

IN NOVEMBER 2020
AND FEBRUARY 2021

climate
change and
biodiversity



THAT'S THE



online mobility!

- **WELCOME**
- **DOBRODOŠLI**
- **BENVENUTI**
- **BIENVENUE**





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Erasmus+ Programme
of the European Union



Online mobility_Climate change

Presentation of causes and effects of climate change, evident in our local area
Presentation of water, soil and air quality, monitored by parameters



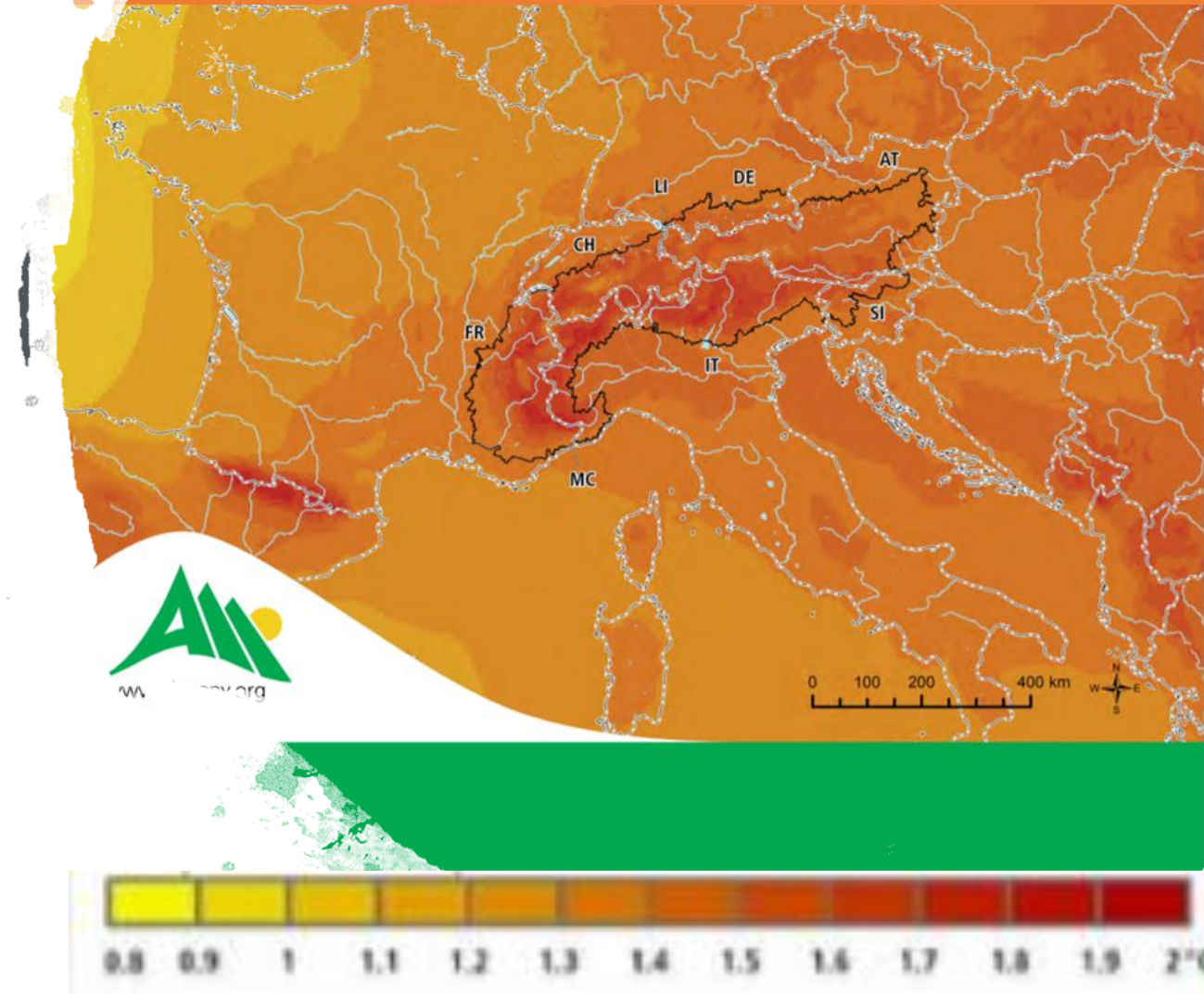
Climate change in the Alps

- Since the late 19th century temperatures have risen by almost 2 °C in the Alps, about twice as much as the northern hemisphere average.



mitigation and adaptation measures

https://www.youtube.com/watch?v=n4e5UPu1co0&feature=emb_logo





There is no
PLANET B



1971

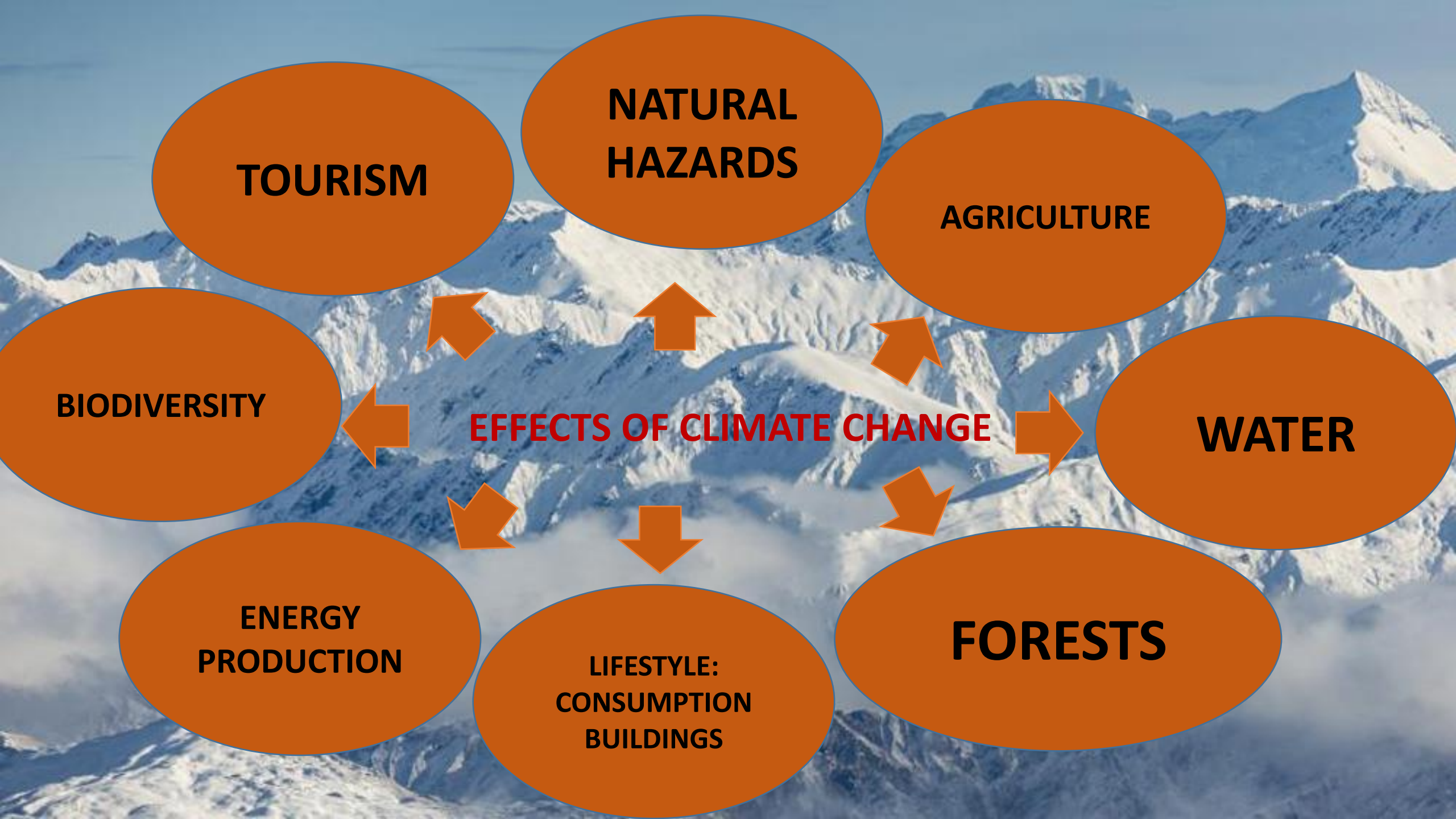


1991



2002

Can we still deny climate change?



EFFECTS OF CLIMATE CHANGE

TOURISM

**NATURAL
HAZARDS**

AGRICULTURE

WATER

FORESTS

**LIFESTYLE:
CONSUMPTION
BUILDINGS**

**ENERGY
PRODUCTION**

BIODIVERSITY





TEMPERATURE

CO2

SO2

NOX

PM10

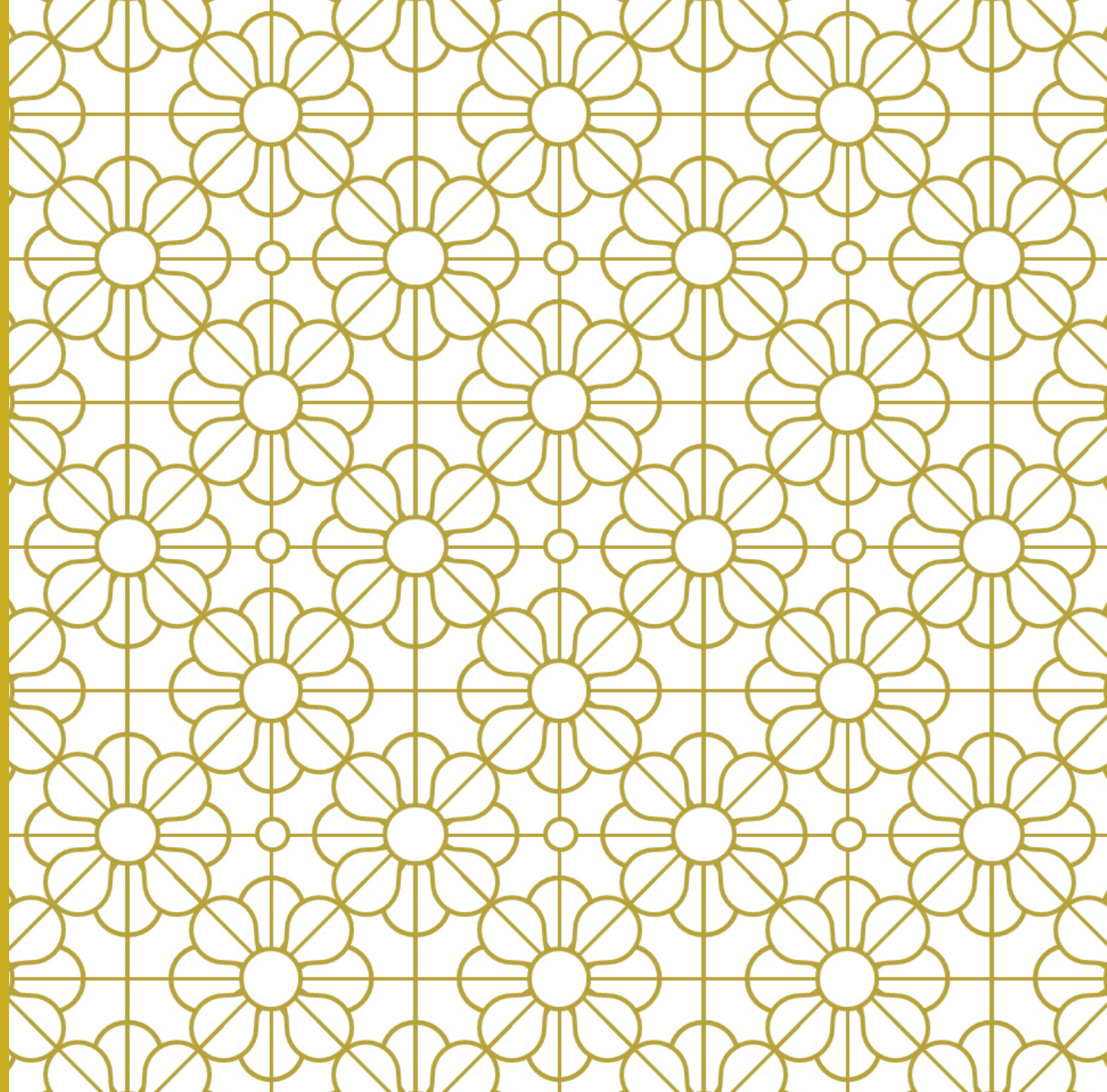
PHOSPHATES

- If we want to maintain the high quality of water, soil and air in the alpine area, we have to monitor various environmental parameters.



QUALITY OF WATER IN LAKE BLEĐ

Nika Valič, Matic Finžgar, Inis Primožič, Petra
Lebar, Tinkara Mezek







FACTORS, WHICH DEGRADE QUALITY OF WATER

Mass tourism

Agriculture

Sewage and wastewater

Poor water flow

Traffic



MASS TOURISM

In 2014, more than 610,359 tourists spent the night in Bled, while in 2017 there were 1,031,636 overnight stays - tourism is increasing.



ALGAE BLOOMS

Higher concentrations of nutrients such as nitrates and phosphates



Quick reproduction of algae – algae blooms

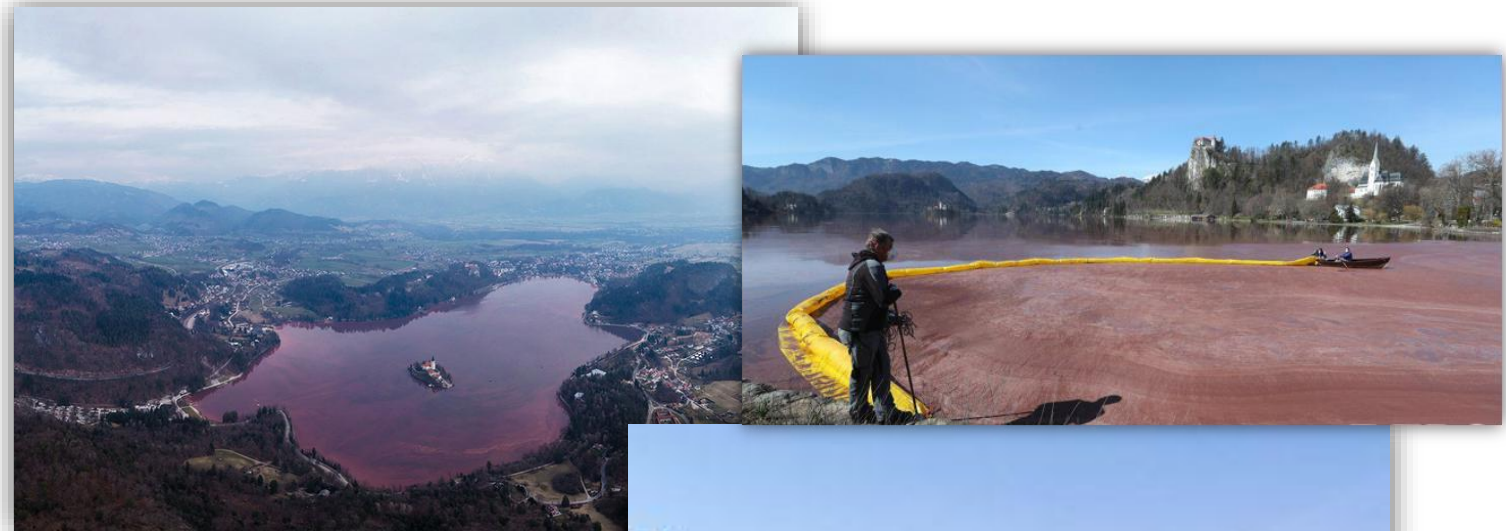


When all nutrients have been consumed, algae start to die.



In decomposing process, oxygen is taken and toxins are released. They are not dangerous to people, but they can harm other organisms in the lake.

The worst algae blooms occurred in February 2020.



**Would you swim
in this water?**

PRECAUTIONS

Environmentally friendly sunscreen is offered to tourists for free.

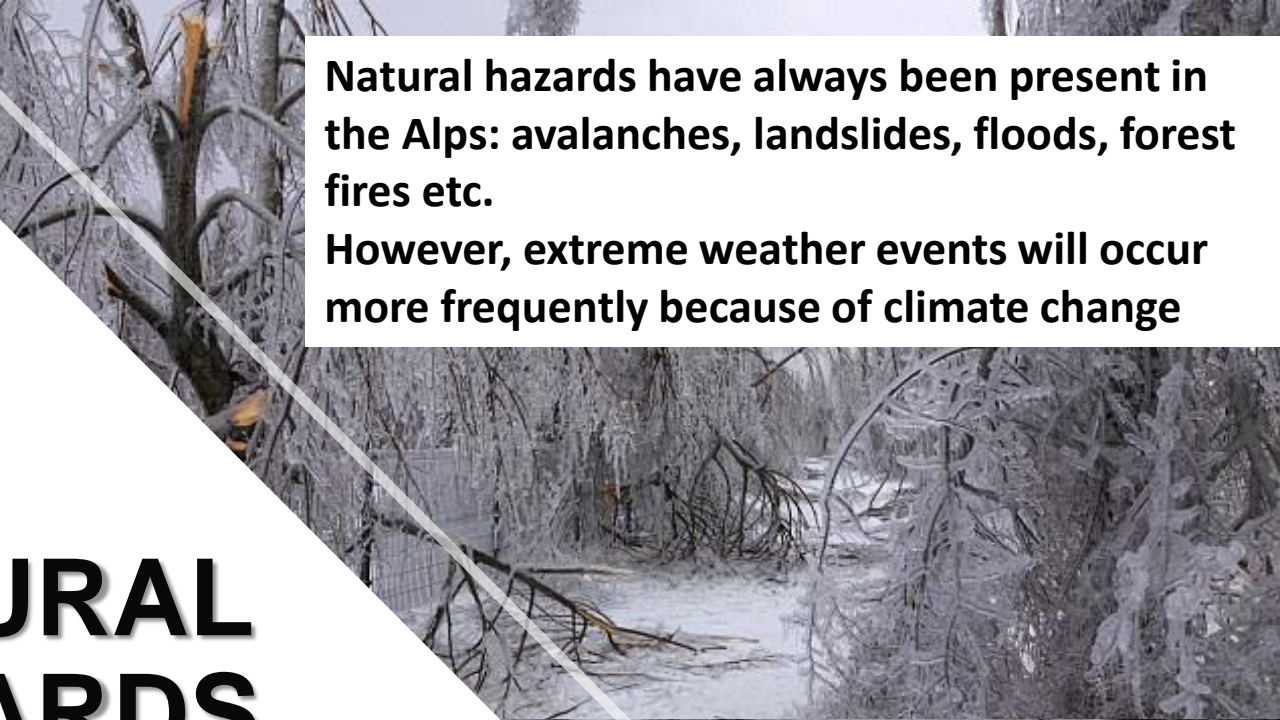
Quality of water is monitored more frequently.



Small robots are used for algae monitoring and also for their destruction.

Big cleaning campaigns are organized by divers twice a year.





Natural hazards have always been present in the Alps: avalanches, landslides, floods, forest fires etc.

However, extreme weather events will occur more frequently because of climate change

NATURAL HAZARDS

Mitja Dobovišek, Anja Ažman,
Zara Hema Mitrovič, Ema triler,
Sumeja Mujagič



General facts about our forests

- Forest cover almost 60% of Slovenian land surface – **a land of forests**
- 950 plant species, including 71 trees, grow in Slovenian forests
- Most of the forest is made of beech, fir, spruce, hornbeam and ash trees. It is expected that climate change will change the structure of the forest.
- Forests protect the soil from erosion and prevent landslides. They also retain rainwater and prevent it from evaporating too quickly.



Effects of a large scale sleet event

- Big sleet event in Slovenia happened in February 2014 and damaged almost half of all Slovenian forests.
- Sleet occurs, when falling snow melts then quickly refreezes – frozen raindrops.
- Ice coats branches and trunks. Their weight increase up to 30 times, so they snap or break.



– consequences

Before



After



Windfall

- Windbreaks most commonly affect one-dimensional forests of one tree species.
- They are common on ridges, around peaks, on rounded hills and mountain saddles.
- in Slovenia we had big windstorms in 2017 and 2018 (Bohinj, Bled, Postojna, Snežnik)



– consequences

- Before



- After



Dark beetle - lubadar

- During described extreme events a lot of trees were damaged or broken. These were optimal conditions for a dark beetle population explosion.
- Dark beetle (*Pityogenes bidentatus*) affects mostly spruce. The most damage is caused by larvae, which feed on the bark. By tunneling into the bark they destroy the trees.



• Before



• After



Snow avalanche

- it's a collection of snow and ice sliding into a valley. It's triggered when a lot of new snow falls in mountains in a short time.
- it usually happens on steep terrain.
- not long ago we had a bunch of avalanches in the Alpine region.
- they are very dangerous for people as well.



Before



After





AIR POLLUTION IN THE MOUNTAINS

*Tajda Arsovski, Maša Šimnovec, Nina Bucalo,
Hana Vrhovnik, Ina Pernuš Lebar 2.N*

- In the last years, the popularity of mountain tourism has increased.
- Mountain huts are visited by large number of tourist, who drive as far as possible.
- Supply demands of mountain huts have increased. To transport all needed supplies to the huts, cars and helicopters are frequently used.



Increased number of cars in mountains



Higher concentration of CO₂, which is a greenhouse gas.



The effect of global warming



Use of public transport, car-pooling, electric cars

TURIZEM BOHINJ



Občina Bohinj



BODI KUL, BODI MOBILEN,
V BOHINJU UPORABLJAJ JAVNI PREVOZ
STAY COOL, STAY MOBILE AND USE
PUBLIC TRANSPORT IN BOHINJ



✗ V Bohinju se namesto z avtomobilom pripeljite z avtobusom ali vlakom.

Don't use a car – visit Bohinj by bus or train.



✗ Uživate v vožnji po Bohinjskem jezeru z ladjo na električni pogon.

Enjoy in a special ride on Lake Bohinj in an electric boat.



✗ Za vožnjo po Bohinju uporabite avtobus: poleg rednih linij avtobusnega prometa vozijo v poletnem času še dodatni avtobusi (Poletni avtobus, Hop-On Hop-Off Bled/Bohinj – Pokljuka/Triglavski narodni park*).

View Bohinj's sites by bus: during the summer season, regular and extra bus lines are available (Summer Bus, Hop-On Hop-Off Bled/Bohinj – Pokljuka/Triglav National Park*).

* Z avtobusom Hop-On Hop-Off se ob sobotah in nedeljah za 5 € lahko neomejeno vozite po Bohinju. Hop-On Hop-Off bus enables you unlimited rides in Bohinj on Saturdays and Sundays for only 5 €.



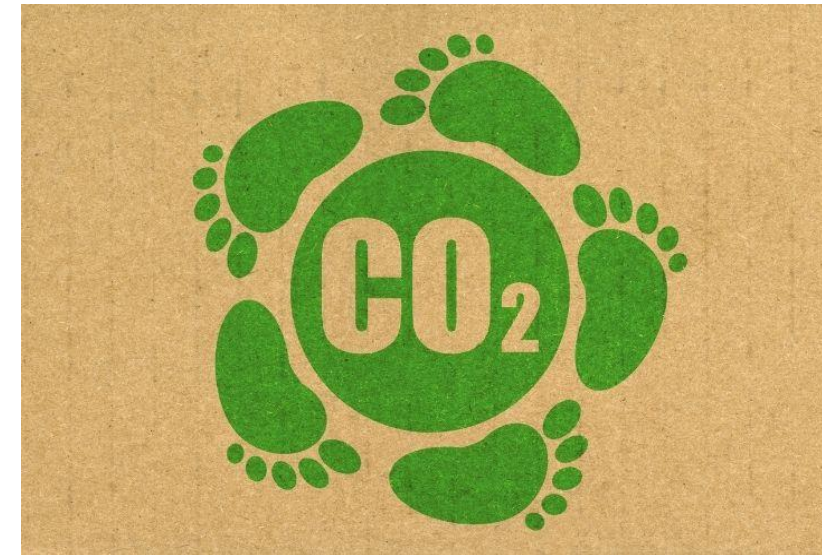
✗ Izposodite si gorsko ali električno kolo in se odpeljite do Bohinjskega jezera po Bohinjski kolesarski poti.

Rent a mountain or e-bike and ride to Lake Bohinj on the Bohinj Cycling Route.

Več o voznih redih:
More about timetables:
www.cipra.org/vozniredi



© Adele in Slovenia



Lichens are the best indicators of the concentration of exhaust gases (SO_2 and NO_x)



crustose lichens



foliose lichens



fruticose lichens

If you find fruticose and foliose lichens in your environment, this is a sign of good quality of air :)



Bradovec (*Usnea barbata*) is a fruticose lichen, which is typical for Alpine area.



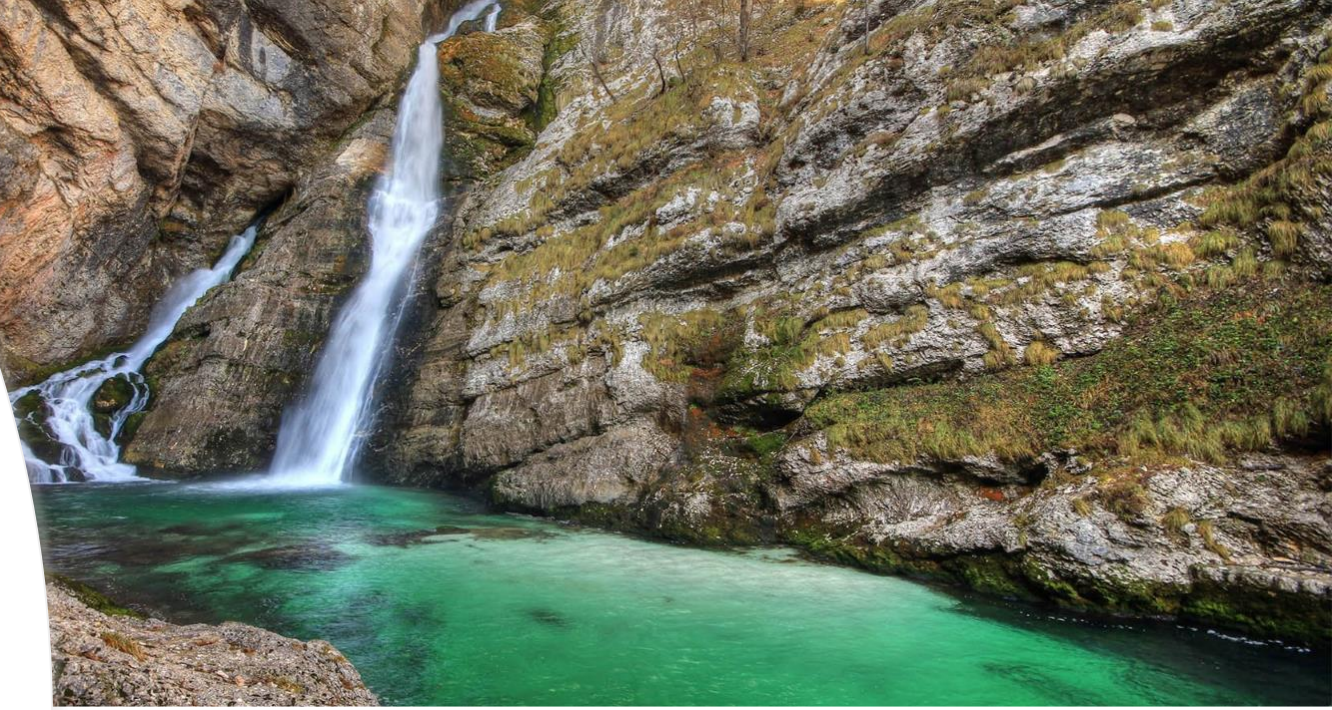


Sustainable mobility in Triglav national park

Zoja Jereb, Dora Osterman, Tia Imperl, Danaja Ješe
in Ana Rožič, 2N

Sustainable mobility in Triglav national park

- Triglav National Park (Slovene: Triglavski narodni park) is the only national park in Slovenia. It was established in 1981 and is located in the northwestern part of the country
- Many tourist points are located in TNP.
- Number of tourists, who visited TNP, has increased each year, and consequently, also the number of cars and concentration of exhaust gases



One of the main tourist attractions is Lake Bohinj



- You can use just one road from Bled to Bohinj, which was not designed for so many cars.
- There are not enough parking spaces around the lake and they are very expensive.

Solutions

- Affordable parking spaces, established approximately 5-10 km from the lake
- Free public buses take you from parking space to the lake every half an hour.
- Very well organized public bus and railway transport from our capital Ljubljana to Bohinj.
- Established cycling paths around the lake.





- Whether on foot, bike, bus or train - spice up your trip through the valleys and across the passes of the Julian Alps. Therefore, we recommend that you use several eco-friendly mobility options.



Glaciers

Bor Kaloper, Luka Košir and Rožle
Bohinc, 2.N



What are glaciers

- A **glacier** is a body of dense ice that is constantly moving under its own weight.
- Glaciers slowly deform and flow under stresses induced by their weight, creating several glacial phenomena.
- Glaciers form only on land and are distinct from the much thinner sea ice and lake ice that forms on the surface of bodies of water.



What faith awaits
glaciers in the Alps?

- It is expected that two-thirds of glacier ice in the Alps 'will melt by 2100'
- In February, a study found that a third of the huge ice fields in Asia's towering mountain chains were also doomed to melt because of climate change.

Slovenian glaciers

- **Skuta Glacier** (Ledenik pod Skuto) is located beneath mountain Skuta in Kamnik-Savinja Alps.
- It is also one of the lowest elevation glaciers in the Alps
- 1950: 2.8 hectares
2013: 1.6 hectares

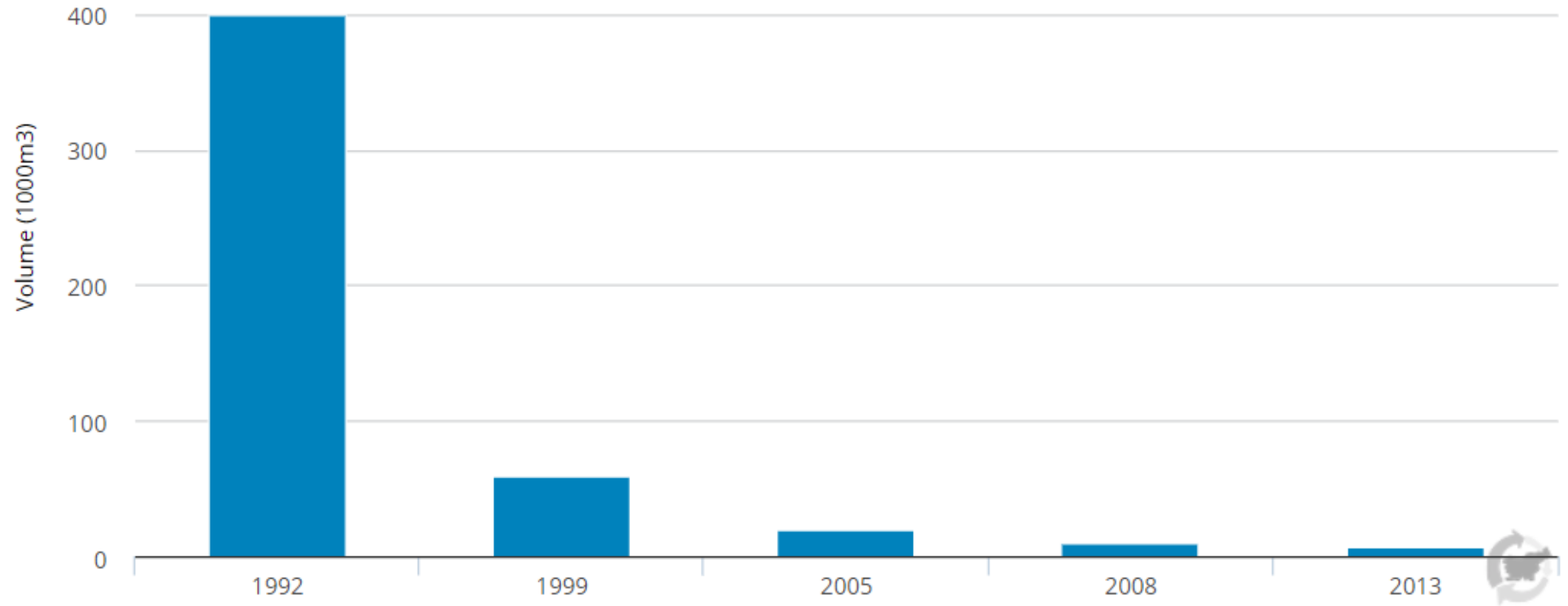


The background image shows a large, rocky mountain peak under a clear blue sky. Patches of snow are visible on the mountain's surface. A circular inset on the left side of the image provides a close-up view of a glacier's surface, showing its textured, crevassed appearance.

Slovenian glaciers

-
- **Triglav glacier (Triglavski ledenik) is today the second largest glacier in the territory of Slovenia.**

- Changes in the Triglav glacier volume, 1992-2013



Sources: Anton Melik Geographical Institute, ZRC SAZU, 2019

Average temperature of the melting season (May–October) at Kredarica, 1955-2018

