

# Importance of Cyanobacteria in oceans



Oceanic bacteria (photo : C. Sardet, CNRS/Tara)

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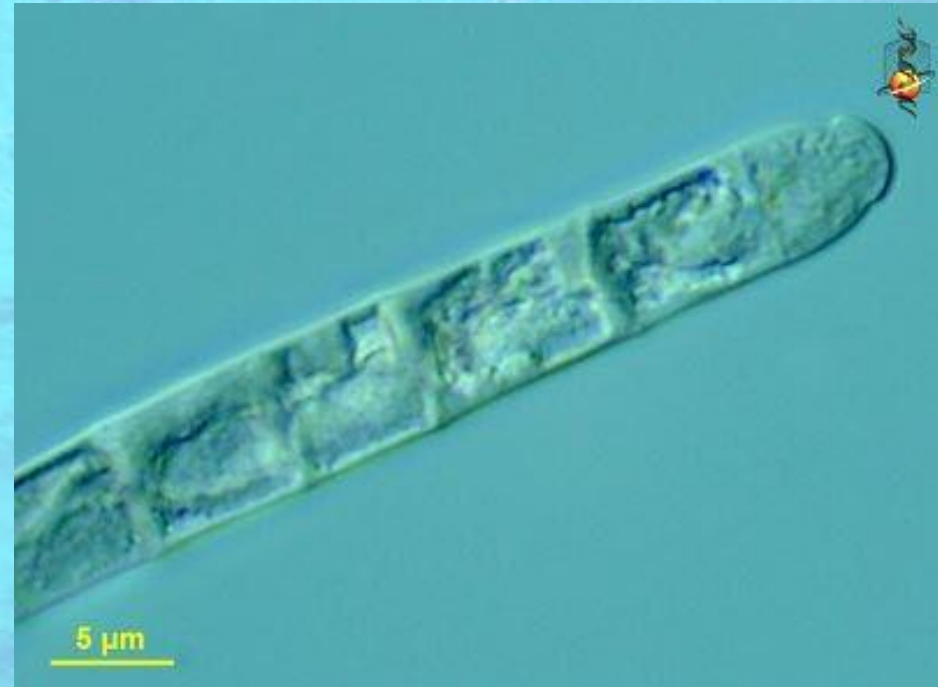


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## Diversity of cyanobacteria



*Cylandrospermum* sp. (photo : Aurélien Magaud)

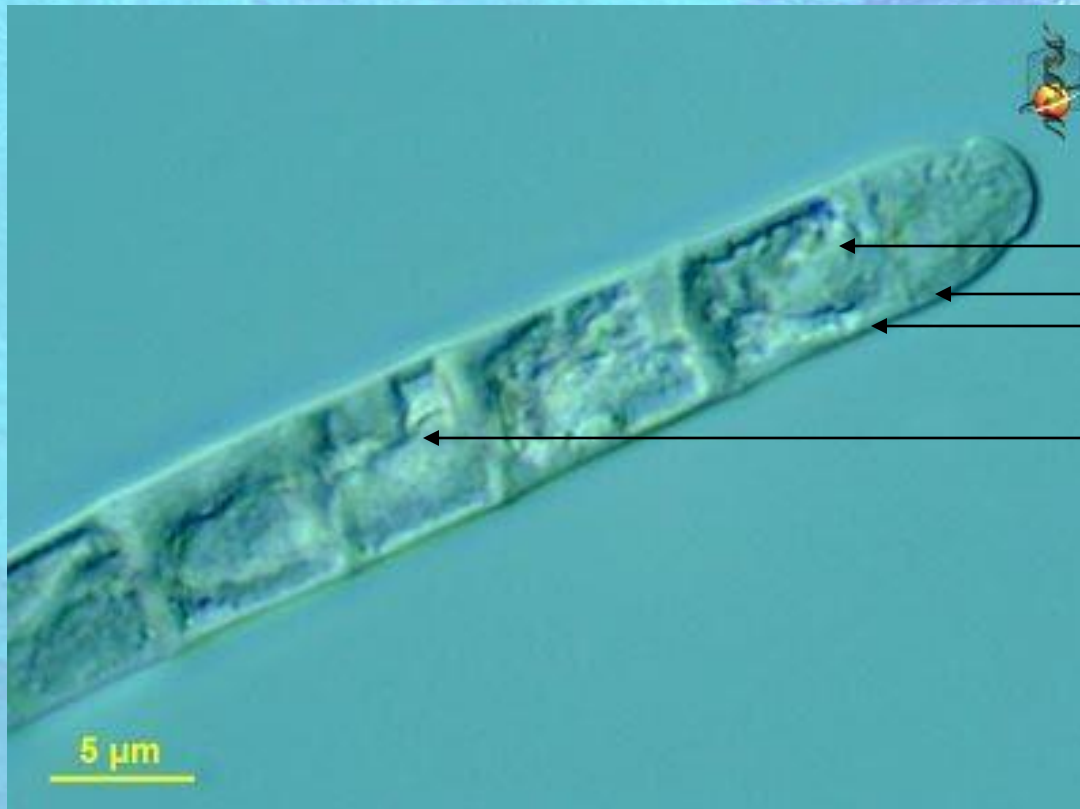


*Trichodesmium* sp. (From the collection  
Provasoli-Guillard National Center for Culture of Marine Phytoplankton (CCMP) )



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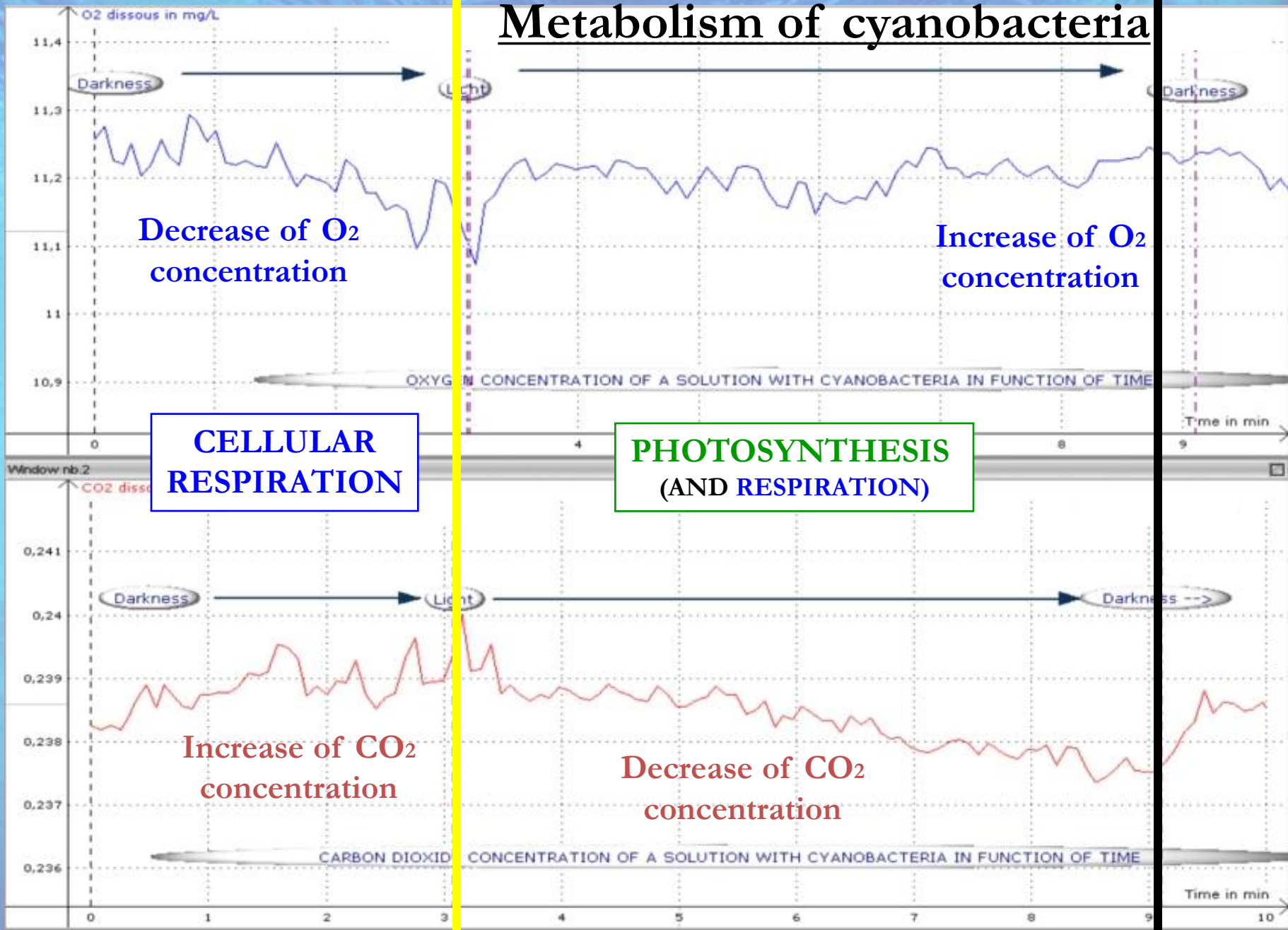
## General organisation of cyanobacteria



- Cytoplasm (without organelles)
- Cell membrane (inner layer)
- Cell wall (outer layer)
- Molecules of chlorophyll where is made photosynthesis

*Trichodesmium sp.* (photo :)

# Metabolism of cyanobacteria



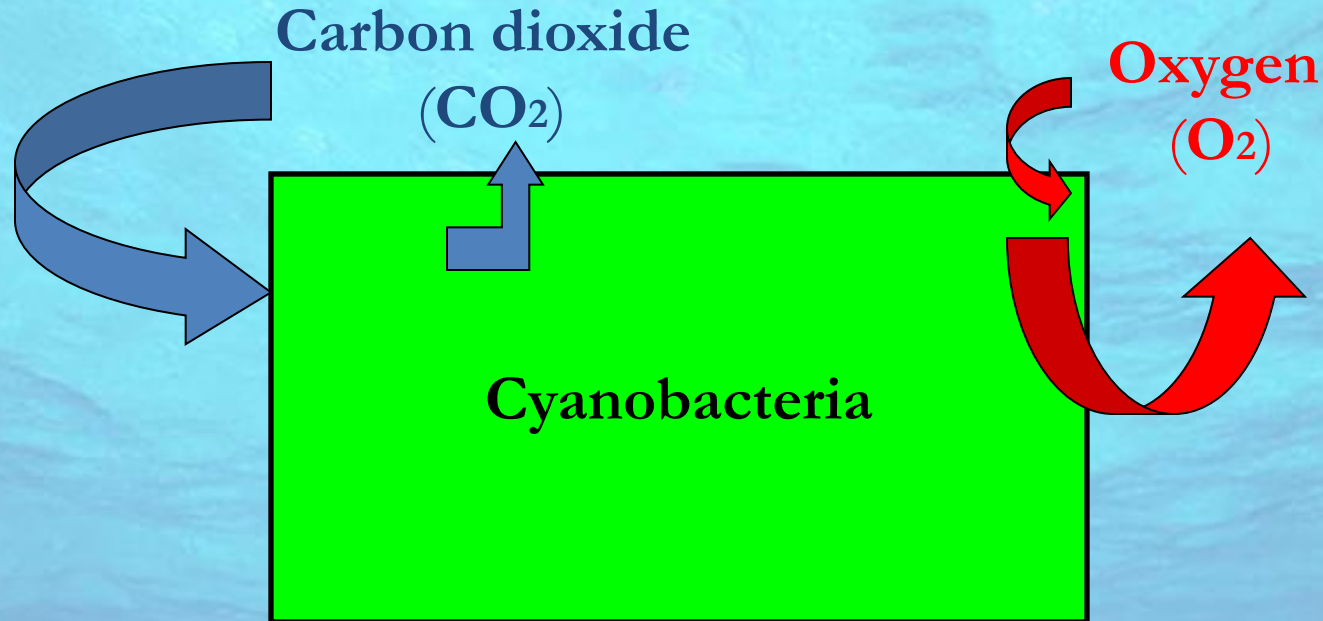
# Metabolism of cyanobacteria (Gaseous exchanges)

During the day, they can make :

- **cellular respiration** as any kind of living beings :  $C_6H_{12}O_6 + 6O_2 \longrightarrow 6CO_2 + 6H_2O$

AND

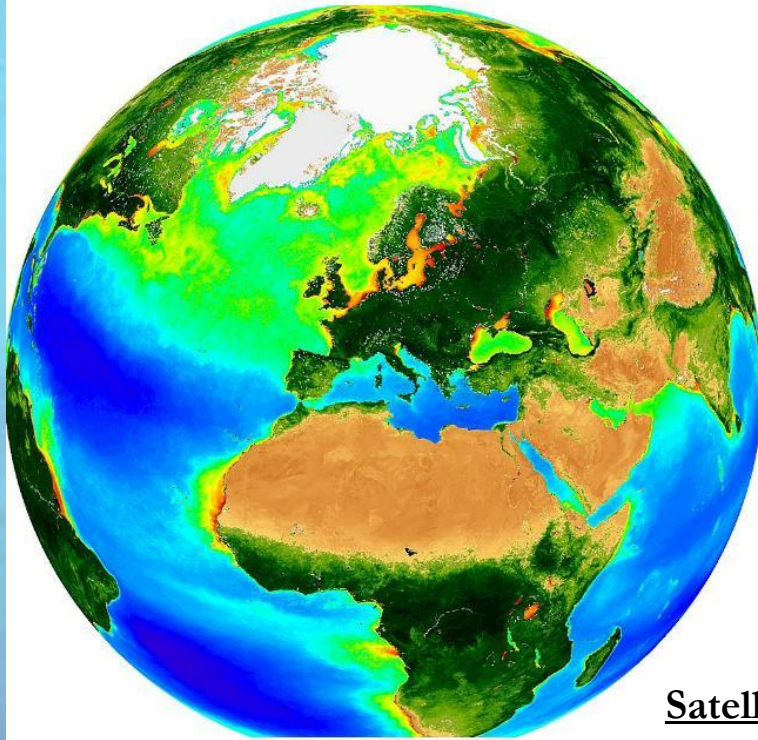
- **photosynthesis** as they have chlorophyll :  $6CO_2 + 6H_2O \longrightarrow C_6H_{12}O_6 + 6O_2$





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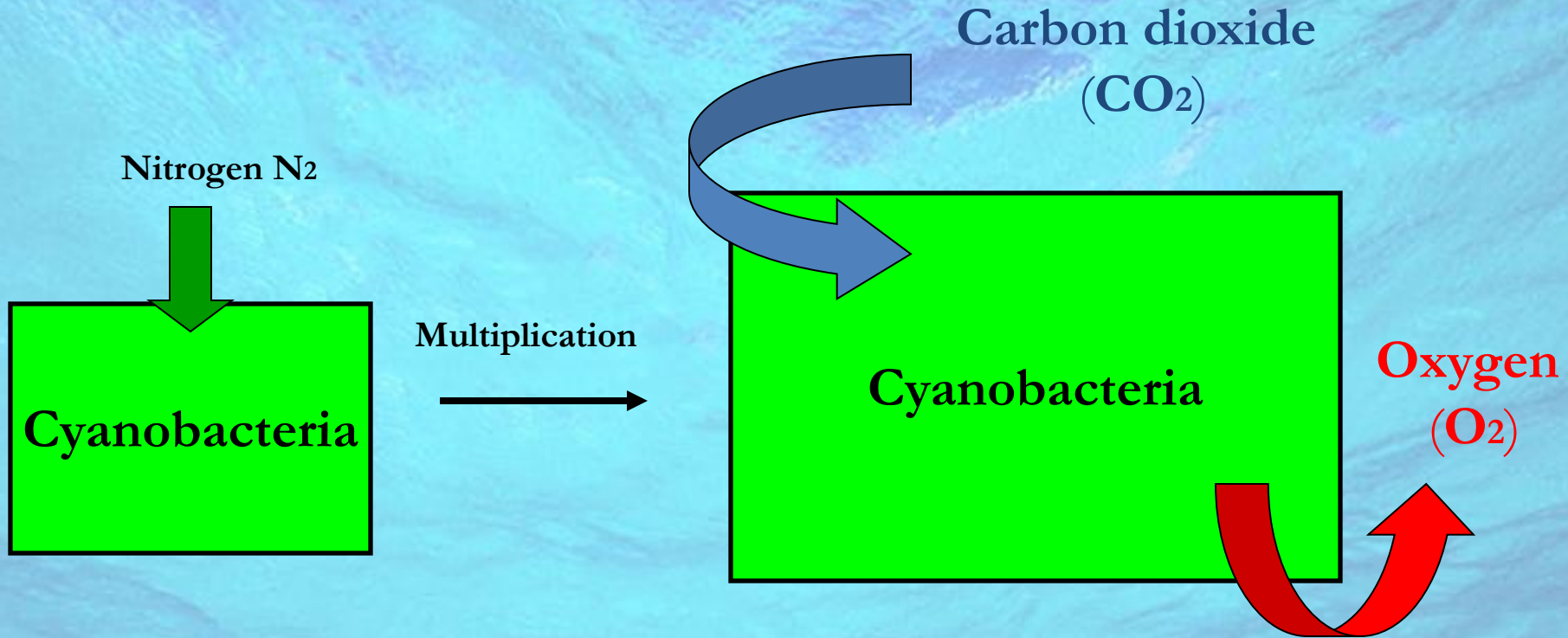
## Development of cyanobacteria (Trichodesmium sp.) in North Atlantic ocean and Mediterranean sea



Scientists showed that Cyanobacteria (as Trichodesmium sp.) can absorb Nitrogen ( $N_2$ ) dissolved in oceanic waters. Then, they can develop and multiply in low-nutrients areas.

Satellite image (SeaWiFS) taken by where we see in green and yellow the presence of phytoplankton (cyanobacteria)

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As they absorb a lot of carbon dioxide and release a lot of oxygen, cyanobacteria (with algae) of the phytoplankton are the main producers of the molecular oxygen of the planet.

They could also have a strong effect against the global warming by decreasing the concentration of CO<sub>2</sub> (a green house gas).



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## The explorers





## Resources

- newspaper of IRD
- Conference of Michel Ollivier, microbiologist at the IRD