

全国高等气象院校试用教材

科技英语读本

第一册

南京气象学院外语教研组谭丁、方苇编

气象专业用

农业出版社

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编写说明

《科技英语读本》衔接《基础英语》（气象学各专业适用），供已学过约2,000常用词及基本句型和基础语法的学生使用。

课文、补充阅读及书末附加阅读材料均选自60和70年代英、美作者的原著，文章的观点并不代表编者的意见。

选材侧重“普通气象学”中的各种气象要素以及锋面、天气图等方面。在考虑专业内容的同时，尽量照顾语言上由浅入深、循序渐进。

每篇课文与补充阅读，专业内容基本相同，以增加单词重复率。书末附加阅读材料也与课文相呼应。每学一课可指定学生阅读相应的材料。注释中的译文，尽量保持原文结构，以便对照；在过分生硬的地方，才加以改变，以符合汉语习惯。

考虑到学生已基本掌握读音规则，每课中单词不注音标，既减少篇幅，又避免分散对单词拼写的注意。附录总词汇表，除少数符合读音规则的单词（单音节词、第一个音节重读的双音节词及某些派生词）外，均注有音标，以备查考。

教学时数每课约6课时，第一册共需80学时左右。

所附练习主要是为了巩固所学单词、短语及课文内容，适当复习过去学过的语法，如果需要提高学生写作能力，可将问答练习中某些问题改为作文题目，由学生模仿课文书写短文；也可指定“附加阅读材料”作为英译汉的练习。

由于水平限制，教材中一定存在不少缺点和错误，请提出批评、建议，以便及时改进。

编者

一九七九年二月

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Lesson One

I. New Words

(For pronunciation, see App.)

Part One

- space *n.* 空间, 太空, 间隔;
v. 留间隔
- scale *n.* 刻度, 标尺, 尺度, 规模
- atmospheric *a.* 大气的
- atmosphere *n.* 大气(层、圈)
- variable *a.* 易变的, 多变的; *n.*
变量
- vary *v.* 变化, 不同
- various *a.* 不同的, 多样的
- variation *n.* 变化, 变更
- humidity *n.* 湿度
- humid *a.* 潮湿的
- precipitation *n.* 降水, 沉淀
- precipitate *v.* 降水, 沉淀
- nowadays *ad.* 现在, 近来
- justification *n.* 正当理由
- just *a.* 公正的, 正当的
- justify *v.* 证明有理
- justice *n.* 公正, 正义
- particle *n.* 微粒, 质点
- part *n.* 部分, 作用; *v.* 分离
- apart *ad.* 分开, 离开
- pollutant *n.* 污染物
- pollution *n.* 污染
- factor *n.* 因素, 因子
- describe *v.* 描述, 作图
- description *n.* 描述, 说明(书)
- purpose *n.* 目的, 意义
- reliable *a.* 可靠的
- rely *v.* 依靠
- sufficiently *ad.* 足够地, 充分地
- sufficient condition 充分条件
- event *n.* 事件
- desire *v., n.* 愿望, 要求
- connect *v.* 连接
- circulation *n.* 循环, 流通
- circulate *v.* 循环, 流, 传阅
- circle *n.* 圆圈, 环,
- circular *a.* 环形的; *n.* 通报
- cyclone *n.* 气旋
- anticyclone *n.* 反气旋
- latitude *n.* 纬度
- longitude *n.* 经度
- duration *n.* 持续时间, 期间
- during *prep.* 在...期间
- primarily *ad.* 首先, 原来, 根本上

primary *a.* 初级的, 主要的, 原来的
primary school 小学
balloon *n.* 气球
sounding *n.* 探测
sound *n.* 声音
sound *v.* 探测, 听起来是
gap *n.* 空隙, 裂缝, 空白
population *n.* 人口, 总体
dense *a.* 稠密的
density *n.* 密度
major *a.* 主要的
minor *a.* 次要的
airport *n.* 航空港
warn *v.* 警告, 警报
typhoon warning 台风警报
approach *v.* 接近 *n.* 方法, 途径
danger *n.* 危险

dangerous *a.* 危险的
thunderstorm *n.* 雷暴
storm *n.* 暴风雨, 风暴
snowstorm *n.* 雪暴
squall *n.* 飑, 狂风
squall line 飑线
plain *n.* 平原; *a.* 平坦的, 平易的
tornado *n.* (陆)龙卷
furnish *v.* 供给, 供应
additional *a.* 附加的
addition *n.* 加, 加法, 增加
occurrence *n.* 发生, 出现
occur *v.* 发生, 出现
severe *a.* 剧烈的, 严重的
research *n.* 研究
search *v.*, *n.* 搜索, 探索
maintain *v.* 维持, 保持

Geographical Names

North America [nɔ:θ ə'merikə]
Europe ['juərəp]
Russia ['rʌʃə]

Japan [dʒə'pæn]
India ['india]
Australia [ɔ:s'treiljə]

Part Two

(New words appearing in the Supplementary Reading)

define *v.* 给...下定义, 规定
definition *n.* 定义
simultaneous *a.* 同时发生的
geographical *a.* 地理的
geography *n.* 地理学
locality *n.* 地点, 场所

local *a.* 当地的, 局部的
collection *n.* 收集, 集中
collect *v.* 收集, 集中
interrelate *v.* 使相互联系
structure *n.* 结构, 构造
term *n.* 术语, 项, 学期; *v.*

把…叫做
elevation *n.* 提高, 高度, 海拔
popularly *ad.* 通俗地, 流行地
popular *a.* 通俗的, 流行的, 有名的
activity *n.* 活动(性)
act *v.* 行动, 起作用
active *a.* 活动的, 积极的
flood *n.* 洪水
orderly *a.* 有秩序的
order *n.* 命令, 等级, (数)量级, 次序; *v.* 命令
accompany *v.* 伴随
company *n.* 同伴, 公司, 商号
hemisphere *n.* 半球
northern hemisphere 北半球
southern hemisphere 南半球

illustrate *v.* 图解, 演示, 阐明
illustration *n.* 插图, 演示, 例证
extend *v.* 延伸
extent *n.* 范围, 程度
gentle *a.* 温和的
clockwise *ad., a.* 顺时针向
counterclockwise *ad., a.* 反时针向
fair *a.* 相当(好)的, 公正的
imply *v.* 意指, 暗示
sunny *a.* 有阳光的, 晴朗的
cloudy *a.* 有云的, 多云的
foggy *a.* 有雾的, 多雾的
dark *a.* (黑)暗的
feature *n.* 特征, 特性
visibility *n.* 能见度
visible *a.* 可见的
invisible *a.* 不可见的

II. Expressions

to add... to... 把…加到…上
general circulation 总环流, 大气环流
to warn... of... 警告…有…
to be defined as... (被)定义为…
weather element 天气要素, 气象要素

III. Text

Time and Space Scales of Weather Observations

The principal atmospheric variables are:

Temperature

Pressure

Wind

Humidity

Clouds

Precipitation

Nowadays there is much justification for adding gaseous and particle pollutants in the air to these factors.

Together, these variables describe the state of the atmosphere. They must be accurately observed, if we are to understand what is happening in the air.¹ For this purpose reliable instruments are required, and measurements must be made often enough from stations sufficiently close to one another.

How often observations are made, and how widely they are spaced, depends on the scale of the atmospheric events about which information is desired.² Time and space scales are connected. The general circulation has a distance scale of several thousand miles and a time scale from season to year. Cyclones in middle latitudes have a scale of about 1,000 miles and of 1 to 5 days. Large thunderstorms cover 10 miles with durations of 1 to 6 hr, and small clouds 1/10 mile during 10 to 30 min.

The observing networks are designed primarily to provide information on the scale of the general circulation and

1. “...如果想要了解大气中正在发生什么。” what ... air 是不定式的宾语从句。

2. “多久进行一次观测以及观测地点相隔多远取决于想要得到其情报的大气活动的尺度。”两个主语从句并列,当作一件事情,按单数处理。about which... desired 为 events 的定语从句。

the cyclone. For this purpose, upper-air observing stations make balloon soundings twice a day. The average distance between stations is about 200 to 500 miles over North America, Europe and Russia, China, Japan, India, and Australia. Very large gaps remain over all oceans. Ground observing stations are spaced more closely where the population is more dense. Near major airports they may be only a few miles apart and may report weather at intervals of an hour or even less to warn of approaching weather dangers, such as thunderstorms, fog, or heavy squalls. Special networks, such as operate over the western plains of the United States during the tornado season,¹ furnish additional information about occurrence of severe local weather. For research purposes, networks with stations spaced only 1/10 to 1 mile apart have been maintained for limited periods in small areas.

IV. Supplementary Reading

Weather

Weather may be defined as the state of the atmosphere, as determined by the simultaneous occurrence of several meteorological phenomena at a geographical locality or over broad areas of the Earth. When such a collection of weather elements is part of an interrelated physical structure of the atmosphere, it is termed a weather system, and includes phenomena at all elevations above the ground. More popularly, weather refers to a certain state of the atmosphere as it affects

1. “专门的台站网，如同龙卷风季节设置在美国西部平原工作那样的，...”
such 起同位语作用，as 引导定语从句，在从句中代替 networks 作主语。

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man's activities on the Earth's surface. In this sense, it is often taken to include such related phenomena as waves at sea and floods on land.¹

An orderly association of weather elements accompanying a typical weather system of the Northern Hemisphere may be illustrated by a large anticyclone, or high-pressure region. In such a "high", extending over an area of many thousands of square miles, the usually gentle winds circulate clockwise around the high-pressure center. This system often brings fair weather locally, which implies a bright sunny day with few clouds. The temperature may vary widely depending on season and time of day. However, a cyclone or low-pressure region is frequently associated with a dark cloudy sky with driving rain (or snow) and strong winds which circulate counterclockwise about a low-pressure center of the Northern Hemisphere.

A weather element is any individual physical feature of the atmosphere. At a given locality, at least seven such elements may be observed at any one time. These are clouds, precipitation, temperature, humidity, wind, pressure, and visibility.

V. Exercises

- 1) Translate the following expressions into Chinese:
 1. space research
 2. variables and constants
 3. light and variable wind

1. “在这个意义上，天气也常用于包括象海浪以及陆上的洪水那样的有关现象。” take 在这里的意思是“以为，认为”。it 为人称代词，指代 weather。

4. necessary and sufficient condition
 5. middle-latitude cyclone
 6. radiosonde balloon
 7. to fill the gap
 8. to warn him of the coming danger
 9. geographical feature
 10. in a counterclockwise sense
- 2) Answer the following questions in English:
1. What are the six principal atmospheric variables?
 2. What must be done if we want to understand what is happening in the air?
 3. What determines how often observations are made and how widely they are spaced?
 4. What is the distance scale of the general circulation?
 5. What kind of a time scale does the general circulation have?
 6. How big an area do large thunderstorms cover and how long do they last?
 7. What are the observing networks designed primarily for?
 8. What is the average distance between upper-air stations in our country?
 9. Are observing stations over the oceans dense enough?
 10. Why are observing stations near major airports spaced so closely and why do they report weather so often?
- 3) Translate the following sentences into English, using the gerund phrase to express the bold-faced types:
1. 我们在**发展雷达气象**方面取得了很大的进展。
 2. 通过**研究大气中的污染物**,我们提供关于环境 (environmental) 污染的情报。
 3. 我们的任务是**认识天气现象及其起因** (cause)。
 4. 他们已经设计出一种新型的用于**测定** (determine) **空气中气体和微粒污染物**的装置。
 5. 为了研究的目的,我们将继续**在那个地区保持一个测站网**。
- 4) Translate the following into English with the corresponding ex-

pressions in the text:

1. 如果我们是要说明大气状况，那就必须精确测定所有这些变量。
2. 哪里测站分布更密集，天气观测就应当进行得更经常。
3. 除了这些测值，有必要再增加一些如同空气污染、大气电等别的要素。
4. 我们想知道一些主要大气事件在空间尺度上有多大以及它们在持续时间上有多长。
5. 气象中心预报（警告）有台风在48小时内来临。

Lesson Two

I. New Words

Part One

- differ *v.* 有差别, 不同
different *a.* 不同的
difference *n.* 差别, 差
sensitive *a.* 敏感的, 灵敏的
sense *n.* 感官, 感觉, 意义
obstacle *n.* 障碍(物)
represent *v.* 代表, 表示, 表现
representation *n.* 表示(法),
表达(式), 表现
representative *a.* 有代表性的,
n. 代表
vane *n.* (风)标
past *prep.* 经过; *a.* 过去的
site *n.* 场(所), 基地, 位置
revolution *n.* 绕转, 公转
revolve *v.* 绕转, 公转
propeller *n.* 推进器, 螺旋桨
propel *v.* 推进
drive *v.* 推动, 驱动, 驾驶
drove, driven
cup *n.* 杯
rotation *n.* 旋转, 自转
rotate *v.* 旋转, 自转
gusty *a.* 阵风的, 阵性的
gust *n.* 阵风
fluctuate *v.* 起伏, 摆动
fluctuation *n.* 起伏, 摆动
trace *n.* 痕迹, 迹线, 微量
drum *n.* 鼓, 圆筒
permit *v.* 容许
permission *n.* 许可
permissible *a.* 容许的
interval *n.* 间歇, 间隔
toward *prep.* 向…
nonmeteorological *a.* 非气象
(学)的
advisable *a.* 合宜的
advise *v.* 劝告, 建议
advice *n.* 劝告, 意见
check *v.* 核对
knot *n.* 结, 节, 海里/小时
nautical *a.* 航行的, 航海的
statute *n.* 法定, 法规

Part Two

- instrumentally ad.* 在仪器上
instrumental a. 仪器的
construct v. 构造, 建造, 绘制
construction n. 建设, 结构, 绘图, 建筑(物)
constructive a. 建设(性)的
reconstruct v. 重建
communicate v. 传达, 通信, 联络
communication n. 传播, 通讯, 联络
instantaneously ad. 即刻, 同时
instant n. 瞬时, 即时
instantaneous a. 瞬时的, 即时的
indicator n. 指示器
indicate v. 指示, 表明
automatic a. 自动的
recorder n. 记录装置, 录音机
record n. 记录, 记载, 唱片
record v. 记录, 记载
proper a. 适当的, 固有的
property n. 特性, 属性
connection n. 连接, 关系
sock n. 短袜, (风向)袋
typical a. 典型的, 有代表性的
type n. 类型; *v.* 打字
cardinal a. 主要的, 基本的
division n. 划分, 区分, 除(法)
divide v. 分, 划分, 除
include v. 包括, 包含
exclude v. 排除, 排斥
conclude v. 推断出, 断定, 结束
intermediate a. 中间的, 过渡的
require v. 要求, 需要
requirement n. 要求, 需要
spread v. 展开, 传播, 散布
spread, spread
navigation n. 航海, 航行
navy n. 海军
demand v., n. 要求, 需要

II. Expressions

- to differ from ...* 与...不同
different from ... 与...不同
in that ... 在于..., 由于...
close to ... 接近..., 靠近...
and/or 和/或, 二者或二者之一
as well 也, 同样

III. Text

Wind

Wind observations differ from those of temperature and pressure in that two quantities must be observed: direction and speed.¹ Close to the ground, wind speed increases quickly with height. Both direction and speed are sensitive to the influence of buildings, trees, and other obstacles. It is therefore difficult to obtain a wind measurement representing air flow over a distance of several miles from the observing point.²

Wind direction, from old times, has been measured with a wind vane. The rate at which air moves past the observing site is measured by the rate of revolution of a small propeller driven by the wind or by three or four cups rotating about a vertical axis.³ Wind is often gusty; direction and/or speed may fluctuate widely in just a few seconds. A recording instrument giving a continuous trace of direction and speed on a revolving drum permits reading averages of direction and speed over time intervals such as 1 or 5 min. ⁴ Such averaging makes the measurement useful for determining the pattern of air motion from station networks. ⁵

1. “风的观测与温度、气压的观测不同之处在于需要测定风向、风速两个数值。”

2. “因此难以得到代表观测点几英里范围内气流情况的风的测值。”

3. “气流经过观测点的速率按照风推动小螺旋桨的转速或由绕垂直轴旋转的三、四个风杯而测得。”第一和第三两个 by 短语都是 is measured 的状语。

4. “在转筒上给出风向风速连续曲线的自记仪器可供读出例如一分钟或五分钟时间间隔内风向风速的平均值。”

5. “这样求平均使得测值可用于根据台站网确定空气运动的型式。”