of finding and investigating ancient shipwrecks in a deep water environment must ensure that the tools and techniques available can deliver results that satisfy that rubric, with the benchmarks being comparable expectations for shallow water and land site investigations. We began developing protocols for these different levels of investigation using an overarching methodological rubric of 'nautopsy,' which at this stage is still an evolving and informal way of characterizing the concerns and objectives of recording deep sea archaeological sites.

The growth of regional archaeological survey in the Mediterranean in the last thirty years has been dramatic, and with this growth has come an increasing sophistication in methods and technologies. Procedures for juxtaposing and synthesizing individual survey datasets, however, have lagged far behind. Until this situation changes, the primary value in regional underwater surveys will be the collection of data that do synthesize readily with established knowledge and conventions for representing that knowledge. In the case of an amphora cargo, then, certain precise measurements and observed features (handle stamps, fabric, etc.) of the individual jars provide the key to unlocking the date and origin of the cargo, with minute stylistic changes sometimes enabling the date of a Classical shipwreck to be narrowed to within a quarter century, exceeding the accuracy of radiocarbon dates from the same period. For this level of recording to take place without physical disturbance of a deep water site presents many challenges, both underwater and in the translation of the raw data into the representational conventions of archaeology. This paper confronts the challenges and reviews the achievements of the new site recording technologies in deep water, and proposes guidelines for ensuring that these techniques generate the maximum amount of archaeologically useful data in line with the scientific objectives of the survey.

K-Ar mineral dating and thermochronometry of the south Sithonia plutonic Complex (Chalkidiki, Greece)

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The Eocene Sithonia Plutonic Complex (Chalkidiki, Greece), which intrudes the Circum Rhodope Belt and the Serbomacedonian Massif, is divided into a northern part comprising two-mica (TMG) granites and leucogranites (LG) and a southern part comprising hornblende-biotite granodiorites (HBGD), grading into tonalities (HBTON), and biotite granodiorites (BGD). Abundant mafic microgranular enclaves are enclosed in the granodiorites and tonalites. A mixing plus fractional crystallisation process (MFC) is considered responsible for the evolution of the Sithonia Plutonic Complex. Two end-members are considered, an acid represented by leucogranites and a basic one represented by a lamprophyric-like magma which underplated a lower crust of amphibolitic/basaltic composition. At the early stages of the evolutionary process fractional crystallisation was more active than mixing giving rise to tonalitic/monzonitic enclaves while later on mixing was the prevailing process giving the wide spectrum of composition of the southern part of the complex (HBTON, HBGD, BGD).

The aim of this study is the K-Ar mineral geochronology and thermochronometry of the southern part of the Sithonia Plutonic Complex.

Based on the variety of rock types and their spatial distribution, twenty seven samples (mineral separates) of hornblende (3), biotite (12) and K-feldspar (12) were selected and dated. The K-Ar ages obtained range between 45 and 50 Ma for hornblende, 40 and 46 Ma for biotite and 36 and 42 Ma for K-feldspars respectively.

The K-Ar ages yielded and the published Rb-Sr mica ages are used to investigate the thermal history of the complex. The intrusion of the LG affected mostly the northern part of the HBGD (~46 Ma) and disturbed more the K-Ar isotopic system of the biotite than the Rb-Sr system. The last intrusion was that of the BGD at about 42 Ma. The larger age difference between Bt and Kf and the smaller Kf age in BGD in comparison to the rest rock types along

with the fact that biotite gives an isochron only in BGD indicate that: 1) The cooling rate of BGD is slower than the rest rock types, and 2) The K-Ar isotopic system for Kf in BGD was open for longer time resulting in a homogenous feeding of biotite with radiogenic Ar. In this way biotite was enriched in 40Ar.

The closure temperatures of hornblende, biotite and K-feldspar, the K-Ar ages obtained and the available Rb-Sr mica ages were used to decipher the thermal history of the southern Sithonia Plutonic Complex. The estimated average cooling rate for HBGD+HBTON was $\Delta^0C/\ \Delta t = 40.2^0C/Ma$, nearly the same as that for the whole south part of the complex (HBGD+HBTON+BGD) estimated to $\Delta^0C/\ \Delta t = 40.1^0C/Ma$. This cooling rate is lower than the cooling rate estimated for the TMG of the northern part of the Sithonia Plutonic Complex ($\Delta^0C/\ \Delta t = 60^0C/Ma$). For the last cooling rate zircon ages have also been used.

Future estimations of precipitation in the Balkan Peninsula with the use of a Regional Climate Model

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During the last decades there were a lot of discussions regarding climate changes. Many climatological studies have focused on precipitation and drought due to their important role for many human activities. South Europe and especially the Balkan Peninsula is a prominent and vulnerable area, mainly due to its complex topography. This study aims to estimate the changes in the precipitation regime at the Balkan Peninsula through the end of the 21st century using a Regional Climate Model (RCM).

The daily precipitation data used are derived from an updated Regional Climate Model, the RACMO2, developed by the Royal Netherlands Meteorological Institute (KNMI) with the GCM ECHAM5 as a «parent» model. For the future climate projections the SRES A1B scenario is used. The spatial resolution of the model is 25x25 km and the data cover the whole European area. Of the 14136 grid points of the domain, those corresponding to the Balkan Peninsula have been chosen and their precipitation daily time series were analyzed. Also, three extreme indices were calculated and their trends were analysed over the entire time period (1960-2100). The selected indices were: the heavy rainfall threshold (the 95th percentile of rainday amounts (mm/day), the greatest 5-day rainfall (greatest 5-day total rainfall (mm)), and the longest dry days (maximum number of consecutive dry days (days). It is to be noted that the first index is based on thresholds defined using percentile values rather than fixed values. This makes the pq95 index transferable in different regions with different climatic regimes. The greatest 5-day rainfall amount is an important measure of extreme from the point of view of flooding in a region.

The first results of the study showed that heavy rainfall conditions will become more intense in the future mainly in the western part of the Balkan Peninsula. On the other had, the model "predicted" a general shift to drier conditions. In the case of the summer period a persisting absence of rainfall is expected in the future, since the length of dry spells approaches 90 days. Finally, extreme precipitation tends to decrease during the warm part of the year by the end of the 21st century, while intense precipitation episodes should be more often expected in autumn.

In the last part of the study, the relationship between extreme indices of precipitation and the atmospheric circulation was analysed. More specifically, the North Sea-Caspian teleconnection index is identified as an upper level (500hPa) atmospheric teleconnection between grid points 0^o to 55^oN; 10^oE to 55^oN (North Sea) and 50^oE to 45^oN; 60^oE to 45^oN (northern Caspian). During the negative phase of the NCP index there is an increased southwesterly anomaly circulation towards the study area, while during its positive phase there is an increased northeasterly circulation towards the Balkans. After calculating the daily calendar of the index, until the end of the 21st century, the statistical relationship between the