Bulgaria, “Zlata”. It was mined from the beginning of the 20th century by English companies and in 1939-1974 by Bulgarian companies. The EurOmax Company has been exploring a license in the region of the Lutzkan magmatic complex since 2004. EurOmax classifies these deposits as Intrusion Related Gold (IRG) deposits with gold mineralisation related to the CO_2-rich gold bearing fluids produced by the cooling of the intrusion at depth (www.euromaxresources.com/projects). Although the deposit is not directly dated based on the type and the characteristics of the Au-Ag±W mineralisation we suggest a link with the differentiated Carboniferous granitic intrusion of LMM.

Climatological assessment of atmospheric instability indices for southeastern Europe

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Atmospheric instability indices are routinely used in operational forecasting for identifying the possibility of convective storm activity. This study focuses on the long-term temporal assessment of Showalter Index, SWEAT Index, K- Index and CAPE at three coastal (Athens, Istanbul and Brindisi) and at one inland station (Sofia) of southeastern Europe. The indices are calculated from daily archived radiosonde observations for a 36-year period, from 1973 to 2008. In order to identify meaningful temporal trends, a two-phase methodology is applied. The first step contains the assessment of the monthly, seasonal and yearly averages. The yearly trends of Showalter and SWEAT indices indicate an increase of atmospheric instability mean values for Athens, Brindisi and Sofia after mid 1990s. The second step, which is the primary focus of this study, is the assessment of index extremes. After the selection of index threshold levels, index extremes are studied in terms of threshold exceedences. The analysis reveals long term trends for some combinations of indices and stations.

Fe-Mn Nodular Concretions Associated with Middle Jurassic Oceanic Melange (Argolis, Greece)

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Fe-Mn nodular concretions from Angelokastron and Lykotroupi areas, Northern Argolis Greece, are friable and compact types. They are associated with Middle Jurassic radiolarian red chert and red siliceous shale matrix slivers, originated and detached from a Middle Jurassic oceanic mélange. Friable Mn concretions consist of poly- or mononucleate nodules lacking primary botryoidal microstructures and possessing a unique composition. They form by the replacement of chalcedonic jasper by cryptomelane and todorokite; these concretionary crystalline manganese-structures are dissected by a birnessite phase oxidized to ntsutite and then crosscut by veinlets of hollandite and manganiferous carbonated fluroapatite during late-stage hydrothermal alteration. The resultant composition consists mostly of manganese with a very low content of iron and transition metals. The mineralogical and chemical compositions differ from those of recent or fossil manganese nodules and are related to a hydrothermal field. Compact Fe-Mn concretions consist of jasper and chert dissected by veinlets of hydrothermal todorokite. Sulphides with magnetite characterize these concretions, even when altered and silicified. Some enclose scattered fragments of magnesiochromite with Ni-rich todorokite as veinlets and as concretionary crystalline structures. Some others, such as silicified basaltic fragments, contain remnants of copper mineralization such as sulfides, oxides, and hydroxide copper minerals, generated by an older hydrothermal event with subsequent oxidation. Furthermore, a few compact concretions, which were chemically treated, revealed that they contain equal amounts of iron and manganese similar to the

hydrothermal ferromanganiferous crusts on basalts. The reworked Fe-Mn nodular concretions resulted from submarine hydrothermal and fissural activity. These processes took place during the pre-emplacement period of an oceanic crust unit preserved today as the Subpelagonian ophiolite.

Tectonic evolution of the Argolis Peninsula (Greece)

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The Argolis Peninsula indicated a Tertiary nappe stack of different Pelagonian tectonic units structurally overlying the Subpelagonian series. From the base to top they consist of three major tectonic units, which have been successively emplaced throughout different extensional and compressional tectonic regimes: (a) the Para-autochthonous Subpelagonian Unit, as Lower Unit, which is composed by Middle Triassic - Lower Jurassic limestone sequence of Didyma-Trapezona, an ophiolitic mélange of Late Jurassic age, an ophiolitic nappe bearing pillow lavas with radiolarian red cherts of Triassic and Jurassic age and at the top by Meso-autochthonous series that is consisted of an unconformably cover by the Cretaceous to Eocene meso-autochthonous sedimentary sequences, which are tectonically overlain by Pelagonian-originated units, like a Middle Unit (b) Flyschoidal Mélange of Late Cretaceous - Early Tertiary age, associated with various carbonate and ophiolite tectonosomes trapped and carried within this highly disrupted terrigenous flyschoidal mélange and, (c) an Upper Unit consisting of Cretaceous carbonate slivers bearing serpentinite sole. An intra-Jurassic extensional regime (D0) has affected the limestone sequence of Didyma-Trapezona, which was subjected to an extensional stress-field of NE-SW direction. This extensional regime had an effect on the deposition of condensed pelagic limestone of Toarcian age and upwards to the tectono-sedimentary ophiolitic mélange of Late Jurassic age originated from the destruction of an oceanic internal basin. A Late Jurassic compressional stress-field (phase φ1) with NE-SW direction affected the red cherts, which is responsible for the overthrusting of the pillow lavas ophiolitic nappe over the ophiolitic mélange and shows a movement towards the southwest with structural elements that are characterised by overturned NW-trending folds, shear planes and internal thrusts of similar direction having low angle of dip towards the NE and show a constant vergence towards the southwest. After the compressive tectonic phase of Late Jurassic, the Argolis at that time records a severe intra-Cretaceous extensional regime (D1) with NE-SW stress field direction leading to the successive transgression events and hiatus in sedimentation that have occurred from SE to NW of diachronous Meso-autochthonous Cretaceous limestone deposits, topped by deep-water limestone of Campanian-Maastrichtian and then from Lower Tertiary limestone passes upwards into post-Ypresian flysch of the para-autochthonous Subpelagonian Unit. The post-flysch compressional stress-field (phase φ2) with NW-SE direction of late Eocene age, which may be connected with the Cycladic blueschist formation, during the Eocene continental collision of the Hellenides, has contributed to the formation of the Flyschoidal Melange Unit, overriding by the Upper unit, and finally has caused their thrust over the Para-autochthonous Subpelagonian Unit. This compressional phase activated the old lines of NE-SW direction and consists of fronts of internal shearing and thrusting of the same direction and with planes at low angle of dip towards the SE. The recognized structural data indicate a compressional movement towards the northwest. The Upper Unit, which tectonically overlays the Flyschoidal Melange Unit is also affected by the same post-flysch (φ2) phase and was synchronously affected by a transtensional tectonic regime D2, which is characterized by an oblique slip of the normal faults with NE-SW direction and within the same stress-field direction. The neotectonic faults reveal an extensional regime (D3) with NNW-SSE direction stress-field that has affected the Neogene and Quaternary sediments, with a NE-SW trend (σ3, minimum principal axis of stress) and is responsible for the creation of Ligourio-Dhimaina and Drepano-Nafplio-Argos graben-like structures.