EDEM

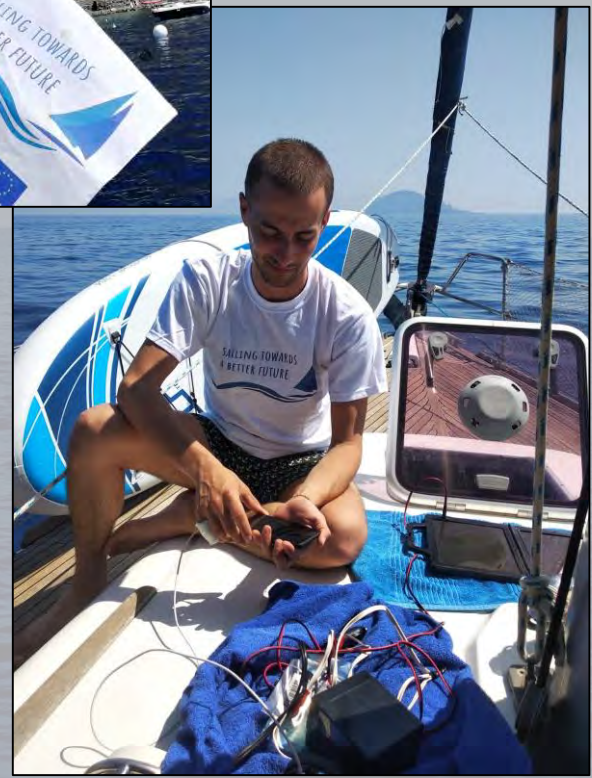
SAILING TOWARDS A BETTER FUTURE

Excerpts from the vacation diary of a young researcher

The outreach activity "Sailing towards a better future"
was designed by Matteo Calabresi (ESR 8/AVL, AT) with the assistance of Amalia Petrova (CITY, UK)
and was conducted by the ESR in August 2020 with the support of the "Pura Vida" crew

DAY 1: Milazzo-Lipari-Filicudi

The cruise started from Lipari, an island of the Aeolian archipelago, Northern to Sicily, where I officially boarded onto “Pura Vida”. To reach the island I took a hydrofoil, which is a quite common transport mean in this region. Despite its unquestionable benefits in terms of speed and hydrodynamic drag, I was quite surprised to notice a huge and very dark smoke cloud coming from his exhausts, indicating a relevant amount of soot emissions.
After having boarded, we were finally ready to head to Filicudi island for a first welcome bath. Although the wind was blowing exactly from our final target, we did not mind to do few “borders” in order to get there only by sails. Indeed, it is possible to sail towards the wind (with an angle generally between 30 and 45 degrees, depending on the boat, the sails and the wind), in the so called “close-hauled” configuration. So, we made quite a compromise in terms of distance to the target, all compensated by the zero emission produced during the cruise. And, in my case, also by the enjoyment of sailing!



The Aeolian archipelago consists of seven islands, all of volcanic origin. There are still two active volcanos, one on “Stromboli” and one on “Vulcano” island. I was surprised to find out that, in addition to the seven visible islands, there are also eight mountains below the sea level, originating from the same geological fault. I like the story behind the name Aeolian Archipelago: it comes from the Greek god “Aeolus”, king of the winds, who used to live in Lipari and could forecast the weather by watching the shape of the smoke cloud that erupted from the volcanos.
Now it is esteemed that around 600’000 tourists get to this archipelago every year.

DAY 2: Filicudi-Salina

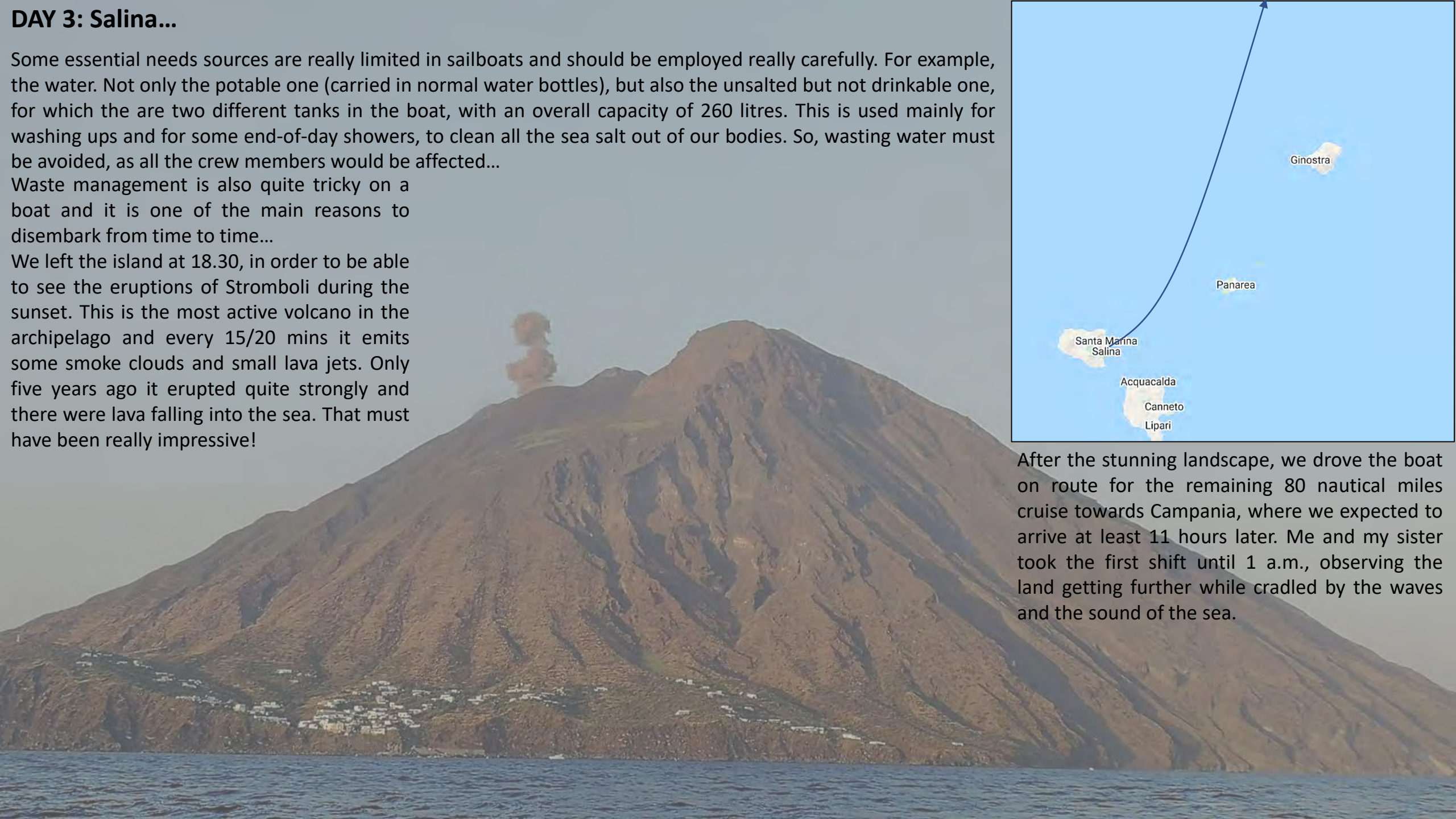
The day after, we decided to unfold our sails once again, towards Salina this time. The navigation was easy, the wind was blowing from backwards and pushed us to the destination in two hours and half. During the navigation, I plugged my mobile to a photovoltaic panel linked to a transformer, a quite convenient device for sunny days which let us avoid using the batteries while the engine was off.

DAY 3: Salina…

Some essential needs sources are really limited in sailboats and should be employed really carefully. For example, the water. Not only the potable one (carried in normal water bottles), but also the unsalted but not drinkable one, for which the are two different tanks in the boat, with an overall capacity of 260 litres. This is used mainly for washing ups and for some end-of-day showers, to clean all the sea salt out of our bodies. So, wasting water must be avoided, as all the crew members would be affected…

Waste management is also quite tricky on a boat and it is one of the main reasons to disembark from time to time…

We left the island at 18.30, in order to be able to see the eruptions of Stromboli during the sunset. This is the most active volcano in the archipelago and every 15/20 mins it emits some smoke clouds and small lava jets. Only five years ago it erupted quite strongly and there were lava falling into the sea. That must have been really impressive!



After the stunning landscape, we drove the boat on route for the remaining 80 nautical miles cruise towards Campania, where we expected to arrive at least 11 hours later. Me and my sister took the first shift until 1 a.m., observing the land getting further while cradled by the waves and the sound of the sea.

DAY 4: …Baia degli infreschi-Scario

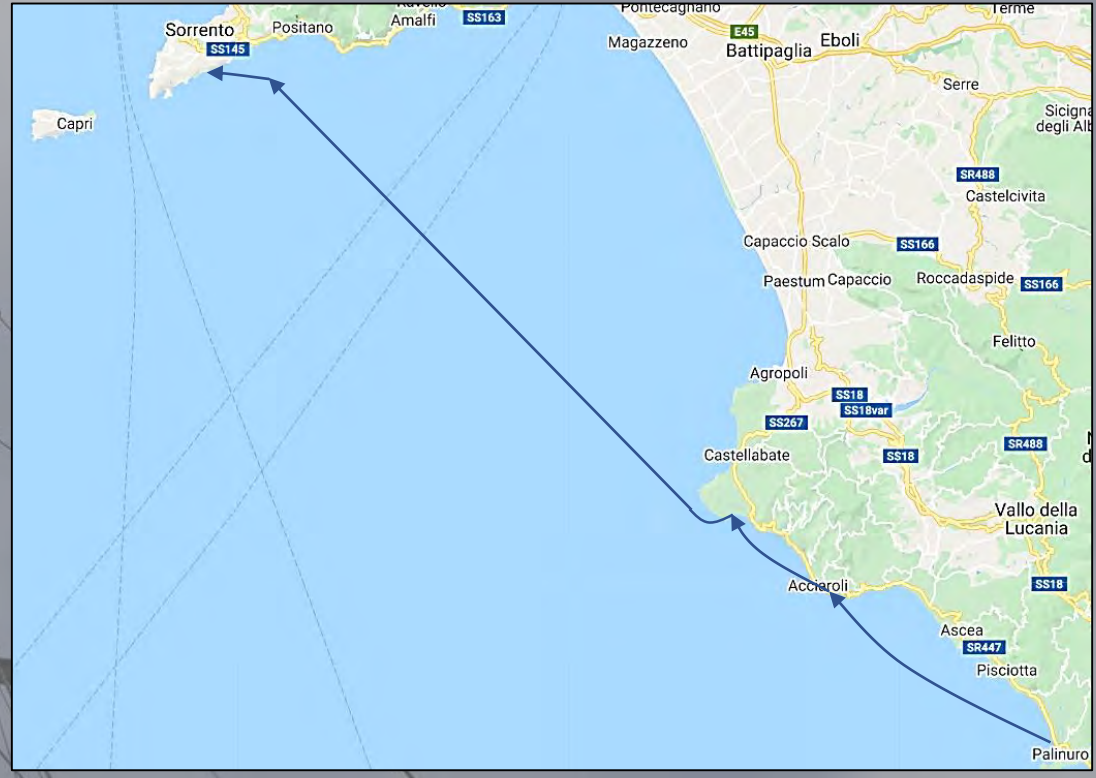
At around 8 a.m., we finally caught sight of some land on the horizon and we arrived, after 13 hours and 80 nautical miles (slightly more than 6 knots on average), at a bay in the Cilento National Park. This natural reserve has been established in 1991 and since 1998 is also an UNESCO heritage site. In order to protect its biodiversity, there are some strict regulations both for those who access from the sea and for those coming from the inland. I was very pleased to find out that in the bay where we moored, there were some buoys for the boats since it is not allowed to drop the anchor, in order not to ruin the seabed and the fauna which lives there.

DAY 5: Scario-Palinuro

The day after, we woke up in an extremely peaceful bay. After breakfast, we had a long bath while exploring around with the canoe and promoting the EDEM project.
After lunch, we took the tender to go ashore and hike towards one of the many Saracen watchtowers that scatter across this part of the coast. Once back onboard, we decided to head to Palinuro harbour, one of the main ports of Cilento. To arrive there, we sailed intensively, the wind was blowing from our back at 20 knots and fortunately the waves did not get too high yet.

DAY 6: Palinuro-Acciaroli-Ogliastro Marina

After a short break and a bath at Acciaroli, renowned for the cleanness of its waters, we headed to Ogliastro, where something promising occurs since 2006: marine turtles lay their eggs on those shores again, after many years!

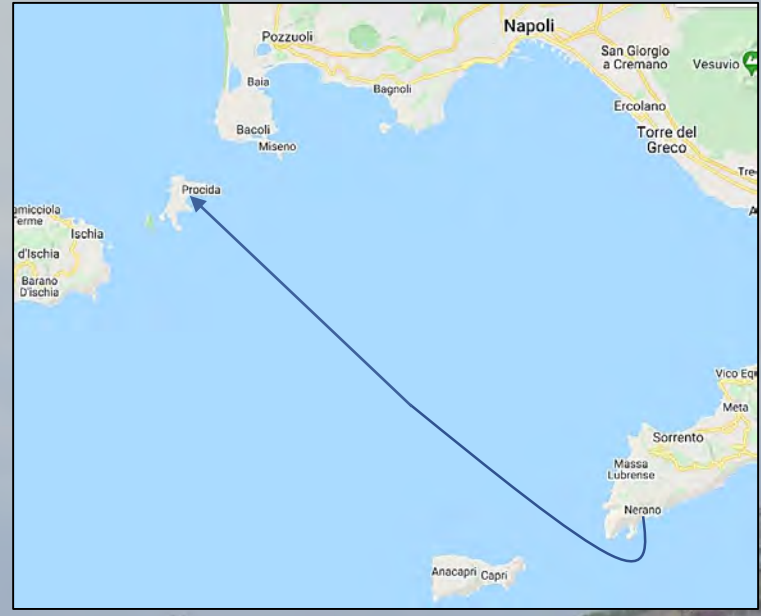


DAY 7: Ogliastro-Isola delli Galli-Nerano

In the afternoon, we moved to one of the most beautiful and most unknown islands of Campania, Isola delli Galli, which is - maybe sadly - private. Still, it is possible to stop there (without anchoring) and enjoy a sort of natural pool created by three small cliffs. The island has been owned by different famous dancers and the villa has been designed partially also by Le Corbusier. Moreover, this island is thought to be the home of mermaids and here took place the famous legend about Ulysses tying himself on the main mast to avoid been caught by their persuasive song!

DAY 8: Nerano-Procida

Finally and sadly, the last day of the cruise arrived. With a heavy heart, we set sails towards Capri at first, giving a glimpse also to the coast where the Natural Park of the Ieranto bay is located. This place is particularly interesting due to a relevant exchange of sea currents from the two neighbouring gulfs, which generates a prosperous habitat for different animal and vegetal species (indeed, the access of any polluting transport mean is strictly forbidden). In the meantime, ahead of us we could see the stacks of Capri due to the high visibility of that morning. Surpassed the coast tip, we could finally make the route towards Procida island, the final destination, where we would leave “Pura Vida”. The wind was blowing at 15 knots from Naples, the waves were 1.5 metres high, so we could enjoy our last sailing with the Vesuvio volcano aside.



Pura Vida performances

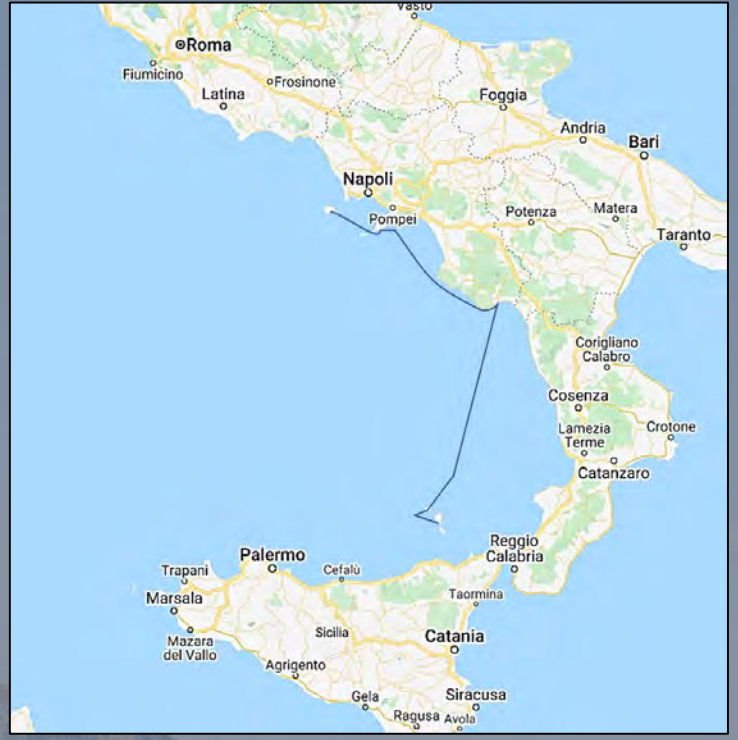
Overall engine hours: 26 h

Overall fuel consumption: 39 l

Average fuel consumption: 1,5 l/h

Average engine rpm (power at crankshaft): 1800 rpm (13kW)

Total cruise mileage (approx.): 250 nm



Emissions generated

(according to EU RCD Stage II normative for 37 ≤ P < 75 kW)

CO2: 1859 g

HC: 507 g

NOx: 2704 g

PM: 270,4 g

Fuel and emissions saved

(for the same distance, if going only with engine at 6 knots - 2000 rpm)

Fuel: 44 l

CO2: 1578,5 g

HC: 430 g

NOx: 2296 g

PM: 229,6 g

In order to draw a fair conclusion, a couple of things regarding a generic sailboat electric system should be pointed out.
The electric sources in a modern average sailboat consist of the engine (feed by naphtha) and a battery pack. Since the batteries are generally not really powerful (in the case of “Pura Vida”, only 100 Ah overall), we try to switch on electric devices only when the engine is operative and can charge the batteries with the dynamo (a good practice is to start it at least one hour every two days).
Also, in order to comply all the safety regulations, there are some electrical devices that must be on while traveling by boat. For instance, the EPIRB (an emergency position-indicating radio beacon) must be always on, and, during the sailing, we generally use the GPS, to keep track of the route, and few indicators (the wind, speed and depth one, with the relative displays out on the deck). Moreover, the hydraulic system that pumps the water from the tanks all around the boat is generally always on. While moored in nature during the night, in addition, a light on the tip of the mast must be switched on and the below-the-deck lights are generally used. When we use the engine, we also turn on the refrigerator and we try to always have the engine on (in idle, not to overload the batteries) when we use the device to lower and lift the anchor. Finally, the batteries can generally be charged also in common harbours, but only if you spend the night there.
The general idea on such sailboats is in any case to reduce the electronic devices to the minimum (for instance, even the toilet is manual).
Keeping these concepts in mind, I think that, despite the effort spent during the cruise in order to reduce to the minimum the energy consumption, some improvements can be employed. For instance, a renewable energy generator, would serve as an eco-friendly solution to low-energy-demanding applications, without the need to switch on the engine or to use the batteries. On the other hand, there are some factors (for example, the weather or long night-time cruises) that will in any case increase the energy and fuel demand.
Overall, I found really interesting to esteem the emissions generated during the cruise. It helped me to know exactly where we stand and how we can further save, and I would like to adopt this habit for any future trip of mine.