

河南省市县两级行政区域界线详图集的设计与编制



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摘要:《河南省市县两级行政区域界线详图集》是根据法定行政区域界线协议书附图、协议书和界桩坐标等界线资料、成果编纂而成的带状地图集。首先对详图集的基本形式和主要内容、特点进行了介绍;然后对图集的技术流程及要求进行了说明,并对编制过程中出现的主要技术问题进行了探讨;最后总结了编制发布该图集的重要意义。

关键词:市县两级行政区域;界线详图集;带状地形图;印刷

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根据国务院《行政区域界线管理条例》规定:“行政区域界线勘定后,应当以通告和行政区域界线详图予以公布^[1]。”编制出版规范的行政区域界线详图和行政区划图,既是界线管理的要求,又是社会各界广泛的需要,同时也是向社会公布法定行政区域界线和行政区域范围的有效形式。全面勘界期间,全省用现代化技术手段,形成了准确反映省、市、县三级行政区域界线实地走向的文件、地图、勘界资料,其中最重要的是经国务院、省政府批复的界线双方政府签订的行政区域界线协议书及反映行政区域界线走向的地图^[6]。将这些法定的、科学的勘界成果及地图进行专业性整理、汇总成册,编制、出版市、县级行政区域界线详图集向社会公布,可以使社会各界和广大干部群众了解法定的行政区域界线,自觉维护行政区域界线及标志物,共同维护边界地区的社会稳定。

1 基本形式及内容

《河南省市县两级行政区域界线详图集》是根据省政府批准的由双方市、县(市、区)人民政府代表签字的法定行政区域界线协议书附图、协议书和界桩坐标等界线资料、成果(界桩坐标成果表)编纂而成的带状地图集。

该图集采用统一开本,开本尺寸同1:50 000地形图,为70 cm × 52 cm。《详图集》的界线带状地形图比例尺与勘界附图比例尺为同等比例尺,均为1:50 000;共表示河南省境内36条市级行政区域界线,225条县级行政区域界线;共涉及1:50 000勘界协议书附图1 136幅,成图共804幅1:50 000带状地形图,分18分册装订(36条市级线为1个分册,17个省辖市(济源市没有县级线)的县级线为17个分册)。每分册包括封面、省行政区划图、编制说明、目录、结合表、

图例、界线带状地形图、界桩照片等。

该图集所采用的基本资料,主要是5年多勘界过程中所形成的经省政府批准的由双方市、县(市、区)人民政府代表签字的法定行政区域界线协议书附图(法定行政区域界线标注在1:50 000地形图上,共1 136幅)、协议书和测绘队伍测定的界桩坐标等界线资料、成果^[2],资料截止时间为2001年底(即勘界结束时间)。

行政区域界线协议书附图中市、县界线两侧各5 km范围所形成的界线带状地形图为编绘作业范围,内容分成带状地形图和专题要素两类表示。省界只绘界线不绘带状地形图,界线两侧加注省级、市、县级表面注记。

带状地形图内容的表示:按1990年1:50 000地形图图式、规范及本设计书的要求作业,除界线的专题要素,主要表示是与界线相关的带状地形、地物。原地形图中的内容(除植被可省去一部分)基本全取。其植被只表示独立树、行树和林地外其他一律不表示。

专题要素内容的表示:行政区域界线表示方法为,本图所反映的主线,线宽为0.4 mm的红实线,非主线为0.25 mm的灰线,主线加3 mm底色衬托。界桩符号不分等级不分类型,一律用直径1.5 mm(线粗0.15 mm)红圆圈绘出。

《详图集》样书验收审定后,分18册输出EPS文件,检查EPS文件,无误后进行胶片的输出、打样、晒版、印刷、分检、覆膜,封面印刷,装订成册、裁切、包装。

2 主要特点

1) 该图集依据河南省最新勘界成果,采用先进的数字化制图技术编制而成。图集统一采用1:50 000地形图作为地理底图,全面表示市县两级行政区域界线

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的标准画法，具有权威性、规范性，对河南省行政区域界线管理具有重要意义和作用，是河南省今后进行行政区域界线管理和编制各类专业地图的基础资料与法定依据。

2) 该图集准确表示了市县两级法定行政区域界线走向、界桩位置，并运用直观的地图语言，反映界线周边相关的基础地理信息和社会经济要素，内容丰富、表示合理、重点突出、层次分明，集科学性、实用性于一体。

3) 该图集采用全数字化制版、五色胶印等先进的印刷出版技术，编印装帧精美，具有长期保存价值。

3 技术流程及要求

该图集编制流程：行政区域界线协议书附图 扫描 数字栅格地图 坐标几何纠正 带状范围线的确定 矢量化带状地形图 接边、整饰 喷绘 图面检查 出胶片 印刷 装订成册。具体工艺流程如图 1 所示。

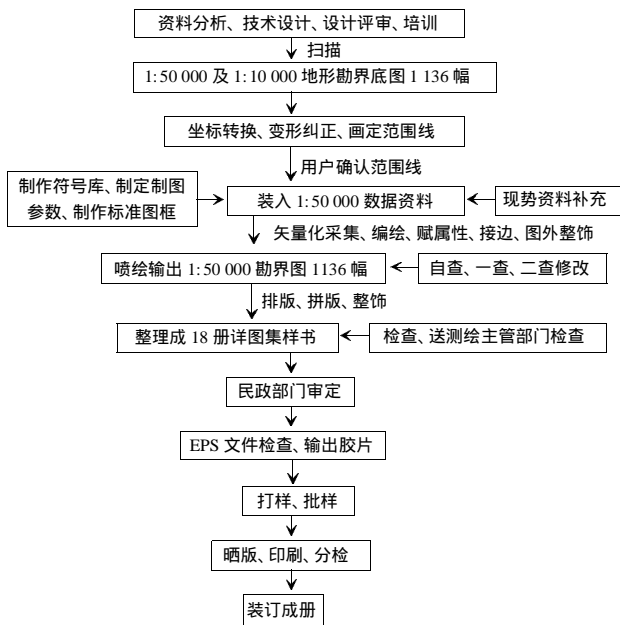


图 1 图集编制流程图

带状范围线的确定：在图幅坐标转换和变形纠正后的数字栅格地图上采集勘定的市、县行政区域界线，以境界线为单位利用生成缓冲区或绘制平行线的方法由计算机自动生成带状范围线，再由人工手动局部修改，以保证带状范围线的统一和协调。

如果界线不跨投影带或跨带范围线不超过 30 时，可直接将本条界线所涉及图幅中采集的境界线按 54 坐标系进行接边（或转换到同一投影带），并连接成一条完整的界线后生成带状范围；如果市县界线跨不同投影带，且超过 30 时，先按照统一规划的新投影带，将

本条界线所涉及的图幅中采集的界线转换到新投影带进行接边，再生成带状范围线，将生成的带状范围线投影到原图的坐标系后进行分幅裁切，得到每幅图原始投影参数的带状范围线及经定向的数字栅格地图，经民政部门确认后，才能矢量化采集与编辑。

4 主要技术问题的处理

4.1 境界要素方面的问题

1) 由于部分界桩定位后偏离界线，经过认真分析，采用以下方案：首先，对界桩成果表进行核实，将界桩成果表与测绘单位提供的原始测量成果进行对比，确定成果表中坐标无误；其次，查阅界桩登记表，界桩登记表中有界桩周围放大图（多数为 1:10 000），并且还描述与用于定位界桩的地物，可以查阅界桩与周围地物的关系；最后，结合协议书通过制图手段（如适当移动界线）使界线与界桩吻合，并将此情况反映给民政厅及其各市勘界部门，由其核实处理是否合理。

2) 在编制过程中发现不同界线之间相互矛盾的情况。由于县级界与市级界不是同一时间勘定，因此造成部分县界超出了市界或未连接到市界。通过与民政厅协商，采用低等级界线服从高等级界线的原则，低等级界线与高等级矛盾界线用黑线（与界线等粗）表示。

3) 关于争议地和飞地、插花地的问题。经民政部门沟通，最终方案为：争议地不表示；飞地、插花地统一用红色虚线表示，不加底色衬托；飞地，如底图加注有名称，则县级飞地加注**县飞地，市级飞地加注**市**县飞地，插花地用箭头指向主区，不表示名称。

4) 当带状范围内出现多条界线时界线表示方法：本图所反映的主线，线宽为 0.4 mm，非主线为 0.25 mm，主线加 3 mm 底色衬托。主线两侧加注表注记（较大），非主线在带状范围边缘加注界端注记（较小）。

5) 界线不接边问题的具体情况有：纸图资料年代较久，变形较大，经过纠正后仍有变形；勘界时，未对纸图进行严格接边；勘界时，底图资料坐标系不一致。解决方案：第一种情况，结合协议书，通过制图手段，将其边接；第二、第三种情况，将协议书与附图对照，找出可能造成此问题的原因，根据协议书提出建议处理意见，交于省民政厅及其下属各市勘界主管部门，待处理意见返回后修改。

6) 如果界桩注记有误，则结合协议书，分析界桩编号，将分析的编号与省民政厅及其下属各市勘界主管部门核实，修改。

4.2 编绘过程中存在的问题

1) 由于在勘界过程中采用分段（按县或市进行勘

界)勘界,当一幅五万图中有多段界线时,部分采用了不同年代出版的底图,造成界线周边的地物地貌难以套合。经过反复比较和试验后,确定底图要素以最新年代的为基础,专题要素以各自勘界时底图为准,根据协议书合理处理专题要素与底图要素之间关系。勘界时,界线周围 2 km 范围内底图要素部分进行了更新,编制中以更新的为主。

2) 针对底图资料较为陈旧,与现实存在较大出入的问题,我们采用了不同的处理办法:乡镇更新至 2001 年底(即勘界结束);县、市名称变化较小,名称更新到 2008 年(含图名);根据资料增加京九、宁西铁路等复线铁路,通过制图手段将最新的高速资料(截止 2007 年 12 月底)与详图集套合、使用。

3) 为读图方便,考虑在左上角加注此条界线名称,右上角加注界线编号,左下角加注图幅说明(协议签订时间、省政府批复时间、上报省政府时间、编制时间、坐标系、高程系),右下加注监制与编制单位,右侧下方加界线接图表。

5 结 语

《河南省市县两级行政区域界线详图集》是河南省历史上首次完成的市县两级行政区域界线图集,是国内同类型图集中第一部正式印刷成果,集中体现了测绘高新技术在行政区域界线表示和管理中的应用。该详图集的编制生产发布,具有十分重要的社会效益:

法定了行政区域界线,由此可以准确计算出各市县的行政区域范围;确定了标准画法图,规范了过去各类地图上行政区域界线的不规范画法^[5];在界线管理中,使用《详图集》,既保护了勘界原始档案,又方便快捷,提高了工作效率;能够产生强大的综合效益,图集的发布必将被广泛应用于国土、农业、林业等部门和生产领域,为政府和各部门依法办事提供法定依据^[4]。该图集将作为河南省各级政府行政区域界线管理的基础性、法定性文献,对各级政府依法行政,解决边界争议,维护社会稳定,建立和谐社会将起到十分重要的意义^[3]。

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Experience on the Geological Engineering Survey in Guinea Bauxite Exploration by LI Baojie

Abstract Exploration for bauxite in Guinea is a large survey area, short period, lack of available information, and other adverse conditions. The paper summarized the methods, experience and skills of the coordinate system choice, control network, topographic mapping, engineering survey etc. in its geological exploration.

Key words GPS-net, topographic survey, geological engineering survey (Page:114)

Quality Control Research on the Highway GPS Survey by DU Xin

Abstract Highway Surveying work is the basis of highway engineering design, control, measurement and measure their quality on the highway played a decisive role. This paper described the road when the GPS control survey prone to problems, analyzed the cause of the error, put forward specific measures to ensure the quality of measurements, GPS control survey of the future highway has a guiding role.

Key words standard, coordinate system, GPS adjustment, quality control and inspection (Page:116)

Cross-section Morphology Analysis of the Yangtze River by WANG Yan

Abstract Extracting different historical period cross-sections at different locations could capture river flushes and siltation. This paper achieved creating DEM by the river point data through the Spline interpolation, extracting the cross section lines by using the ISurface interface to generate sections, implementing flushes and siltation analysis by copulating the cross-sections' areas. The shape of cross-sections, extracted at different locations in the Yangtze River, according to the actual style of river potential evolution, react the river situation very well.

Key words cross-section, ArcEngine, cross-section analysis (Page:120)

Subsidence Monitoring Methods and Data Processing of Guangzhou Metro by LIU Jianting

Abstract The ground subsidence observation is the most important thing for the safety of subway construction. The surveying data can evaluate the construction impact on the ground surface and the environment. The topics discussed in this paper included the method of subsidence observation used in Guangzhou subway construction, the data processing of subsidence observation and the deformation analysis for ground and buildings affected by the mentioned construction. The paper also gave a way to forecast the deformation value.

Key words subsidence observation, DSZ precise level, data processing, statistical analysis (Page:122)

MapGIS Second Development to Solve the Second Survey of Ownership Knee Moving Problems by HE Qiu-hua

Abstract This paper instructed using Visual Basic (VB) 6.0 based on MapGIS-SDK 6.7 to do second development to develop more suitable function for the instruction of the second survey database, which to make up for the shortage of the second Survey software in the instruction of database.

Key words second development, second survey, ownership (Page:125)

Teaching and Practice Reform of "Quantitative Remote Sensing" Course by CHEN Jian

Abstract According to the development characteristics of remote sensing professional and the specific situation of students in universities, this paper analysed quantitative remote sensing course based on the current situation to determine the course teaching outline and content. The teaching methods and means in practice of the course were summarized and discussed so that the course was adopted to China's remote sensing science and technology development and personnel training needs.

Key words quantitative remote sensing course, multimedia, heuristic teaching, project-based teaching (Page:127)

Discussion on the Construction of GIS Practice Base under University-Industry Cooperation for Local Colleges by ZHENG Chunyan

Abstract CEEUSRO is an important way to training GIS applied talents. Taken Jiaying University as an example, the paper analyzed the existing training modes of GIS talents based on CEEUSRO for local colleges. Aiming at these main problems for local colleges to establish practice base, some improvement measures were proposed.

Key words CEEUSRO practice base, GIS, local colleges, training mode (Page:130)

Construction and Research of Map Website of Hubei Province by LI Yongfeng

Abstract Map Website of Hubei Province provides a map service platform for public, and it is a promotion version based on the original dynamic electronic Map Website of Hubei Province. In this paper, the construction and research of Hubei Map Website was introduced. And we mainly discussed system function, system architecture and key technology of this website. In the end, we made an analysis and summarize of status and development for Hubei Map Website.

Key words Hubei Map Website, electronic map, tile, map publish, geographic information platform (Page:132)

South Tibet Toponym Proving National Ascription of Monba and Lhoba by LIAO Xiaoyun

Abstract After author conducted filler research on south Tibet toponyms in the Map of China and raised the number of south Tibet toponyms on map from the original 9 to 36, according to the characteristic that the names of Lhoba and Monba coinciding with the toponyms of residence, and the Lhoba language meaning of south Tibet toponym 'Pasighat' coinciding with the Tibet meaning of Sichuan toponym 'Zhaxika', we demonstrated the close connection between the two national minorities and mainland together with south Tibet in cultural geography, and further explained people of Lhoba and Monba living in the south Tibet areas for generations are not trans-border ethnic people in this paper.

Key words south Tibet, toponym, Monba, Lhoba, ascription (Page:136)

Characteristics of Compilation of Atlas of Fujian Provincial Administrative Divisions by DAI Jiping

Abstract Material usage, content selection and symbol and color design of Atlas of Fujian Provincial Administrative were discussed and analyzed in this paper, which can stress the subject of administrative divisions.

Key words administrative divisions, features, symbol (Page:142)

Implementation of User Information Custom Service in Personalized Electronic Map by FAN Baomei

Abstract The paper described key technologies and implementation methods of user information custom service in electronic map in details, from the aspect of information classification, data mining and map marker adding, and designed and realized the function modules in implements.

Key words personalization, electronic map, information custom (Page:144)

Design and Compilation of Henan Province City-County Administrative Boundary Atlas by YANG Xiaochao

Abstract The Atlas of County-city Boundary in Henan Province contains zonal maps based on materials of administrative boundary survey agreement (attached maps, agreements, and boundary post coordinates). This paper introduced basic layouts, contents and features of this atlas which was followed by technical flow and requirements. We also discussed major technical problems in the map compilation. The importance of this work was summarized as well.

Key words administrative regions at city-county level, detailed boundary atlas, zonal topological maps, printing (Page:147)

Design and Implementation of Web Thematic Atlas Based on XML by ZENG Xingguo

Abstract Thematic atlas is a collection of relative maps which reflect the statistic data about natural resources, social economy, develop planning etc of a specific area. Publishing thematic atlas in web Environment will acquaint the masses get more information from the thematic atlas services, which means a lot. However, there existed some problems in online thematic atlas such as the organization of structure, the representation of maps, and the retardation of thematic data update. To solve these problems, this paper created the concept of dynamic online atlas, taking use of the technology as xml, experts designing, real time map producing and the result is approved by experiment.

Key words thematic atlas, thematic map update, experts design, online dynamic atlas, online map representation (Page:150)