SUPPLEMENT

Yuriy S. Biske

The Southern Tian-Shan: upgrading the geologic synthesis

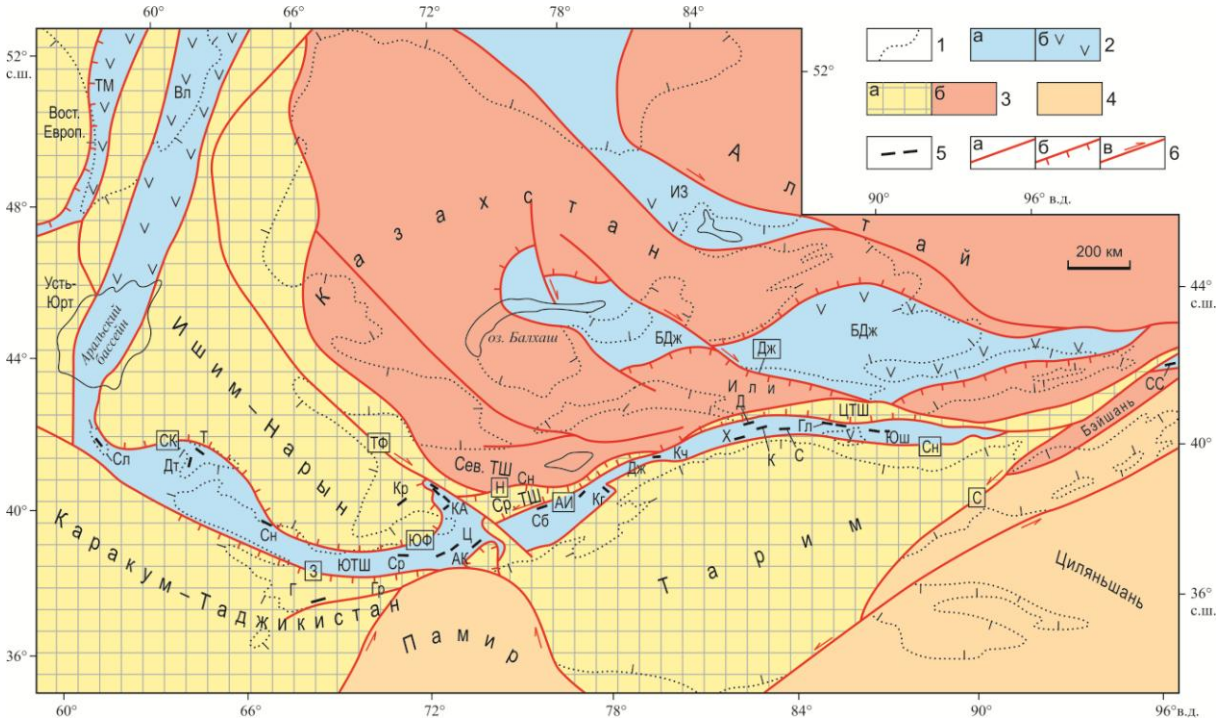

Fig. 1.

1 – Limit of the Mezozoic to Cenozoic cover

2 – a) Collisional belt formed after the Paleozoic ocean mainly in the Carboniferous: ЮТШ – the Southern Tian-Shan, БДж – Balkhash-Junggar, ТМ – Tagil-Magnitogorsk, Вл – Valerianov (Trans-Uralian); б) – the same, mainly arc-origined

Continents of the Late Paleozoic Europasia:

3 – a) Precambrian with Paleozoic sedimentary cover: СрТШ – the Middle Tian-Shan, ЦТШ – the Central Tian-Shan; б) accreted in the Cambrian to Silurian, partly Precambrian terrains: СевТШ – the Northern Tian-Shan (Issyk-Kel)

4 – Collisional crust of the Pamirs and Qaidam – Qilanshan

5 – Ophiolite massive, out of scale (Ср –Sartale-Nadir, Ц – Jigeng, Х – Heyingshan, К – Kule, С – Serkeyailak, Д –Dalubai, ЮТ – Yushugol-Tonghuashan, СС – Xiadong-Xiaohu.

6 – main terrain margin: a – Late Paleozoic suture, with subduction direction noticed (ЮФ – South Ferghana, З – Zeravshan, АИ – Atbashi-Inylchek, НК – Narat-Qawabulak, Н – Terskey, or Nikolaev line); б – strike-slip, including post-Paleozoic (ТФ – Talas-Ferghana, Дж – Junggar, Сн – Xingeer, С – Xingxingxia) Other objects, including metamorphic massives: Гр – Garm, К – Kassan; granite bodies: Г – Gissar, Сн – Songkel, Дж – Jangart

https://doi.org/10.21638/spbu07.2018.403

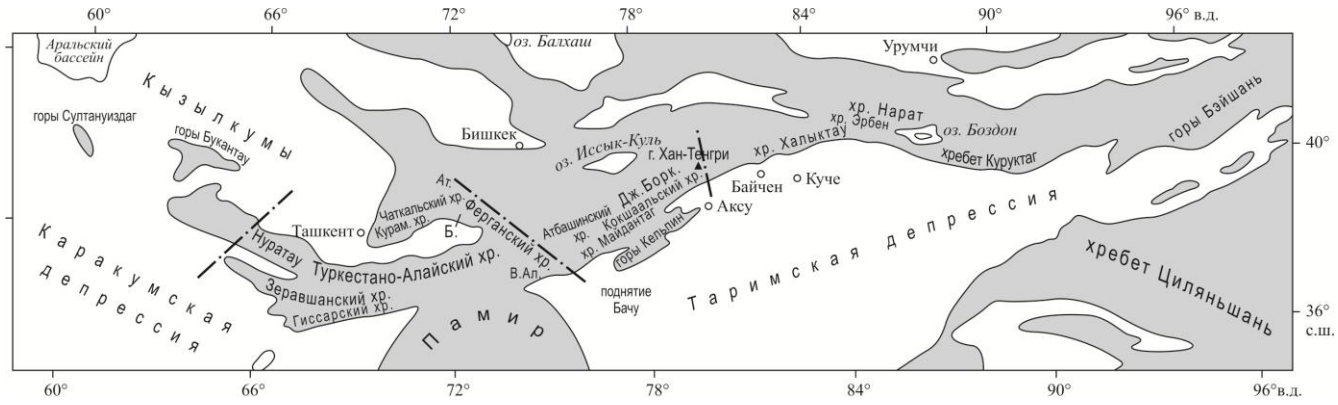

Fig. 2. Orography of the Tian-Shan. Б – Bozbutau Mountains, Дж – Janjir Range, Борк – Ulan and Borkoldoi Ranges.

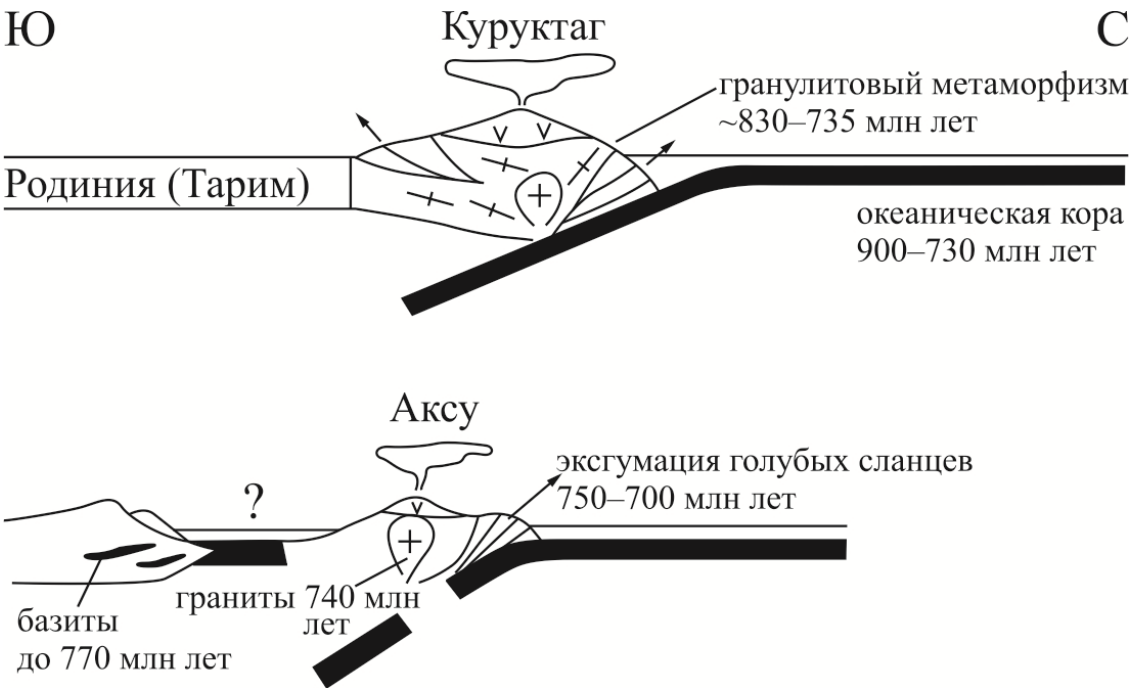

Fig. 3. Late Proterozoic development of the Rhodinia margin in the northern Tarim, compiled after (Ge et al., 2014).

https://doi.org/10.21638/spbu07.2018.403

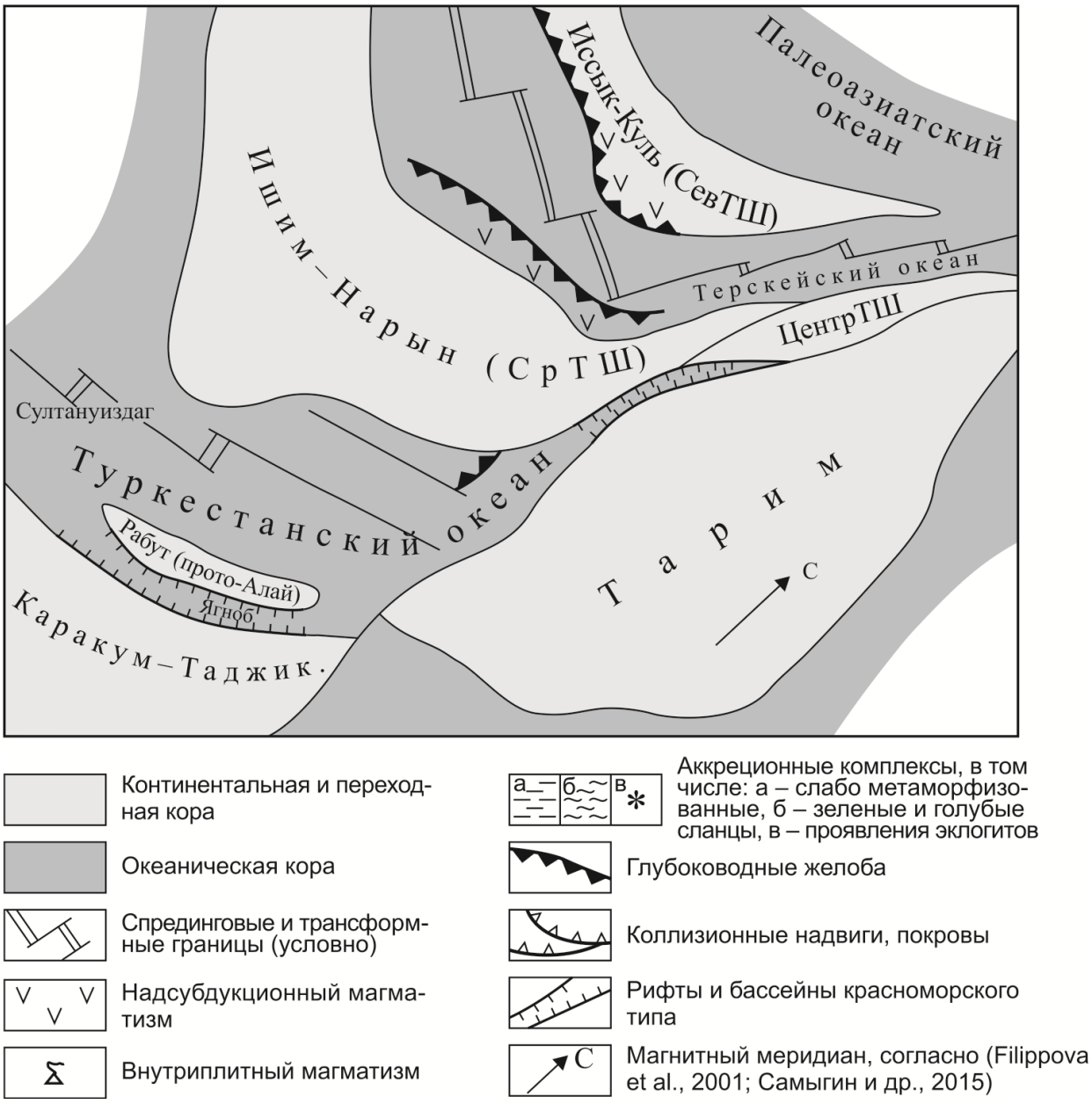

Fig. 4. Geodynamics of the Southern Tian-Shan: beginning of the Cambrian (540-520 Ma).

https://doi.org/10.21638/spbu07.2018.403

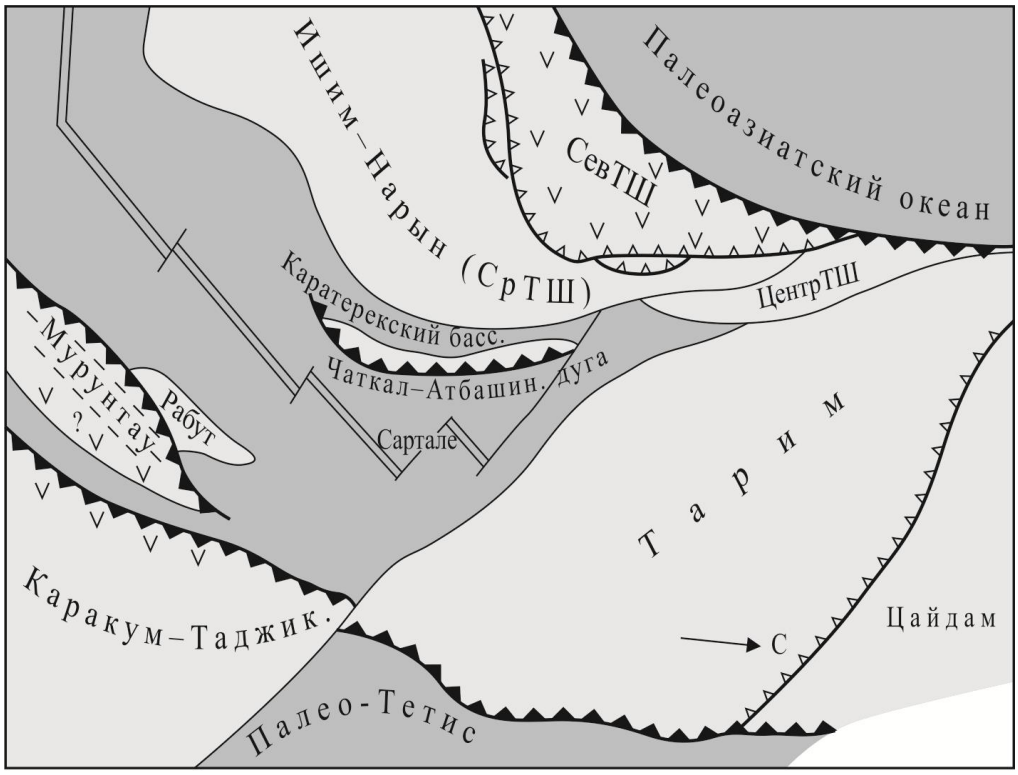

Fig. 5. Geodynamics of the Southern Tian-Shan: end of the Ordoviician (460-445 Ma). See fig. 4 for captions.

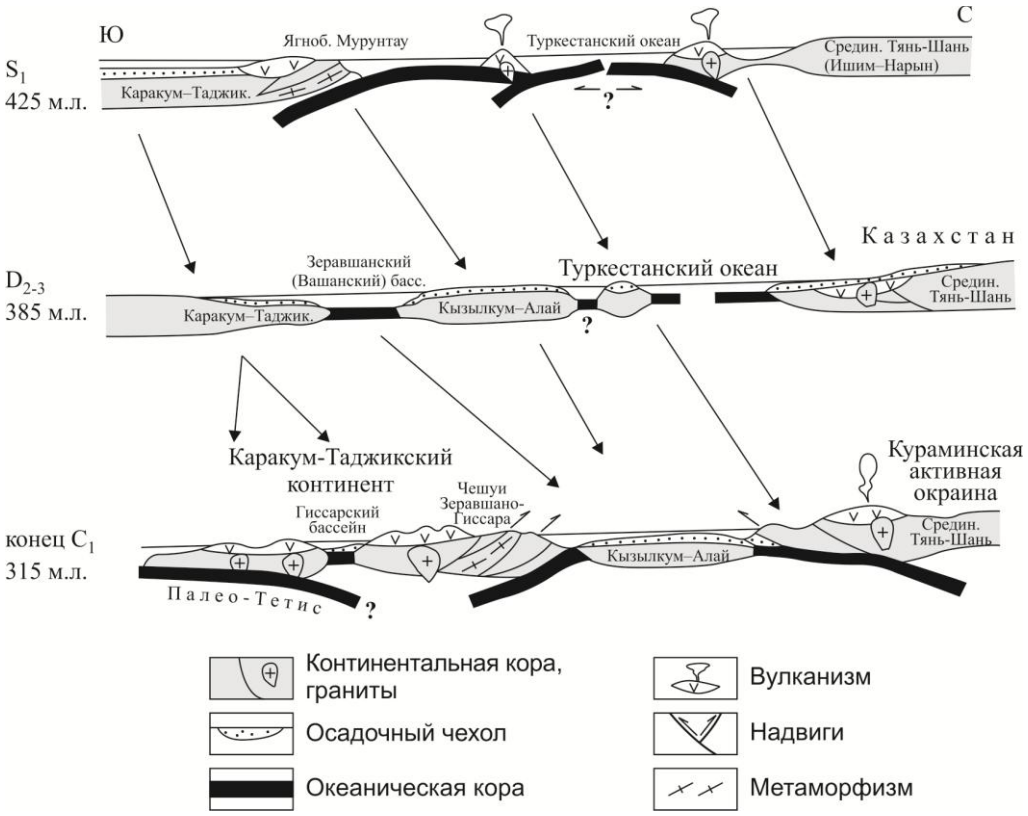

Fig. 6. The sketch of geodynamic evolution in the Kyzylkum and the western segments of the Southern Tian-Shan (modified after Dolgopolova et al., 2017).

https://doi.org/10.21638/spbu07.2018.403

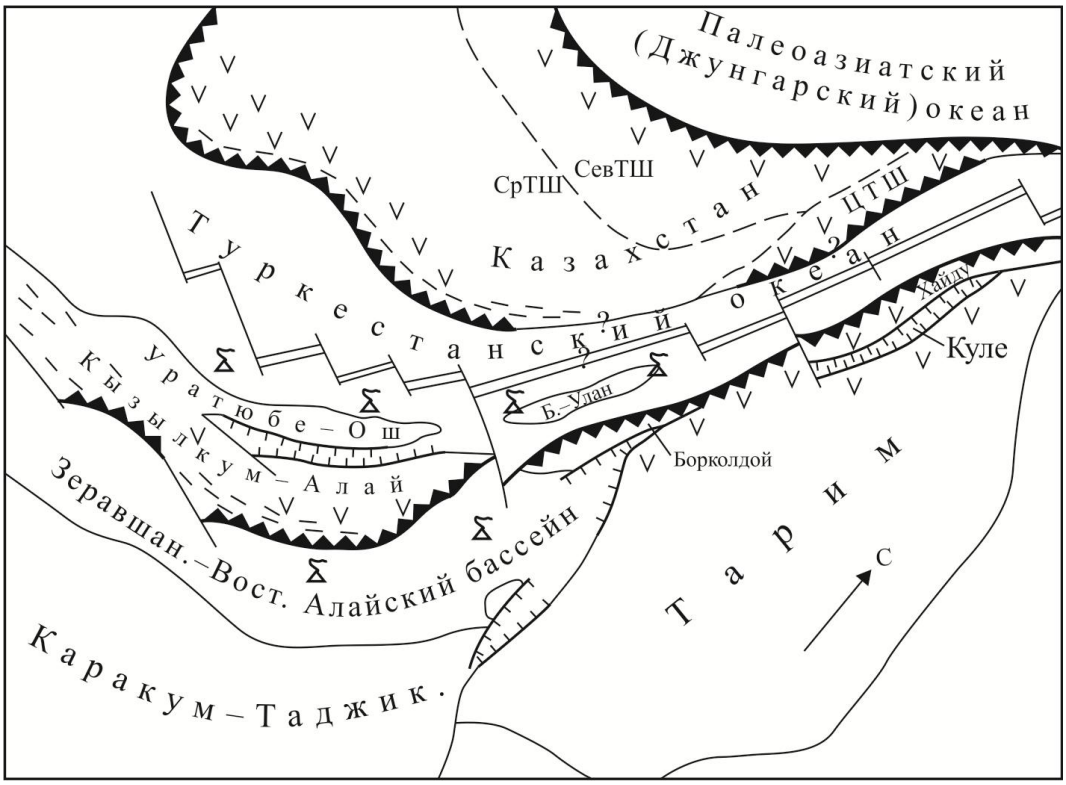

Fig. 7. Geodynamics of the Southern Tian-Shan: Late Silurian to Early Devonian (425-400 Ma). See fig. 4 for captions.

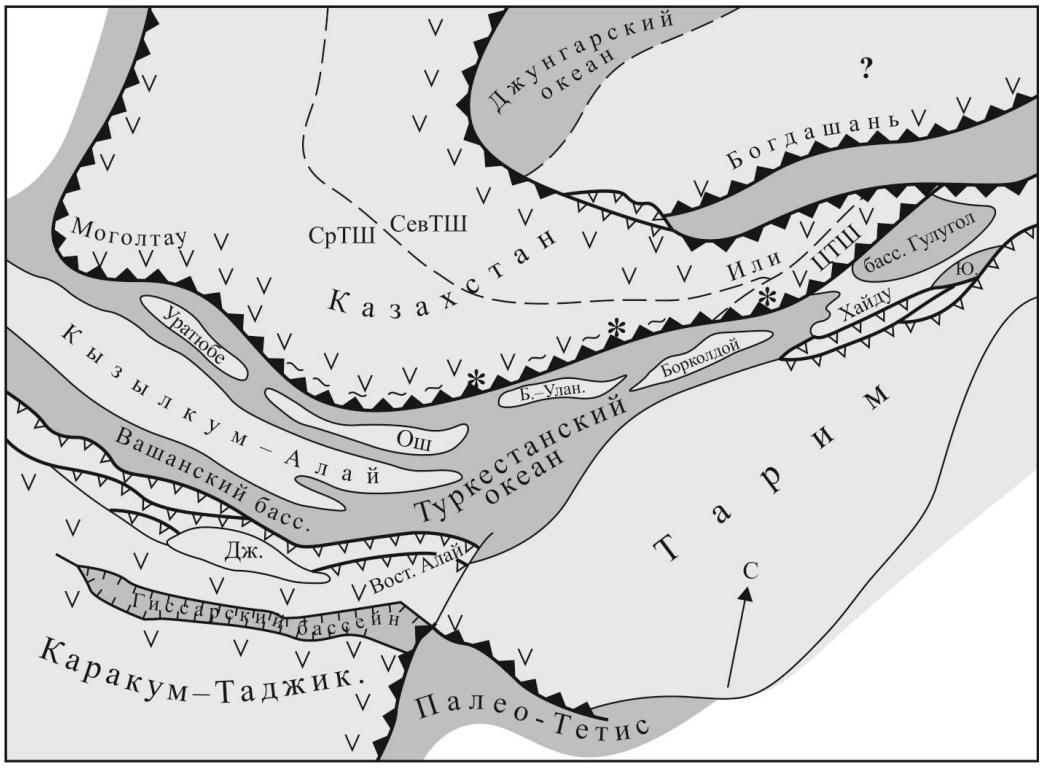

Fig. 8. Geodynamics of the Southern Tian-Shan: beginning of the Upper Carboniferous (about 315 Ma). See fig. 4 for captions. Дж – Jizhikrut downwarp, Б -Улан – Baubashata-Ulan terrain, Ю – Great Yulduz foreland basin.

https://doi.org/10.21638/spbu07.2018.403

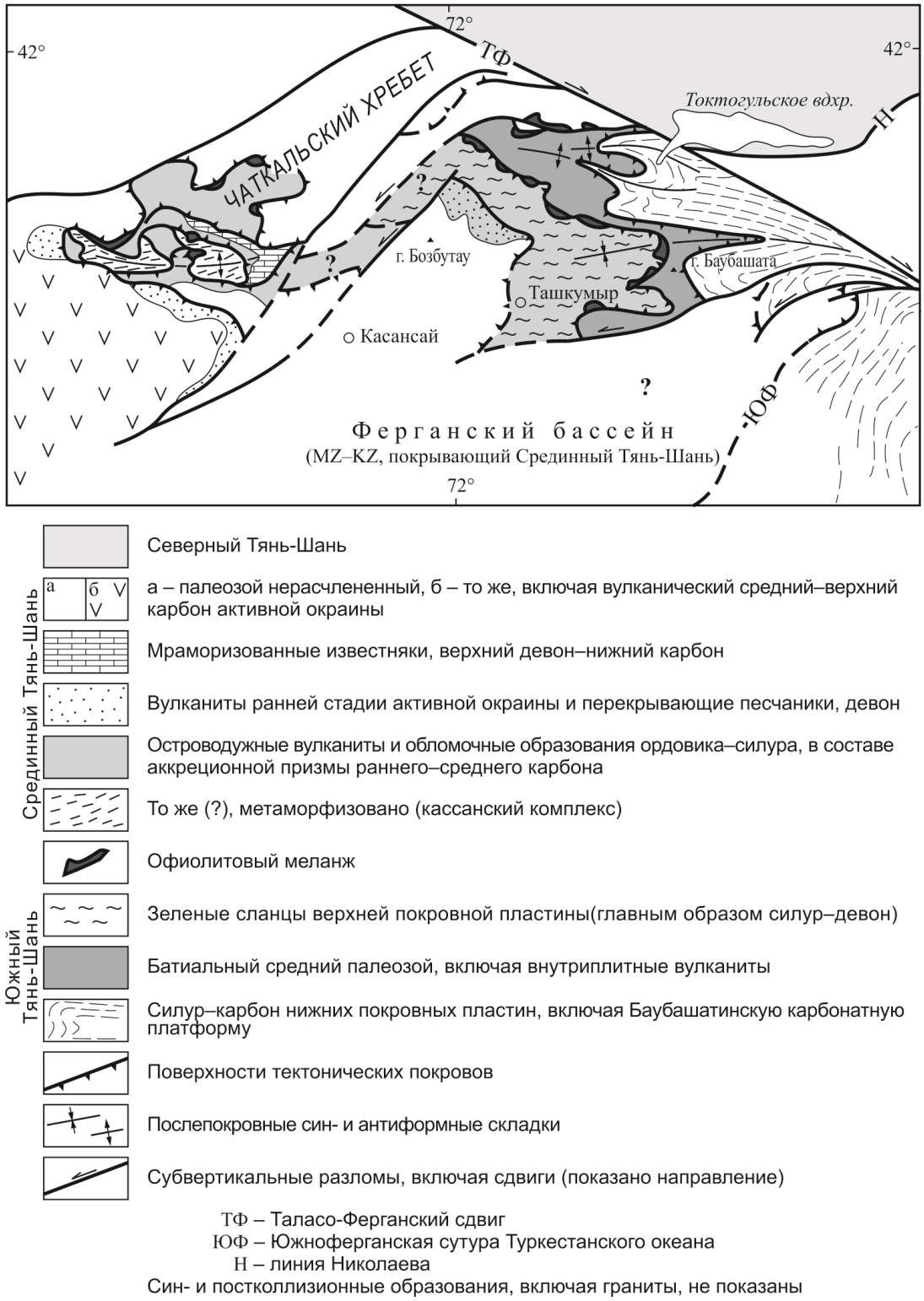

Fig. 9. The model of the Paleozoic collisional structure in the northern Ferghana. Modified after (Tursungaziev, Petrov, 2008; Alexeyev et al., 2016).

https://doi.org/10.21638/spbu07.2018.403

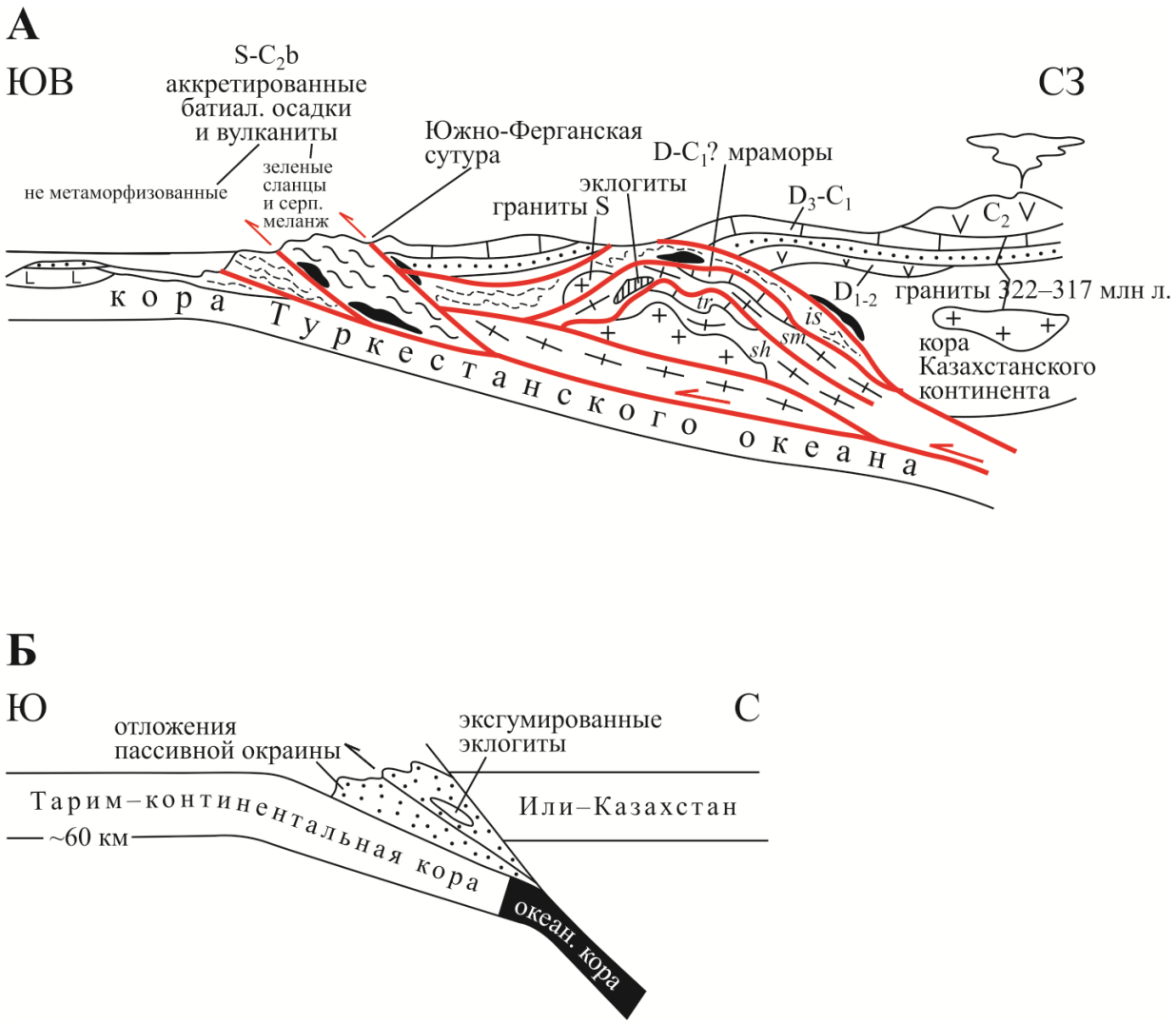

Fig. 10. Accretionary wedge of the northern Southern Tian-Shan (STS) flank formed in the start of the Late Carboniferous.

A. The general model of the subduction and reversal exhumation of HP rocks, the eastern STS segment. Modified after (Gao. Klemd, 2003).

Б. Specification of the model to the western STS segment in the northern Ferghana (see fig. 9).

Accretionary structure consists of exhumed (see double arrow) and imbricated metamorphic rocks of the Kassan complex formed of Ordovician to Silurian protolith (sh –Shaldyr gneisses and garnet amphibolite, tr – Tereksai marble, sm – Semizsai gneiss, amphibolite, eclogite relics, is - Ishtamberdy quartzite, schist). The further subduction of the Turkestan ocean led to the accretion of Middle Paleozoic ocean island volcanics shown in the south.

https://doi.org/10.21638/spbu07.2018.403

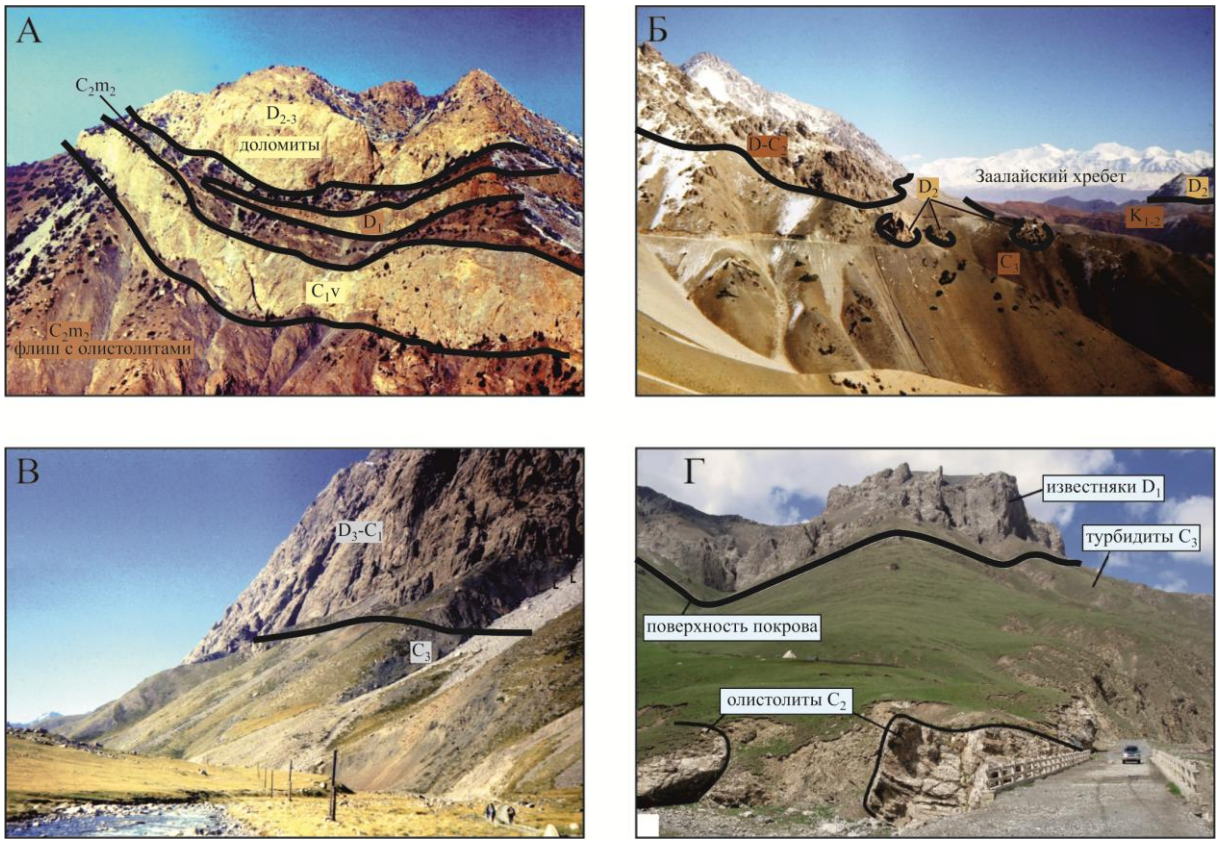

Fig. 11. The frontal aspect of the STS main collisional thrust belt.
Uppermost Carboniferous turbidites and olistostromes of the fordeep everywhere underlie Devonian to Carboniferous carbonate nappes.
A. The Turkestan Range, Urta-Chashma River. Б . The Alai Range, southern slope near Tegermach pass. B. The Kokshaal Range, Pikertyk River. Г. The Halyktau Range (eastern STS), Kukinek River.

https://doi.org/10.21638/spbu07.2018.403

Fig. 12. Top-to-the-north recumbent folds in the Lower Carboniferous to Lower Moscovian limestones, former Kyzylkum-Alai microcontinent. The Alai Range, Isfairam River.

https://doi.org/10.21638/spbu07.2018.403