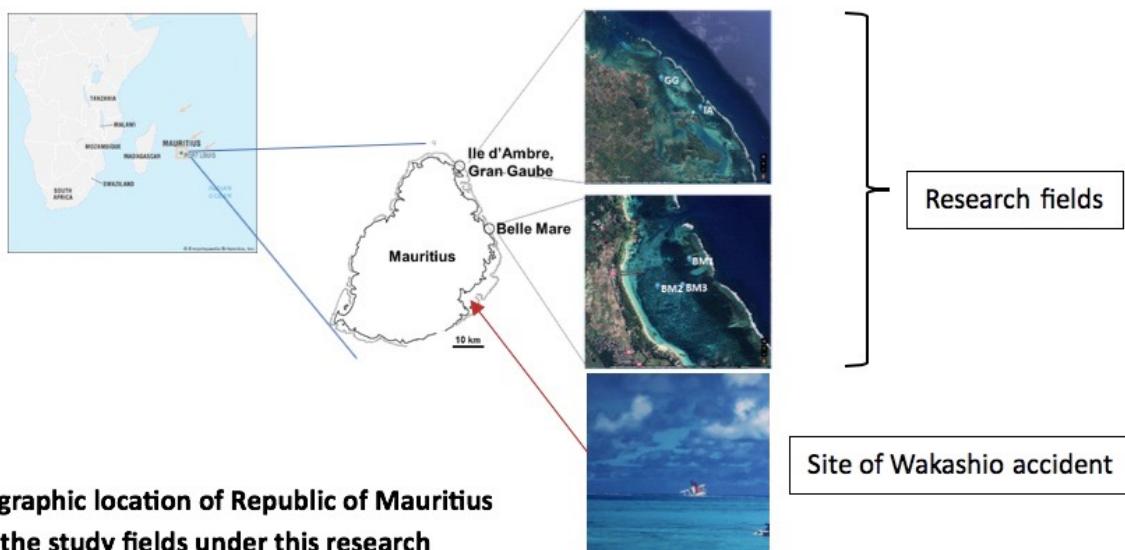




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沿岸生態系ニュース
COASTAL ECOSYSTEM NEWS

Activity of our research team in the MOL Mauritius International Found
(MOL : 商戦三井モーリシャス国際ファンドにおける活動報告) by Dr. Casareto Beatriz

The present research team from the Marine Environment and Bioresources: Sakura-ebi lab. (MEB) is participating in the MOL Mauritius International Found for Natural Environment Recovery and Sustainability, since 2021. This Found was created by Mitsui OSK Lines (MOL) after the grounding of the MV Wakashio on the East coast of Mauritius in July 2020, when 1,000 tons of oil spilled, causing coral bleaching due to toxicity from oil chemicals and excessive sedimentation.



Geographic location of Republic of Mauritius and the study fields under this research

This research focus on reef recovery strategies after the impact of Wakashio oil spill, focusing on the identification and protection of thermal-resistant corals, stress-vulnerable corals and endemic corals species. The final goal is to create consciousness among the Mauritius citizens to protect and help the recovery of their reefs for the future of their economy. The research team have been developing research activities under this found for 4 years. During 2025 we visited Mauritius from 6th to 18th of October to perform field surveys, coral experiments lectures and a workshop to transmit knowledge and experiences to the citizens of rep of Mauritius.

Research team Schedule in Mauritius during field trip from Oct 6 to Oct 18

- Oct 6 (Mon) departure from Narita
- Oct 7 (Tues) Arriving in Mauritius
- Oct 8 (Wed) from afternoon (15:00~) meeting with UoM team at the University of Mauritius.
Visit Japanese Embassy, ambassador's residence for dinner from 18:30~.
- Oct 9 (Thu-morning) Preparation of equipment for field trip. **Evening from 16:00** visit MOL office and dinner with MOL staff (Mr. Yasuo Suzuki (GM) and Mr. Kaoru Sohun).
- Oct 10 (Fri) Field work at Belle Mare (BM) reef
- Oct 11 (sat) BM coral incubations (SU Team)
- Oct 12 (Sun) Field work at Grand Goube and Ille D'Ambre reefs
- Oct 13 (Mon) *Short term coral incubations SU team
*Adaptation of corals for high temperature stress experiment (temperature rump-up) (SU+UoM team)
- Oct 14 (Tu) High temperature stress Coral incubations (SU+UoM team)
- Oct 15 (Wes) Morning: Joint workshop at UoM from 9:00: **Workshop on "Coral Reefs and Ocean Warming"**

Afternoon: Visit Odysseo aquarium and the new container incubation facility
Oct 16 (Thu) Morning: preparation for return to Japan
Afternoon: Television interview
Oct 17 (Fri) Departure from Mauritius
Oct 18 (Sat) arriving in Narita

Activities

1) Visit Japanese Embassy, ambassador's residence for dinner October 8, from 18:30~

(日本大使館大使公邸での夕食懇談会)

We discussed activities during our visit to the Republic of Mauritius in October 2025, and explained in detail our schedules to his excellency the Japanese ambassador Mr. Masahiro KAN. We also discussed on the establishment of sisters' cities between Shizuoka City and Port Louis. We enjoyed delicious Japanese foods, and several wines offered from the host.



From left: Dr K.Toyoda, Dr A.Yamaguchi; Prof. B.E. Casareto, Japanese Ambassador Mr. M. Kan, Prof Y.Suzuki and first secretary of Japanese Embassy in Mauritius Mrs. Nakamura.

2) Visit to Mitsui OSK lines (MOL) office in Mauritius and joint dinner on October 9 from 16:00 ~

(モーリシャスの商船三井（MOL）の所長との夕食懇談会)

We visited MOL office and discussed and explained in detail planned activities during our visit to the Republic of Mauritius in October 2025, including filed trips and experiments. We invited to Mr. Y. Suzuki and Mr. K. Sohun to participate in our filed trips with the aim to more clearly understand our activities and efforts during field sampling. We also discussed the necessity to continue this research activities in searching heat tolerant corals and, on the contrary, those corals that are weak to environmental changes, for further restauration and resilience of the coral reefs around Mauritius under the global climate change scenario. We strength the idea that during previous years we focused on field surveys, but from now we are shifting to laboratory experiments to test the adaptation capacity of some selected corals in Mauritius to heat waves that are recently observing in Mauritius reefs causing extended bleaching effects on some coral species.

3) Belle Mare field work on October 10 from morning (ベルマーレでのサンゴ礁調査と試料採取)

We continued our field research strategy searching corals that we are categorized as heat resistant and others that are easily affected by the high seawater temperature and strong illumination.

We visited the three station points that were determined at the beginning of this project: BM1, near reef crest, BM 2 near the shoreline and B3 in the middle of the lagoon. We sampled several coral' species as follows:

BM1: *Pocillopora damicornis*, *Pocillopora eydouxi*, *Pavona decussata*, *Fungia* sp., *Galaxea* sp. *Acropora muricata*, *Acropora tabularis*.

BM2: *Acropora muricata*, *Acropopra tabularis*

BM3: *Acropora muricata*, *Acropopra tabular*

Also, at each of station points, we took data on water temperature, light intensity and salinity with loggers, chemical data as organic carbon and nutrients, and plankton samples with water sampling and plankton nets. In

this occasion, we were very happy to share the experience with Mr. Yazuo Suzuki (MOL) who observed our sampling techniques and help some of them. He was very satisfied and interested in all activities.



Plankton sampling



coral sampling



Sensors for temp. Salinity and light



Aspect of the corals in BM1

3) Ille D'ambre and Grand Goube field work on October 12 from morning

(イルダンブレ・グランルーベでのサンゴ礁調査と試料採取)

We visited the two station points that were determined at the beginning of this project

We took data on water temperature, light intensity and salinity using in-situ loggers, we took water samples for chemical data as organic carbon and nutrients, and plankton samples using plankton nets. We sampled the following corals in these two station points:



Pocillopora madagascarensis



Pavona decussata



Sharing experiences with researchers from UoM and MOL members during and after field sampling

Ille D'ambre (IA): *Pocillopora madagascarensis* morphos 1, 2 and 3

Grand Goube (GG): Three different colonies of *Pocillopora madagascarensis* morpho 5, *Pavona decussata*
In this occasion also we shared field sampling experience with Mr. Y Suzuki.

5) BM Corals' incubation experiment: combined strong illumination and high temperature stresses on October

11. ベルマーレで採取したサンゴによる高水温と強紫外線によるストレス応答実験)

We incubated several coral species to test their response to single and combined stresses of high seawater temperature (30°C) and strong illumination (~1800 to 1900 $\mu\text{m}/\text{cm}^2/\text{sec}$) and compare with ambient conditions (24°C and ~400 $\mu\text{m}/\text{cm}^2/\text{sec}$). we also measured primary productivity based on dissolved oxygen signals and converted to carbon units to assess corals' organic carbon fixation capacity.



Preparing incubations



Aspect of the incubation experiment

The following coral species were tested: *Pocillopora damicornis*, *Pocillopora eydouxi*, *Pavona decussata*, *Fungia* sp., *Galaxeia* sp. *Acropora muricata*, *Acropora tabular*.

4) IA and GG Corals' incubation experiments (October 13):

イルダンブレ・グラントルーベで採取したサンゴによる高水温と強紫外線による ストレス応答実験)

a) combined strong illumination and high temperature stresses: this incubation was performed to test the response to single and combined stresses of several morphotypes of *Stylophora madagascarensis* (an endemic coral).

Incubated coral species were as follows:

Ille D'ambre (IA) *Pocillopora madagascarensis* morphos 1, 2 and 3

Grand Goube (GG): Three different colonies of *Pocillopora madagascarensis* morpho 5, *Pavona decussata*

b) Testing extreme high temperature stress (October 14): This incubation aim is to test responses of corals to extreme seawater temperature (33 °C) that were registered during an extended bleaching event during the past summer in Mauritius. Corals from the Genus *Pavona* showed no bleaching or rapid recovery during extended bleaching events in this summer, so we wanted to know more about their physiological responses to survive the extreme high seawater temperature stress. The corals were incubated in ambient (28°C) or stress (33°C) degrees. We performed a pre-adaptation of corals in a rump-up period of increasing gradually seawater temperature during 24 h (about 1 degree each 4 h) during October 13.

Incubated coral species from GG were as follows: *Pavona decussata*, *Pavona cactus*, *Pavona frondifera*, *Pavona danai*, *Fungia* sp, *Galaxeia* sp.



Pavona decussata



Galaxeia sp.



Fungia spp.