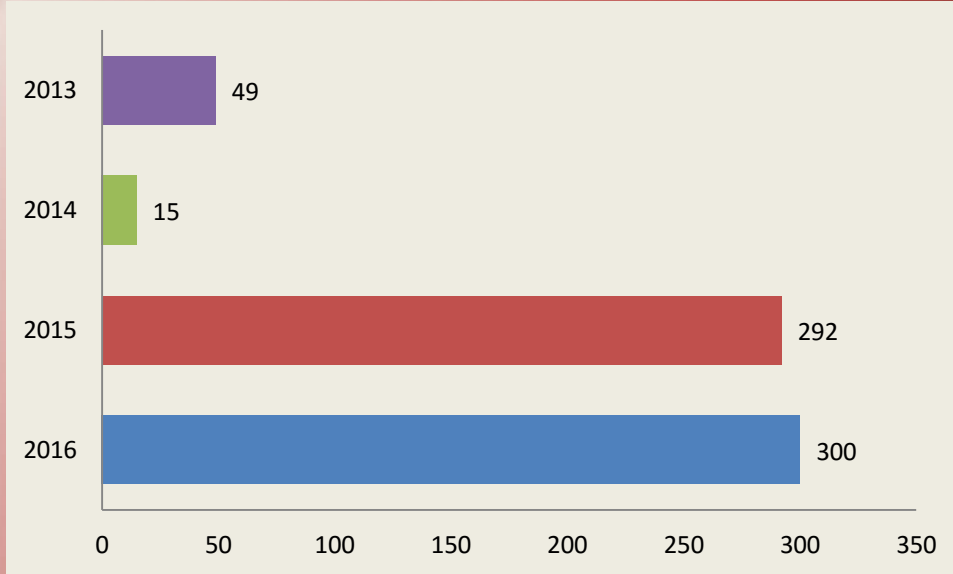


...to host one laboratory and one refrigerator container during an one month long oceanographic survey in the Western Mediterranean Sea.

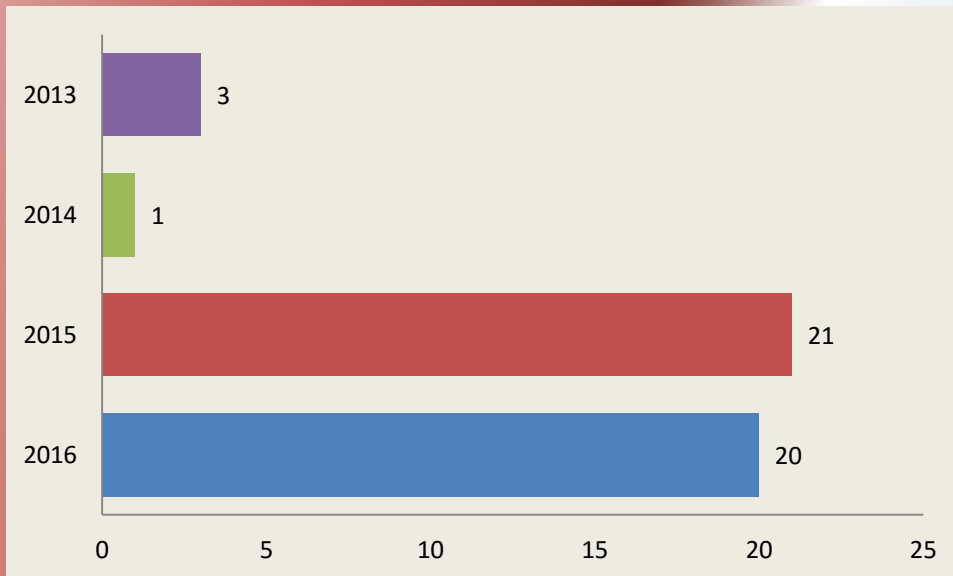
A very important air gun seismostratigraphic survey as been run in the Naples and Pozzuoli gulf to monitor volcanic activity.



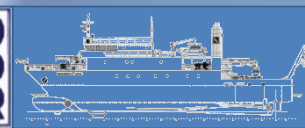
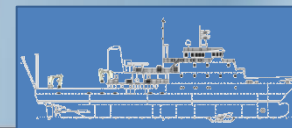
Before 2015 the vessel was used mainly for offshore surveys for private companies and only occasionally for C.N.R..



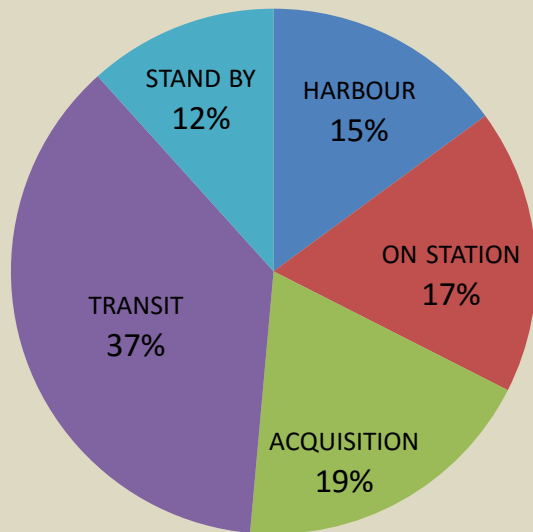
RV Minerva Uno days at sea for C.N.R. from 2013 to 2015 and 2016 schedule.



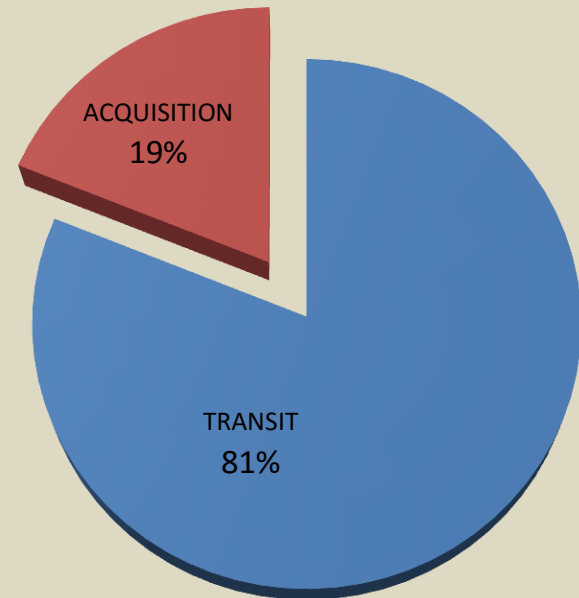
RV Minerva Uno number of surveys for C.N.R. from 2013 to 2015 and 2016 schedule.



Hourly Time Sheet

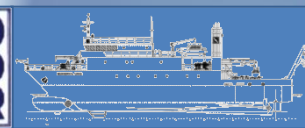
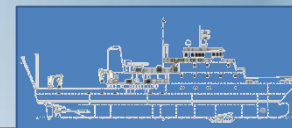


Nautical Miles



The diagrams above summarize RV Minerva Uno activities during 2015 for C.N.R., in terms of hours for type of work and miles run by the vessel.

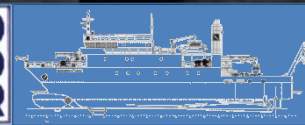
Transit time and nautical miles values are quite impressive, especially considering Mediterranean spaces. It is also interesting that time on station (for activities like CTD casts, corings, etc) is almost equal to acquisition time (i.e. multibeam and side scan sonar survey).



SO.PRO.MAR. procedures and quality controls are certified under ISO 9001/2008 rules. Clients' opinions and thoughts gathered via the Customer Satisfaction Module are the most immediate way to know what they think about the ship, the equipments and the crew.

**Ιδού ἡ Ῥόδος,
ἰδού καὶ τὸ
πήδημα**

At the end of the cruise, the party chief has to give an evaluation on technical equipment, technical service, on-ship service and room and board.

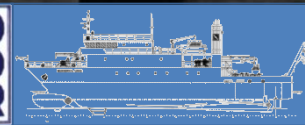


In the below scheme are the average grades given by C.N.R. crews to services onboard Minerva Uno from 2013 to 2015.

	2013	2014	2015	2016
Technical Equipment	3.0	2.0	2.4	2.4
Technical Service	3.0	3.0	2.9	3.0
Maritime Service	3.0	3.0	3.0	3.0
Room and Board	3.0	3.0	2.8	3.0



Grades values: inadequate (0), sufficient (1), good (2), excellent (3).



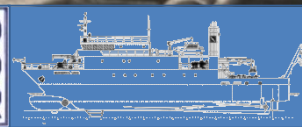
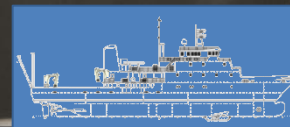
Overall results are very good and consistent with the expected goals. For sure things could be better and we deeply respect and take into account the scientists' opinions.

Following their suggestions and their expertise, we work hard to keep our ships always updated and well suited for the tasks and missions our clients have to fulfill.



The satisfaction of our hosts is one of our main concerns, but for us it is also important to have attention on environment protection.

The interventions planned on RV Minerva Uno were focused on this aspect too and the results are very good even in this field.



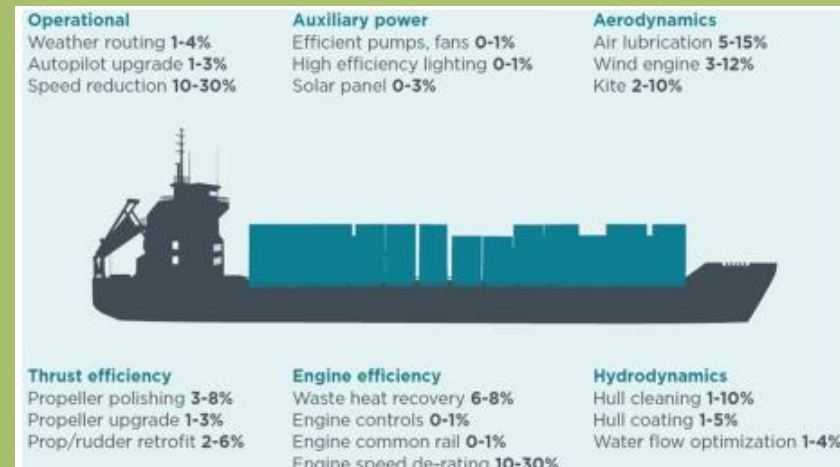
After the interventions...a greener and less expensive Vessel

Fuel consumption and energy efficiency of the vessel are very important matters, under both economical and environmental point of view.

FUEL CONSUMPTION AND SHIP ENERGY EFFICIENCY: YEAR 2015		
FUEL TYPE: DIESEL OIL	CLASSIFICATION: ISO 8217	AVERAGE FUEL CONSUMPTION
CARBON FACTOR: 3.206	EEOI =8,30773E-05 T CO2/T*NM	0.12 T/HOUR

FUEL CONSUMPTION AND SHIP ENERGY EFFICIENCY: YEAR 2014		
FUEL TYPE: DIESEL OIL	CLASSIFICATION: ISO 8217	AVERAGE FUEL CONSUMPTION
CARBON FACTOR: 3.206	EEOI =9,61918E-05 T CO2/T*NM	0.14 T/HOUR

Despite the fitting of a third generator overall average fuel consumption and CO₂ production lowered .



The picture on the right is taken from an IMO publication and indicates the potential fuel use and CO₂ reduction from various efficiency approaches (*).

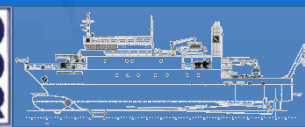
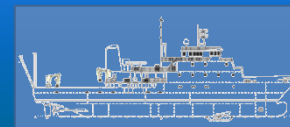
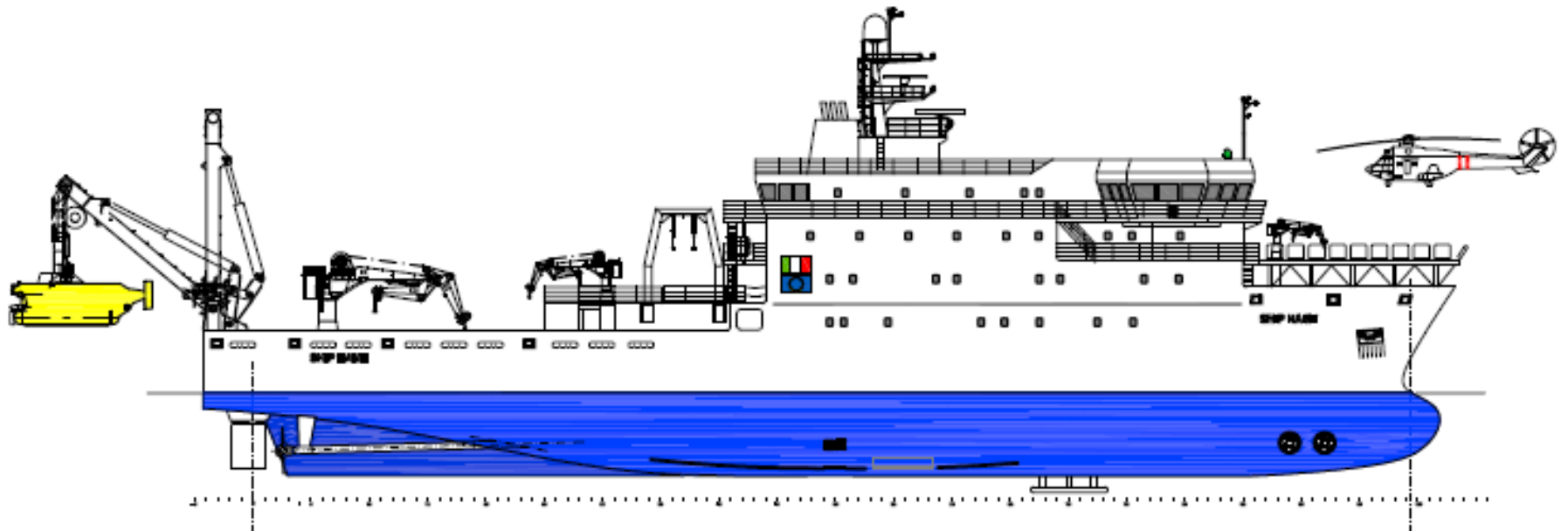
After the interventions RV Minerva Uno has proven to be a greener and more energetically efficient vessel.

(*) International Council on Clean Transportation July 2013



Future has to be planned now. This is a project for a 75 meters long vessel that SO.PRO.MAR. is continuously updating to keep it to the state of the art.

OCEANOGRAPHIC RESEARCH VESSEL - 75 m
SOPROMAR S.p.A.

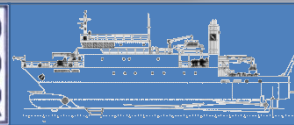
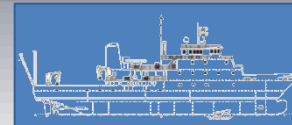


SOME KEY FEATURES OF THE NEW VESSEL

- ✓ Active stabilizer fins to improve low speed and on-station stability and manoeuvrability
- ✓ Optimization of blister with possibility to recover it inside the keel
- ✓ A-frame pistons power and excursion optimization
- ✓ A-frame – devices interface improvement
- ✓ Helicopter deck to improve safety and operational features
- ✓ Electric propulsion system
- ✓ Shilling rudders



- Extreme noise and vibrations reduction
- Crew and researchers comfort improvement
- Dedicated cabins for cadets
- The fitting of DP2 system will be evaluated
- Reduction of risks related to suspended payloads
- Lifting devices optimization



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