Mapas Andinos –
Generation of Cartographic Products for an Andean Helicopter Skiing Region

Benjamin Schröter & Manfred F. Buchroithner
Institut für Kartographie – TU Dresden
“Manfred, I need good maps!”

Francisco Medina Schlotterbeck, UIAGM Guide and President Chilean Mountain Guides, Manager Puma Lodge Heli Skiing Concession
Puma Lodge and Chilean Heli Ski

Mapas Andinos – Dresden Mapsmiths in the Chilean Andes
Faculty of Environmental Sciences, Institute of Cartography

Mapas Andinos – Dresden Mapsmiths in the Chilean Andes
Timeline

March 2010: „We need good maps!“

April 2011: Students informed about projekt possibilities

November 2011: M. Buchroithner inspects mapping region

01.03.2012: Flight of mapping team to Chile

07.04.2012: Finalisation of field-mapping activities

As from June 2012: Delivery of final map products
Generation of a comprehensive map package

- Topographic overview maps (1:50,000; 1:100,000) with all off-pist ski runs
- Topographic detailed maps 1:20,000
- Hiking sketch map of Puma Lodge surroundings
- Access map Santiago/Chile Airport – Puma Lodge
- Risk maps of the individual off-pist ski runs
- 360° outlook panorama
Mapas Andinos – Dresden Mapsmiths in the Chilean Andes
Faculty of Environmental Sciences, Institute of Cartography, Mapas Andinos – Dresden Mapsmiths in the Chilean Andes

Prof. Burghardt

Seven Students

Prof. Buchroithner

1 univ. assistant (also immediately in pool)
• Mapping region located in central part of the Chilean Andes (size approx. 5,000 km²)

• Deeply incised valleys and peaks (1,300 – more than 5,000 m)

→ Ideal region for deep-snow skiing
Input data and preparatory work at TU Dresden

• Topographic maps of IGM

• Digital geodata of IGM

• Satellite imagery (Landsat, BING, GoogleEarth)

• Digital terrain models (Aster, SRTM)

• GPS data / fieldbook

→ FIELDWORK
Mapas Andinos – Dresden Mapsmiths in the Chilean Andes
Mapas Andinos – Dresden Mapsmiths in the Chilean Andes
Mapas Andinos – Dresden Mapsmiths in the Chilean Andes
Generation of topographic maps

Synthesis of the individual information layers like

- Trail network (GPS, satellite imagery)
- Hydro network (permanent / perennial)
- Various boundaries
- Surface cover (fieldwork, satellite imagery)
- Tourism information
- etc.
Ruta de acceso

Access Route

Airport / Aeropuerto
Interstate / Ruta
Interstate / Ruta
Interstate / Ruta
Interstate / Ruta

Santiago
First exit / Primera salida
Tollgate / Peaje

Machali
Old copper route / Vieja ruta del cobre
Begin dirtroad / Inicio de camino de tierra

Coya
Turn left at roundabout after bridge > Camino a Pangal
Después de puente in rotanda hacia la izquierda > Camino a Pangal
2nd bridge and control station
Fondo „Sierra Nevada“
hydro-electric power station
central hidroelecrica

25 km
Mapas Andinos – Dresden Mapsmiths in the Chilean Andes
Faculty of Environmental Sciences, Institute of Cartography

Mapas Andinos – Dresden Mapsmiths in the Chilean Andes
Faculty of Environmental Sciences, Institute of Cartography

Mapas Andinos – Dresden Mapsmiths in the Chilean Andes
360° panorama for the Mirador Las Orchidias

- Generation of annular panorama
360° panorama for the Mirador Las Orchidias

- Generation of contour lines
360° panorama for the Mirador Las Orchidias

- Generation of annular panorama
360° panorama for the Mirador Las Orchidias

- Labelling and collateral infos
360° panorama for the Mirador Las Orchidias

- Labelling and collateral infos
Mapas Andinos – Dresden Mapsmiths in the Chilean Andes
Mapas Andinos – Dresden Mapsmiths in the Chilean Andes
Faculty of Environmental Sciences, Institute of Cartography

Mapas Andinos – Dresden Mapsmiths in the Chilean Andes
Cereal: 4 kg chocolate cereal
        4 kg fruit cereal

Milk powder: 4kg
Milo powder: 4kg

Cereal bars: 200 bars with different!!! flavours
Fruit bars: 200 bars with different!!! flavours
Bars: 50 Snickers, Kit Kat, Mars

Cookies: 5 kg different!!! flavours
Waffers: 3 kg different!!! flavours
Nuts: 2 kg salted peanuts
       1 kg walnuts

Crackers: 3 kg potato chips, salt sticks
Dried fruits: 3 kg of different kinds

Fruits: 10 kg apples, 3 kg bananas:
Noodles, rice: 70 portions of different flavours
Couscous: 4 kg
Mashed potatoes instant powder: 4 kg

Onions: 1kg
Garlic: 1 clove of garlic
Mapas Andinos – Dresden Mapsmiths in the Chilean Andes
Faculty of Environmental Sciences, Institute of Cartography

Mapas Andinos – Dresden Mapsmiths in the Chilean Andes
Mapas Andinos – Dresden Mapsmiths in the Chilean Andes
Faculty of Environmental Sciences, Institute of Cartography

Mapas Andinos – Dresden Mapsmiths in the Chilean Andes
Mapas Andinos – Dresden Mapsmiths in the Chilean Andes
Mapas Andinos – Dresden Mapsmiths in the Chilean Andes
Faculty of Environmental Sciences, Institute of Cartography

Mapas Andinos – Dresden Mapsmiths in the Chilean Andes
Faculty of Environmental Sciences, Institute of Cartography

Mapas Andinos – Dresden Mapsmiths in the Chilean Andes
Mapas Andinos – Dresden Mapsmiths in the Chilean Andes
Faculty of Environmental Sciences, Institute of Cartography

Mapas Andinos – Dresden Mapsmiths in the Chilean Andes
Faculty of Environmental Sciences, Institute of Cartography

Mapas Andinos – Dresden Mapsmiths in the Chilean Andes
Faculty of Environmental Sciences, Institute of Cartography

Mapas Andinos – Dresden Mapsmiths in the Chilean Andes
Faculty of Environmental Sciences, Institute of Cartography

Mapas Andinos – Dresden Mapsmiths in the Chilean Andes
Mapas Andinos – Dresden Mapsmiths in the Chilean Andes
Mapas Andinos – Dresden Mapsmiths in the Chilean Andes
Mapas Andinos – Dresden Mapsmiths in the Chilean Andes
Mapas Andinos – Dresden Mapsmiths in the Chilean Andes
Faculty of Environmental Sciences, Institute of Cartography

Mapas Andinos – Dresden Mapsmiths in the Chilean Andes
Mapas Andinos – Dresden Mapsmiths in the Chilean Andes
Faculty of Environmental Sciences,
Institute of Cartography

Mapas Andinos – Dresden Mapsmiths in the Chilean Andes
Thank you very much for your attention!