中国地震台网观测报告

BULLETIN OF SEISMOLOGICAL
OBSERVATIONS OF CHINESE STATIONS

1976

国家地震局地球物理研究所编

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说　明

一、本报告使用国际标准时（G. M. T.），系世界时 UT_1 系统。

二、国内地震一般取$M \geqslant 4$的编入；国外较远的地震一般取 $M \geqslant 5\frac{1}{2}$的编入。

三、测定震源位置使用J-B表，用电子计算机作了修定，“N”表示未定深度震源在地壳内。个别地震取 NEIS 的测定结果并作了注明，同时报出中国测定的震级。部分国内$M<5$的地震选用区域台网的测定结果。

四、震级的测定用北京台1965年的面波震级公式：

$$M = \log\left(\frac{A}{T}\right) + 1.66\log\Delta^\circ + 3.50 \quad (1^\circ < \Delta < 130^\circ)$$

体波震级用李希特1956年的公式，以 M_B 表示：

$$M_B = 1.59m - 3.97$$

式中 m 为统一震级。

本《报告》中使用了北京台、包头台、成都台、长春台、贵阳台、广州台、昆明台、喀什台、拉萨台、兰州台、南京台、泉州台、上海佘山台、泰安台、武汉台、乌鲁木齐台和西安台的地震图和地震报告资料，特此向这些台站同志们表示谢意。

ANNOTATIONS

1. Time used in this bulletin is the International Standard Time (G. M. T.) which belongs to the Universal time system UT_1.
2. Earthquakes compiled are of $M \geqslant 4$ within China and $M \geqslant 5\frac{1}{2}$ outside China, generally.
3. In determining hypocentral locations the J-B Table is used and then revised by electronic computers. “N” denotes earthquakes within the crust. A number of earthquakes are taken from the NEIS Bulletin, marked“NEIS”, but their magnitudes given by the Chinese station network are also listed. A portion of earthquakes of magnitude $M<5$ occurred within China are taken from local station networks.
4. Magnitudes of earthquakes are computed by the 1965 surface wave formula of the Peking Seismological Station, namely,

$$M = \log(A/T) + 1.66\log\Delta^\circ + 3.50. \qquad (1^\circ < \Delta^\circ < 130^\circ)$$

Body wave magnitudes M_B are computed by the 1956 Richter formula, namely,

$$M_B = 1.59m - 3.97.$$

where m denotes the unified body wave magnitude.

一九七六年地震观测资料
汇编工作人员

Compiling personnel of the observed seismological data in 1976

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台 站 目 录

List of Seismic Stations

台名 Stations	汉语拼音代号 Code	Geographical Co-ordinates ϕ	λ	海拔高度 Altitude(h) m	仪器 Instruments
北京 Beijing	B J I	40°02′25″	116°10′30″	43	64, 513, SK
包头 Baotow	B T O	40°35′54″	110°01′06″	1120	64, SK
成都 Chengdu	C D U	30°39′37″	104°00′40″	506	SK
长春 Changchun	C N H	43°49′45″	125°18′48″	236	513, SK
贵阳 Guiyang	G Y A	26°27′31″	106°39′50″	1162	SK
广州 Guangzhou	G Z H	23°05′13″	113°20′38″	11	SK
昆明 Kunming	K M I	25°07′24″	102°44′24″	1945	SK
喀什 Kashi	K S H	39°27′19″	75°58′48″	1286	SK
拉萨 Lhasa	L S A	29°42′00″	91°09′00″	3658	VGK
兰州 Lanzhou	L Z H	36°05′12″	103°50′40″	1560	64, 513, SK
南京 Nanjing	N J I	32°03′48″	118°47′00″	10	64, SK
泉州 Quanzhou	Q Z H	24°56′35″	118°35′30″	21	64
上海佘山 Shanghai	S S H	31°05′48″	121°11′11″	90	64, SK, SW(2)
泰安 Tai'an	T I A	36°12′41″	117°07′28″	300	64, 513, SK
武汉 Wuhan	W H N	30°32′37″	114°21′01″	26	64, SK
乌鲁木齐 Urümqi	W M Q	43°49′16″	87°41′42″	970	62, 763, SK
西安 Xi'an	X A N	34°02′22″	108°55′17″	630	64, SK

注：长春台于1976年10月15日中止工作。于1977年元月迁至新址，座标为43°48′05″N，125°26′54″E，h=230m.，台基为火山岩和板岩互层。

上海佘山于1976年11月15日迁至新址，座标为31°05′44″N，121°11′12″E，h=9.9m.，台基为蚀变辉绿岩。

Changchun seismological station stopped its operation on Oct. 15, 1976, and it was moved to a new site at 43°48′05″N and 125°26′54″E, h=230m. The foundation of the station is igneous rock and slate.

On Nov. 15, 1976, the Shanghai seismological station was moved to a new site at 31°05′44″N and 121°11′12″E, h=9.9m. the foundation of the station is eroded diabase.

仪 器 常 数

Constants of Seismographs

仪器型号 types of Instruments	分 向 comp.	T_1	T_2	D_1	D_2	σ^2	r_1	V_o	R_v
62	H	2.0	0.5	0.5	1.5	0.05		3×10^5	120
	Z	2.0	0.5	0.5	1.5	0.08		$2\sim3\times10^5$	120
64	H Z	1.5	0.10	0.5	5.0	0.3		5×10^4	60
	H Z	1.5		0.7				$2\sim3\times10^5$	120
513	H	4		0.3			0.10	50	30
763	H	31.5	85	1	1	0.3		2900	6
	Z	34.0	103	1	1	0.3		370	6
SK	H	12.5	1.2	0.45	5.0	0.07		1600	30
	Z	12.5	1.2	0.45	5.0	0.30		900	30
VGK	H	1.0	0.10	0.5	4.0	0.3		3×10^4	120
	Z	1.0	0.10	0.5	4.0	0.3		3×10^4	120
SW(2)	H	6					0.18	200	30

62 62型电流计记录地震仪 type62 galvanometrie seismographs

64 64型电流计记录和电子放大笔绘记录地震仪 type64 electronic amplified, galvanometric seismographs with visible recordcr

513 513式水平向机械记录中强地震仪 type513 low magnification, mechanical registration, horizontal seismographs

763 763式长周期电流计记录地震仪 type763 long-period galvanometric seismographs

SK 基尔诺斯 (Kirnos) 式电流计记录地震仪 Kirnos type galvanometric seismographs

VGK 维开克 (Vegik) 电流计记录地震仪 Vegik type galvanometric seismographs

SW(2)维谢尔特 (Wiechert) 式 (重锤1,200公斤) 水平向机械记录地震仪 Wiechert (2) type mechanical registration horizontal seismographs (1,200kg)

T_1 拾震器的周期 Pendulum period

T_2 电流计的周期 Galvanometer period

D_1 拾震器的阻尼常数 Damping factor of pendulum

D_2 电流计的阻尼常数 Damping factor of galvanometer

σ^2 耦合系数 Coupling coefficient

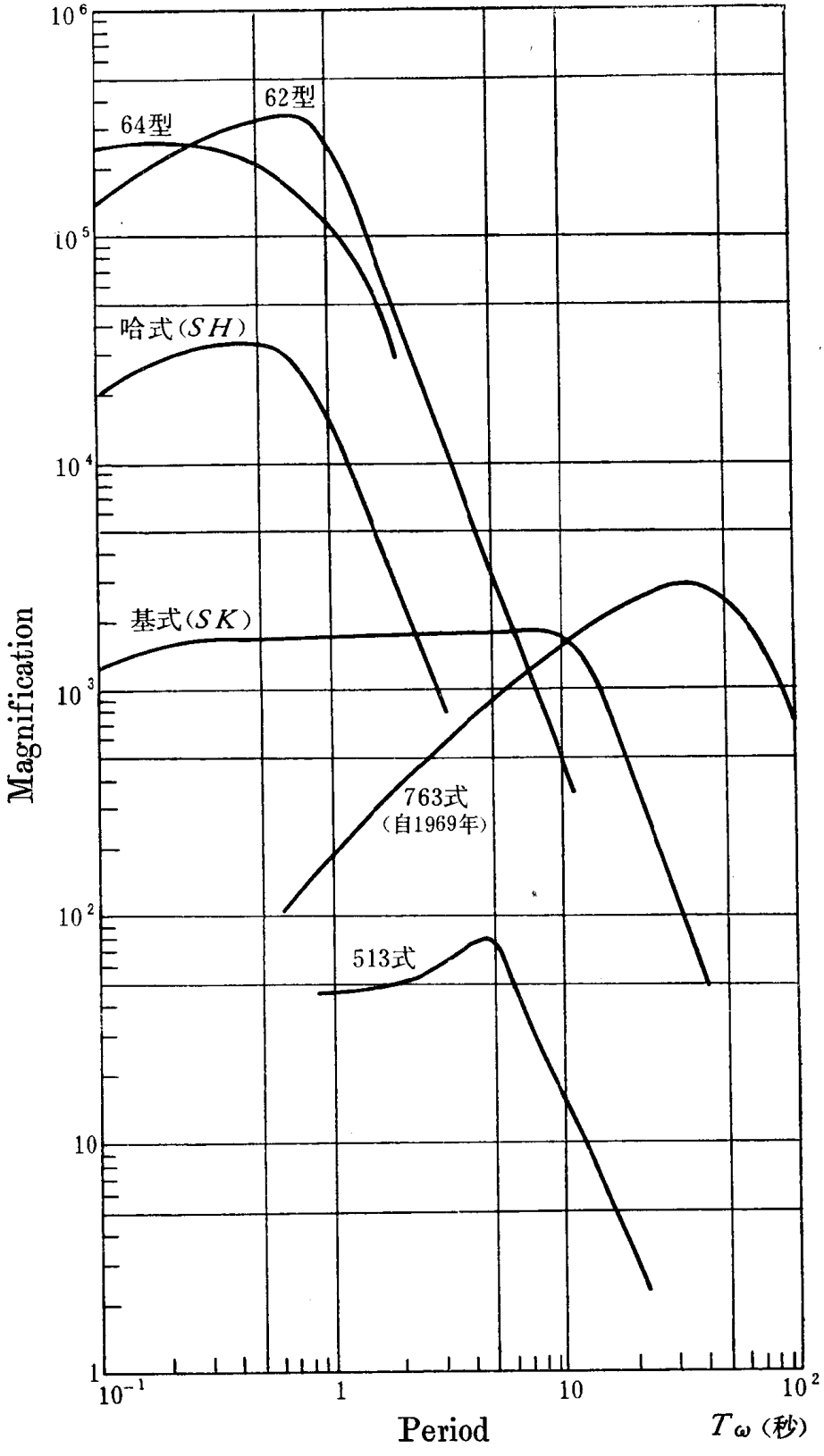
r_1 摩擦振幅 Amplitude of solid friction

V_o 静态放大倍数 Static magnification

R_v 记录纸速，毫米/分 The recording paper speed, mm/min.

仪 器 放 大 倍 数 曲 线

Magnification Curves of Seismographs



1976 年　地震活动简况

全世界地震活动

根据中国地震台网观测资料，1976年能够测出震中位置的地震，全球 $M_s \geqslant 5.5$级（以下叙述均用 M_s 震级标度）的共227次，其中 6 级以上的118次。 7 级以上的22 次。最大的一次地震是 8 级，震中在菲律宾棉兰老岛的南部近海地区。全年主要的地震，分布在环太平洋地震带的西半部，在欧洲和亚洲中部也发生一些较大的地震，南北美洲地震活动相对较弱。在大西洋中部和南部地区没有记到 5.5 级以上的地震。 7 级以上的地震次数比1904年以来的年平均次数（18次）稍高一些。就全世界范围来说，1976年的地震活动属于一个普通的年份。

我国国内地震活动

1976年是我国地震活动强烈的年份。其主要活动特点是，虽然没有 8 级以上的特大地震，但7～7.8级地震次数比历史记载的任何一年都多，中国地区 5 级以上地震有76次。 6 级以上的有20次，其中7.0～7.8级有 6 次，最大震级是 7.8 级，震中在河北省唐山地区。这年的地震活动在时、空分布方面都比较集中。自 5 月至 8 月的四个月期间内，沿着滇西——川北——冀北这一条近于北东向条带上，在云南省龙陵地区，河北省唐山地区和四川省松潘地区，三个地区都相继发生两次 7 级以上大地震。时间间隔分别为 2 小时（龙陵地区），15小时（唐山地区）和 7 天另14小时（松潘地区，）每两次的震中位置间距分别是25公里左右（龙陵和松潘地区）和60公里（唐山地区）。每两次地震的震级相差最大是0.7级（唐山地区），其他是 0.1 级左右。类似这种接连发生地震的时间间隔短，震中位置的间距近，震级相差小的两次大于 7 级地震的例子，在中国有地震仪器记录以来，除台湾和新疆地区外，在其他地区是少有的。

内蒙古自治区和林格尔县， 4 月 6 日（按北京时间）发生 6.3 级地震， 6 个月以后，在其西部磴口相继发生 6.2 级地震。这和1929年 1 月呼和浩特之西 6 级地震之后，于1934年 1 月在五原县发生 6.3 级地震的情况类似。震级大小和震中位置都很相似，只是时间间隔稍长几年。

西藏日喀则北部于 9 月14日发生一次中源地震，震源深度107 公里，震级 5.3(M_B)。在这附近地区，仅于1935年 5 月21日发生过一次震源深度为140公里的 6 ¼级地震；这次5.3级地震是该地区少有的中源地震活动。即使在西藏南部地区，中源地震活动也是少有的。

A Brief Review of the Seismic Activity in 1976

The world-wide seismic activity

Using the observed data of the Chinese seismological station network, in 1976, the epicentral locations of 227 earthquakes with $M_S \geqslant 5.5$ (magnitude scale M_S is used) have been determined, among them 118 with $M_S \geqslant 6.0$, 22 with $M_S \geqslant 7.0$, the greatest one is $M_S = 8$, whose epicenter is located off the coast of southern Mindanao, Philippine Islands. Most earthquakes of the year are distributed on the western half of the Circum-Pacific seismic belt. Some major shocks also occurred in Europe and middle Asia, The seismic activities of North and South America are relatively lower. In the Southern and Central Atlantic Ocean no earthquake with magnitude larger than 5.5 has been recorded. Number of earthquakes of $M \geqslant 7$ is slightly more than that of the annual average (18 shocks) since 1904. For the whole world, the seismic activity in 1976 is at an ordinary level.

The seismic activity of China

Yet, the year 1976 is of strong seismic activity in China. The main characteristics of the activity are as follows: Although no earthquake of $M \geqslant 8$ has occurred, the number of earthquakes of $M = 7\text{-}7.8$ are more than that of any year in the historical record of China, Within the territory of China, 76 shocks with $M_S \geqslant 5$ and 20 with $M_S \geqslant 6$ occurred in 1976, among them, the greatest one is $M_S = 7.8$ located at the Tangshan region, Hebei Province, The seismic activity of this year is relatively concentrated both in time and space. During the four months from May to August, along a nearly northeast belt which runs from Western Yunnan—Northern Sichuan—Northern Hebei Provinces three pairs of earthquakes with magnitudes over 7 occurred successively in three regions, the time intervals between the two earthquakes of each pair are respectively 2 hours in Longling, 15 hours in Tangshan and 7 days and 14 hours in Songpan. The distances between the epicenters of the earthquakes of each pair are respectively about 25 km. (Longling and Songpan), and about 60 km. in Tangshan. The magnitude differences of the two earthquakes of each pair are at most 0.7 in Tangshan; and about 0.1 in the other two regions. Occurrences of double earthquakes of $M_S \geqslant 7$ with short time intervals and spacing distances and small differences in magnitudes are seldom for other parts of China, since the beginning of instrumental recording of earthquakes in history, except for Taiwan and Singkiang.

At Horinger County of the Inner Mongolian Autonomous Region, on April 6 (Peking time), a shock with $M_S = 6.3$ occurred, while six months later at Dengkou, west of Horinger a shock with $M_S = 6.2$ occurred. In this same region, in January 1929 a shock with $M_S = 6$ occurred west of Hohhot. Then five years later at Wuyuan County (near Dengkou) a shock with $M_S = 6.3$ occurred in January 1934, The situation of these two double earthquakes are similar as above, that is, the two earthquakes of each pair are of nearly equal magnitudes and same epicentral locations, only that the time interval of the latter pair is longer by few years.

On September 14, 1976, an intermediate depth earthquake occurred north of Xigaze (Shigatse) in Tibet, the focal depth of which is 107 km. with magnitude 5.3 (M_B). In the vicinity of this region only one intermediate depth earthquake occurred on May 21, 1935 with magnitude $6\frac{1}{4}$ and focal depth 140 km. This intermediate depth earthquake ($M_B = 5.3$) is considered as a rare occasion. Even in southern Tibet intermediate depth earthquakes are very few.

中—英文译校者：郭履灿、顾平、宋守全

1976 年 地 震 目 录

The Catalogue of Earthquakes in 1976

全世界 WORLD-WIDE

No.	DATE	GMT h-m-s	LOCATION		DEPTH	M	REMARKS
1	Jan. 1	01-29-37.0	28.9 S	177.3W	45	6.9	克马德克群岛 KERMADEC ISLANDS
2	1	09-04-46.0	16.5 S	172.1W	40	5.6	萨摩亚群岛 SAMOA ISLANDS
3	1	18-43-40.4	16.5 S	167.2 E	N	5.6	新赫布里底群岛 NEW HEBRIDES ISLANDS
4	4	03-56-55.5	10.2 S	109.0 E	49	5.6	爪哇以南 SOUTH OF JAVA
5	6	21-08-20.3	51.9 N	159.0 E	N	6.5	堪察加半岛 KAMCHATKA
6	7	01-57-02.9	51.7 N	159.2 E	N	5.6	堪察加半岛 KAMCHATKA
7	7	23-34-24.1	51.7 N	159.4 E	42	6.2	堪察加半岛 KAMCHATKA
8	8	10-30-44.2	51.6 N	159.3 E	N	5.7	堪察加半岛 KAMCHATKA
9	8	15-50-10.9	51.4 N	159.7 E	N	5.7	堪察加半岛 KAMCHATKA
10	9	09-43-36.0	41.0 N	122.0 E	N	4.0	中国海城 HAICHENG, CHINA
11	9	23-54-33.2	15.8 S	168.1 E	141	6.6(MB)	新赫布里底服岛 NEW HEBRIDES ISLANDS
12	10	12-51-27.8	42.2 N	83.3 E	N	5.8	中国乌鲁木齐西南 SOUTHWEST OF URÜMQI, CHINA
13	12	19-35-25.8	30.1 S	176.8W	N	5.7	克马德克群岛 KERMADEC ISLANDS
14	13	13-29-18.9	66.0 N	16.7W	N	6.7	冰岛 ICELAND
15	14	15-56-39.8	30.1 S	177.5W	69	7.8	克马德克群岛 KERMADEC ISLANDS
16	14	16-47-31.9	29.4 S	176.4W	33	7.6	克马德克群岛 KERMADEC ISLANDS
17	14	22-43-42.9	28.5 S	176.4W	32	6.2	克马德克群岛 KERMADEC ISLANDS
18	15	00-45-59.6	28.8 S	176.8W	33	6.2	克马德克群岛 KERMADEC ISLANDS
19	15	02-00-12.0	29.1 S	176.7W	33	6.4	克马德克群岛 KERMADEC ISLANDS
20	15	03-30-08.3	29.6 S	176.4W	33	6.7	克马德克群岛 KERMADEC ISLANDS
21	15	06-06-49.8	29.6 S	177.1W	33	6.3	克马德克群岛 KERMADEC ISLANDS
22	15	06-28-19.7	30.1 S	176.9W	33	6.7	克马德克群岛 KERMADEC ISLANDS
23	15	16-12-23.2	29.9 S	177.3W	33	6.3	克马德克群岛 KERMADEC ISLANDS
24	16	15-28-09.6	29.8 S	176.4W	33	6.3	克马德克群岛 KERMADEC ISLANDS
25	17	17-54-18.1	35.8 N	79.8 E		4.5	中国新疆和田西南 SOUTHWEST OF HOTAN, CHINA
26	18	04-46-23.0	77.8 N	17.9 E	N	6.7	挪威北部 NORTHERN NORWAY
27	21	10-05-22.5	44.9 N	149.1 E	N	7.2	千岛群岛 KURILE ISLANDS

No.	DATE	GMT h-m-s	LOCATION	DEPTH	M	REMARKS
28	Jan. 21	18-02-09.4	58.9N 163.4E	49	6.1	堪察加半岛 KAMCHATKA
29	21	21-00-42.9	44.5N 149.3E	N	5.4	千岛群岛 KURILE ISLANDS
30	22	08-07-09.7	44.4N 149.6E	39	6.1	千岛群岛 KURILE ISLANDS
31	22	09-00-56.3	44.6N 149.1E	51	5.9	千岛群岛 KURILE ISLANDS
32	22	17-26-16.0	44.5N 149.1E	47	5.8	千岛群岛 KURILE ISLANDS
33	22	21-45-22.0	21.9N 101.7E	N	4.6	中国云南南部 SOUTHERN YUNNAN, CHINA
34	23	02-24-50.8	44.1N 149.6E	N	5.5	千岛群岛 KURILE ISLANDS
35	23	05-45-31.4	7.5S 120.0E	630	6.5(MB)	佛罗勒斯海 FLORES SEA
36	24	21-48-24.1	28.9S 177.2W	70	6.0	克马德克群岛 KERMADEC ISLANDS
37	25	12-23-54.4	44.7N 149.9E	50	6.2	千岛群岛 KURILE ISLANDS
38	27	11-08-51.7	29.5S 176.9W	N	6.0	克马德克群岛 KERMADEC ISLANDS
39	31	00-25-35.9	44.0N 149.3E	N	5.6	千岛群岛KURILE ISLANDS
40	Feb. 1	11-14-52.0	17.8N 100.0W	N	5.9	墨西哥格雷罗州 GOERRERO,MEXICO
41	2	03-00-17.0	51.9N 159.5E	N	5.8	堪察加 KAMCHATKA
42	3	10-45-57.2	7.2S 123.7E	604	5.5(MB)	班达海 BANDA SEA
43	3	12-27-29.0	24.9S 179.8E	451	6.0(MB)	斐济群岛以南 SOUTH OF FIJI ISLANDS
44	3	23-57-54.0	54.5N 162.0E	N	5.5	堪察加 KAMCHATKA
45	4	09-01-45.0	14.0N 90.6W	N	7.9	危地马拉 GUATEMALA
46	5	17-13-10.4	43.0N 145.9E	65	5.5	日本北海道 HOKKAIDO,JAPAN
47	6	16-53-54.1	6.0S 146.4E	67	5.5	新几内亚以东 EAST OF NEW GUINEA
48	6	19-36-51.0	27.8N 100.8E	N	4.1	中国四川西昌以西 WEST OF XICHANG, CHINA
49	10	07-40-34.0	44.5N 149.3E	42	5.6	千岛群岛 KURILE ISLANDS
50	10	08-40-40	40.7N 122.9E	15	4.4	中国海城 HAICHENG, CHINA
51	11	21-43-58.4	15.2S 171.8W	65	6.0	汤加群岛 TONGA ISLANDS
52	13	08-07-32.7	15.7N 121.7E	44	5.8	菲律宾 PHILIPPINE ISLANDS
53	13	10-33-42.6	13.8N 120.0E	31	6.0	菲律宾 PHILIPPINE ISLANDS
54	14	10-50-23.2	26.6N 140.4E	564	5.2(MB)	小笠原群岛 BONIN ISLANDS
55	14	18-19-55.5	34.7N 82.0E	21	4.6	中国西藏西部 WESTERN XIZANG, CHINA
56	14	20-25-38.8	31.1N 103.1E	25	4.3	中国成都附近 NEAR CHENGDU,CHINA
57	14	20-31-47.2	8.1S 108.7E	133	5.3	爪哇南部 SOUTHERN JAVA
58	15	01-54-26.5	13.0N 125.8E	64	6.4	菲律宾 PHILIPPINE ISLANDS