

The Shear Sense of the Chegualin Fault

車瓜林斷層的剪切行為

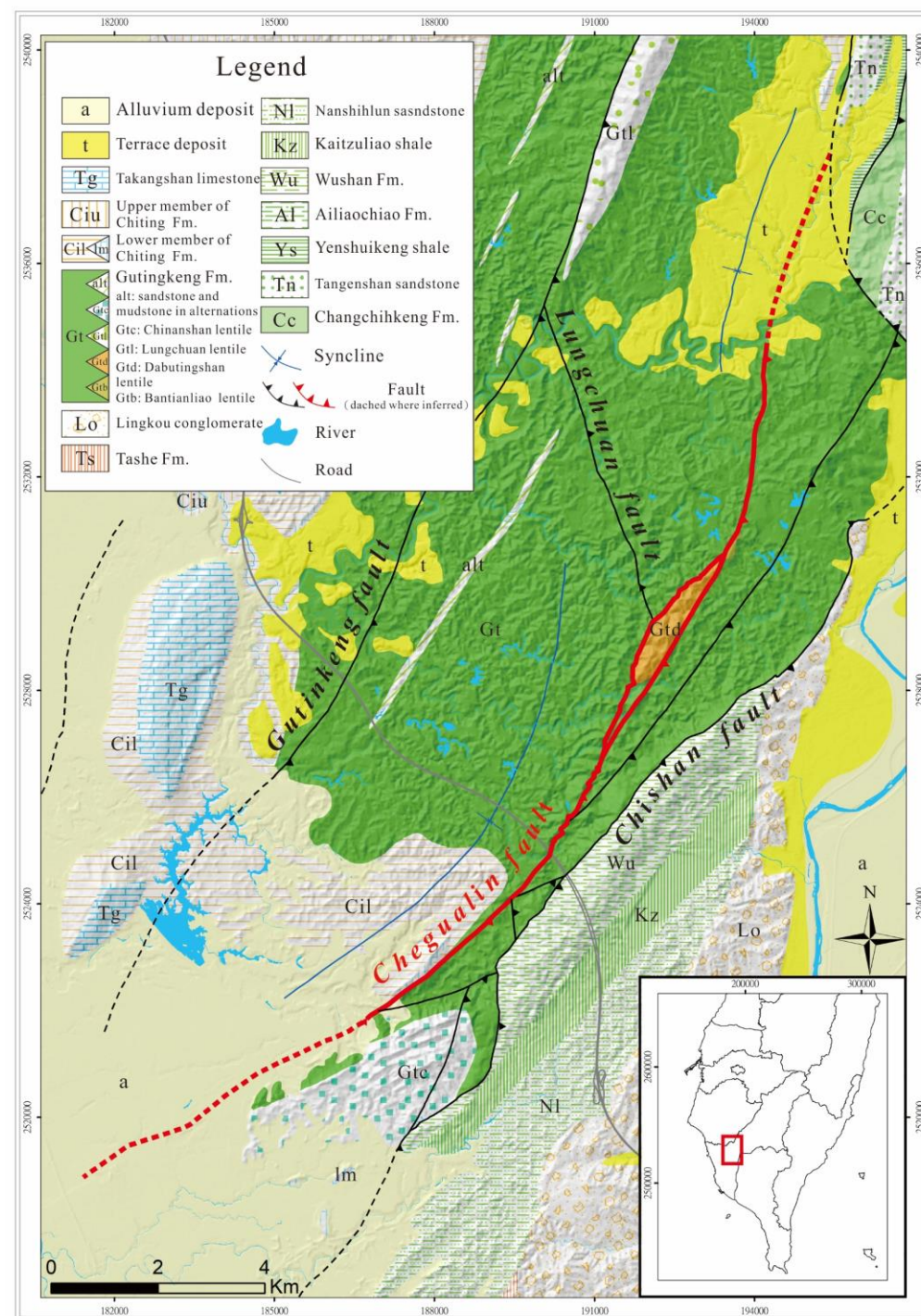
Presenter : Yu-Hsun Chang

Advisor : Prof. Wen-Jeng Huang

Date : 2024/10/18

Chegualin Fault

- Chegualin fault is a thrust fault with strike-slip component, striking NE-SW and dipping to the east.
- Most of the fault are in the Gutingkeng formation which is mainly composed of massive mudstone.



- Massive mudstone in Gutingkeng Formation.
- The dark broad band is clearly observable.
- A fault zone composed of several dark broad bands.



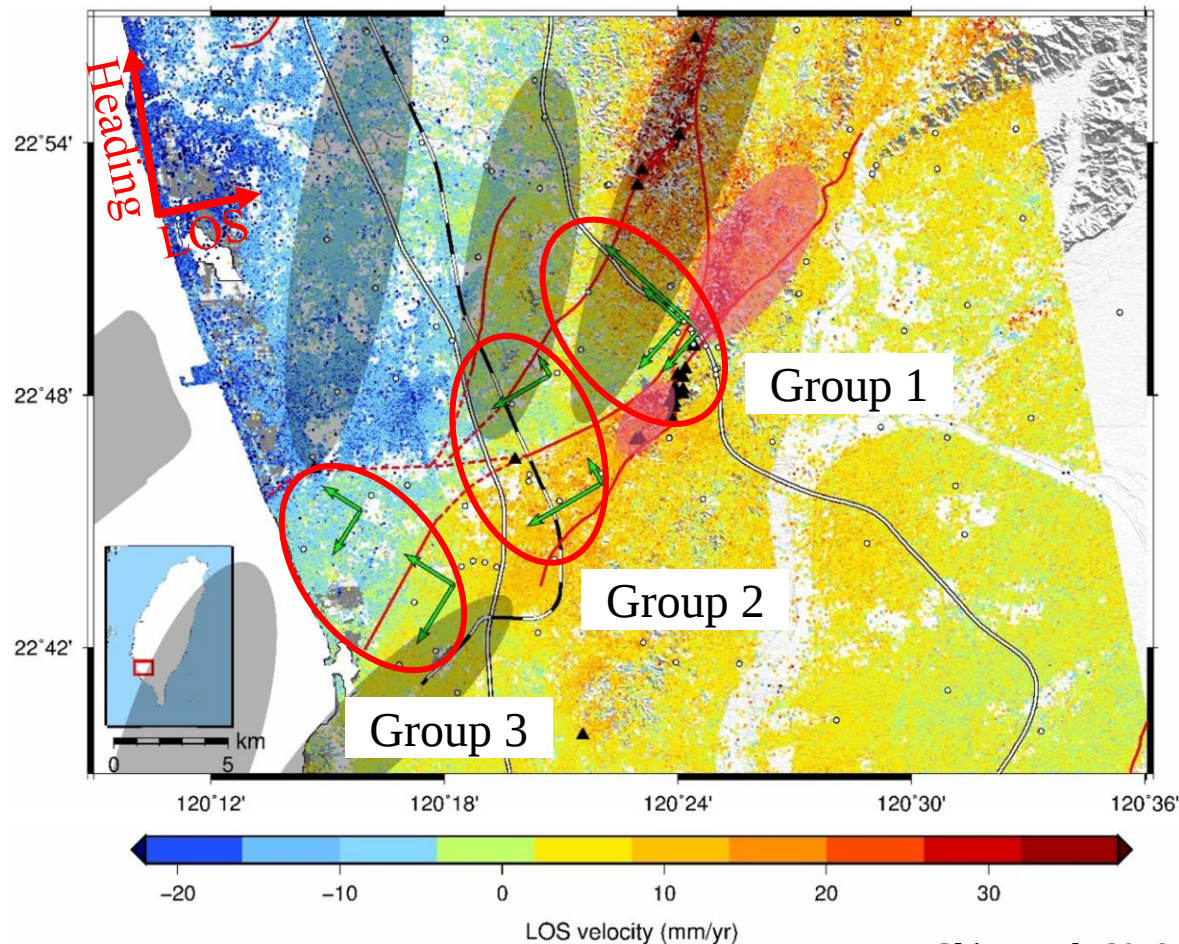
Jhuang, 2023



- The dark broad band is composed of many black bands.

Research Problem

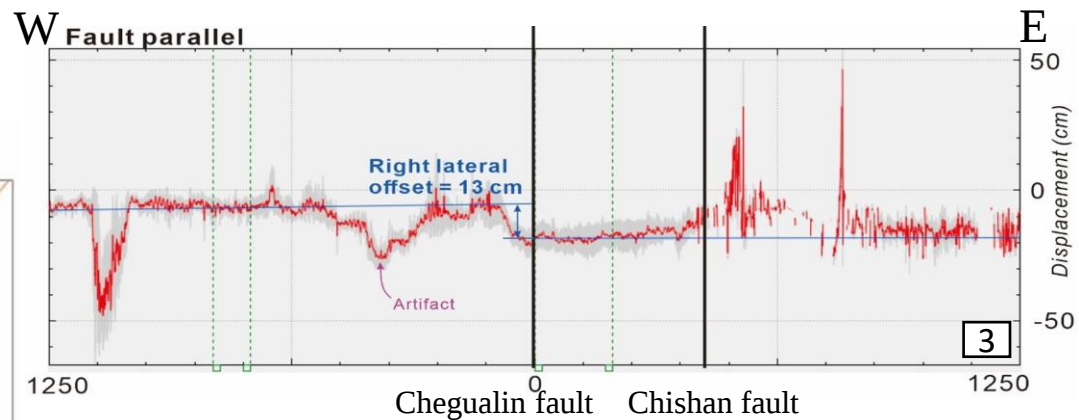
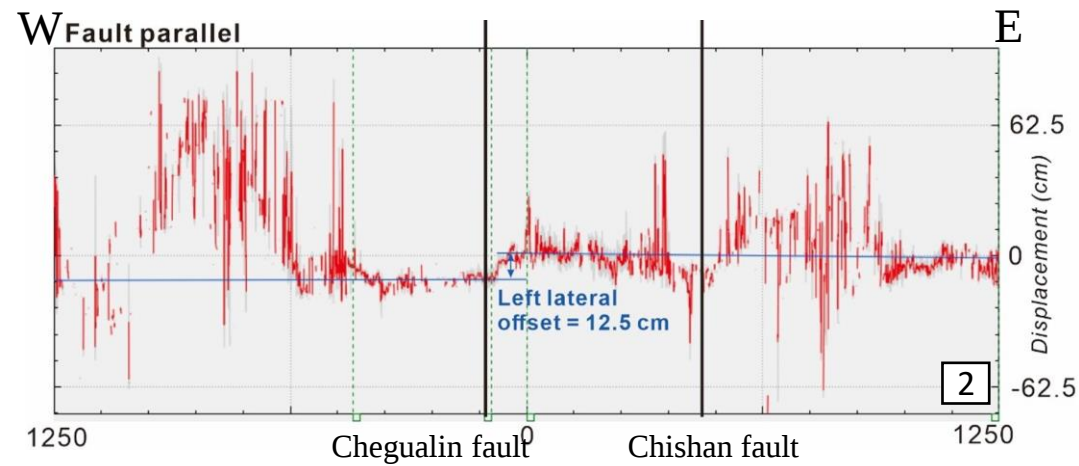
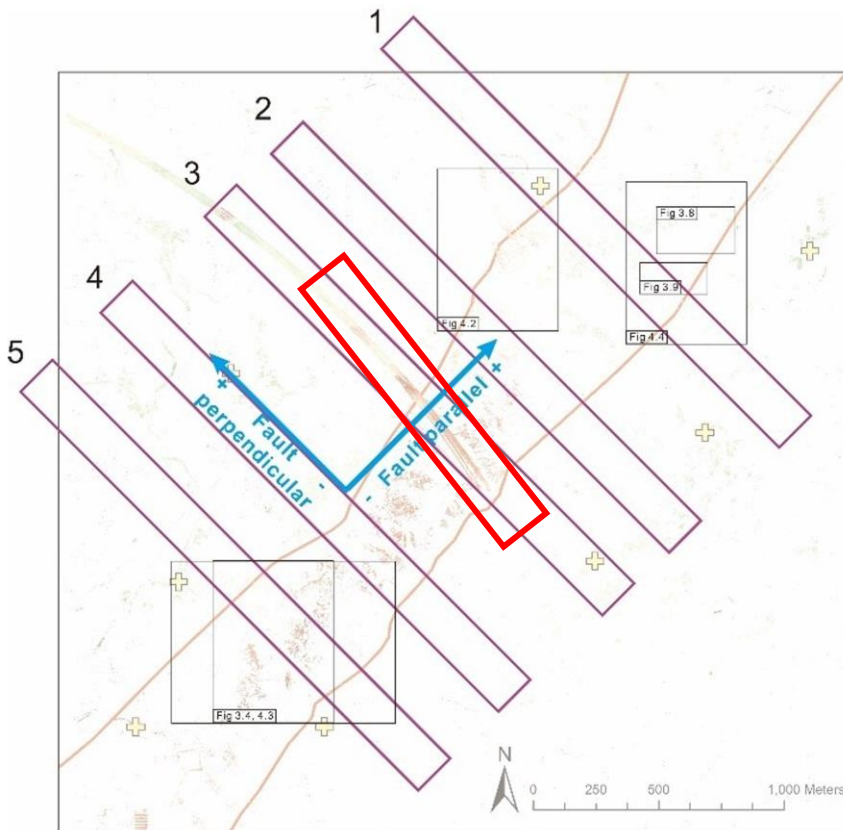
- The length of arrow represents the magnitude of velocity.
- Divided into three groups from north to south along Chegualin fault.
- Near Zhongliao tunnel region indicate relative left-lateral shearing.
- South of Chegualin fault all indicate relative right-lateral shearing.



- The velocity of fault-perpendicular component
- The velocity of fault-parallel component
- Mean velocity

Image correlation

- Compare the displacement on both sides of the fault.
- Section 2, shows relative left-lateral movement.

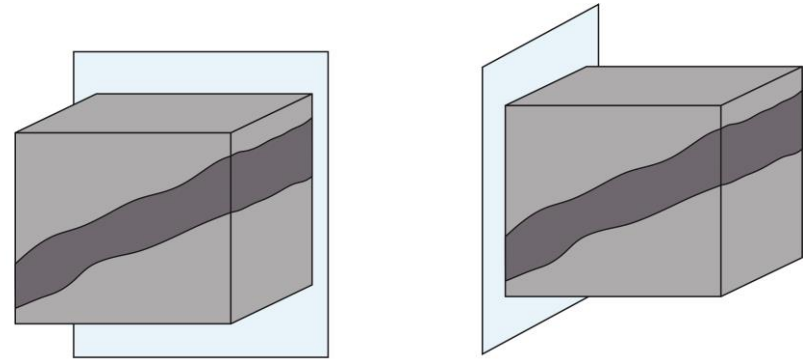


Chen, 2024

- Section 3~5 all shows relative right-lateral movement.

Methodology

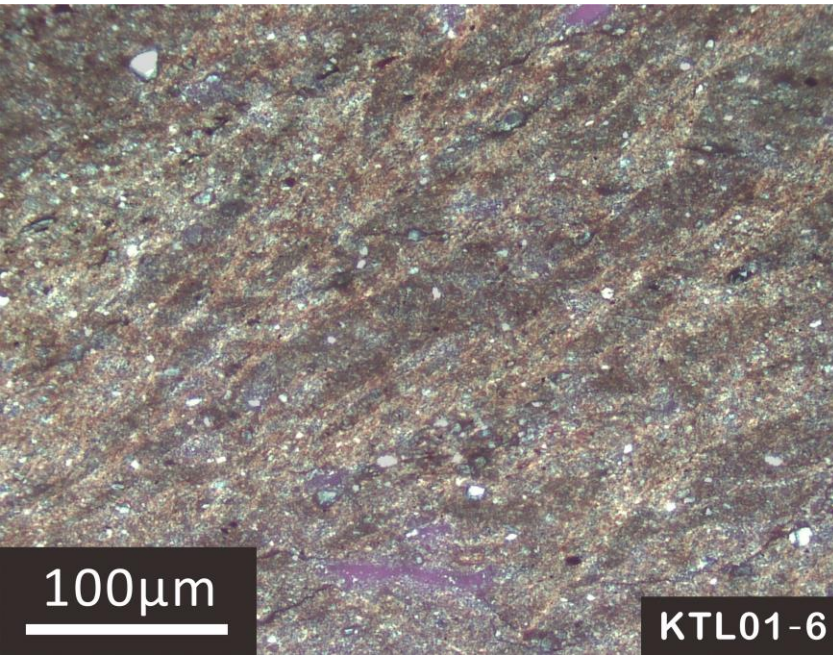
- Outcrop observation
- Microstructural analysis



Strike-perpendicular

Strike-parallel

Jhuang, 2023

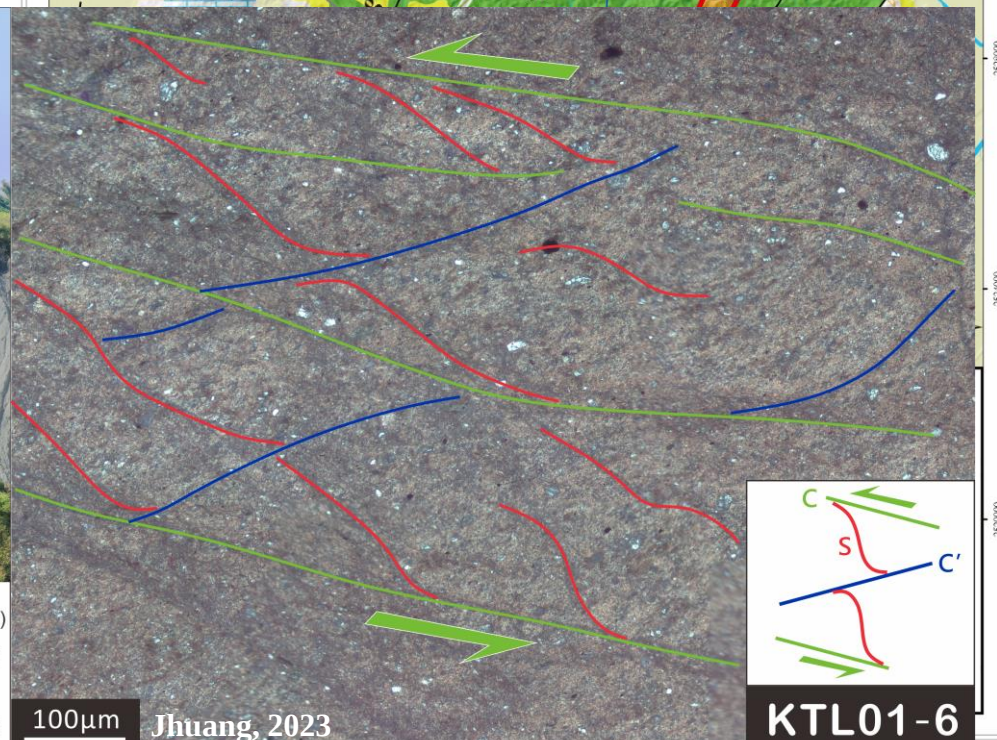
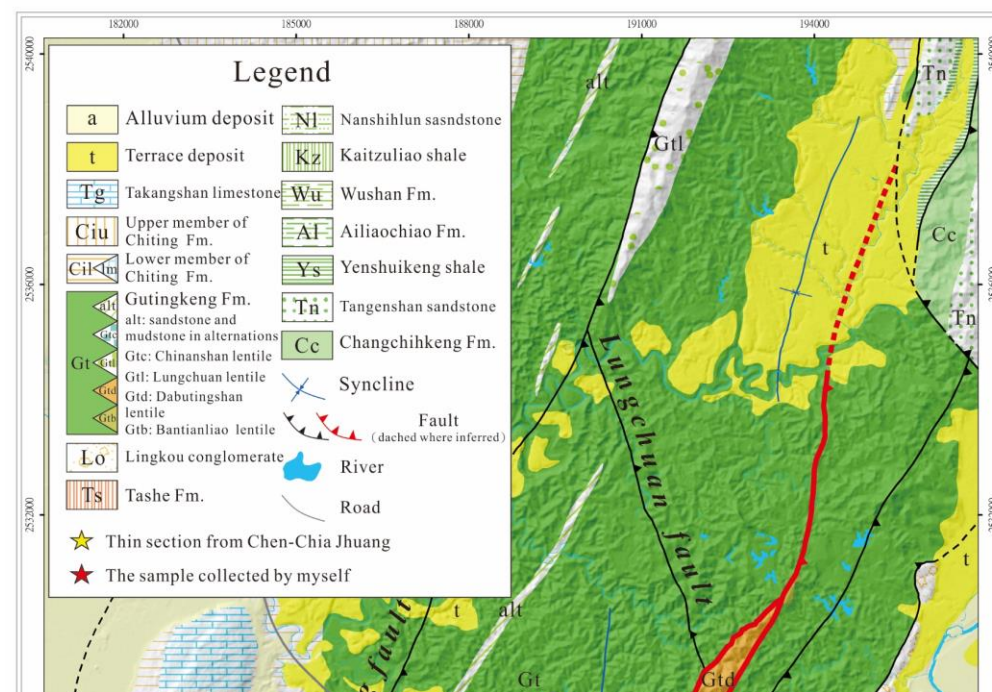


Thin section of the
strike-perpendicular sample



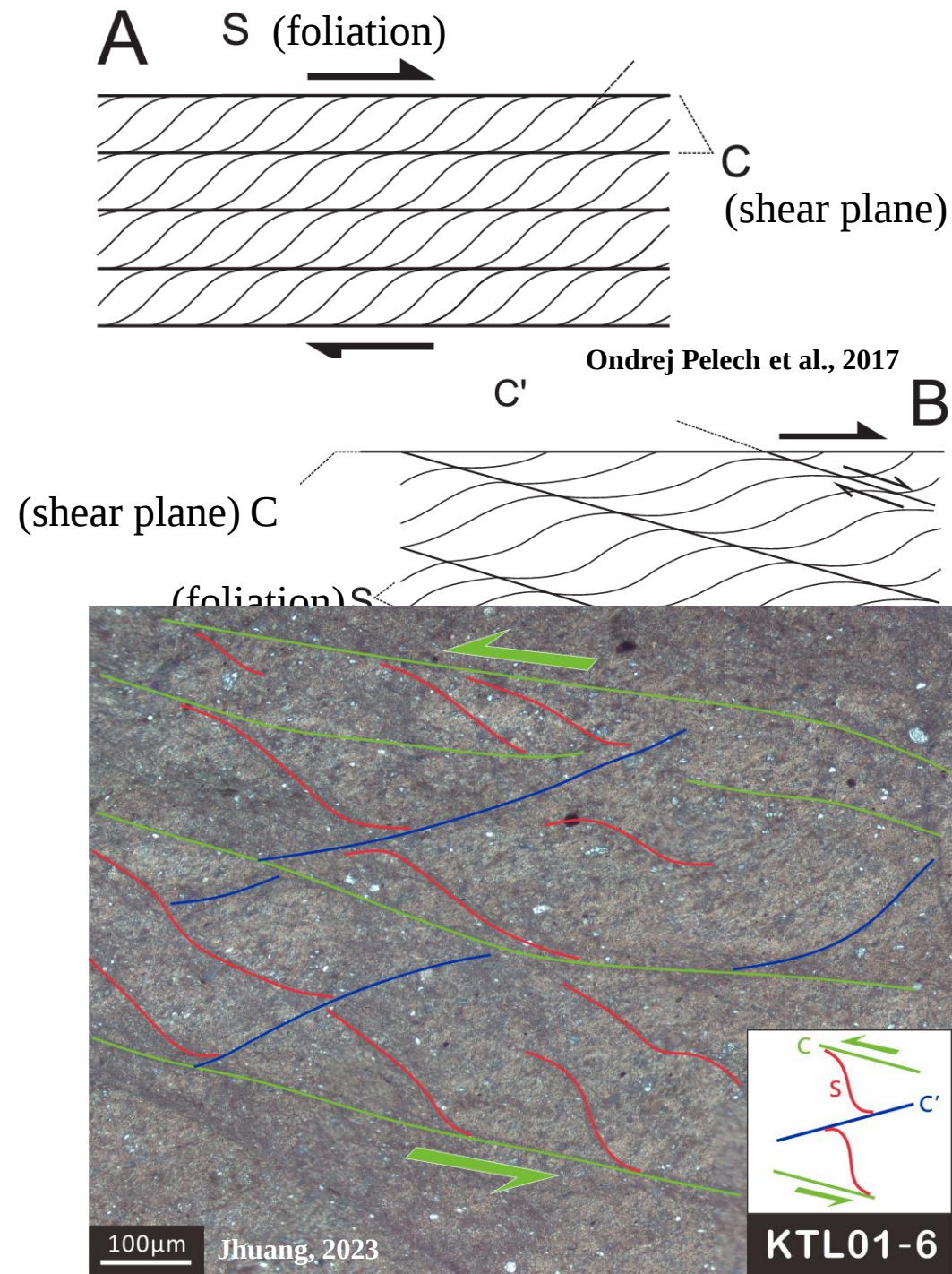
Previous work

- The sample located at northeast of freeway No.3.
- The thin section shows left lateral shear direction.

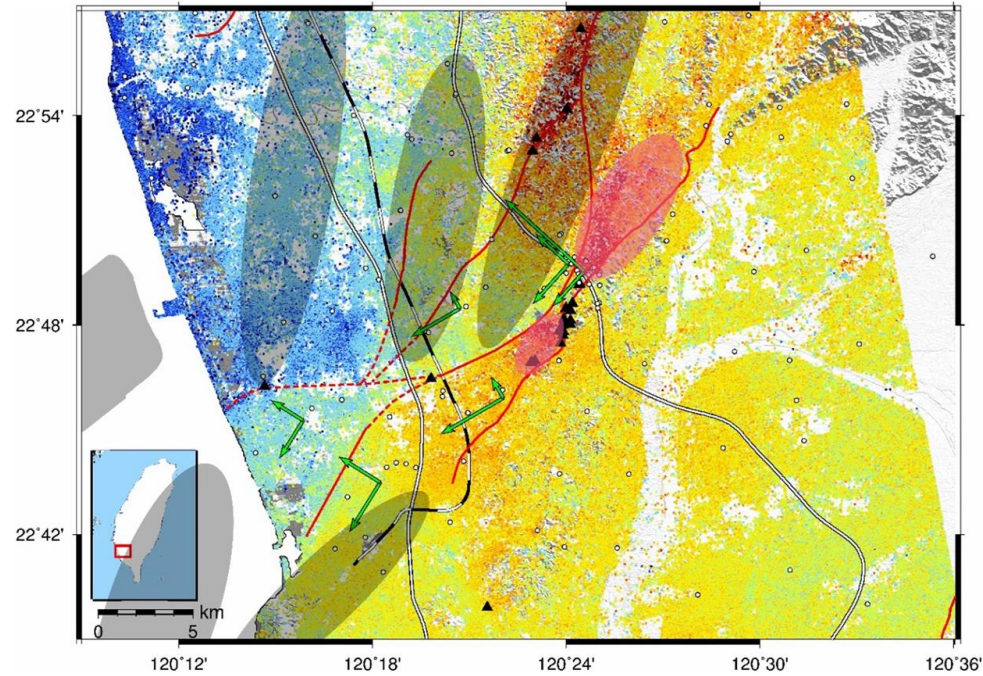
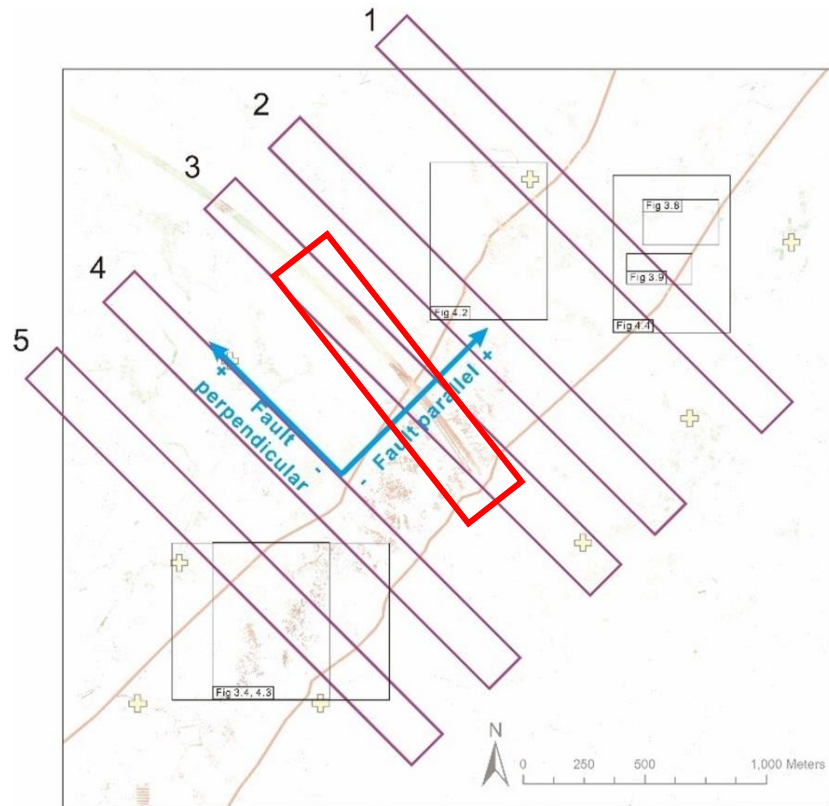


S-C fabric

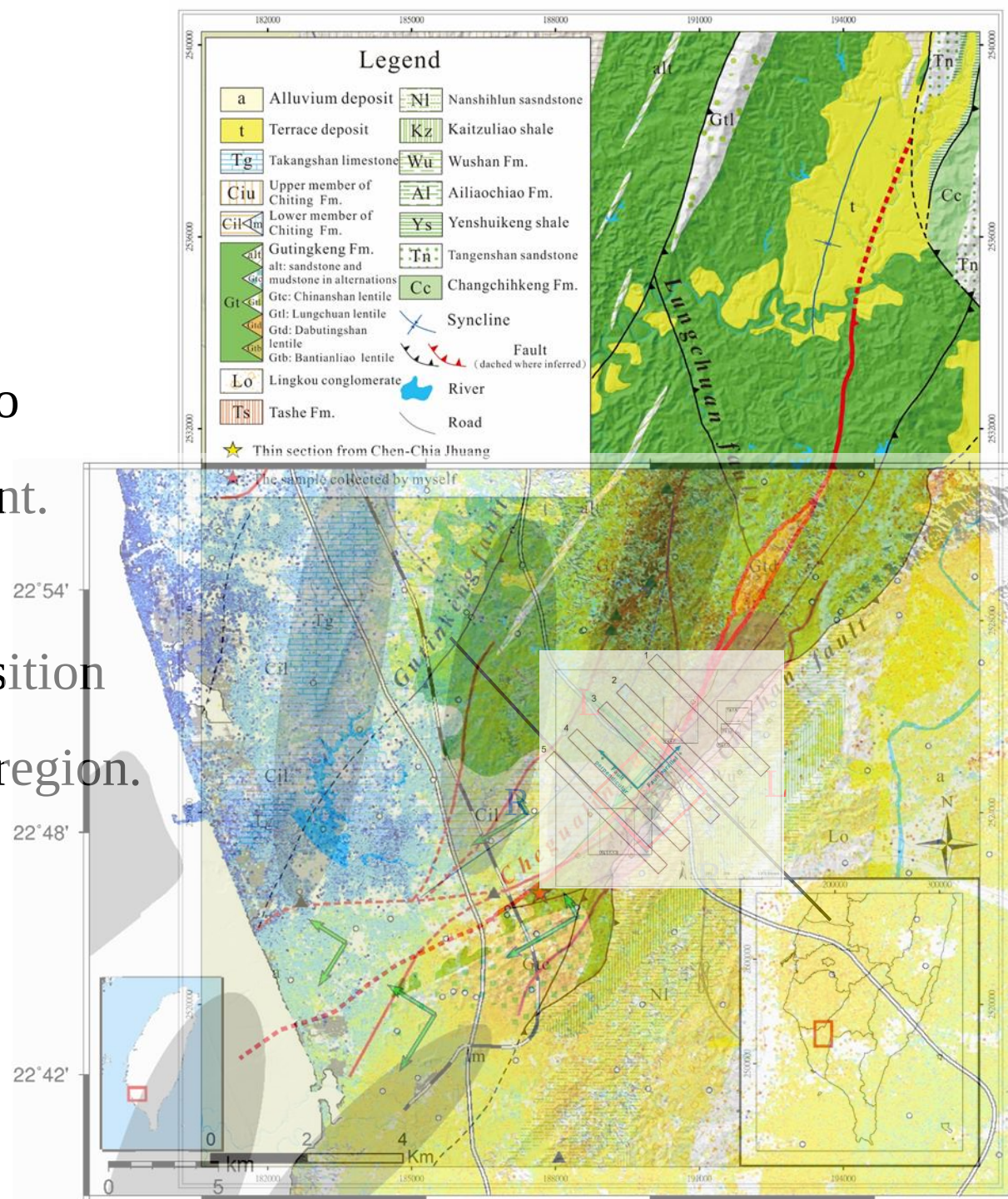
- S-surface (schistosity) are formed by the alignment of mineral grains in the rock.
- C-surface (cisaillement) are parallel to the shear zone.
- The S-surfaces rotate toward the right side of the shear zone, forming right-lateral shear structures.



Future work



- The boundaries from two geodetic data are different.
- The shear direction transition zone must locate at this region.



- The location of the shear direction transition zone
- The mechanism influencing the different shear directions.

Thank you for your listening