# Towards a Better Digital Terrain Model for South America

M. C. B. Lobianco
IBGE - DEGED
cristina@deged.ibge.gov.br

D. Blitzkow
EPUSP-PTR
dblitzko@usp.br

C. M. Green and R. Daniels
GETECH - UNIVERSITY OF LEEDS
info@geteeh.leeds.ac.uk

## ABSTRACT

The need for an accurate and reliable digital terrain model (DTM) for South America is required by many scientific disciplines and commercial organisations. To this end, a 3' x3' (~5 km grid) DTM has been compiled from all available data for a major part of South America. The task is not yet complete and help Is still needed to obtain a consistent and reliable 3' grid resolution throughout South America. The need for an accurate DTM was identified during the South American Gravity Project (SAGP, 1988-91) to provide interpolated height for gravity stations whose heights had been lost and generating reliable terrain corrections. The only available DTM was a 5' grid, ETOPO 5 (NGDC, Boulder Col) which for South America was at best an interpolated 10' grid. The most serious error associated with ETOPO 5 was a lateral shift of all land based topography by 2 grid cells e. 10' or ~ 20 km) to the west. This lateral shift defect has been detected for all land areas world wide although the size of the shift varies making the DTM of little use for scientific investigations. In 1989 a programme was commenced to improve the DTM for South America. This programme is still continuing and this contribution is a progress report on the current state of this DTM. The principal data sources used in the construction of the 3' x 3' DTM for South America include:

- **Existing DTMs:** These include the 3' grid of the Central Andes 12°S to 36°S by Isacks (1988) based on digital I:50,000 to 1:500,000 scale maps and the 30" (~1 km) DTED grid for northern Argentina.
- **New DTM'S:** these are based on systematic digitising of topographic maps generally at 1: 100.000 to 1: 250,000 scales for Northern Andes, Venezuela, Argentina, Chile and Brazil.
- **Gravity Station Heights:** These are taken from gravity surveys forming SAGP and subsequent studies in Brazil, Argentina and Chile.
- **Marine Bathymetry:** Using all available bathymetric data linked to geophysical surveys.
- **Shorelines:** The WDB II provides important zero height lines.

These data types have been carefully integrated to form the best available DTM so far generated for South America Data are available on CD-ROM from GETECH.