Important communication

Lectures are suspended on:

- 3 March
- 4 March
- 31 March
- 1 April

Last lecture before the field trip is:

- 25 March

Field relations
Features of the geological units mappable on the field

The features of one or more rock bodies observed in the field are the first and fundamental step for their study. These can be observed in rocks that outcrop in hilly and mountainous areas and in excavations of anthropogenic origin (road cuts, quarries, mines, drillings).It is therefore clear that a fundamental step in the study of an igneous or metamorphic body is also the examination (or drafting) of a geological map.

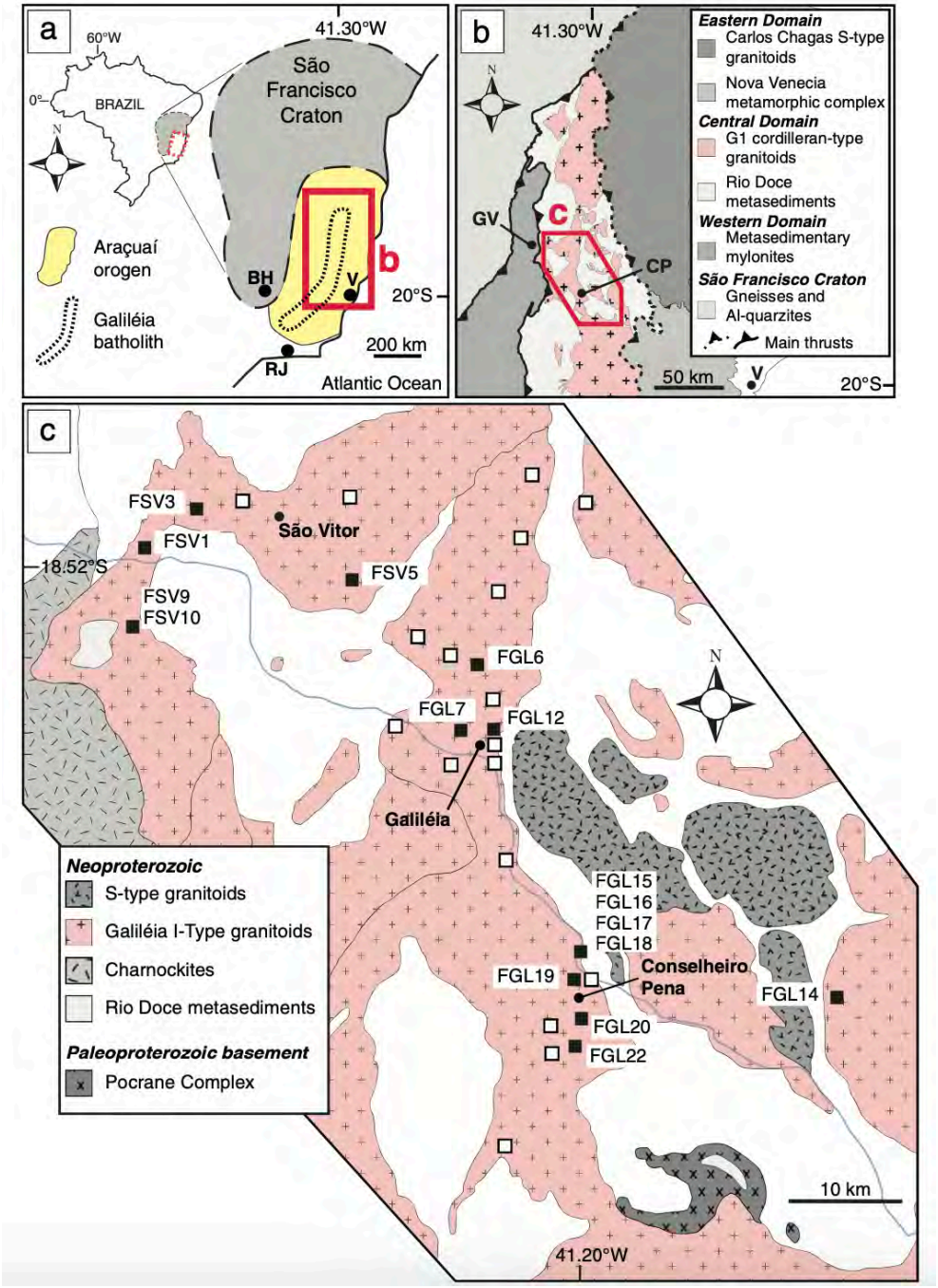
Field relations can provide information on the causes of changes in a given rock system and on the forms of energy that have produced these changes. In the case of igneous rocks, field relations reflect the dynamics of the magmas from which the geological body was formed.

Some of the characteristics that can be detected in the field are:

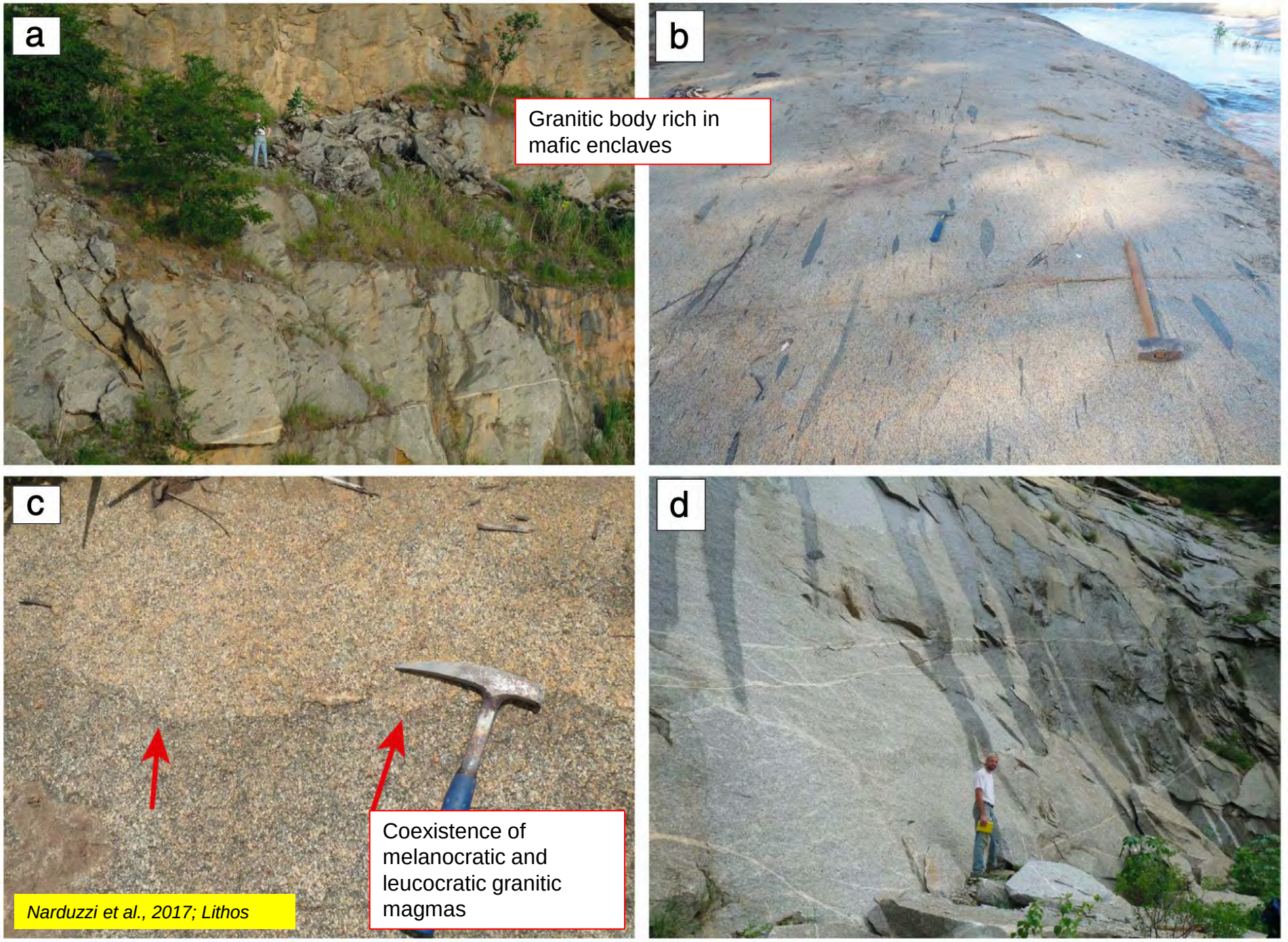
- The nature of the contacts of a given rock mass with the adjoining bodies (sharp, gradual, conformable, cross-cutting, etc.).
- The relative chronology of the adjoining bodies.
- The spatial aspects of fabric and composition, which may be uniform or may vary within the same geological body.
- The dimensions of the geological body.

Some examples:

Mapping of a granit complex in South-East Brazil

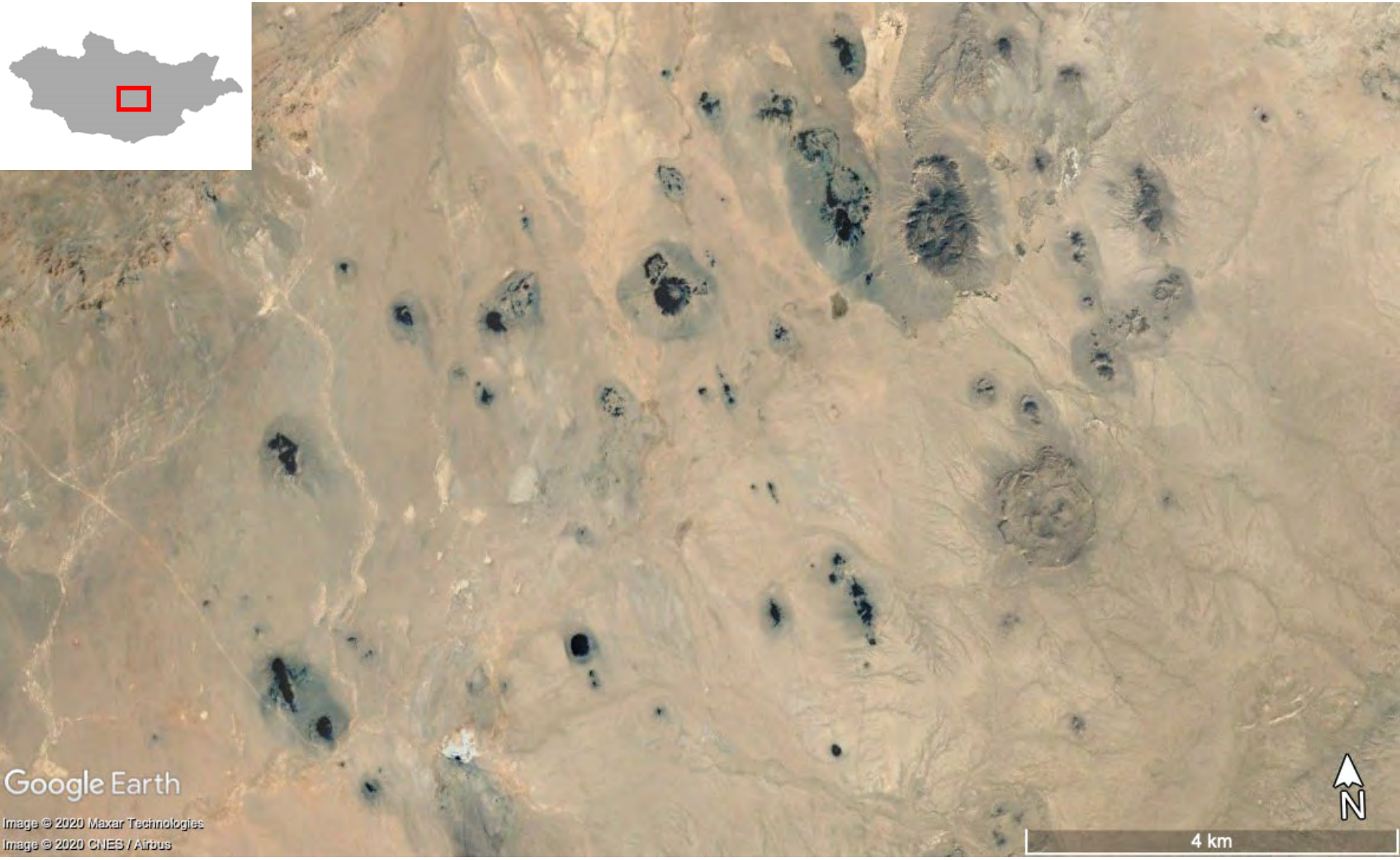


(*Narduzzi et al., 2017; Lithos*)


a
Granitic body rich in mafic enclaves
b
c
Coexistence of melanocratic and leucocratic granitic magmas
d
Narduzzi et al., 2017; Lithos

Some examples

Sampling of a volcanic complex in Central Mongolia


Google Earth
Image © 2020 Maxar Technologies
Image © 2020 CNES / Airbus
N
4 km


AMPHIBIOUS

Fabric

The term **structure** refers to all those features that are observed at a centimeter scale and above (e.g., columnar joints in a lava flow, fragments of host rock in an intrusive magmatic body, layering in a pyroclastic deposit, folds in metamorphic rocks).

The term **texture** refers to the characteristics of the grains (size and shape, intergranular relationships, and amount of glass), which are usually observed at the centimeter scale and below.

Sometimes, it is not possible to make a clear distinction between **structure** and **texture**, which is why the general term **fabric** is often used in English. Furthermore, there is sometimes no clear distinction between the terms **structure** and **field relationships**.

The fabric of a rock reflects the temporal evolution of the rock formation system. For example, the deformation rate in a deep crustal fault strongly influences the fabric of a metamorphic rock. The speed at which magma rises through the crust can determine whether it erupts non-violently as a vesicular lava or explosively, forming a pyroclastic flow.

Only Italians use this distinction. "Fabric" includes both!

http://hacker.faculty.geol.ucsb.edu/geo102C/lectures/part2.html


http://rockingwiththerocks.com


BRUKER