The standing stones of creation

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Cold seeps (subterranean movement of large volumes of gases and liquid, e.g. H_2S, CH_4, CO_2, at ambient temperatures) and the large array of signatures they leave in the geological records have entered the body of geological knowledge somewhat through the back door. They are differentiated from hydrothermal fluid, as they are unrelated to magmatic heat sources. Petroleum geologists discovered cold seep signatures (CSS) in the late 1970s and to this day they remain almost exclusively an 'internal topic' of what Miall ironically calls 'corporate science'.[1] Justified or not, the reluctance of geology theorists to include CSS as standard geological features, especially as part of rock formations on continents, remains a rather strange trend. Nevertheless, there have been sporadic mentions in the literature. Perhaps the largest of their kind appear to be the carbonate masses in terrigenous Miocene formations at Monferrato and cylindrical carbonate concretions in mud breccias at Verrua Savoia (both from Northern Italy)—interpreted as cold seep carbonates with strongly depleted $\delta^{13}C$ values.[2] Other paleo-CSS have been reported in Silurian formations in Morocco[3] and the Cretaceous formations of Tepee Buttes in Colorado.[4]

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Figure 2. *Carbonate pipes supporting a continuous layer of limestone which appears to have been generated by the same cold fluids that generated the pipes.*

I have previously suggested CSS provide an excellent solution to the challenge paleokarsts represent to the young-earth model (YEM).[5] My focus was on hollow-type features considered paleo-sinkholes, which I interpreted as pockmarks on the ocean bottom during and immediately after the Flood. Another area, where CSS are of interest is in explaining features that vaguely resemble speleothems in continental environments, where they are found associated with so-called paleokarsts.[6]

Figure 1. *The Pobiti Kamani site (about 1/3 of the entire area). The sand on the ground comes from the disaggregating subjacent sandstone.*

Pobiti Kamani

There is a location in north-eastern Bulgaria where some of the most unusual naturally occurring carbonate features are found, over an area of 1 hectare. They consist of standing and lying columns, pipes and chimneys and are know as 'Pobiti Kamani' ('The Standing Stones') and appear to have been completely ignored by scientists. (I have thoroughly searched the existing literature and the Internet and there appears to be no scientific report available.) They can reach over 5 m in height and over 1 m in diameter. Some have bulging 'caps' and in places the columns are in fact covered by a continuous layer of carbonate (a porous, sometimes fossil-rich limestone assigned to the Sarmatian of the Upper Tertiary). The underlying rock is fine sand believed to be of Sarmatian affinity as well.

There is a striking resemblance between these formations and the numerous carbonate pipes, chimneys, columns, mounds and crusts reported from many cold seeps on present continental margins.[5] This resemblance

Figure 3. *Sketch of seep structure from Smooth Ridge in Monterey Bay (based on Moore).[5] Diameter of sample is about 30*

makes me believe that Pobiti Kamani are in fact paleo-CSS linked to the large oil deposits of the Moesian Platform, a significant oil deposit located in the immediate vicinity, at Tiulenovo.[7]

The same Sarmatian limestone continues north, into Romania's southern Dobrogea county, where numerous sulphurous springs emerge from it, discharging into the Black Sea. There are also numerous small ponds of sulphurous waters near Mangalia (S Dobrogea) called 'Obane'.[8] These ponds are interconnected via karst conduits partially investigated by divers.

The Movile Cave

There are many gently sloping carbonate mounds in the area, which are conventionally considered to be erosional features,[8] but which could potentially be CSS features. The Movile Cave is also located nearby, famous for its chemotrophic ecosystem based on sulphurous mesothermal waters rising from the deeper, confined karstic aquifer in Devonian formations. It is worth mentioning that the Devonian karstified limestones also host large oil reserves, believed to be the source of the sulphur.[7]

The Movile Cave is interpreted as bathyphreatic (deep under the water table) acid karst whose inception predates the Messinian Crisis (5.1–5.5 Ma).[9,10] The lowering of the Black Sea level during the Messinian Crisis is considered to have generated three overimposed karstification levels, the deepest being located at about 150 m below the present sea level.[11] As the level reached its present position, it is likely that sulfuric acid speleogenesis has reshaped and enlarged the pervious phreatic conduits and the sulphurous waters have provided the perfect habitat for a large bacterial population that constitutes the basis of the trophic chain in the cave.[11]

Cold-seep interpretation

I propose that not only the Pobiti Kamani but the entire Sarmatian limestone on the western shore of the Black Sea, are in fact paleo-CSS, the mounds near Mangalia being a primary, syngenetic and not secondary feature. The fact that organic matter sampled in the Movile Cave yielded $\delta^{13}C$ between -47.5 and -37.5‰,[12] very close to the ones measured in CSS in the Monterey Bay (-49.88‰ avg.)[13] confirms the CSS nature of these features. I further suggest that similar features must be present at other locations around the Black Sea and also in the proximity of the enormously-rich Caspian Sea oil fields, as well as in other similar geological settings around the world.

Under such circumstances one has to approach karsting processes and their history from a completely different perspective. First, there is a tremendous primary porosity associated with cold-seep-affected limestones, much higher than in any other type of carbonate. This results in a significant increase in subsequent karsting rates and patterns. The abundance of sulphur and H_2S in the depositional phase—as indicated by present-day CSS—must have accelerated karsting

Figure 4. *Broken and standing hollow columns at Pobiti Kamani are very similar to the ones found on the bottom of Monterey Bay.*

Figure 5. *Capped ('plugged') carbonate pipe which is most probably a remnant of a layer generated by the pipe (like in the case presented in PK 39).*

dramatically. Furthermore, it is most improbable that under such circumstances the Movile Cave and any other karst features could have survived in the corrosive environment for over 6 Ma as suggested by various authors. In fact, there is virtually no problem in explaining the deposition, karsting and formation of these features in a late- to post-Flood scenario. I have previously proposed that 'endogenous karsting' (i.e. karsting generated by highly acidic waters rising from the crust and not mildly acidic waters infiltrating from the surface) can account for the assembly of existing karst terrains within a YEM.[6] A subsequent paper discussed a rapid hydrothermal karsting model as the source of most of the present-day karst.[14]

The Pobiti Kamani and the assembly of Neogene carbonate deposits on the western coast of the Black Sea represent an excellent location for further investigations that could provide significant arguments for an improved YEM, not only in respect to karst but also to the issue of carbonate deposition during and immediately after the Flood. There are numerous sub-signatures of cold seeps like bacterial mediation in carbonate deposition, specific Ba/Ca ratios, high-Mg calcite (in fact presence of dolomite in chemical environments where it should not be present, except for bacterial mediation), carbonates with heavier $\delta^{18}O$ (> 3.5 ‰), drastically depleted $\delta^{13}C$ values to mention a few. No such sub-signatures have been studied thus far at the Bulgarian site and except for the Movile Cave, anywhere else on the western coast of the Black Sea. I have previously invited fellow creation scientists to make good use of this new and spectacular boundary area of sedimentology, geochemistry and biology in their continued improvement of the YEM.[5] I believe that given these new developments and potential future discoveries, a joint effort of the creationist scientific community for detailed research in this area is much needed and it could result in, not only another strong argument for a young earth, but also a major contribution to the understanding of past geological processes within the wider geological community.

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