

STRUCUTRAL MAPPING AND GOLD PROSPECTING THROUGH FIELD GEOLOGY
AND PSEUDOSECTION ANALYSIS OF IP/RESISTIVTY DATA

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INTRODUCTION

Over the past few years, Ghana has become Africa’s largest gold producer by volume. As an economic mineral, gold generates substantial export revenue, boosts the national economy and promotes employment with both large and small-scale mining operations. Gold mineralization in Ghana is hosted within the Paleoproterozoic Birimian Supergroup and modern exploration has increasingly shifted towards integrating geology , geochemistry or geophysics to characterize mineralization (Amoah et al.,2018).This study investigates the Anansu Prospecting Lease on the Sefwi Belt by combining detailed structural field mapping with induced polarization(IP) and resistivity pseudosection analysis. The aim of this research is to employ a multidisciplinary exploration approach, integrating structural field mapping and IP/resistivity geophysical data to identify and characterize structurally controlled gold mineralization targets within the Anansu Prospecting Lease, including the key lithological units and faults systems associated with mineralization. Key Objectives ;

- Map structural controls on mineralization, foliations and veins.
- Characterize hydrothermal alteration from thin sections.
- Model IP derived resistivity and chargeability to identify potential gold targets

GEOLOGICAL SETTING

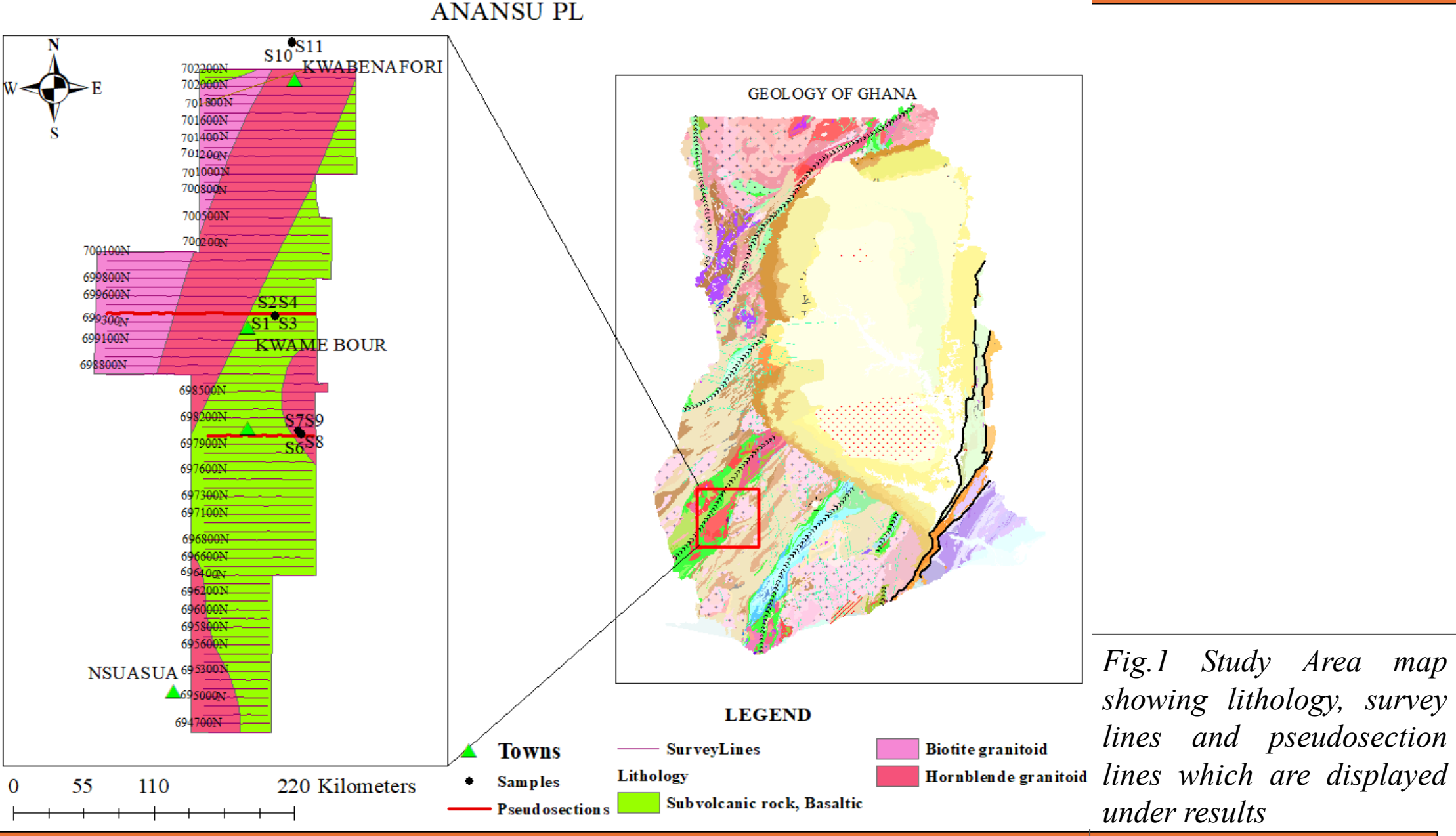
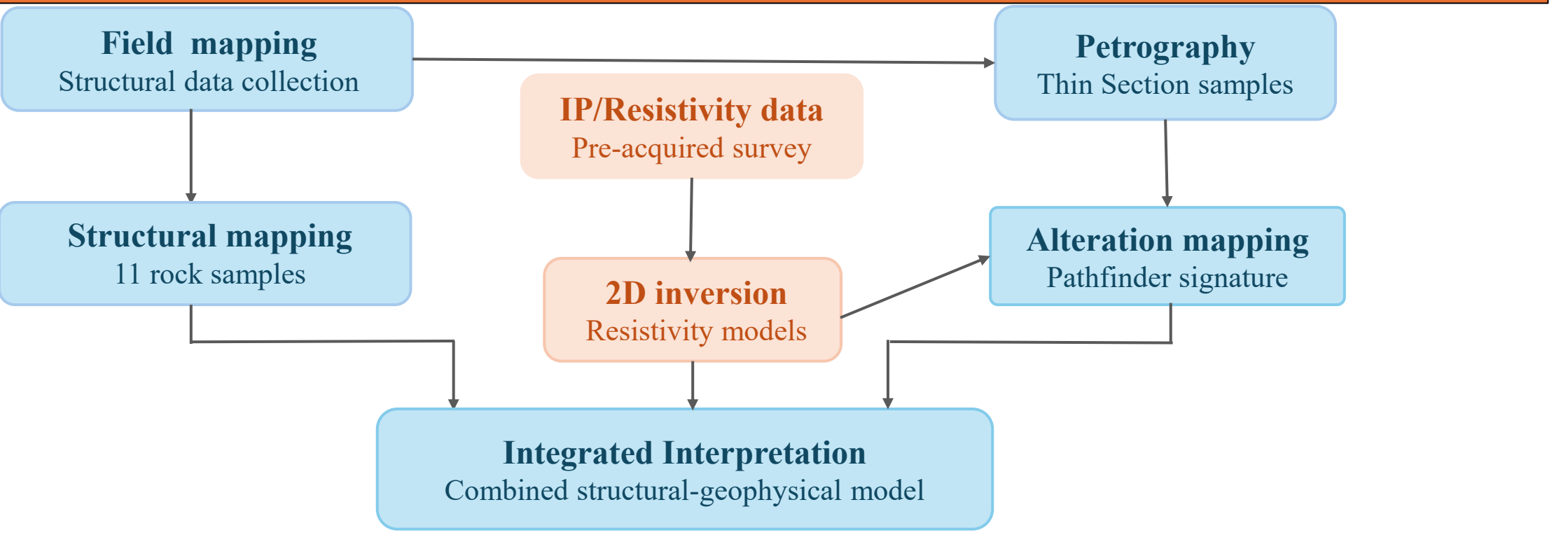


Fig.1 Study Area map showing lithology, survey lines and pseudosection lines which are displayed under results

METHODS



RESULTS

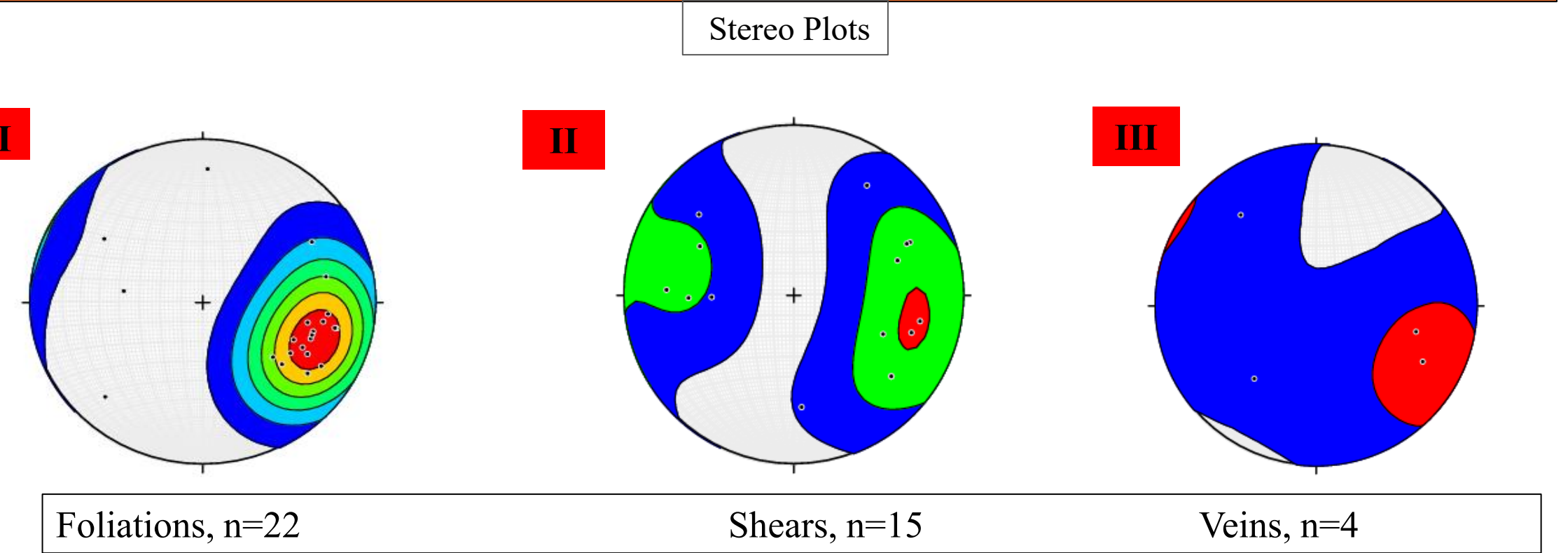


Fig. 2 (I). Foliations. Dominant and consistent foliation fabric. NW-SE compressional event. (II) Shears, Bimodal with W-E clustering, Later tectonic event causing reactivation (III) Veins. Multiple vein orientation indication syn-tectonic emplacement.

PETROGRAPHY

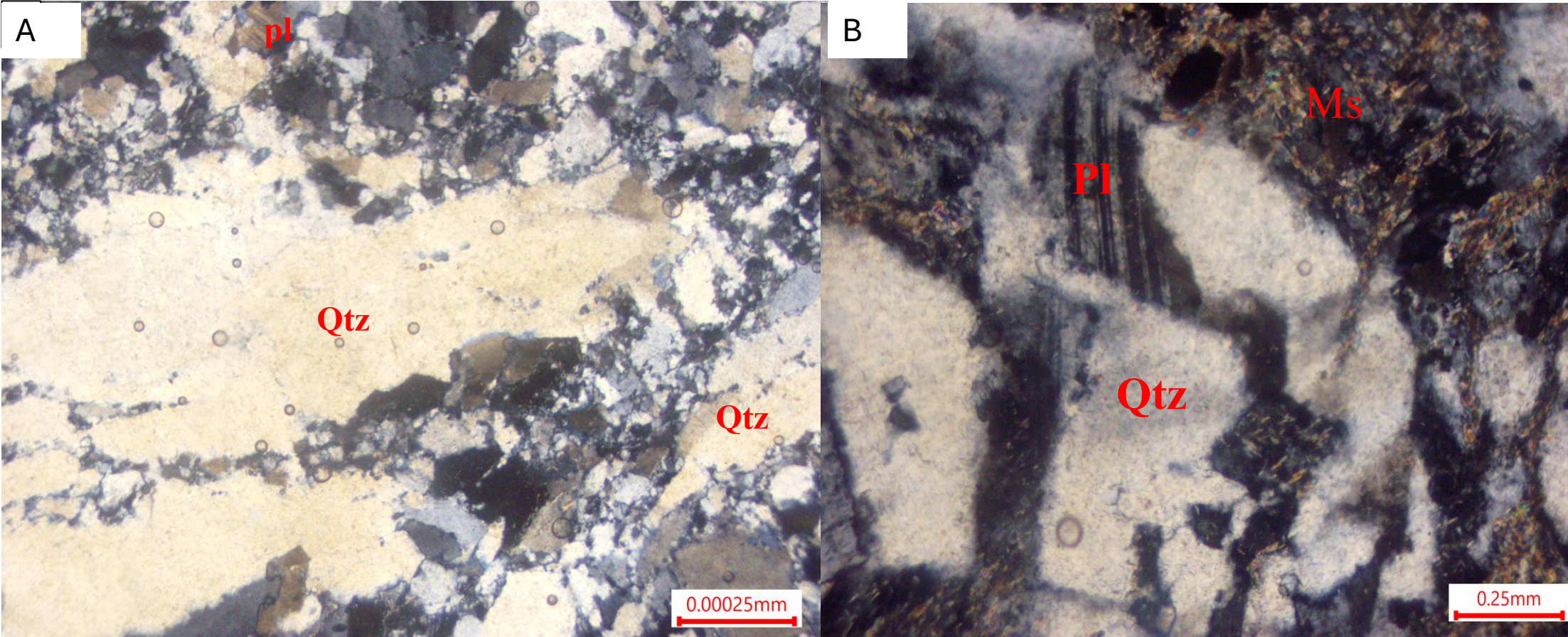


Fig 3. A. Elongate quartz(qtz), recrystallization under stress with plagioclase(pl) within quartzite B. Plagioclase and deformed quartz in tonalite with visible Muscovite alteration

PSEUDOSECTIONS

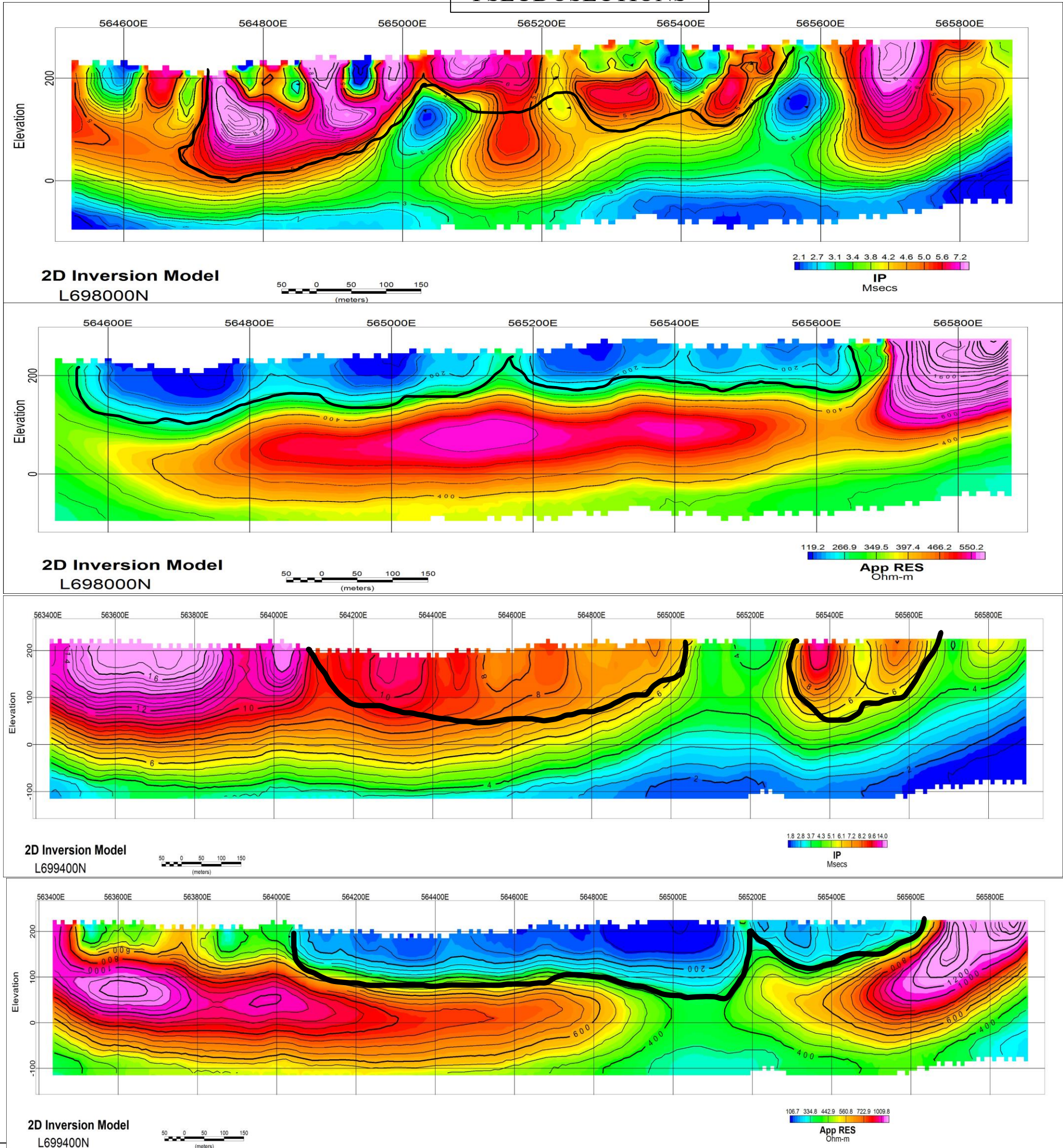


Fig.4 IP chargeability and apparent resistivity pseudo-sections of (lines L698000N, L699400N), inverted in ResIPy. Coincident chargeability highs/resistivity (Black highlights) lows mark inferred mineralization pathways priority targets for follow-up exploration.

CONCLUSION

Integration of structural mapping, petrography and IP/resistivity inversion delineates a mineralization framework across the Anansu Prospecting Lease. A dominant NW–SE foliation fabric and tectonic quartz veining reveal fluid pathways channeled by regional deformation, while chargeability highs coincident with resistivity lows mark potential mineralized and high priority exploration targets. Combining structural geology with IP/resistivity geophysics offers a robust vector for identifying structurally controlled gold mineralization within this region

REFERENCE

1. Amoah, B. K., Dadzie, I., & Takyi-Kyeremeh, K. (2018). Integrating gravity and magnetic field data to delineate structurally controlled gold mineralization in the Sefwi Belt of Ghana. Journal of Geophysics and Engineering, 15(4), 1197–1203. <https://doi.org/10.1088/1742-2140/aaa7b2>.
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