

[1] “The Decorrugation Tool – A user’s Perspective”, Adam Schubert, UTS - Geotech Airborne Limited

Adam Schubert¹
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ABSTRACT

Intrepid has been used to decorrugate magnetic and radiometric survey grids which are then oversampled onto pseudo-tielines when microlevelling airborne geophysical survey data. A short explanation of this workflow will be presented.

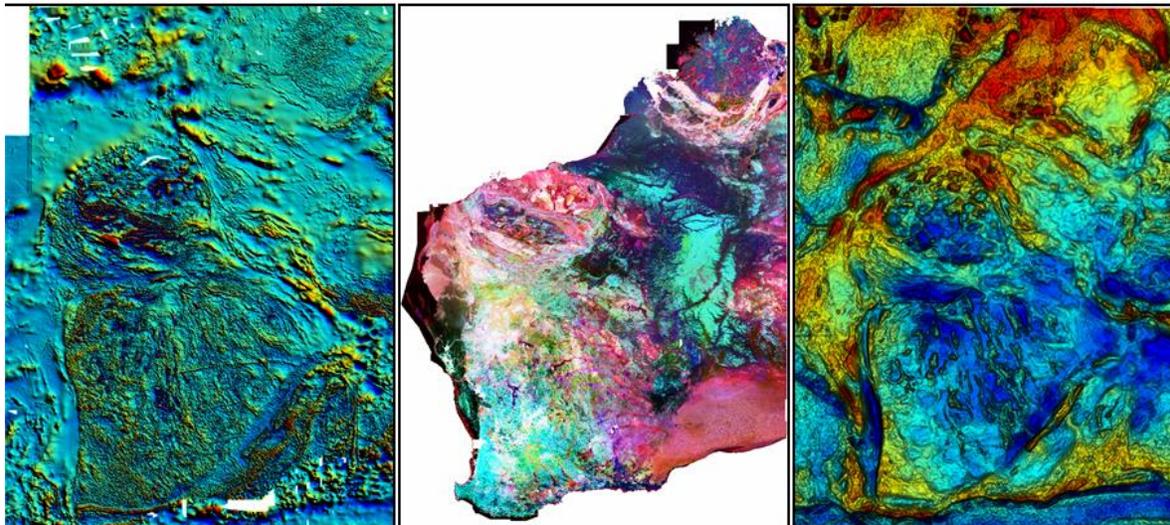
[2] Geophysical data compilation for WA

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ABSTRACT

Intrepid GridMerge has been successfully used to create a 40m magnetic compilation grid, and a 80m radiometric compilation grid of WA. The magnetic grid contains over 1000 individual grids sourced from the WA MAGIX airborne database. GridMerge has also been adapted to run on the iVec supercomputer, resulting in faster turnaround even with non-optimised code.



Total Magnetic Intensity

Radiometrics

Bouguer/FreeAir Gravity

[3] A 3D geological interpretation for the Nevado del Ruiz Volcano (Colombia)

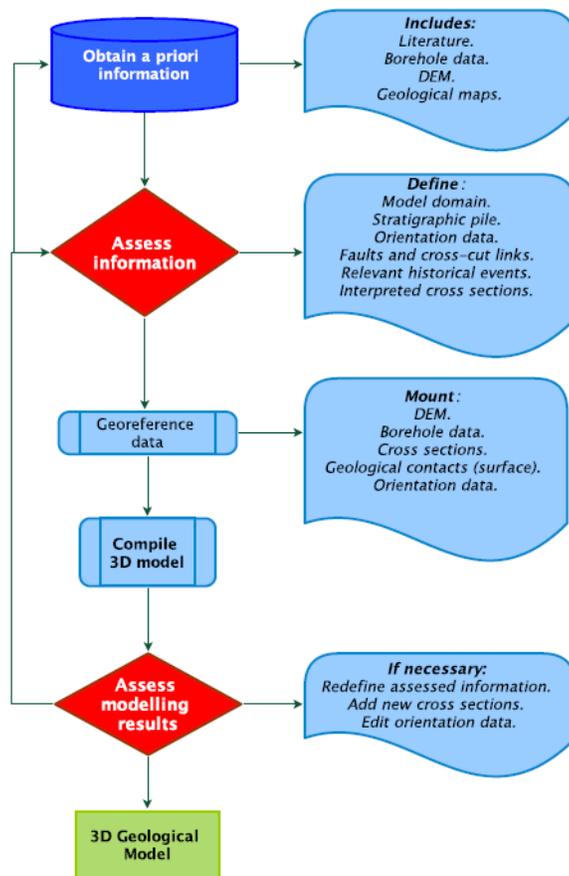
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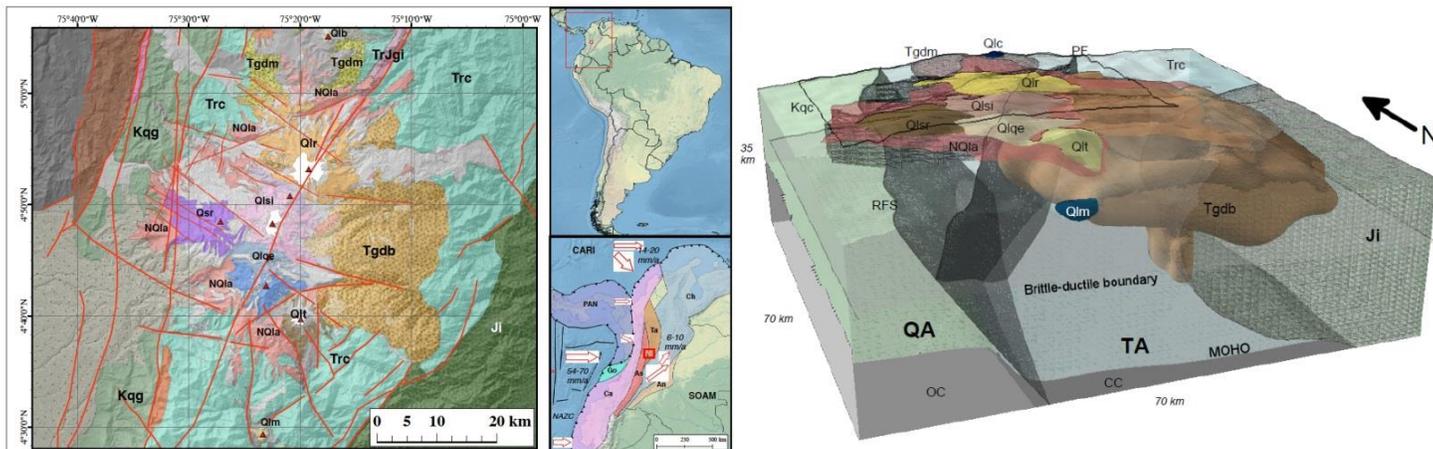
ABSTRACT

A study case in 3D geological modelling of a volcanic region is presented (i.e. Nevado del Ruiz, Colombia). The general geological configuration encountered includes multiple lava flows overlying a pre-volcanic basement. This basement consists of a poly-metamorphic complex intruded by a series of plutons. Both the volcanic cover and the pre-volcanic basement are dissected by two sets of strike-slip faults. The modelling workflow was implemented using *Geomodeller*TM, resulting in a 3D geological interpretation consistent with the current, non-geophysical body of information for the region. The modelling process began with a compilation of relevant material, including published works, one available lithological borehole record, geological cartography and topographic data. This information was assessed and used to define the modelling parameters. Similarly, a series of geological cross sections were prepared and georeferenced. Orientation data is scarce given both the physiography and the absence of sedimentary units in the study area. In order to overcome this limitation, orientation data was inferred from the cross sections. To obtain a plausible model, an iterative approach was employed. Thus, after each model compilation, new interpreted cross sections were added wherever necessary. The resulting 3D model is intended to assist in subsequent geophysical analyses (i.e. magnetotellurics and passive seismology). In turn, the results from those analyses are expected to provide information that could allow updating and refining the model. Specifically, that information would provide evidence on the possible location and geometry of the hydrothermal and magmatic systems of the volcano.

GRAPHICAL ABSTRACT



Flowchart of the workflow employed during the geological modelling process.



Geological model of Nevado del Ruiz. Model domain corresponds to the area of the map above. QA: Quebradagrande Arc, TA: Tahami Terrane. CC: continental crust, OC: oceanic crust. Trc: Cajamarca Complex, Kqc: Quebradagrande Complex, Ji: Ibague Batholith, Tgdm: Manizales Stock, Tgdb: El Bosque Batholith, NQla: Ancient Lava, Qlm: Machin Lava, Qlt: Tolima Lava, Qlqe: Quindio-Cerro Españã, Qlsr: Santa Rosa Lava, Qlsi: Santa Isabel-Cisne Lava, Qlr: Ruiz Lava, Qlc: Cerro Bravo Lava. PF: Palestina Fault, RFS: Romeral Fault System.

[4] Modelling of the Yilgarn greenstone belts

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ABSTRACT

The Yilgarn Craton has been the focus for mineral exploration for many years with GSWA providing many datasets as encouragement to small prospectors and larger companies to keep on exploring. Many recent discoveries have been found in greenfields areas, often under a significant amount of cover. The current exploration strategy uses a “mineral systems approach” which hypothesises that deep structures that tap into the mantle are potential pathways for mineral rich fluids to reach the depths at which deposits form.

The Sandstone greenstone belt was used as a training ground for getting started with Geomodeller as it is an isolated synform of greenstones in a sea of Archean granites and looked to be a nice little contained project. It was also lucky enough to have some depth and geometry constraints provided by a seismic line running across the middle of the greenstone. Modelling greenstones threw up some interesting issues with stratigraphy and faulting. The model was taken through inversion of gravity and magnetic data to arrive at an “almost final” model. It will be published in the near future as part of a series of “3D products” that GSWA provides to the public.

