Glass Earth Gold LIMITED

A science driven **gold** exploration company

MAGNETICS

INTRODUCTION

The purpose of magnetic surveying is to identify and describe regions of the earth's crust that have unusual magnetic signatures. The anomalous areas reflect variations in the magnetic properties of the underlying rock and provide valuable information about the composition and structure of the earth.

Magnetic surveys are done quickly and provide a lot of information without any impact on the environment. They are taken from a moving aircraft and use an instrument called a magnetometer.

Glass Earth uses magnetic surveys to help with locating different rock types and structures such as faults, fractures and hotspots (active geothermal areas). These help us determine the possible location of mineral deposits.

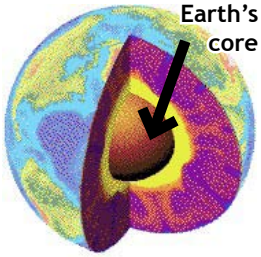
THE EARTH'S MAGNETISM

The earth has a natural magnetic field caused by the motion of materials deep within its core.

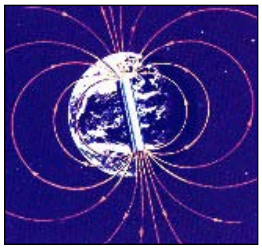
When the earth's magnetic field interacts with a magnetic mineral contained in a rock, the rock becomes magnetic. This is called induced magnetism.

A rock will be magnetic if at least one of the minerals it is composed of is magnetic. The strength of the rock's magnetism is related not only to the amount of magnetic minerals it contains but also to the physical properties, such as grain size, of those minerals.

The main magnetic mineral is magnetite (Fe_3O_4) - a common mineral found scattered through most rocks in differing concentrations.



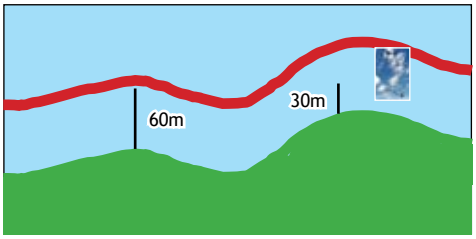
The core acts like a big bar magnet within the earth and generates a magnetic field around the planet.



FLYING A MAGNETICS SURVEY

The aircraft must fly at a set height over the ground at all times to get accurate readings. When the aircraft approaches a hill it must ideally climb to remain at the set height above the ground and then drop down into the valley afterwards.

In the case of Glass Earth's 2007 Otago survey, the helicopter followed the contour of the ground 60m up in the air. The drone was towed at 30m above ground level.



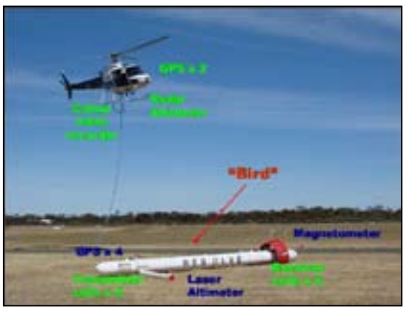
THE SCIENCE

Once the aeromagnetic data has been collected, this data is processed to remove the earth's natural magnetic field and any diurnal field changes (night to day variations) to reveal the variations in magnetisation due to the underlying geology.

Individual magnetic anomalies - magnetic signatures different from the background - consist of a high and a low (dipole) compared to the average field. The position and size of the anomaly depend on the position and size of the magnetic body. A change in latitude will affect the positioning of anomalies over the magnetic body.

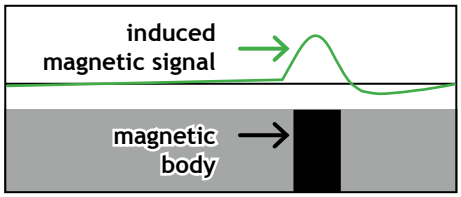
This allows the geologist to interpret the position of the body which has caused the anomalous reading. A modern technique for representing the data is to plot it as a colour image (red=high, blue=low and all the shades in between representing the values in between). This gives an image which is easy to read.

When interpreting the aeromagnetic image, it is useful to know that magnetite is found in greater concentrations in igneous and metamorphic rocks.



The Resolve™ system

The Resolve™ drone or 'bird' and one of the B2 Squirrel helicopters used to tow it ↓



The more magnetic the body, the higher the magnetic signal picked up by the magnetometer

An example of a mag anomaly map with red showing higher magnetic signatures such as rhyolite and blue less magnetic rock such as basalt →