

STRUCTURAL EVOLUTION OF THE SUHUM BASIN

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INTRODUCTION

The Suhum Basin is a Paleoproterozoic metasedimentary basin within the Birimian Supergroup of the West African Craton, deformed during the Eburnean orogeny (~2000 Ma). It is one of the least-studied Birimian basins. Recent research has covered its petrology and geochemistry, but its structural geology remains poorly constrained. Deformation features (folds, faults, foliations, lineations) lack systematic documentation, limiting understanding of the basin's deformation timing and tectonic role. This study combines airborne geophysical data with field structural mapping to build a robust structural model of the basin's evolution.

GEOLOGICAL SETTING

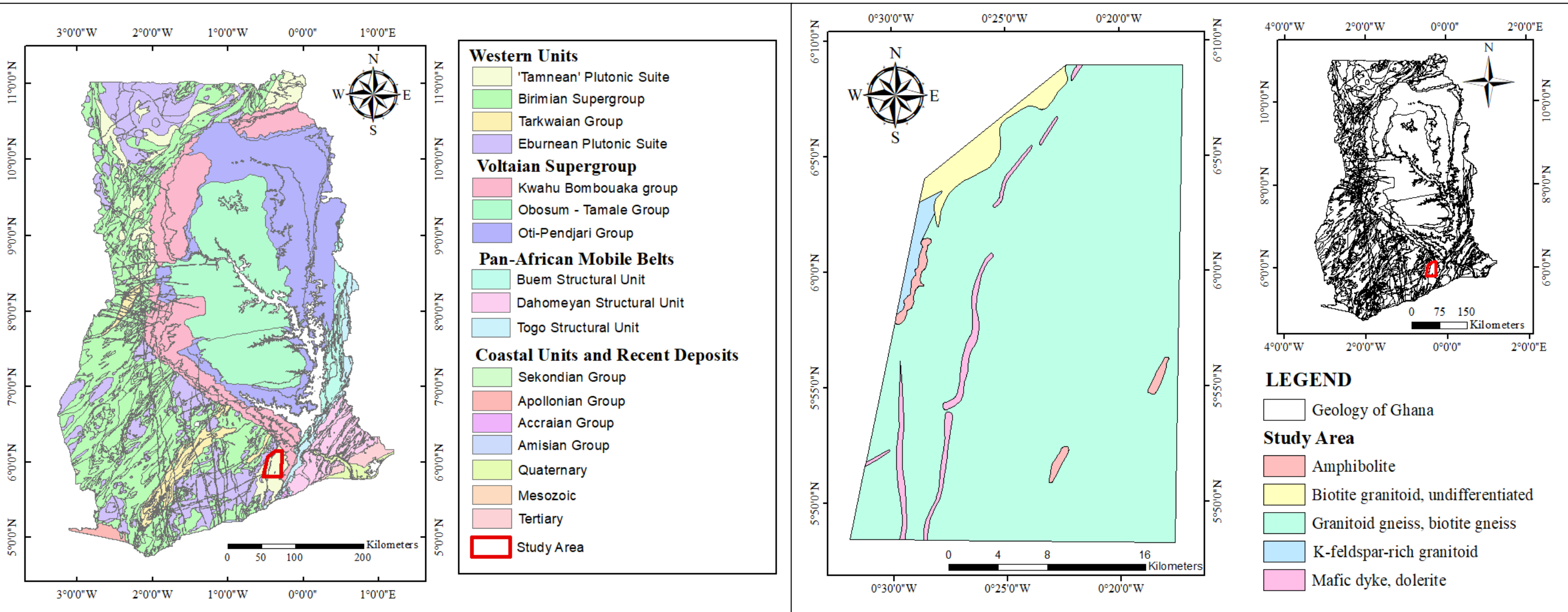


Figure 1: a) Map of Ghana showing various geological provinces, b) Geological map of the study area.

METHODOLOGY

Stage 1
Compilation of Maps, acquisition of existing aeromagnetic data (Fig), fieldwork logistics and literature review.

Stage 2
Reconnaissance survey, Geological mapping (Structural Mapping).

Stage 3
Structural analysis of field data to determine the evolution of the rocks, petrographic analysis and completion of lithostructural map and geological map using oasis montaj.

RESULT AND DISCUSSION

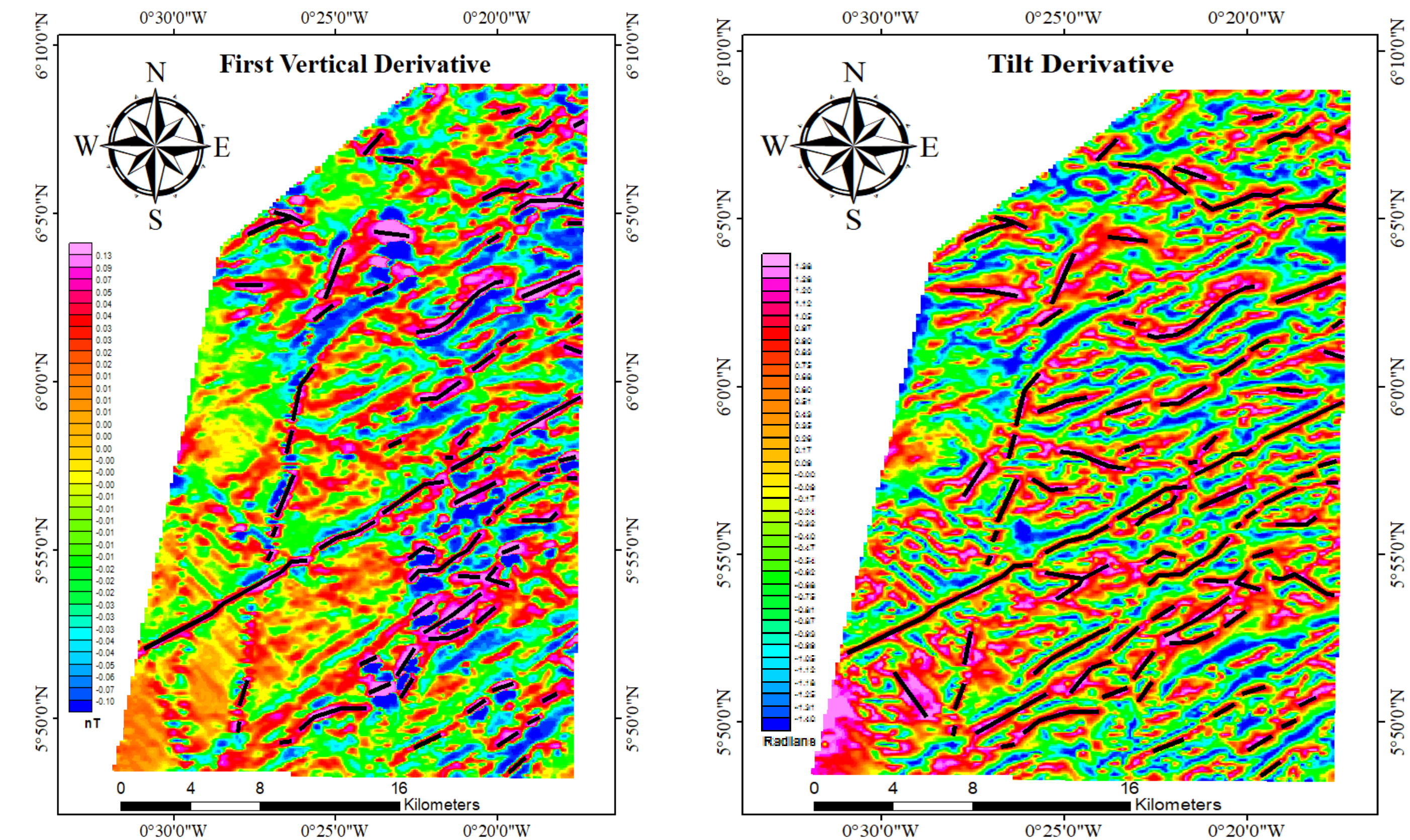


Figure 2. Total Magnetic Intensity maps for first vertical derivative and tilt derivative showing lineaments observed.

RESULT AND DISCUSSION

FIELD PETROGRAPHY

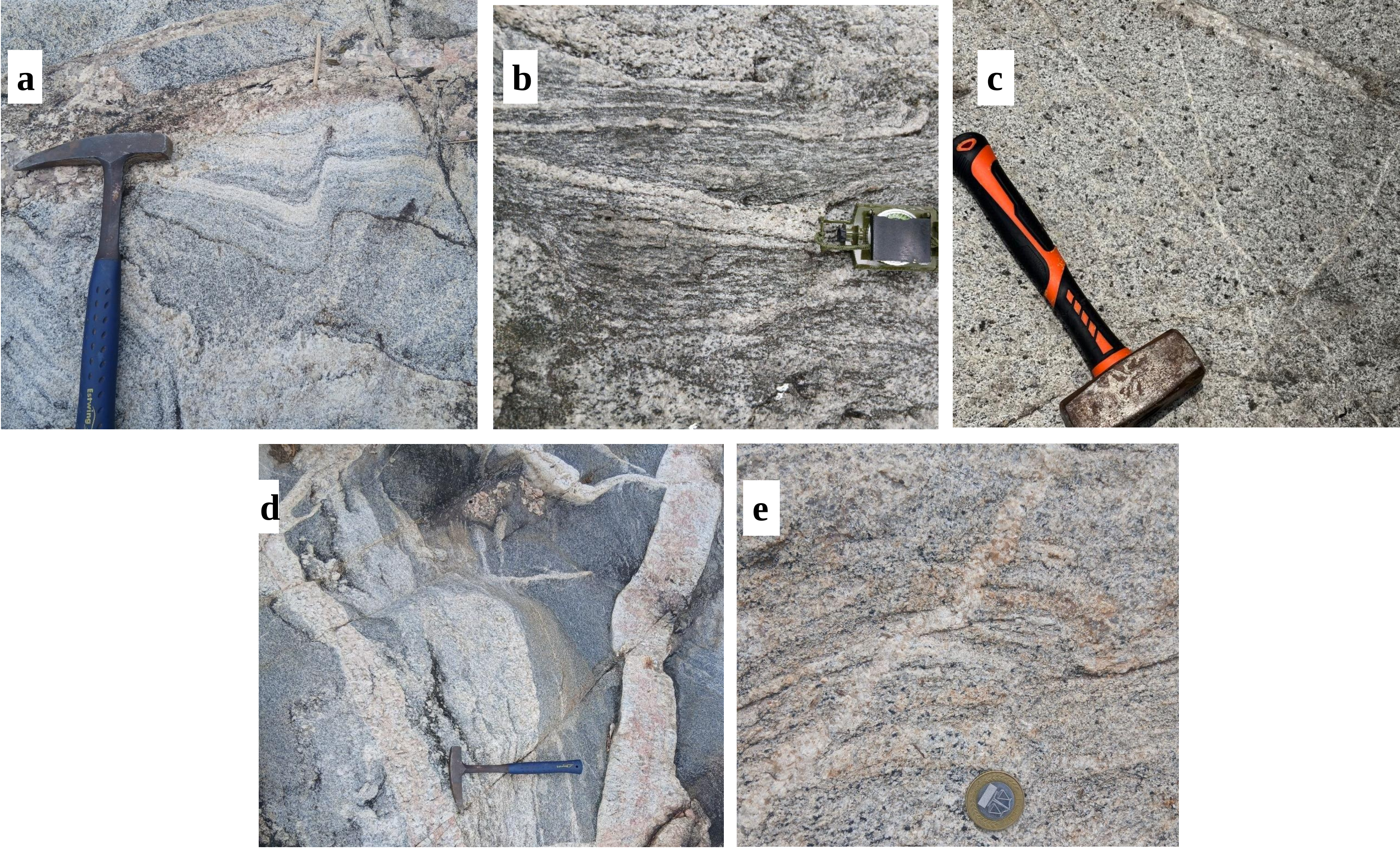


Figure 3. Representative structural features observed in the study area: a) tight isoclinal fold in banded gneiss, b) foliations observed, c) quartzo-feldspathic vein cross cutting host gneissic fabric, d) joint set observed in massive granitoid, e) sigmoidal shear band recording sense of shear.

STEREOGRAPHIC PLOTS

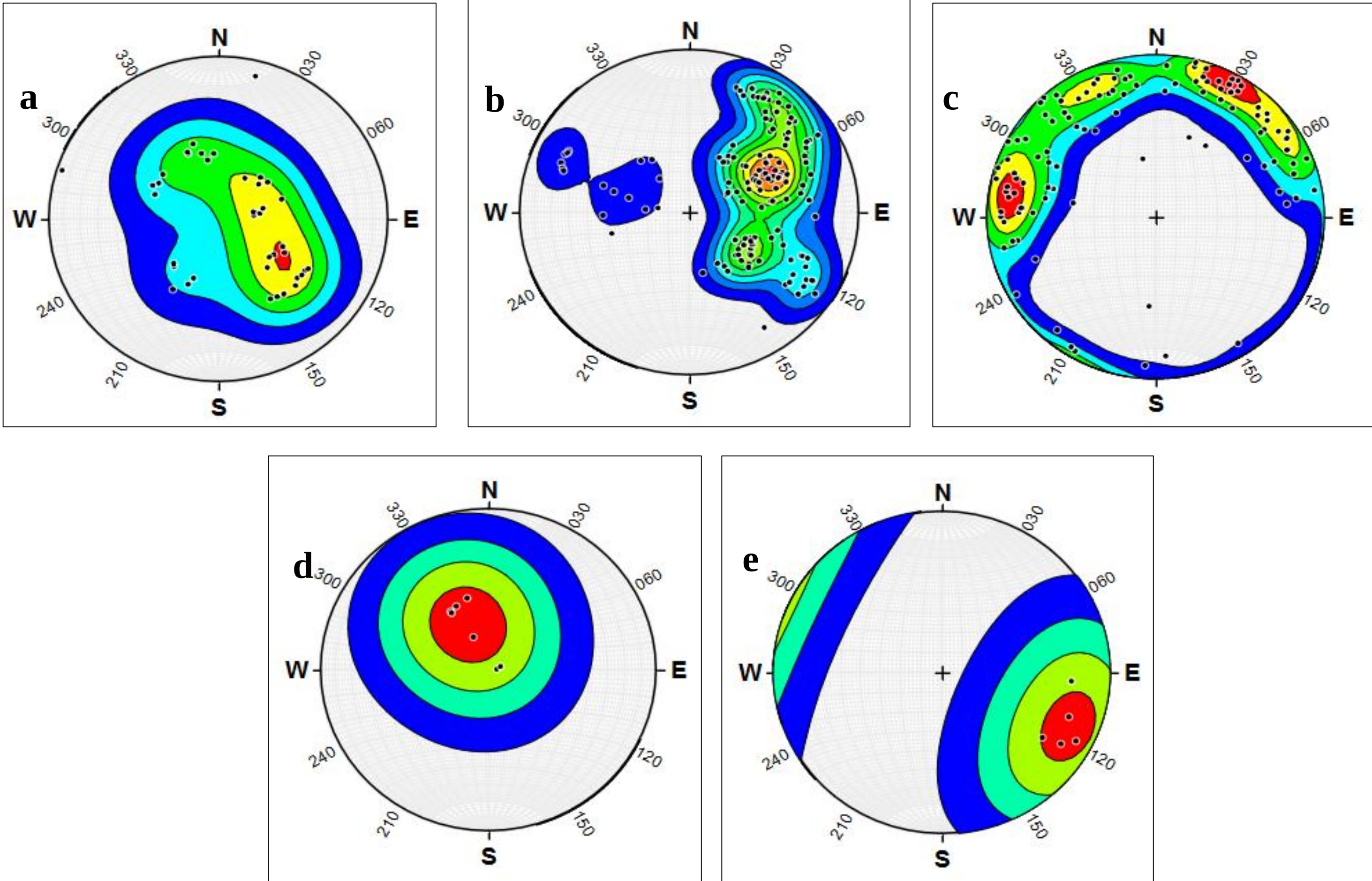


Figure 4. Stereographic plots for a) folds, b) foliation, c) veins, d) joints, e) shear band from structural measurements taken on the field

CONCLUSION

Combining aeromagnetic derivative maps with field structural data reveals a polyphaser deformation history in the Suhum Basin consistent with the Eburnean orogeny, evidenced by correlated lineaments, fold, foliations, veins, joints, and shear bands. This integrated structural framework advances understanding of one of the least-studied Birimian basins

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