中国地震台网观测报告

BULLETIN OF SEISMOLOGICAL OBSERVATIONS OF CHINESE STATIONS

1980

国家地震局地球物理研究所编

地震出版社出版

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地震出版社 出版

INSTITUTE OF GEOPHYSICS
STATE SEISMOLOGICAL BUREAU

PUBLISHED BY SEISMOLOGICAL PRESS
BEIJING CHINA

1983

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（1980）

国家地震局地球物理研究所编

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地震出版社 出版

北京复兴路63号

北京印刷一厂印刷

新华书店北京发行所发行

全国各地新华书店经售

*

787×1092 1/16 50.75印张 1768字

1983年3月出版

统一书号：13180·186 定价：7.80元

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序

1.《中国地震台网观测报告》是我国地震台网对发生在全世界、特别是发生在中国和邻近地区的地震观测数据的汇编。自1979年起，本报告改用国际协调时UTC，并采用汉语拼音拼写中国地名和人名，外国地名和人名仍沿用英文。

2. 本报告测定震源参数，沿用J-B走时表[1]。除使用报告中所列台站的数据外，还选用了一部分国内外其它地震台站的P波到时，用计算机进行修定。残差、标准偏差和标准误差分别列于计算结果和参加运算的原始数据之后。震源深度数据符号“S”，表示定位过程中选用了J-B表的表面走时。参数之后加注“*”表示选用了地方台网或国外机构的结果。

每个选定的震中都按Flinn和Engdahl等[2·3]的分区办法给出相应的地理区。这些地区的界限沿经纬线整度划分，因而有时与国境线不符。应该强调指出，所用地震及地理区域的名称仅作位置的指引，而不包含任何政治意义。对发生在中国的地震，分别注明震中的具体地理位置。

3. 测定面波震级Ms，沿用北京台1965年的面波震级公式：

$$M = \log(\hat{A}/\hat{T}) + 1.66\log\triangle + 3.50 \quad (1^\circ < \triangle < 130^\circ)$$

测定体波震级M_B，采用古登堡-里克特1956年的体波震级公式：

$$M_B = 1.59m - 3.97$$

式中m为统一震级

测定近震震级M_L，采用里克特的经典方法；$M_L = \log A + R(\Delta)$

式中A是地动位移，以μ计，量规函数$R(\Delta)$是由李善邦教授确定的。

4. 本报告还摘录了部分国内较大地震的宏观结果，分别附在各地震之后。其中给出的烈度，均按1957年谢毓寿教授所编《新的中国地震烈度表》[4]标度评定。

5. 汇编《中国地震台网观测报告》采用了国际通用的符号[5]。为便于使用计算机打印报告，对下列震相采用了NEIS的地震电报符号暂时予以替代，敬请注意。

PG	代表	$\overline{P}$或P_g，	SG	代表	$\overline{S}$或S_g，	LG	代表 Lg
PB	代表	P*	SB	代表	S*		
AP	代表	$_pP$	XP	代表	$_sP$		
			XS	代表	$_sS$		
APKP	代表	$_pPKP$	XPKP	代表	$_sPKP$		

参 考 文 献

[1] H. 杰弗里斯和K. E. 布伦 1940 地震表 伦敦不列颠协会（1967年再版）。

[2] E A. 福林和E. R. 恩达尔 1965 地理和地震分区基础的建议 地球物理评论 第3卷 123。

[3] E. A. 福林. E. R. 恩达尔和A. R. 希尔 1974 地震和地理分区 美国地震学会报告 第64卷 771。

[4] 谢毓寿 1957 新的中国地震烈度表 地球物理学报第6卷第1期。

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INTRODUCTION

1. The "Bulletin of Seismological Observations of Chinese Stations" is a summary of the observed data of earthquakes occuning in the whole world, especilly in China and its neighbouring regions, Beginning from 1979, the observational times and the times of epicentral estimates are given in UTC. The names of Chinese places and persons are spelt with Chinese phonetic alphabets while foreign names are all given in English.

2. All computation of focal parameters are based on the Seismological Tables by Jeffreys and Bullen[1]. Besides the data observed at the stations listed in this Bulletin, the P arrivals at some other stations inside and outside China are used for computer revision of the parameters. The residuals, standard deviations and standrd errors are listed with the results. The focal depth "S" indicates that travel times for a surface focus are used in positioning earthquake focus. An asterisk after the focal parameters indicates that the results are adopted from local network of stations or foreign agencies.

For each adopted epicenter a geographical region corresponding to that given by Flinn and Engdahl[2] and Flinn, Engdahl and Hill[3] is given The boundaries of these regions follow integral degree lines of latitude and longitude and this system of division leads, on occasion, to discrepancies with state or national frontiers. It should be noted that the names used to classify seismic and geographic regions are meant to be only a guide to their location and in no way to imply any political matter. For earthquakes occurring in China, concrete geographic positions of the epicenters are given.

3. The surface wave magnitude Ms is determined, as usual, with the surface wave magnitudc formula(1965) of Beijing Station(BJI)

$$M = \log(A/T) + 1.66\log\triangle + 3.50 \quad (1^\circ < \triangle < 130^\circ)$$

The body wave magnitude M_B is determined with the Gutenberg-Richter formula (1965)

$$M_B = 1.59m - 3.97$$

where m is the unified magnitude.

The local magnitude M_L is determined with the Riochter formula(1935)

$$M_L = \log A + R(\Delta)$$

where A is amplitude of ground motion in μ and $R(\Delta)$ is as determined by Prof. S. P. Lee.

4. In this Bulletin are also included macroseismic phenomena of part of the major earthquakes occurring in China. The intensities listed are evaluated accor-

ding to the New Chinese Seismic Intensity Scale of 1957 given by Prof. Xie Yushou.[4]

5. The Bulletin is compiled with internationally adopted symbols[5]. For the convenience of typing out the Bulletin on a computer, the following phases are represented by the telegraphic symbols used by US National Earthquake Information Service, namely:

PG	represents	$\overline{P}$	or Pg
PB	represents	P*	
SB	represents	S*	
AP	represents	pP	
APXP	represents	pPKP	
SG	represents	$\overline{S}$	or Sg
XP	represents	sP	
XS	represents	sS	
XPKP	represents	sPKP	
LG	represents	Lg	

References

[1] Jeffreys, H. and Bullen, K. E., 1940, Seismological Tables. British Association, London. (Reprinted, with additions, 1967).

[2] Flinn, E. A. and Engdahl, E.R., 1965, A Proposed Basis for Geographical and Seismic Regionalization. Rev. Geophys., Vol. 3, 123.

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一九八〇年地震观测资料
汇编工作人员

Compiling personnel of the observed seismological data in 1980

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LIST OF THE SEISMOLOGICAL STATIONS

Station Name	Code	Geographical Coordinates φ_N	λ_E	Altitude h_m	Foundation	Instruments
Baotou (Paotow)	BTO (PT)	40° 35′ 54″	110° 01′ 06″	1120	Granite-Gneiss	SK, 64
Beijing (Peking)	BJI (PK)	40 02 25	116 10 30	43	Gravel bed	SK, 62, 513
Changchun	CN 2	43 48 05	125 26 54	230	Slate	SK, 64, 513
Chengdu (Chengtu)	CDU (CU)	30 39 37	104 00 40	506	Clay	SK, 513
	CD 2	30 54 36	103 45 28	628	Conglomerate	SK
Guangzhou (Canton)	GZH (CT)	23 05 13	113 20 38	11	Sandstone	SK, DD-1, 513
Guiyang	GYA (HS)	26 27 31	106 39 50	1162	Dolomite	SK, DD-1
Kashi	KSH (KS)	39 27 19	75 58 48	1286	Alluvialclay	SK
Kunming	KMI (KM)	25 07 24	102 44 24	1945	Basalt	SK, DD-1
Lanzhou (Lanchow)	LZH (LC)	36 05 12	103 50 40	1560	Lehm	SK, 64, 513
Lhasa	LSA (LS)	29 42 00	91 09 00	3789	Granite	SK
Nanjing	NJ2	32 03 06	118 51 16	45	Silicarenite	SK, DD-1, 513
Quanzhou	QZH (CCW)	24 56 35	118 35 30	21	Granite	SK, 64
Sheshan (Sose)	SSE (ZS)	31 05 44	121 11 12	10	Andesite	SK, DD-1
Taian	TIA (TA)	36 12 41	117 07 28	300	Amphibole-Granite	SK, 64, 513
Urumqi (Urumchi)	WMQ (UM)	43 49 16	87 41 42	970	Sandstone	SK, 62
Wuhan (Wuchang)	WHN (WC)	30 32 37	114 21 01	26	Silicarenite	SK, DD-1
Xian (Sian)	XAN (SA)	34 02 22	108 55 17	630	Granite	SK, DD-1, 513

* The Code CD2 for Chengdu has being used since 1. Oct 1980 instead of CDU, because of the shift of the station.

仪 器 常 数

Constants of Seismographs

台站代号 station Code	仪器型号 type of Instruments	分 向 Comp.	T_1	T_2	D_1	D_2	σ^2	V_0	r_1	Rv mm/min	记 录 方 式 Recorder Type
BTO	SK	N-S E-W U-D	12.5 12.5 12.5	1.2 1.2 1.2	0.45 0.45 0.65	4.9 5.0 5.1	0.106 0.091 0.372	1.93×10^3 1.72×10^3 1.02×10^3		30	照 像 纸 Photo paper
	64 (473)	N-S E-W U-D	1.5 1.5 1.5		0.5 0.5 0.5			*8.68×10^4 *5.30×10^4 *6.54×10^4		120	熏 烟 纸 Smoked paper
BJI	SK	N-S E-W U-D	12.5 12.5 12.5	1.1 1.1 1.1	0.45 0.45 0.59	5.5 5.5 5.5	0.090 0.083 0.300	1.70×10^3 1.63×10^3 0.88×10^3		30	照 像 纸 Photo paper
	62	N-S E-W U-D	1.5 1.5 1.5	0.4 0.4 0.4	0.7 0.7 0.7	1.5 1.5 1.5	0.058 0.058 0.058	3.09×10^4 3.27×10^4 3.92×10^4		60	照 像 纸 Photo paper
	513	N-S E-W	4.8 4.3		0.31 0.34			4.3×10 6.3×10	0.35 0.19	30	熏 烟 纸 Smoked paper
CN2	SK	N-S E-W U-D	12.5 12.5 12.5	1.2 1.2 1.2	0.45 0.45 0.60	5.0 5.0 5.0	0.066 0.086 0.319	1.45×10^3 1.75×10^3 1.00×10^3		30	照 像 纸 Photo paper
	64 (473)	N-S E-W U-D	1.5 1.5 1.5		0.45 0.45 0.45			*6.54×10^4 *6.94×10^4 *4.82×10^4		120	熏 烟 纸 Smoked paper
CDU	SK	N-S E-W U-D	12.5 12.5 12.5	1.2 1.2 1.2	0.45 0.45 0.56	5.2 4.9 5.0	0.074 0.069 0.273	1.38×10^3 1.48×10^3 0.81×10^3		30	照 像 纸 Photo paper
	513	N-S E-W	5.0 5.0		0.33 0.33			5.0×10 5.0×10		30	熏 烟 纸 Smoked paper
GZH	SK	N-S E-W U-D	12.5 12.5 12.5	1.2 1.2 1.2	0.45 0.45 0.56	5.0 5.0 5.1	0.071 0.061 0.268	1.54×10^3 1.36×10^3 0.88×10^3		30	照 像 纸 Photo paper
	DD-1	N-S E-W U-D	1.0 1.0 1.0		0.45 0.45 0.45			*3.20×10^4 *2.20×10^4 *2.76×10^4		120	墨 水 笔 Pen and ink
	513	N-S E-W	5.0 5.0		0.33 0.35			5.3×10 4.8×10	0.21 0.21	30	熏 烟 纸 Smoked paper
GYA	SK	N-S E-W U-D	12.5 12.5 12.5	1.2 1.2 1.2	0.45 0.45 0.56	4.9 4.9 5.0	0.091 0.071 0.307	1.57×10^3 1.45×10^3 0.86×10^3		30	照 像 纸 Photo paper
	DD-1	N-S E-W U-D	1.0 1.0 1.0		0.45 0.45 0.45			*0.81×10^5 *1.02×10^5 *1.10×10^5		120	墨 水 笔 Pen and ink
KSH	SK	N-S E-W U-D	12.5 12.5 12.5	1.2 1.2 1.2	0.45 0.45 0.53	4.9 5.0 4.9	0.093 0.075 0.255	1.31×10^3 1.24×10^3 1.06×10^3		30	照 像 纸 Photo paper
KMI	SK	N-S E-W U-D	12.5 12.5 12.5	1.1 1.1 1.1	0.45 0.45 0.60	5.5 5.5 5.5	0.092 0.081 0.325	1.58×10^3 1.44×10^3 0.86×10^3		30	照 像 纸 Phato paper
LZH	SK	N-S E-W U-D	12.5 12.5 12.5	1.2 1.2 1.2	0.45 0.45 0.59	5.0 5.0 5.0	0.086 0.080 0.347	1.51×10^3 1.45×10^3 0.95×10^3		30	照 像 纸 Photo paper

续表

台站代号 station Code	仪器型号 type of Instruments	分向 Comp.	T_1	T_2	D_1	D_2	σ^2	V_0	r	R_V mm/min	记录方式 Recorder Type
LZH	64	N-S E-W U-D	2.5 2.5 2.5	0.1 0.1 0.1	0.5 0.5 0.5	6.0 6.0 6.0	0.25 0.25 0.25	2.44×10^4 2.28×10^4 2.67×10^4		60	照像纸 Photo paper
	513	N-S E-W	5.0 5.0		0.33 0.34			4.4×10 4.8×10	0.18 0.20	30	熏烟纸 Smoked paper
LSA	SK	N-S E-W U-D	12.5 12.5 12.5	1.2 1.2 1.2	0.45 0.45 0.56	5.2 4.9 5.3	0.080 0.085 0.258	1.57×10^3 1.77×10^3 0.87×10^3		30	照像纸 Photo paper
NJ2	SK	N-S E-W U-D	12.5 12.5 12.5	1.2 1.2 1.2	0.45 0.45 0.58	5.0 5.0 5.0	0.070 0.069 0.263	1.81×10^3 1.32×10^3 0.92×10^3		30	照像纸 Photo paper
	513	N-S E-W	4.8 5.0		0.36 0.36			7.3×10 4.6×10	0.25 0.28	30	熏烟纸 Smoked paper
QZH	SK	N-S E-W U-D	12.5 12.5 12.5	1.2 1.2 1.2	0.45 0.45 0.45	5.0 4.9 5.0	0.079 0.071 0.085	1.67×10^3 1.46×10^3 1.07×10^3		30	照像纸 Photo paper
	64	N-S E-W U-D	1.5 1.5 1.5		0.45 0.45 0.45			*2.47×10^4 *2.62×10^4 *1.60×10^4		120	熏烟纸 Smoked paper
SSE	SK	N-S E-W U-D	12.5 12.5 12.5	1.2 1.2 1.2	0.45 0.45 0.55	5.0 5.0 5.0	0.088 0.087 0.233	1.82×10^3 1.54×10^3 0.75×10^3		30	照像纸 Photo paper
	DD-1	N-S E-W U-D	1.0 1.0 1.0		0.45 0.45 0.45			*1.33×10^5 *1.10×10^5 *1.01×10^5		120	墨水笔 Pen and ink
TIA	SK	N-S E-W U-D	12.5 12.5 12.5	1.2 1.2 1.2	0.45 0.45 0.53	5.1 5.1 5.1	0.084 0.093 0.220	1.56×10^3 1.74×10^3 0.66×10^3		30	照像纸 Photo paper
	64	N-S E-W U-D	1.5 1.5 1.5		0.45 0.45 0.45			*0.89×10^5 *1.09×10^5 *0.96×10^5		120	熏烟纸 Smoked paper
WMQ	SK	N-S E-W U-D	12.5 12.5 12.5	1.2 1.2 1.2	0.45 0.45 0.61	5.0 5.0 5.0	0.102 0.090 0.534	1.93×10^3 1.64×10^3 1.04×10^3		30	照像纸 Photo paper
	62	N-S E-W U-D	2.0 2.0 2.0	0.5 0.5 0.5	0.5 0.5 0.5	1.5 1.5 1.5	0.054 0.097 0.081	*6.50×10^4 *6.47×10^4 *6.75×10^4		60	照像纸 Photo paper
WHN	SK	N-S E-W U-D	12.5 12.5 12.5	1.2 1.2 1.2	0.45 0.45 0.56	5.0 5.0 5.0	0.080 0.090 0.311	1.78×10^3 1.68×10^3 0.93×10^3		30	照像纸 Photo paper
	DD-1	N-S E-W U-D	1.0 1.0 1.0		0.45 0.45 0.45			*3.80×10^4 *4.20×10^4 *5.50×10^4		120	墨水笔 Pen and ink
XAN	SK	N-S E-W U-D	12.5 12.5 12.5	1.2 1.2 1.2	0.45 0.45 0.59	5.0 5.0 5.0	0.088 0.158 0.362	1.49×10^3 2.16×10^3 0.71×10^3		30	照像纸 Photo paper
	DD-1	N-S E-W U-D	1.0 1.0 1.0		0.45 0.45 0.45			*1.01×10^5 *1.03×10^5 *0.84×10^5		120	墨水笔 Pen and ink

62: tybe 62 seismograph with galvanometer recording

64: tybe 64 seismograph with galvanometer recording or with etectronic amplifier and pen recorder

SK: type SK (Kirnos) seismograph with galvanometer recording

DD-I: tybe DD-I seismograph with electronic amplifier and pen recorder

T_1: Pendulum period in sec.

T_2: Galvanometer period in sec.

D_1: Damping coefficient of pendulum

D_2: Damping coefficient of galvanometer

σ^2: Coupling coefficient

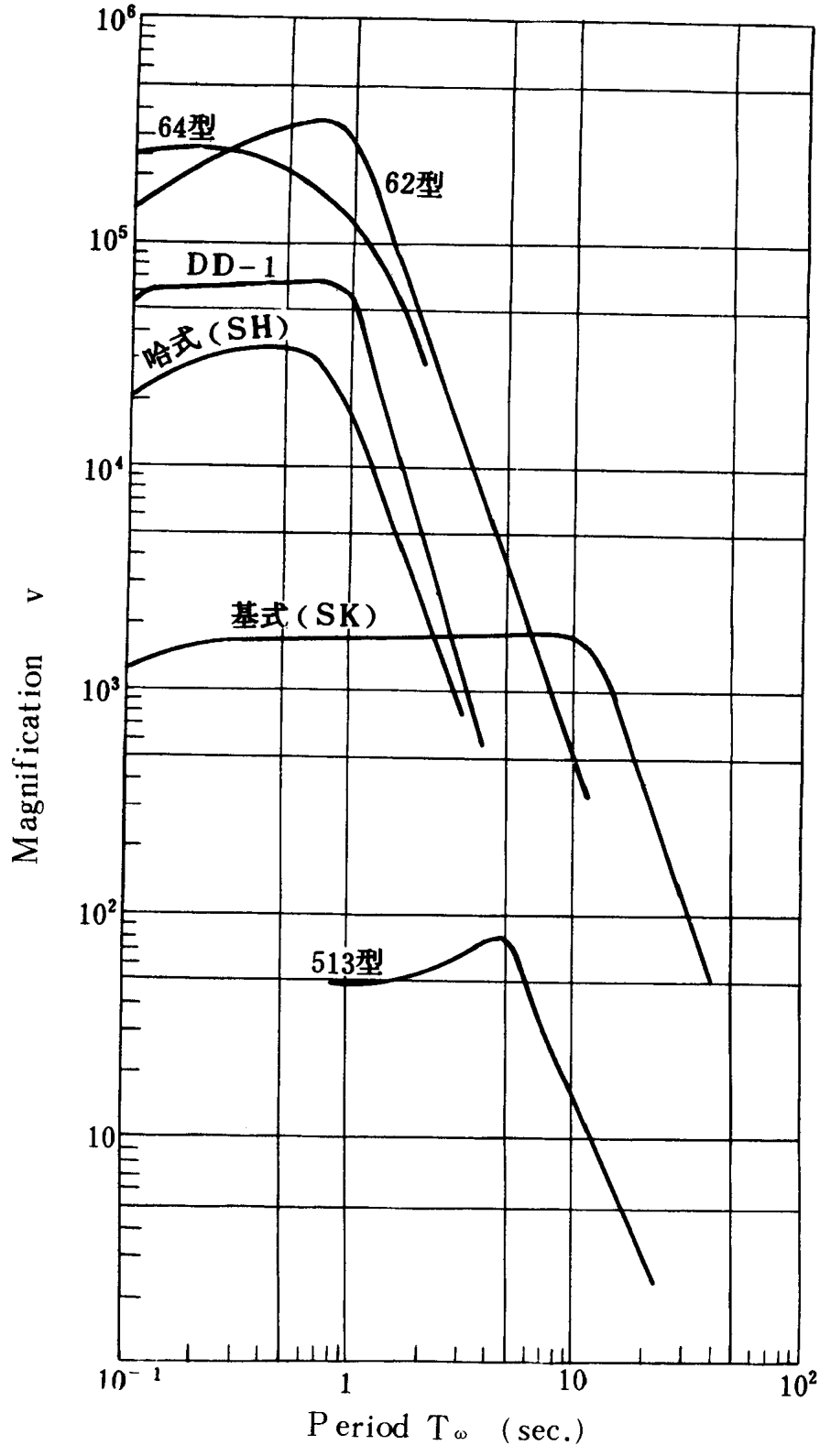
r_1: Amplitude of friction

Vo: Static magnification. An asterisk indicates magnification at T_1.

R_v: Paper speed in mm/min

仪 器 放 大 倍 率 曲 线

Magnification Curves of Instruments



1980 年 地 震 目 录

The Catalogue of Earthquakes in 1980