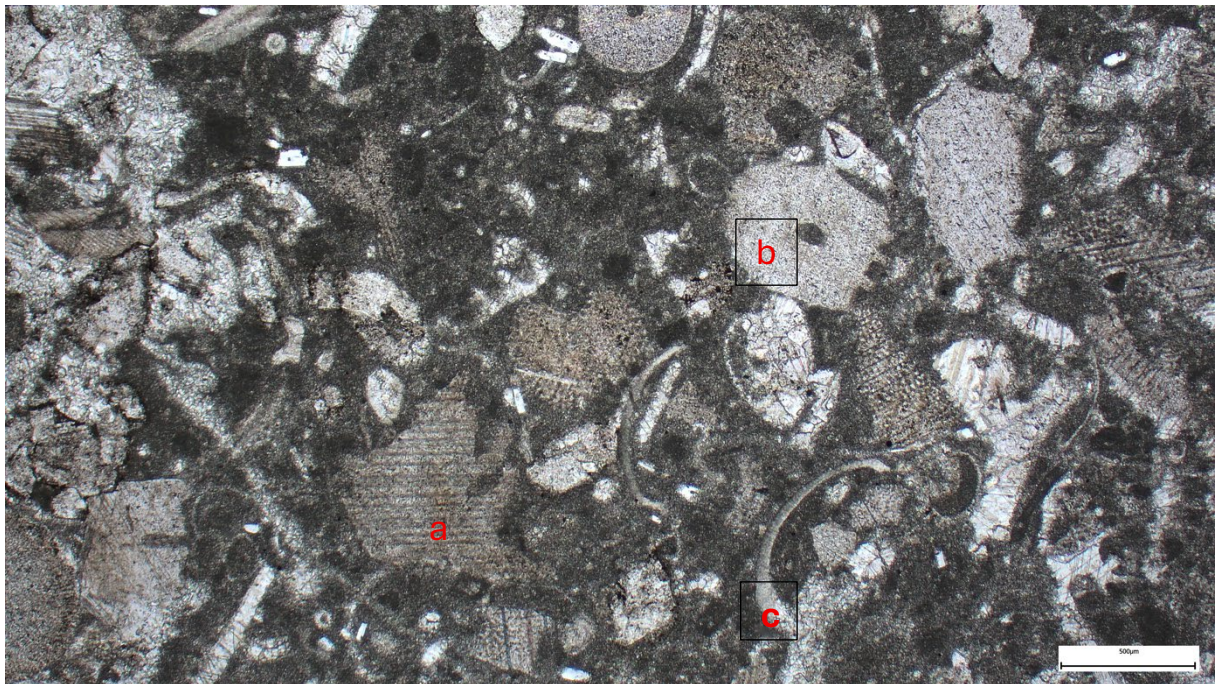
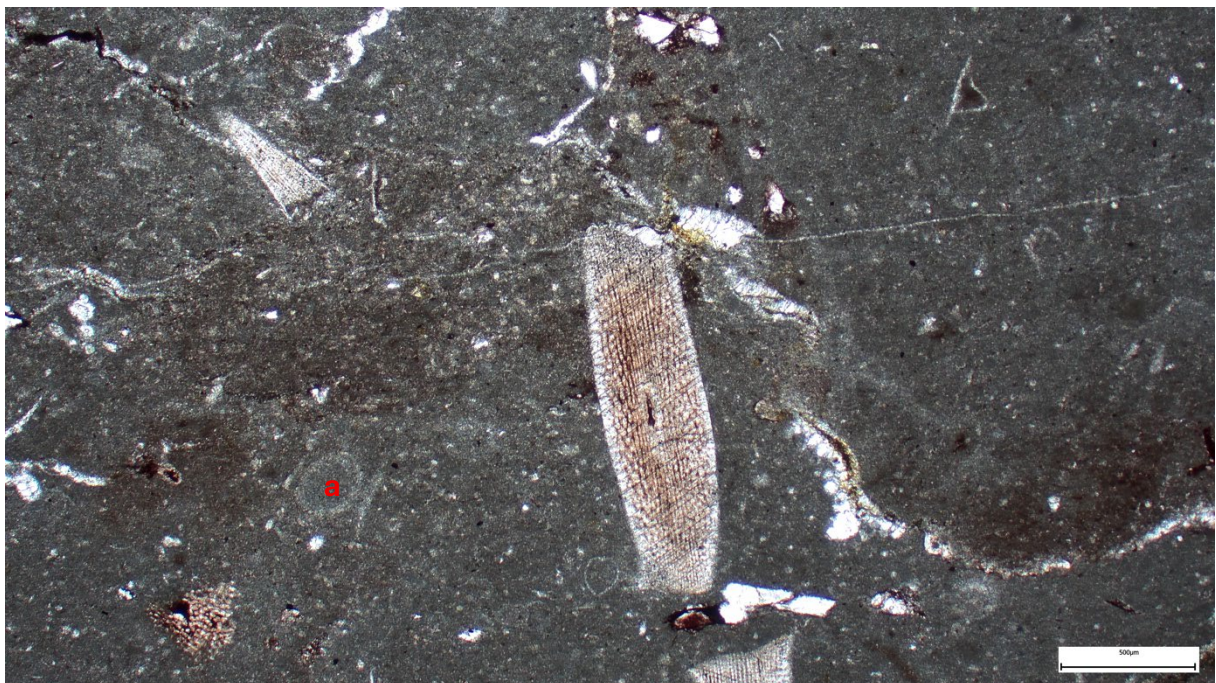


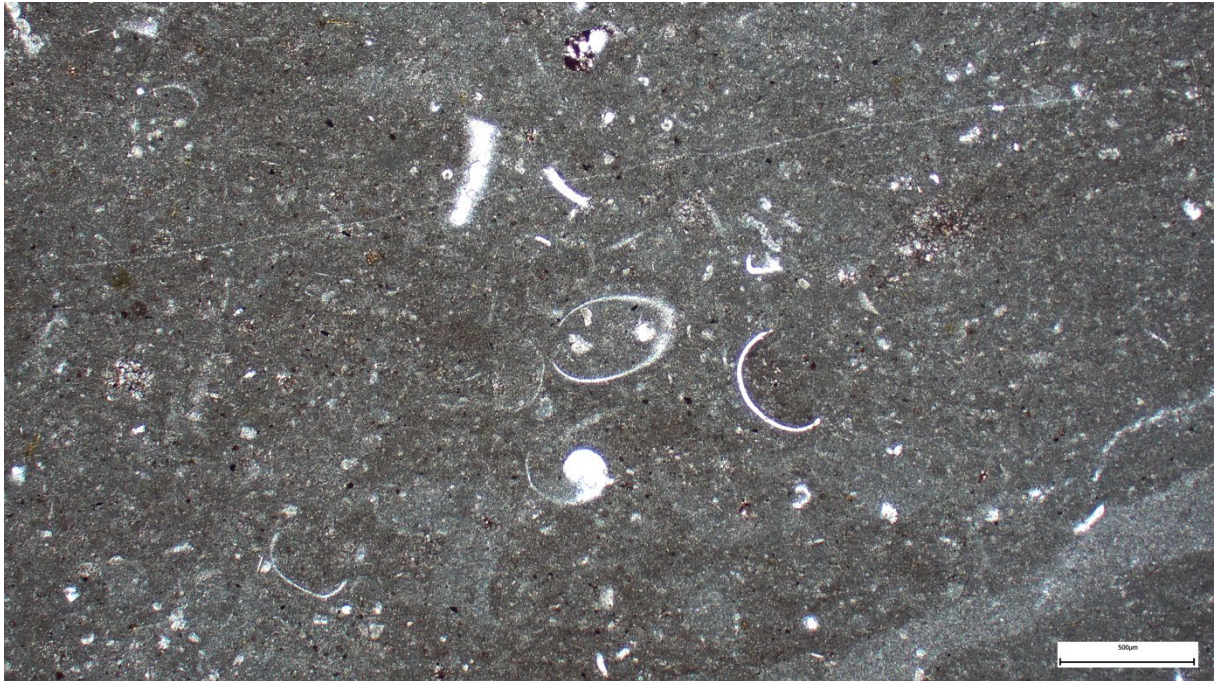
Supplementary: S2



a) MOS 3B - *Calcare Massiccio Fm.* Abraded echinoderm plate (a), rounded crinoids (b), and thin shell of ostracode grains (c). Plane polarized light, scale bar: 500 µm.



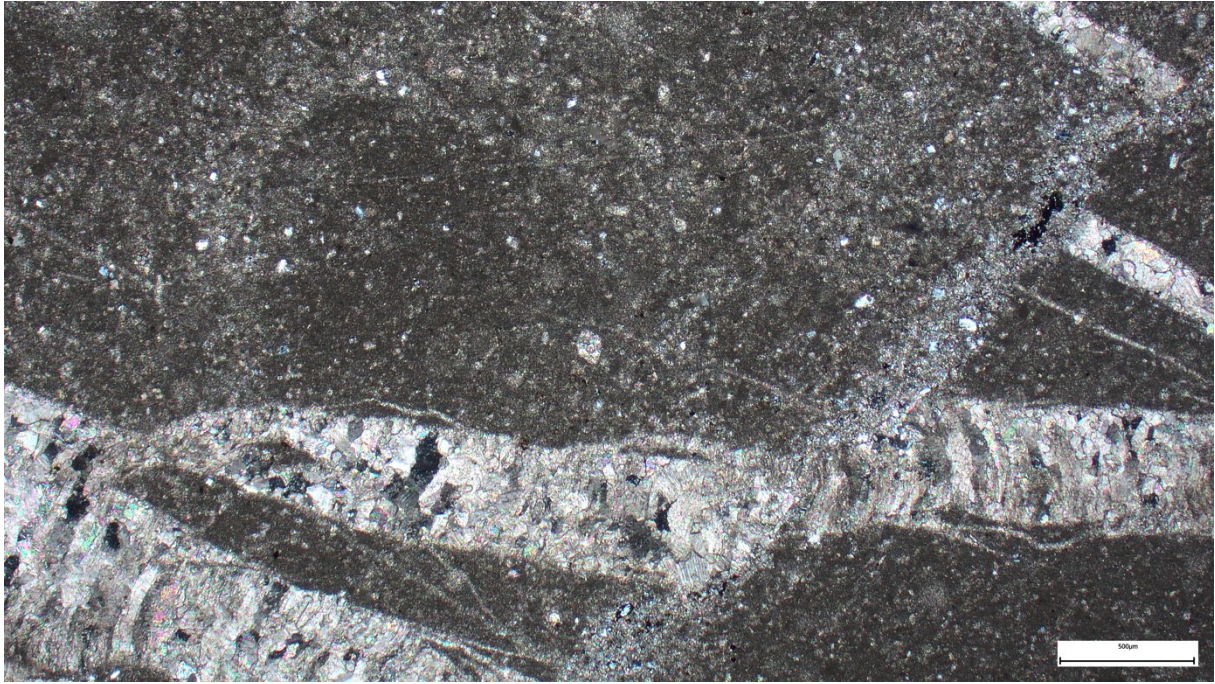
b) MOS 4A - *Rosso Ammonitico Fm.* Abraded echinoderm plate and bivalve shell (a). Plane polarized light, scale bar: 500 µm.



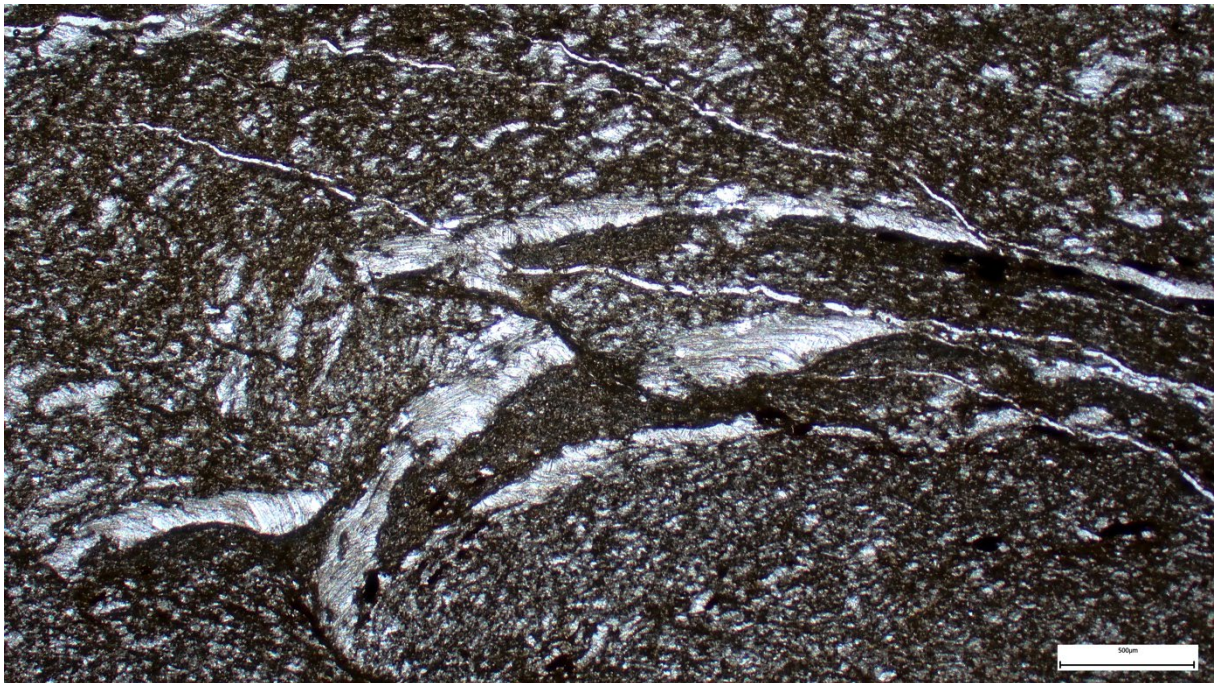
c) MOS 4B - Rosso Ammonitico Fm. Rounded shape and thin shell ostracod bioclasts, and juvenile ammonite (centre of photo). Plane polarized light, scale bar: 500 μm.



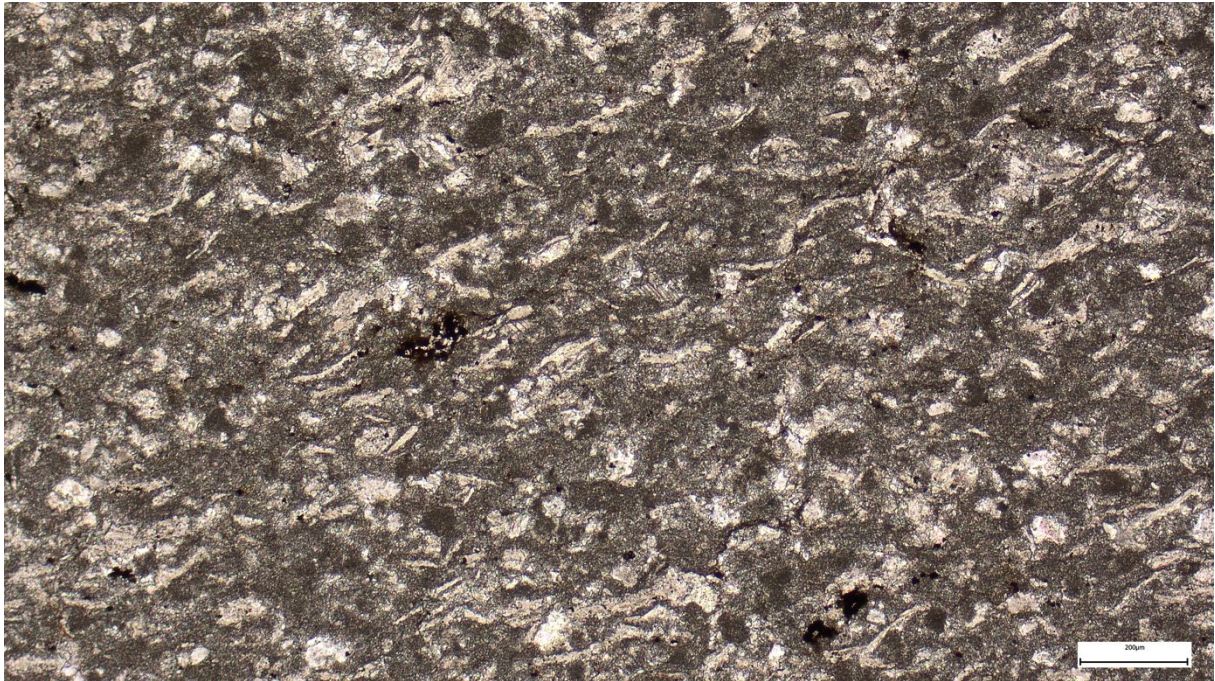
d) MOS 4B - Rosso Ammonitico Fm. Abraded echinoderm plate. Plane polarized light, scale bar: 500 μm.



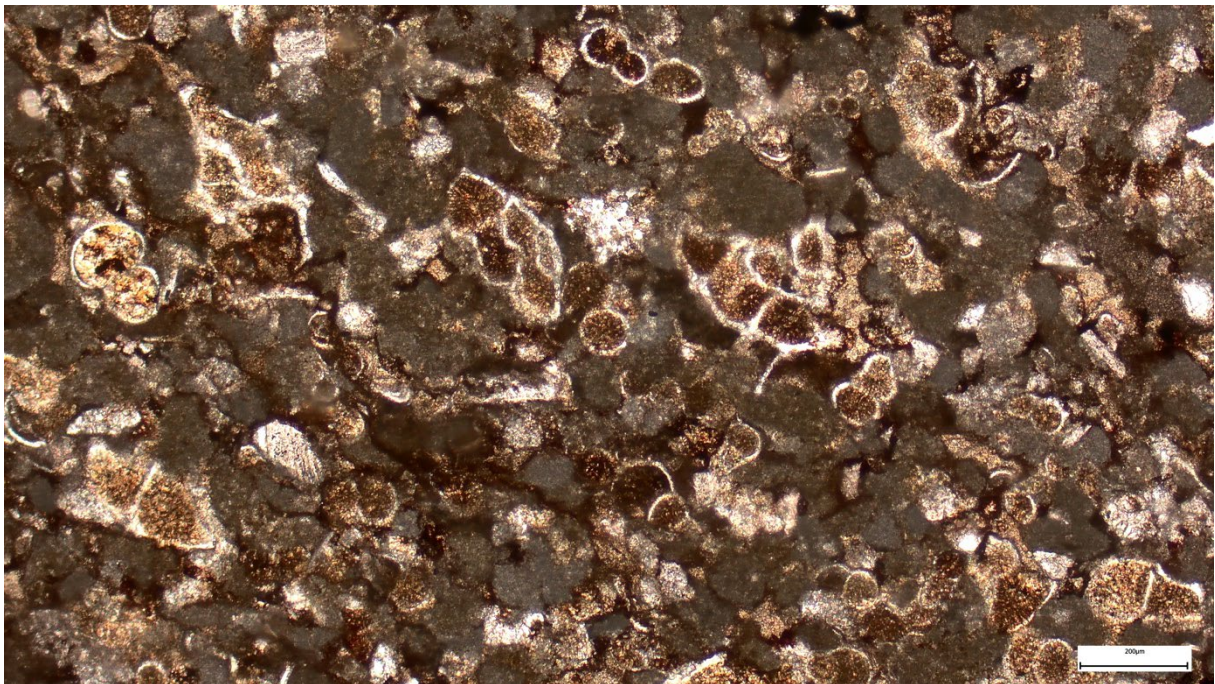
e) MOS 5C - *Calcare Selcifero di Limano Fm.* Foraminifera test (centre of photo) and calcite vein systems. Crossed nicol, scale bar: 500 μm .



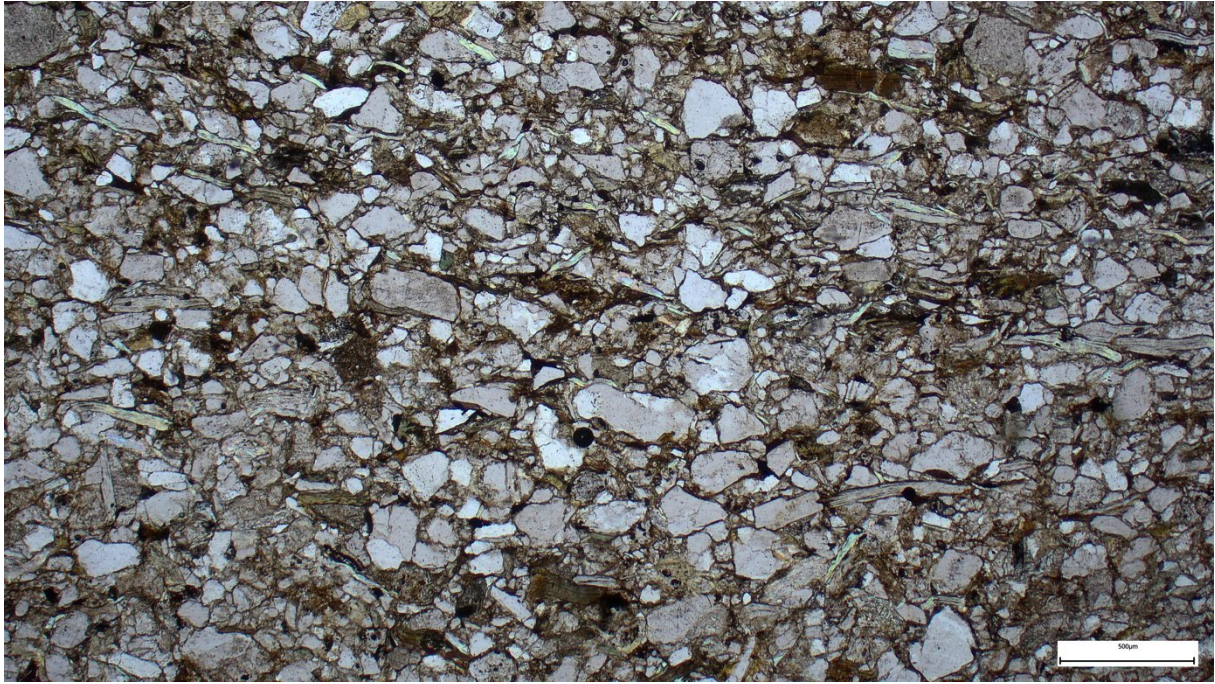
f) MOS 5C - *Calcare Selcifero di Limano Fm.* Bivalve fragments. Plane polarized light, scale bar: 500 μm .



g) MOS 7B - *Calcare selcifero della Val di Lima Fm.* Packstone with micrite nodules and filaments made up of thin shelled bivalve fragments. Plane polarized light, scale bar: 200 μm.



h) MOS 10D - *Scaglia Toscana Fm.* Packstone with rounded to subrounded resedimented micrite nodules with planctonic foraminifera. Plane polarized light, scale bar: 200 μm.



i) **MOS 11** - Macigno Fm. Lithic arkose with angular to sub-angular poorly sorted quartz, feldspar and white mica clasts. Plane polarized light, scale bar: 500 μm .