

# CARAVAN ON BLUE GROWTH

June 11<sup>th</sup> 2021



Education for Blue Growth

Andreea Presura,  
Prof. dr. Eden Mamut  
Black Sea Universities  
Network

E-mail: [emamut@bsun.org](mailto:emamut@bsun.org)



The activities of the Black Sea CONNECT Coordination and Support Action are funded the European Union's Horizon 2020 Research and Innovation Programme under grant agreement No 860055.

**Surface: 413 488 Km<sup>2</sup>**

**Maximum depth: 2245 m**

**Volume of water: 529 955 km<sup>3</sup>**

**Average salinity: 18 mg/liter**

**Shore length: 4790 km**

**Riparian countries: Georgia, Russia, Ukraine, Romania, Bulgaria, Turkey**

**Main Rivers: Danube, Dniestr, Dnieper – 70% fresh water supply**

**Outflow through Bosphorous: 610 km<sup>3</sup>/year**

**Danube contribution: 205 km<sup>3</sup>/year**

**Anoxic waters: under 150m**





**4869 km** coastline with  
**421 639 km<sup>2</sup>** total area and  
**18** major sea ports

**160 million**  
population of Black Sea  
Coasts and catchment

Deep Black Sea as the  
paleoclimate archive of  
**5 million years**

**30 to 8 reduction**  
in the number of fish species  
with enocomical significance

**10** large rivers flowing to the sea,  
with a total river input exceeding  
**350 km<sup>3</sup> year<sup>-1</sup>**

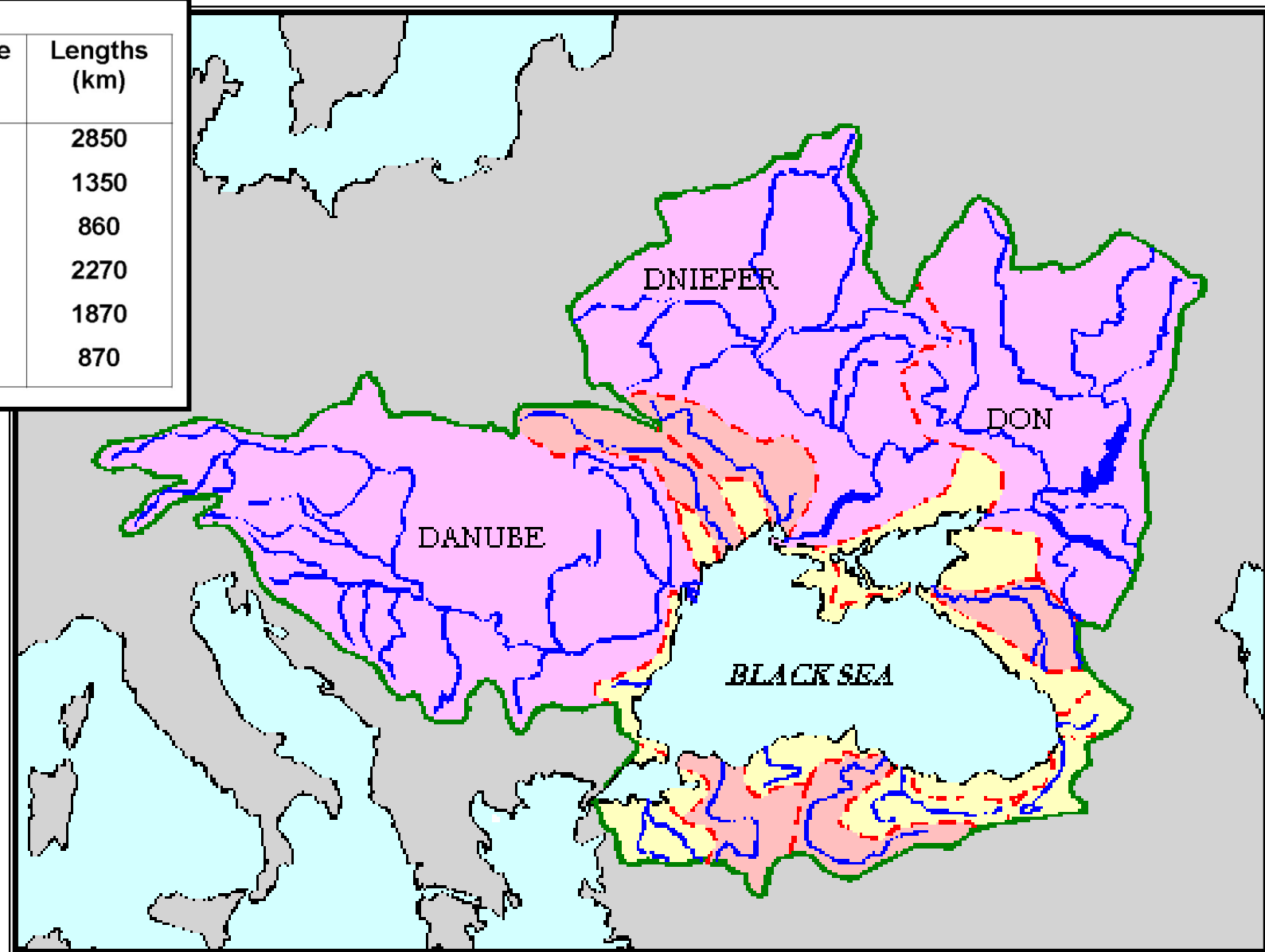
**5 ratio** of the Black Sea  
catchment area to the  
sea's area

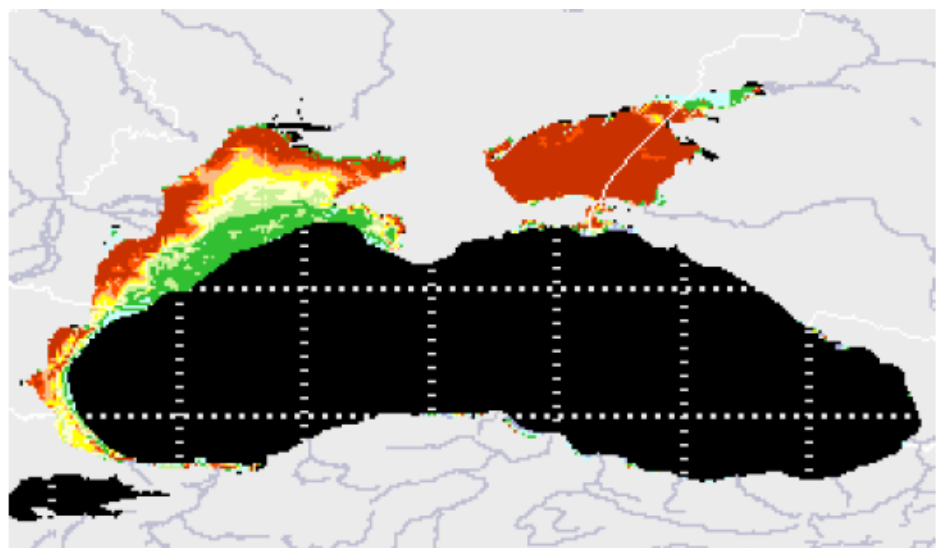
**Rich** in energy sources  
such as wave, currents,  
offshore wind, H<sub>2</sub>S,  
gas hydrates

**90%** of oxygen free,  
**H<sub>2</sub>S-rich** volume

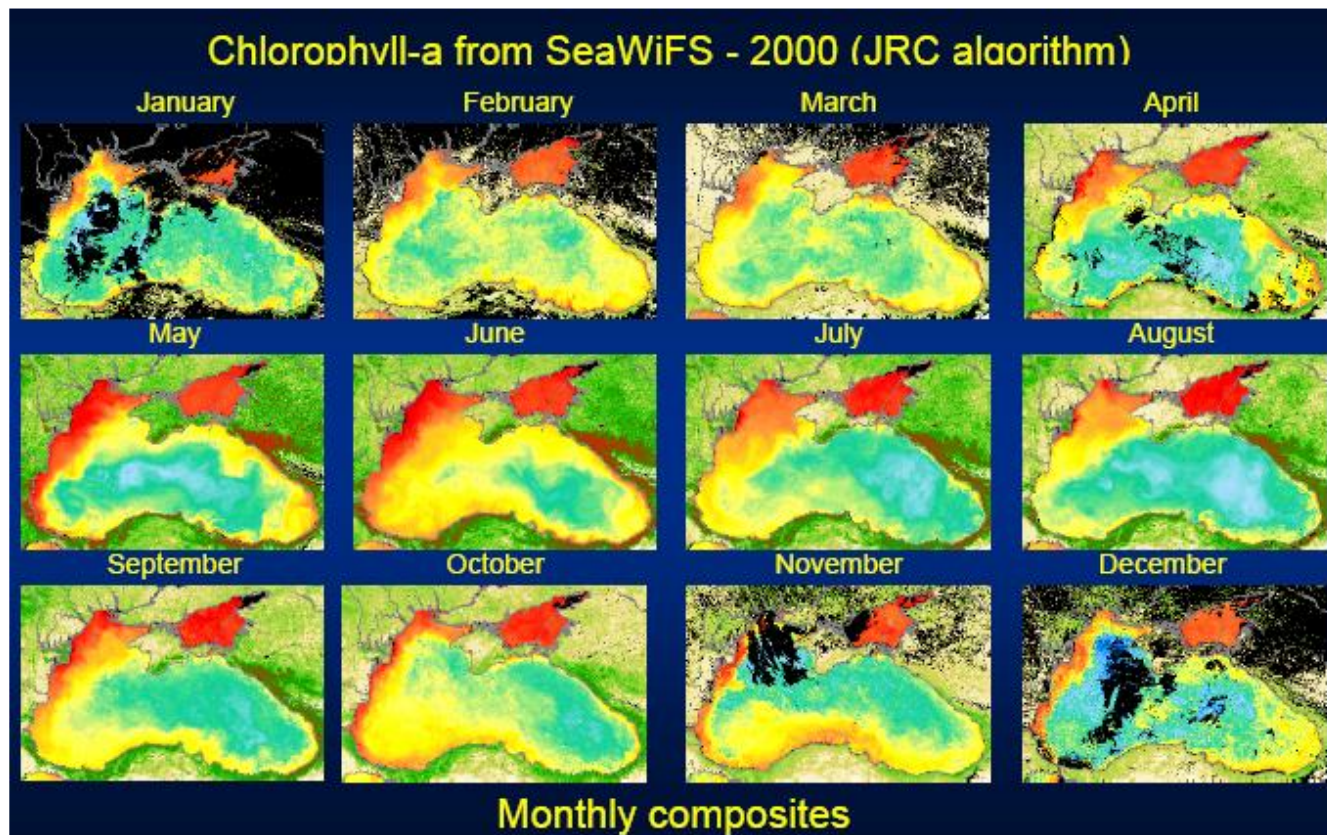


River	Catchment area (10 <sup>3</sup> km <sup>2</sup> )	Mean discharge (km <sup>3</sup> /year)	Lengths (km)
1. Danube	817	205	2850
2. Dnestr	72	10	1350
3. Bug	65	3	860
4. Dnepr	558	53	2270
5. Don	422	38	1870
6. Kuban	58	13	870





0 0.2 0.4 0.6 0.8 1
   
 Oxygen depletion risk index

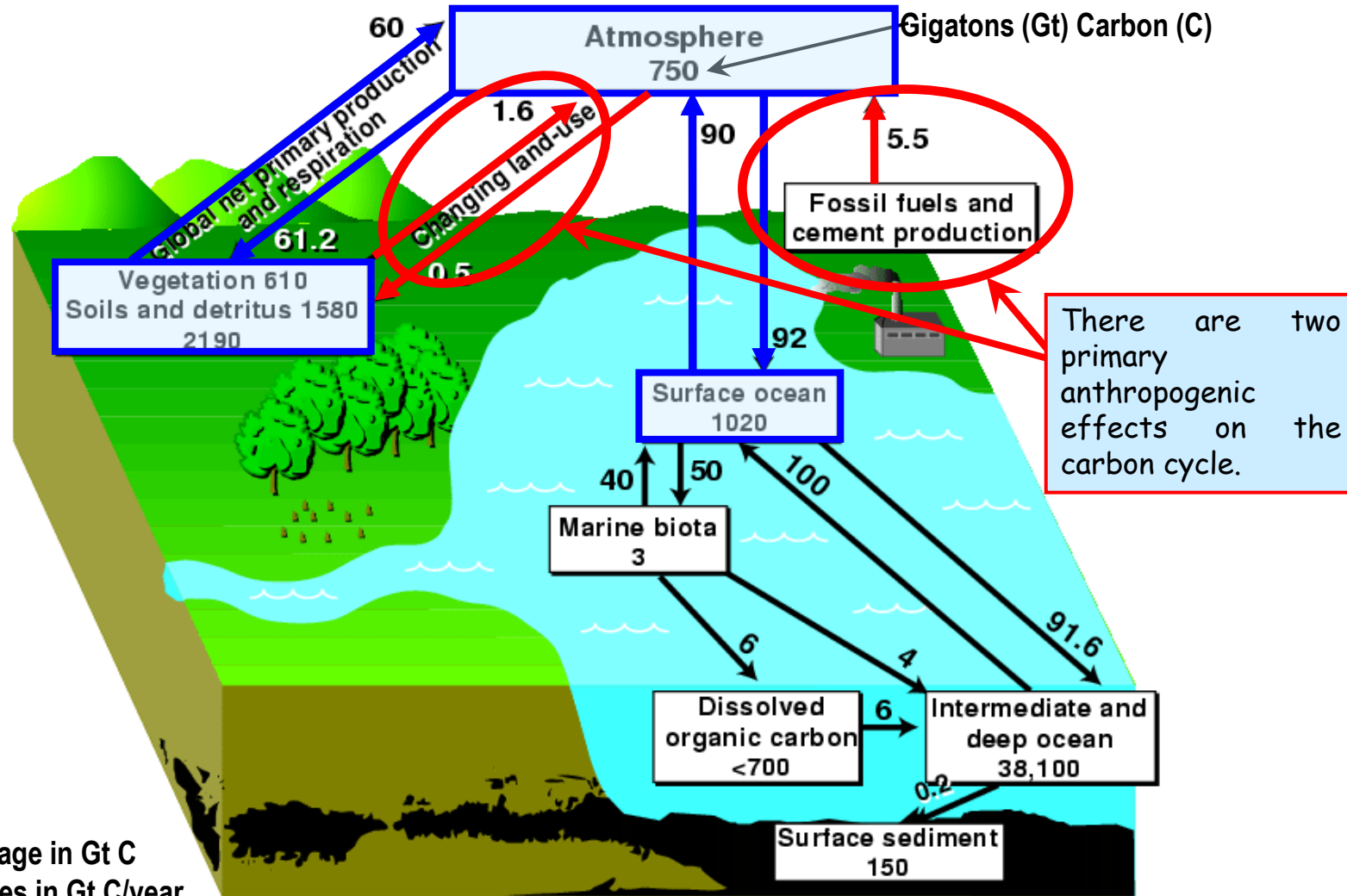


0.2 0.6 1.2 2.1 5.1 10.1 25.1 > Chl a (mg m<sup>-3</sup>)

Monthly composites

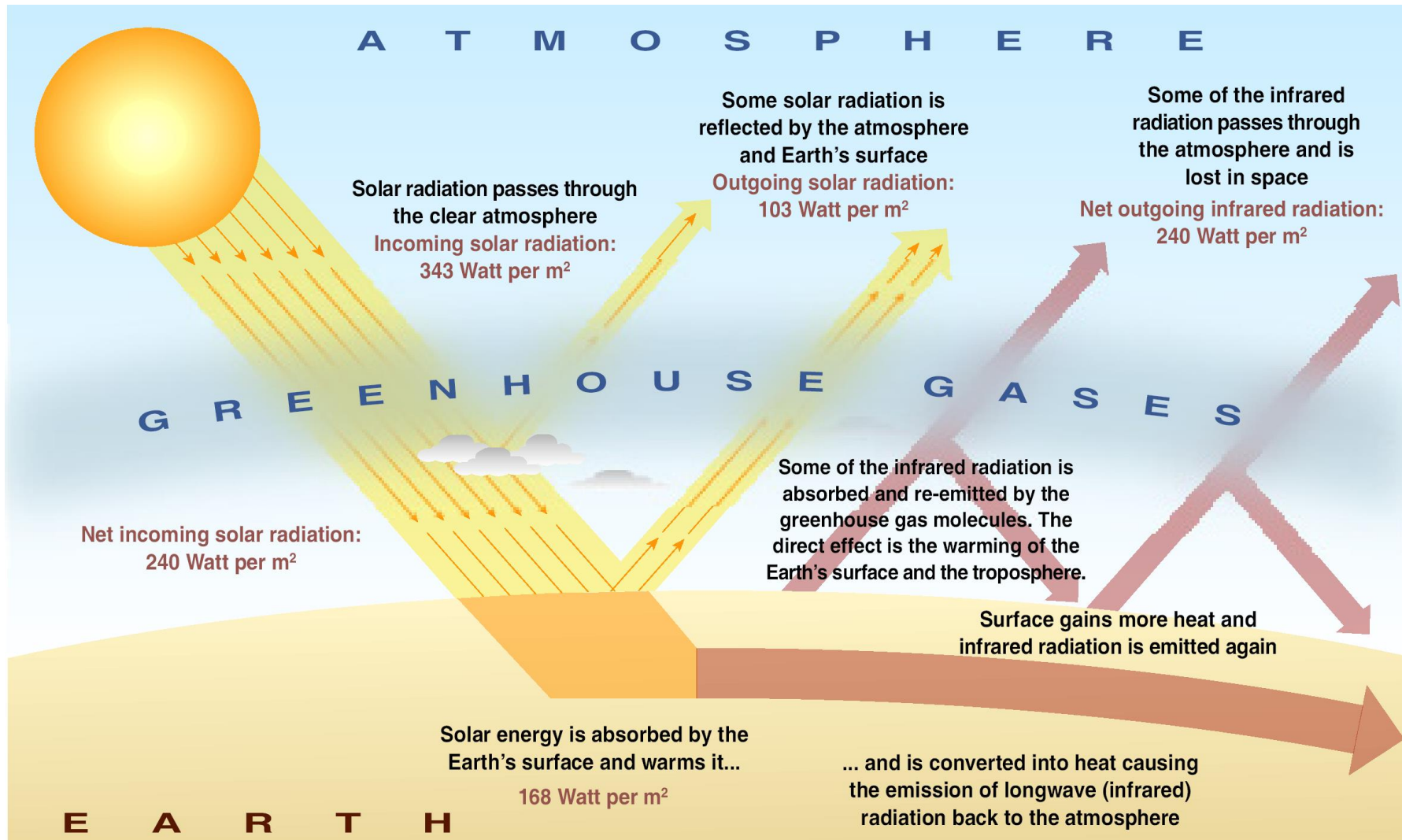


# THE CARBON CYCLE ON EARTH



Storage in Gt C  
 Fluxes in Gt C/year  
 1 Gton = 10<sup>9</sup> tons

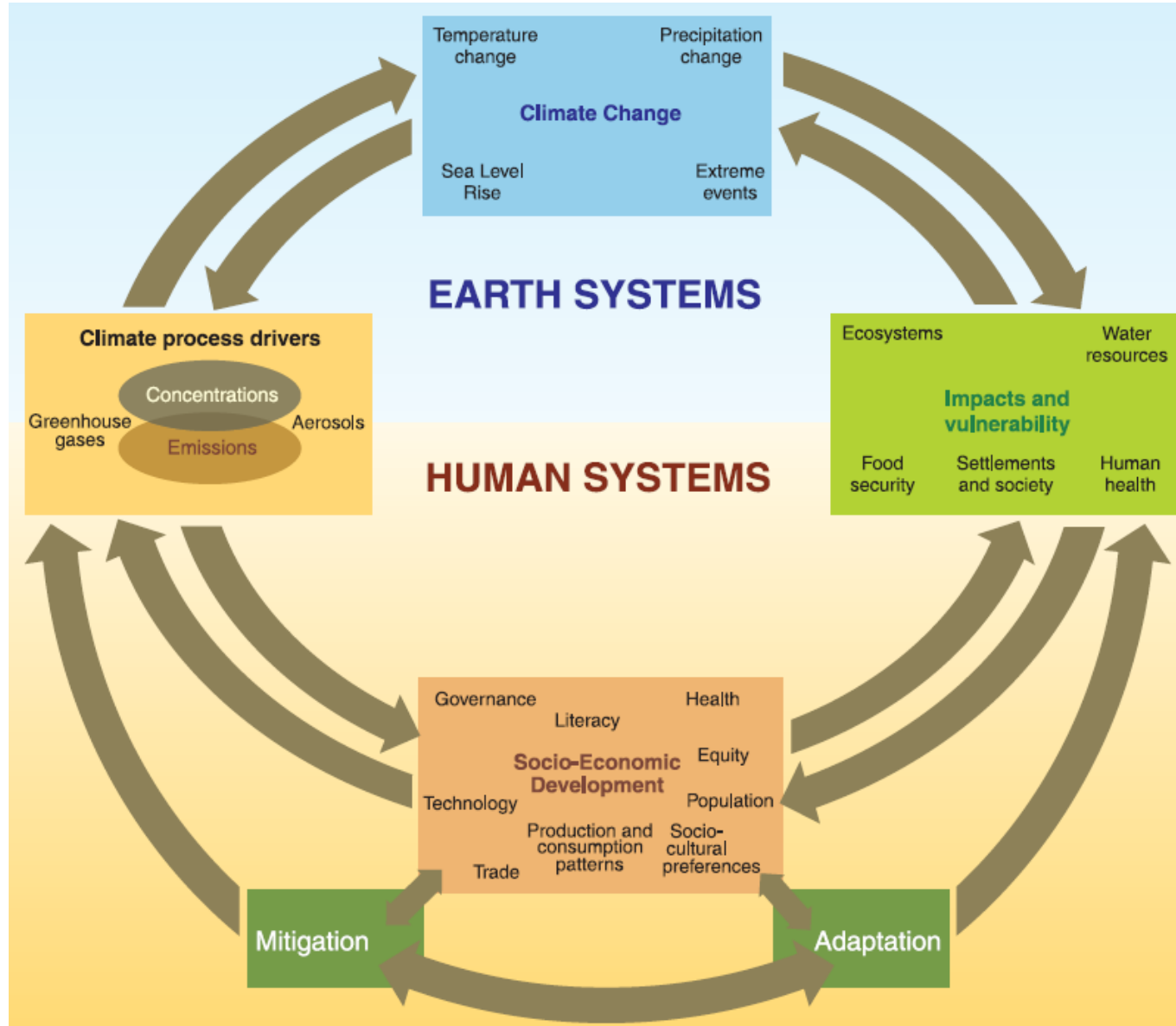
# THE GREENHOUSE EFFECT



Human actions - burning fossil fuels and land clearing - are increasing the concentrations of greenhouse gases. This is known as the enhanced greenhouse effect. Naturally occurring greenhouse gases include water vapor, carbon dioxide, methane, nitrous oxide, and ozone. Greenhouse gases that are not naturally occurring include hydro-fluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride ( $SF_6$ ), which are generated in a variety of industrial processes.



# CLIMATE CHANGE





The image shows the cover of a conference agenda. At the top, there are logos for the European Commission, the Romanian Ministry of Research and Innovation (MINISTERUL CERCETĂRII ȘI INOVĂRII), and GeoEcoMar. Below these is the 'romania2019.eu' logo. The central part of the cover features three photographs: a large blue ship at sea, a yellow offshore platform, and a small boat with a yellow buoy. At the bottom, the text reads: 'SUST-BLACK Agenda of the Sustainable development at the Black Sea Conference', '8-11 May 2019, Bucharest - Romania', 'Palace of the Parliament, Alexandru Ioan Cuza Hall', and the website 'www.sust-black.ro'.

*The Blue Growth Initiative for Research and Innovation in the Black Sea has determined four main pillars based on the Burgas Vision Paper and the Black Sea Strategic Research and Innovation Agenda.*

**Black Sea Knowledge Bridge**  
Addressing fundamental Black Sea research challenges

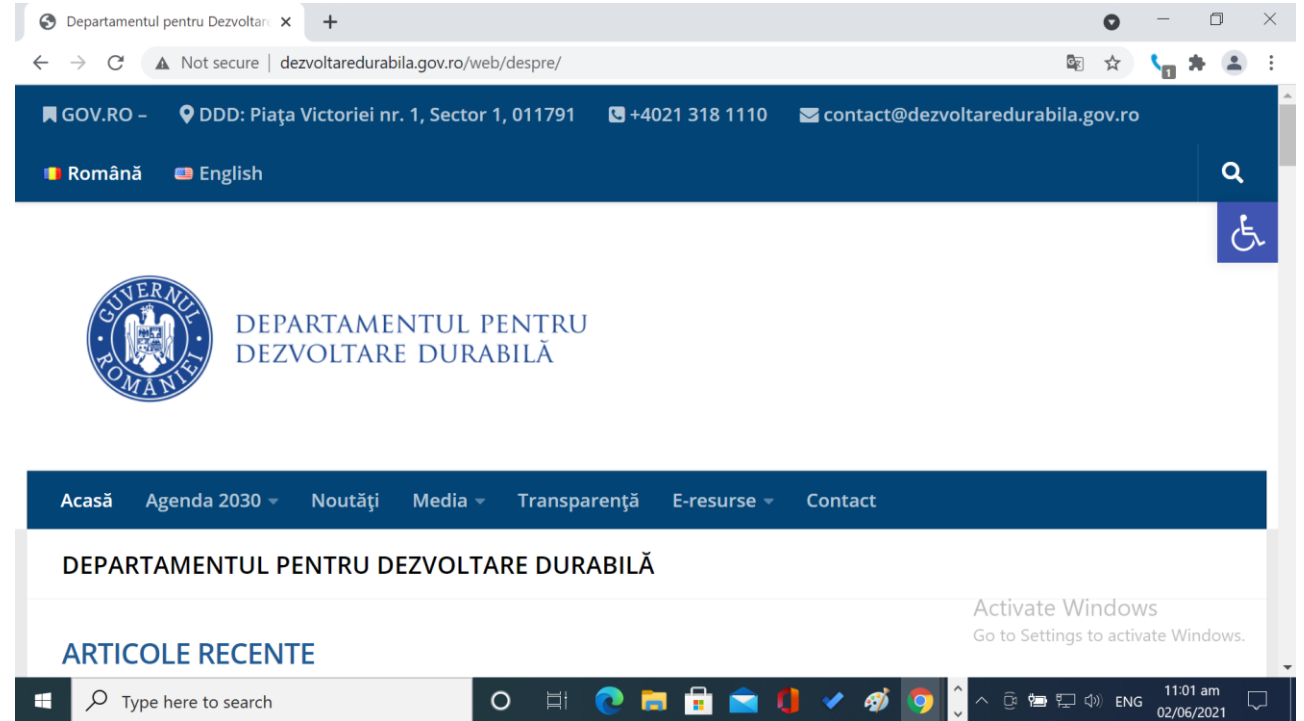
**Empowered Citizens & Enhanced Blue Workforce**  
Education and capacity building



**Black Sea Blue Economy**  
Developing products, solutions, and clusters underpinning Black Sea Blue Growth

**Key Infrastructures & Policy Enablers**  
Building of critical support systems  
And innovative infrastructures

# ROMANIA - SUSTAINABLE DEVELOPMENT STRATEGY 2030



Departamentul pentru Dezvoltare Durabilă

GOV.RO - DDD: Piața Victoriei nr. 1, Sector 1, 011791 +4021 318 1110 contact@deztvoltaredurabila.gov.ro

Română English

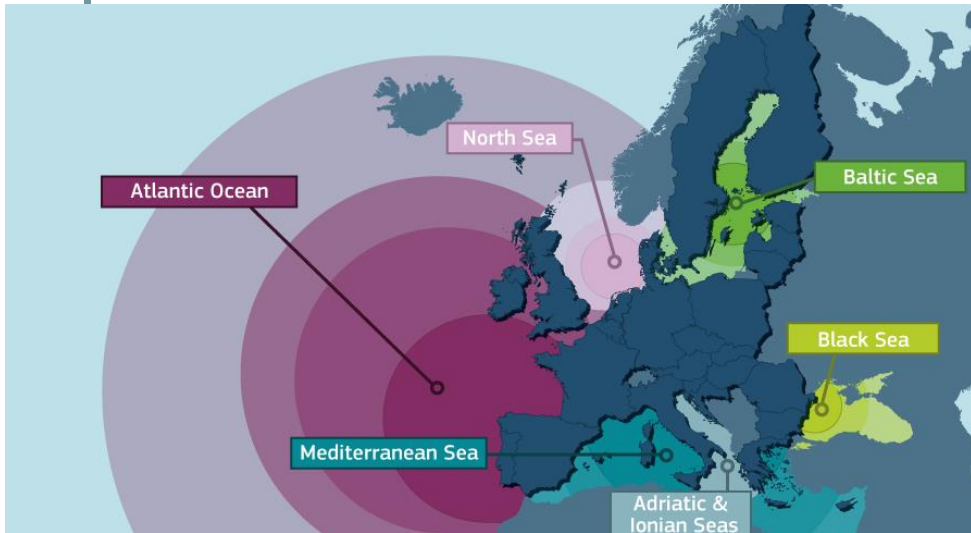
DEPARTAMENTUL PENTRU DEZVOLTARE DURABILĂ

Acasă Agenda 2030 Noutăți Media Transparență E-resurse Contact

DEPARTAMENTUL PENTRU DEZVOLTARE DURABILĂ

ARTICOLE RECENTE

11:01 am 02/06/2021




Blue Growth is the European Commission's initiative to further harness the potential of Europe's oceans, seas and coasts for:



Five sectors with high potential for sustainable Blue Growth are to be further developed:



 **Black Sea CONNECT is a key H2020 coordination and support action (CSA) which will scientifically, technically and logistically support the broader Black Sea Blue Growth Initiative, supported by the European Commission (EC) and composed of country-appointed experts, stakeholders and various national and international organizations.**

 **Black Sea CONNECT is the first project in its own field for Black Sea. The overall objective of the Black Sea CONNECT is to coordinate the development of the Strategic Research and Innovation Agenda (SRIA), based on the defined principles in the Burgas Vision Paper and support the development of the Blue Growth in the Black Sea.**

## "BSUN Master Course on Blue Growth: Microbiology and Genetic Engineering",




Date: April 7th and 8th,  
online event

7th of April from 10 am to 12 am, course on "Marine Microbiology and Human Health" Dr. Anca Cristina Lepadatu, Ovidius University of Constanta







8th of April from 10 am to 12 am, course on "CRISPR-Cas Technology - history, mechanism and applications in microalgae" Prof. John van der Oost and Mihris Naduthodi, Wageningen University & Research.




CRISPR (/ˈkrɪspər/) (which is an acronym for **Clustered Regularly Interspaced Short Palindromic Repeats**) is a family of DNA sequences found in the genomes of prokaryotic organisms such as bacteria and archaea. These sequences are derived from DNA fragments of bacteriophages that had previously infected the prokaryote. They are used to detect and destroy DNA from similar bacteriophages during subsequent infections.

Cas9 (or "CRISPR-associated protein 9") is an enzyme that uses CRISPR sequences as a guide to recognize and cleave specific strands of DNA that are complementary to the CRISPR sequence. Cas9 enzymes together with CRISPR sequences form the basis of a technology known as CRISPR-Cas9 that can be used to edit genes within organisms.[]

-  **Hackathons** (Active involvement for Problem Solving): There will be organized as itinerant events around the Black Sea region in the form of small group camps for young students and researchers building Cooperative Problem-Solving Teams to address some very specific problems related to the Implementation Plan in different regions.
-  **Black Sea Observatory on Blue Growth:** A section in the project website dedicated to the indexing of open publications on topics related to the Implementation Plan in order to facilitate the exchange of scientific results via open science actions, internet-based gatherings of scientists, policy makers and civil society to maximize the impact the science diplomacy in the region.
-  **Science Fairs:** Events like European Researchers' Night and science festivals aiming to integrate/translate scientific information to a non-academic public.



-  **Tv Show: The Blue Dobrogea**
-  **Broadcasting channel: Dobrogea TV**
-  **Aim: promotion of Blue Growth in the SE Region of Romania**
-  **Format: a discussion with a notorious personality and inserts of different documentary movies, news, debates, opinions and actions**
-  **Broadcasting: Every Sunday, 1 pm**
-  **Link: <https://www.dobrogea.tv/categorie/dobrogea%20albastra/>**

-  **Mobile caravan:** BSUN has an adequate car that shall be organized as a mobile caravan. By developing digital applications based on multimedia and Augmented Reality (AR) technologies and their dissemination through the mobile caravan in the target areas, a large impact dissemination towards a large variety of population segments shall be obtained.
-  **Gaming of Blue Growth in the Black Sea:** The Black Sea CONNECT will engage known software companies to create a game which have some simplified models on ecosystems services connected with blue growth principles especially under human impact scenarios (fisheries, energy and tourism). [www.bluejoy.bsun.org](http://www.bluejoy.bsun.org)
-  **Art Fairs:** A series of art events, such as photo contest and/or film festival will engage artists and the general public in expressing their views, concerns and relationship to the sea and its sustainability.

# THANK YOU!



CONNECT  BLACK SEA



@ConnectBlackSea



@connect2blacksea



Connect Black Sea



[connect2blacksea.org](https://connect2blacksea.org)



The activities of the Black Sea CONNECT Coordination and Support Action are funded the European Union's Horizon 2020 Research and Innovation Programme under grant agreement No 860055.