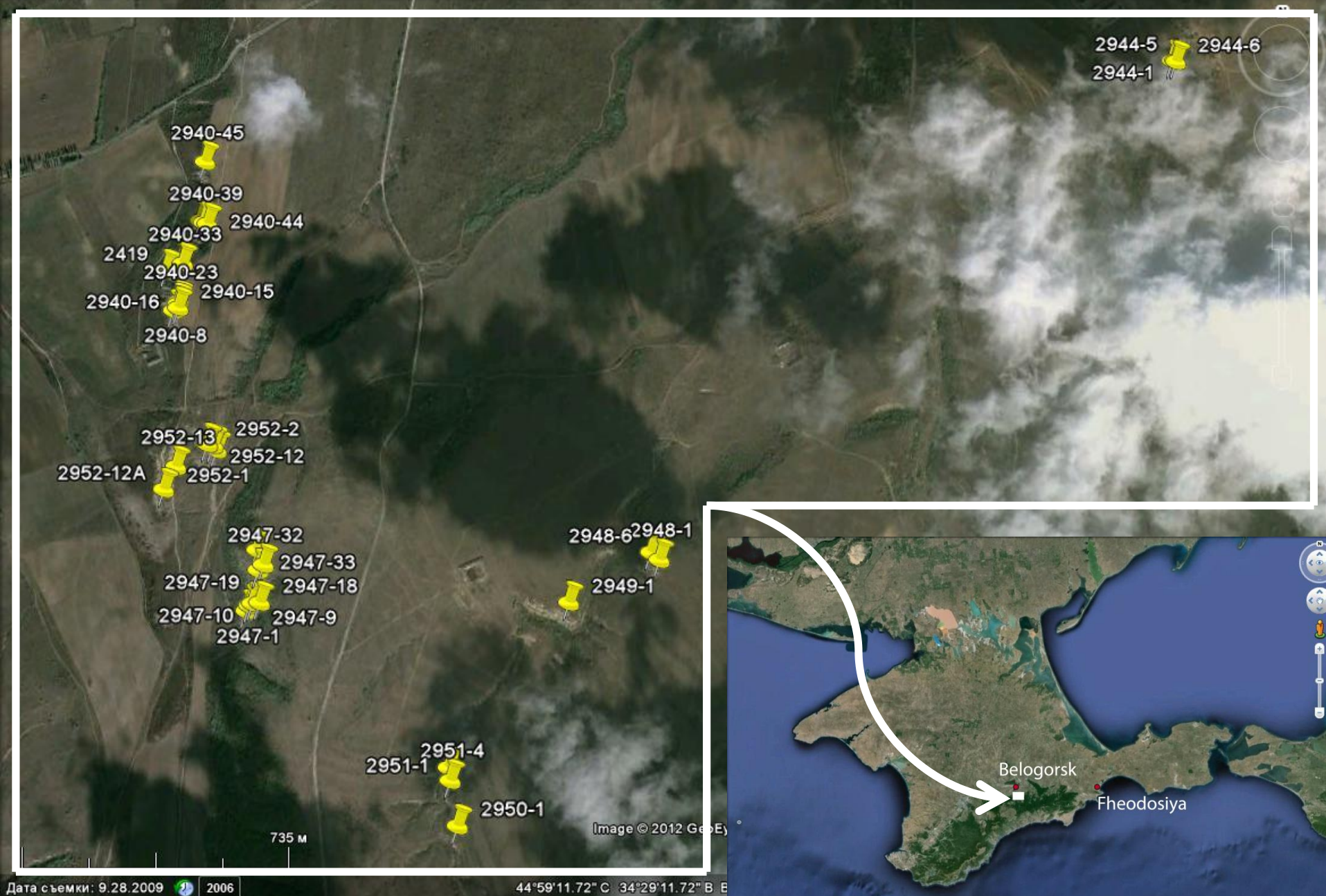


10th Meeting of the Berriasian Working Group,
October, 9-12 2013, Warsaw, Poland



Berriasian of the Central Crimea: magnetostratigraphy

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T.N. Bogdanova, A.G. Manikin, V.K. Piskunov, E.S. Platonov,
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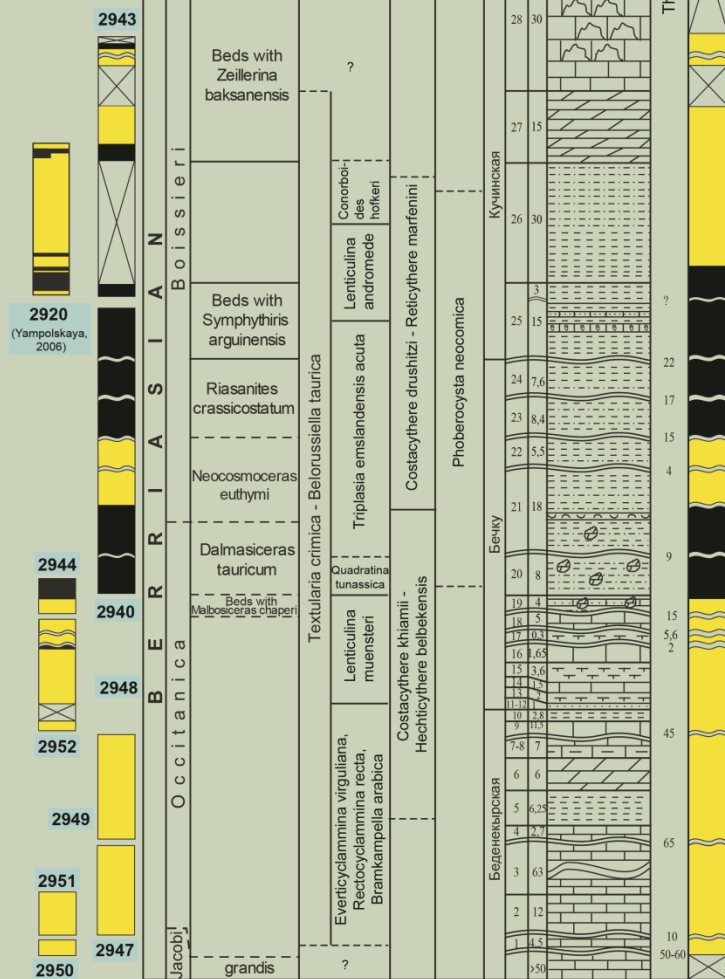
We investigated the sections of Berriasian of Central Crimea in 2012. The sections are localized in Belogorsk area near Balki village on north slopes of Karabi mountain.

Previously, we investigated the J-K boundary and Berriasian of the Eastern Crimea in Theodosia area.

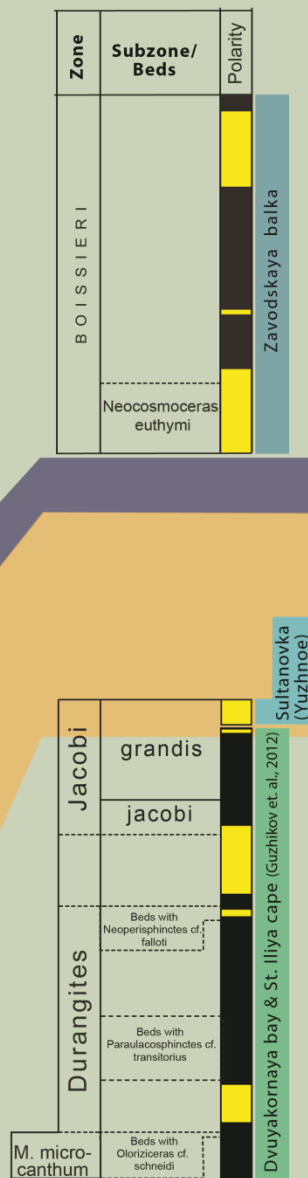
Jacobi and Boissieri zones were investigated.

But Occitanica zone is not available for study in Theodosia area.

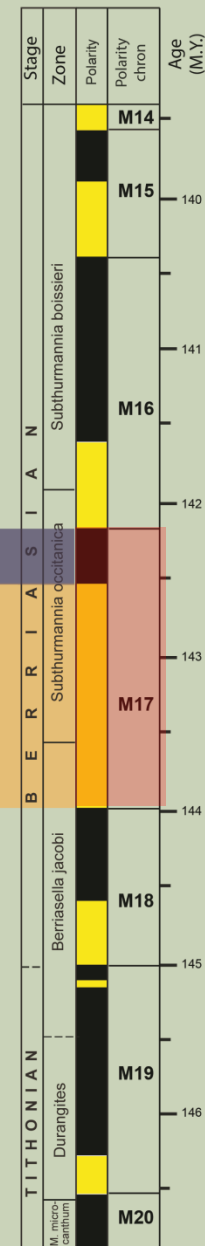
Analogs of magnetic chrons M20, M19, M18, M16 and M15 are identified. Probably the base of chron M17r was identified in Sultanovka.



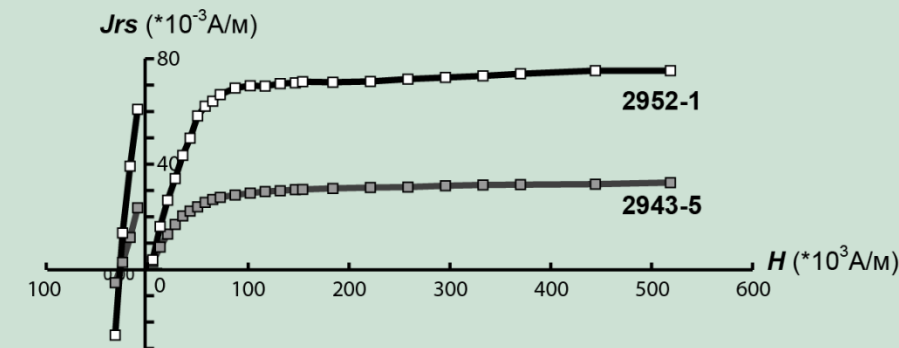
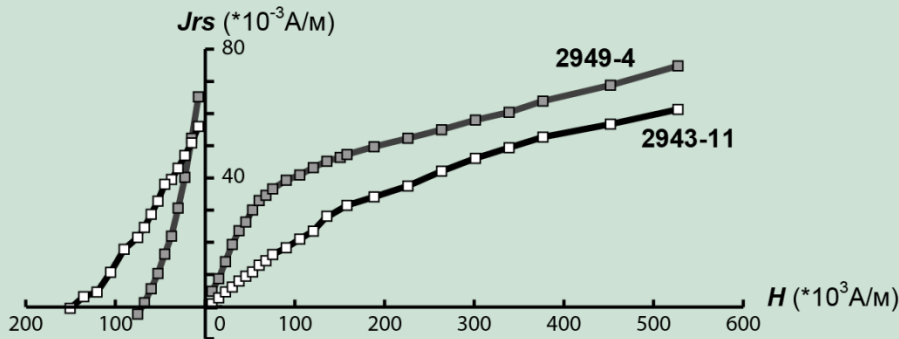
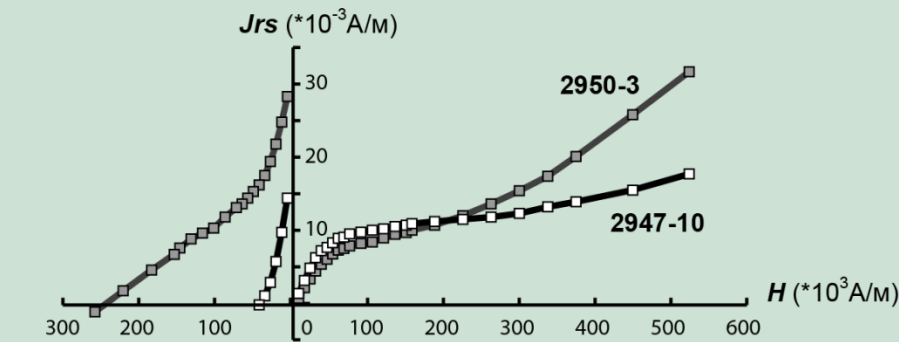
Eastern Crimea Theodosia area



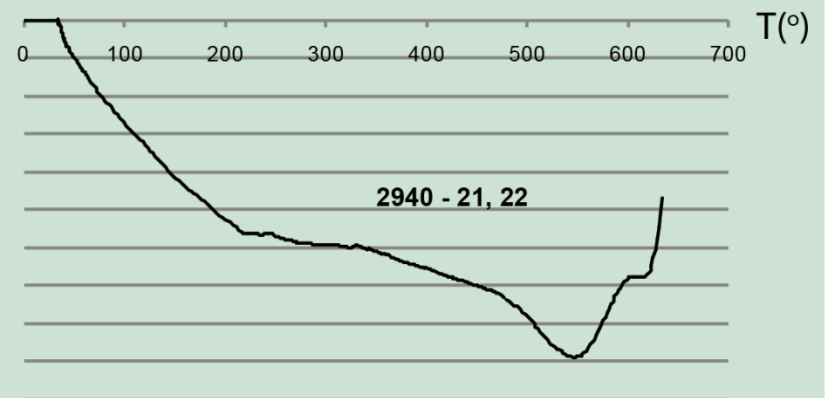
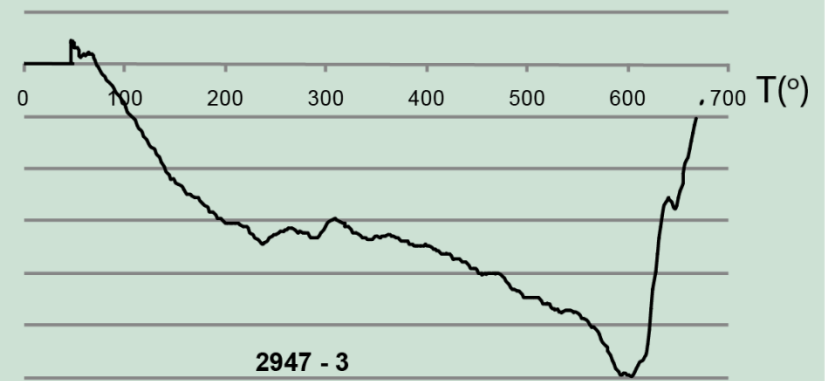
Cretaceous Time Scale (Ogg, Hinnov, 2012)



Now magnetostratigraphic characteristic zones Occitanica is obtained. Analogues of Chron M17 (R- and N-magnetozones) are identified in the Central Crimea.



Curves of magnetic saturation



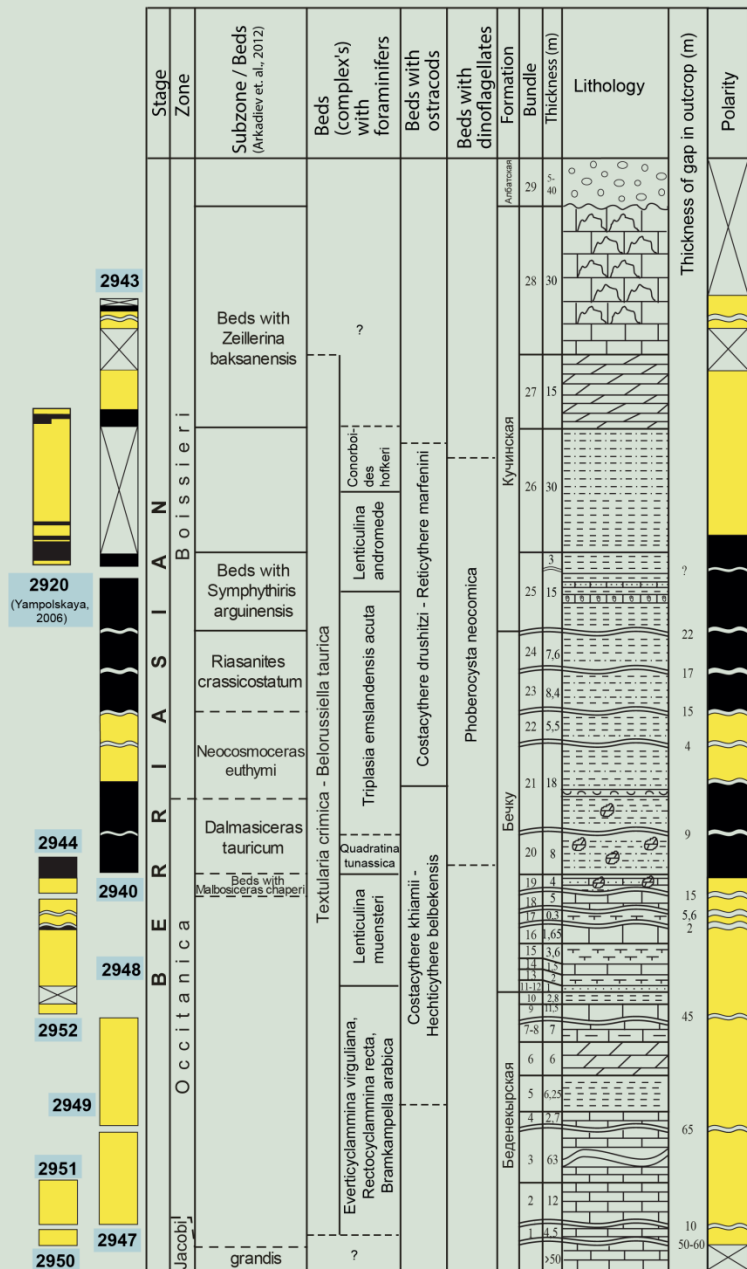
Curves of differential termomagnetic analysis

Probably, the main mineral responsible for magnetization is magnetite. It is fixed on the DTMA curves by the characteristic minimum in 580°C approximately.

Hematite is not fixed on the curves DTMA, because of the low concentration and a lack of sensitivity of the instrument, probably.

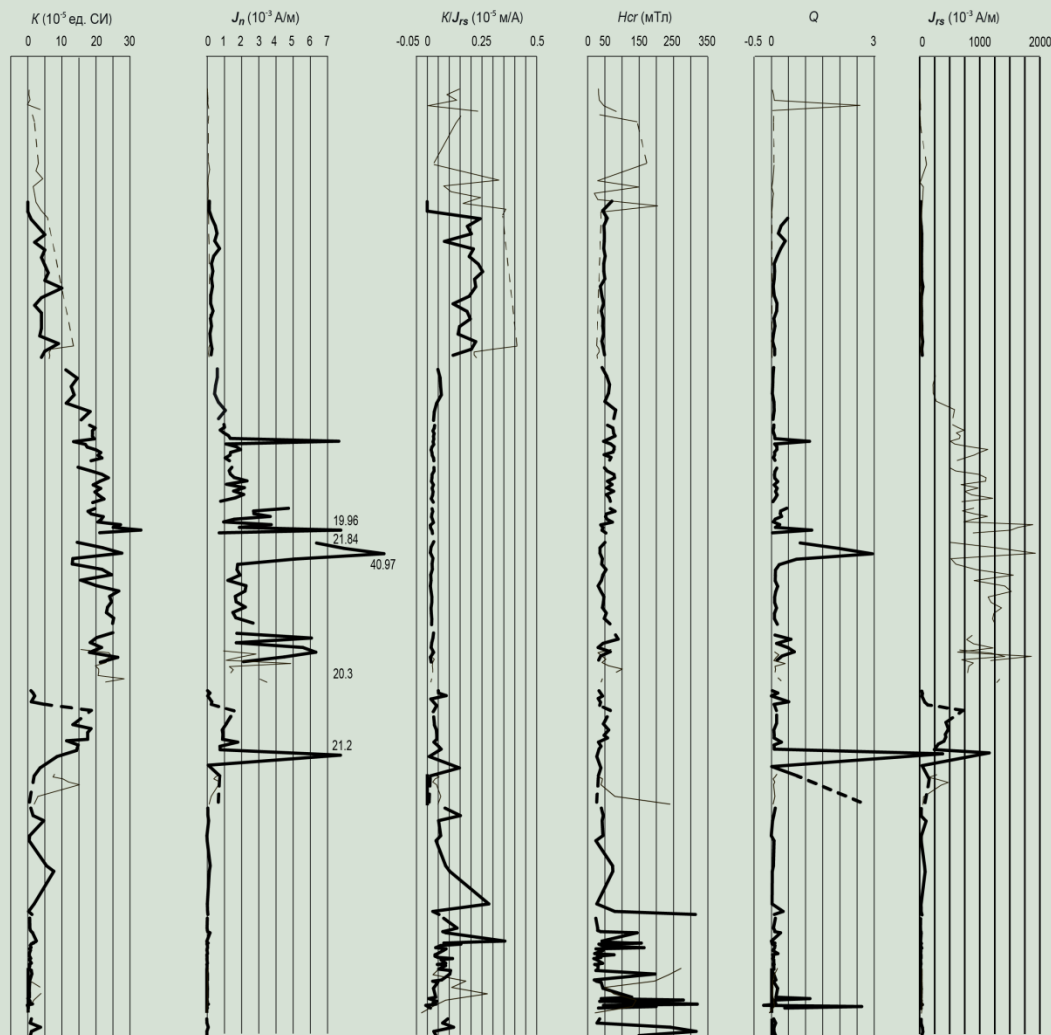
But hematite is well fixed on the curves of magnetic saturation (saturation not in the fields of 700 mT, $H_{cr} > 200-300$ mT).

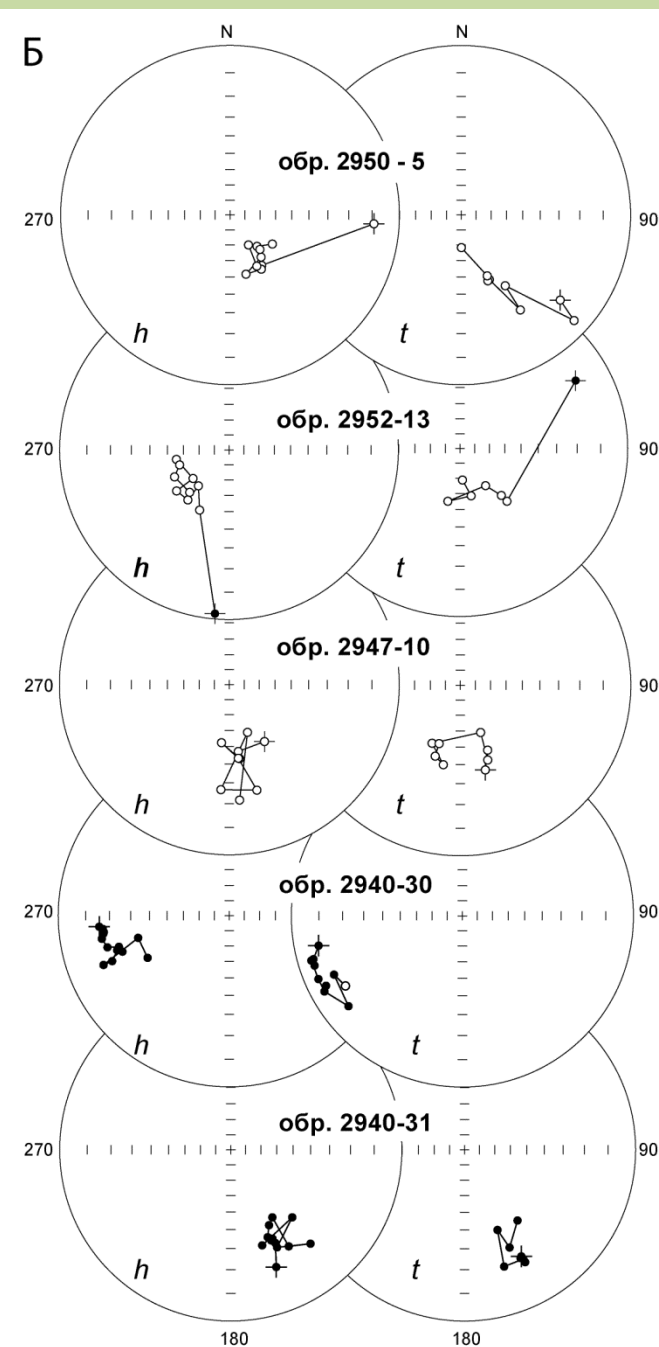
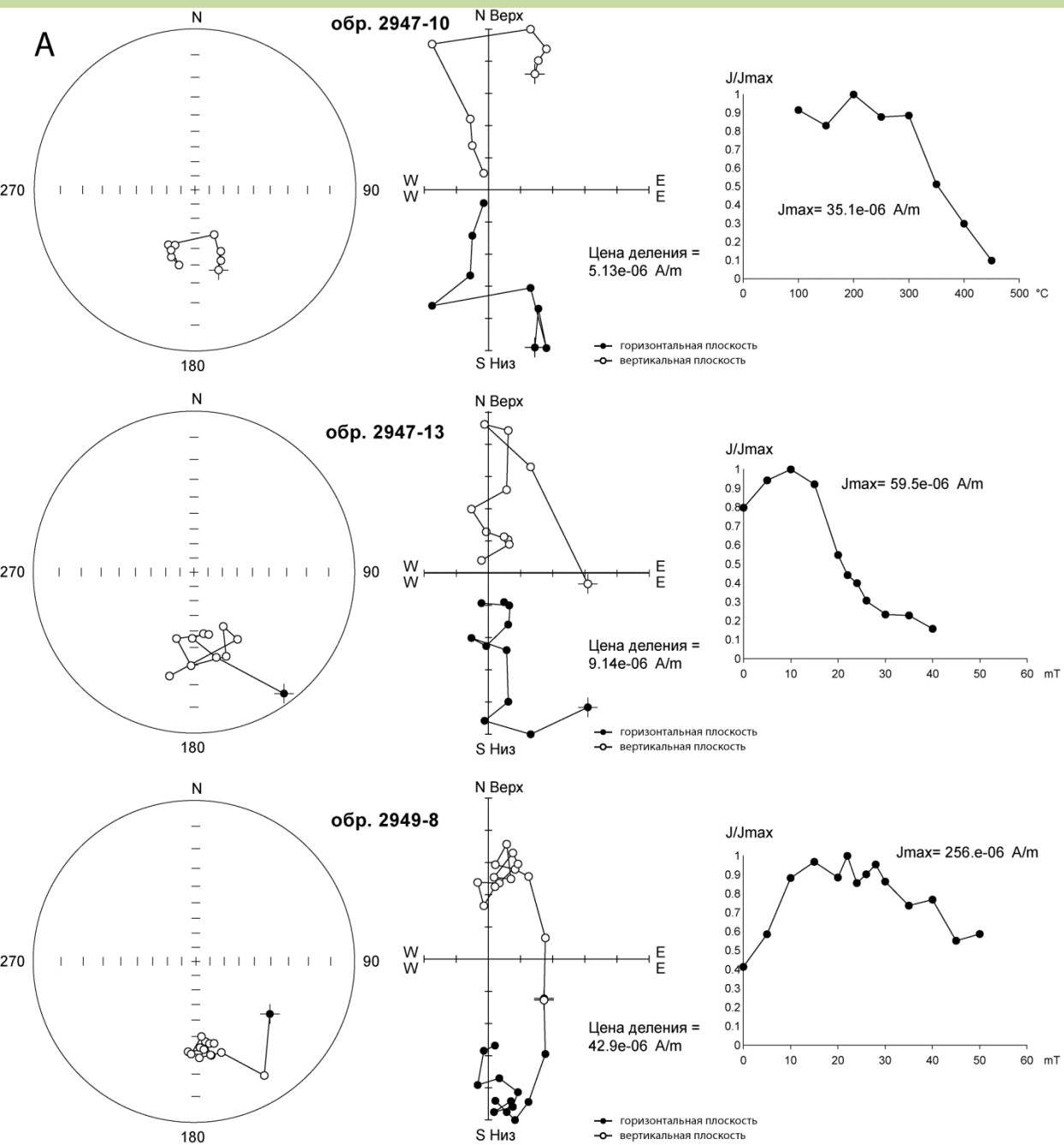
Central Crimea Belogorsk area



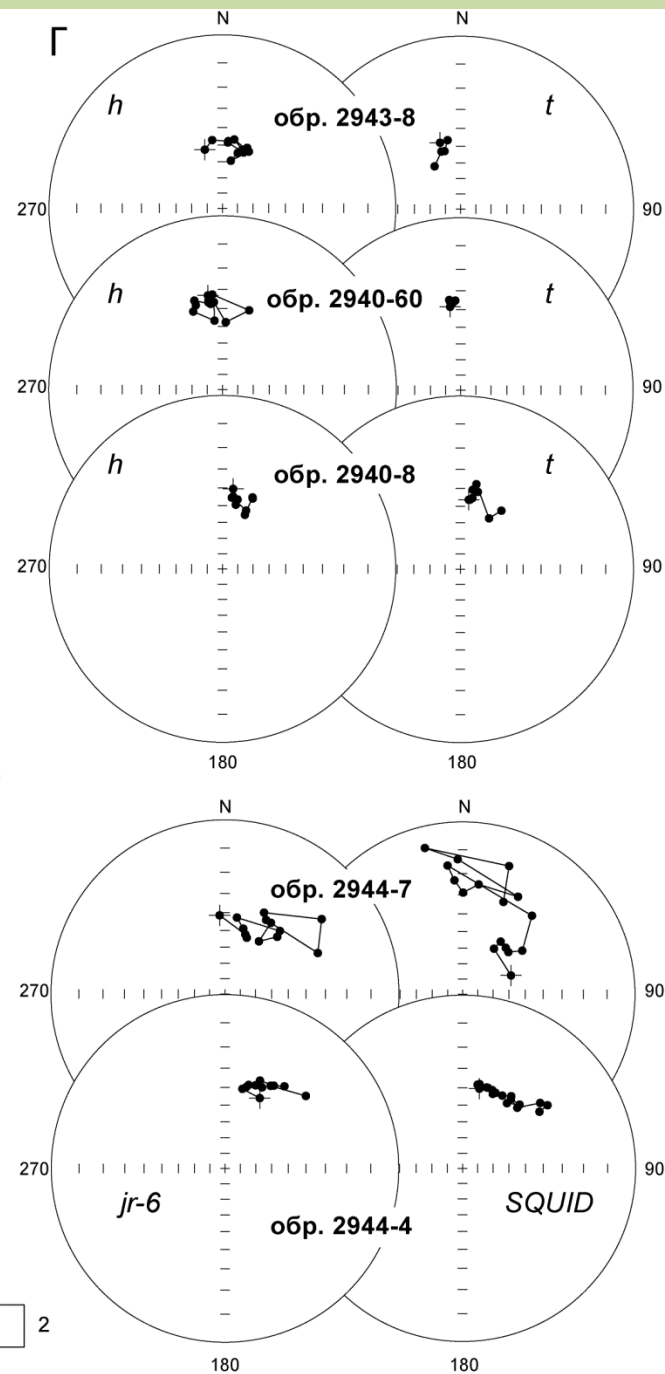
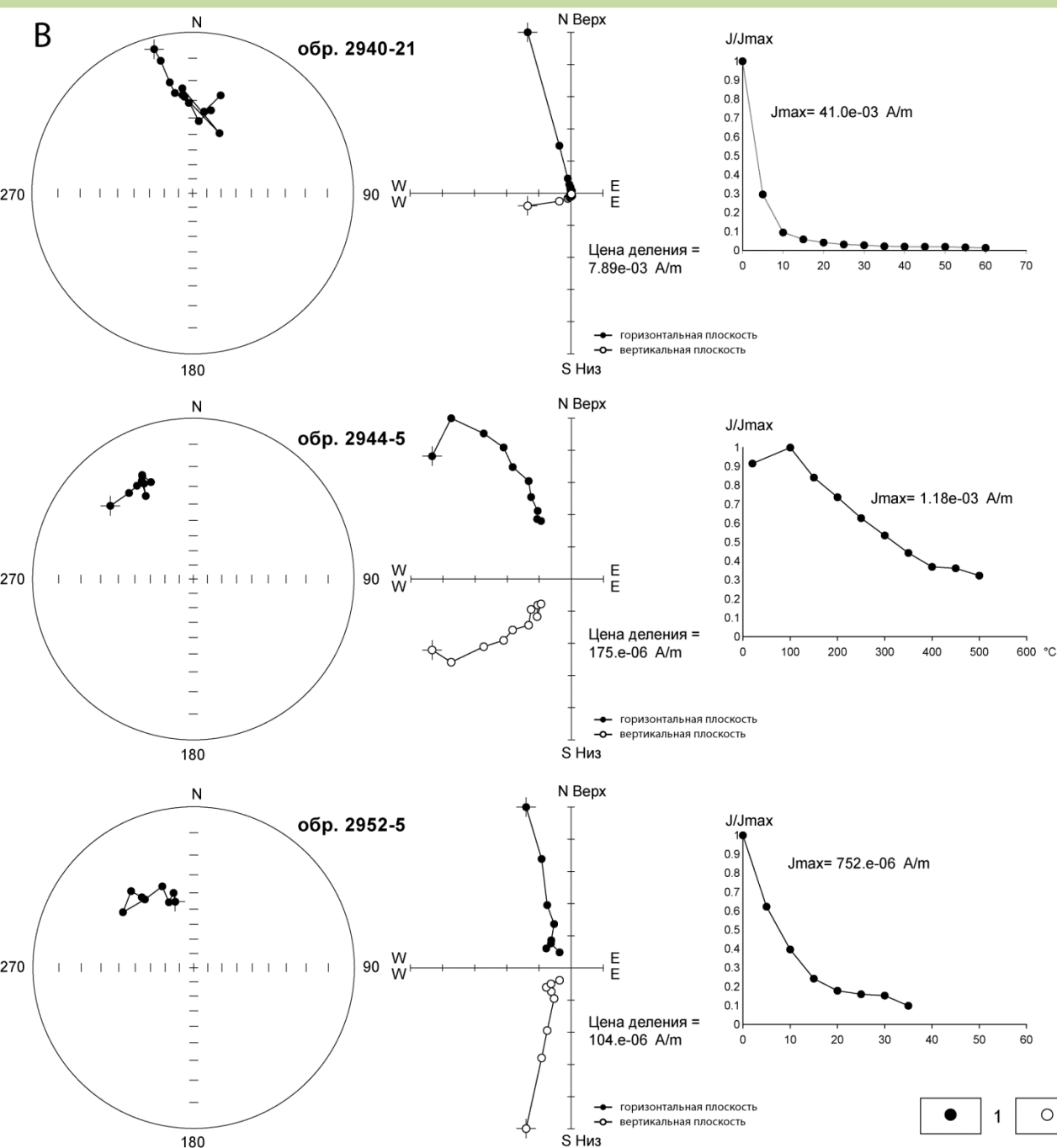
Intervals of summary section with hematite are fixed by high values of Hcr-parameter.

In general, the carbonate rocks are minimum magnetic, terrigenous rocks - more magnetic.



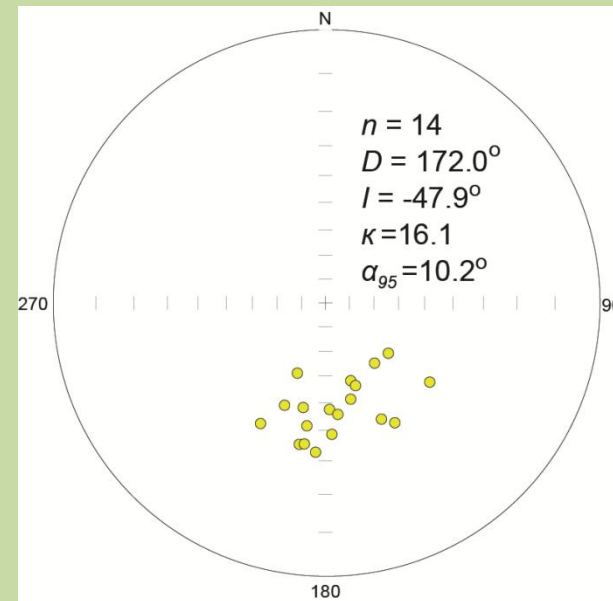
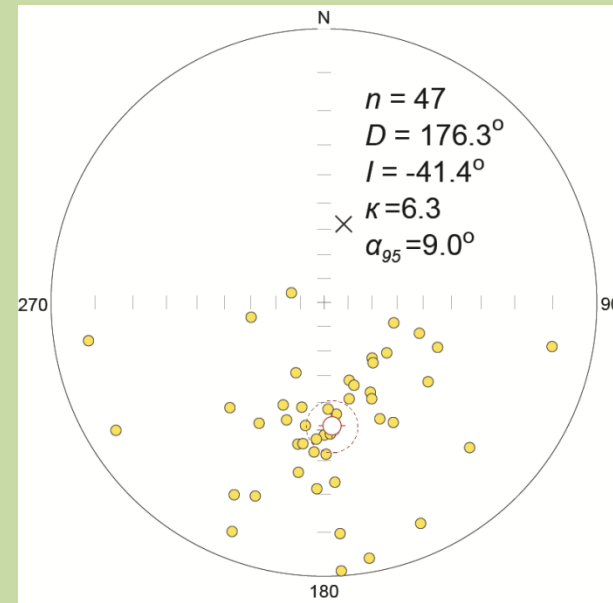
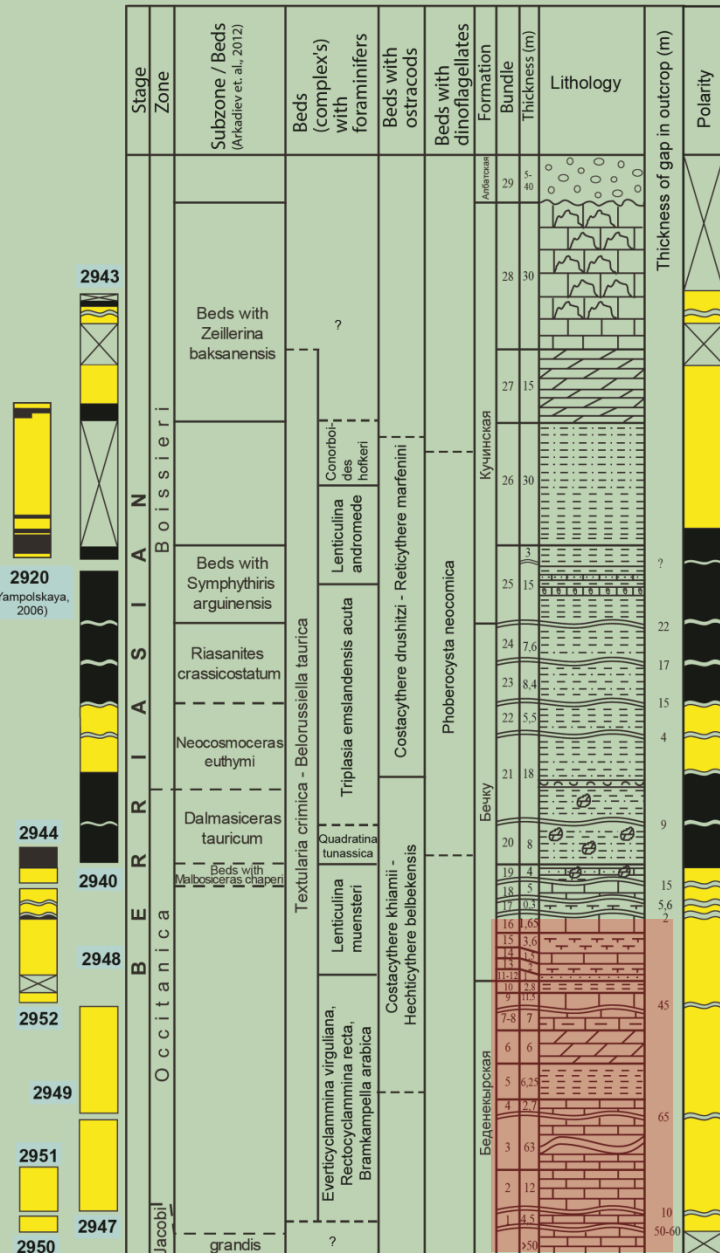


Typical diagram Zijdeveld for directions corresponding to R-polarity.

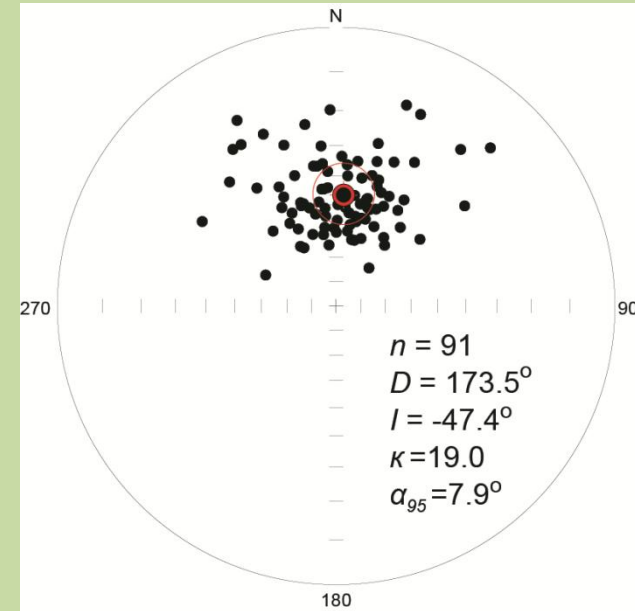
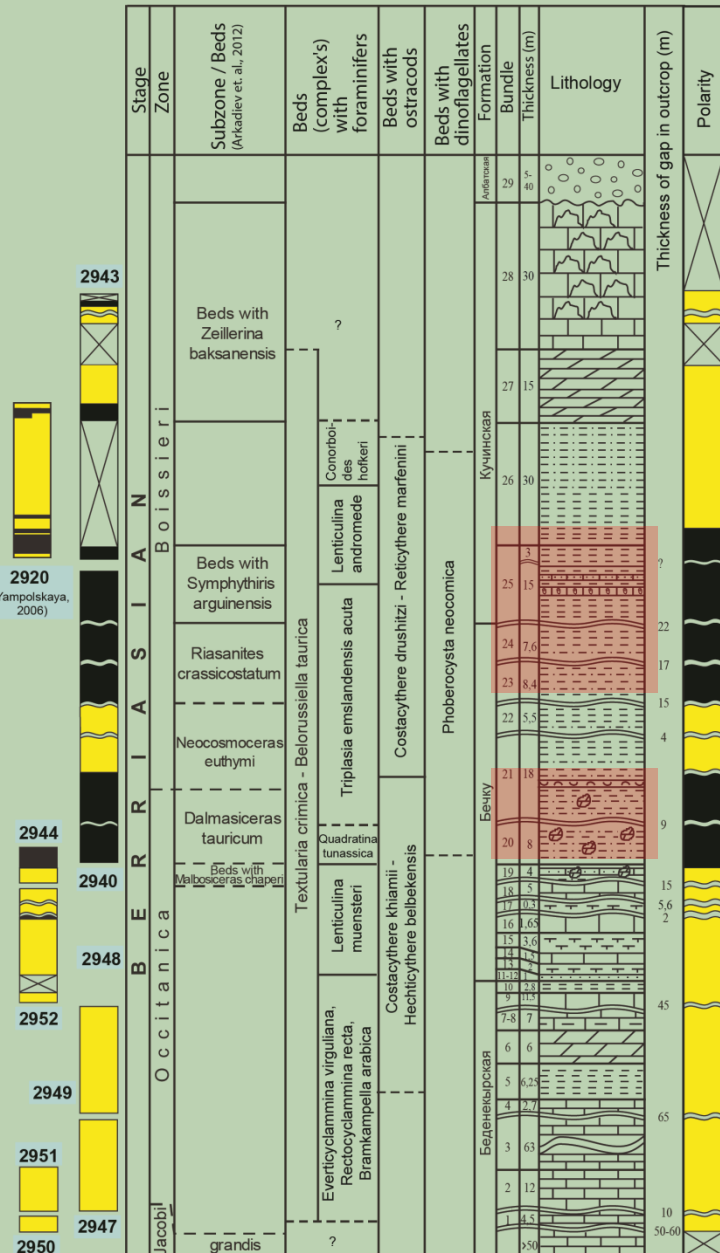


Typical diagram Zijdeveld for directions corresponding to the N-polarity.

Central Crimea Belogorsk area

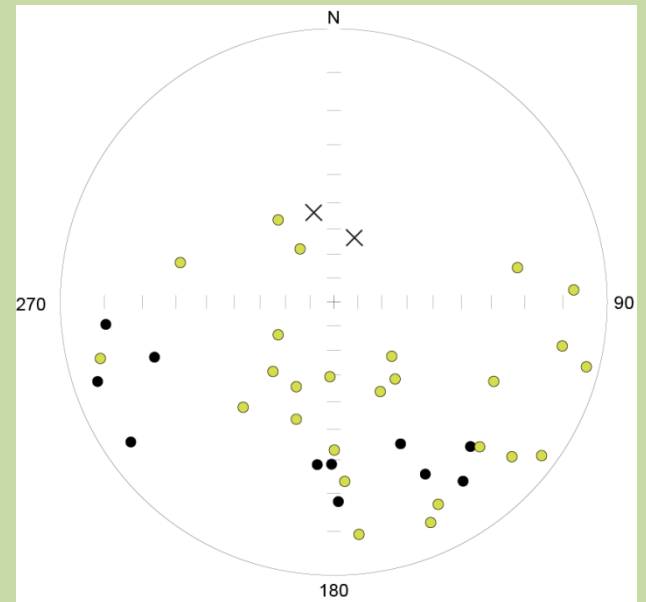
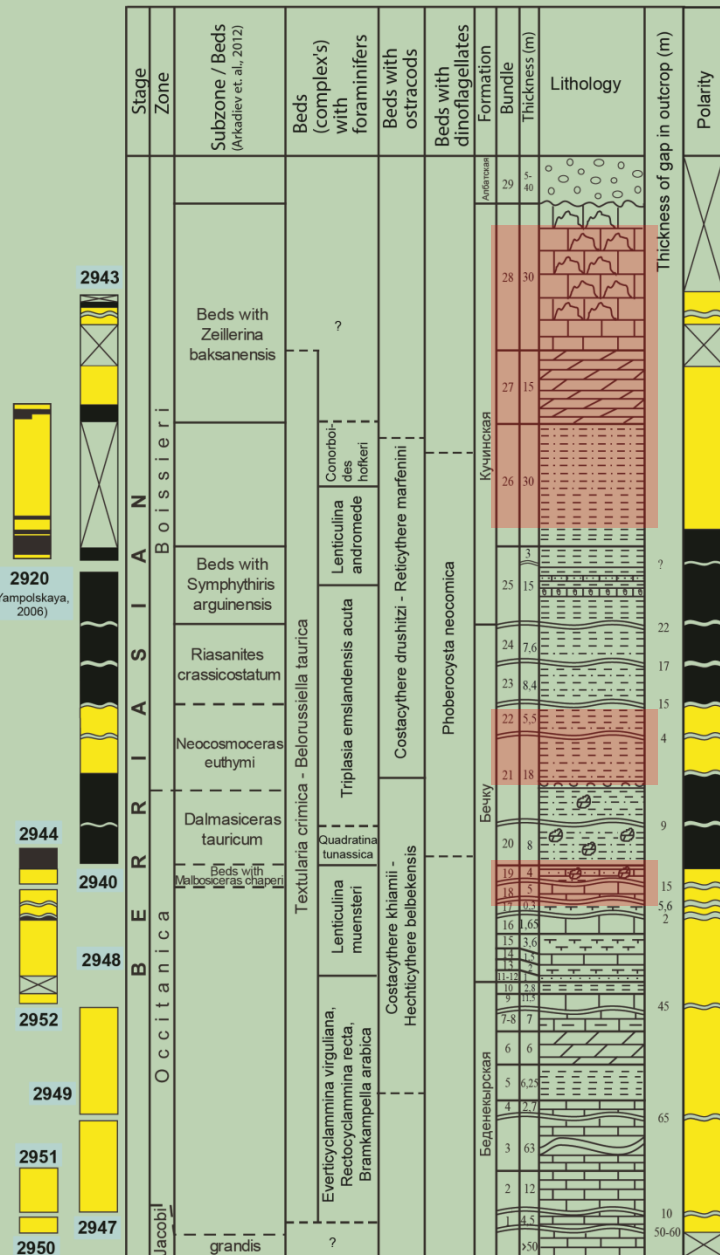


Central Crimea Belogorsk area



Paleomagnetic statistics for normal polarity from terrigenous samples is also good.

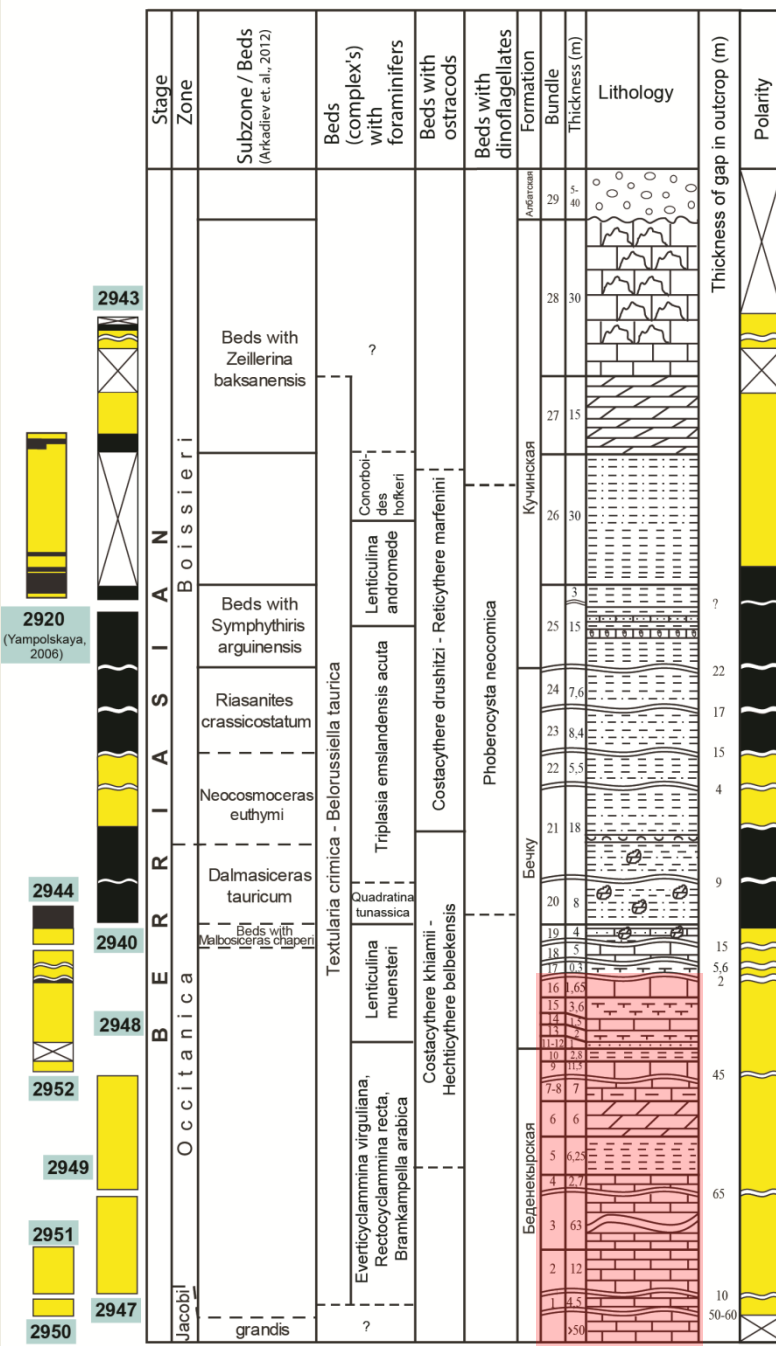
Central Crimea Belogorsk area



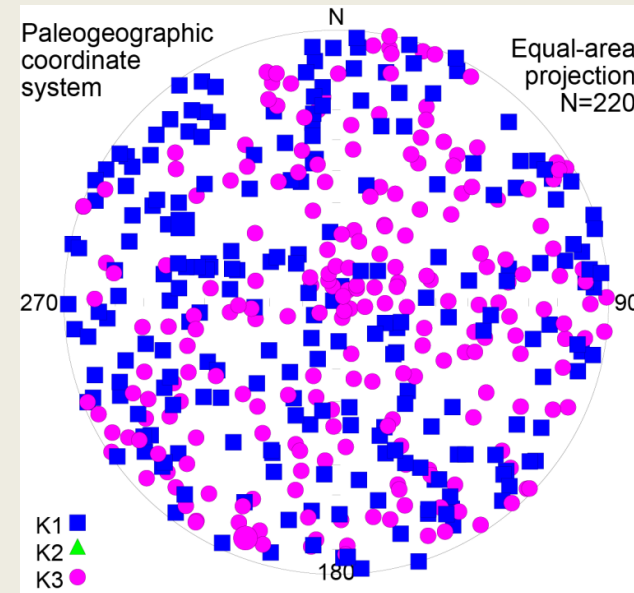
Reversy components of the magnetization in terrigenous and carbonate-terrigenous rocks are very poor in quality.

Central Crimea

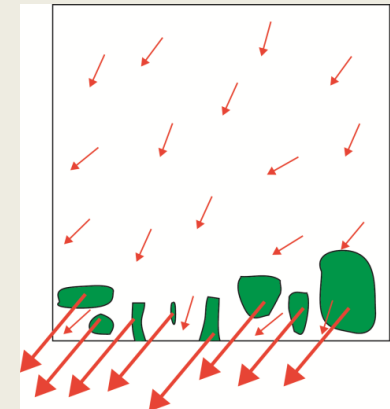
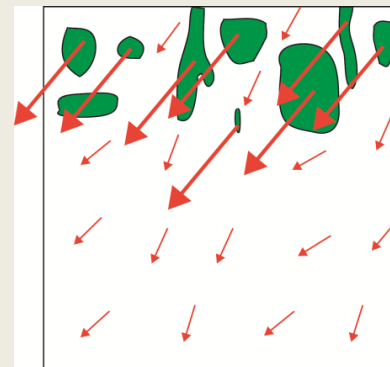
Belogorsk area



The results of the anisotropy of magnetic susceptibility (AMS) are interesting.



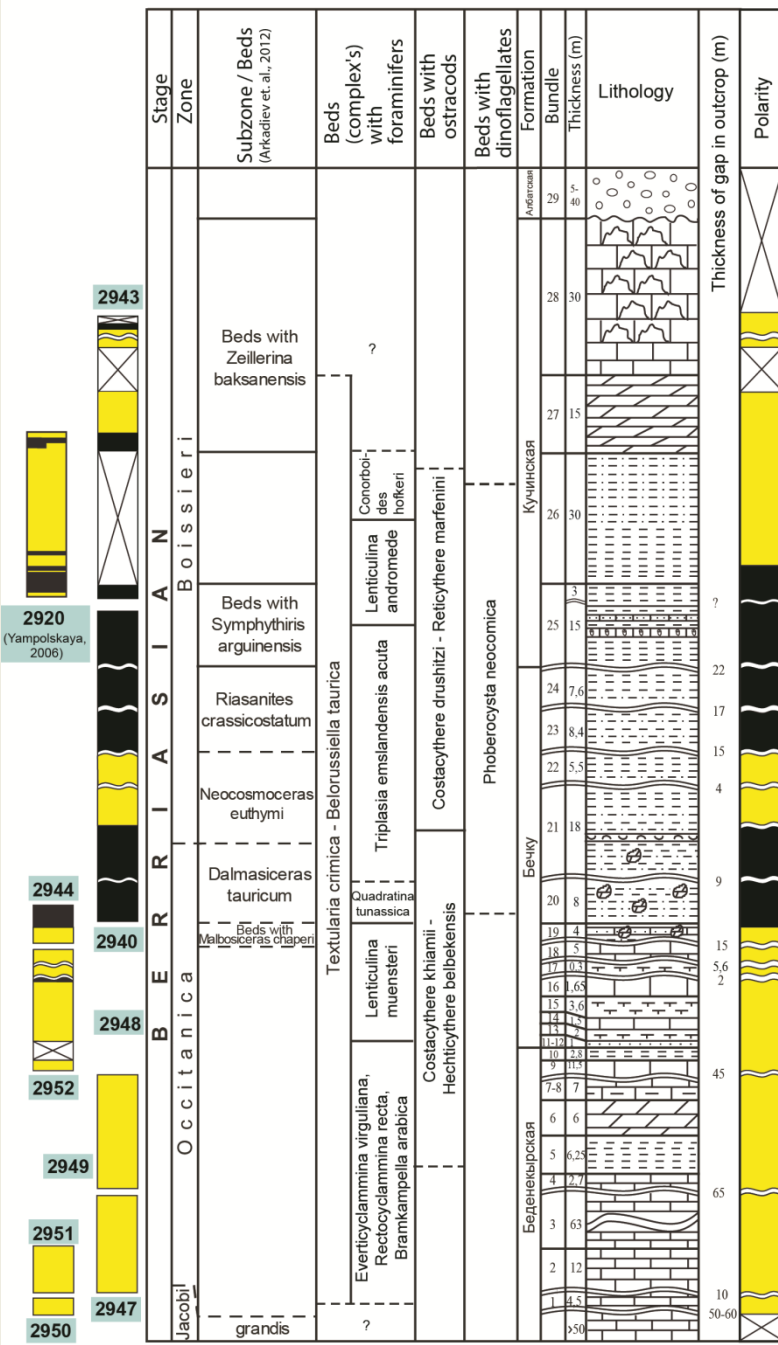
AMS in the limestone is chaotic.



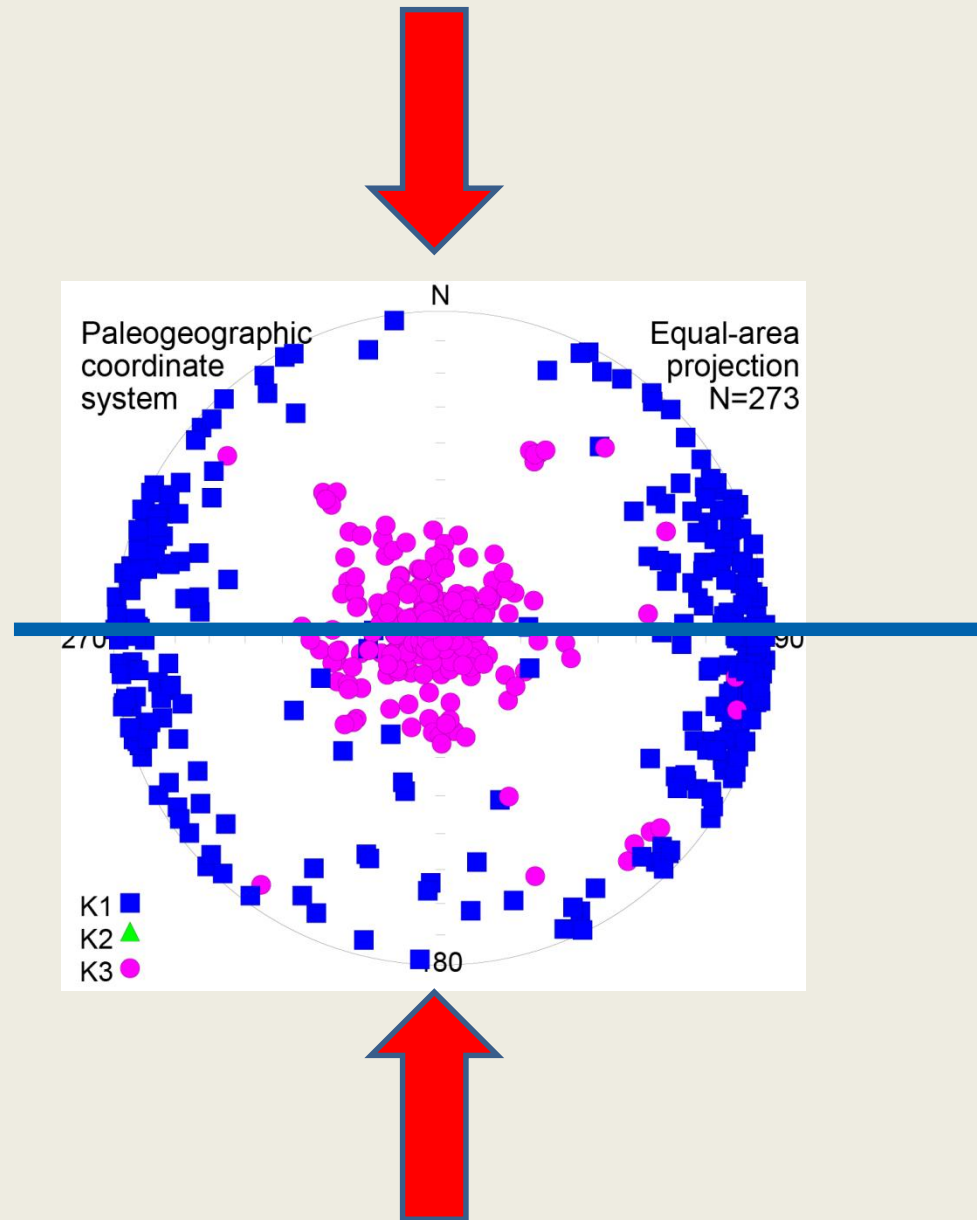
We think, the chaotic AMS caused by bioturbation (all limestones are bioturbated). In our opinion, biogenic magnetite deposited in burrows. Tissue of many decapod crustaceans are known as a source of biogenic magnetite, and magnetite-bearing bacteria are typical for burrows (Stolz et. al., 1986; Gingras et. al., 2002). Probably biogenic magnetite in fossil traces is the main carrier of magnetization in limestones (red arrows). Terrigenous (?) magnetite and (or) hematite (brown arrows) have a secondary role. Diagenetic genesis of biogenic magnetite is argument for Berriasian age of magnetization.

Central Crimea

Belogorsk area



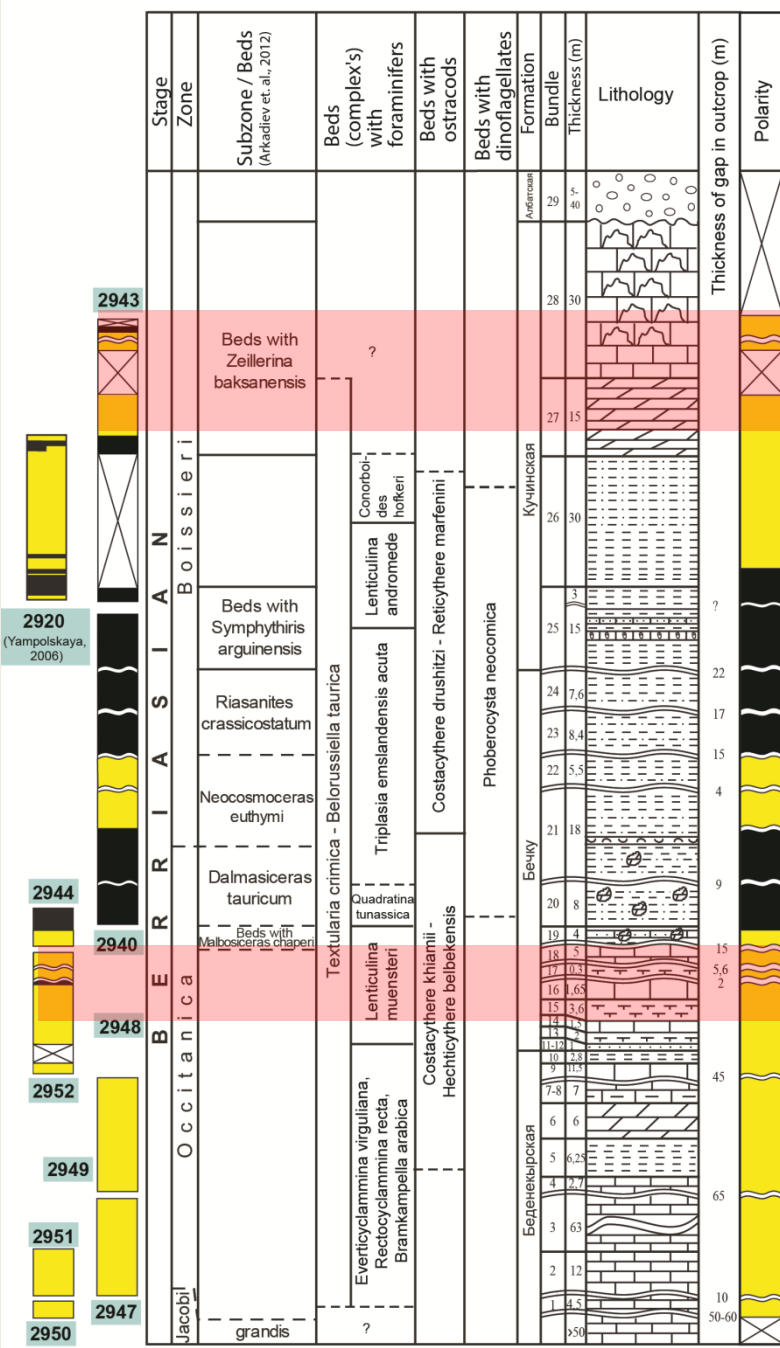
AMS in clays.

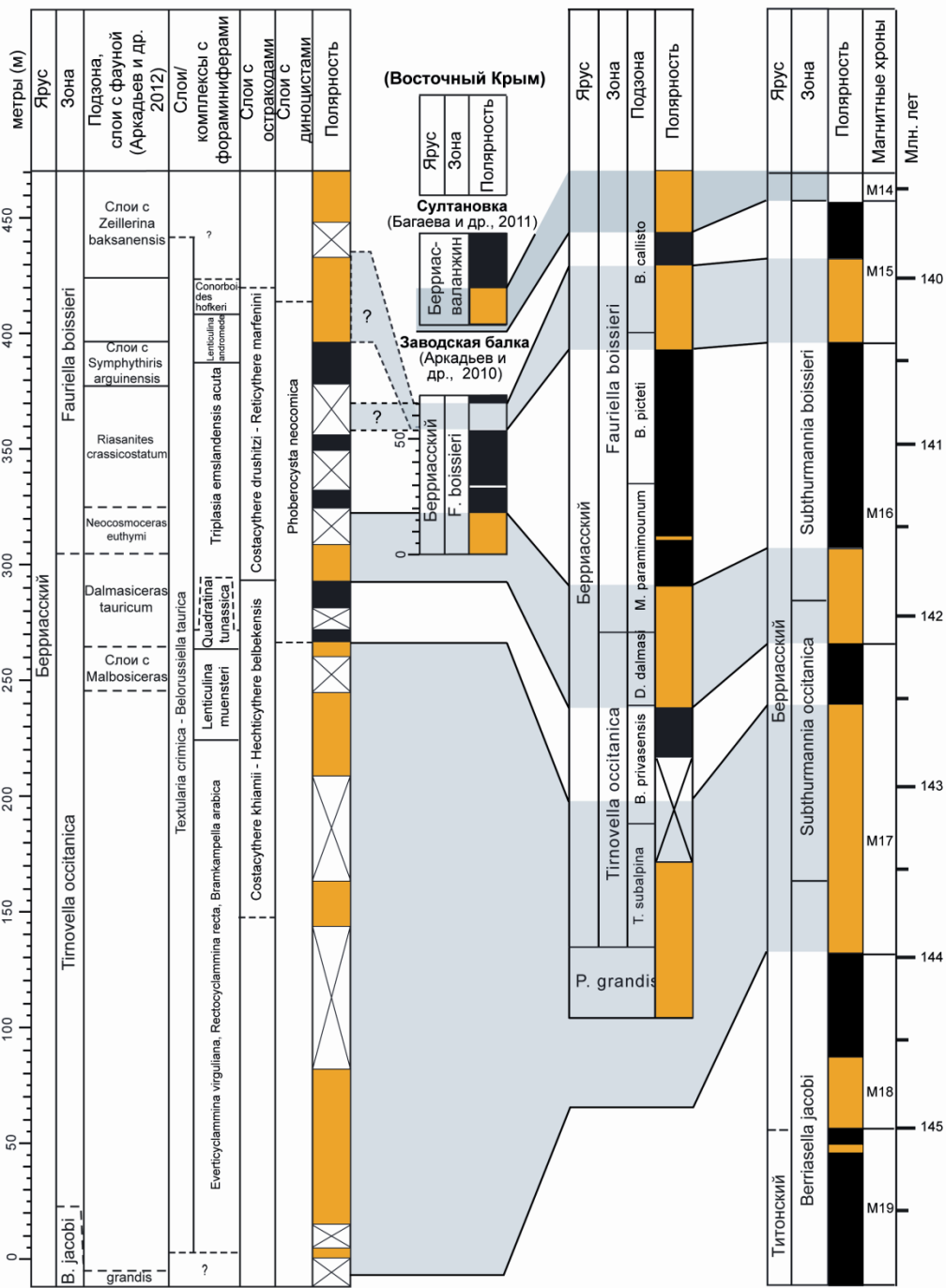


We think, the long axis are oriented North-South mainly, because the plastic clays were deformed during the general neotectonic collisional compression (South- North).

Central Crimea

Belogorsk area





This slide shows the summary of magnetostratigraphic results from the sections of Central Crimea with gaps in outcrops to real scale.

Analogues of magnetic Chron M17 (M17r and M17n) in the Crimea are fixed, while M16 is recognized in the Balki section.

Probably, there is analogue of M15r in Mezhgor'e section. But possible, that it may be located within the big gap in outcrop in Balki section. In addition, quality of paleomagnetic data is very poor in the Mezhgor'e section.

Thank you for your attention!

