怎样预报观测台站周围及国内外最近七天地震

——MDCB查震报震法是解开临震预报的钥匙

王文祥 杨武洋 编著

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卷 首 语

MDCB查震报震法的工作程序

1. 研究某地区是否潜伏着破坏性地震的震源区，首先要对该地区的区域应力场进行地下5km、7km、10km三个深度利用DYL型地应力探测仪进行普查，确定该地区是否潜伏着地应力异常区（震源区），如果有，根据其具体位置、面积大小，利用公式计算未来的震级和确定对该震源区进行监测时最佳观测台站位置。

2. 在震源区周围建立近区（7—9台）、远区（9—10台）MDCB—5、6型临震信息监测仪联网观测台站，对潜伏的震源区其后的活动进行跟踪监测。

3. 由近区中心台站负责每天汇总近区、远区各台站监测的资料，综合分析，适时作出该地区最近几天即将发生的破坏性地震预报意见，并及时向当地政府汇报，研究采取相应的防范措施。

MDCB查震报震法目前正值地震界推广之际，我们提出验证该仪器性能、方法及相关信息的反馈途径

晚上听天气预报，只要对明天的天气状况作个统计，不需要了解高深的气象知识和预报方法，就能得出目前气象预报的水平和成功率。

由3名工作人员，每周三用MDCB查震报震法作国内外最近7天即将发生的地震预报，也具备检查气象预报成功率的条件，不需要了解高深的地震、地质知识和如何预报地震的方法，每天只要下载国内外公布的地震目录，核查预测的成果图，同样可以统计出这种预报方法的水平和成功率。

考证2003年9月30日—2005年9月28日连续102次作地震预报的研究成果，您可能就会得出如下结论：

在全世界范围内实现MDCB法联网监测、共同研究震情，唐山大地震、苏门答腊海啸的悲剧有可能在人类历史上不会再重演。

前　言

地震短临预报是公认的世界性难题。但由煤炭科学研究总院西安分院王文祥研究员个人自筹资金领导的蹿论实验室的科研人员经过15年的努力，利用“Ω理论”研制的MDCB型地震前兆监测仪和2003年9月30日创立的MDCB查震报震法，经过一年半的短临预报实践证明，MDCB查震报震法可能是解开地震短临预报这一世界性难题的钥匙。

理由如下：

1. 2003年9月—2005年3月78次预报的成功率高

对地区短临预报成功率在60%左右；对方向短临预报成功率在70%左右。

MDCB法18个月地震预报结果成功率统计表

方向预报数	实际发震数	成功率(%)	地区预报数	实际发震数	成功率(%)
2010	1450	72.1	500	325	65

说明：在统计时，如果预报该地区发生几级地震，震级误差稍大于规定的震级，按预报成功对待。另外在预报的时间段内，预报区内如果发生一个小震群，也作成功对待。每次预报意见发给中国地震局分析预报中心、国内十几个省市地震局、国外十几名地震专家，做到有记载可查。

2. 改变仅几个人做地震短临预报的现状，预报成功率可能会更高

78次预报所投入的人力、物力和财力：4个台站使用4台MDCB－5型仪器，每台仪器价格10万元，仪器总费用40万元。6个工作人员投入该项工作，其中2个人是常年分析资料，投入的工作日为680天(340天/人)；两个人每次预报只占用一天的时间，为156天；另外两个人每天只用10分钟向西安发数据，两个人的工作按30天计算，6个人的工作量为866天。如果每个人的工资和仪器用电等消耗目前按每年3万元/人，6个人投入的研究经费大约为7.117万元。

假如上述预报期间使用的仪器不是4台，而是60台，参与该项工作的研究人员不是6名，而是60名，投入的研究经费不是7.117万元，而是300万元(5万元/人)，那么上述预报的成功率可能会更高。

3. 该种预报方法简单易行，便于推广

预报方法用MDCB－5型仪器监测的资料，已经作到监测异常数字化、分析数据半自动化、提交预测研究成果程序化(如确定未来震源区位置、震级大小，只要将有关参数输入到交汇、震级计算程序中，马上可以得出结果)。一般工作者不需要掌握更多的地震、地质知识，只要经过两周培训，认真工作，严格按照MDCB法工作程序进行资料研究，基本都可胜任地震短临预报工作。

4. 该种预报方法可以跨地区、跨国界实行世界联网进行地震短临预报

MDCB型仪器监测的资料在世界范围内都能通用。因此该种方法可以实行跨地区、跨国界联网监测，互通信息，共同研究某个地区即将发生的大地震。

5. 为国家节省大量的人力、物力和财力

这种预报方法在实现定期全国范围内快速地应力普查的基础上，若由国家局集中管理监测仪器、研究人员，从而做到统一调配、重点监控、互相配合、联合预报，再配合当地的宏观异常现象和已有的一些监测手段，就会收到事半功倍的效果，每年可以节约大量的人力、物力、财力。

不管单位或个人，只要对地震预报工作感兴趣，不需要具备高深的地震地质知识，只要拥有一台 MDCB－5 型仪器或者从我们的网页上，下载本地区、附近地区或远区有关台站最近几天的数据，按照书中介绍的 MDCB 查震报震法来研究震情，在很短的时间内就会掌握某方向、某地区地震的发震规律，成为业余预报地震的专家。

为了使人们在研究震情的过程中，少走一些弯路，本书后面还收录了以前研究震情的一些方法，虽然已经过时，但可能对读者仍有所补益。

地震是一个很复杂的地质问题，有前兆不一定有地震发生，对资料的认识不能拘泥于形式，要有彼变我亦变的对策。本书中只概略地介绍了作者和作者的同事们最近一段时间研究的一些心得，针对苏门答腊海啸后，世界上越来越多的人们开始对如何抗御天灾的重视，为了让更多的人了解如何做地震短临预报的方法，少走弯路，才决定出版此书。这里只是介绍如何预报地震诸多方法中的一种，有可能是解决地震预报的一条捷径，但准确无误地预报每一个地震，还有很大的差距，还有大量的工作要做。如果本书的出版能达到抛砖引玉的目的，那么也就达到了作者再次编写如何做地震短临预报的初衷。

本书第二章主要介绍如何预报地震，第三章介绍如何根据地应力测量的结果计算震源区未来震级，第四章是向读者介绍用另外一种研究思路修正预报的发震地点的经纬度，第五章是向读者介绍如何用另外一种研究思路研究未来的发震方向，第六章是模拟张铁铮、沈宗丕两位老先生利用磁暴二倍法预报发震时间的研究思路，提出了电磁波异常二倍法预测发震时间的事例，第七章是向读者介绍典型的预报地震的事例，第八章是 MDCB 研究方法在发展过程中的一些相关材料。本书第二章第六节主要部分是由原青岛市地震局监测处祝桂秋处长编写的，介绍的是如何利用黄岛监测站仪器监测资料，对台站周围小震进行预报，其余部分都是由笔者完成的，部分典型震例由吴频高级工程师、王兰香技术员参与整理。书中部分内容难免有一些不准确的提法或错误的认识，这也是启迪人们继续思考、不断深入研究、不断完善的线索，所以一旦有读者发现，还请鉴谅笔者的误导，同时也希望不要因此放弃，因为“发现问题也就等于解决了问题的一半”。

正像 1997 年 3 月出版的《蹼论与地震短临预报》前言中所说的那样，MDCB 法地震短临预报研究一开始就受到了地震系统很多老领导老专家的支持，也得到了本单位一些老同志的关怀，特别是完稿后，白清昭研究员、吴频高级工程师作了校正，提出了一些良好的意见，在此一一表示感谢。

在此，我们特别感谢中国地球物理学会天灾预测委员会顾问、中国灾害防御协会灾害史研究专业委员会顾问、英籍华人陈一文先生数年来大力协助，将 MDCB 地震预测技术推荐介绍到国外，配合我们出席参加有关国际会议，建立与国际地震预测研究者的联系与交流。引起国际地震预测研究者与防灾减灾机构对中国人自主创新开发的 MDCB

地震预测技术越来越大的兴趣。

利用新的电磁波定义研制的 MDCB 型仪器和建立的 MDCB 查震报震法在地震系统是一个全新的概念，用这种理论和方法研究地震短临预报，基本上局限于几个人狭小的圈子之内，所以文中引用别人的参考文献较少，详见第八章第四节“MDCB 法有关论文、论著、报刊报道”，在此特作说明。

2005 年 7 月 1 日　于西安

Preface

Earthquake(EQ) short-term/imminent prediction is a widely admitted difficult scientific task for the world. However, through 15 years of efforts and hard work by researchers at the Ω-Theory Laboratory led by Wang Wen-xiang, research, Xi' an Branch of the China Coal Research Institute, supported with self-raisedfunding, the MDCB Check Earthquake-Predict Earthquake Method was established on Sep. 30, 2003. The EQ short-term/imminent prediction practice for over one and a half year has proved that the MDCB Check Earthquake-Predict Earthquake Method possibly is a key to dissolve the world difficult task of EQ prediction.

The reasons are as follows:

1. The success rate of 78 continuous weekly EQ predictions during Sep. 2003—Mar. 2005

The success rate of EQ predictions within specified areas is about 60%; and along specified directions is about 70%.

Statistical summary of the success rate of 18 months of EQ prediction

Number of predicted directions	Number of directions EQs occurred	Success rate	Number of predicted areas	Number of areas EQs occurred	Success rate
2010	1450	72.1%	500	325	65%

Note: In statistical summary, when a prediction specified a certain magnitude EQ might occur in a specific area, if the magnitude of the later occurred EQ was slightly higher than what the prediction specified, then it will be considered as a successful prediction. Similarly, during the predicted time window, if a group of minor EQs occurred, then it will also be regarded as a successful prediction. Each weekly prediction is submitted to the Analysis & Prediction Center of the China Seismology Bureau, to provincial seismology bureaus of over ten provinces, over ten EQ prediction researchers abroad. Each prediction is recorded and can be checked.

2. If the situation of only a few members working on the EQ prediction project could be significantly improved, the success rate could be much improved

The total amount of human resources, facilities and costs to generate these 78 EQ predictions:

The above EQ predictions are mainly based on only four observation stations using 4 units of MDCB-5 instruments, net cost of each trial unit is RMB 100,000, thus total instrument cost RMB 400,000. These instruments are in stalled and operate in normal office conditions suitable

for computers to work, without any special requirements, do not need any underground facilities, and also do not need any other sensors or lead wires.

Six staff member work on the project, the daily regular work of two members are to analyze the data, total 680 working days (340 working days/person); two members use one working day to generate each prediction, amounting to 156 working days (78 predictions × 1 working day/person × 2 person); Another two person everyday only use 10 minutes to transfer the daily data over the internet to the Xian Central Station of the MDCB network, amounting to about 30 working days. If the cost of each person, plus power cost for the instruments and computers is about RMB 30,000/person, then the total operating cost for the EQ prediction research is about RMB 71,170.

If the total numbers of observation stations/instruments working on the MDCB network in China is not 4 units, but is 60 units, amounting to RMB 6 million; and the total number of researchers working on the project is not six people, but 60 people, and the operating cost is not RMB 71,170, but is RMB 3 million (RMB 50,000/person/year), then the success rate might be much higher.

3. This EQ prediction method is simple, cost effective, and easy to popularize

The EQ prediction method relies on the data monitored/recorded by the MDCB-5 instrument, already digitizing, analysis of the data is also semi-automatic, generating the result of the prediction is also programmable. As example, to determine the location of the future EQ focal area and its magnitude, staff member only need to input the relevant parameters into the intersection program and the magnitude calculation program, and the computer program will immediately generate the result. There is no special requirements on the staff member, they do not need to master too much seismology, geology knowledge, only need to go through about two weeks of intensive training, be serious to their work, strictly follow the data analysis work procedures required by the MDCB check EQs-Prediction EQs Method. and they basically would all be able to master their work.

4. The MDCB network could be established regionally and globally, predicting EQs occurring over continents and globally

The data monitored/recorded by the MDCB instrument is standardized and can be used worldwide. Therefore, the MDCB network could be established regionally and globally, enabling review, analysis and discussions held between researchers in different nations around the world, enabling joint team-work to predict EQs occurring in any region, continents of our globe.

5. Massive human resources, equipment, facilities and funds could be saved for the nation

For most effective results, on the basis of nationwide rapid terrestrial stress surveys by terrestrial stress measurement instruments developed by our Ω-Theory Laboratory, if the state seismology bureau centralizes the allocation of seismic activities monitoring instruments, human resources, and concentrates monitoring efforts on identified high risk areas, establishing coopera-

tion between all the observation stations to achieve team-work joint efforts in EQ prediction, and working together also with local observations of natural macro abnormally phenomena, and collaborating together with other already existing other means of monitoring, much better results could be achieved, and massive human resources, equipment, facilities and funds could be saved for the nation.

Regardless if institutions or individuals, if they have interest in EQ prediction, without mastering deep knowledge in seismology and geology, once they obtain one MDCB-5 unit, or, from our web page download the recent few days data from their region, nearby region and remote regions, and proceed according to the analysis procedures of the MDCB check EQs-Prediction EQs Method described in this book, then, without too long a period of time, they will be able to master the rules of how to determine EQs occurring in a certain direction, in a specific area, and become a spare-time EQ prediction expert.

To help the readers during their process of studying seismic activities proceed through less misleading paths, at the end of the book we have also attached some methods used before in studying seismic activities. Although these older methods are a little out of date, they still might be helpful in various respects to the readers.

EQs is a rather complex geological issue, when precursors appear EQs will not surely follow. Therefore, the understanding of the data should not be confined only to their form, but must also be ready to adopt our tactics when conditions are changed. This book only briefly introduces experience by the author and his colleagues obtained during the past few years of our work in EQ prediction research.

After the Tsunami tragedy generated by the Sumatra EQ, more and more people in our world pay much greater attention on how to protect mankind against national disasters. In order to enable more people to understand the method of how to generate EQ short-term/imminent predictions, and along less misleading paths, we decided to publish this book.

This book only introduces one method out of many method how to predict EQs, which likely is a short-cut path to solve the issue of EQ prediction, but also is quite far away from accurate EQ predictions without any errors, indicating there is still a lot of work for us to continue.

If the publish of this book can help to result into the objective of "throwing a brick to attract pieces of jade", then the author has accomplished his initial intention in why to write another book on how to generate EQ short—term/imminent predictions.

In this book:

The 2nd Chapter mainly introduces how to predict EQs:

The 3rd Chapter introduces how to calculate the future magnitude level of the focal area identified through terrestrial measurement survey;

The 4th Chapter introduces to the readers another research thought approach how to modify the latitude and longitude of the future epicenter location;

The 5th Chapter introduces another research thought approach how to study the direction of

future EQs;

The 6th Chapter simulates the research thought approach found and developed by Zhang Tie-zheng and Shen Zhong – pei during the 1969/1970 using the Geomagnetic Storm Double Time Method to predict the occurrence time of EQs, proposing how to use the Electromagnetic Abnormally Double Time Method to predict the occurrence time of future EQs;

The 7th Chapter introduces various typical EQ prediction cases to the readers;

The 8th Chapter introduces various relevant materials adopted during the development process of the MDCB research method.

Section 2. 6 of Chapter 2nd is mainly written by Zhu Gui-qiu, former Section Chief, Monitoring Section of the Qingdao Municipal Seismology Bureau, which introduces how minor EQs around the observation station were predicted on basis of data monitored/recorded by the MDCB-5 instrument at the Huangdao Observation Station. Other parts of the book were by the author. Wu Ping, senior engineer, and Wang Lan-xiang, technician, helped to organize the data on some typical EQ prediction cases.

It might be unavoidable that some descriptions of the book are not clear enough, and some understandings might also contain errors or even mistakes. They provide leads and stimulate readers to give further thoughts, and make more in-depth studies. Whenever readers identify any such respects, please contact and notify the author, because "identifying the problem is already equal to half of solving the problem"!

As stated in the Preface of "The Shun (Ω) Theory & Earthquake Short-term/Imminent Prediction", published in March 1997, from the very beginning the MDCB Earthquake Prediction Method received support from many old leading members and old experts, and also received care taking by old members of my institute. I must especially mention researcher Bai Qing-Zhao and senior engineer Wu Ping, who helped to review, make necessary corrections, and propose various very good suggestions to improve the original manuscript of the book. I herewith acknowledge my appreciation to all of them.

Herewith, we would like to express our special appreciation to Mr. Chen I-wan, a British-Chinese, advisor to Committee of Natural Hazard Prediction of China Geophysics Society, and advisor to Committee of Disaster Historical Studies of China Disaster Prevention Association. During the past few years, Mr. Chen made great efforts helping to introduce the MDCB EQ prediction technology to abroad, collaborated with US in participating international conferences, establishing contacts and exchanges with overseas EQ prediction colleagues, which generated more and more stronger interest among EQ prediction researchers and disaster prevention institutions on the MDCB EQ prediction technology creatively developed by Chinese researchers.

The MDCB instruments, developed on the basis of a new electromagnetic wave deftnition, and the related MDCB Check EQ-Predict EQ Method, have established a completely new concept in the seismology community. Using this theory and method to study EQ short. term/imminent prediction, during the past years to date is still limited within a very narrow circle of re-

searchers. For this reason, the references quoted in the book on others are rather few; please refer to section 8.5 of Chapter 8 "Papers, books and news reports on the MDCB method".

The Author

May 31, 2005 in Xian, China.

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