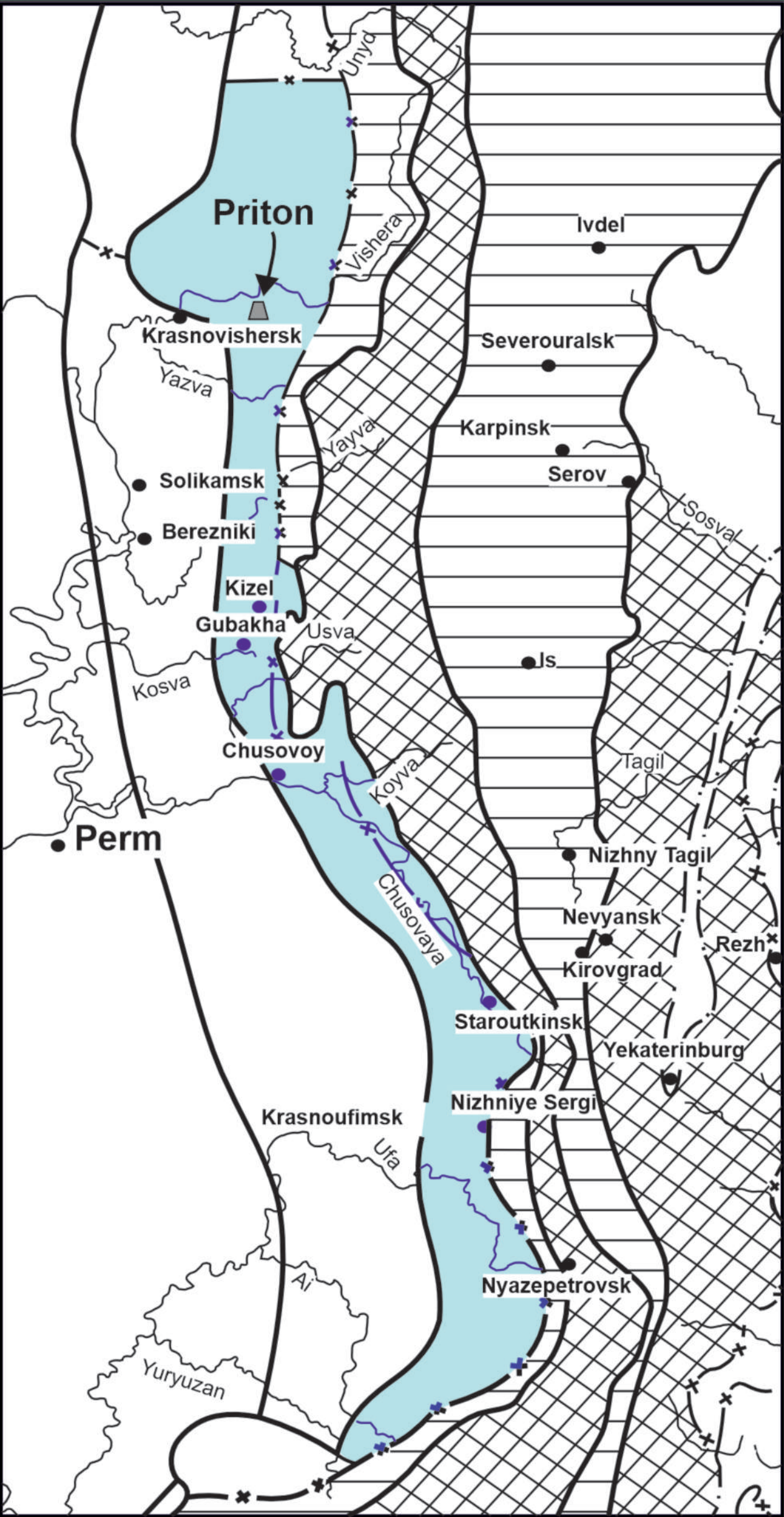


Sequence stratigraphic analysis of the Priton section (Vishersky Urals)

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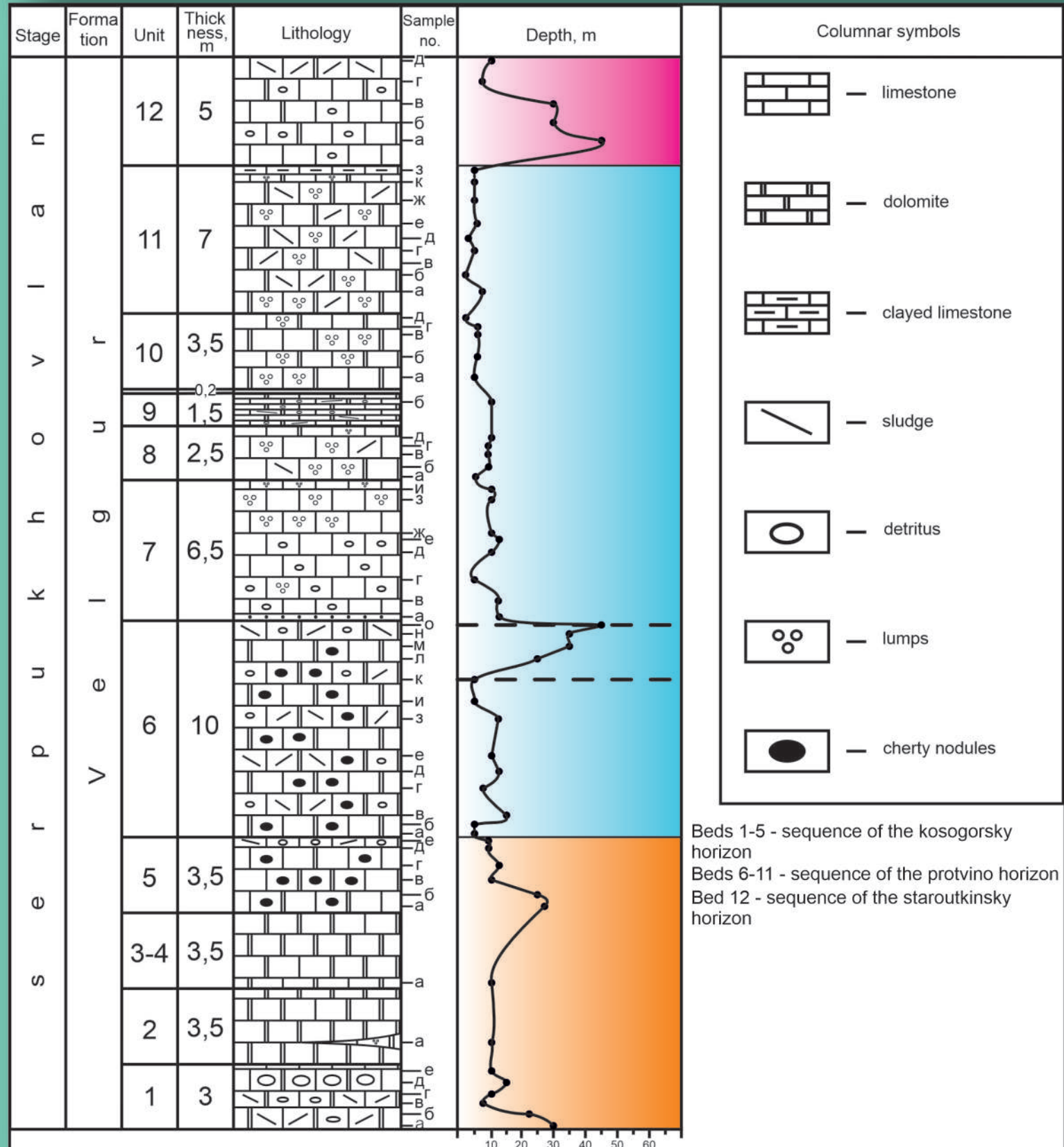
Vishera-Chusovskaya structural-facies subzone

The Priton section is located on the left bank of the Vishera River opposite the village of Velgur, 50 km upstream from the city of Krasnovishersk (Northern Urals). The Upper Serpukhovian substage and the Bashkirian stage of the Carboniferous system are exposed here. The Priton section is territorially associated with the Kolvino-Shchugorsk paleo-trough, one of the branches of the Kama-Kinel depression system. It is important for regional stratigraphy, since it is the stratotype of the Velgur suite. In terms of volume, it corresponds to the Protvino and Staroutkinsk horizons of the Upper Serpukhovian substage of the Lower Carboniferous of the Western Urals. Layers 1–13 correspond to the Serpukhovian stage. The section was dated based on foraminifers. Layers 1–5 are the Kosogorsky horizon, 6–11 are the Protvino horizon, layers 11 (upper part)–13 are the Staroutkinsk horizon. Sequence stratigraphic analysis was used to clarify the position of the lower boundary of the Protvino horizon. We studied microfacies of more than 100 thin sections of 59 samples of carbonate rocks. The description of limestones in thin sections was carried out according to the classification of I.V. Khvorova, microfacies – according to R. Dunham with additions by A. Embry and J. Cloven. Facies belts and basin depth were determined using the model of J. Wilson. Based on the data obtained, a bathymetric curve was constructed for layers 1–12.

Three sequences are distinguished in the section. The first sequence (layers 1–5) is associated with the Kosogorsky horizon. The second complete sequence (layers 6–11) is represented by three system tracts and has an asymmetric structure. The low sea level tract corresponds to the lower part of layer 6. The microfacies characterize the environments of the outer slope of the shoal and the upper part of the shallow shelf with depths of 5–10 m. The transgressive tract (upper third of layer 6) is represented by fine-bioclastic wackestones and packstones. The rocks correspond to the environment of the middle and lower parts of the shallow shelf with depths of 30–50 m. The high sea level tract (layers 7–part 11) is several times larger than the transgressive tract. The environments are internal (lagoon) and external parts of the shoal, depths of 5–10 m. The third sequence (layers 11 (upper)–13) corresponds to the Staroutkinsky horizon. In this interval, the last transgression of the Early Carboniferous before the global crisis of glacial-eustatic nature is traced. According to paleontological data, the base of the Protvino horizon is fixed at the base of layer 6 by the appearance of the marker species *Bradyina cribrostomata* (Raus. et Reitl.). The lower boundary of the Staroutkinsky horizon is drawn according to sample 4416-11k by the appearance of *Plectostaffella varvariensis* (Brazhn. et Pot.).



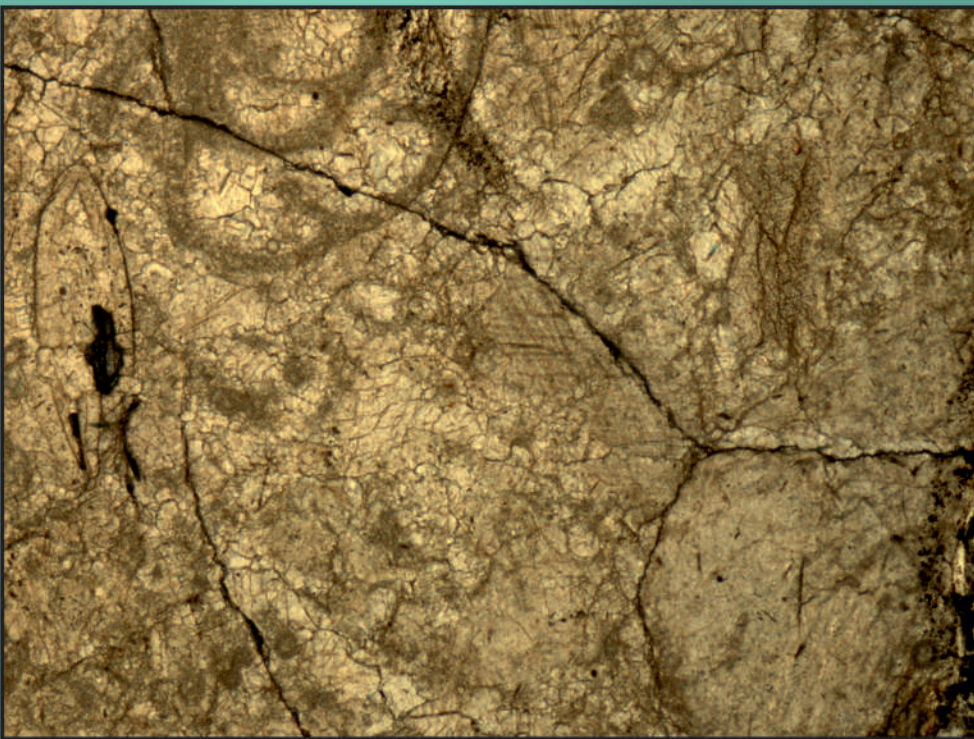
Priton section



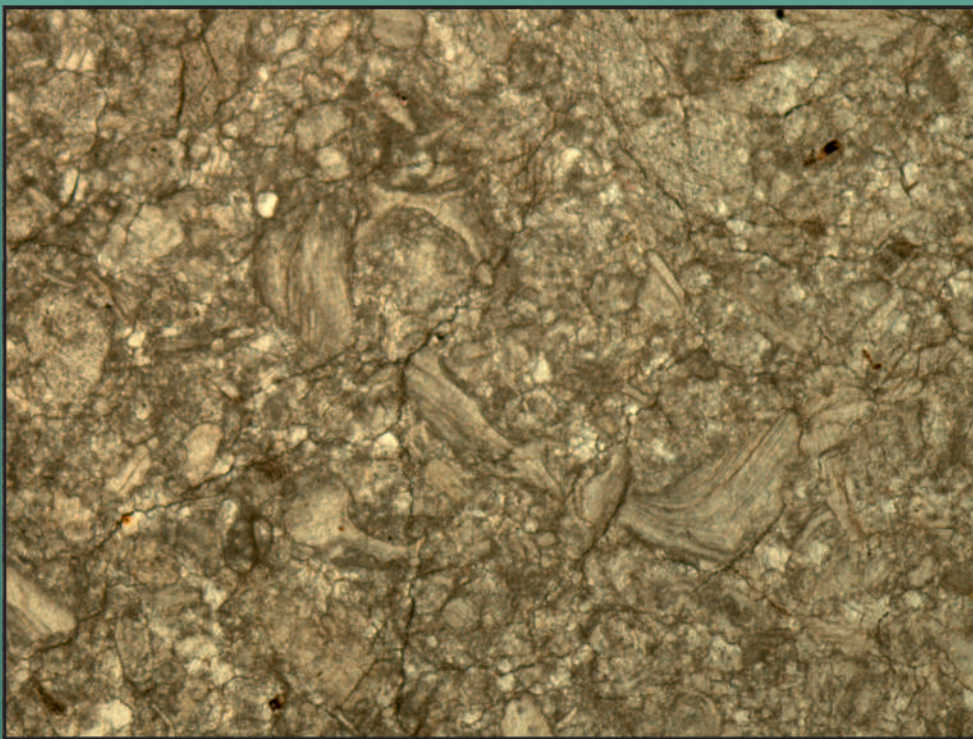
Stratigraphic column of 1-12 beds of the Priton section and depth fluctuation curve



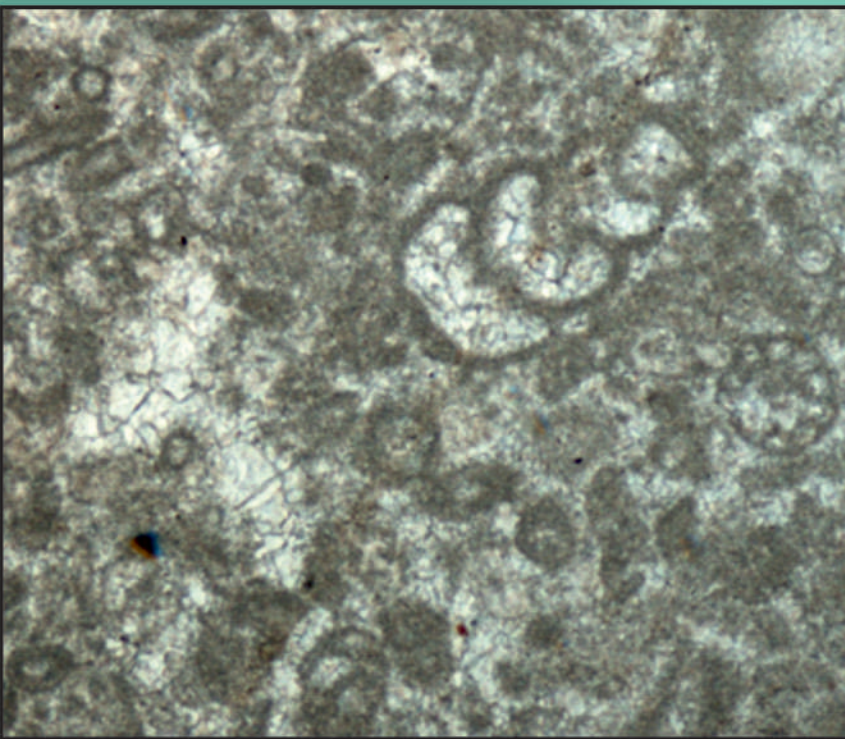
A fragment of the geological map of the Perm region



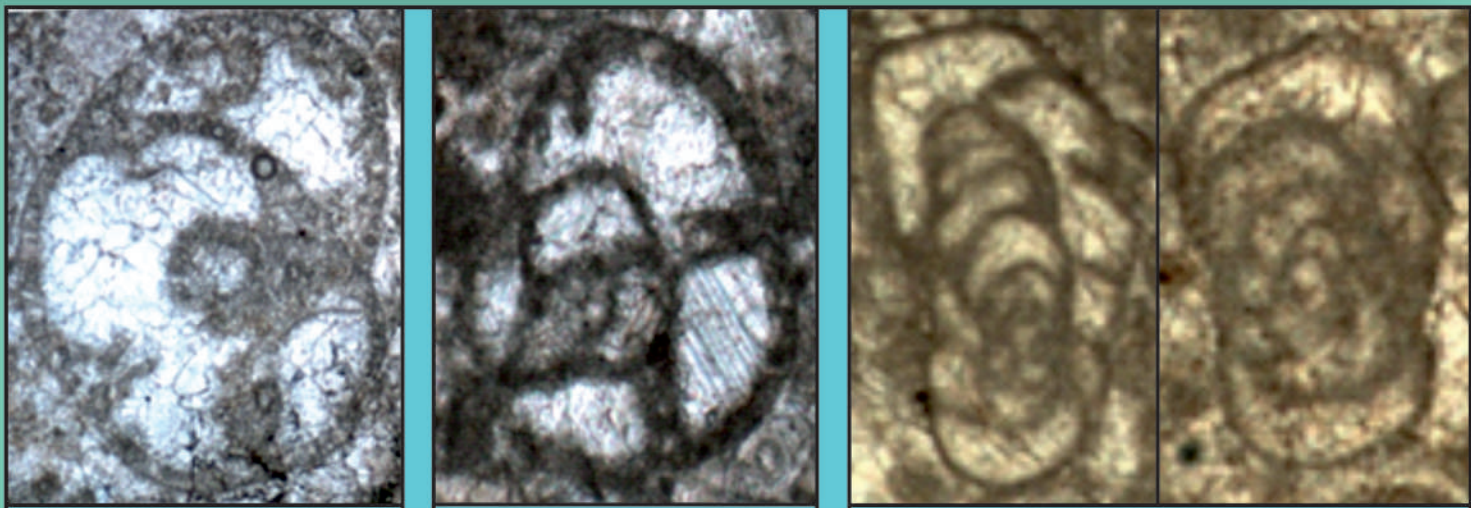
Bioclastic-peloidal grainstone with remains of foraminifera, sea urchins, crinoids, brachiopods, and red algae. Sample 4416-6a. Maximum shallowing level, sequence boundary.



Fine-bioclastic packstone-wackestone with remains of foraminifera, crinoids, and ostracods. Sample 4416-6o. Transgressive systems tract.



Bioclastic-peloidal grainstone with remains of foraminifera, green algae, crinoids, and brachiopods. Sample 4416-8a. Low-sea-level tract.



Marker species of the Protvino Horizon:

A – *Bradyina cribrostomata* Raus. et Reitl., B – *Bradyina ex gr. minima* Reitl. and the Staroutkino Horizon C – *Plectostaffella varvariensis* (Brazhn. et Pot.)