

PRESS RELEASE

***The Ocean Mapping Expedition* reveals its first greenhouse gases « hot spots » on the surface of the oceans in the wake of Magellan**

The Swiss expedition engaged in a 4-year journey (2015-2019) around the world in the wake of Magellan onboard sailboat *Fleur de Passion* to measure the human impact on the oceans has already identified several strong methane and carbon dioxide emission areas between Mactan, Philippines, where *The Winds of Change* program on monitoring greenhouse gases was launched at the end of 2017 in partnership with the University of Geneva, and Singapore where the expedition arrived on 13 March 2018.

The stopover of *The Ocean Mapping Expedition* at the Republic of Singapore Yacht Club, with the support of the Embassy of Switzerland in Singapore and James Cook University, will offer opportunities to visit the boat and raise awareness about the other scientific programs of the expedition on noise and micro-plastic pollution of the oceans and coral bleaching due to global warming.

Geneva/Singapore, 14 March 2018 - The ambition of *The Winds of Change* monitoring program for greenhouse gases on the surface of the oceans is to provide the scientific community with unprecedented and reference field data and therefore to contribute to a better understanding of the role of the oceans in the current global warming process. In view of the worrisome evolution of the climate and the resulting ocean acidification, it is becoming increasingly urgent to have baseline data available to revise our concepts on the global carbon cycle. And the least we can say is that it didn't take long to get its first « exciting » results!

This pioneering program was launched in December 2017 in Mactan, Philippines, in partnership with the University of Geneva on board Swiss sailboat *Fleur de Passion* in the frame of *The Ocean Mapping Expedition*, a 4-year journey (2015-2019) around the world in the wake of Magellan. It collected its first real time reference data on methane and carbon dioxide concentrations along the way down to Singapore, where the boat has arrived on 13 March 2018, coming from Puerto Galera, Brunei and Kuching. Through *The Winds of Change* program, some first « hot spots » were identified, areas with very strong emissions of greenhouse gases deserving as such a closer assessment.

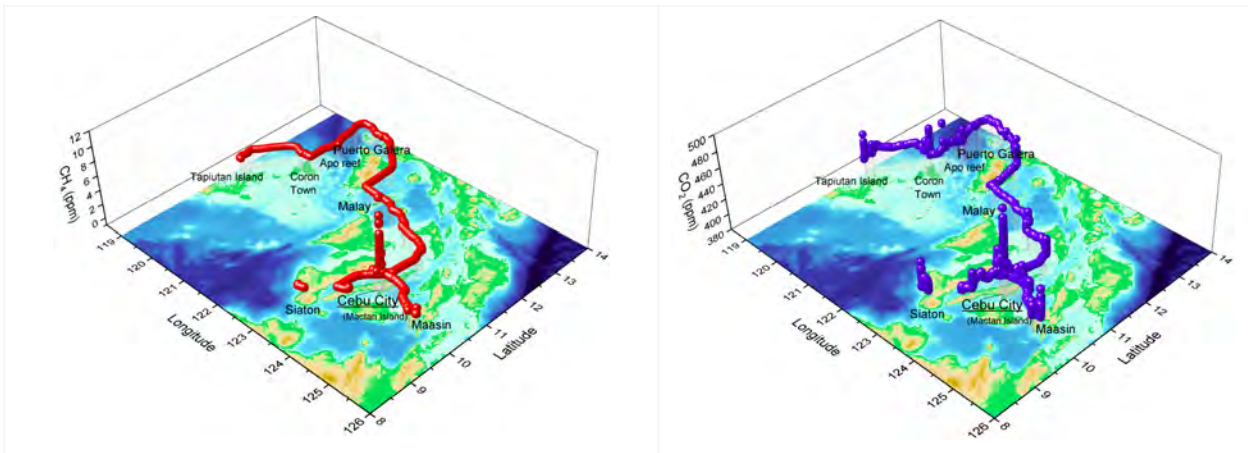
« The first two months of data received since *The Winds of Change* was launched in the Philippines are very promising, and revealed exciting findings and features », explains Prof. Daniel McGinnis, Head of the Aquatic Physics Group at the University of Geneva and responsible of the program in partnership with the expedition.

« Methane and carbon dioxide concentrations clearly rise near cities, approaching islands and shallow seas, in other words in areas that are influenced by human activities or experience higher algal growth », he says.

The program has already revealed several emission “hot spots” – areas that would warrant further investigation - e.g. methane was more than 6 times higher than background levels at Mactan where the boat was anchored during her stopover in December-January », adds Prof. McGinnis

« These exciting first results present a huge step forward in the project and the overall issue of global warming, and prove our approach as a very effective method to track atmospheric gases over the sea », he also adds.

To perform *The Winds of Change* program, 33m-long *Fleur de Passion* - a former WWII minesweeper from the German Navy now converted into a ketch - is equipped with a ultraportable greenhouse gas analyzer with a sampling port positioned 16 meters above the sea surface on the aft mast and automatically collects methane and carbone dioxide readings every 1 minute. The boat will hence fulfill her mission for the climate until the return of the expedition back to Seville in August 2019.



Methane and carbon dioxide concentrations along the route of Fleur de Passion. Atmospheric background of methane is about 1.6 ppm, and carbon dioxide is about 410 ppm.

« The instrument has been functioning very well, and requires little attention and maintenance by the crew of *Fleur de Passion* », comments Prof. McGinnis. The scientist embarked in early March for the navigation from Kuching to Singapore in order to check the maintenance parameters of the program.

« We are very proud that *The Winds of Change* monitoring program for greenhouse gases on the surface of the oceans is producing its first field data, contributing therefore to also keep the global warming issue on the agenda, » says Samuel Gardaz, Vice-President for Public Affairs of the Fondation Pacifique, a non-profit organization based in Geneva and initiator of *The Ocean Mapping Expedition*.

« Such a pioneering program, as a pure initiative of civil society, once again illustrates the potential and interest of a sailboat like *Fleur de Passion* in terms of scientific research in addition to more conventional oceanographic vessels, » adds Gardaz.

« It provides the opportunity to access essential information at a very large geographical scale to complement that available by satellite so far at a time when the global scientific community is specifically alarmed by the lack of data on this issue. »

As explained by Prof. Daniel McGinnis, head of the Aquatic Physics group of Department F.-A. Forel of the University of Geneva and project manager *The Winds of Change*, « climate change is one of the greatest challenges facing our time and its understanding is a major challenge for the scientific

community. In order to be able to effectively reverse the trend, scientists need to have a comprehensive and accurate view of the concentrations of greenhouse gases on the surface of the oceans and to be able to better understand their role not only as reservoirs of such gases, but also as emitters, of emission source. "

« But the oceans and fresh water as a whole emit more greenhouse gases than previously estimated, according to the Intergovernmental Panel on Climate Change (IPCC), » Prof McGinnis insists. It is therefore urgent to re-evaluate the role of the oceans in the global carbon cycle for a better understanding of global warming issues. »

« A pioneering project such as *The Winds of Change* aboard the *Fleur de Passion* sailboat is therefore a necessity to collect in real time and continuously along the way, field data that we lack on greenhouse gases. and to allow science to take a step forward in understanding the role of the oceans in the current global warming process, » he continues.

Three other scientific programs on noise and micro-plastic pollution, and coral bleaching

Since leaving Seville in April 2015, *The Ocean Mapping Expedition*, which also aims to contribute to a greater awareness of the issues of sustainable development, already leads two programs unpublished by their scope: the *20,000 Sounds under the Seas* program on ocean noise pollution, in partnership with the Laboratory of Bioacoustic Applications (LAB) of the Polytechnic University of Catalonia in Barcelona, led by the biologist and engineers Dr Michel André; and the *Micromegas* program for mapping micro and meso-plastic pollution on the surface of the oceans in partnership with the Oceaneye association in Geneva.

« Marine noise pollution is recognized today as one of the greatest disrupters of marine ecosystems that threaten the natural balance of the oceans », recalls Dr Michel André and responsible for the *20,000 Sounds Under The Seas* program.

« This pollution, little known to the general public because it is invisible and inaudible, at least for human ears, increases with the development of industrial activities at sea and spreads at high speeds in all the corners of the planet. Result: there is no more "end of the ocean" that is spared », explains the French scientist.

« Except maybe between French Polynesia and Australia, where levels of noise were measured in some deep-ocean areas were to be close to natural ambient noise levels, meaning that the contribution from human operations there is minimum and could be defined as the levels that were present in the ocean before its industrialisation. In other words close to pollution zero », he adds. Some initial results are accessible on <http://omexpedition.listentothedeep.com/acoustics/>.

The situation is totally different in other regions of the globe as on the Great Barrier Reef for example. « Because most of the marine organisms found in coral reefs produce sounds, tracking these specific soundscapes represents one efficient way to monitor and understand possible changes », explains Dr André.

« The *20,000 Sounds Under the Seas* program has collected sound recordings at sample stations and is currently comparing its analysis with the health status of the coral reefs: it is expected that the acoustic monitoring of biodiversity will significantly contribute to understand the magnitude of the damage that this unique ecosystem is facing. »

« Now, that the expedition has entered more industrialized areas, we expect these levels to significantly increase along with the presence of heavy maritime traffic », he concludes.

Regarding micro-plastic pollution, as of 14 March 2018, 148 surface water samples has been collected from Seville to Singapore and, for the latest to date, are being analysed by the biologists from Oceaneye. For a first glance at the samples already analyzed: www.oceaneye.ch/cartographie/

Since April 2017, the expedition has opened a first field of investigation on the theme of global warming, the second major human impact on the oceans with pollution and overfishing. In partnership with the CoralWatch project at the University of Queensland in Brisbane, Australia, the *Fleur de Passion* crew is conducting observations on the health status of corals, victims of bleaching due to warming waters. So far, more than 1300 observations had been made in Australia, the Solomon Islands, Papua New Guinea Indonesia and the Philippines, as the expedition continued its course in Magellan's footsteps. Transmitted to CoralWatch, they feed a large database managed by the project and covering 77 countries.

« **Outstanding opportunity** » for scientific institutions

"James Cook University, one of the world's leading institutions in the field of marine science, is proud to have an association with the voyage of Swiss sailboat *Fleur de Passion* and *The Ocean Mapping Expedition* », says Dr Dale Anderson, Deputy Vice Chancellor of James Cook University in Singapore that supports the expedition's stopover in Singapore.

« *Fleur de Passion* celebrates the historic voyage of Ferdinand Magellan while at the same time supporting research that will advance our understanding of the oceans. It has delivered an outstanding opportunity for collaboration amongst organisations, including that between JCU and the institutions that are supporting the voyage, and drawing in the wider public. It is collaborations such as this that will empower the search for solutions to critical environmental problems such as the pollution of the global oceans», adds Dr Anderson.

Singapore stopover program

During its stopover at the Republic of Singapour Yacht Club (RSYC) until 25 March 2018, and with the support also of the Embassy of Switzerland in Singapore, The Ocean Mapping Expedition offers the opportunity to share the spirit and thrill of the adventure through guided visits of *Fleur de Passion*: on Saturday 17 March from 10am to 5 pm (public); Sunday 18 (RSYC members only) and Monday 19 (JCU members). Booking compulsory on <http://omexpedition.ch/index.php/fr/visit-fleur-de-passion-in-singapore>

Sharing the experience, awareness and culture

In parallel with scientific programs, *The Ocean Mapping Expedition* includes a sharing of experience. This translates into the welcome aboard *Fleur de Passion* of teenagers break in the framework of the socio-educational program *Young at Sea*, in partnership with the Geneva association Pacifique, but also passengers embarking as team members. Since April 2015, 35 teenagers and young adults have boarded by two-three or in groups, for two months on average as part of this program as well as some **70** passengers.

As part of the « In the mirror of Magellan » cultural program, eleven cartoonists or illustrators - mainly Swiss and French - have already come on board « in residence » since the departure from Seville: Zep, Matthieu Berthod, Tom Tirabosco, Pierre Wazem, Peggy Adam, Isabelle Pralong, Ambroise Héritier, Pierre Baumgart, Alex Baladi, Mirjana Farkas and Maurane Mazars, soon to be followed by Cécile Koepfli from Singapour to Jakarta, and many others until the return of the expedition to Seville un August 2019.



About the Fondation Pacifique

The Fondation Pacifique is a non-profit Swiss-based non-profit organization based in Geneva. It was created in 2007 by a handful of men and women driven by a strong entrepreneurial spirit at the service of the community. Since its creation, it designs, organizes and conducts at sea aboard sailing ship *Fleur de Passion* thematic expeditions combining scientific research programs, cultural projects, socio-educational and environmental awareness. Its ambition is to contribute to a better knowledge of the human impact on the oceans and to invite to the reflection on the place of the man on the planet sea by allowing everyone to embark as a crew member and to participate to the expedition. To this end, his expeditions are conducted in a multidisciplinary spirit and experience sharing, and are accompanied by communication actions for the general public.

Fondation Pacifique

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The Ocean Mapping Expedition

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