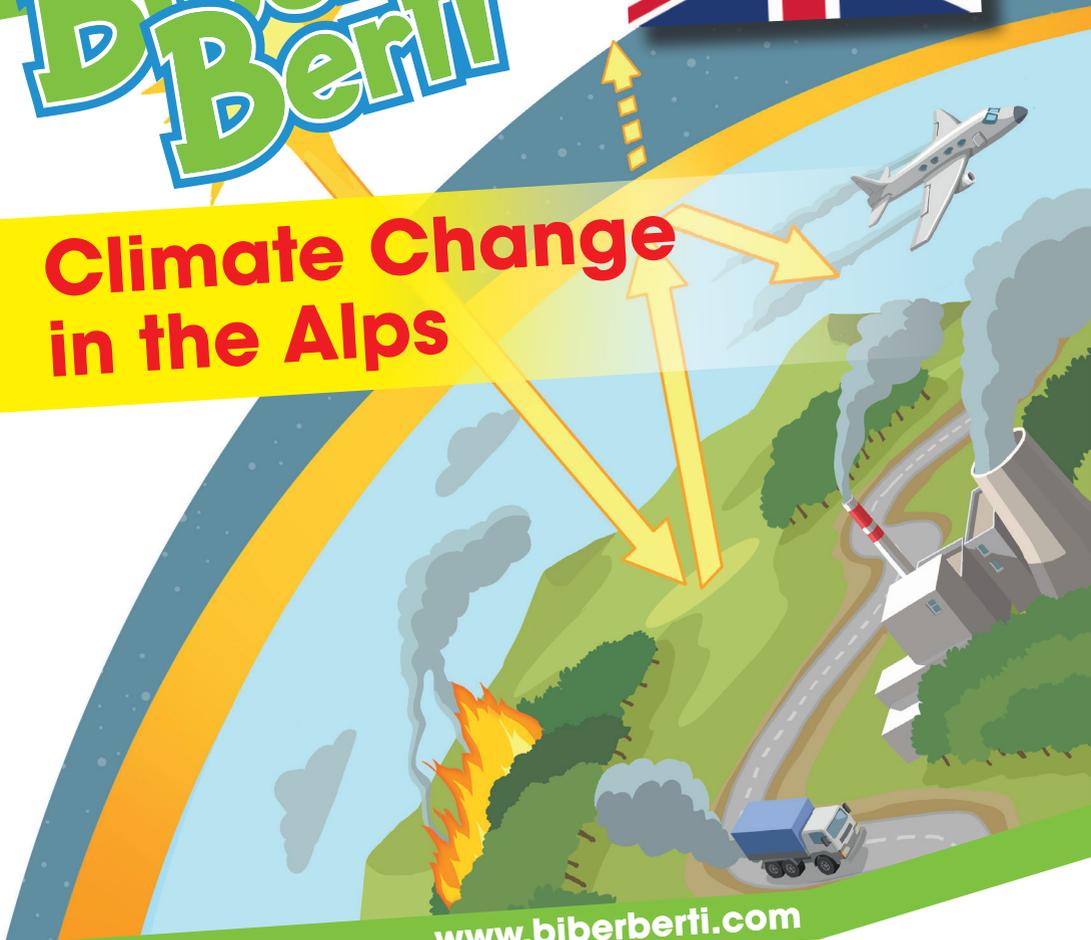




Biber Berti



Climate Change in the Alps



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Climate Change in the Alps

The story

Rain and rain

It is spring in the mountains but the flowers cannot bloom because it has been raining cats and dogs in the last few days. Because of the rain beaver Berti's lake has flooded. That is why Berti and his friend Kilian have taken shelter in a tree house which belongs to their friend Randy.

Early this morning Randy is going out to the patio.

„It has almost stopped raining“, she tells her friends.

They get out of the house and watch the clouds disappear slowly. Through a hole in the sky the sun is twinkling at the friends.

Probably as a consolation it is painting a rainbow over the mountains.

Berti is pointing at the sun and says: „Well, we like the rainbow. But when will there be nice weather again?“

The rainbow

„It has been raining all winter long and now even in spring. What a crazy weather!“, Kilian says.

Slowly the clouds are making way for the mountains.

“Look how beautiful,” Berti says pointing at the snow-covered mountain tops.

“There is snow only on the mountain top,” Kilian the crow croaks.

“It has hardly snowed all winter,” Randy rants. “I wanted to build a snowman.”

“Look,” Berti says. “What are the people over there doing?”

“Come on, let's go and ask them,” Kilian says.

They are climbing down the ladder and running across the muddy ground.

“Hello,” the little friends say. “What are you doing here?”

A woman is coming over and explains: „My name is Professor Leonie Frosch. I am a meteorologist.“

“What's that?” Kilian asks.

"I study the weather," Leonie says. "Weather means air, sun, clouds, rain and snow. Did you know that?"

"Yes, of course!" Kilian answers. "The weather has been very bad recently."

"It has been sunny or rainy," Randy adds. "But there is no snow anymore."

„Up on the mountain there is a weather station. We have to set up some new instruments.“

"What do these instruments do?" Berti wants to know.

"Would you like to come with us?" Leonie asks. "Then I can show and explain everything to you."

Suddenly there is a loud, sizzling noise. Frightened they turn around.

"These are my assistants," Leonie explains. "They are filling the balloon with hot air, because we will be flying up there with the balloon."

As soon as the balloon is full of warm air, the men load some instruments into the basket. Then they all get in. Now the pilot is pulling on a line several times. The gas burner is blowing a sizzling flame up in the air. They are taking off gently and floating upwards.

The trees on the ground are becoming smaller and smaller.

"Today is a very good day for a balloon ride," Leonie explains. „After the rain you can see very well. In winter and in the morning there is no wind and the air is calm.“

Soon they are high up on the mountain. Leonie points down: „Look, there is the weather station.“

They are landing gently and quietly and get off.

At the weather station

Behind a fence you can see many different instruments. They walk through the door and see columns, funnels or tubes made of metal.

„What do these instruments measure?" Randy asks.

„Come over here," Leonie says. She explains: „This is a big **thermometer**. It measures the temperature of the air in degree Celsius. At zero degree Celsius water freezes. Thirty degrees are hot for most people.

You can measure the air pressure with a **barometer**. The air pressure is the weight of the air.”

“What? Air has a weight?” Kilian asks.

“Oh yes!” Leonie answers. „If the air didn’t have a weight, you couldn’t fly. Depending on the air pressure there is rain or fine weather.

Air that moves is called wind. The speed and the direction of the wind are measured with a **wind gauge**.

The **Hygrometer** over there shows how humid the air is.

With the **rain gauge** we can measure how much and how long it rains.”

Leonie is taking a small cup out of the bucket.

„Look, the lines here show how much it has been raining or snowing.

Not to forget the **sunshine**. We also measure how long the **sun** was shining and how many clouds there were in the sky. The weather is not only measured here at this weather station. There are many stations all over the world. Some of them are in **aeroplanes** or on **ships**.

Some weather stations even swim on the seas and **satellites** float in space. All of them collect data and send them by radio waves to the big headquarters of the weather service. With all these data we can make a weather prediction. It is announced on the radio or television.”

Weather balloon

“Come with me,” Leonie says. “Let’s fly a weather balloon.”

„But we’ve just flown in a balloon,” Berti protests.

„A weather balloon is much smaller,” Leonie explains. “And there are no people on board.”

Leonie is filling the balloon with gas.

„What do you fill in there?” Randy wants to know.

„Have you ever had a balloon on a string going up in the air?” Leonie asks. “It is the same gas. It is called helium.”

“Oh yes, for my last birthday,” Randy remembers.

Leonie nods and says, „The balloon rises slowly up to 30 kilometres. That is high above the clouds. On its way it measures the temperature, the air pressure and the air humidity at several points. At the very top it bursts and the instrument floats down to earth with a small parachute. All data are sent to a weather station. So the meteorologists can predict the weather more precisely.

What is climate?

“You know a lot about the weather. So can you tell us, why it did not snow last winter?” Berti asks.

“Right, it was always only raining!” Kilian adds.

“In the past it almost always snowed in winter,” Leonie says. “But now there is a climate change. So often in winter, it is not cold enough for snow. Therefore it rains.”

“I don’t understand,” Randy says.

“I’ll explain you what **climate** is,” Leonie answers.

„Meteorologists collect data about the weather for many years. So we can see that once there was a cooler summer. After that there were several hotter summers. Then we calculate if it usually was rather warm or rather cold in a place during that time. We do the same with the winter. All these data of the weather together are called climate.”

Weather is what is happening right here and now.

Climate is observing the weather for 30 years.

“Unbelievable,” Randy says. “That is a long time!”

„Today big computers help us,” Leonie answers. “In the past many meteorologists all over the world wrote down their weather reports in big books.”

The weather defines the climate. Without the sun, there would be no weather. It warms the earth with its rays. But earth moves all the time. It turns around its axis. So there is day and night.

The earth also moves around the sun. This takes one year. During that time there are four seasons: spring, summer, autumn and winter.

The climate zones of the earth

As our planet earth is a ball, the sun rays do not hit the earth equally strong. In the middle of the earth it is hot because this area is reached by the most rays. Only a few sun rays reach the top and the bottom. Here it is coldest. So there are different climate zones on earth.

Tropics

In the middle of the earth it is very hot all year long and it rains a lot. In this region around the equator there are the rainforests.

Subtropics

High temperatures in summer and cool winters. There are rainy seasons and dry seasons. Here you can find the big deserts of the earth.

Temperate zone

This is where we live. There are four seasons: spring, summer, autumn and winter.

Subpolar zone

Short summers, there are no seasons.

Polar zone

High up in the north or down in the south there are the polar climate zones. There, the temperatures are similar to those here in winter all year long.

We live in an atmosphere

“Our planet does not only consist of the ground that we are standing on,” Leonie explains. “Our earth is surrounded by a thick, invisible air layer. Kilian can fly in this sea of air.”

“Oh yes!” Kilian screams spreading his wings. “I can fly up to the highest mountain tops and beyond.”

“You are right!” Leonie agrees. “Without the oxygen in the air we all could not breathe and survive.”

“Air is a mixture of oxygen, nitrogen, carbon dioxide and many other gases,” Leonie explains. “It also contains water vapour and dust.”

„The atmosphere also makes sure that there are pleasant temperatures on earth. Without it, it would be bitter cold everywhere on earth. Most animals and plants could not exist. It would also be too cold for the people.

The atmosphere also protects us against the dangerous sun rays. Without it we would burn.

The layers of the atmosphere

The earth's atmosphere consists of five layers. Scientists have given them very difficult names. The lowest layer is called troposphere.

It is the layer above the earth's surface. It is about 10 kilometres high. Here on the ground, people and all other living things exist. This layer is where we fly with our hot-air balloon.

Weather also happens here. All clouds are here.

The sun warms the earth. Clouds form. The wind drives the clouds in the atmosphere across the earth. If the clouds get too cold, it rains or snows.

The higher up you go, the thinner the air gets. The human body is actually not made for high altitudes. From 2,500 metres the human body must adapt. If you go up even higher, it is harder for you to smell. At 3,000 metres or more many people begin to have health problems.

Warm and freezing cold

“Since our earth exists climate has changed again and again,” Leonie explains. In the past 50 years, it has also changed. Ask your grandparents what is different today.

There were glacial periods and interglacial periods. Once it was freezing cold for 100 000 years. Back then half of the earth was covered with ice. It was a thousand metres thick. Then it slowly got warm again and the ice melted. The warm period also lasted 100 000 years. This happened again and again. Animals and plants had a lot of time to adapt to the climate. You probably know some animals of the ice age: mammoth, bear, sabre-toothed tiger or giant deer. Here in the Alps there lived the marmot, the snow hare and the snow grouse. These animals still exist today.”

Climate change

“When the climate changes, meteorologists call this a climate change,” Leonie says.

„Has the climate changed in the last 30 years?” Berti asks.

“Yes, the climate has changed a lot,” Leonie answers. “It is getting warmer and warmer on earth.”

“Yay! Always summer, sunshine and swimming,” Berti cheers.

“Well, I also want to have winter again. It is fun to play in the snow, build a snowman, have a snowball fight and go bobsleighbing,” Randy grumbles.

“You are right,” Berti admits. “Every season is nice.”

“Because of the climate change the weather changes in every season,” Leonie explains. “So in the future there will be warm winters. But suddenly it can become very cold and a lot of snow can fall. The next day it can rain again causing floods.

In summer it can get extremely hot. Plants and trees die und the woods catch fire. Suddenly there is a big thunderstorm and your valley is flooded.”

„Is the weather going crazy?” Kilian asks.

„Yes Kilian, that’s right,” Leonie answers. “The weather is going crazy because people are warming the earth with everything they do. Everything that moves and turns produces **carbon dioxide**. This is a difficult word.

Carbon dioxide is a gas that is produced during combustion. When people go by car, ship or areoplane petrol is burned. This produces carbon dioxide.

It is also produced when we use electricity for our smartphones, computers, TV sets, video games, electric toothbrushes, air-conditioning systems or for cooking. Often coal is burned for generating electricity. Then carbon dioxide is produced.

In winter when we heat our homes wood, oil or gas is burned. All of it produces carbon dioxide.

A lot of carbon dioxide is produced when **fossil fuels** are burned.

“What’s that?” Kilian croaks flying around excitedly.

“Fossil means that people have to take these fuels out of the earth. These fuels are oil, gas and coal. They all formed millions of years ago. Back then huge amounts of plants and small marine creatures died and were covered by sand and gravel. Over millions of years they turned into these fuels.”

Greenhouse effect

„Our earth is a nice place to live,” Leonie explains. „In all climate zones animals and plants have found a home. But why is it so nice on earth? The reason is the greenhouse effect.”

“Greenhouse!” Berti groans. “A new word again.”

Leonie is smiling, „A greenhouse is a house of glass. Maybe you have seen such a house in a garden before. It is warm and many plants grow in it. Our atmosphere with all the gases is like a glasshouse over the whole earth.”

The sun rays get through the atmosphere and warm the earth’s surface. Warmth rises. One part of the rays goes back to space again.

Greenhouse gases in the air

Another part of the warm rays meets water vapour and **greenhouse gases** in the air. They are like the glass pane of a greenhouse. The warmth cannot go away.

So it stays warm on earth.

People are changing the greenhouse effect

This natural greenhouse effect is very good for us people. Carbon dioxide is also a greenhouse gas. It prevents warmth from escaping to space. We have already heard about this gas. It is a result of combustion.

Bad gases

Methane is also a greenhouse gas. It is produced in stomachs of animals when they digest grass and herbs. Cows produce a lot of methane. As people eat more and more meat there are more and more cows on earth. These cows but also sheep burp and fart methane.

„I don’t like beef,” Berti says.

“Beef is used for hamburgers and people all over the world like to eat them,” Leonie answers. As so many people produce carbon dioxide and eat a lot of meat there are many greenhouse gases in the air. All these gases prevent warmth from escaping to space. Warmth stays in the atmosphere and it is getting warmer and warmer on earth.”

What is happening now?

People are making the earth warmer and warmer. In the mountains, it has become particularly hot. Here it is twice as warm as in the rest of the world. The temperature also rises sharply at the North Pole and the South Pole. Because of the high temperatures the ice is melting in the cold climate zones.

Also the glaciers here in the Alps are melting. Let's have a look at it. I will show you what happens here in the Alps as it is getting warmer," Leonie says. "Come on, let's go."

They all get on board of the balloon and fly upward. Leonie turns on the laptop and a camera.

"I will take photos of the mountains. So I can see clearly where the forests and plants grow. Because of the climate changes also the plant world in the Alps is changing."

The plants in the mountains

When you climb a mountain in the Alps you will see that there are different plants in every altitude. In the valley it is warm and there are all four seasons. In spring the deciduous trees have enough time to grow their leaves. Also the flowers are beginning to bloom in spring. Then there is summer, after that autumn and then winter.

As you go up higher, winter lasts longer and the warm seasons are shorter. Here it is too cold for deciduous trees. Only conifers grow here.

But still higher up it is too cold even for them. Only lichens, herbs and mosses grow here.

At 3000 metres or more no plant can survive. There it is winter all year long. Just like at the North pole.

Animals in the mountains

Depending on the plants also the animal world changes. In the valley there are many familiar animals: deer, fox, badger, boar, squirrel and hare. Also red ants, beetles and butterflies live here.

Many mountain animals live above the tree line. They only exist here in the high mountains of the Alps. These are ibex, marmot, chough, snow grouse, snow hare or Alpine salamander.

You can also find chamoises, snow voles and many birds and even snakes up here.

All these animals have lived for thousands of years in the cold Alps. They can only survive here. As it is getting warmer because of the climate change many of them will die out.

Glaciers

“Look, there is a glacier,” Leonie says pointing down.

„What’s a glacier?” Randy asks.

„Glaciers are very big and thick masses of ice,” Leonie answers. “You can find them in places where it is very cold all year long. The ice of the glacier is made of snow. The ice is so heavy that it slowly moves downwards. On its way the ice tears big and small stones out of the mountain and takes them with it. Below, where it is warm in summer, the ice melts. The water runs in streams down to the valley. But due to the climate change it is getting warmer and warmer. A lot of ice melts and the glaciers are becoming smaller.”

“Look!” Berti screams. “Down there is our friend Stani, the ibex.”

“Hey Stani,” Randy and Berti scream. They are waving at Stani and Kilian is flying downward to his friend.

„Well, my little friends, we’ll be landing now,” Leonie says setting down the balloon on the glacier.

“Oh, I was so curious when I saw the balloon deep above the glacier. I thought it was you!,” Stani says.

The glaciers are getting smaller

After saying hello Leonie is taking long sticks out of the balloon's basket.

"Now I'm going to measure how thick the glacier is," Leonie says. "She is drilling the hot sticks into the ice. I do that every year. Since last year the glacier has become thinner by two metres."

"I remember," Stani answers. "Last year I was standing up there on the rock and the ice reached up there."

"Come over here," Leonie says. "Here you can see, how much shorter the glacier has become. Please hold the measuring tape, Berti."

Leonie is walking across a field of stones to a measuring stick that sticks in the ground. Then she shouts, "The glacier is 50 metres shorter than last year! Wherever the ice melts, stones and gravel appear. When it rains they are washed down into the valley. Water and stones form a stone avalanche and destroy houses and streets in the valley. Water, stones and earth can form a mudslide. This is very dangerous."

Down into the valley

Now Leonie has measured all of the ice of the glacier. She has also studied the rocks around the glacier because with the glacier also the ice inside the rocks melts. This ice holds the rocks together. So they cannot break and fall down.

"How can there be ice inside the rock?" Randy asks.

„In many rocks there are gaps and holes. The ice is in there. It holds the stones together like a glue. Down in the valley there is earth on the slopes. Trees and plants grow on it. Their roots hold the mountains together. Up here no plants can grow. It is much too cold. So the ice connects the rocks. But now we must go down into the valley again."

They say good-bye to Stani and take off with the balloon.

They are flying quietly. They are looking at the forests, the streams and a mountain lake.

Berti says, "How beautiful! Kilian, you are lucky because you can always fly over these beautiful mountains."

Kilian is also happy. He is jumping out of the basket and flying round the balloon. Soon they reach the valley and land.

They say good-bye to Leonie and thank her for this fantastic and interesting adventure.

“I enjoyed it very much,” Leonie says. “If you want to come and see me, you can find me in the big weather station.”

Climate change in the Alps

Know how

My name is Biber Berti and I live in the Alps. Today is a beautiful day. The sun is shining brightly from the deep blue sky and only a few fluffy clouds are passing by.

But beware! Here in the Alps the weather can change very quickly. One moment the sun is shining and in the next minute a huge thunderstorm with heavy rain could come down. I want to tell you how sun, wind, rain and snow are mixed in the Alps.

What is weather?

The weather can be sunny, rainy, windy, and lots more. We refer to weather as the present state in the atmosphere in a certain place at a certain time. At this very second the weather is different in all the different parts of the world. Oh this weather – it is never the way we want it.

Atmosphere

The atmosphere is the layer of air, that surrounds our earth making it possible for us to live on this planet. The name atmosphere comes from the Greek language meaning “air ball”. The atmosphere consists of a mixture of gases.

Among these gases there are the oxygen that we breathe and the carbon dioxide that plants need to survive. Our atmosphere protects us from all the dangerous UV rays and regulates the temperatures that we have.

Where does the weather take place?

The lower atmosphere is also called troposphere and reaches up to an altitude of 10 km. This is where the weather phenomenon takes place.

How does the Weather develop?

Sun, air and water are responsible for the way the weather behaves.

The Sun - The power of the Weather machine

The sun is the “driving force” of our weather. Without the sun it would be beastly cold on our earth and there wouldn't be any life in this planet.

Through its heat it makes the water evaporate and regulates the air humidity. It warms up oceans and continents and causes the enormous air circulation on earth.

Blue Planet

Almost three quarters of the earth's surface is covered with water. Therefore, seen from the perspective of astronauts, the earth looks blue. The water of the lakes, rivers and oceans has a great influence on our weather.

Air Humidity – Invisible water (vapor)

Have you ever asked yourself why the air feels so damp? The warmer the air becomes, in earth's atmosphere, the more water (vapor) it can absorb. If there is too much vapor in the air, small drops develop.

When these drops become bigger and visible clouds and fog are formed.

Air

The air always surrounds us. It is made up of several gasses that are constantly moving. When the air moves faster and stronger we call it wind.

Wind - how does it develop?

The sun warms up oceans and continents with their mountain ranges, deserts, forests etc. at different times. When warmer air rises- a low-pressure area is developed.

Where the air is not being warmed up the cooler air tends to remain close to the ground. This is called a high-pressure area.

Clouds - water in the air

Clouds are big accumulations of miniscule water drops high up in the air. The sun radiation warms up the water of lakes, rivers or the sea and consequently a part of it evaporates.

The gaseous water rises together with the warm air. There, high up in the sky it is colder and the water vapor then turns into miniscule water drops, which are so light that they are floating in the air. Then we see a cloud.

Water cycle:

The clouds are an important part of the water cycle. The water vapor from the earth's surface (oceans, lakes, rivers wet earth surface, vegetation) is transported to higher layers of the atmosphere, there the water condenses to form clouds, from which the water falls, in the form of rain or other precipitation, back on the earth's surface.

Precipitation:

The general definition of precipitation is all moisture (water) that falls from the clouds down to the earth as a result of gravity. For example we know **rain, sleet, hail or snow.**

Thunderstorm

On very hot days the sun heats up the earth, lakes, and rivers. Lots of water evaporates and we have the feeling that it is humid. Due to the heat on the ground the air humidity rises very fast and thunderclouds develop.

Dark and stormy thunderstorms can be scary in the Alps. It was such a hot, sunny day, but suddenly the sky has darkened to gray.

Off in the distance, you hear a soft rumble of thunder. Fat raindrops hit the ground. And all of a sudden lightning flashes bright, then BOOM! BANG! Loud thunderclaps surprise you.

What is a thunderstorm?

A thunderstorm is a storm with lightning and thunder. It's created by a cumulonimbus cloud, usually producing gusty winds, heavy rain and sometimes hail.

Lightning

If many small water droplets collide in a cloud in the sky and rub against each other, static electricity is generated. When this static electrical current jumps from one cloud to another as a spark we call it lightning.

Thunder

Lightning is very hot and heats up the air around it. This warm air around the lightning expands and quickly displaces the remaining cool air. The expanding air causes a loud bang, namely thunder is produced.

Climate

What is climate?

Climate is the measurements of temperature, wind, humidity, snow, and rain in a place over the course of years.

Who observes the climate for such a long time?

Climate researchers measure the temperature and how it changes over the course of many years. Also the type of precipitation and the quantity is exactly recorded. If you do that over decades you will notice the "patterns of the weather" in certain places. We call these certainties of weather climate.

The Climate of the earth

The atmosphere and climate are in a close relationship with the oceans, rivers, lakes and the water cycle. The permafrost of the glaciers, the poles, as well as the annual snow quantities has an important influence on the climate.

Not to forget that fauna and flora, soil, mountains and volcanoes also have their impact on the atmosphere and climate. All these factors create the climate of the earth. It must be taken into serious consideration that humans are making a negative impact on the climate.

Climate Zone

Is the climate the same everywhere on earth?

There is not the same climate everywhere on earth. Because the earth is round the sunrays reach earth at different angles. The different areas are warmed up at different intensities by sunlight. All of the areas on earth where we find certain climates to be dominant are summarized into a climate zone.

Most important climatic zones on earth

The coldest regions are on the poles where the sunrays impinge upon the earth at a flat angle, causing its heat to hardly be effective. The hottest areas are the tropics and the subtropics.

Here the sunrays impinge on the earth almost vertically. Between these two extremes there are various other climate zones.

- Polar zone
- Subpolar zone
- Temperate zone
- Subtropical zone
- Tropical zone

Central European Weather

Which climate zone is Austria located in?

Austria is located in the temperate climatezone. Our climate is a so-called Central-European climate.

What does Central-European climate mean?

Our climate is a climate of transition. The Alps crisscross our country and are one of the most important climate divides of Europe. From all four cardinal directions a different type of climate has its influence on the weather in our country as well as all over the Alps.

Which Climate influences weather in the Alps?

Weather from all four cardinal directions (North, South, East and West) have different effects on the climate of the Alps.

In **Southern Europe** you find what we call a Mediterranean climate with dry, hot summers and rainy, mild winters. The South of the Central Alps (South-Tyrol, Carinthia) is considered to be a particularly snow reliable area.

In **Western Europe** a moderately warm climate, influenced by the Atlantic dominates. The valleys accessed by the West wind show higher temperatures in the winter and lower temperatures in the summer compared to neighboring valleys.

From **Northern Europe** a climate that is cooler in the summer and very cold in winter infiltrates the Alpine area. It is caused by the influence of the North Sea, the North Atlantic and by the boreal forest zone of Northern Europe.

From **Eastern Europe** and from the Russian taiga continental climate enters the Alps. Here we have a picture low precipitation rates and by great differences in temperatures. This is where it can be burning hot in summer and bitterly cold in winter.

Climate change

What is climate change?

Climate change (or global warming), is the process of our planet heating up.

The climate is constantly changing. Warm and cold periods have separated in the course of the earth's history and created new climatic conditions on earth.

Climate is constantly changing. Warm and cold times have always been detached.

Does climate change take place on the whole earth?

The climate is presently changing all over the world, but the effects differ from region to region. The effects differ from region to region.

Global climate change today

The average temperature rises all over the world. Since 1900 we have recorded in the Alps an increase by 2 degrees Celsius. The global rise in temperature makes the ice masses of the poles and the glaciers of the mountains melt. All over the world researchers observe many more drought periods or other natural disasters.

Natural greenhouse effect

The atmosphere of the earth creates the climatic conditions which are necessary for life on the earth's surface to exist. The "natural greenhouse effect" plays a decisive role in this perspective. The sunrays penetrate the atmosphere like the glass panes of a greenhouse and then warm up the earth's surface. The water vapour and the gases of the atmosphere are responsible for the fact that the heat cannot escape into space again. Among the most important gases there is the greenhouse gas: Carbon dioxide (CO₂).

In basically the natural greenhouse effect can bring about climatic fluctuations but at a very slow pace. In the past this was often caused by volcanic eruptions.

Man-made greenhouse effect

Due to the utilisation of coal, crude oil and natural gas for industrial production, for heating and for transportation, great quantities of carbon dioxide are constantly being emitted into the air in very high quantities. Another cause of the

man-made greenhouse effect is the deforestation of huge areas of primeval forest (ancient forest which has not been changed by man) and by environmental pollution.

Right now the atmosphere contains about one third more CO₂ than 150 years ago.

Once formed and released greenhouse gases slowly rise into the atmosphere and form a dense layer which causes the earth's warmth to be kept trapped within the atmosphere. Consequently it is getting warmer and warmer on earth. It takes about 100 years for the CO₂ in the atmosphere to decrease again. The carbon dioxide that we release into the air today will end up staying in the atmosphere long enough to even warm up our children.

What is frightening, however, is the speed by which the climate is changing right now.