



# The Danube basin

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# The countries of the Danube basin

# 5.1.

# 5.1. The countries of the Danube basin

## Nineteen countries, one river

The Danube basin is rich in countries and cultures. The Danube rises in Germany, touches or flows through Austria, Slovakia, Hungary, Croatia, Serbia, Bulgaria, Romania, the Republic of Moldova and the Ukraine, and finally flows into the Black Sea. The greater parts of Slovenia, Bosnia and Herzegovina, the Czech Republic and Montenegro are in the catchment area of the Danube, as are smaller areas of five other countries. The Danube touches or flows through ten countries and receives its water from 19 countries. It is the world's most international river.

There are at least 17 official national languages in the Danube basin. In many countries, languages of other Danube countries are spoken in addition to the national language. Our language, too, is the mother tongue for at least parts of the population in other countries of the Danube basin.

The Danube and its tributaries are of great significance for the people in the Danube countries. This is evident in many features the countries of the Danube basin have in common. Many cities were founded on tributaries of the Danube: Czernovicz in the Ukraine and Munich in southern Germany, as well as Sarajevo in Bosnia and Herzegovina and the Bulgarian capital, Sofia, or Košice in Slovakia. On the Danube itself lie capitals such as Vienna, Bratislava, Budapest and Belgrade.

## Objectives:

The children learn ...

- ✓ that their home country forms part of the Danube basin and how many countries are connected by the Danube and form the Danube basin.
- ✓ to understand the linguistic diversity as natural, enriching and characteristic of the Danube basin.
- ✓ to listen to foreign languages and discover words they use in their own language.
- ✓ about the important role of the Danube, its tributaries and the Black Sea for the foundation of our present-day towns and villages.
- ✓ that many countries in the Danube basin are connected by a common history.
- ✓ that the Danube can be the source of inspiration.

## Materials:

Activity 1: pieces of papers with the names of the 19 countries of the Danube basin (one piece for each child), adhesive tape, pen, Danube poster, paper and coloured pencils, a key of the flags of the countries in the Danube basin (on page 216), worksheet “We join the Danube on its way”

Activity 2: a piece of paper with the name of the Danube in different languages (on page 218)

Activity 3: children’s books in different languages of the Danube countries brought to class by the pupils

Activity 4: a piece of paper for each child, pencil, coloured pencils, Danube poster

Activity 5: paper and writing materials

Activity 6: music related to the Danube, sheets of A4 paper (the edges already designed like a stamp), scissors, pencil, coloured pencils

## Organisational points:

Duration: 3 teaching units

Location: classroom

## Activity 1: Game; Group work / discussion

### The Danube – the world's most international river



Explain what the Danube basin is. The children guess where the rainwater from the roof of the school flows to.

They learn that water flows into the Danube from many other school roofs, in other places and even in other countries, and that this whole area is called the Danube basin.

Before class, pieces of paper were prepared. On each piece of paper write the name of one of the 19 countries from which water flows into the Danube.

All the children choose a country. If there are more than 19 children in the class, the names of some countries are handed out twice. The children write the name of the country they have drawn on a piece of sticky tape and stick it on their clothes. Then they all come together in the centre of the classroom to represent the Danube and the countries in the Danube basin.

The children discuss which of these countries the Danube flows through, where it originates and where it flows into the Black Sea. The Danube Poster should be used to help.

The children impersonating countries the Danube flows through take each other by the hands to form the Danube.

Where the Danube is the border between two or three countries, two or three children stand facing each other. This occurs between Slovakia and Hungary, Croatia and Serbia, Serbia and Romania, Bulgaria and Romania, and the Ukraine and Romania. The Danube forms the border for only a few kilometres between the Republic of Moldova and Romania, Austria and Germany, and Slovakia and Austria.

The children who represent the other nine countries from which water flows into the Danube stand on the side according to their country's geographical position. The Czech Republic joins with Slovakia and Austria, Poland with Slovakia, and so on. The poster may help the children to find the right positions.

Now the teacher tells the children that it has started to rain hard in one country. The water level in the rivers rises. When the water has flown into the next country, the water level falls again.

#### Making “the wave”

In the first round the children hear for example: “It’s raining in the Czech Republic.” The water in this country rises. The child playing this country makes a wave. She throws her hands up in the air for a few seconds and calls out the name of the country into which the water flows on: “Hello, Austria! Here comes water for the Danube!” Now the child playing Austria throws his hands up and greets the countries to which the water flows further: “Hello, Slovakia! Hello, Hungary! Here comes water for the Danube.” The two children who are playing Slovakia and Hungary both throw their hands up together and call out at the same time: “Hello, Croatia! Hello, Serbia! Here comes water for the Danube.” Thus, the water from a heavy rainfall flows from country to country until it ends up in the Ukraine and Romania and flows into the Black Sea.

Then all the children shout together: “Hello, Black Sea! Here comes our water from the Danube.”

In the second round it gets more difficult, as it rains simultaneously in two different countries. In the third round it rains in three different countries. In the last round it rains in an area where it hadn't rained before. This ensures that all children have a turn. To close, the

children enter the names of the countries on the map in the worksheet. Each child paints or draws the flag of the country they were representing in the worksheet.

Learning outcomes: The children can see that the Danube flows through many countries and receives water from many countries. They note that the Danube links many countries and often forms the border between two countries or sometimes even three countries.

## Danube water is international

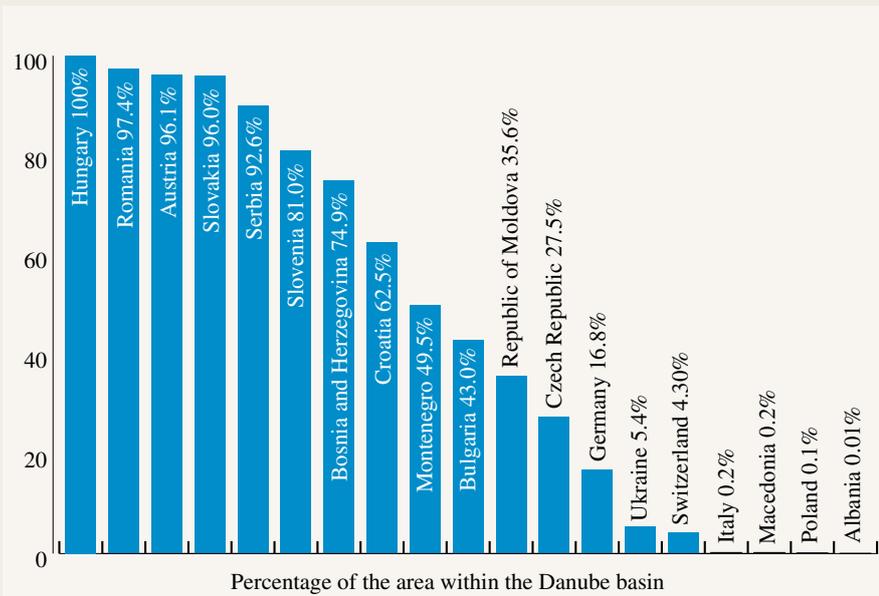
The Danube basin includes the areas in various countries from which water from precipitation flows into the Danube. The countries of the Danube basin are linked by a common history. The Danube plays an important role for the national identity of the countries.

From its source to the mouth, the Danube flows through or touches on ten countries. It rises in Germany and then flows through Austria, Slovakia, Hungary, Croatia, Serbia, Romania, Bulgaria, the Republic of Moldova, and the Ukraine. Its catchment area, however, includes even more countries: the water of the Danube originates from 19 different countries in all.

The catchment area of the Danube includes, for example, 81% of the territory of Slovenia, 74.9% of Bosnia and Herzegovina and 27.5% of the Czech Republic. Rainwater even finds its way into

the Danube from Switzerland, Italy, Poland, Albania and Macedonia, from comparatively small areas as well as areas of up to 2,000 km<sup>2</sup>. Every drop of rain that falls to earth in Hungary and finds its way into a stream or river ends up in the Danube.

Romania, Slovakia and Austria have from 96% to 97% of their national territory within the Danube catchment area.



## Background information

## The Danube basin, a region of many peoples

81 million people live in the Danube basin. Of these, 26.79% live in Romania, 12.47% in Hungary, 11.60% in Germany, 11.11% in Serbia and Montenegro\*, and 9.51% in Austria. The Danube basin is a multi-national region. The 81 million people in the Danube basin communicate through 20 different languages. Of these, at least 17 are official national languages.

In addition to the official national languages, parts of the population in the various countries also speak other languages of the Danube basin as their mother tongue. This is due to the eventful history of the Danube basin and is an important common feature of all countries of the Danube basin.

The people, and with them the languages, migrated into the Danube basin for three reasons in particular. In the past, people were repeatedly urged by their rulers to emigrate to other countries. Thus, regions that had been depopulated by wars were repopulated, or particular regions were economically strengthened.

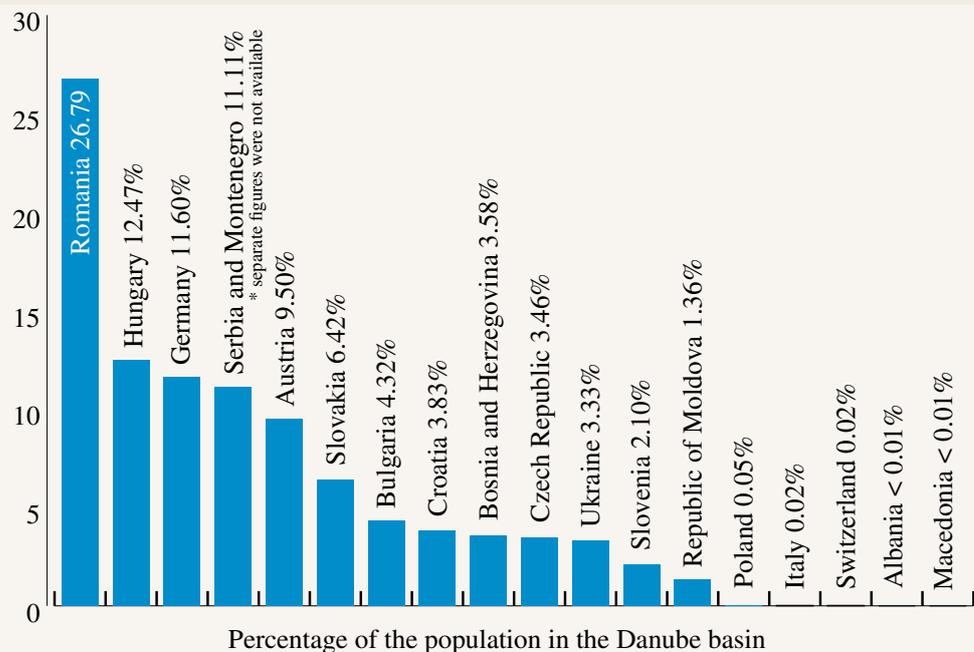
Examples include the Serbs in Croatia and the German-speaking Saxons in Hungary. The Serbs, who until the civil war a few years ago lived in the Croatian region of Krajina, were settled there in the 16th century by the ruling Habsburg family to protect the border against the Ottomans.

As early as the Middle Ages, German-speaking Saxons were called into the Hungarian part of the empire. They were settled in Transylvania and as miners colonised the

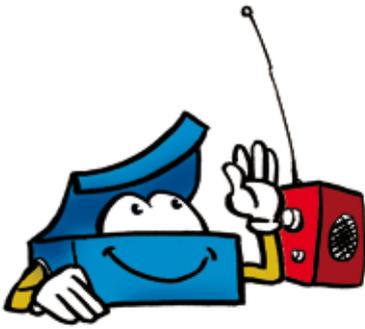
south-eastern foothills of the High Tatra. Today these areas belong to Romania and Slovakia.

Other people have taken refuge in the countries of the Danube basin to save their lives. For example, many Jews fleeing persecutions in imperial Spain settled on the lower course of the Danube in the religiously tolerant, Muslim-influenced Ottoman Empire. In large Jewish municipalities, such as Ruse in Bulgaria and Galați in Romania, people spoke a kind of Spanish as their mother tongue and Hebrew for religious ceremonies.

During and after many wars, the borders of the countries were repeatedly changed. As a result of shifting borders, people lost their affiliation to their country and became part of a large minority in another country. For example, Hungary historically extended far beyond the borders of present-day Hungary. As a result, Hungarian is still spoken in other countries. Large Hungarian minorities live in Slovakia, in Croatia, in Vojvodina in Serbia, in the Serbian–Romanian Banat and in Transylvania in Romania.



### Background information



## Activity 2: Game

### Many people speak many languages

The various names of the Danube are written on small cards. The children draw a card, consider what language it is, and find out where it could fit on the Danube poster.

These are the different ways that the word "Danube" is spelt in languages used in the Danube basin:

- German: Donau • Hungarian: Duna • Croatian: Dunav • Macedonian: Dunav  
• Serbian: Dunav (Дунав) • Bulgarian: Dunav (Дунав) • Russian: Dunaj (Дунай)  
• Ukrainian: Dunaj (Дунай) • Slovakian: Dunaj • Romanian: Dunăre  
• Albanian: Danub • Turkish: Tuna.

What does "child" or "water" or "school" mean in the Danube languages? With the aid of dictionaries, draw up a vocabulary list of words that are important for the children and are related to the Danube, and translate them into some of the neighbouring languages. The pronunciation can be tried out together. These words, too, can be written on small cards and stuck on the Danube poster. A vocabulary list for the words "child", "water" and "river" can be found on the CD-ROM. Encourage the children to tell the class what other languages they have heard. They recognise that even in their own country various languages are spoken. They learn that in every country there are people living who have different mother languages. They hear that their own language is used in other countries and then guess which country it might be.

Learning outcomes: The children experience it as self-evident and not disagreeable that other languages are also spoken in their own country.



## Activity 3: Group work / discussion

### We've got the gift of the gab

With the help of their teacher, the children look for words in their own language (official language or dialect) that are derived from other languages. A volunteer writes the words and their origins on the blackboard. An example of such a word would be "paprika". It is a Serbian word. The name of the spice, and in some languages the name of the fruit as well, came from Serbia via Turkey to Hungary.

Children from different cultural backgrounds bring in books in their native language and read a short passage out to the class. The other children close their eyes and listen.

Afterwards the class tries to work out what the text could be about. The child who has read it out helps. They explain and translate individual words or sentences.

**Find more at "Additional information for teachers":**

**Language diversity in the Danube basin**



## Activity 4: Group work / discussion

### Our towns and villages are built near water

The class travels back in time. The children imagine exploring their surroundings on a sunny summer's day 2,500 years ago. They go in search of a place for a new

settlement. Together they consider what was important for people at the time.

In small groups, the children discuss what features the new settlement should have and where it should be. Finally, the groups present their ideas in class and the children discuss advantages and disadvantages of their choice of place.

Each child creates a map of an imaginary place that is well suited for settlement. The children invent a name for their place, which refers to the position by the river, lake or sea.

Finally, each child draws a coat of arms for its place by the water.

The children consider which place names (of villages or towns) in their area have something to do with water or with the position of the place by the water. They attempt to find place names that are based on buildings by the water. The collected names are written on the blackboard.



photo: CCHBC/Mark Fallander

**Belgrade:** the capital city of Serbia is situated on the Danube.

**Learning outcomes:** The water of the rivers, lakes and sea has always been a matter of survival for people. Many villages were founded on the Danube and its tributaries. The people in the Danube basin are proud of the fact that their villages and towns are situated by the Danube and its tributaries.

## Places by the water

The foundation stone of many villages and towns in the Danube basin has been laid by the water – by the Danube, its tributaries or on the coast of the Black Sea, often on river estuaries and on the crossings of roads and rivers.

Settlements were established on somewhat higher sites, safe from high water and flooding. Built on a hill over a river or over the sea, and suitably fortified, this arrangement offered protection against attack. Rivers and sea provided plenty of fish as food and served as a transport route.

The river water was used as drinking water. The floodplain forests along the river were rich in game and edible plants. In addition, materials such as sand, stone or wood were also available by the water.

Many names of towns refer to their location by the water. The name of the Romanian city Timișoara in-

cludes the name of the River Timiș on which it lies. The Slovenian capital, Ljubljana, lies on the river of the same name. The name of the Austrian city of Innsbruck is derived from the bridge over the River Inn.

The coats of arms of many places in the Danube basin show that they are proud of being situated on a river. The coat of arms of Belgrade shows a three-masted sailing ship on the Danube, and that of the Bulgarian Danube city of Ruse has waves as a symbol for the Danube. The Romanian town of Drobeta-Turnu Severin includes its Roman bridge over the Danube in its coat of arms. A common motif is the walls of a castle or town on the river – as a symbol for protection against threats by the sometimes dangerous water. Fish in coats of arms underline the importance of the waters for feeding the people.



## Background information



## Activity 5: Group work / discussion

### Countries with a past, or: the past connects

The teacher asks questions about what Belgrade, Budapest, Bratislava and Vienna have in common. The children may choose between four answers. Those children who think that all of these cities are in one country go to one corner of the classroom. Those who think that all four are not capitals go into a second corner. The children who think that all of them are not on the Danube go into a third corner. Those who think that all four cities were founded by one and the same people go into the fourth corner.

#### The Celts

Discussing the reason for their answers, the children learn that all four cities were founded on the Danube by the Celts and that even the name Danube is of Celtic origin. They are told that the Celts spread out from the Alpine area down-river along the Danube.

#### The Greeks

At the same time, another people spread up-river along the Danube from the Black Sea and founded settlements. The children have to guess who these people were. They learn about Greek settlements and about the Danube serving as a natural barrier limiting their spread.

Then the following names are written on the blackboard:

Singidunum • Aquincum • Serdica • Castra Regina



### Celts, Greeks, Romans

The countries of the Danube basin are linked by a common past. Some 2,500 years ago, the Celts had established settlements in almost the whole of the Danube basin, from which many of our present-day towns are derived. Also, some names of places or rivers go back to the Celts, for example: “dan” means big river. In Roman times this became Danuvius or Danubis, and later Danube.

The Greeks found the way to the Danube via the Black Sea. On a rise to the south of the Danube mouth, by a bay of the Black Sea, they founded Histria. The name of the city is derived from Istros, the Greek name for the Danube. Today, you can find the excavations of an ancient city on Lake Sinoie.

On the present-day Romanian sea coast, the towns of Tomis, today Constanța, and Kallatis, today Mangalia, developed. Inland, the Greeks founded Axiopolis on the Danube, the present-day Cernavodă. With their ships, the Greeks travelled up about a third of the Danube. The Iron Gate, with its rapids and

shallows, was a natural barrier that was difficult for them to overcome with their rowing ships. Thus, the Greek sphere of influence was limited to the lower course of the Danube and the Black Sea.

The plans of the ancient towns are still visible in some places. The modern city centre of Constanța lies directly above the Greek agora, the market and gathering place of ancient Tomis.

After the Celts and the Greeks, the Romans discovered the Danube basin. For hundreds of years, all the land south of the Danube and large areas of present-day Romania were part of the Roman Empire. From the source to the estuary, the Danube became a fortified border against the Germanic peoples in the north.

The Romans further extended the Celtic and Greek settlements and founded new towns. Present-day Belgrade was then called Singidunum, Budapest was Aquincum, Sofia was Serdica and the German Regensburg was Castra Regina.

### Background information

## The Romans

The children guess what the words mean and what language they might come from. Once they know, explain to them that after the Celts and the Greeks, the Romans came to the Danube basin.

The class is divided into two groups to do a quiz on the Romans. Each group considers what still reminds us of the Romans today and, with the help of the teacher, writes out questions. For example they might ask about Latin words that are still used today, Roman buildings, town foundations, or Roman excavations in the area.

If the Romans were not present in the children's region, base the quiz on another culture that influenced the greater part of the Danube basin, for example the Celts or the Greeks.

Learning outcomes: The children learn that the countries in the Danube basin are linked by a common past and that our towns and villages have common roots.

Find more at “Additional information for teachers”: [The Danube connects us](#)

## Activity 6: Creative design

### The Danube – a symbol

In class the children listen to a piece of music that was inspired by the Danube or another river in the Danube basin (e.g. “The waves of the Danube/Valurile Dunarii” by Ivanovici, or “By the beautiful blue Danube” by Strauss). Ideally, the children bring the music or lyrics with them.

Together they consider whether they know other pieces of music in which the Danube or one of its many tributaries appear. They may be pop songs or nursery rhymes.

On prepared sheets each child designs a postage stamp for their country based on the Danube or another river. Then the children present their stamps in class.



## The Danube, important for all countries

The Danube and its tributaries have great symbolic significance for people in the Danube countries.

Many capitals in the Danube basin are on rivers. The capitals of Serbia, Hungary, Slovakia and Austria – Belgrade, Budapest, Bratislava and Vienna – even lie directly on the Danube.

Some buildings on the river are important landmarks for places or countries. Examples are the Hungarian parliament in Budapest, which lies directly on the bank of the Danube, or the railway bridge in Romanian Cernavodă. At the time of its opening in 1895 it was the longest in the world; today only ruins remain. Even buildings of which only the main supports remain today can be important symbols, for example the Roman bridge over the Danube, which is depicted in the city coat of arms of the Romanian town Drobeta-Turnu Severin.

The flags of the Republic of Moldova, Austria and Germany include a bird that makes its home by the Danube: the white-tailed eagle. The heraldic beast of the three countries breeds in the floodplain forests along the Danube. Serbia and Romania also have eagles in their coats of arms, which may represent white-tailed eagles. In the national coat of arms of Slovenia, on the other hand, two wavy lines symbolise the rivers Sava and Drava.

Some special cultural landscapes are associated with the Danube, such as the Wachau, north of Vienna, where the slopes down to the Danube are terraced and planted with vines, or the Hungarian “Danube knee” with the former royal residence in Visegrád.

The Danube can be of particular significance as a place of natural spectacles and as a natural paradise. In Passau, Germany, the confluence of the differently coloured waters of the Danube and the Inn are an attraction. Between Serbia and Romania there is the narrow Kazan Gorge by the Iron Gate. In Croatia, there is the natural paradise of Kopački rit, where numerous white-tailed eagles breed and over 40 species of fish spend their juvenile stages. With its enormous reed beds and rare pelicans, the delta of the Danube is a unique habitat. The designation of reserves and



photo: SEPIAZINNOBER Films

**The Hungarian Parliament in Budapest:** one of the landmarks on the Danube.

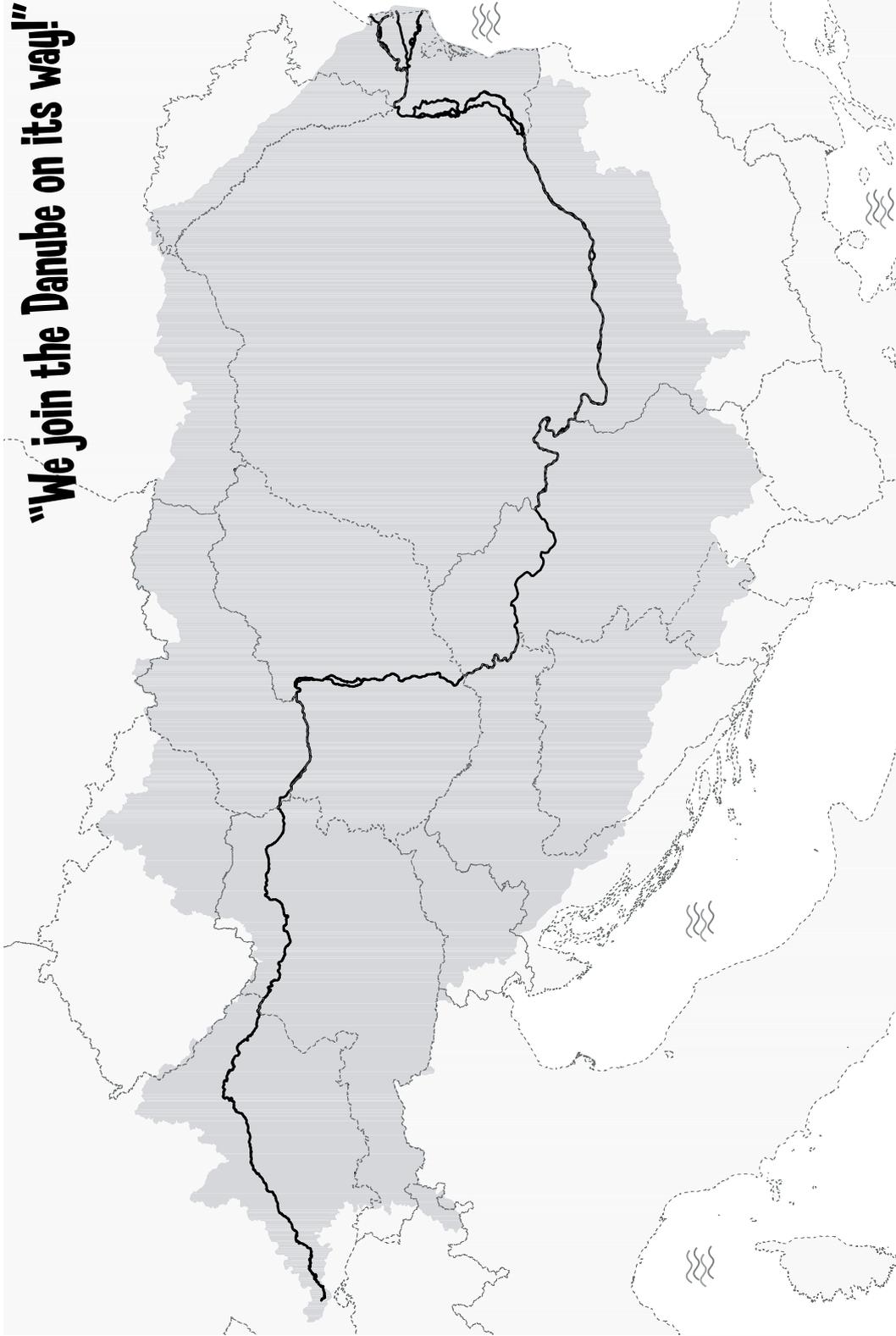
protected areas such as national parks along the Danube underlines its outstanding importance.

In some towns on the Danube, crops that are typical of the country and of great symbolic importance are produced, for example hops or peppers. Hops are the main ingredient for brewing beer. The biggest hop-growing area in the world is in Hallertau, on the German Danube south of Kelheim. Peppers are an essential part of Hungarian cuisine. Their main growing area in Hungary is around Kalocsa, on the Danube south of Budapest. Peppers, which were brought to Hungary by the Turks, are a good example of the diversity in the Danube basin. The name of the spice “paprika” is derived from Serbian.

The special relationship between people and the Danube is reflected in many customs and traditions. In Ulm, for example, a special custom has been observed on the Danube since 1545 – “fisherman-stabbing”. In “fisherman-stabbing”, the participants stand in small boats, called Zills, and with blunt lances attempt to push each other into the water. Whoever does not fall into the Danube has won.

### Background information

**"We join the Danube on its way!"**



Credit: FLUVIUS, 2006

- ✓ Add any information you can to the map, for example the names of the countries along the Danube!
- ✓ What sea does the Danube flow into? Write the name on the map.
- ✓ Note all languages which are spoken in your country.
- ✓ On the Danube are situated the four capitals Belgrade, Budapest, Bratislava and Vienna. Mark their position and the capital of your country on the map.

# Danube tales

## Secure Danube borders?

The provinces conquered by the Romans lay along the Danube like a chain of pearls, from west to east: Raetia, Noricum, Pannonia, Dacia, Moesia and Scythia. Only the Roman province of Dacia was north of the Danube. For all the others the “Fluvius Danuvius” formed the northern border. What lay on the other side of this border was “barbaricum”.

“Limes” means border path or strip. Between the young Danube and the Rhine, which marked the west–east border, the Roman outer border ran straight across land. In 83 AD, the Emperor Domitian started to build an astonishing stone wall to protect this section of the border. Even today one can see traces of the limes in the southern German landscape.

The Danube formed the “water limes”, which had many advantages over the stone border wall: the border was easier to keep watch over and to defend. The Roman Danfleet mounted daily patrols and troops could be shifted quickly from one camp to another if an attack by Germanic warriors was reported.

On the upper Danube, in the province of Raetia, it was no big adventure to reach the other bank of the still young, narrow Danube over fords and shallows. As a result, the “bar-

barians” often attacked here. But a quite different place was also favoured for incursions, presumably often in winter when the river was frozen: the winding canyon at the Iron Gate. Here Roman road maps show an unusually high concentration of camps, fortified road stations and watchtowers. Before the water level was raised, when the power station was constructed in 1972, a 210-metre-long piece of Roman road could be seen hewn out of the rock wall in the Kazan narrows. This was used by soldiers on patrol, and above all for towing the larger Roman rowing boats.

Further downstream in the great plain, the fortresses on the Roman side rather than the Danube functioned as the dividing line between the Roman empire and the Dacian territories. A ferryboat (Latin: *traiectum*) service was quickly set up here. Ships and rafts could cross with no problem. At low water there had been fords since time immemorial, and during the often months-long freezing of the river, it was possible for whole armies and their retinues and horses to cross it. For this reason, the Dacians, who lived north of the Danube, frequently invaded and posed a constant threat to the Romans until they were defeated in AD 106.

### Multi-ethnic world in miniature: Vojvodina

The one-time "bread basket" (so called because of its agricultural richness) lies between the rivers Danube and Tisza in Serbia. It is a flat region where land and water apparently merge. The co-existence of dozens of ethnic groups with their own languages and culture has a long history here. The autonomous region of Vojvodina consists of three regions: Srem (the Romans called it Syrmium), Banat, which continues into Romania, and Batschka. The capital is Novi Sad (German: Neusatz; Hungarian: Újvidék).



photo: Dragan Bosnic

### Until 1945 the following nationalities lived here:

Serbs  
Hungarians  
Germans ("Danube Swabians")  
Bulgarians  
Greeks  
Italians  
French  
Spaniards (Catalans)  
Croats  
Slovaks  
Walachians (= Romanians)  
Ruthenians (= Ukrainians)  
Bosnians  
Jews  
Šokice (= Orthodox Croats)  
Bunjevici (= Catholic Serbs)  
Roma  
Sinti

In addition, until the 18th century there were Ottoman Turks, who played an important role politically and culturally.

**Novi Sad:** the capital of the Serbian province Vojvodina is situated on the Danube.

### Old children's games from the countries of the Danube

Children live on every river in the whole Danube basin, and they all like to play, today as much as in the past. Some games, songs or rhymes are known only in a small number of places; others have spread throughout the region almost everywhere, and are even played today. In the small collection of games we de-

scribe here there are some that we have chosen because they are directly connected with the Danube or the Black Sea. Others have just been told to us by people who lived somewhere on the Danube or on one of its tributaries.

**Instructions for various games you can find at "Additional information for teachers".**

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# The catchment area of the Danube

# 5.2.

## 5.2. The catchment area of the Danube

### Nothing comes from nothing

At 2,780 m, the Danube is the second longest river in Europe, after the Volga. Before it discharges into the Black Sea, its outflow averages 6,500 cubic metres of water per second. In rare periods of extremely high water, the discharge can be up to three times as much as this. The Danube's great length and abundance of water is due to the vast size and nature of its catchment area. The Danube catchment area – the area from which all rainwater that does not otherwise evaporate flows into the Danube – is 801,463 square kilometres.

Precipitation in the Danube basin is distributed unequally. In the west, in the area of the Atlantic climate, it is very high. It falls off towards the east, owing to the continental climate. The southwest of the catchment area is influenced by the Mediterranean (Illyrian) climate and because of its proximity to the Mediterranean Sea receives high precipitation in the course of the year.

A third of the catchment area is mountainous; the rest is hilly or flat. Whereas areas on the Black Sea coast are at sea level, in the Alps the highest summits in the Danube basin reach nearly 4,000 m. Throughout the catchment area, precipitation in the mountain areas is high, regardless of the prevailing climate. In the Alps, in the Carpathians, in the Balkan Mountains and in the Dinarian Mountains, the annual precipitation is 2,000 mm and more.

The Danube and its tributaries originate in these mountains with high rainfall, and subsequently flow through dry lowlands and basins. Some 300 rivers from the entire catchment area take their water, which is ultimately derived from snow or rain, to the Danube. The most plentiful rivers are the Sava, Tisza, Inn, Drava, Siret and Velika Morava.

## Objectives:

The children learn ...

- ✓ that the abundance of water in the river Danube is due to precipitation in the whole catchment area.
- ✓ that in the whole catchment area there are very different levels of precipitation.
- ✓ that there are different climates.
- ✓ why precipitation in the mountains is so high.
- ✓ to know the Danube basin by modelling with clay.
- ✓ to get to know the mountains, and they learn how the Danube and its tributaries find their way through the plains.
- ✓ that the rivers bring water into areas with low precipitation.
- ✓ the names and characteristics of the rivers in the Danube basin, through play.
- ✓ how floods occur.
- ✓ that the meadows and floodplain forests along the rivers absorb floodwaters and thereby contribute to reducing flood damage.

## Materials:

Activity 1: 1 narrow-necked bottle, 1 funnel with a matching diameter, 1 ruler or tape measure

Activity 2: 8 A4 sheets of paper or more, sticky tape, pencils, Danube poster

Activity 3: no materials

Activity 4: precipitation maps of the Danube basin, relief maps of the Danube basin

Activity 5: clay, an appropriate base for the clay model, teaspoons, thick string, thin string, white paper, scissors, relief map of the Danube basin

Activity 6: ruler or tape measure, blue pencil, the rainfall chart already completed in Activity 2

Activity 7: the completed clay models, the rainfall chart already completed in Activity 2

Activity 8: thin cardboard or paper, scissors, coloured pencils or felt-tips

Activity 9: the completed clay models

Activity 10: 2 buckets, water

## Organisational points:

Duration: 3 teaching units

Location: classroom, schoolyard

## Activity 1: Experiment

### On the tracks of the rain



A bath tub and a river representing the Danube are drawn on the blackboard. The children try to guess how many bathtubs full of water correspond to the amount of water that flows into the Black Sea every second. (One bathtub averages 200 litres.)

After everyone has guessed, the solution is written on the blackboard: the quantity of water that flows into the Black Sea every second could fill 32,500 bathtubs. To illustrate this, it is calculated how many classrooms could be filled up to the ceiling in order to accommodate the corresponding quantity of 6,500 cubic metres (6,500,000 litres) of water.

The children discuss where this amount of water in the Danube comes from. They learn that this great quantity of water has fallen from the sky as rain or snow and reached the Danube via rivers from the whole catchment area of the Danube.

The children go on to find out how much water falls to the ground in their locality. They build a rain gauge in order to measure precipitation. First a bottle is labelled so that the precipitation collected can be read off in millimetres. In an outdoor area sheltered from the wind, for example the school yard, the marked bottle is set up in such a way that it cannot fall over. A funnel whose diameter matches that of the bottle is attached to the bottle so it cannot come off even in heavy rain.

After it has rained, the level of rain water (in millimetres) in the bottle is recorded. The result is discussed. It is recalled that 1 mm of water in the bottle corresponds to 1 litre of rainwater per square metre.

The children try to answer the following questions: When does rain fall in their home region? In what season is there more rain than average and in what season is there less? How high is the precipitation for a whole year? On the basis of the answers to these questions it is possible to proceed to the next subject.

Learning outcomes: The children get an impression of how much water flows into the Danube. They make a connection between the water in the Danube and local rainfall.

### Precipitation for the Danube

Every second, an average of 6,500 cubic metres of water flows into the Black Sea from the Danube. This quantity of water corresponds to 32,500 200-litre bathtubs, or a cube with a side length of 18.7 km. Before the water gets into the Danube through rivers, it falls from the sky as rain or snow in the whole catchment area.

Precipitation is measured in millimetres. The value indicates how high above the ground the rainwater would stand if it did not flow off or evaporate. An annual precipitation of 600 mm means that the rain and snow of a whole year would result in a 60-cm-high sheet of water over the surface of the earth. If there is 1 mm of rain there will be water at the rate of 1 litre per square metre.

### Background information



## Activity 2: Group work / discussion

### Rain in other places

A 2-m-long strip of paper is made by sticking eight A4 sheets of paper together. It is put up on the classroom wall so that it reaches exactly to the ground.

The children form pairs. Each pair chooses a town in the Danube basin and marks the height of precipitation (in millimetres) in that town on the paper. Measuring from the floor, they mark the appropriate height with a line and label it with the place name and the name of the country.

On the Danube poster, the groups look for “their” place and show it to the other children.

Also on the Danube poster, they check where there are areas with similar levels of precipitation.

Learning outcomes: The children learn that rainfall in the Danube basin varies. In some places, very large quantities of water fall to earth as precipitation. Even places that are far apart can have similar levels of rainfall.

### Precipitation fluctuates

The annual precipitation in the Danube basin fluctuates between under 400 mm on the Black Sea coast and over 2,000 mm in the mountains such as the

Carpathians and the Alps. The cities have different annual rates of precipitation according to their position in the Danube basin:

City	Rainfall
Location of children’s school	
Sofia (Bulgaria)	563 mm
Munich (Germany)	1,009 mm
Debrecen (Hungary)	565 mm
Sibiu (Romania)	623 mm
Brno (Czech Republic)	488 mm
Craiova (Romania)	582 mm
Salzburg (Austria)	1,169 mm
Sulina (Romania)	308 mm
Sarajevo (Bosnia/Herzegovina)	932 mm
Ljubljana (Slovenia)	1,398 mm

City	Rainfall
Constanța (Romania)	396 mm
Zagreb (Croatia)	891 mm
Szeged (Hungary)	495 mm
Cluj-Napoca (Romania)	548 mm
Graz (Austria)	838 mm
Černivci (Ukraine)	661 mm
Wien (Austria)	613 mm
Budapest (Hungary)	518 mm
Galați (Romania)	477 mm
București (Romania)	628 mm
Beograd (Serbia)	690 mm

### Background information

## Activity 3: Game

### Precipitation is dependent on climate



The children listen to descriptions of the three types of climates predominant in the Danube basin. As soon as a child thinks they know what the prevailing climate in their region is they stand up – without giving away the answer. The following text is read out:

- “The continental climate owes its name to the word continent. This climate is heavily influenced by the mainland, the continent.”
- “The Illyrian climate – in English known as the Mediterranean climate – is named after the Roman province of Illyria. This climate is influenced by the Mediterranean Sea. Most precipitation falls in autumn.”
- “The maritime climate takes its name from the sea. This climate is greatly influenced by the Atlantic ocean. The winds mostly come from the sea, from the west or north-west. They bring a lot of rain.”
- “In the area of the Mediterranean climate, there are long periods of fine weather in summer. At this time the temperatures are very high. The Mediterranean climate is the prevailing climate in the areas of the Sava and Drava rivers.”
- “The influence of the Atlantic ocean means that the winters are not too cold and the summers are not too hot. In areas in the Danube basin where the maritime climate dominates, there is no or only very little wine production. The Danube originates in a region with a maritime climate.”
- “In the continental climate, the summers are long, hot and dry. The winters are very cold and temperatures can fall to -20 degrees. The continental climate is influenced by the mainland. As a result it rains very little. This climate prevails in the centre and east of the Danube basin.”
- “If the place where we live is high up in the mountains, the climate is heavily determined by the altitude. It rains more than in the adjacent plains. Summers are cool and brief, winters are long and cold. High mountains have a ‘mountain climate’.”

When finally all the children are standing, they all shout together: “Where we live there is a ... climate.”

Learning outcomes: The children realise that there are different climates in the Danube basin. They categorise their own region in a particular climate.

**Find more at “Additional information for teachers”: Climate and hydrology**



## Activity 4: Group work / discussion

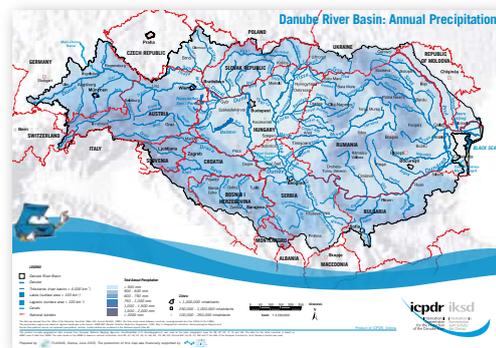
### Where there are mountains, there is rain and snow

The children have a look at a precipitation map of the Danube basin. They learn that different quantities of precipitation are marked by different colours. The children see that the amount of rain and snow varies in quantity between different places.

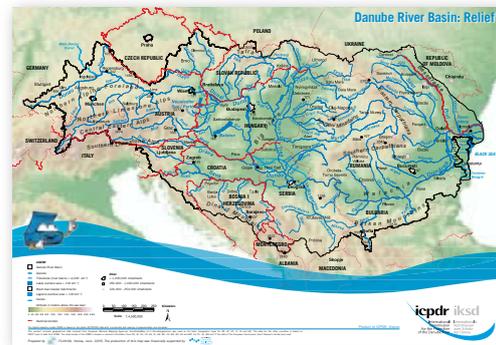
Look at the precipitation map and the relief map of the Danube basin. The children see that precipitation is particularly high in the mountains and low in lowland areas and basins. Together, explanations for this phenomenon are considered.

The formation of relief rain is explained.

Learning outcomes: In the mountains, the annual quantity of precipitation is higher than in the lowlands.



precipitation map



relief map

You will find extra maps for copying at “Precipitation map” and “Relief map”.

### Relief (or orographic) rain

Besides the climate, the altitude of a place has a significant influence on the amount of precipitation there is. Precipitation includes rain and snow.

In the Danube basin, the annual precipitation is higher in the mountains than it is in the lowlands.

Mountains represent barriers to airflow. Air masses

build up against them and are diverted upwards. As the rising air cools, the gaseous water vapour condenses and forms clouds. If the air cools down further, rain develops. Because of the way it is formed, this is called relief rain. This is why precipitation is high in the mountains of the Danube basin.

### Background information

## Activity 5: Creative design

### Grasping the Danube basin



In groups of four, the children build a clay model based on a relief map of the Danube basin. On a suitable base (such as trays), they recreate the mountains and basins in the catchment area of the Danube. Spoons can be used to model the clay. In the model, a 1,000 m mountain will be 1 cm high (if there is enough clay 1,000 m will be 2 cm). Use a relief map to have a pattern.

- Glaciers in the Alps are represented by white paper.
- The course of the Danube from the Black Forest to the estuary is outlined by a piece of string.
- The tributaries of the Danube are represented by pieces of thin string. First, the children choose a tributary that flows from their region in the direction of the Danube and mark its course, then they mark the courses of other tributaries, such as the Inn, March, Drava, Sava, Tisza, Velika Morava, Iskar, Olt, Siret or Prut.

The clay models of the Danube basin are allowed to dry and then continue to be used in teaching about the Danube.

Learning outcomes: The Danube seeks its way between the mountains and then flows for long stretches over lowlands. Rivers rise in the mountains where it rains a lot. The course of the Danube and its tributaries is influenced by the mountains and plains in the Danube basin.

## Activity 6: Game

### Rivers rise where it rains a lot



The children enter 2,000 mm in the rainfall chart (see Activity 2). They learn that the annual precipitation is that high in some parts of the Alps and the Carpathians. They learn that tributaries of the Danube such as the Inn, Tisza, Siret and the Prut rise in these areas. The river names are entered in the rainfall chart in blue.

The children try to guess the highest level of precipitation in the Danube basin. They learn that precipitation in the catchment area of the upper Drava, the Sava and the Kupa can reach 3,800 mm per year. This amount does not fit onto the rainfall chart. To give the children an idea of the masses of water coming from precipitation, the 3.8-m-high layer of water is compared to the height of the classroom.

Learning outcomes: Rivers rise in areas where precipitation is high. The biggest tributaries of the Danube rise where it rains or snows a lot.



**Source of the Sava:** the Sava rises in the high rainfall Julian Alps.

photo: Andrej

### High precipitation – big rivers

In the catchment areas of the upper Drava and the Sava in the Julian Alps, as well as in the source area of the Kupa, the highest level of precipitation may amount to 3,800 mm. Southwest of Zagreb, the Kupa flows into the Sava.

The Sava is the tributary of the Danube which carries most water. It rises in Slovenia, crosses Croatia, then forms the border between Croatia and Bosnia and Herzegovina and flows through Serbia. In Belgrade, its outflow at the mouth into the Danube averages 1,564 cubic metres of water per second. Thus, almost



photo: Martin Schneider-Jacoby

**The Sava:** full of variation and high run-off.

a quarter of the water that flows into the Black Sea from the Danube comes from the Sava. The Drava carries on average 577 cubic metres of water. It is the fourth biggest tributary of the Danube in regard to flow volume. On the national coat of arms of Slovenia, the rivers Sava

and Drava are symbolised by two wavy lines.

With an average outflow of 794 and 735 cubic metres of water per second, respectively, the Tisza and the Inn have the second and third largest volumes of flow volume of all the Danube's tributaries.

### Background information

## Activity 7: Group work / discussion

### Plains – thirsty stretches for rivers



The children take their clay models and learn about the dry plains.

A town in one of the plains of the Danube basin with low rainfall is selected. A child points out the annual precipitation on the rainfall chart. A second child indicates on the map where the place is located. Other children do the same for other towns.

Learning outcomes: The Danube and other major rivers flow through areas that are very low in precipitation. Throughout the Danube basin, there are places where rainfall is low. Nevertheless, because of their locations on major rivers or by the sea, they are heavily influenced by water.

#### Annual precipitation

Rivers rise in mountain regions with high precipitation and often flow through lowlands with low rainfall. The Hungarian plain in the centre of the Danube basin, the catchment area of the Czech Morava, the Vienna basin, the valley of the Velika Morava, the highlands of Transylvania and the area in the lower course of the Danube all have low levels of precipitation. The areas on the Black Sea coast east of Silistra and Galați are particularly dry.

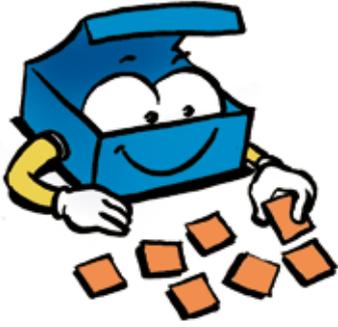


photo: National Park Neusiedler-See-Seewinkel

**The Little Plain:** warm and dry in summer.

Brno (Czech Republic)	488 mm, on a tributary of the Morava
Vienna (Austria)	613 mm, in the river Vienna basin and on the Danube
Budapest (Hungary)	518 mm, on the Hungarian plain and on the Danube
Szeged (Hungary)	495 mm, on the Hungarian plain and on the Tisza
Craiova (Romania)	582 mm, on the Campia Romana on the River Jiu
Bucharest (Romania)	628 mm, on the Campia Romana
Galați (Romania)	477 mm, on the Danube
Sulina (Romania)	308 mm, at the estuary of the Danube into the Black Sea
Constanța (Romania)	396 mm, on the Black Sea coast
Cluj-Napoca (Romania)	548 mm, in the Transylvanian Alps
Sibiu (Romania)	623 mm, in the Transylvanian Alps

#### Background information



## Activity 8: Game River-Memory

The children make cards for a game of memory. The subject of the game is the rivers of the Danube basin. Cards of the desired size and number are cut out from thin cardboard or paper. Two identical cards of each are designed. They should include the name of the river and a symbolic representation of a special feature of the river.

The children choose a river from their region. They think about the origin of the river's name, the place where it rises and the way it flows downstream. They think about what makes it distinct and what is damaging to it.

Besides the river nearest to where the children live, other rivers that have been discussed should be included in the game. Information provided by the teacher should help the children to be able to draw an expressive picture of each river. When enough cards have been produced, the river memory game can be played in class.

Learning outcomes: The names and special characteristics of the major rivers are learned.



photo: Anton Voraueer

Lech



photo: Zoka Bela

Tisza



photo: CCHBC/ Mark Fallander

Prut



## Activity 9: Group work / discussion The water is rising

The children form groups of four and think of a stream or river in their locality. Together, they consider the following questions.

Does the river or stream always carry the same amount of water? Is the water level high or low at the moment? When is there a lot of water? When is there little water? The groups report to each other. The teacher explains that there is low water and high water.

The children guess how much water flows down the Danube during periods of high water. They learn that it can be almost ten times as much as during low water. The children take their clay models of the Danube basin. With the models in front of them, they consider how floods and high water occur in the Danube. It becomes clear to the children that the longer and the more heavily it rains, the more water enters the rivers

and the Danube. The greater the area in which it rains, the more water gets into the rivers and into the Danube.

In order to visualise this, the children think of a garden hose. If you turn it on fully and aim at a single spot, for example a vegetable patch, the water no longer seeps into the ground. The longer you aim at the same place, the more water collects on the surface. Water that does not seep away goes directly into streams and rivers where it may lead to high water.

Learning outcomes: The quantity of water in a river can change greatly. The water level of a river is dependent on the density and duration of precipitation in its catchment area. The greater the area of rain in the catchment area, the greater the level of flooding.

## Water level fluctuations on the Danube



photo: Béla Zóka

**Water level fluctuations:** during autumn there is hardly any water in the Tejfausziget in Hungary.



photo: Béla Zóka

**In Hungary:** rivers carry the most water during summer.

The water level of a river fluctuates. Little or no precipitation in the catchment area of a river results in low water. High precipitation leads to high water.

During periods of low water, the outflow of the Danube into the Black Sea is 1,610 cubic metres per second. During high water it is 15,540 cubic metres per second.

Until the point where the Morava discharges into the Danube, the Danube is heavily influenced by the Alpine glaciers. In the upper course it reaches its highest monthly flow in July; water levels are lowest during the winter months of January and February.

In the mid-course of the Danube, water levels are highest in early summer. Down-river of the mouths of the Sava and the Tisza, the water level of the Danube rises even before summer because the snow in the Dinarian Mountains and the Carpathians starts melting earlier than in the Alps.

Thanks to its extensive and diverse catchment area, the Danube carries sufficient water for shipping traffic all year round. In Budapest and further downstream it is fairly often frozen in January and February. As a result, ice blockage may cause floods in spring.

## Background information



## Activity 10: Open-air activities

### When you're up to your neck in water ... floods

The children try to find out what the following animals have in common:

**Carp**  
**Kingfisher**  
**Little ringed plover**

Solution: All three animals need floods in order to live. The children are encouraged to describe their own experiences of floods. Together they consider how people can protect themselves against it. The focus is on the following questions:

- Are there places that are secure from floods?
- Does everything have to be protected against floods?
- What can people do so that floods and the effects of floods for them are not so severe?

In the schoolyard, or in front of the school, two full buckets of water are emptied simultaneously onto a natural surface where water can seep away. One bucket is emptied very quickly, the other slowly. Where the bucket was emptied quickly, a small flood can be observed. In contrast, the water from the bucket that was emptied slowly has time to seep away.

The children see that if water can be held back and the outflow slowed down, flooding is less severe. They discuss how, for instance, a woodland in the catchment area can prevent the water running off into the rivers too quickly. Two more buckets are emptied, one in an open area so the water has space to spread out, the other in a narrower place, for example a channel created by two planks. It can be seen that where the water has space to flow, it spreads out and the water level is lower. The same amount of water in a narrower place leads to a higher water level.

The children see that if rivers have space to spread out, floods are less severe. They discuss where rivers can spread out without causing damage.

Learning outcomes: Floods are natural occurrences. Some animals need flooding to survive. Some places are safe from floods. Woodland and meadows are not damaged by floods and do not need to be protected against them. As inundation areas they provide space for rivers to flood. People have it in their own hands to minimise the effects of floods.

## Floods

Floods are part of the natural dynamic of rivers. Many animals and plants need floods. Fish such as carp spawn in flooded water meadows. The kingfisher requires vertical riverbanks for its nesting burrow. The little ringed plover, on the other hand, needs non-vegetated shingle and gravel islands to breed. Its eggs are barely distinguishable from shingle. Vertical riverbanks and shingle islands develop on rivers as a result of floods.

Not all places are in danger of floods. People can select flood-secure places for activities that require safety from floods.

By using land in different ways people can keep flood damage within certain limits. A meadow or a woodland on the river is not damaged by floods. A sunflower field or a potato field is.

Through their actions, people can influence the severity of floods. If there are woods in the catchment area of a river, a great deal of rainwater evaporates and seeps away, unless the soil is already saturated. In contrast, if there is farmland in the catchment area, large amounts of rainfall flow directly into the rivers.

Villages and towns can be protected by embankments; however, in the open landscape, the river should be given space. Loops, bends, gravel, sand banks and bank-side vegetation slow the water down, and then flood water spreads more slowly. If there are meadows or woods adjacent to the river, the flood water can spread out without causing any damage. As a result, the water level in the river drops and the danger to people from floods is reduced.

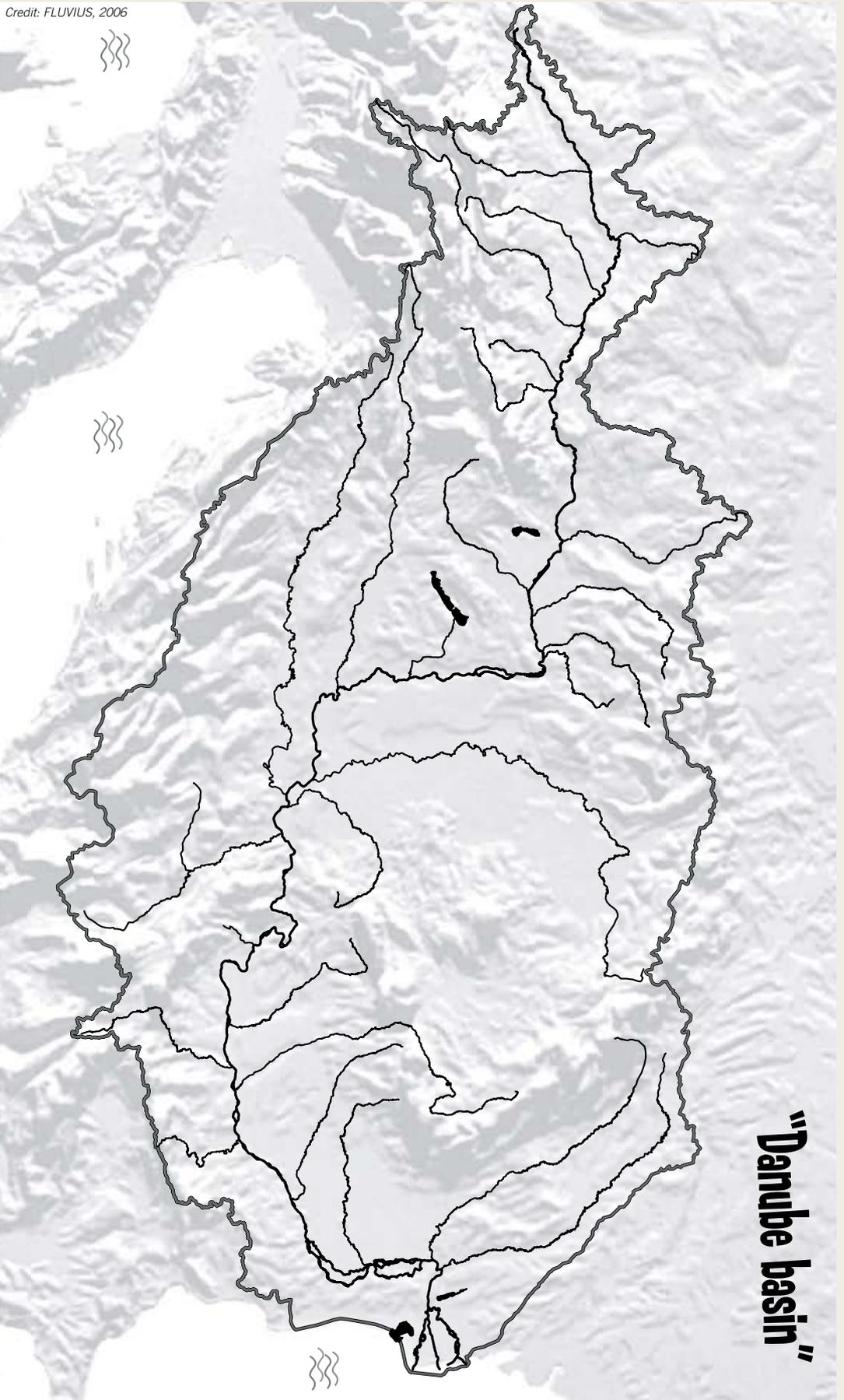


*Distelverein/Gerhard Neuhauser*

**Near the Morava in Slovakia:** the river may spread over the adjacent grass plains when it floods.

### Background information

Credit: FLUVIUS, 2006



**"Danube basin"**

- ✓ Can you find the mountains of the Danube basin? Label the Alps, the arc-shaped Carpathians and in the south the Balkan Mountains and the Dinarian Mountains.
- ✓ Label the Hungarian plain and the Campia Romana.
- ✓ Find the rivers that you remember and label them, e.g. the Inr, Drava, Sava and Tisza, or Iskar, Prut and Siret.

# Danube tales

## The Danube as a link for earlier cultures: the Thracians

The Thracian tribes settled in the south-eastern area of the Balkans (Bulgaria, Romania, north-eastern Greece and north-western Turkey) between the seventh millennium BC and the second century AD.

The area of Walachia and the Bulgarian Danube, a heartland of the “Thracian Empire”, formed a typical transit area. The people living here grew and developed in trade and cultural exchange with the great civilisations of antiquity: the Greeks, the Persians, the Celts, the Romans, the Scythians and the Egyptians. The result was a mastery of handicrafts, a religion with special fertility rites and mythological figures such as Orpheus, the son of the god Apollo, the greatest of Greek singers.

Herodotus called the Thracians “the most numerous people after the Indians”. Linguistically and culturally they formed a unit, but politically they were divided into numerous tribal principalities, small kingdoms and temporary war alliances. The lower Danube formed the northern boundary area of their residences. In the middle Danube area the Thracian tribes bordered on the Pannonians in the Danube basin and the Dalmatians in the Sava-Drava area.

Homer was the first to use the name Thrace. He called this region the “home of fast stallions” and “mother of the sheep”, where bel-

ligerent tribes live, the “spear carriers” and “chariot drivers”.

As far as one knows today, the Thracian tribes had no alphabet of their own, which is one reason why they fell into oblivion for so long.

On the lower Danube at Cernavoda (Romania), it has been found that as early as 4000 BC, people were able to work gold into jewellery, to fire clay and to decorate it with silver graphite and red and yellow ochre. Here the sculpture “The Thinking Woman” was found, which was created five millennia before Christ and indicates that there was a developed settlement here on the lower Danube as early as 2000 years before the Mycenaean (Greek) culture was established.

The world’s oldest gold treasure (4200 to 4500 BC) was discovered in Varna, on the Black Sea, some 100 km from the Danube in present-day Bulgaria. It consists of around 2,000 different objects, mainly jewellery, with a total weight of 5.5 kg. Today the treasure can be admired in the Historical and Art Museum in Varna.

As this brief sketch of early human history shows, people felt the need to portray their conceptions as figures from very early on. After the children have studied this early sculptural art, they can make their own sculptures using modelling clay or could chisel sculptures out of Ytong stones.

### Language confusion on the Danube

The writer Elias Canetti (1905–94) was born in the Bulgarian city of Ruse on the Danube (described in his autobiographical novel “The Rescued Tongue” under its Turkish name of Rustschuk), where he lived until he was 16. The following description (taken from “The Rescued Tongue”) is characteristic of the multi-ethnic mixture that makes up the Danube basin up until the present day.

“Rustschuk on the lower Danube, where I came into the world, was a wonderful city for a child, and if I say that it was in Bulgaria I am giving an inadequate idea of it, because people of the most diverse origins lived there; on one day you could hear seven or eight languages. Apart from many Bulgarians, who often came from the countryside, there were also many Turks, who

lived in their own quarter, and bordering this was ... ours. There were Greeks, Albanians [Albanians], Armenians, Gypsies [Roma and Sinti]. From the other bank came Romanians ... There were also, occasionally ‘Russians’.”

Suggestion: What are the words for “child” or “water” or “school” in the Danube languages? With the aid of dictionaries, draw up a vocabulary list in some neighbouring languages with words that are important for the children and are related to the Danube, and stick them on the Danube poster. Try out the pronunciation together or practise the foreign alphabets.

**A vocabulary list for the words “child”, “water” and “river” can be found at “Additional information for teachers”.**