

MESTRADO EM Ciências do Mar
Temas de Dissertação
Ano letivo 2023/2024

TÍTULO	Assessment of standard palynological preparation methods for the study of dinoflagellate cysts in sediments from coastal environments off Figueira da Foz (NW Portugal)
RESUMO	
 <p style="font-size: small;">Sediment processing for palynological analyses.</p>  <p style="font-size: small;">Microphotograph of a dinoflagellate cyst from a sediment sample.</p>	<p>Objectives:</p> <p>To assess the reproducibility of organic-walled dinoflagellate cyst records obtained by standard sediment processing procedures (mineral acid digestion-based). This study also aimed at providing reference data on D/P ratio variability (a widely used palynological index) in coastal environments that may improve its use as a paleoecological tool.</p> <p>Rationale for the study:</p> <p>Dinoflagellate cysts and pollen are two of the most widely used microfossils in paleoecology. Due to their physicochemical characteristics, these palynomorphs can be preserved in sediments for hundreds of thousands of years, and their sedimentary records provide valuable information about past environmental changes. However, sediment processing methods used by palynologists (palynological extraction) generally includes aggressive chemical treatments that could damage some organic-walled cysts and alter the sedimentary record. The reproducibility of extracted cysts with and without acid treatments has not yet been tested to date.</p> <p>D/P (dinoflagellate cysts to pollen) ratio is a useful paleoecological index to assess the degree of marine/terrestrial influence in sedimentary records, but its interpretation can be biased by transport processes and preservation issues. New data will serve as supporting evidence for the interpretation of past D/P signals in sediment cores and the reconstruction of historical environmental changes.</p> <p>Working plan:</p> <p>Sediment samples of different grain-sizes will be processed by standard palynological methods (sieving + HCl and HF treatments) to study dinoflagellate cysts. Samples have already been collected off Figueira da Foz (NW Portugal).</p> <p>The student will analyse (qualitatively and quantitatively) the dinoflagellate cyst records using a light microscope. Microphotographs will be taken and cyst diversity and absolute and relative abundances will be calculated. Cyst records will be compared by statistical methods with cyst assemblages previously extracted from the same samples by using conventional methods in phycology that did not include strong acids. Furthermore, this</p>

	<p>study will include the quantification of total pollen grains to assess the utility of the ratio of dinoflagellate cysts to pollen (D/P) as a (paleo)environmental indicator. D/P distribution will be analysed in relation to different environmental gradients (such as water depth).</p> <p>The student will participate in a multidisciplinary project and acquire skills in marine botany, palynology and sedimentology.</p>
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