

## D4 Magnetic fields of simple geological structures

In the following examples it is assumed that the background has  $k=0$  and only **induced magnetization** is considered.

Remnant magnetization is ignored in this section. For an illustration of how **remnant magnetization** can affect surface magnetic anomalies, see Assignment 4, Question 2 and also the section on kimberlite pipes in D7.4

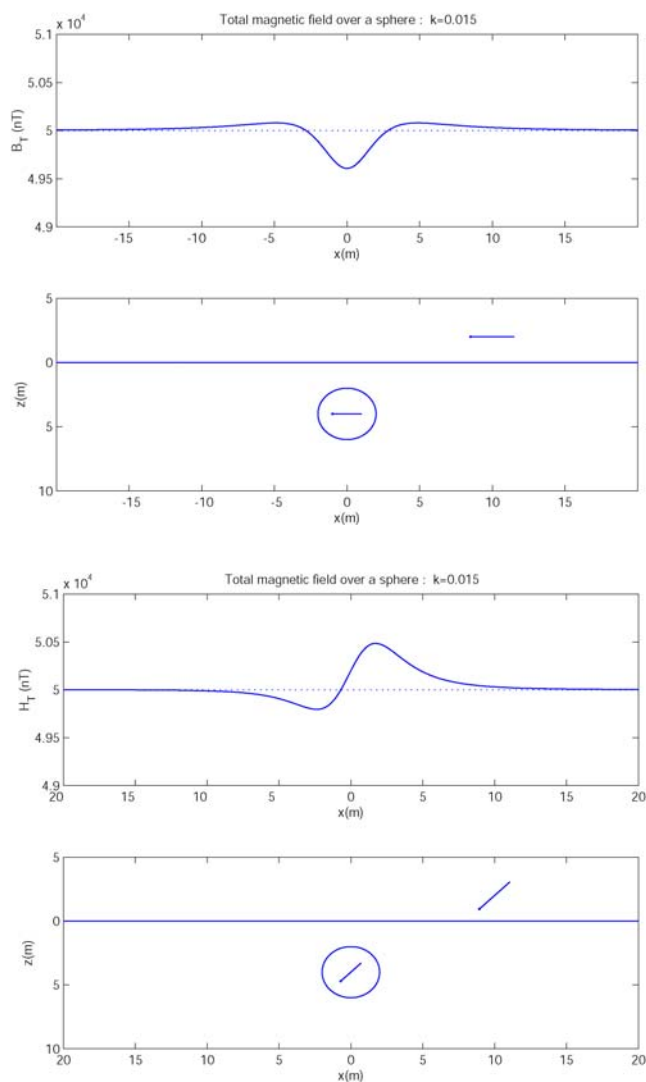
All the following plots show the variation in **total magnetic field**. Curves for individual components can be derived in a similar way.

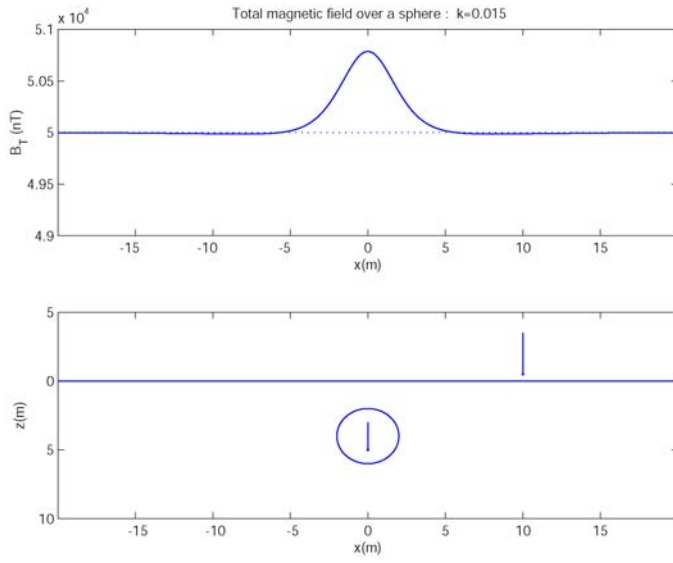
### D4 .1 Monopole

*See derivation in class notes*

### D4 .2 Sphere

*See derivation in class notes*



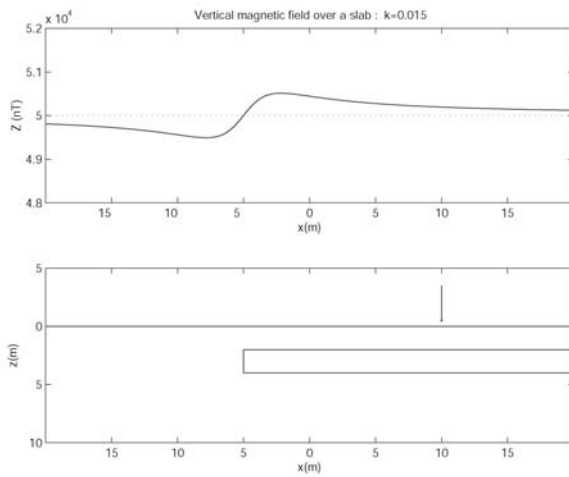


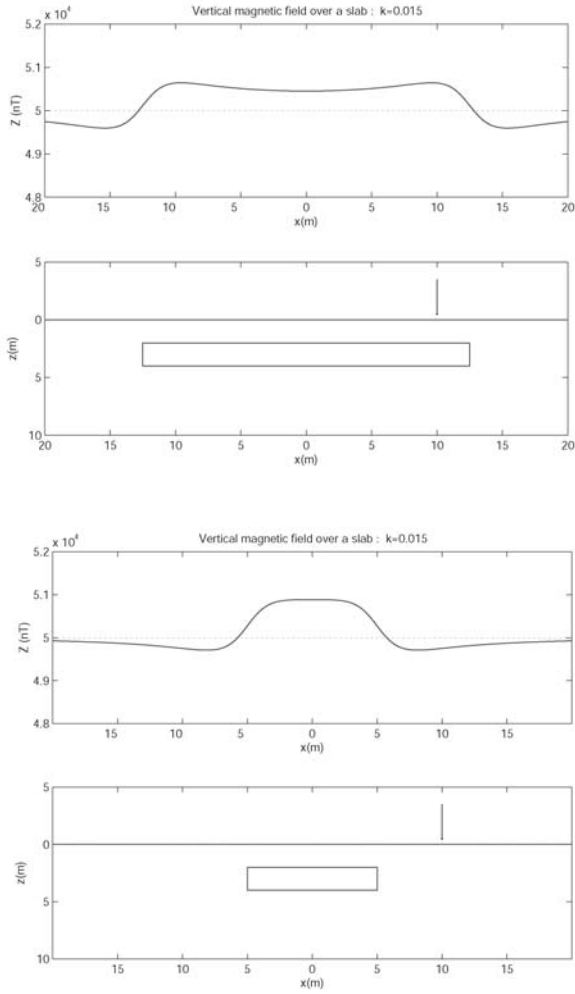
MATLAB script : `mag_dipole_325.m`

### D4.3 Cylinder

*See derivation in class notes*

### D4.4 Slab





MATLAB script : **mag\_slab\_325.m**

## **D4 .5 Basement topography**