

# 前 言

根据近年科学信息技术和知识的发展,将它们应用于诸如沉积学资料的集成处理、沉积作用的模拟和统计学的与数学的模型,以及包括石油在内的沉积矿床的自动预测和评价之类的沉积学研究是可能和重要的。这些高深的研究有两个基础:其一是数据库内充足数量和质量的数据积累,这对所需研究易于检索和传递;另一是新理论和计算机系统的发展,这能处理此类集成数据和研究模型。前者将产生知识基础系统;后者将扩大到更高集成度中的人工智能和专门系统。

设立于 1988 年的 IGCP-269 项目,是讨论沉积岩石学全球数据库的可行性。它已解决了数据库的很多问题,并于 1992 年建立了有大量沉积岩石学分析的原型数据库。在该项目的进行过程中强调将来的数据库在沉积学中的应用是十分重要的,同时决定 1994 年 7 月 1 日至 8 日在中国成都举行一次沉积学数据库和计算机应用的国际学术讨论会。

这次学术讨论会提交有 30 多篇论文,有来自 10 个国家的 50 多位代表。与会代表交换了各种计算机应用和沉积学及有关地学的数据库的知识,展示了许多软件并用个人计算机和影象幻灯进行了表演。许多系统通过吸取最新的方法和技术而取得新进展,如目标定位模型和 WINDOWS 系统之类。我们已知现有一些相似的数据库系统,并用于世界各地。这些系统间几乎没有联系,而这次学术讨论会为它们的交流提供了很好的机会。

现在,建立大而复杂的数据库,从数据库检索数据和显示所检索的数据没有什么困难,但是,计算机和数据库应用到现实的沉积学研究中去是不容易的,这是因为有关理论和方法都不充分。我们将不断地努力,以计算机和数据库的综合应用,去建立新的沉积学领域。

决定于 10 月份提出一个在地学中发展数据库应用方法和知识的新的 IGCP 项目,特别是怎样交流、联系和使用不同的数据库;同时也决定建议召开数据库应用的专门学术讨论会,举办数据库的短训班和(或)实习班,以及在 30 届国际地质大会(北京,1996)上作计算机的广告展示。

这次学术讨论会由中国地质科学院成都地质矿产研究所和中国科学院地球化学研究所组织,由国际数学地质学会(IAMG)、地科联地质信息委员会(COGEOINFO)和地科联岩石学数据库分会主办。衷心感谢中国科学院南-南合作基金会、中国国家自然科学基金会、中国地质学会、中国石油地质学会和日本奈良大学提供财政支持。

这次学术讨论会的汇编由《岩相古地理》以专刊形式出版。我们希望它将促进沉积学家们在他们的研究中应用计算机和数据库,我们期望将涌现出大量的沉积学的优秀成果。

中岛西协二一,1994,11

## PREFACE

According to the development of knowledge and technology of information sciences in recent years, it is possible and important to apply them in sedimentological researches, such as, integrated processing of sedimentological data, statistical and mathematical modeling and simulation of sedimentary process, automatic prediction and assessment of sedimentological deposits including petroleum, etc. There are two basis for those advanced researches. One is the data accumulation of sufficient amount and quality in databases, which can be easily retrieved and transferred for the required researches. The other is the development of new theories and computer systems, which can treat such integrated data and examine the models. The former will create the knowledge base systems, and the latter will expand to the expert system and artificial intelligence in the more integrated stage.

The IGCP Project-269 was established in 1988 for discussion on the feasibility of a global database in sedimentary petrology. It has resolved many problems on the database and constructed the prototype database with variety of analyses in sedimentary petrology by 1992. In the course of the project it was stressed that the application to sedimentology is important for the future of the database, and it is decided to hold an international symposium on the application of computer and database to sedimentology at Chengdu, China on July 1—8, 1994.

In this symposium, more than 30 papers were presented and more than 50 participants attended from 10 countries. The participants have exchanged various knowledge on the application of computers and databases to sedimentology and related geosciences, and many softwares were exhibited and demonstrated by using personal computers and video projector. Many systems have been recently developed by adopting the most recent methods and technology, such as, the object-oriented modeling and WINDOWS system. We have known that similar database systems are now developed and used at different places in the world. In many cases there is almost no communication within these systems, and this symposium is a very good chance for their exchange.

Now, there is no difficulty to construct large and complicated databases, retrieve data from database, and display the retrieved data. The application of computers and databases to actual researches in sedimentology, however, is not easy because of insufficient theories and methodologies. We should continue our effort to establish the new field of sedimentology with integrated application of computers and databases.

It is decided to propose a new IGCP project in the next October on the development of knowledge and methodology on the database application in geosciences, especially on how to communicate, connect and use different databases. It is also decided to propose the special symposium on database application, workshops and/or short courses on database, and poster presentation with computers in the 30th IGC (Beijing, 1996).

This symposium was organized by Chengdu Institute of Geology and Mineral Resources, CAGS (Chinese Academy of Geological Sciences), and Institute of Geochemistry, CAS (Chinese Academy of Sciences), and sponsored by IAMG (International Association for Mathematical Geology), COGEOINFO (IUGS Commission on Geological Information), and IUGS (International Union of Geological Sciences) Subcommittee on Databases in Petrology. South-South Cooperation Foundation of CAS, National Natural Science Foundation of China, Chinese Society of Geology, Chinese Society of Petroleum Geology, and Nara University in Japan are greatly acknowledged for their financial support.

The proceedings of this symposium was published as a special issue of "Sedimentary Facies and Paleogeography" by courtesy of its editorial office. We hope it will encourage sedimentologists to apply computers and database for their researches and many excellent results in sedimentology will appear in the future.

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