

UNIT ONE

Weather and Climate

I. Background Information

1. Climate System

Weather and climate have a profound influence on life on Earth. The weather is the fluctuating state of the atmosphere around us. The climate is the “average weather” (more rigorously, it is a statistical description of weather, including variability and extremes as well as averages); climate involves the other components of the climate system in addition to the atmosphere.

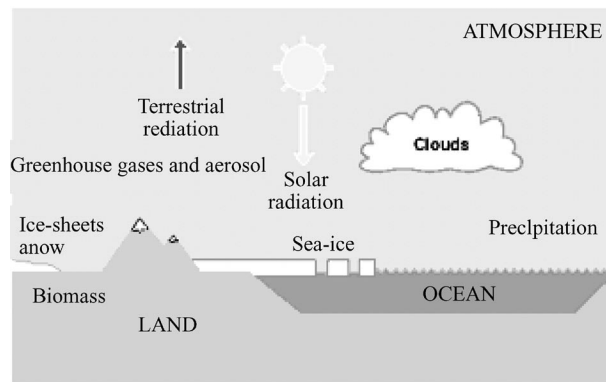
They are part of the daily experience of human beings and are essential for health, food production and well-being. Many consider the prospect of human-induced climate change as a matter of concern.

The Intergovernmental Panel on Climate Change (IPCC) Second Assessment Report (IPCC, 1996) (hereafter SAR) presented scientific evidence that human activities may already be influencing the climate. If one wishes to understand, detect and eventually predict the human influence on climate, one needs to understand the system that determines the climate of the Earth and the processes that lead to climate change.

2. Components of the Climate System

The atmosphere: Its circulation, the heat (terrestrial radiation) and light (solar radiation) which pass through it, and the processes which go on in it, such as the formation of clouds and the atmospheric chemical reactions that determine the concentrations of some of its important constituents, such as methane and ozone.

The ocean: There is a constant exchange of heat, momentum and water between ocean and the atmosphere. The ocean acts as a heat sink to delay climate change. In addition, ocean currents transport large amounts of heat and water around the world.



The land surface: Including its vegetation and seasonal snow cover, has an important influence on the flow of air over it, the absorption of solar energy, and the water cycle.

The cryosphere: Those parts of the world whose surface is affected by ice, principally sea-ice in the Arctic and Southern Oceans and the land-based ice-sheets of Greenland and Antarctica.

The biosphere: Life on land (the terrestrial biosphere) and in the ocean (the marine biosphere) plays a major role in the carbon cycle and hence in determining the atmospheric concentration of carbon dioxide.

II. Language Points

mostly *adv.*

1) *for the greatest part; mainly*

e.g. The earth here is mostly clay.

Most of the Americans use their cars mostly for their job.

2) *generally; usually*

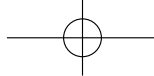
e.g. The audience consisted mostly of women.

The weather has been mostly warm.

delay

1) *vt. to postpone until a later time*

e.g. The letter was delayed three days by the train accident.



We decided to delay our holiday until next month.

He delayed telling her the news, waiting for the right moment.

2) *vi. to act or move slowly; put off an action or a decision*

e.g. It's getting late; don't delay.

Don't delay; call us today.

3) *n. the act of delaying; postponement*

e.g. After a delay of one hour, we continued our journey.

Commuters will face long delays on the roads today.

divert

1) *vt. to turn aside from a course or direction*

e.g. A ditch diverted water from the stream into the fields.

The government is planning to divert the river to supply water to the town.

A loud noise from the street diverted my attention.

2) *vi. to change the direction or the use of something*

e.g. The trucks were forced to divert to another road.

He was trained as an actor, but diverted to diplomacy.

Traffic was ordered to divert to another road because of the repair of the main road.

compile vt.

to gather into a single book

e.g. We are compiling an English dictionary for students.

The album was compiled from live recordings from last year's tour.

We are trying to compile a list of suitable people for the job.

mass

1) *n.*

(1) *a unified body of matter with no specific shape*

e.g. The sky was full of dark masses of clouds.

The pages were covered with a mass of figures.

Don't give me any more. I've eaten masses.

(2) *a grouping of individual parts or elements that compose a unified body*

e.g. Government attempts to suppress dissatisfaction among the masses.

TV programs bring science to the masses.

2) *adj. of, relating to, characteristic of, directed at, or attended by a large number of people*

e.g. mass education

mass communication

The latest product is aimed at the mass market.

statistic *n.*

a collection of information shown in numbers

e.g. According to official statistics the disease killed over 500 people.

Statistics show that far more people are able to ride a bicycle than can drive a car.

An important statistic is that 94% of crime relates to property.

statistical *adj.*

relating to the science of using numbers to present facts

e.g. statistical methods in data analysis

statistical tables and graphs

statistically *adv.*

e.g. statistical analysis/ methods/data

The difference between the two samples wasn't statistically significant.

Cure rates didn't differ statistically between the two groups.

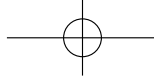
statistics *n.*

the science of using numbers to represent facts and describe situations

e.g. He got a master's degree in economics and statistics.

datum *n.*

(pl. data) a fact used to draw a conclusion or make a decision



e.g. These data show that most cancers are detected as a result of clinical follow-up.

The analysis was based on data collected in the field.

Note: *Although it is plural in its Latin form, data is now coming to be used as an uncountable noun.*

e.g. This data has been collected from various sources.

The data we have collected isn't enough to be convincing.

specialize *vi.*

to pursue a special activity, occupation, or field of study

e.g. That doctor specializes in children's illnesses.

After she qualified as a lawyer, she decided to specialize in contract law.

specialty (*BrE*), **specialty** (*AmE*) *n.*

1) [*C*] *a special field of work or study*

e.g. Her specialty is Business English.

His specialty is biology; mine is physiology.

2) *specialty* (*BrE*) *a particular fine or excellent product*

e.g. I can recommend the vegetable pie—it's the specialty of the restaurant.

The menu changes daily, though the specialty is seafood.

Wood carving is a specialty of this village.

crew *n.*

1) *all people working on a ship, plane, etc. It can be followed by a singular or plural verb*

e.g. The jet crashed soon after takeoff, killing all the passengers and crew.

The blast threat keeps the crews from the Iran train.

The crew is/are waiting for instructions from the captain.

2) (*singular*) *a group of people working together; a gang*

e.g. We're a happy crew in our office.

The people she invited were a pretty motley crew.

vital *adj.*

very necessary

e.g. Your support is vital for/to the success of my plan.

It's vital that we (should) act at once.

vitality *adv.*

in an extremely important way

e.g. Would it matter vitally if he failed?

Education is vitally important for the country's future.

vitality *n.*

[U] spirit; cheerfulness; force

e.g. She is bursting with vitality and new ideas.

The music has a wonderful freshness and vitality

visible *adj.*

that can be seen

e.g. The house is clearly visible from the beach.

Most stars aren't visible to the naked eyes.

She made a visible effort to control her anger.

visibility *n.*

[U] how far or well you can see

e.g. Visibility was down to about 100 meters in the fog.

The car has excellent all-round visibility.

The advertisements were to increase the company's visibility in the marketplace.

mercy *n.*

1) *a kind or forgiving attitude towards somebody*

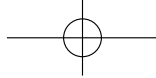
e.g. He begged for mercy.

They showed no mercy to their hostages.

2) *an event or a situation to be grateful, usually because it stops something unpleasant*

e.g. It's a mercy that the explosion happened after the theatre.

It's a mercy that she wasn't seriously hurt.

**at the mercy of**

in a situation controlled by somebody or something with the power to harm you

e.g. I'm not going to put myself at the mercy of the bank.

We were at the mercy of the weather.

avoid vt.

to choose not to do something

e.g. I crossed the street to avoid meeting him, but he saw me and ran towards me.

To avoid confusion, the teams wore different colors.

To avoid the city center, we may turn right here and take the belt highway.

perishable adj.

likely to decay or go bad quickly

e.g. Perishable food decays after a short time, especially if it isn't kept cold.

Fruits are perishable in transit.

precaution n.

something done to protect people or things against possible harm

e.g. Residents around the coast were evacuated as a precaution.

Doctors recommend taking precautions to protect your skin from the sun.

You must take all reasonable precautions to protect yourself and your family.

precautionary adj.

done or used for protection against possible harm or trouble

e.g. He was taken to hospital for a precautionary examination.

She was kept in hospital overnight as a precautionary measure.

stage n.

a point in the course of an action or series of events

e.g. This technology is still in its early stage.

The children are at different stages of development.
People tend to work hard at this stage of life.

rely on sb./sth. (to do sth.)

1) *to trust somebody/something to do for you*

e.g. My brother can help. At least we can rely on him.

You should rely on your own judgment.

You can rely on me to keep this secret.

2) *to need or be dependent on somebody/something*

e.g. These days we rely heavily on computers to organize our work.

The industry relies on the price of raw materials remaining low.

The museum relies on voluntary donations to keep open.

reliable *adj.*

can be trusted; dependable

e.g. It's not reliable to judge a man only by his looks.

Alice can look after this child. She is very reliable.

I heard this from a very reliable source.

draw on

to make use of a supply

e.g. I'll have to draw on my savings to pay for the repairs.

A writer has to draw on his imagination and experience.

To solve the problem, we should draw on all the evidence we can get.

prevent *v.*

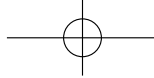
to keep from happening

e.g. Regular cleaning may help prevent infection.

If necessary, add a little water to prevent sticking.

prevent ... from

to keep (something) from (happening); stop (somebody) from (doing something)



- e.g.** What prevented you from joining us last night?
He is prevented by law from holding a license.
We must prevent the disease from spreading.

protect v.

to keep safe by guarding or covering

- e.g.** His head was protected by a helmet.

protect ... from/ against ...

- e.g.** He raised his arm to protect his face from the blow.
You should protect your children from the harmful effect of television.
This medicine will protect you against a return of the illness.

be suitable for

to be right for particular purpose

- e.g.** This film isn't suitable for young children.
Is he suitable for the important position?
We need more programs that are suitable for children.

ride out

to overcome a difficult or dangerous period or situation without any serious problem

- e.g.** The ship rode out the storm without any permanent damage.
We hope to ride out this recession better than last time.
We shall certainly be able to ride out every difficulty.

hold up

1) *to delay or block the movement or progress of sb./sth.*

- e.g.** An accident is holding up traffic.
My application was held up by the postal strike.
Sorry I'm late, but my train was held up.

2) *to remain strong and working effectively*

- e.g.** She's holding up well under the pressure.
Her legs were almost too shaky to hold her up.

take measures/precautions to do sth.

to take an official action to achieve a particular aim

e.g. We must take preventive measures to reduce pollution in this area.

Doctors recommended taking precautions to protect your skin from the sun.

Stronger measures will have to be taken to bring down unemployment.

make the best of sth.

to accept the bad or difficult situation and do as well as you can

e.g. The girl didn't like to wash dishes, but she made the best of it.

One must learn to make the best of a bad job.

Compare:

make the most of sth.

to gain as much advantage, enjoyment, etc. as you can from somebody/something

e.g. It's my first trip abroad so I'm going to make the most of it.

We must make the most of the fine weather.

George studied hard. He wanted to make the most of his chance to learn.

III. Structure and Grammar

句型: **prep. + which/whom**

1) *In formal styles we often put a preposition before the relative pronouns **which** (for things) and **whom** (for people).*

e.g. The rate **at which** a material heats up depends on its chemical composition.

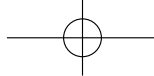
In the novel by Peters, **on which** the film is based, the main character is a teenager.

Fortunately we had a map, **without which** we would have got lost.

Mr Carter, **to whom** I spoke on the phone last night, is very interested in our plan.

I have at last met Linda's tenant, **about whom** I have heard so much.

Her many friends, **among whom** I like to be considered, gave her encouragement.



Notice that after a preposition you can't use **who** instead of **whom** and you can't use **that** or **zero relative pronoun**.

e.g. Who is the man **with whom** you just shook hands?

The two things **about which** Marx wasn't sure were the grammar and some of the idioms.

*In informal English we usually put the preposition later in the relative clause rather than at the beginning. When we do this, we normally use **who** (not **whom**) for people.*

e.g. This is Mr Carter, **who** I was telling you **about**.

The playground wasn't used by those children **who** it was built **for**.

Yesterday we visited the City Museum, which I'd never been to before.

His house, which he paid \$10,000 for ten years ago, is now worth \$50,000.

2) *If the verb in a relative clause is a phrasal verb ending with a preposition, you cannot move the preposition to the beginning of the clause. Combinations such as "come across, look after, look for, look up to, turn in, pay attention to, take care of, depend on, listen to, put up with" should be treated as a unit, i.e., the preposition/a adverb shouldn't be separated from the verb.*

e.g. Everyone I came across seemed to know about it.

This machine, which I have looked after for twenty years, is still working perfectly.

Your inefficiency, which we have put up with far too long, is beginning to annoy our customers.

She is one of the few people (who/that) I look up to.

The babies (whom) the nurses are looking after are very healthy.

Is this the book (which/that) she was looking for?

Where is the wallet (which/that) you turned in yesterday?

These are the words (which/that) you should pay attention to.

Exercises

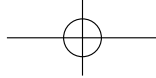
Join the sentence halves using “which” or “whom” after an appropriate preposition.

I would never have finished the work	it was primarily written
we know nothing	it was discovered
she was born	he learned how to play chess
Dennis scored three goals in the final	they got a good view

1. They climbed up to the top of a large rock,
2. I would like to thank my teacher,
3. She has now moved back to the house on Long Island,
4. The star is to be named after Patrick Jenks,
5. This is the ball,
6. He is now able to beat his father,
7. The book is enjoyed by adults as well as children,
8. There are still many things in our solar system,

Key

1. They climbed up to the top of a large rock, from which they got a good view.
2. I would like to thank my teacher, without whom I would never have finished the work.
3. She has now moved back to the house on Long Island in which she was born.
4. The star is to be named after Patrick Jenks, by whom it was discovered.
5. This is the ball with which Dennis scored three goals in the final.
6. He is now able to beat his father, from whom he learned how to play chess.
7. The book is enjoyed by adults as well as children, for whom it was primarily written.
8. There are still many things in our solar system about which we know nothing.



IV. Tapescripts

A. You will hear five short conversations twice. For each question, choose the best from the choices marked A, B or C.

1. **F:** It's very cold and damp today.
M: How are the winters here generally?
F: They're usually rather mild.
2. **F:** Do you like the weather in this country?
M: Not really, but I'm used to it now.
F: Is the weather different in your country?
M: Yes. It never gets as cold there as it does here.
3. **F:** Hi, Bob! Lovely day, isn't it?
M: Yes, it's sunny and not windy.
F: It's a pleasant change after all the rains we've had.
4. **M:** And what's the weather like in Beijing?
F: Mm. It's awful. It's cold and windy. We have to stay at the hotel all day.
Is it windy in Tokyo?
M: No. We have beautiful sunshine today and it's warm.
5. **F:** We're having a picnic tomorrow. Why don't you come with us?
M: I'd like to, but I wonder whether it's going to rain tomorrow. What does the weather forecast say?
F: The weatherman says it may be foggy in the morning and then it will clear up with a height of about 18°C, but it is supposed to rain at night.

B. You will hear a passage. It will be read twice. Listen carefully and choose the right answer to complete each sentence.

Here is the weather forecast for the next 24 hours. In the North of Scotland, there will be snow with strong winds. It will be very cold. In England and Wales, the weather will be much better. There will be some fog in the morning. But the fog will clear. And in the south, it will be a fine day with some sunshine. It will be quite warm. In the west, it will be cold in the morning, but it will get warmer, and perhaps there will be some sunshine

later. In the east, the day will start fine, but then the weather will change. In the afternoon, there will be some rain. It will get cooler. And here in London, the weather will be fine and warm with some sunshine. And that's the end of the weather forecast for today.

C. You will hear five sentences which will be read three times. Listen, repeat and write down what you hear.

1. What's the weather like in your country?
2. What's the weather forecast for today?
3. There will be snow tomorrow morning.
4. We have very good weather in Paris.
5. It was rainy and cold and then it cleared up and got warmer.

D. Listen to the dialogue twice and supply the missing words.

F: Where do you come from?

M: I come from England.

F: What's the climate like in your country?

M: It's generally rather mild.

F: What's the weather like in spring?

M: It's often windy in March, and always warm in April and May, but it rains sometimes.

F: What's it like in summer?

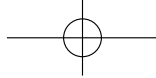
M: It's hot in June, July and August.

F: Is it cold or warm in autumn?

M: It's always warm in September and October, and it's often cold in November. It rains sometimes.

F: Is it very cold in winter?

M: It's often cold in December, January and February. It snows sometimes.

**V. Key to Listening**

- A. 1. A 2. C 3. A 4. C 5. C
 B. 1. C 2. B 3. B 4. C 5. A
- C. 1. What's the weather like in your country?
 2. What's the weather forecast for today?
 3. There will be snow tomorrow morning.
 4. We have very good weather in Paris.
 5. It was rainy and cold and then it cleared up and got warmer.
- D. 1. climate 2. mild 3. What's 4. windy 5. warm
 6. rains 7. hot 8. September and October 9. cold
 10. January and February

VI. Key to Reading

- I. 1. B 2. A 3. B 4. C 5. B
 II. 1. D 2. F 3. B 4. C 5. E
- III. 1. mostly 2. delayed 3. prevent from 4. divert
 5. mass 6. statistically 7. data 8. specialize
 9. relies on 10. at the mercy of
- IV. 1. d 2. e 3. h 4. c 5. a
 6. b 7. j 8. i 9. g 10. f
- V. 1. telling 2. to divert 3. compiling 4. masses
 5. statistics 6. specialty 7. precautionary 8. reliable
 9. vitally 10. visibility
- VI. 1. 天气和气候对地球上的生命有着深远的影响。天气是指我们周围变化无常的大气情况，气候是指“天气的平均值”。
 2. 海洋起着散热器的作用，能延缓气候变化。
 3. 所有对大气和陆地的观察资料以及从海洋表面下收集的数据都显示，地球有变暖的趋势。
 4. 人类制造和排放温室气体等活动，很大程度上造成了全球气温升高。
 5. 重要的是了解天气和气候将在哪些方面迅速发生变化。

- | | | | | |
|-------------------|------|------|------|-------|
| VII. 1. B | 2. C | 3. A | 4. C | 5. A |
| 6. B | 7. B | 8. C | 9. C | 10. C |
| VIII. 1. D | 2. A | 3. D | 4. B | 5. C |

VII. Key to Writing

1.

Weathermen can provide information about the past and the future.

Crews are interested in landing conditions at their destination, where the weather will be suitable for landing.

The weather services help ships by warning of the coming of strong winds and by predicting their movement.

Lorry operators plan their journeys on the basis of special weather forecast.

Farmers have interest in the weather because it affects their work and the products of their work at all stages.

3.

Dec. 20th, 2006

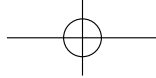
Fang Fang,

I called on you this afternoon, but you were out. So I left a message for you.

Xiao Ding has come to Beijing on business. He is staying in Beijing Hotel now. It has been a long time since we met last time.

We thought it a good idea to have a get-together. We decided to visit the Great Wall. Let's meet at the hall of the hotel at 8:30 on Saturday morning. Please do come.

Lin Shen



Chinese Translation of the Text

运用气象信息

我们都用这种或那种气象信息，多半借以做出决定。这可能是如上学带雨衣或推迟举行足球赛之类的简单决定，也可能是如让客机转飞无雾机场这样较重要的决定。每天都要做出无数这样的决定。气象员可以提供过去和未来的气象信息以帮助决策者。对于过去的气象信息，气象员编制了大量的气象统计资料以用来回答有关过去的气象信息的询问；也为未来的天气预报做准备。

下面只是一些需要提供特殊气象服务活动的例子。

现在大多数飞机飞得很高，远在云层之上，不受天气影响。但是机务人员依然对目的地的着陆条件，如云底和能见度等很感兴趣。如果预计气候恶劣，天气预报人员必须能够在该飞机航程内提出另一个天气适合着陆的机场。

船只无论大小，其命运都受风浪摆布。大船通常能安然度过风暴，但较小的船只可能必须采取预防措施避免受到损失和破坏。气象台发出大风警报，预报大风动向，从而提供帮助。

许多长途卡车司机根据特殊气象预报来计划他们的行程；像运输易腐烂食品所需的冷却温度之类的事情就可根据气温预报来确定。

结冰的道岔、铁轨上出现的冰冻、结冰的带电导体以及雾等都会使火车停驶，所以气象人员必须及时发出警报以便采取预防措施。

农民一直特别关心气候情况，因为气候在所有生产阶段都影响他们劳动及收成。他们想要适时适量的光照。但风调雨顺的好天气不多见。农民只能充分利用其所遇到的天气，所以他必须依靠气象预报员来安排他的农事。