

WHEN SCIENTISTS GO UNDER THE WATER
BİLİM İSNALARI SUYUN ALTINA İNDİĞİNDE

RESEARCHERS AT SCHOOLS: HOW DEEP WE CAN DIVE?

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the European Union

What is Science in Blue (Mavide Bilim)?

SCIENCE IN THE BLUE is a European Union Project that aims to bring young generations together with researchers working in the field of underwater science and technology.

SCIENCE IN THE BLUE Project aims to raise awareness among young generations about scientific research opportunities in the seas and oceans.

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What is Science in Blue (Mavide Bilim)?

The activities to be held to bring together scientific researchers and young generations in schools can be summarized under the following headings:

- Researchers in Schools,
- Researchers in the Blue Depths,
- Researchers' Night

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What is Science in Blue (Mavide Bilim)?

Within the scope of the project, one hundred and forty visits are planned for two years to primary, secondary and maritime vocational schools in seven different regions of Turkey, including international schools where English, French and Italian are spoken.

During these visits and researchers' night, project members will use results from eight different EU projects mainly related to citizen science, underwater cultural heritage, sustainable tourism, underwater physiology, marine protected areas, informatics, robotics, internet of things and educational aspects of scientific diving.

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Tamer Özyiğit

Galatasaray University
Computer Engineering Department

1983-1991	Galatasaray High School
1991-1996	İTÜ Business Engineering
1997-1999	GSÜ Industrial Engineering (Master)
2000-2005	İTÜ Industrial Engineering (Ph. D.)
1997-2006	GSÜ Industrail Engineering Department
2007- …	GSÜ Computer Engineering Department

Tamer Özyiğit

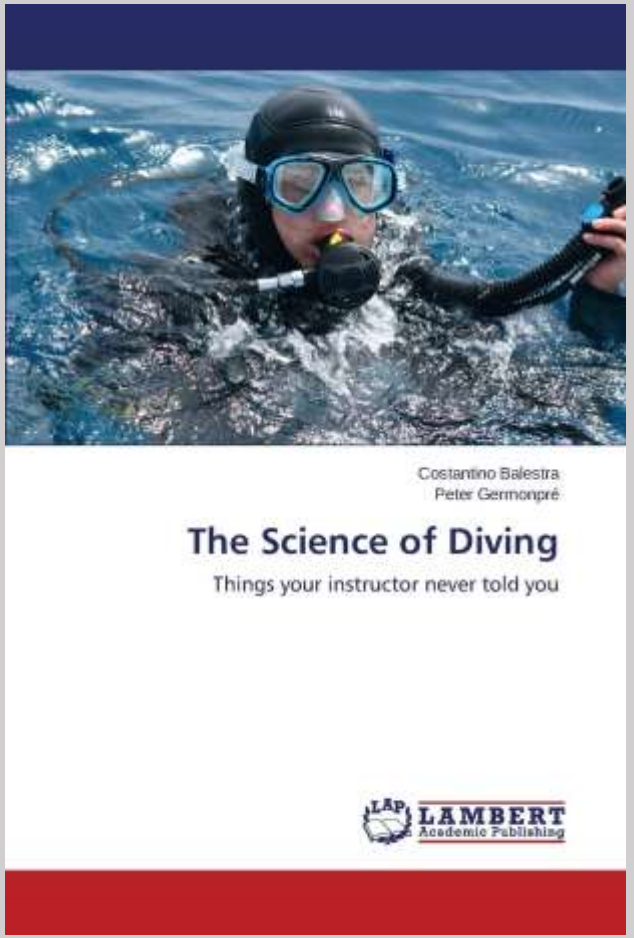
Linear programming
data mining
Multivariate statistical analyzes

Dive computers user interface and operating logic
R&D consultancy

Tamer Özyiğit

EU Project – Diving Physiology - Phypode Classification of decompression sickness

EU Project – Sustainable diving - Divesafe



HOW DEEP WE CAN DIVE?

Reference Project

Green bubbles:

Devices and applications to support marine-related citizen science projects, such as «Do-it-yourself» kits. Studies to support school teaching in school curricula to incorporate ocean literacy principles and diving.



PHYPODE – Physiology of diving

Science of Diving Book

Providing training and experience to young researchers

Diver surveillance/safety systems

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HOW DEEP WE CAN DIVE?

Green bubbles:

Ocean literacy

Informing students about the underwater environment and diving technologies…

PHYPODE – Physiology of diving

Effects of diving on the body

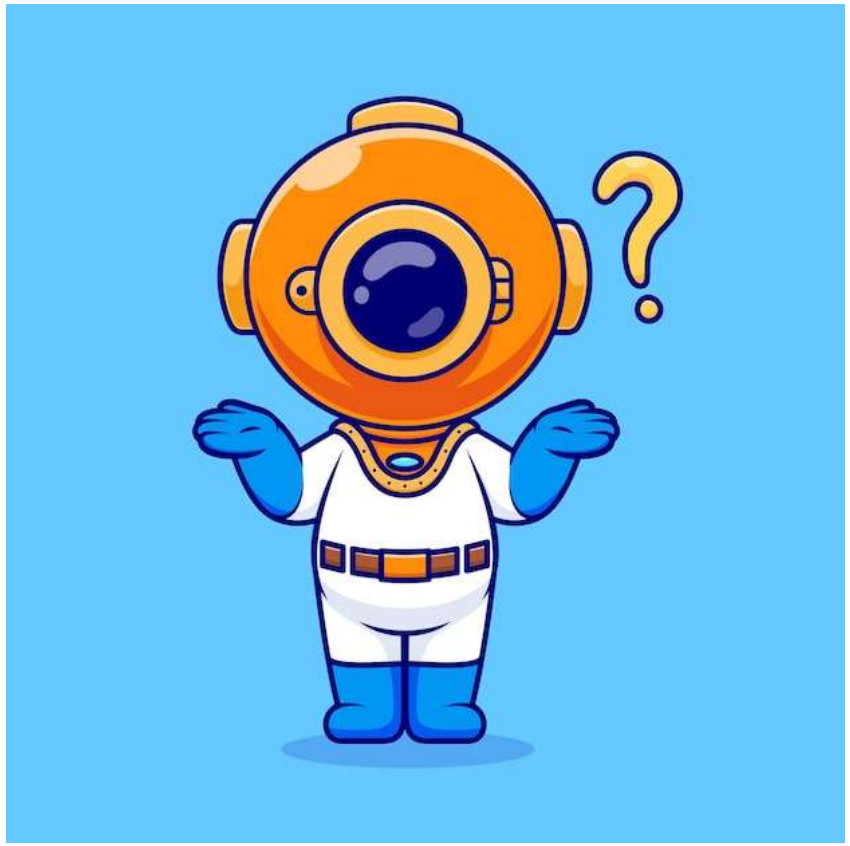
What to pay attention to?

What does it take to dive deeper?



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HOW DEEP WE CAN DIVE?



Can we breathe underwater?

Is breathing the only obstacle?

How to breathe underwater?

So where is the deepest place?

Is there anyone who dives there?

How deep can you dive?

How?

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HOW DEEP WE CAN DIVE?

Constant Weight Double Fins: 122 meters

Free Diving: 128 meters

Fixed Weight: 133 meters

Fixed Weight Without Fins: 103 meters

Variable Weight: 156 meters

Unlimited: 214 meters!



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HOW DEEP WE CAN DIVE?

Record Honding Turkish Free Divers

Yasemin Dalkiliç

World record in Limited Variable Weight Freediving with 105 meters in 2000



Şahika Ercüment

World record in Limited Variable Weight Freediving with 105 meters in 2000



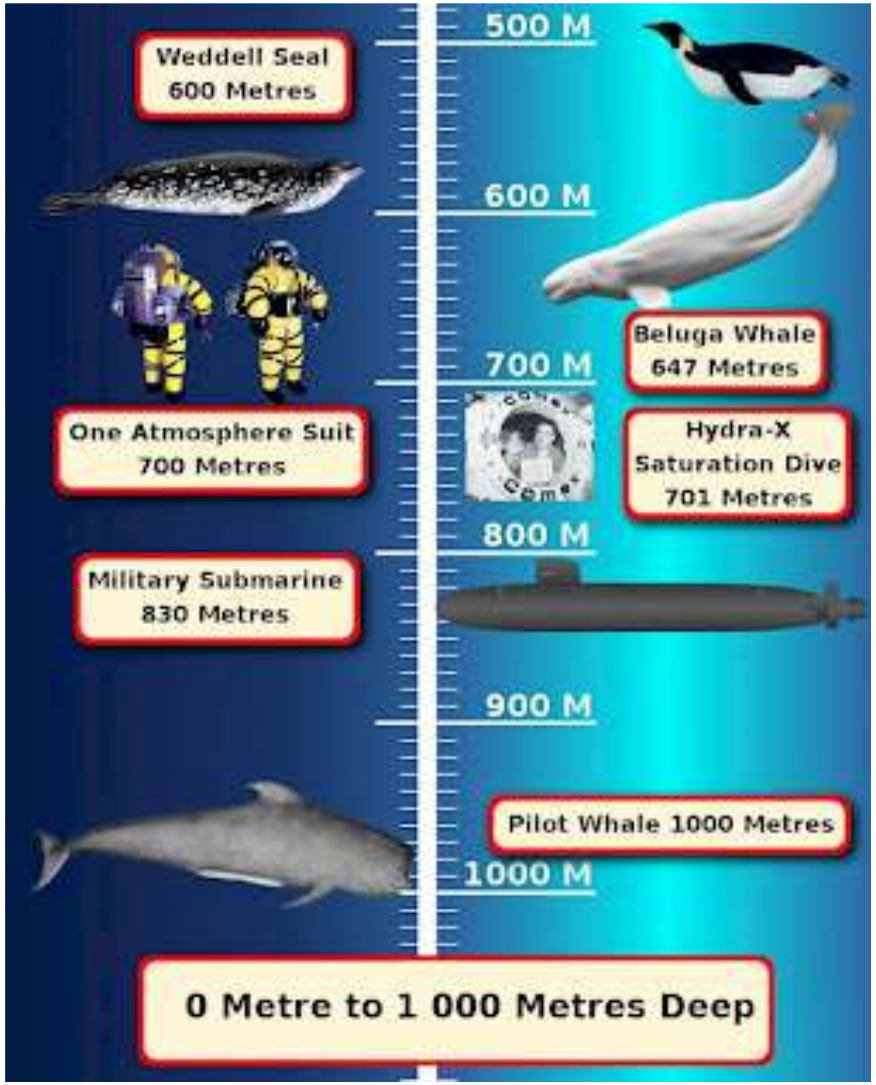
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HOW DEEP WE CAN DIVE?



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HOW DEEP WE CAN DIVE?



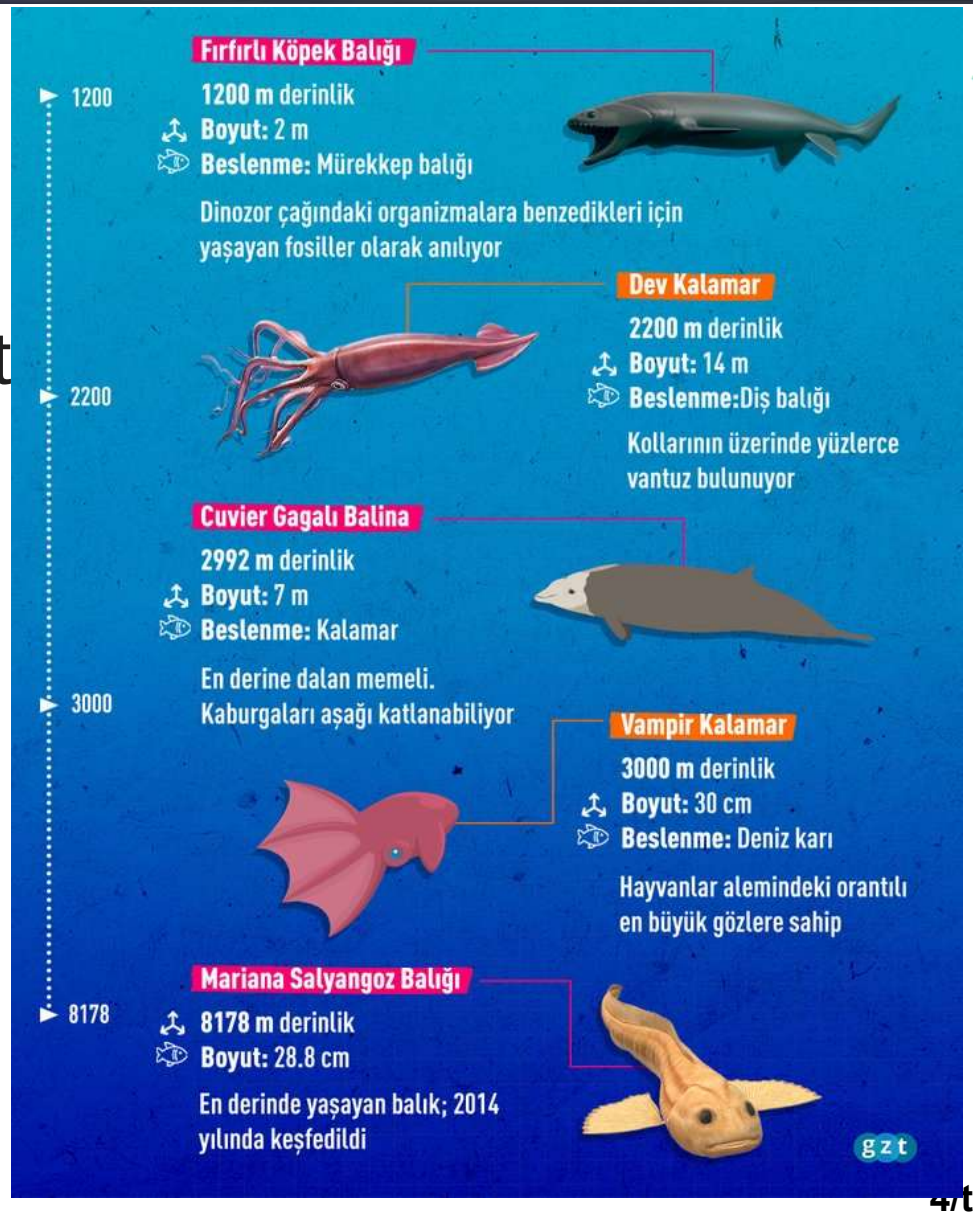
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HOW DEEP WE CAN DIVE?

Bushes in the sea are generally It

shallow waters (0-50 meters)

But there is life deeper



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HOW DEEP WE CAN DIVE?

AVERAGE DEPTH OF THE OCEANS: 3688 m



DEEPEST!

Mariana Trench

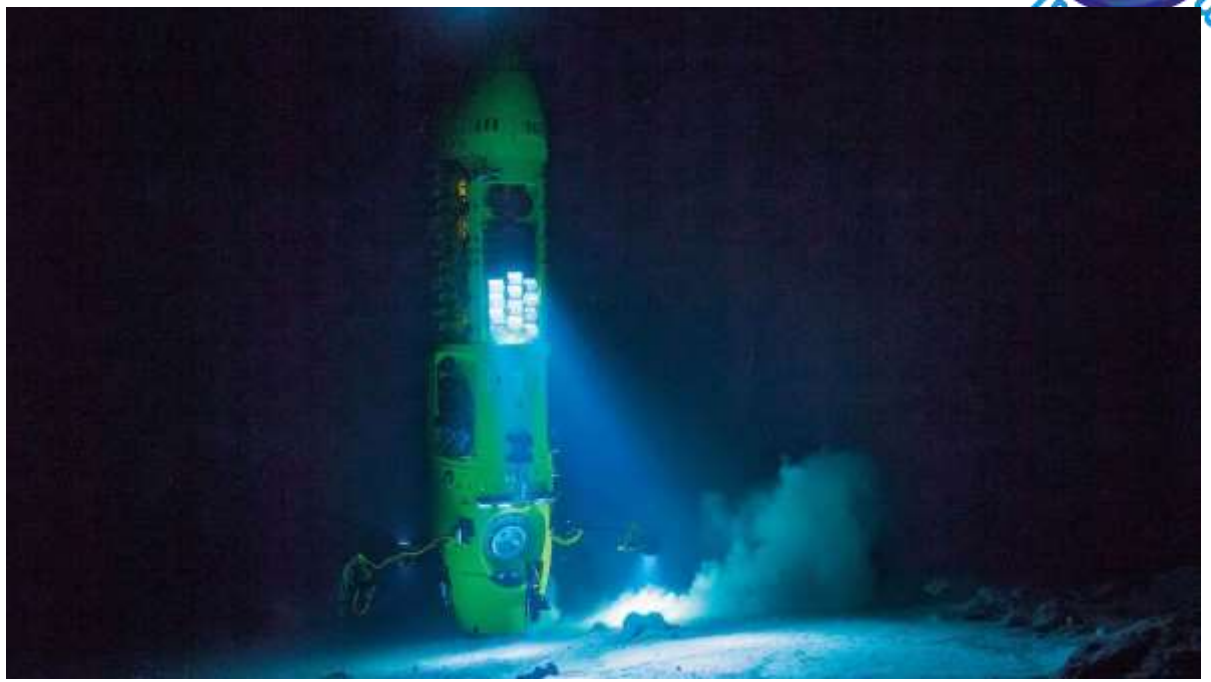
(West Pacific): 11034 m



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HOW DEEP WE CAN DIVE?





1960: Bathyscaphe.
Don Walsh ve Jacques Piccard

2012: Deep Sea Challenger
James Cameron

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HOW DEEP WE CAN DIVE?

Diving with breathing apparatus:

Mask, Fins

Diving Suit

Weight

Helmet

Diving Tube

Regulator















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HOW DEEP WE CAN DIVE?

Diving with breathing apparat

Dive computer

Compass

Torch

guide rope

BC

Boots

Glove

Knife

…













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HOW DEEP WE CAN DIVE?



What is SCUBA? How Many Meters Can You Dive?

1 star diver: 18 m

Limit in Turkey: 30 m

Deepest SCUBA dive: 332.35 meters

Why is this diver carrying a bunch of tanks?



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HOW DEEP WE CAN DIVE?

Why can't we dive too deep?

Nitrogen accumulates in the tissues

and poses a danger of decompression

sickness.

Nitrogen toxicity in depth

Oxygen toxicity at depths

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HOW DEEP WE CAN DIVE?

Other systems?

Surface supplied

Dive

Closed circuit systems

Atmospheric diving

gosuit







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HOW DEEP WE CAN DIVE?

Saturation Dives

Used in commercial diving

Divers live in a pressure chamber

The chamber is lowered to the depths ar

the divers

He gets out of there and does his job.

Record: Comex 534 m



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