Flood Geology of the Crimean Peninsula
Part II: Conglomerates and Gravel Sandstones of the Demerdji Formation

Alexander V. Lalomov*

Abstract

Conglomerates and Sandstones of the Demerdji Formation[1] assigned to the Upper Jurassic comprise the third major stratigraphic sequence of the Crimean peninsula (southeast Europe, Black Sea coast). The basement of the Crimean sedimentary sequence consists of highly metamorphized rocks assigned to Precambrian and/or Paleozoic erathems. The second structural floor consists of folded sandstones and shales of Tavrick and Eksiordian Formations. The conglomerate contains exotic clasts with the probable source area located in the Ukrainian Crystalline Massif, up to 400 km to the north. This formation has numerous features that demonstrate its formation in a vigorous hydraulic regime. Hydraulic parameters derived from grain analysis suggest ranges of hydraulic conditions during the Flood, and erosion of the underlying flysch indicates a strong variation of hydraulic conditions during the main phase of the Flood. To the extent that these Crimean formations are typical of other geosynclinal settings, they can be used to interpret sedimentary sequences in other fold belts.

Introduction

This article is a continuation of long-term research of the sedimentary rocks of Crimea. In Part I of this series (Lalomov, 2001) the geology of the basement and lower strata of the Crimean sedimentary sequence was described. The basement consists of faulted, high-grade metamorphic shale and limestone, cut by diabase dikes. The shale and limestone are assigned to the Precambrian and Paleozoic erathems, respectively. Above the basement are sedimentary rocks of the Tavrick and Eksiordian Formations. The Tavrick Formation consists of flysch—rhythmically alternating sandstones, siltstones, and shales—assigned to the Triassic System. Overlying the Tavrick Formation without an angular unconformity, are the "flysch-like" shales and sandstones of the lower and middle Jurassic Eksiordian Formation. These rocks are interbedded with layers of gravel, tuff and volcanic rocks. Strata of both the Tavrick and Eksiordian Formations are folded.

Numerous features of these strata provide evidence of deposition in catastrophic conditions that would be expected in the Flood. In spite of this evidence, uniformitarian geologists of the former USSR consistently interpreted the Crimean sedimentary strata by means of gradualism. Lalomov (2001) reinterpreted the geology of Crimea in a creationist framework.

In this paper, the third Crimean sedimentary sequence is described and interpreted. It consists of conglomerate and gravel sandstones assigned to Upper Jurassic series

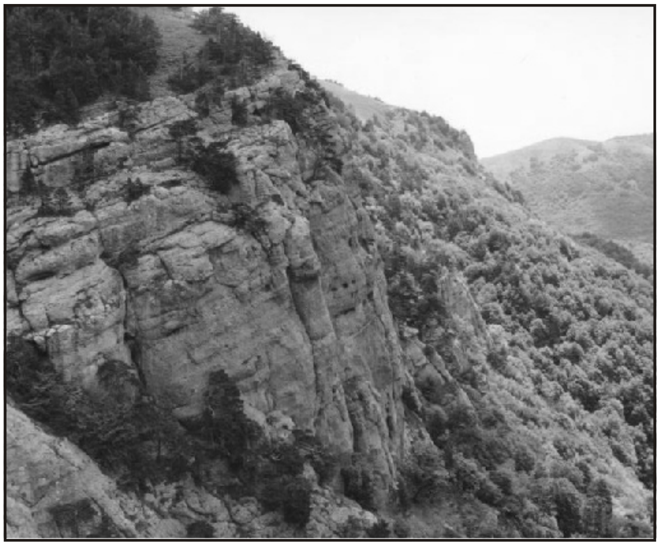

Figure 1. Conglomerate and Sandstone Formation (middle member), western slope of Demerdji Mountain.

---

*Dr. Alexander V. Lalomov, ARCTUR Geological Research Lab. (Moscow, Russia), alex.lalomov@mtu-net.ru http://www.creationism.org/arctur/

Received: 9 July 2002. Revised: 14 November 2002.

[1] The conglomerates and sandstones do not have a formal name. In the geological literature they are usually called "Upper Jurassic conglomerates" and "Upper Jurassic sandstones." Therefore I propose the name, Demerdji Formation, after the mountain where the formation has its most spectacular outcrop (Figure 1)

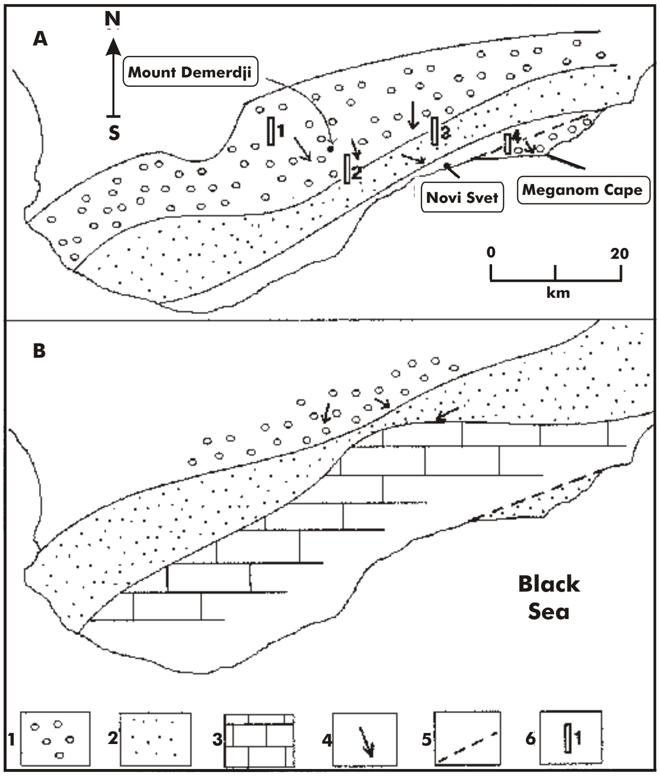

Figure 2. Schematic map of south part of Crimean Peninsula. Distribution of Conglomerate and Sandstone Formation (after Sidorenko, 1969, figure 24, with some changes and additions): A: Late Oxfordian-Early Kimeridgian stages of Upper Jurassic series; B:Tithonian stage of Upper Jurassic series. Legend: 1. Conglomerates; 2. Sandstones; 3. Limestones; 4. Direction of paleoflow; 5. Fault; 6. Researched exposures.

(Callovian and Oxfordian stages) that overlie the Tavrick and Eksiordian rocks across an angular unconformity. Although the erosion surface is mechanical; there is no intrinsic evidence of long periods interrupting sedimentation.

Rocks of the Demerdji Formation comprise the main ridge of the Crimean Mountains, reaching an elevation of up to 1500 meters above sea level. The formation extends approximately 80–100 km from west to east and up to 20 km from north to south. Its thickness reaches 750 m. It consists of pebbles, cobbles and boulders up to 1.0 m in diameter in a sand and muddy-sand matrix. Limestones assigned to the Kimeridgian and Titonian stages of the Upper Jurassic grade into (and sometimes juxtapose) the conglomerates and sandstones with some evidence of a paraconformity. Both the conglomerate and limestone strata are tilted.

Strata of the Demerdji Formation are well exposed on the southeastern slope of Crimean Ridge. They form prominent cliffs of the upper part of the slope. This formation contains many geological features that indicate that deposition in a vigorous current, and thus allows a determination of some hydraulic parameters of the Flood.

The Crimean mountain ridge is part of the Alpine fold system that extends from Western Europe to Middle Asia. The structure of the Crimean mountain area is typical of folded belts in the other regions. Therefore, the goals of this investigation include both a diluvial interpretation of the sedimentary sequence of the geosynclinal fold belt in Crimea, and the identification of criteria to extend that interpretation to similar sedimentary strata in the other regions.

In the description of the geological structure of Crimea, I use the terminology of the uniformitarian geological column, such as Triassic, Jurassic, Cretaceous, etc. Use of the column presupposes accurate biostratigraphic dating around the globe, which in turn demands the assumption of evolution (i.e., the same fossils are of the same age). Inasmuch as the temporal identify of such strata is questionable, absolute dating of the strata by use of the uniformitarian column is rejected. However, use of the terminology is employed for ease of reference.

Lithological Characteristics of the Demerdji Formation

Existing literature about the conglomerates is sparse and they have apparently not been studied before in detail. Therefore, I described the sequence of conglomerates and gravel sandstones on several outcrops and made a composite geological column for the Demerdji Formation.

The greatest thickness and the most complete sequence of the Demerdji Formation were observed on the western and southeastern slopes of Mt. Demerdji (Figure 2). The maximum visible thickness of the formation there is between 700 and 800 m. Both the underlying Tavrick Formation and overlying limestones are visible in these outcrops. Another exposure located northeast of Mt. Demerdji near Novi Svet village was studied. The upper section of the Demerdji Formation (about 300–400 m in thickness) was observed there. The easternmost significant outcrop of the Demerdji Formation is situated in the coastal cliff of Meganom cape. The thickness of the conglomerate strata there is up to 380 m.

The Demerdji Formation can be subdivided into three members (Figure 3). These members are not homogeneous, and the contacts are not always obvious; different lithologies exist within the main conglomerate. From the bottom to the top these members include:

- Matrix-supported conglomerate with mud-sand matrix,
- Clast-supported conglomerate with medium sorted sandy matrix, and
- Stratified gravel sandstone.

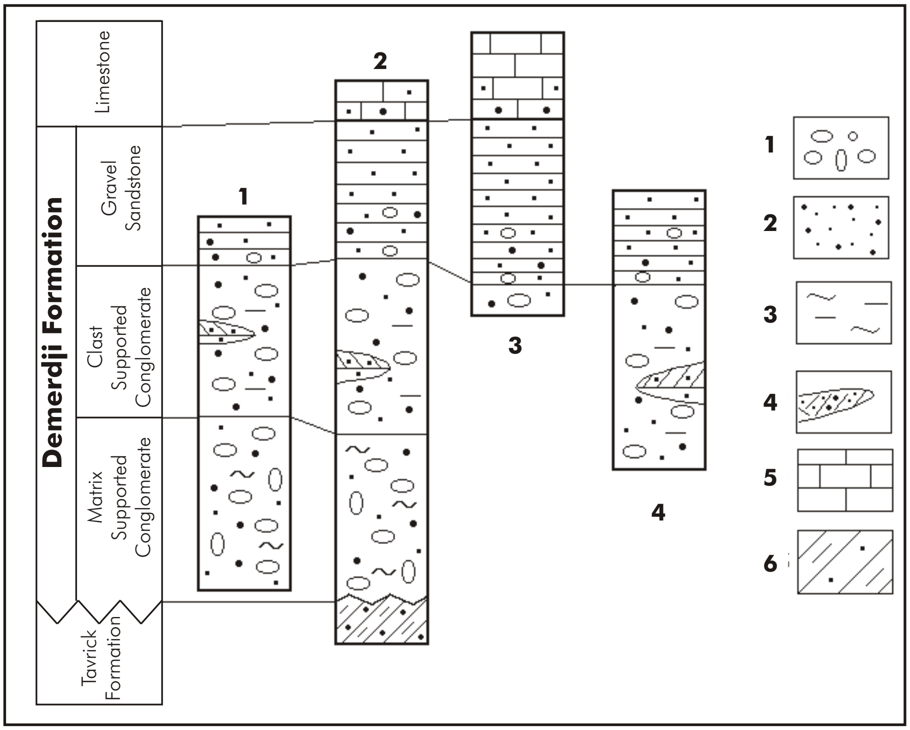

Figure 3. Correlation of local columns of Conglomerate and Sandstone Formation. Column 1: To the west from Mt. Demerdji; Column 2: To south-east from Mt. Demerdji; Column 3: North from Novi Svet village; Column 4: Coastal cliff of Meganom cape. Legend: 1. Pebbles, cobbles and boulders; 2. Heterogranular (varying particle size) sand; 3. Silt and clay; 4. Limestone; 5. Lenses of sandstone with cross-beds; 6. Turbidites of Tavrick Formation.

Matrix Supported Conglomerate

Rocks of this member are poorly-stratified conglomerate whose clasts are supported by a poorly sorted mud-sand matrix. The clast-supported fabric is not well developed. The matrix comprises approximately 40% of the total volume, and consists of heterogranular sand with silt and montmorillonite-hydromica clay (Sidorenko, 1969). The clay and silt content is up to 30–40% of the matrix. Clasts are pebble to cobble sized, subangular to subrounded, with occasional boulders up to 1.0 m in diameter (Figure 4). The clasts do not have a preferred orientation and graded bedding was not observed in this member. Occasional lenses of cross-bedded, coarse sand, 0.3–0.6 m thick and 3–8 m long occur in the upper part of the member.

The conglomerate clasts consist of fine to coarse sandstones and siltstones (58%), shale (12%) quartz (23%), and fine pebbly coarse sandstone (7%). The quartz gravel is mostly subangular. Sandstones, siltstones and shales are similar to the rocks that compose the underlying flysch strata. The underlying flysch also contains quartz veins, and that quartz is similar to the quartz gravel of the Demerdji Formation. However, the small (usually not more than 2–3 cm width), rare veins cannot explain the considerable amount of quartz in the conglomerates. Therefore, at least part of this quartz should be possibly considered exotic. The source of the fine pebbly sandstones is not clear. It may be from coarse-grained rocks of underlying formations (Tavrick or Eksiordian), or it may also be exotic.

The thickness of this member is approximately 300 m. Its lower contact is the eroded surface of the underlying Tavrick Formation and the contact is quite distinct . The erosion surface is planar to moderately undulate. The erosion surface does not provide evidence of a long period of interrupted sedimentation; rather it displays mechanical erosion only. The upper boundary of this member is not obvious; there is a gradational transition between it and the second member of the sequence.

Clast-Supported Conglomerate

Rocks of this member are clearly stratified. The alteration of sub-facies of clast-supported conglomerates and lenses of cross-stratified, coarse to medium-grained sandstones up to 0.5 m is common. Within the sandstone layers, a matrix-supported fabric is occasionally present. The matrix content in the conglomerate sub-facies is about 30%. Its pebbles and cobbles are mostly medium- to well-rounded. Maximum particle diameter is 0.4 m.

Clasts in this member are oriented parallel to bedding planes. Long axes have a west-southwest to east-northeast orientation. Graded bedding is present, clast sizes decrease

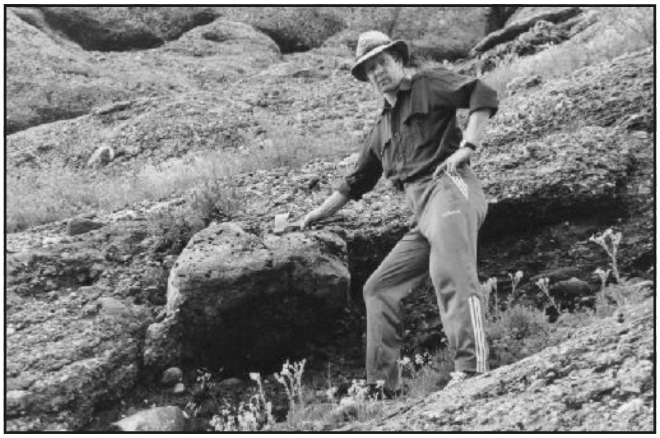

Figure 4. Matrix-Supported Conglomerate (lower member of the Formation) contains boulders up to one meter (photograph by E. Lalomova).

Figure 5. Exotic pebble of granite with iron oxide rind. Nearest location of granites is 400 km to the north.

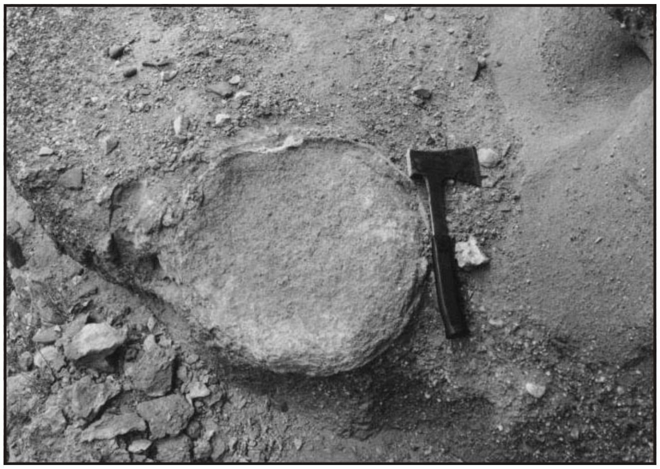

Figure 6. Exotic well-rounded boulder of granodiorite with weathering rind.

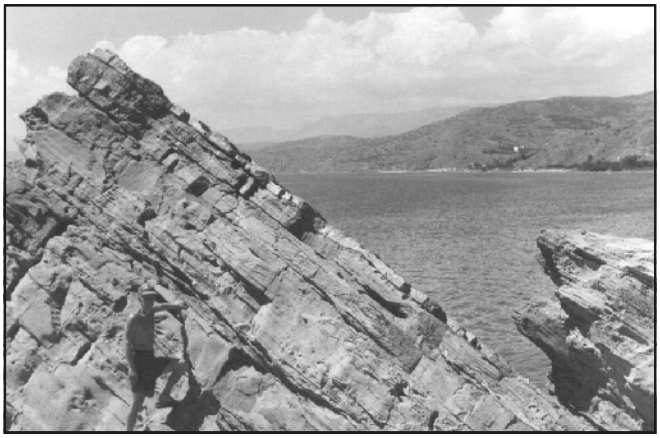

Figure 7. Gravel sandstone with strongly marked cross beds (photograph by E. Lalomova).

within the conglomerate sub-facies, and within the alternating conglomerate and sandstone sub-facies.

Finer-grained interbeds are coarse- to medium-grained sand. Strongly pronounced cross-bedding dips to the south-southeast. Thickness of the cross-bedded units ranges up to 1.5 m.

The petrography of the gravel is similar to the underlying member. The quartz gravel is much more rounded. Occasional (6 samples on four outcrops) biotite-hornblende-feldspar granite and granodiorite pebbles and cobbles are present in the conglomerate (Figure 5 and 6). These clasts are well-rounded with a fringe of iron oxide (weathering rinds). The granites and granodiorites are exotic in Crimean Peninsula. The nearest source of the granites is on the Ukrainian Crystalline Shield 400 km to the north (Dobrovolskaya and Snegireva, 1962; Dobrovolskaya, 1966), therefore it is likely that the material was transported that distance, if not farther.

A mathematical model of transportation of pebbles of marking rocks (Lalomov and Tabolitch, 1991; 1996) shows that with a considerable distance of transport (hundreds of kilometers), the content of the marking pebbles [Marking pebbles (or other size particles) mean clasts of the rocks that have limited in the space source area that allows determining transportation parameters such as a source of clastic material, direction of paleoflow and distance of transportation.] decreases by three orders of magnitude. Even if the marking clasts near the source are a considerable part of the load, as the flow withdraw from the source area the concentration decreases to 0.001–0.02% of the source content because of dilution of the marking clasts by fresh material and abrasion of the clasts. Thus, the low concentration of exotic clasts (along with high roundness and weathering rings) can be evidence of long transport (partially, at least) of exotic clasts.

The thickness of the second member is about 250 m. The upper contact of the member is not obvious. It is distinguished by a decrease of size and content of gravel and by an increase in the thickness of the sandstone interbeds.

Stratified Gravel Sandstone

This member includes well- to poorly-stratified pebble sandstones. The content of the coarse clasts varies from 30–40% in the lower part of the member to 10–15% in the upper. The stratification is defined by the repetition of fine gravel beds and centimeters-thick, coarse- to medium-grained sand layers that are parallel or inclined at a low angle to the gravel beds. In the upper part of the member, the sandstone has a mostly massive fabric and has limestone cement.

Long axes of the pebbles are aligned parallel to bedding planes with an unclear orientation in plain view. The pebbles are smaller than those in the underlying member and are mostly well rounded. Rare cobbles up to 0.2 m were observed. The petrography of this gravel is similar to the underlying member. Cross beds were observed in the lower medium to coarse sand and fine gravel (Figure 6),

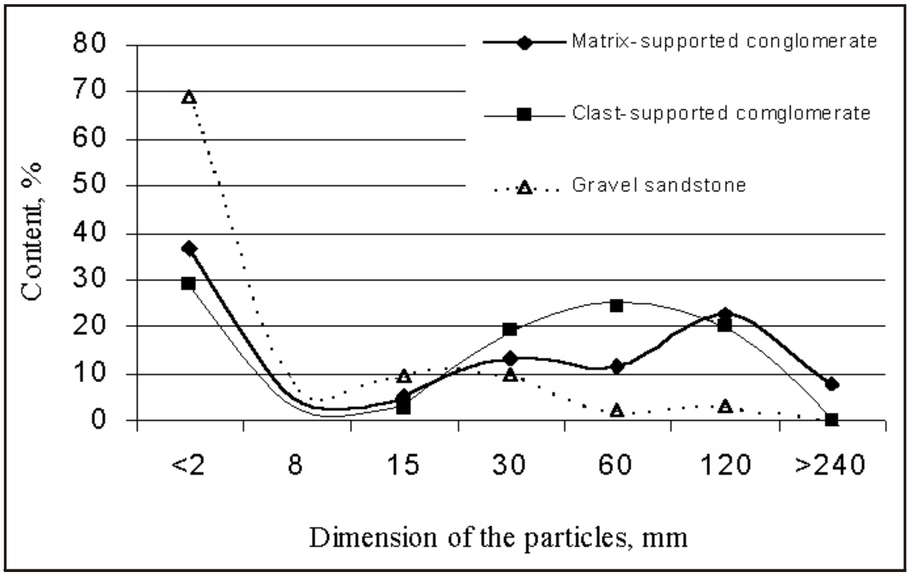

Figure 8. Granulometric composition diagram of Demerdji Formation.

dipping from southwest to east-southeast. Their thickness is up to 1.0 m.

This member is about 200 m thick. The upper contact is a thin gradational transition (not more than 3–5 m) or paraconformity with the overlying limestones. The lower limestone unit contains sand (up to 10%) and fine pebbles of sandstones, siltstones and quartz (not more than 5–10%).

All three members of the Demerdji Formation were evaluated by granulometric analysis. Five-meter sections athwart the bedding planes were measured. Along those sections, the matrix and clasts were measured, and the petrography of the clasts was described. The results of the particle-size analyses are displayed in Figure 8. All the strata had a bimodal distribution, indicating imperfect sorting. An increase in sorting was observed upward from the basal member to the upper.

In spite of local variations in the granulometric composition of the sediments, there is an obvious trend of fining of the sediments downstream to the flow and upward through the sequence. To the southeast, the conglomerate is juxtaposed with the gravel sandstone and even limestone (Tithonian stage of Upper Jurassic), providing a lateral transition of facies similar to what was seen upward through the section. Thus, this sequence represents a transgressive series, corresponding to the Law of Facies of Walther-Inostrantsev-Golovkinskii (Middleton, 1973).

Paleohydraulic conditions of Demerdji Formation sedimentation

The features of the Demerdji Formation provide the basis upon which to determine paleohydraulic conditions during the deposition of this phase of the Crimea sedimentary sequence. The limits of the range of velocity of the currents can be derived from estimates of the two factors of the depositional processes: erosion and transport.

Erosion Phase

Inasmuch as the conglomerate was deposited upon the erosional surface that forms the top of the Tavrick and Eksiordian formations, the initial velocity of the current must have exceeded the threshold velocity for erosion of the underlying flysch deposits. Austin (1994, p.106) determined the velocity of erosion of solid rock by cavitation during the Flood as 10 m (about 30 feet) per second. On the other hand, removing blocks of the bedrock by hydraulic plucking requires a much greater current velocity than that required for the movement of sedimentary clasts. Lebedev (1959) determined that the maximum non-erosive velocity for loose grounds (for boulders more than 0.5 m) varied from 5.4 to 6.2 m/s, depending on the average flow depth.

The "Upper Jurassic" conglomerates above the unconformity commonly rest directly on the folded strata of the Tavrick Formation; therefore it is reasonable that erosion of the Eksiordian and Tavrick Formations rocks reached a depth of 300–500 m (the thickness of the Eksiordian Formation). Under conditions of rapid erosion at Glen Canyon Dam, the velocity of erosion of solid sandstone bedrock reached 3 m (about 10 ft) per hour (Austin, 1994, pp. 106–107). Thus, the maximum expected erosion of the Tavrick and Eksiordian formations would have taken only a few days in a current moving with a speed of 6–10 m/s.

Transport Phase

Maximum clast size determines minimum current strength, therefore we can determine minimum current velocity from the relationship between the average diameter of the particles and the average critical velocity (Berthault, 2002). All observed methods (Hjulstrom, 1935; Neill, 1968; Van Rijn, 1984a;b; Maza and Flores, 1997) have determined the critical flow velocity for particles more than 0.5 m in diameter to be 4–7 m/s. Since boulders in the Demerdji Formation often exceed 0.5 m and sometimes reach 1 meter, the paleocurrent velocity during deposition of the matrix supported congomerate member was not less than 4 m/s. Minimum current velocities for the clast-supported conglomerate and stratified gravel sandstone members were 2 m/s and 1 m/s, respectively.

Gravel Sandstone layers grade into overlying limestones, perhaps across a paraconformity. Thus, as the transgression reached its maximum, the flow velocity had been decreasing from 10 m/s at the very beginning of this stage of hydrodynamic activity to near zero at the final stage during limestone deposition. Since the calculated settling velocity for flocculated lime-mud is approximately 0.15 to 0.6 mm/s (Julien, 1995, p. 78), the time of deposition of the limestone strata can be estimated at between 12 and 46 days in a basin 600 m deep.

These data strongly suggest that the Demerdji Formation represents a single transgressive series with an initial high-velocity paleocurrent that decreased to almost zero at the end of this sedimentary phase. The orientations of clasts and cross-bed dips indicates flow from north-northwest to south-southeast. During the final stage of deposition of the gravel sandstone member, the current direction fluctuated between northeast and northwest.

Although a precise duration of sedimentation has not been determined for the Demerdji Formation at this stage of research (a calculation will be performed later), the entire cycle of erosion, transport, and sedimentation of the Demerdji Formation should be measured in a few days, not in the millions of years estimated by uniformitarians for Upper Jurassic time.

Position of the Demerdji Formation in the Flood Model

The Demerdji Formation has many notable features that indicate the special significance of these strata in the structure of geosynclinal fold belts[2]. The Demerdji Formation overlies a flysch formation (turbidites) typical of geosynclines. The flysch strata of Crimea are commonly folded, with associated intrusions of dikes and volcanic activity. The beginning of Demerdji Formation deposition marked the conclusion of this deformation and igneous activity, and an increase in hydrodynamic energy that resulted in the erosion of the newly folded turbidite strata.

Apparently, the Demerdji Formation is an intermediate conglomerate that formed within the Flood sequence. I interpret the lower boundary of the Demerdji Formation as corresponding with what Davison (1995, p. 223) described as a boundary between megasequences that "indicate regionally- (or globally-) controlled tectonic or other activity which controlled sedimentation during the Flood." The Demerdji Formation possibly correlates with the RP-6 megasequences that Davison described for the Russian platform (Davison, 1995, table 3).

Reed *et al.*, (1996) recorded such an episode of increased hydrodynamic activity during the Flood in their geological energy versus time plot, segment 6 (Reed *et al*, 1996, Figure 1). They considered the increase to be a result of increasing energy from a mid-to-late-Flood tectonic readjustment.

A still more detailed interpretation for the stages of the Alpine geosyncline was provided by Baumgardner (1990). He explained the folding of flysch strata and hydraulic activity after the folding by the closing of the intra-Pangea basin between the African and Asian lithospheric plates, especially by "rapid movement of the Indian block to the northeast " (Baumgardner, 1990).

Folded and eroded turbidites overlain by conglomerates are typical of geosynclines. The conglomerates are usually described as "lower (marine) mollasse". According to the Geological Glossary (1960, p. 46):

> …it [the mollasse] is deposited in the marginal troughs of geosynclines in the main stage of orogeny [mountain-building stage] which follows powerful tectonic movements that cause the closing of geosyncline zones and the formation of mountain ridges with subsequent erosion. The mollasse consists mainly of products of denudation of the mountain massifs, but partly contains rocks transported from platform region" (translation from Russian by author).

Thus we see that mollasse formation is typical for folded belts, so it can be used as a characteristic of geosynclines for the correlation of megasequences.

Conclusion

Investigation of the Demerdji Formation demonstrates that these strata represent a single transgressive series that began with intense erosion of the underlying terrigenous-volcanic complex of the Tavrick and Eksiordian Formations. During the erosion, transport, and deposition of the Demerdji Formation, hydrodynamic energy decreased significantly and the sequence ended with the deposition of limestones.

Calculation of the paleohydraulic conditions for the deposition of the Demerdji Formation shows that conditions were unlike any modern episodes of catastrophic sedimentation. A preliminary estimate of the time of the complete sedimentary cycle (erosion – transport – sedimentation) is consistent with the Biblical Flood and contradicts the uniformitarian geological time-scale.

Finally, these Crimean strata are typical of geosynclinal systems, and can be used to correlate sedimentary sequences in other fold belts.

---

[2] *Geosyncline*: a pre-plate tectonic term describing one of the main elements of Earth's crust (the opposite to "platform") that is characterized by intensive processes of folding and by powerful volcanic and magmatic activity.

Acknowledgment

I thank Mr. Guy Berthault for support of this research and providing useful comments on the paper's content. I also thank the reviewers for editing of the earlier version of the paper and for the improvement of my English. I thank Dr John Reed for improvement of my English and useful recommendations. I also thank my wife Elena for her assistance in field research.

References

CRSQ: Creation Research Society Quarterly

Austin S.A. 1994 . *Grand Canyon: monument to catastrophe*. Institute for Creation Research, Santee, CA.

Baumgardner, J.R. 1990. 3-D finite simulation of the global tectonic changes accompanying Noah's Flood. In R.E.Walsh (editor). *Proceedings of the Second International Conference on Creationism,* Volume II, Creation Science Fellowship, Pittsburgh, PA.

Berthault, G., 2002. Analysis of main principles of stratigraphy on the basis of experimental data. Lithology and Mineral Resources . *Journal of Russian Academy of Science* 37(5):442–446.

Davison, G.E. 1995. The importance of unconformity-bounded sequences in Flood stratigraphy. *Creation Ex Nihilo Technical Journal* 9(2):223–243.

Dobrovolskaya, T.I. 1966. Paleogeograficheskie usloviya Krima vo vremya otlojeniya mezozoiskih konglomeratov (Paleogeographic environment in Crimea during deposition of Mesozoic conglomerates). pp. 76–83. *Proceedings of the Scientific Conference of Geological Departments of Lvov State University*, Lvov (Russian).

Dobrovolskaya, T.J. and O.V.Snegireva, 1962. Konglomerati Bitakskogo yarusa Krima (Conglomerates of Bitak assise of Crimea). *Proceedings of Academy of Science of USSR* 143(6):213–218 (Russian).

Hjulstrom F. 1935. The Morphological activity of rivers as illustrated by river Fyris. *Bulletin of the Geological Institute, Uppsala* 25:89–122.

Julien, P.Y. 1995. *Erosion and sedimentation* . Cambridge University Press, New York.

Krishtofovich A.N., editor. 1960. *Gosgeoltehizdat* (Geological glossary), volume 2. Moscow. (Russian).

Lalomov, A.V. 2001. Flood geology of the Crimean Peninsula, Part 1: Tavrick Formation. *CRSQ* 38(3):118–124.

Lalomov, A.V. and S.E. Tabolitch. 1991. Modelirovanie vdolberegovogo potoka nanosov I prognozirovanie pribrejno-morskih rossipei (Modeling of lateral coastal drift and prediction of coastal submarine placers). *Vestnic of Leningrad State University* 3(21):72–75 (Russian).

———. 1996. Catastrophism and modern geology: modeling of placer generation process . *CRSQ* 33(3):186–190.

Lebedev, V.V. 1959. *Gidrologiya I gidravlica v mostovom dorojnom stroitelstve* (Hydrology and hydraulic in bridge and road building). Gidrometeoizdat, Leningrad (Russian).

Maza A.J.A. and M.Garcia Flores. 1997. Vslocidades medias para el inicio del movimiento de particulas. *V Congreso Nacional de Hydraulica* . pp. 70–88. Guadalajara, Mexico.

Middleton G.V. 1973. Johannes Walther's law of the correlation of facies. *Geological Society of America Bulletin* 84:979–988.

Neill C.R. 1968. Note on initial movement of course uniform material. *Journal of Hydraulic Research* IAHR. 6(2):157–184.

Reed, J.K., C.R.Froede, Jr., and C.B. Bennett. 1996. The role of geologic energy in interpreting the stratigraphic record. *CRSQ* 33(2):97–101.

Sidorenko, A.V. (editor). 1969. *Geology of USSR*, volume VIII (Crimea) . Nauka, Moscow. (Russian).

Van Rijn L.C. 1984a. Sediment transport: Bed-Load transport Part I. *Journal on Hydraulic Engineering, ASCE* 10(11):1431–1456.

———. 1984b. Suspended load. *Journal on Hydraulic Engineering, ASCE* 10(11):1613–1641.

Lest We Forget

Precambrian Pollen in Russia

Evolutionary workers and some creationists too have been ignoring or rejecting the reports of vascular plant microfossils found in strata designated as "Cambrian" and "Precambrian" from many different areas of the world.

One such amazing report discusses "...microscopic vegetable remains from sedimentary rocks in Russia..., Poland, Czechoslovakia, Scotland, and many other countries in Europe and Asia" (*Science News,* 1962). The anonymous writer noted that "Tiny plant pollen grains have been found in rocks up to two billion years old." This had reference to a scientific report delivered by Dr. Sofija N. Naumova of the Geology Institute, Academy of Science, in Moscow as he spoke to the International Conference of Palynology, at the University of Arizona, Tucson.

> More than 650 species of spores and pollen... were described by the scientist. These included shreds of tissue and fragments of many algae... Remnants of primitive pine trees and seed-bearing plants were found during the study... the 32 complexes [of microfossils] can be clearly traced within eastern Europe and Siberia and, he added, can be successfully used for the correlation of the oldest sedimentary rocks on earth. (p. 281). We also found pollen and tracheids of land plants in Precambrian Hakatai shale at the Grand Canyon (Howe *et al*., 1988).

It would be valuable for science if the published proceedings of Naumova's speeches at this conference could be located and reviewed. Attempts are currently underway to locate published accounts of Sofija N. Naumova's discovery of pollen and other vascular plant material in the Precambrian of many different countries. Any help in this regard will be appreciated and can be sent to address below.

It is true, as some workers assert that God *could* have created across vast periods of time if He had so chosen. But the issue is not "how *could* God have worked if He had wanted to" but "how *did* God create?" Neither the Bible (God's Word) nor science (human study of God's work) demands long ages in earth history.

References

Howe, G. F., E. L. Williams, G. T. Matzko, and E. E. Lammerts. 1988. Creation Research Society Studies on Precambrian pollen Part III: A pollen analysis of Jakatai shale and other Grand Canyon rocks. *Creation Research Society Quarterly* 24:182.

Unknown author. 1962. Pollen found in rock two billion years old. *Science Newsletter* 81:281.

G. F. Howe
24635 Apple Street
Newhall, CA 91321-261

Book Review

A *Beautiful Mind* by Sylvia Nasar
Simon and Schuster, New York, 1998. 461 pages, $16

This book, made into a popular movie, tells the life story of world-class mathematician John Nash. Born in 1928, Nash studied and taught at Pittsburgh's Carnegie Tech, Princeton University, and MIT. His insights and publications concerning game theory and economics were legendary. However, around age 30, Nash was struck with severe schizophrenia. This included dilusions, paranoia, personality change, and a near-homeless lifestyle. He wandered the Princeton campus for decades. Around 1990, at age 72, an unusual, spontaneous recovery occurred. Today John Nash functions normally, and he was awarded the 1994 Nobel Prize in economics for his earlier mathematical analysis.

Why include this book as a *CRSQ* review? John Nash is an example of a uniquely gifted person who has failed to honor his Creator. He came from a caring Episcopal family and attended Bible classes (p. 33). He was reared in Bluefield, Virginia in the Bible belt. Nash had a special interest in prophecy, and there were religious overtones throughout his 40-year sickness. He saw himself as "Esau, cast out" (p. 327). One can wish that Nash had found a positive mentor to follow during his early years. Instead he became vain, selfish, and socially snobbish. The book brings out a dark side of Nash that is missing in the movie. Nash had homosexual tendencies (p. 43) and a four-year relationship with a mistress (p. 174). He experienced divorce, and an illegitimate son later developed the same affliction of schizophrenia. This son also became involved with the radical *The Way* group.

If only Nash had developed a mature faith to bring structure to his life. Instead, however, he treated religion much too lightly, a weakness that is typical of many intellectuals today. On his Princeton application, just to raise eyebrows, Nash wrote that his religion was "Shinto." Much later, Nash claimed to "will his recovery" from schizophrenia by renouncing anything related to religion (p. 354). In his 1995 autobiography, Nash made no mention of his mother's faith or the biblical environment of his childhood. It appears that the gospel seed did not find fertile soil in the mind of Nash. He is honored as one of the great minds of our day, and is indeed highly gifted in mathematics. His knowledge is great, but thus far, there is a sad lack of wisdom concerning his Creator. It is not yet too late for John Nash to find peace of mind. Only the Creator can make everything beautiful in his time (Eccl. 3:11).

Don DeYoung
DBDeYoung@Grace.edu