

## **General comment**

White et al report the results of an industry-sponsored study into possible linkages between major mineral deposits and major crustal structures, specifically arc-normal transfer faults, on the island of New Guinea.

They employ new geophysical and topographic data to generate a series of maps showing lithosphere structure and to develop a new lineament map of New Guinea. They find that Cu-Au deposits less than 5 myr old might be associated with arc-normal structures but that older deposits probably are not.

The paper is well-presented with many excellent maps and, happily, provides full information on how the maps were generated - the methods used and the websites from which data and software were downloaded. Readers will enjoy pondering each map and making his or her own interpretation of what they mean. The publishers should ensure that the maps are reproduced at such a scale that they can be easily read and enjoyed.

## **Specific comment**

About transfer faults. Transfer faults are mentioned in the title of the paper but the content of the paper focuses on arc-normal linear structures. The linear structures are not necessarily transfer faults and many may have originated as extensional features in response to arc-normal contractional stress (for example see Fig.2). Probably it is better for the authors to use an all-embracing term such as arc-normal structures or arc-normal fractures.

About geological maps and recent literature. Two papers that present overviews of the geology of New Guinea were published in 2012 and could have been referenced by White et al. (see Baldwin et al., 2012; and Davies, 2012). These and the published geological maps of the island would have provided additional information and ideas. However the fact that they were not used is not a serious issue. This paper stands alone as one that addresses deep crustal structure using primarily geophysical data. It will be a good desk-top companion to the others.

## **Small errors**

The various mineral deposits are listed as Cu-Au. This is true of only some of them. Others are Au or Au-Ag.

Davies (1990) did not invent the term Bosavi Lineament; this appeared subsequently in petroleum industry literature. This requires a change in the text on p. 1689 and in the caption of Fig. 2. Also Ananadi in Fig. 2 caption is mis-spelled. Also on p.1689 line 26 I think "east" should be "west".

Figure 5: The bearing from Mt Kare to Porgera is about 045° not 080° as shown. One or other mineral deposit is at wrong location.

## **References**

- Baldwin, S.L., Fitzgerald, P.F., and Webb, L.E., 2012. Tectonics of the New Guinea region. Annual Reviews of Earth and Planetary Sciences 40: 495-520. doi 10.1146/annurev-earth-040809152340.
- Davies, H.L. 2012. The geology of New Guinea - the cordilleran margin of the Australian continent. Episodes 35(1), 87-102.