

4th ICA Mountain Cartography Workshop
Vall de Núria, Catalonia, Spain
30th September - 2nd. October 2004

The International Cartographic Association Commission on Mountain Cartography held its 4th Mountain Cartography Workshop in Spain in the region of Vall de Núria in the Catalan Pyrenees. This location is situated in the North of Catalonia, Spain, at 2.000 meters altitude and is surrounded by mountains that reach nearly 3.000 meters. The valley can only be reached by a silent cog railway and has a wealth of history and tradition, documented since 1087. It was a perfect meeting place to discuss and confer about current issues within the field of mountain cartography.

This workshop that is held biannually within the activities of the commission covered many topics related to mountain cartography such as avalanche and glacier mapping, relief presentation, tourist mapping, data capture, photogrammetry, remote sensing, geo-visualisation and multimedia. All in all there were 40 participants from Austria, Canada, France, Germany, Poland, Romania, Slovenia, Spain, Switzerland and the USA who spent three very interesting and fruitful days together.

The workshop was sponsored and perfectly organised by the ICC (Institut Cartogràfic de Catalunya) – special thanks go to Maria Pla and Blanca Baella - and covered the following six topics.

- Risk and natural hazard mapping, snow avalanches
- Cartography of glacial phenomena
- Visualisation, rendering, animation
- Alpine cartography, cave mapping, mountain tourist mapping
- Topographic mountain cartography: relief representation, hillshading, cliff drawing, remote sensing

Within the session “Risk and natural hazard mapping, snow avalanches” six papers were presented. Three of them dealt with snow avalanches in the areas of the Tyrolean Alps and Catalan Pyrenees. A further paper discussed a geo-spatial system for data management, modelling, visualisation, and analysis within an alpine valley that displayed the use of a Hazard Tool environment. One paper introduced an interesting approach to understand the dynamics of an avalanche path in the Pyrenees using tree damage and tree-ring information and explained the utilisation of environmental issue to understand avalanche hazards. The last presentation in this session dealt with LIDAR applications to rock fall hazard assessment in the Pyrenees (Vall de Núria) and examined two examples of possible applications related with the detection of potential instabilities areas and rock fall hazard assessment.

The session on “Cartography of glacial phenomena” included four presentations that primarily considered issues on rock glaciers. Three papers had their focus in the Austrian Alps using photogrammetric methods to explain the retreat of a small debris-covered cirque glacier, the change detection of a mountain slope and a report for the years 1995-2004. The final paper introduced geomatic techniques applied to the cartography of rock glaciers in the Sierra Nevada and the Pyrenees.

The third main topic on “Visualisation, rendering, animation” included six very scientifically profound as well as visually appealing presentations. All contributions focused on special 3D methods and their utilisation for cartographic communication. Two demonstrations dealt with the basics of 3D visualisation concentrating on design and graphic variables as well as new approaches for mountain maps. One presentation introduced a very interesting application using True 3D methods by means of Lenticular Foil Technology. The concluding three papers all presented applied implementations of 3D visualisation methods in mountainous areas around the world – Olympic National Park (USA), Catalan Pyrenees (Spain) and Julian Alps (Slovenia).

The session on “Alpine cartography, cave mapping, mountain tourist mapping” comprised four presentations mainly focusing on different ways of communicating “mountain mapping”. One contribution introduced a concept of a new tourist map in the Tibles Mountains, Romania of a region that has not yet been intensively covered from a cartographic perspective for public purpose. Another presentation discussed an interesting approach on evaluating National Park Service 3D trailhead maps in order to understand whether 3D maps in general can be useful or even better than conventional maps for orientation. The final two papers discussed issues that had some connection to the past. One presentation brought back traditional panorama perspectives from the painter's canvas to the digital realm and explained how various approaches are associated to modern methods in cartography. Another contribution described an approach of designing and producing natural-colour shaded relief maps with satellite land cover data based on the pioneer knowledge of Hal Shelton, a retired USGS (US Geological Survey) cartographer.

The following session on “Topographic mountain cartography: relief representation, hillshading, cliff drawing” included six presentations that covered general topics of topographic mountain cartography. One contribution introduced a profound overview of free and low cost datasets for international mountain cartography demonstrating that a variety of data is available; however usability is in some cases restricted for quality use within topographic mountain cartography. Two presentations dealt with special mountain-related issues within the new version of the Atlas of Switzerland, describing the versatility and high quality of this outstanding product. The final three papers all showed examples of topographic mountain maps of different regions of the world – Cartography in the Andes: a new version of the topographic database and map of the Argentinean Republic at 1:100.000, Cordillera Real Bolivia by aero-photogrammetric restitution and "Nevado Ojos del Salado" - a new type of “Alpenverein” map generated for the world's highest volcano.

The final session on “Topographic mountain cartography: relief representation, hillshading, remote sensing” that consisted of six papers, described a heterogeneous variety of issues concerning relief representation within topographic mountain cartography. One paper illustrated the use of hillshading in Canadian mountain cartography, explaining the past as well as the some what unsatisfactory current situation. Another contribution went into detail on field checking as a vital part of mountain mapping, elaborating on interesting details during the process of data acquisition. Two papers introduced ways of representing terrain using direction of slope and lighting as well as using height points for generalisation in trail maps. The final two presentations characterised the utilisation of aerial photographs as a useful tool for constructing maps of mountain areas as well as using mountain shadow profiles for georeferencing historical documents.

All papers will be published in the publication series of ICC. Abstracts can be accessed on the commissions web-site <http://www.mountaincartography.org/publications/papers/index.php>

Dr. Karel Kriz, University of Vienna

