

Assynt Culmination Geological 3D Model

(Version 1 – Dated 11th December, 2012)

Geological 3D Model prepared by G Leslie, M Krabbendam
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British
Geological Survey

NATURAL ENVIRONMENT RESEARCH COUNCIL

This model provides a unique visualisation of the architecture of the classic Assynt Culmination. We aim to provide you with an insight into the way that the individual thrust slices of rock are stacked up on each other, and of the general pattern where each thrust slice repeats the geology of the slice below. Thrust faults transport each slice in turn from the east-southeast toward the west-northwest so that a regular pattern of stacking is achieved. These look a little like a series of roof tiles! This simple pattern is not so obvious if the model is viewed looking west or east, looking in the thrust transport direction. These views reveal some of the true and beautiful complexity of this wonderful geological structure.

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This mapping gives an interpretation of the data available at the last date of survey; it is derived from 1:10 000 (1:10 560 or 1:25 000) scale maps and may involve some generalization of the geology. Additional information is available in BGS files, and questions about access to that information should be directed to the BGS Enquiry Service.



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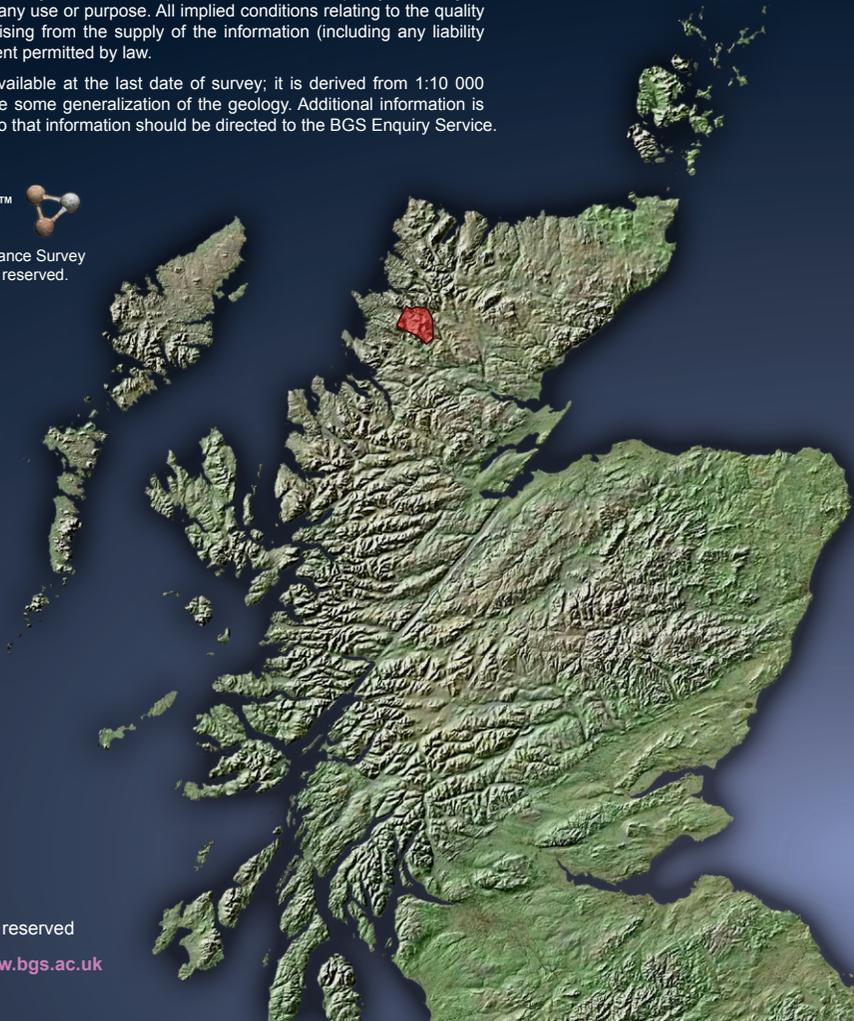
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Interactive 3D
Geological Map 

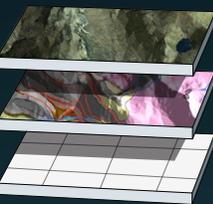
Instructions 

Location Maps 



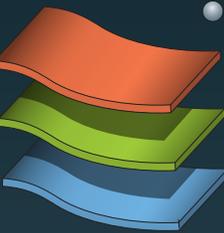
Assynt Culmination Geological 3D Model

Ground surfaces



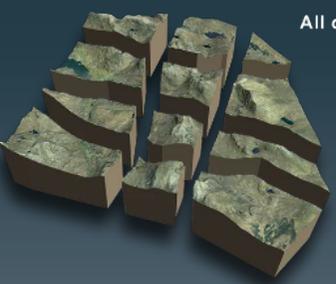
- Surface display
- Aerial photography
- Bedrock geology
- National grid (1km)

Thrust surfaces

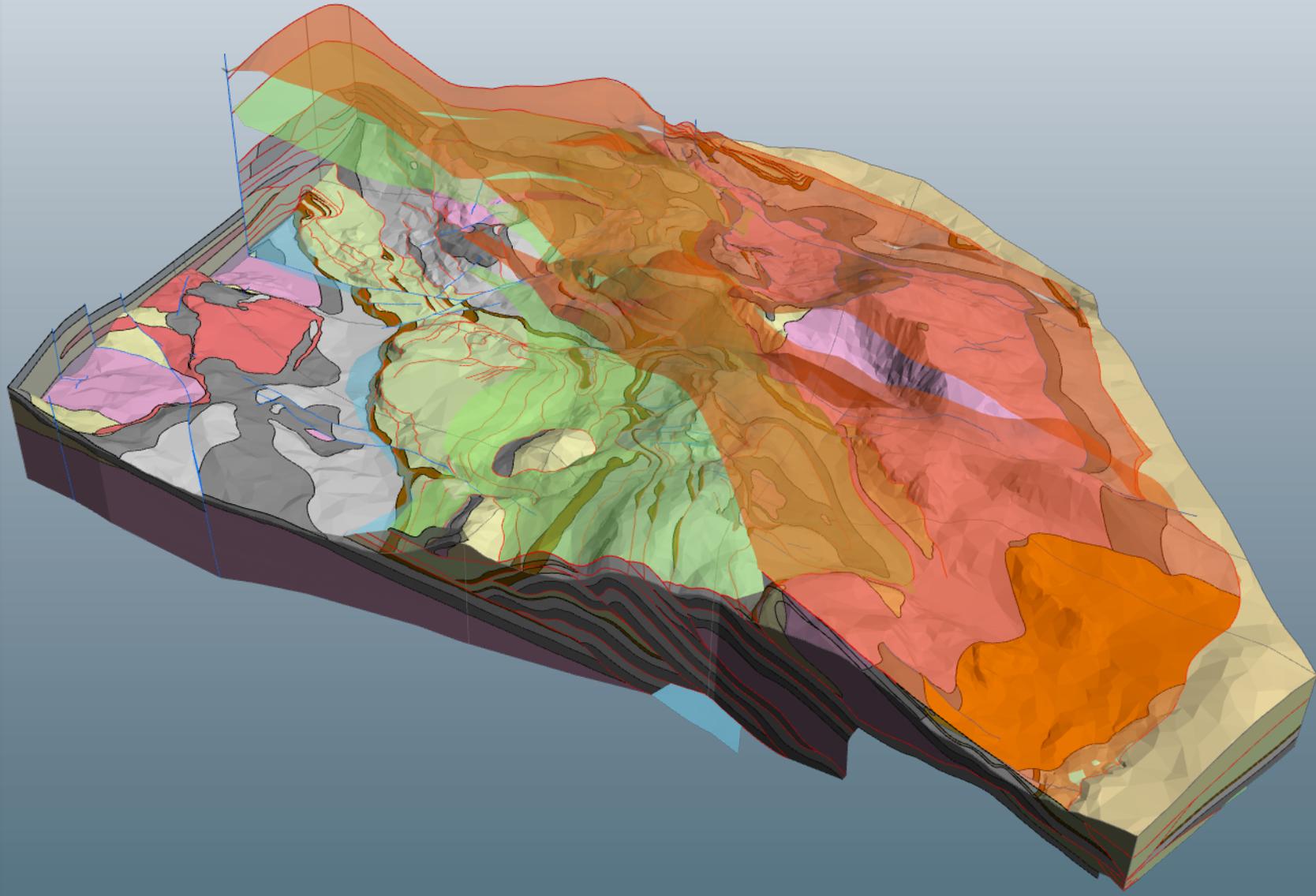
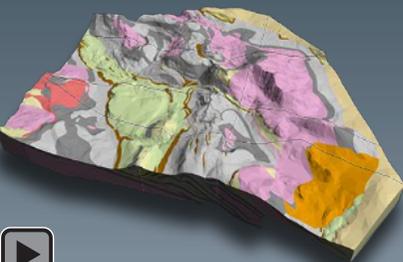


- Display as blocks
- Moine Thrust
 - Transparent
- Ben More Thrust
 - Transparent
- Sole Thrust
 - Transparent

Block display control



- All on
- All off

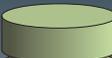


Key to units shown on the map

Intrusive Igneous Rocks

-  Canisp Porphyry Sills
-  Loch Ailsh Pluton

Cambro-Ordovician Rocks

-  Durness Group
-  Ardvreck Group
-  An t-sron Formation (Salterella Grit and Fucoid Beds undivided)

Eriboll Formation

-  Piperock
-  Basal Quartzite

Neoproterozoic Rocks

-  Torridon Group
-  Lewisian Gneiss Complex

Instructions 

Title \ Location 

For further information see:
 BRITISH GEOLOGICAL SURVEY, 2007. Assynt. Scotland
 Special Sheet. Bedrock. 1:50 000 scale Geology Series,
 (Keyworth, Nottingham: British Geological Survey).

Assynt Culmination - Geological 3D Model

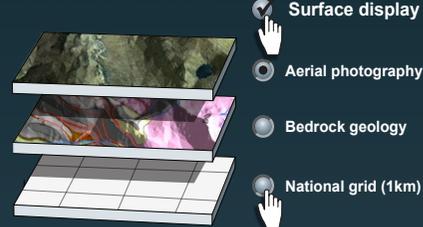


Instructions on viewing the model and available display controls

This document is divided into three pages. Navigate between these using the controls shown in yellow on the right hand side. The startup page contains a series of location maps stepped through using the button to the right or by clicking on the highlighted area in the map. These show the location of the model, the area it covers and its area relative to the Assynt Special 1:50 000 scale Bedrock geological map (BGS 2007). The other pages contain the model itself and its controls, the last is this guide.

The initial model view looks north with a simplified version of the published 1:50 000 scale bedrock geology draped over the land surface and, the calculated 3D surfaces (built in GOCAD®) for the Moine Thrust, Ben More thrust and Sole Thrust displayed. The model broken down into a series of elements that can be controlled from the tools in the panel to the left of the screen. These controls allow the viewer to change the display of the ground surface and the three thrust surfaces shown in the model, as well as breaking the model apart into different configurations of the twelve component blocks that the model is constructed from.

Ground surfaces

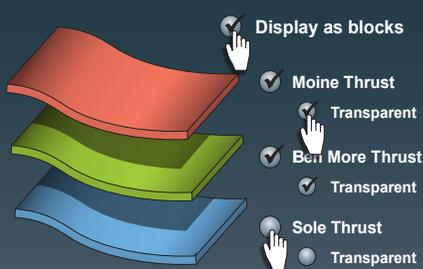


Surface Display

Three different display types for the ground surface are available to view: aerial photography, simplified bedrock geology and a semi-transparent white surface with the 1 kilometre national grid. One of these ground surfaces can be displayed at a time. Simply select the desired option from the set of three radio buttons. At the top of this control group is the master control for the ground level surface display, click on this control to toggle on and off the active surface display.

With the surfaces display off, the network of geological cross sections (fence diagram) can be viewed, this was originally prepared by BGS to guide compilation of the published Assynt special sheet geological map.

Thrust surfaces



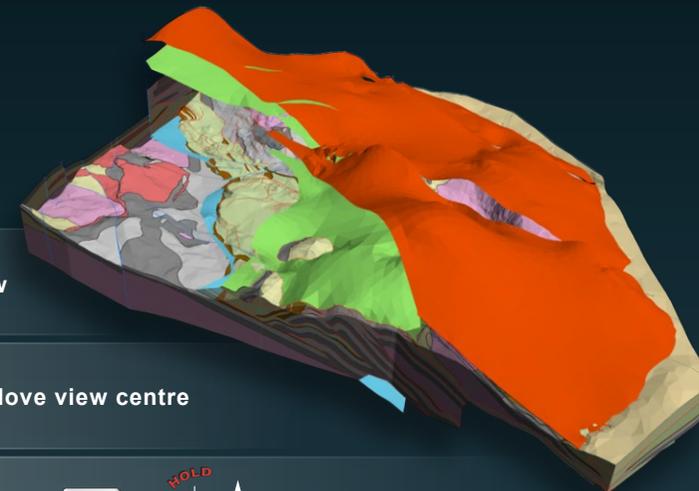
Thrust Display

Three major thrust surfaces have been mapped within the model, the Moine Thrust (red), the Ben More Thrust (green) and the Sole Thrust (blue).

Each thrust surface has a display and transparency control. Click on these to toggle the display of the surface on and off as well as setting their display mode to either transparent or solid.

At the top of this section is a control to toggle the thrust surfaces between their full extents or so they only match the extents of the active display blocks (see block display).

View Controls



Block display control



Block Display

The model is split into twelve blocks created by the pattern of cross section. Changing the display of these blocks enables viewer to gain a unique view of the Assynt Culmination from the inside.

At the top is a graphic control showing the separated blocks rendered with the aerial photographs. Click on each of the individual blocks to add or remove them from the display. Below this is a graphic rendered with the bedrock geology that will change to reflect which of the blocks are visible. This display helps as the controls can be of a different orientation to the actual model.

To the top right are two overriding buttons that allow the user to quickly turn the display of all the blocks on or off at once.