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# 气象专业英语文选

上 册

南京大学外文系  
公共英语教研室编



商务印书馆

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1982年·北京

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## 前 言

在实现科学技术现代化的伟大斗争中，广大气象工作者迫切需要掌握外语。为了帮助在校学生和有关同志提高阅读气象英语书刊的能力，我们编选了这套文选供具有一定英语基础的气象系学生和其他气象工作人员阅读。

全书分上下两册，每册各有二十篇。编选时首先考虑文字的深浅，也适当照顾气象学科的内容，尽可能做到由浅入深，循序渐进。每篇除正文外，还有词汇、词组和注释，便于读者自学，书末附有中文译文，供读者参考。这里要说明的是：读者不宜完全依赖译文进行阅读，更不宜逐句进行英汉对比或练习翻译，而是要通过阅读较大量的语言材料，加深感性知识，扩大词汇量，特别要注意观察语法在实际语言中的运用情况，逐步提高独立阅读专业参考书的能力，这样才能收到预期的效果。

本书的材料多半选自新近出版的美英气象教科书、参考书、杂志、期刊等，有的略作更改。选材范围较广，内容尽可能包括气象学科中各专业的一般知识，这样，词汇范围较广，语法现象和文体类别也较丰富多样。

本书由赵启秀、金筑云编写，定稿后由我系张景桂先生审阅全书，气象系盛承禹先生校订译稿。在本书编选过程中，我校气象系有关教师和七四级学生提出了许多宝贵意见，协

助选择材料，绘制插图，校订中文译稿，做了不少工作，在此谨向他们表示衷心的感谢！

由于我们的专业知识和语言水平的限制，加上时间仓促，本书一定存在不少缺点和错误，译文定有不够完善之处，我们诚挚地希望读者随时提出宝贵意见，使本书得以不断修正和充实，从而能更好地为大家服务。

编者 1978年

### 本书所用语法略语和符号

1. <i>a.</i>	adjective	形容词
2. <i>ad.</i>	adverb	副词
3. <i>conj.</i>	conjunction	连接词
4. <i>n.</i>	noun	名词
5. <i>num.</i>	numeral	数词
6. <i>pl.</i>	plural	复数
7. <i>prep.</i>	preposition	介词，前置词
8. <i>pro.</i>	pronoun	代词
9. <i>sing.</i>	singular	单数
10. <i>v.i.</i>	verb intransitive	不及物动词
11. <i>v.t.</i>	verb transitive	及物动词
12. <i>&amp;</i>	and	和

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## 1. TEMPERATURE

Since temperature may increase or decrease several degrees in the lowest few feet, standard temperature observations are made in most countries in well-ventilated thermometer shelters about 1.5m above the ground. The shelter is needed to protect the instruments against heating by the sun.① Shelters should not be placed next to buildings or in low spots where local winds drain up or down a slope.②

Temperature is usually measured with a thermometer having a bulb filled with mercury just like a clinical thermometer.③ The mercury expands and contracts with warming and cooling,④ and the length of the mercury column indicates the temperature on a graduated scale. Another method is to use a strip of two metals that expand and contract at different rates. During heating and cooling, the shape of the strip changes as one metal contracts or expands more than the other one, and the change is recorded by a pen moving on a chart mounted on a revolving drum.⑤ Such a chart gives a record of how temperature varies with time.⑥ The instrument is called a thermograph

Averages, or means, of temperature and other variables occur often in climatic records. Such averages are usually taken over a period of time, such as an hour, a day, a month, or a year. A good daily average tem-



perature is obtained when a thermometer is read every hour; the twenty-four hourly values are then added and the sum is divided by 24. Quite often, only four values at 6-hr intervals are available, or highest and lowest(maximum and minimum) temperatures for the day alone.⑦The monthly average is determined by adding the daily average temperatures and dividing by the number of days.

A mean monthly temperature can be computed when the average temperature for an individual month, such as January, has been recorded for at least 30 years in middle latitudes. The average January temperatures are added over the length of record, and the sum is divided by the number of January's on the record. The procedure is the same for any desired time interval of averaging.

## 词 汇

temperature ['temprɪtʃə] n. 温度  
increase [in'kri:ts] v.i. & v.t. 增

加

decrease [di'kri:ts] v.i. & v.t. 减  
少

degree [di'grɪ] n. 度, 程度

foot [fɪt] n. 英寸(sing. foot[fʊt])

standard ['stændəd] n. 标准, a. 标  
准的

observation [ˌɒbzə'veɪʃən] n. 观测

ventilate['ventileit] v.t. 通风, 装  
置通风设备

well-ventilated ['wel'ventilei-  
tid] a. 通风良好的

thermometer [θə'momɪtə] n. 温度  
表

shelter ['ʃeltə] n. 百叶箱; 掩蔽物

thermometer shelter [θə-  
'momɪtə 'ʃeltə] n. 百叶箱(温度  
表的)

protect [prə'tekt] v.t. 保护, 防止

heat [hi:t] v.i. & v.t. 加热, 发  
热

place [pleɪs] v.t. 放

spot [spɒt] n. 场所, 地点

local ['ləukəl] a. 地方的

drain [dreɪn] v.t. & v.i. 排出

slope [sleɪp] n. 斜坡

measure ['meʒə] *v.t.* 量, 测量  
 bulb [bʌlb] *n.* 球  
 mercury ['mɜ:kjuri] *n.* 水银, 汞  
 clinical ['klinikl] *a.* 诊所的  
     clinical thermometer ['klinikl  
     θə'momita] *n.* 体温表  
 expand [iks'pænd] *v.i.* 膨胀  
 contract [kən'trækt] *v.i.* 收缩  
 cool [ku:l] *v.t. & v.i.* 冷却  
 length [leŋθ] *n.* 长度  
 column ['kɒləm] *n.* 柱, 圆柱, 栏  
 indicate ['indikait] *v.t.* 指示, 表示  
 graduate ['grædjueit] *v.t. & v.i.*  
     刻度数, 分等级, 毕业  
 scale [skeil] *n.* 标尺, 尺度; 规模  
 strip [stri:p] *n.* 条, 细长片  
 mount [maunt] *v.t.* 固定, 安装;  
     登山  
 rate [reit] *n.* 率, 比例; 速度  
 record [ri'kɒld] *v.t.* 记录; 表示  
 chart [tʃa:t] *n.* 图表  
 revolving [ri'vɒliŋ] *a.* 旋转的  
 drum [drʌm] *n.* 圆筒; 鼓  
 record ['rekɒld] *n.* 记录; 报告  
 vary ['veəri] *v.t.* 改变, 变化  
 thermograph ['θeɪmagra:f] *n.* 温  
     度计  
 average ['ævərɪdʒ] *n.* 平均; 平均

数, *v.t.* 平均; *a.* 平均的; 普通的  
 mean [mi:n] *n.* 平均数  
 variable ['vɛəriəbl] *n.* 变量; 变数  
 occur [ə'kɜ:] *v.i.* 发生  
 climatic [klaɪ'mætɪk] *a.* 气候的  
 period ['piəriəd] *n.* 时期  
 obtain [əb'tein] *v.t.* 得到, 获得  
 value ['vælju:] *n.* 值  
 add [æd] *v.i.* 加, 添  
 sum [sʌm] *n.* 总数, 总和  
 interval ['intəvəl] *n.* 间隔  
 available [ə'veiləbl] *a.* 有用的; 有  
     效的  
 maximum ['mæksiməm] *n.* 最大,  
     极大量(*pl. maxima* ['mæksaɪmə])  
 minimum ['miniməm] *n.* 最小(*pl.*  
     *minima* ['minime])  
 determine [di'tɜ:min] *v.t. & v.i.*  
     决定, 确定, 决心  
 compute [kəm'pjut] *v.t. & v.i.*  
     计算  
 individual [ˌindi'vidjuəl] *a.* 个别  
     的, 单独的  
 latitude ['lætɪtju:d] *n.* 纬, 纬线  
 procedure [prə'si:dʒə] *n.* 步骤; 程  
     序, 顺序  
 desire [di'zaɪə] *v.t.* 想要

## 词 组

(to) protect...from(against) 保  
     护...不受; 使...免于  
 next to 靠近; 次于  
 (to be) filled with 装满, 充满

a strip of 一条  
 a period of time 一段时间; 期间  
 such as 例如  
 at least 至少

## 注 释

- ① The shelter is needed to protect the instruments against heating by the sun.

译文：必须用百叶箱才能保护仪器不受太阳曝晒。

is needed是被动语态。to protect...sun是不定式短语，作状语。heating是动名词，作against的宾语，by the sun修饰heating。

- ② Shelters should not be placed next to buildings or in low spots where local winds drain up or down a slope.

译文：百叶箱不应放在建筑物旁边，也不应放在地方性风沿斜坡吹上吹下的低洼地方。

这里的should not be placed为被动语态，should为情态动词。where...slope为定语从句，修饰spots。

- ③ ...a thermometer having a bulb filled with mercury just like a clinical thermometer.

这里的having... 是现在分词短语，作定语，修饰 thermometer，它相当于 which has a bulb...。过去分词短语filled...作定语，修饰bulb。like...是介词短语，修饰having...这一分词短语。

- ④ ...with warming and cooling...

这儿with可解释“随...”。介词的词义要根据上下文，翻译时要灵活，此处可不译出。warming 和 cooling为动名词，作with的宾语。

- ⑤ During heating and cooling, the shape of the strip changes as one metal contracts or expands more than the other one, and the change is recorded by a pen moving on a chart mounted on a revolving drum.

译文：在变热或变冷的过程中，由于一片金属的膨胀或收缩比另一片多，整个金属条的形状就改变了，这种变化可以由一支笔把它记录在装在滚筒上的图表上。

这里one metal中的一是数词，指一种；other one中的一是不定代词，指metal。as 作“因为，由于”解。moving...是现在分词短语，修饰pen。过去分词短语mounted... 修饰chart。此处可注意现在分词和过去分词用法和意义上的异同。现在分词表示主动的意思，及物动词的过去分词表示被动的意思，现在分词表示正在进行的动作，过去分词表示已经完成的动作。

- ⑥ Such a chart gives a record of how temperature varies with time.

译文：这种图表给出温度怎样随时间而变化的记录。

这句中介词of的宾语是how...time，它叫介词宾语从句。

- ⑦ ...or highest and lowest(maximum and minimum)temperatures for the day alone.

or后的一个分句中省略了谓语are available。

## 2. PRESSURE

Pressure is the force exerted on a surface, usually expressed as the force exerted on a surface of standard or "unit" area. In modern meteorological practice an area of 1 sq. cm. is used as unit surface; pressure then is expressed conveniently in millibars. Weather maps published by weather services and in newspapers usually express pressure in millibars, or in inches or millimeters of the height of a mercury column.

In 1643 the Italian physicist Torricelli made an experiment which demonstrated the barometric principle. He found that the force exerted by the atmosphere at sea level will support a column of mercury almost 30 in. high in a vacuum tube. ① The vacuum assures that there is no pressure on the top of the mercury column; thus, in effect, the atmosphere is weighed in the experiment.

This method of measuring pressure is so simple that it is used to the present day. ② Mercury is chosen for convenience. By international agreement, one standard atmosphere is defined as the pressure to support a mercury column 760 millimeters, or 29.92 inches, high. This pressure is 1,013.25 millibars. For most purposes, it is entirely permissible to make a 1 per cent approximation and assume that 1 atm. has a pressure of 1,000 millibars. ③ The corresponding weight of the atmosphere

is about 1 kg per sq. cm. Air is anything but light.

The mercury barometer is the standard instrument for measuring pressure. As in the case of temperature, an instrument for continuously recording pressure is also available, the aneroid (without fluid) barometer. In a flat metal container, usually round, pressure is reduced to a low value; an inside or outside spring keeps the container from collapsing. The shape of the container changes as air pressure increases or decreases; this change can be recorded by means of a pen arm on a revolving drum. The instrument is therefore called a barograph.

## 词 汇

pressure ['preʃə] *n.* 压力

force [fɔ:ɪs] *n.* 力; 势力

exert ['ig'zɜ:t] *v.t.* 施加(压力); 尽力

surface ['sɜ:fɪs] *n.* 面, 表面; 地面

unit ['ju:nɪt] *n.* 单位

area ['eəriə] *n.* 面积

meteorological [ˌmi:tjə'rɒlədʒɪkəl]

*a.* 气象学的

sq. = square [ˈskwɛə] *n.* 平方

cm. = centimeter [ˈsentɪmɪtə] *n.* 厘米

conveniently [kən'vi:niəntli] *ad.* 方便地, 便利地

millibar [ˈmɪlɪbə:] *n.* 毫巴

weather ['weðə] *n.* 天气

publish ['pʌblɪʃ] *v.t.* 公布, 发表; 出版

weather service ['weðə 'sɜ:vɪs] *n.* 天气服务

height [haɪt] *n.* 高度

Italian [i'tæljən] *a.* 意大利的, *n.* 意大利人

physicist ['fɪzɪsɪst] *n.* 物理学家

Torricelli [tɒ'rɪ'ʃeli] 托里拆利(人名)

demonstrate ['dɛmənstreɪt] *v.t.* 证明; 表示

barometric [ˌbærə'metrik] *a.* 气压计的

principle ['prɪnsəpl] *n.* 原理, 原则

sea level ['si:l 'levl] *n.* 海平面

vacuum [ˈvækjuəm] *n.* 真空

tube [tju:b] *n.* 管

assure [ə'ʃʊə] *v.t.* 保证, 保险

weigh [wei] *v.t. & v.i.* 称(重量); 量

choose [tʃu:z] *v.t. & v.i.* 选择; 决定

(chose [tʃəʊz], chosen ['tʃəʊzn])

convenience [kən'vi:njəns] *n.* 方便

agreement [ə'grɪmənt] *n.* 协定,

一致

define [di'fain] *v.t.* 下定义, 规定  
 entirely [in'taiəli] *ad.* 完全, 全然, 一概  
 permissible [pə'misəbl] *a.* 可允许的  
 approximation [ə,prɒksi'meɪʃən] *n.* 近似值  
 assume [ə'sju:m] *v.t.* 假定; 呈(某种形式)  
 corresponding [ˌkɒrɪs'pɒndɪŋ] *a.* 相应的, 相当的  
 barometer [bə'rɒmɪtə] *n.* 气压表  
 continuously [kən'tɪnjuəsli] *ad.* 连

续地, 不间断地

aneroid ['ænerɔɪd] *a.* 无液的  
 aneroid barometer ['ænerɔɪd bə'rɒmɪtə] *n.* 空盒气压表  
 fluid ['fluɪd] *n.* 液体, 流体  
 flat [flæt] *a.* 平的  
 container [kən'teɪnə] *n.* 容器  
 reduce [ri'dju:s] *v.t.* 减少, 缩小  
 inside ['ɪn'saɪd] *a.* 内的, 里面的  
 spring [sprɪŋ] *n.* 弹簧; 春(季); 泉  
 collapse [kə'læps] *v.i.* 倒塌, 垮下来  
 arm [ɑ:m] *n.* 臂  
 barograph ['bærəgrɑ:f] *n.* 气压计

词 组

in effect 实际上; 总之  
 so...that 如此...以致  
 (to be) defined as (被)定义为,  
 (被)限定为  
 anything but 决不是; 除...外什么

都  
 as in the case of 象在...情况下  
 (to) keep...from (+ing) 阻止...,  
 使...不(...)  
 by means of 用, 以

注 释

- ① He found that the force exerted by the atmosphere at sea level will support a column of mercury almost 30 in. high in a vacuum tube.  
 译文: 他发现, 大气施加在海平面上的力能支持一个真空管中的水银柱高达30英寸。  
 这句中that...tube 为宾语从句。过去分词短语exerted...level 修饰宾语从句中的主语the force, 作定语。
- ② This method of measuring pressure is so simple that it is used to the present day.  
 译文: 这种测量压力的方法如此简单, 以致至今仍在应用。  
 这句中由so...that 引入表示结果的状语从句, 意为“如此...以致于...”。
- ③ For most purposes, it is entirely permissible to make a 1 per cent approximation and assume that 1 atm. has a pressure of 1,000 mil-libars.

译文：在大多数情况下，完全可以取误差在百分之一左右的近似值，即可假定一个大气压的压力是1,000毫巴。

这句中注意 it 是先行代词，作形式主语，它没有具体意义，真正的主语在表语后面，即不定式，这种结构使句子显得灵活一些。两个不定式短语作主语，to make... 和 (to) assume...。第二个不定式又带了一个宾语从句 that ...millibars.

### 3. THE ATMOSPHERE

The air is a mechanical mixture of a number of different gases. A sample of dry and pure air contains about 78 per cent (by volume) nitrogen, 21 per cent oxygen, and almost 1 per cent argon. In addition it contains about 0.03 per cent carbon dioxide.

Nitrogen, oxygen, argon, and carbon dioxide constitute about 99.99 per cent of dry and pure air. The remaining 0.01 per cent represents traces of several other gases. These gases are present in such minute amounts that they are of no practical importance for the study of the weather phenomena.①

The amount of carbon dioxide is not quite constant. The vegetable world continuously consumes carbon dioxide. On the other hand, carbon dioxide is produced by the animal world, through burning of fuels, volcanic action, and various processes of decay in the soil. Although these processes are not always balanced, the oceans, by dissolving the excess of carbon dioxide, effectively regulate the amount of carbon dioxide in the atmosphere.②

Ozone, which is present in the lower atmosphere in minute amounts, has a maximum in the upper atmosphere between 10 and 25 km, where its amount varies considerably.③

Apart from the variations in carbon dioxide and



ozone, the composition of the atmosphere is remarkably constant all over the earth's surface. It is also constant with elevation as far as instruments have reached (35km).

The air also contains a variable amount of water vapor. In many respects the water vapor is the most important constituent of the atmosphere. The maximum amount of water vapor the air can absorb depends entirely on the temperature of the air; the higher the temperature of the air, the more water vapor can it hold.④ The air is saturated with moisture when this maximum amount is reached. When air is cooled below its saturation temperature, condensation takes place; the water vapor is condensed to water droplets or, at low temperatures, to ice crystals. Small water droplets and ice crystals are kept afloat in the air by the ascending air currents. Under special conditions, these minute drops or ice crystals coalesce and form large drops or snowflakes. They will be precipitated from the clouds when they become too large to be kept afloat by the ascending currents.⑤

## 词 汇

atmosphere ['ætməsfiə] *n.* 大气  
mechanical [mi'kænikl] *a.* 机械的  
mixture ['miksʃə] *n.* 混合物, 混合  
sample ['sæmpəl] *n.* 样品, 标本  
pure [pjʊə] *a.* 纯的  
contain [kən'tein] *v.t.* 包含  
nitrogen ['naitridʒən] *n.* 氮

oxygen ['ɒksidʒən] *n.* 氧  
argon ['ɑ:ɡɒn] *n.* 氩  
carbon dioxide ['kɑ:bən daɪ'ɒk-  
saɪd] *n.* 二氧化碳  
constitute ['kɒstitʃu:t] *v.t.* 构成  
remain [ri'mein] *v.i.* 剩余, 留下  
represent [,repri'zent] *v.t.* 代表