

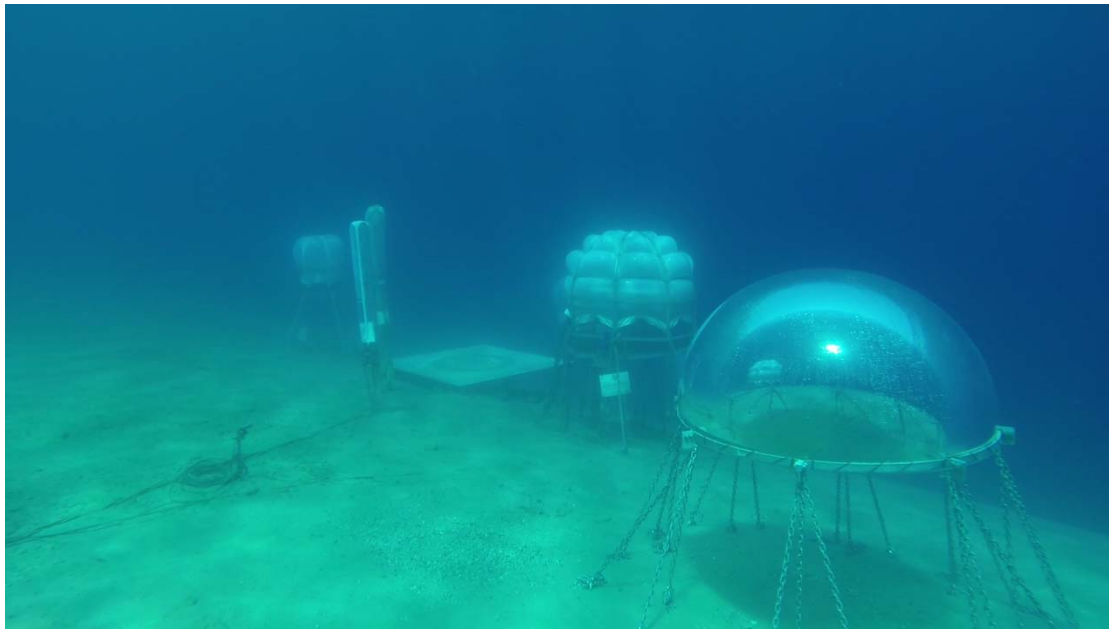


NEMO'S GARDEN PROJECT: GROWING PLANTS

UNDERWATER
OCEANREEF[®]
underwater, naturally.

Elisabetta Princi

What is Nemo's Garden?

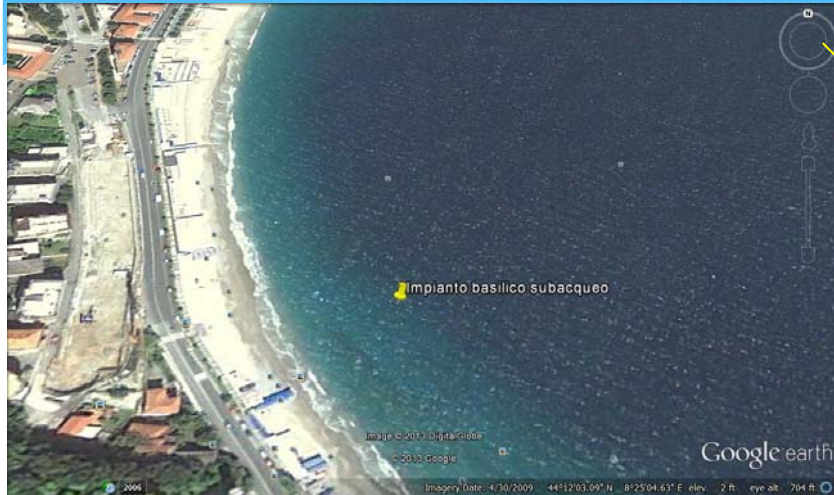


*Underwater HABITAT
anchored to the
bottom of the sea.
Managed by “scuba
farmers” and monitored
from the surface
24/24h by video and
audio. A sensors system
allows to control the
environment variations*



**UNDERWATER
LABORATORY**

Where



NEMO'S GARDEN is in the NOLI bay close to Genova (IT), at around 8 meters depth and at 100 meters from the beach

Our Goal

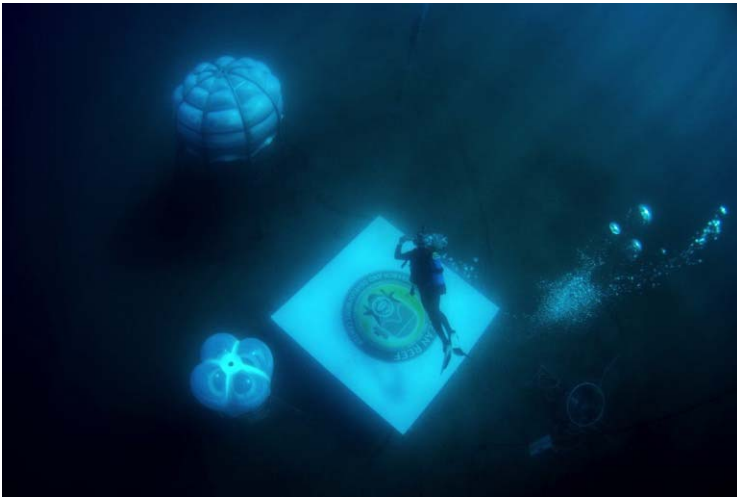


The main project goal is to create alternative ways of agriculture, especially dedicated to those areas where environmental conditions make the plants growth extremely difficult if the conventional farming would be applied. Regions where both lack of fresh water and fertile soils and extreme temperature changes occur may be interested in.

Technology developed in the framework of Nemo's Garden Project might help to create efficient plants productions in an alternative and economical way in respect to standard greenhouses, looking at the new branches of green and blue economy.



Self-Sustainability



Eco-friendly

*Creating new
sources of food*

Nemo's Garden: Industrialisation



WATER CONDESATION

- START UP
- RECYCLE

CULTIVATION

- DIFFERENT SPECIES
- DIFFERENT FARMING TECHNIQUES

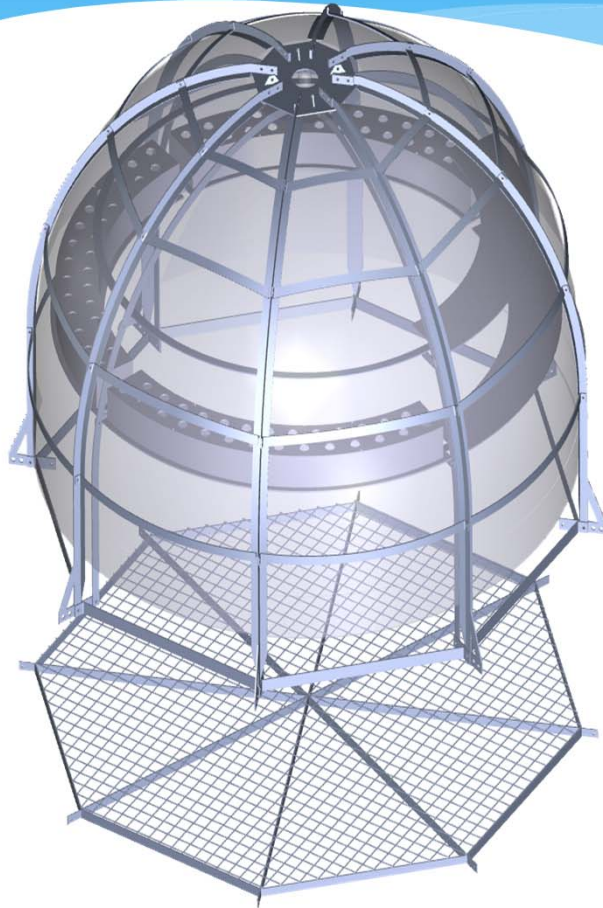
STRUCTURES

- MECHANICAL ASPECTS
- DYNAMICAL RESISTANCE
- MATERIALS
- ARCHITECTURE

MONITORING

- ENVIRONMENT PARAMETERS
- REMOTE CONTROL OF SENSORS

Biosphere



**TRANSPARENT STRUCTURE
RESISTANT TO THE
BUOYANCY.**

**THE ANCHORING TO THE
BOTTOM SEA IS DONE BY
PARTICULAR SCREWS TO
REDUCE THE
ENVIRONMENTAL IMPACT**

PATENTED IN EUROPE AND USA

The Underwater Farm 2015

1 x 2000 liters

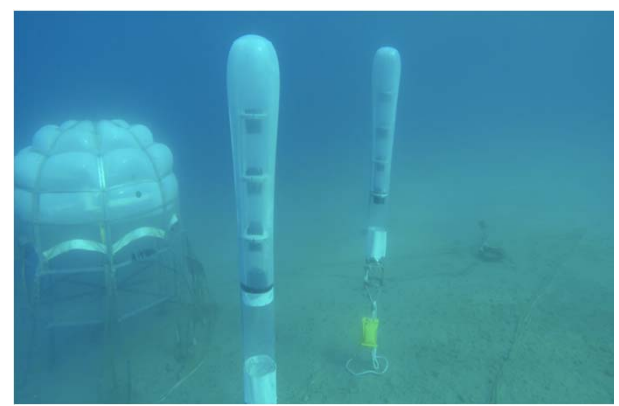


4 x 800 liters

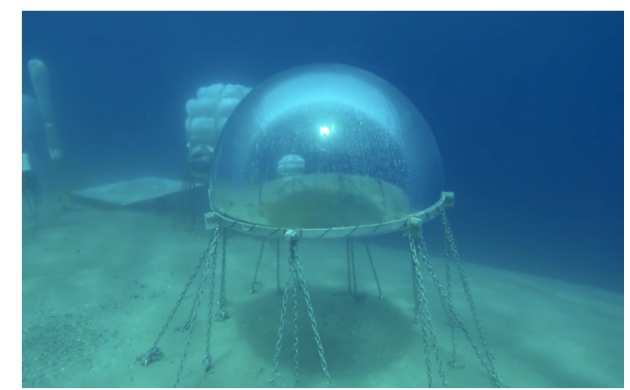


8
BIOSPHERE
S (6 - 10
meters
depth)

2 x 50 liters

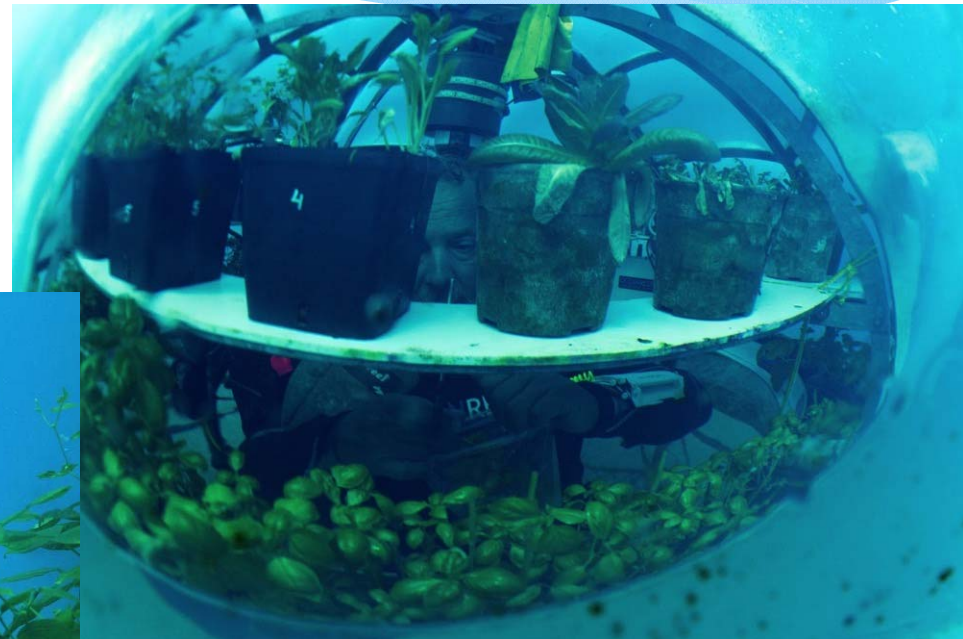


1 x 1500 liters

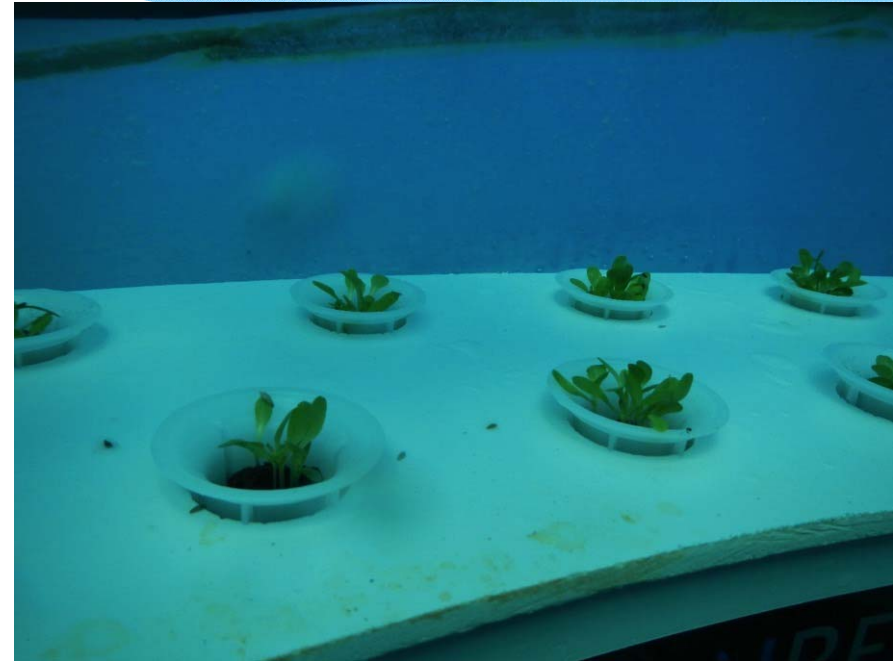




Inside a Biosphere

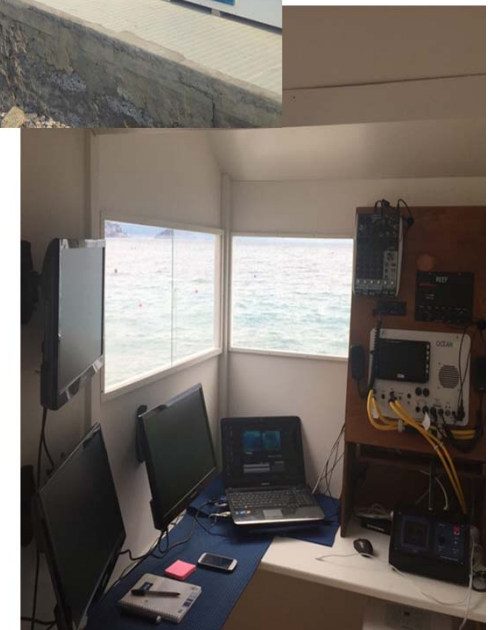
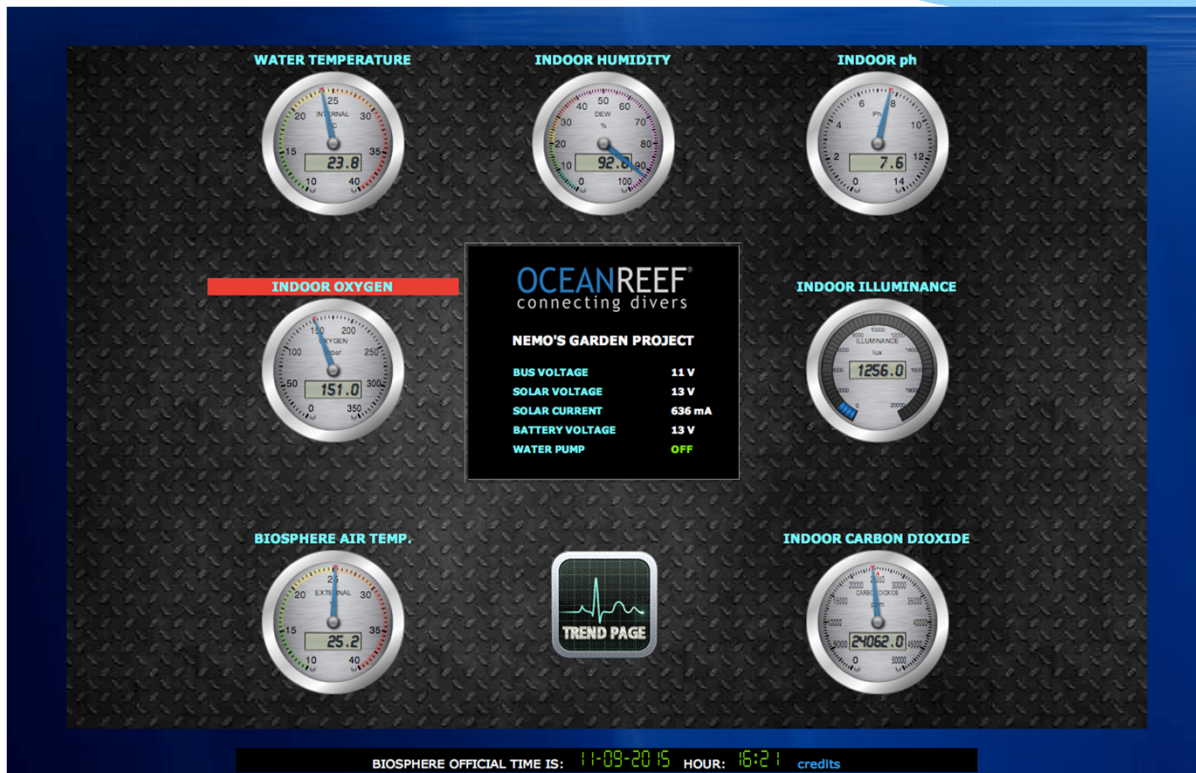


Inside a Biosphere



Hydroponic System

Monitoring

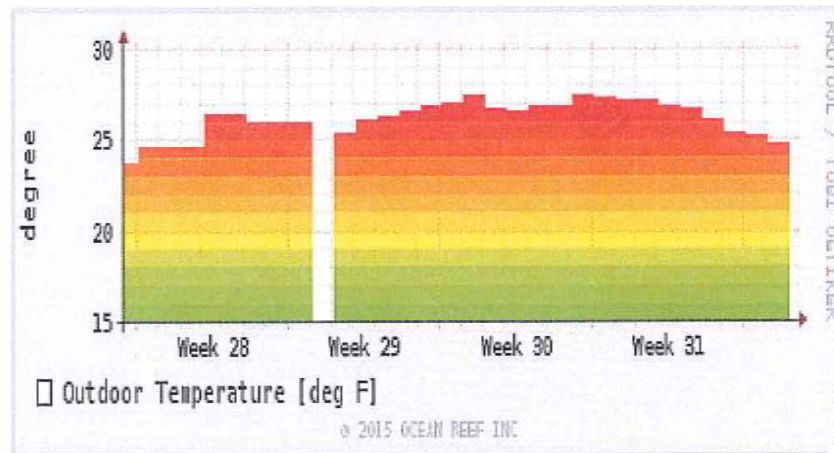


<http://monitor.oceanreefgroup.com/>

Monitoring: Temperature



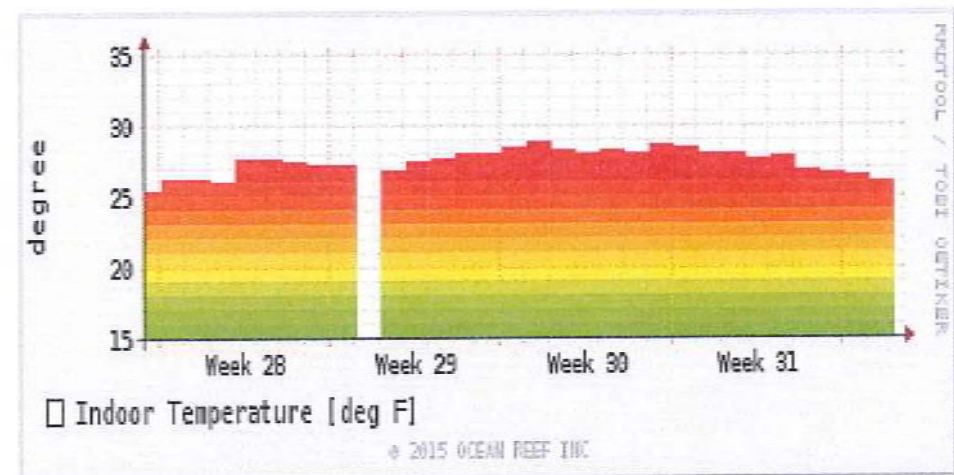
LAST MONTH



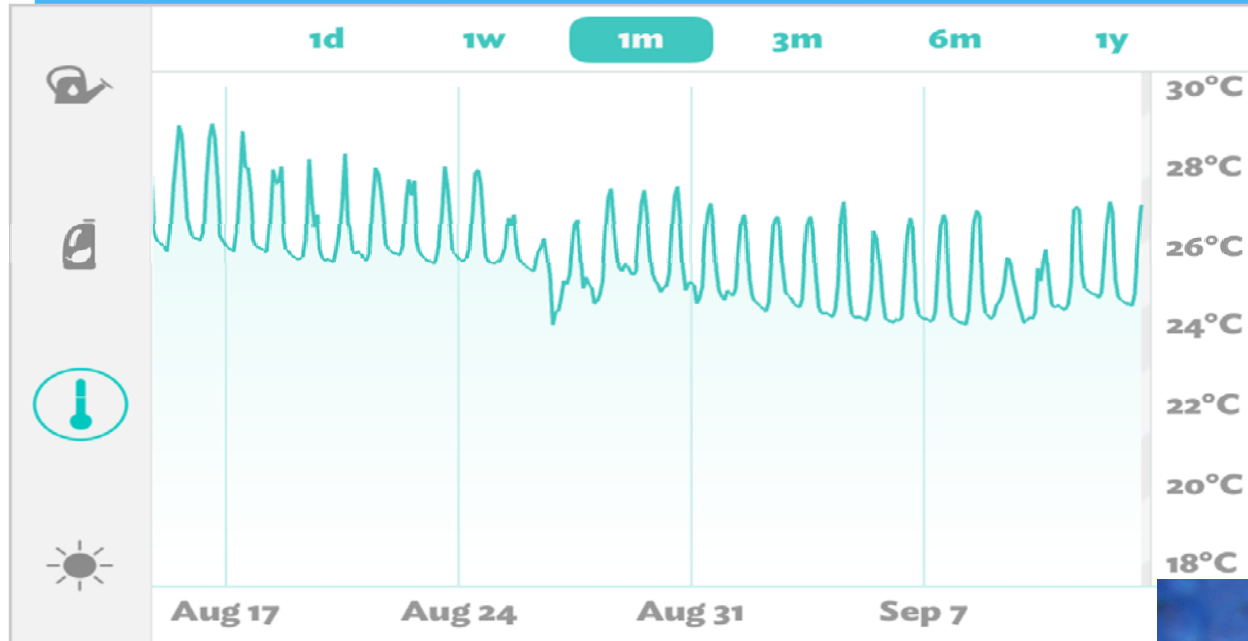
SEA WATER TEMPERATURE

JULY 2015

AIR TEMPERATURE INSIDE THE
BIOSPHERE



Monitoring: Temperature



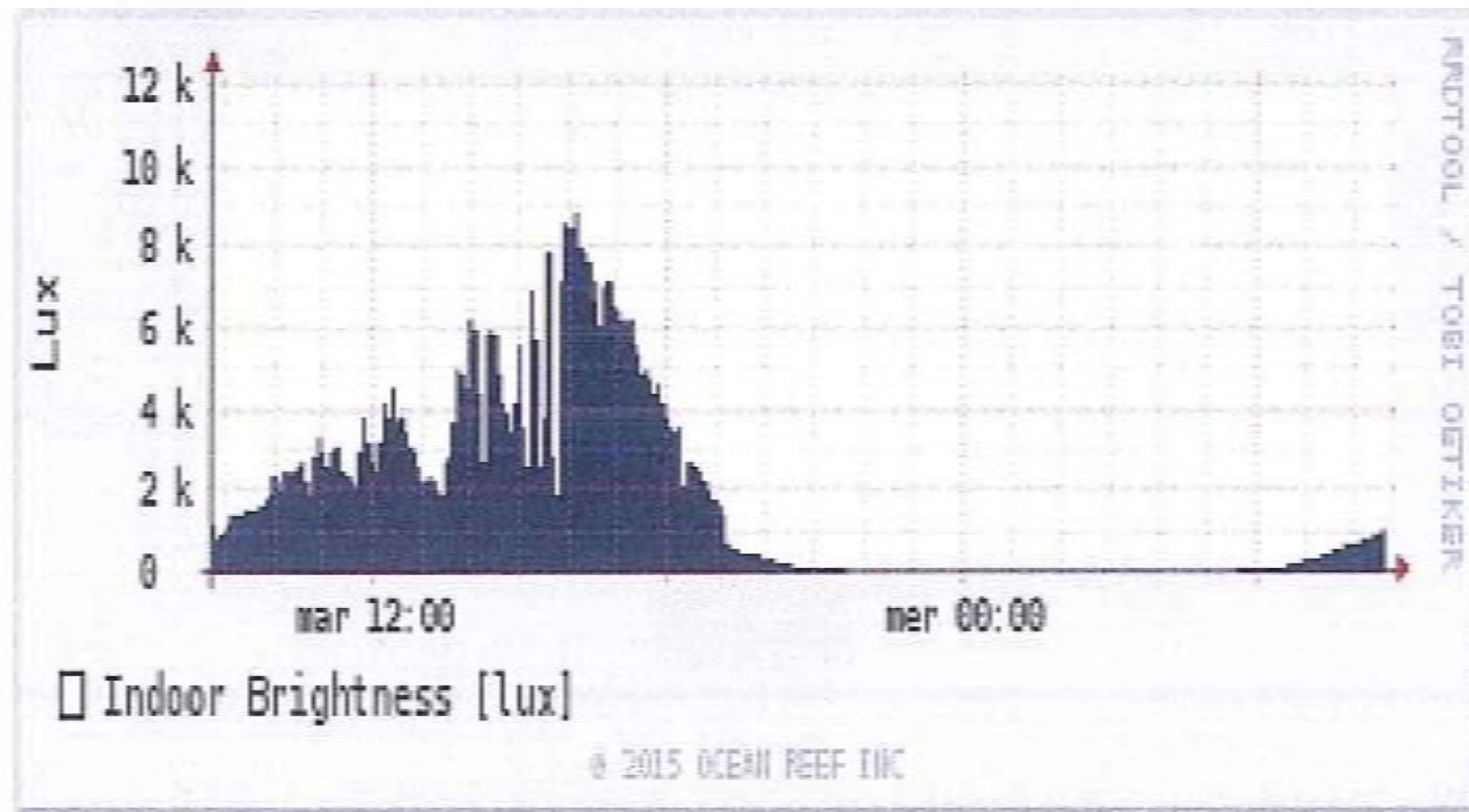
AIR TEMPERATURE
INSIDE THE
BIOSPHERE

DAY/NIGHT CYCLE

SEA WATER EVAPORATES AND
CONDENSES ON THE BIOSPHERE
WALLS

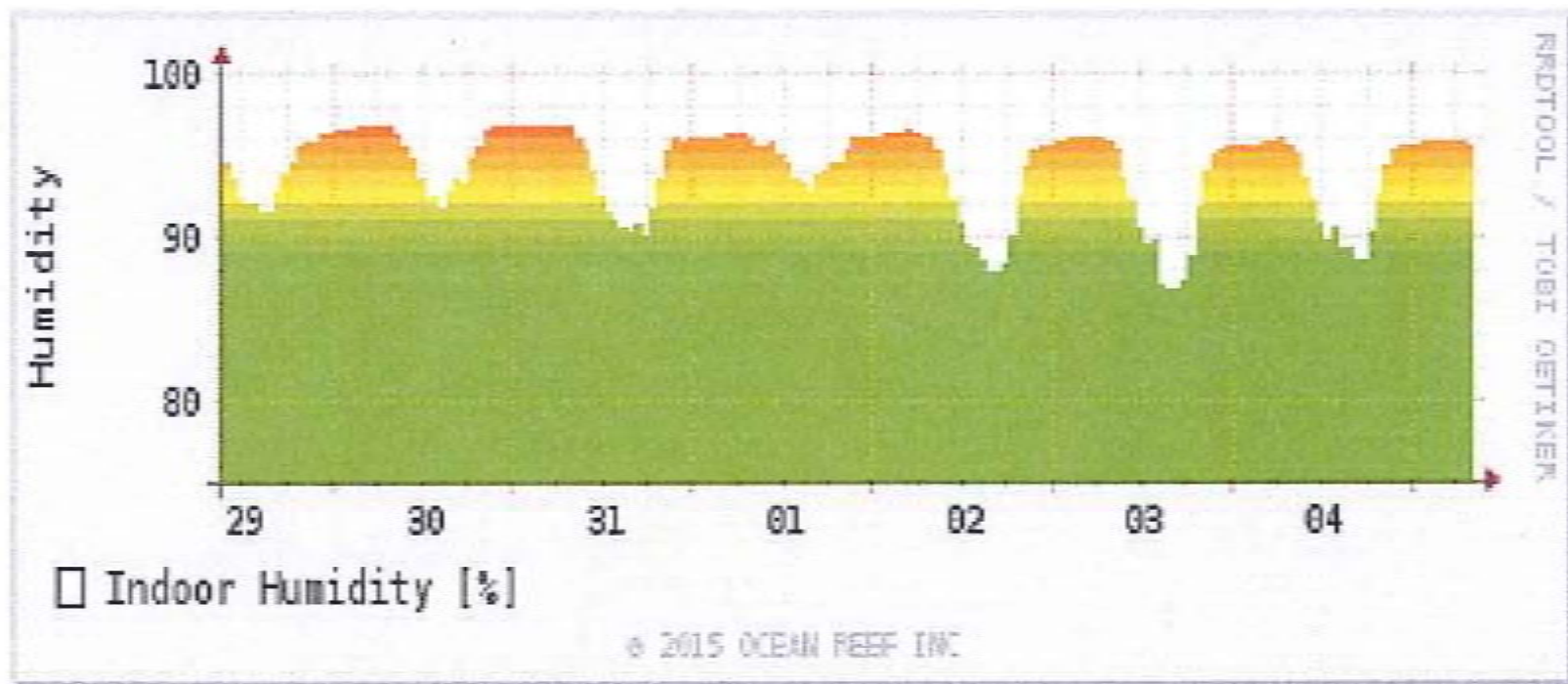


Monitoring: Sunlight



JULY 2015

Monitoring: Relative Humidity



29 June - 4 July 2015

Plants



33 different kinds of plants

106 days of experiments
underwater

158 pots/spots



FLOWERS AND
FRUITS
UNDERWATER



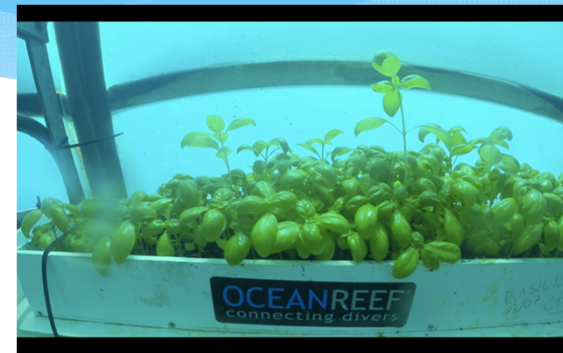
Basil



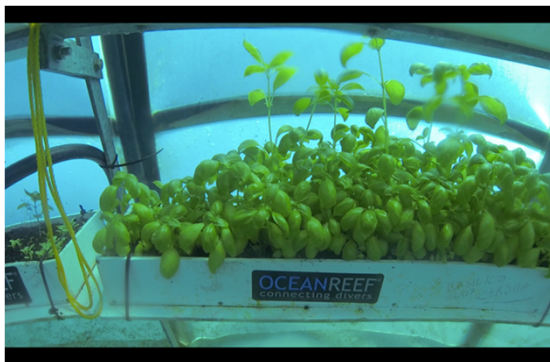
Day 6



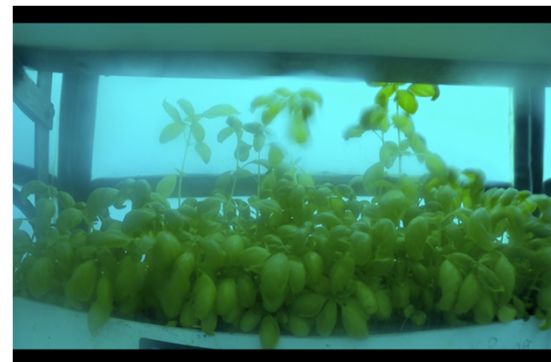
Day 26



Day 31

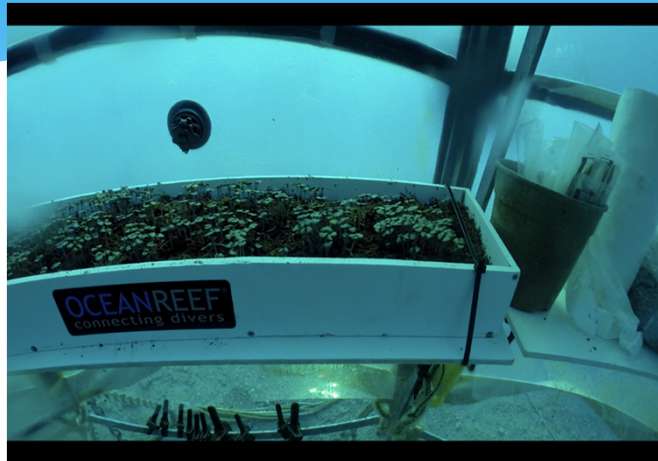


Day 44



Day 50

Red Basil



Day 10



Day 30

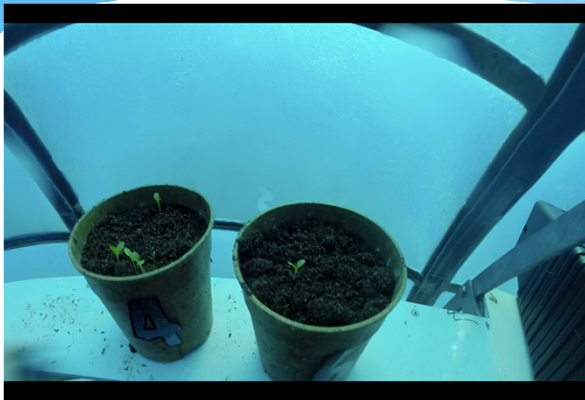


Day 36



Day 49

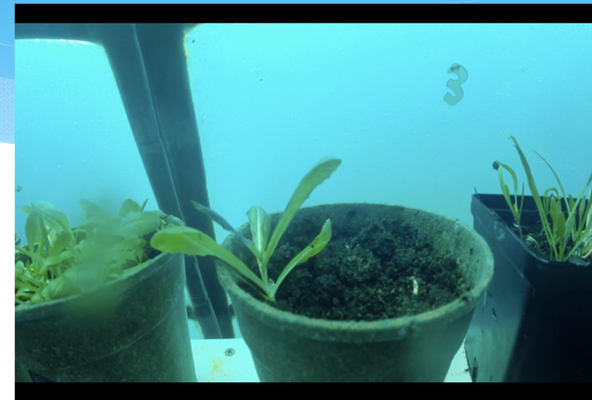
Salade



Day 5



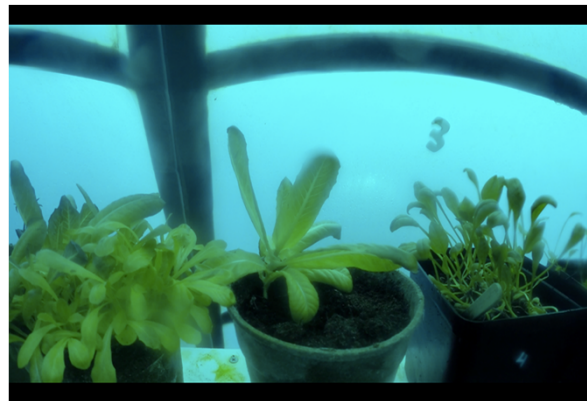
Day 25



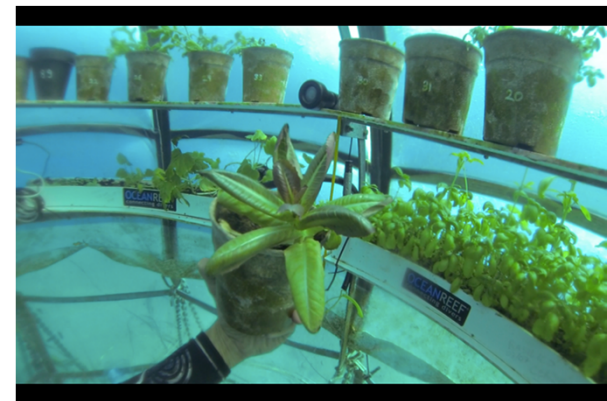
Day 31



Day 44



Day 50



Day 60

Beans



Day 9



Day 15



Day 28



Day 34



Day 51

Nemo's Garden 2016



CALENDAR

June:

- Installation of the new farm
- Seeding

July - August - September:

- Plants growth
- Monitoring
- Streaming 24/24 hours
- Visits

September:

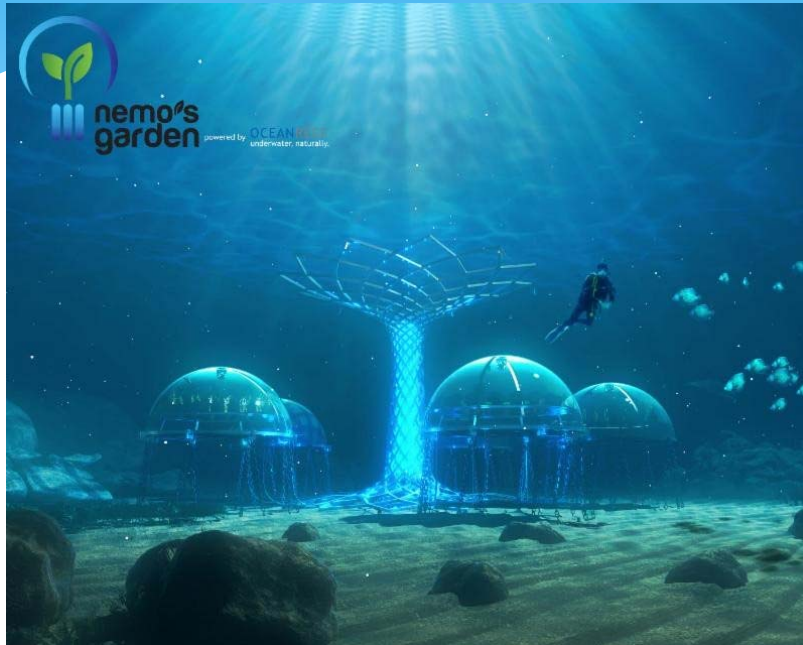
- Harvest
- Plants analyses in collaboration with UNIPI

End of September:

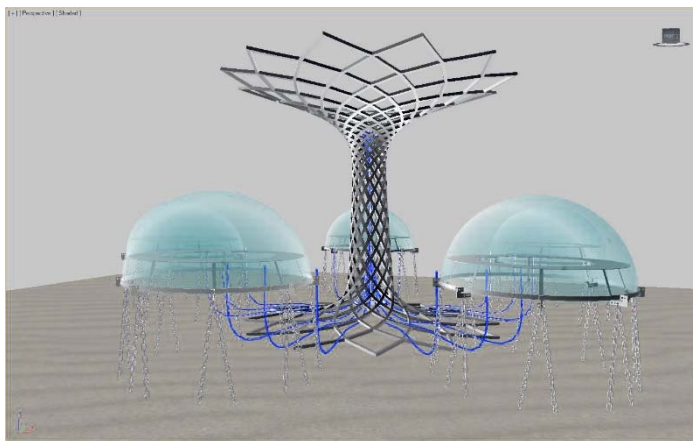
- Farm dismantling



Nemo's Garden 2016



In the middle of the biosphere pentagon there is the **TREE OF LIFE**, a 3.5 meters high by 3 meters large. It is a symbol of evolution and it is a sign of a momentum towards the future, thanks to the innovation and the technology.



The **TREE OF LIFE** hides the cables going to each biosphere. It is handling the illumination system for the entire habitat and it is supporting two webcams, monitoring the area from the top.



www.nemosgarden.com



nemo's
garden

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connecting divers

*Thanks for your
attention!*

OCEANREEF®
underwater, naturally.