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The Results of GES Assessment for IMAP Common Indicator 17 in the Western Mediterranean Sea Sub-region by Applying the NEAT GES Assessment Methodology Harmonized with the CHASE+ Environmental Assessment Methodology

UNEP/MAP
Athens, 2023

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List of Abbreviations / Acronyms

ADR	Adriatic Sea Sub-region
BAC	Background Assessment Concentration
BC	Background Concentration
BDL	Below Detection Limit
CAS	Central Adriatic Sea
CHASE+	Chemical Status Assessment Tool
CI	Common Indicator
COP	Conference of the Parties
CORMON	Correspondence Group on Monitoring
CPs	Contracting Parties
CR	Contamination Ration
CS	Contamination Score
DL	Detection Limit
EMODNET	European Marine Observation and Data Network
EIONET	European Environment Information and Observation Network
EO	Ecological Objective
ESRI	Environmental Systems Research Institute
EU	European Union
GES	Good Environmental Status
nonGES	not Good Environmental Status
IMAP	Integrated Monitoring and Assessment Programme of the Mediterranean Sea and Coast and Related Assessment Criteria
MAP	Mediterranean Action Plan
MedEAC	Mediterranean Environmental Assessment Concertation
MED POL	Programme for the Assessment and Control of Marine Pollution in the Mediterranean Sea
MED QSR	Mediterranean Quality Status Report
MSFD	Marine Strategy Framework Directive
MRU	Marine Reporting Unit
MSs	Member States
NAS	North Adriatic Sea
NEAT	Nested Environmental Assessment Tool
SAS	South Adriatic Sea
SAU	Spatial Assessment Unit

1. Introduction

1. In the course of the implementation of the recommendations of the Meeting of CorMon on Pollution Monitoring (Teleconference, 26-27 April 2021) and the Meeting of the MEDPOL Focal Points (Resumed Session, 9 July 2021), related to the adjustment of the Meeting document on Integration and Aggregation Rules for Monitoring and Assessment[1], the Secretariat started a testing process of the proposed methodology in the Adriatic Sea Sub-region. The results of GES NEAT assessment for the Adriatic Sea Subregion were approved by the Meeting of CorMon on Pollution Monitoring (Teleconference, 17 and 3 May 2022). Accordingly, the Meeting adopted UNEP/MAP WG 533/10, Appendix III. The scope of the current document is to show the outcome of the testing of the proposed methodology for IMAP CI 17 in another sub-region namely the Western Mediterranean Sea (WMS), as well as to compare the results generated by NEAT GES Assessment in the Adriatic Sea Sub-region and the Western Mediterranean Sea Sub-region

2. The harmonized application of the nested approach, including within the application of the NEAT tool, requires defining the Integration Rules for Assessments. Therefore, this document applies the integration and aggregation rules as provided in UNEP/MED WG.509/ Inf.10/Rev.2[2]. 'Rules of Integration of Assessments'; '*4.2 Rules for integration of assessments within the nested approach'* [3]and Table 5 therein, that underlie meaningful assessments on appropriate scales of assessment.

3. As it is indicated in several UNEP/MAP documents (UNEP/MAP WG 463/8; 427/Inf3; 509/Inf.10/Rev.2), the NEAT approach ensures that a balance is achieved between a too broad scale, that can mask significant areas of impact in certain parts of a region or subregion, and a very fine scale that could lead to very complicated assessment processes. To this aim, the two types of scales (i.e. scales of monitoring and scales of assessment) are interrelated; however, a clear description of them is needed for a better comprehension of this interrelationship. The scales or units of monitoring refer to the physical spatiotemporal space where the observations are made (or samples taken) i.e. the points in time and space which are monitored. Monitoring scales are usually defined upon significance of the environmental parameters that are monitored, the expected variability and the types of pressures posed on a particular area/habitat. The parameters monitored within a specific monitoring unit may reflect the environmental conditions/impacts/extent of impacts of the monitoring unit itself or the environmental conditions/ impacts/ extent of impacts of a larger unit.

4. The first element that needs to be considered for the implementation of the nested approach is the definition of the areas of assessment within the Western Mediterranean Sea based on the areas of monitoring. This can be defined as indicated in IMAP by applying relevant criteria, e.g. representativeness/importance of the areas of monitoring for establishing areas of assessment; presence of impacts of pressures in monitoring areas; sufficiency of quality assured data for establishing the areas of assessment covering as many as possible IMAP Common Indicators to the extent possible, and ensuring that adequate consideration is given to the risk based principle (both in pristine areas and areas under pressure). The existing monitoring and assessment areas defined by the concerned CPs were used, in case they were compatible with IMAP requirements; in case of the Contracting Parties that are EU MS, if

[1] For the purpose of building the methodology for aggregation and integration rules contained in this document only the scientific elements have been considered from any reference included in this document. Legal considerations are out of the scope of the present document, which serves exclusively scientific purposes.

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inconsistency appeared between IMAP requirements and MSFD MRUs, the necessary adjustments were undertaken.

5. The harmonization of the scales approach among the concerned Contracting Parties (CPs) is the starting point for the integration process for IMAP CI 17 i.e., to scale up the marine assessment areas from the national to sub-regional and regional scales as required under IMAP. In order to support harmonization, there is a need to apply Integration Rules for Monitoring Activities, as defined in UNEP/MED WG.509/Inf.10/Rev.2, which refer to a set of guidelines that should be followed when implementing monitoring programmes. These rules are needed to produce coherent data sets that will facilitate the subsequent process of providing nested GES assessments.

6. For the purposes of the present work data on contaminants produced within implementation of the national monitoring programmes of the CPs and reported to the IMAP Info System or submitted to UNEP/MAP have been gathered. Information on the availability of data is given in chapter 3 below.

7. IMAP SAUs have been defined for the whole WMS, however, based on findings regarding data availability it was possible to obtain reliable assessment results by using the NEAT tool only for the coastal assessment zones of the Alboran and the Tyrrhenian sub-divisions (ALBS, TYRS). For the central part of the western Mediterranean Sea (CWMS), further lack of data for ~47% of the coastal IMAP SAUs surface area hindered the application of a hierarchical nested scheme of SAUs for this area. A simplified application of the NEAT tool was chosen only for the IMAP SAUs for which data exist without any spatial integration on the CWMS level, and in order to obtain an assessment on the finest level of subSAUS, comparable to the subSAUs of the ALBS and TYRS.

8. Additionally, the use of the CHASE+ tool for individual assessment of the SAUs without any spatial integration on a higher level was investigated and a comparison of the results obtained by the two tools was made possible (chapter 9 below).

2. From monitoring areas to IMAP Spatial Assessment Units (IMAP SAUs) in the Western Mediterranean Sea in line with the nested approach

9. In the absence of declared areas of monitoring by all the concerned CPs, following the rationale of the IMAP national monitoring programmes and distribution of the monitoring stations, as well as the methodology described in UNEP/MED WG.509/Inf.10/Rev.2, the two zones of areas of monitoring are defined for the purposes of the present work: i) the coastal zone and ii) the offshore zone.

10. Detailed explanation on the data sources used and methodology followed for setting of the two zones (coastal and offshore) along with SAUs is provided for the purpose of the present work, as elaborated in UNEP/MED WG.556/Inf.15 in the Western Mediterranean. In summary, GIS layers collected from different sources (International Hydrographic Organization - IHO, European Environment Information and Observation Network - EIONET, VLIZ Maritime Boundaries Geodatabase; EEA Marine Regions portal) were used for the present work for Italy, France, Spain, Morocco, Algeria, Tunisia.

11. Following the rules of integration of assessments within the nested approach, for the assessment of EO9 Common Indicators, the coastal monitoring zone is equal to the respective assessment zone as defined for the purposes of the present work (UNEP/MED WG.556/Inf.15). For the offshore zone, monitoring areas may be representative of broader assessment areas beyond territorial waters and in these cases the offshore monitoring areas are not necessarily equal to the offshore assessment areas. The stations positioned within the offshore zone are considered representative of a wider offshore area, as officially declared by the countries.

12. For IMAP CI 17, integration of assessments up to the subdivision level is considered meaningful. Therefore, three main subdivisions of the Western Mediterranean Sea, have been considered: The Alboran Sea (ALBS); The Tyrrhenian Sea (TYRS) and the Central part of the Western Mediterranean Sea (CWMS),

following the specific geomorphological features based on the IHO data[4]. The coverage of the 3 sub-divisions is shown in Figure 1.

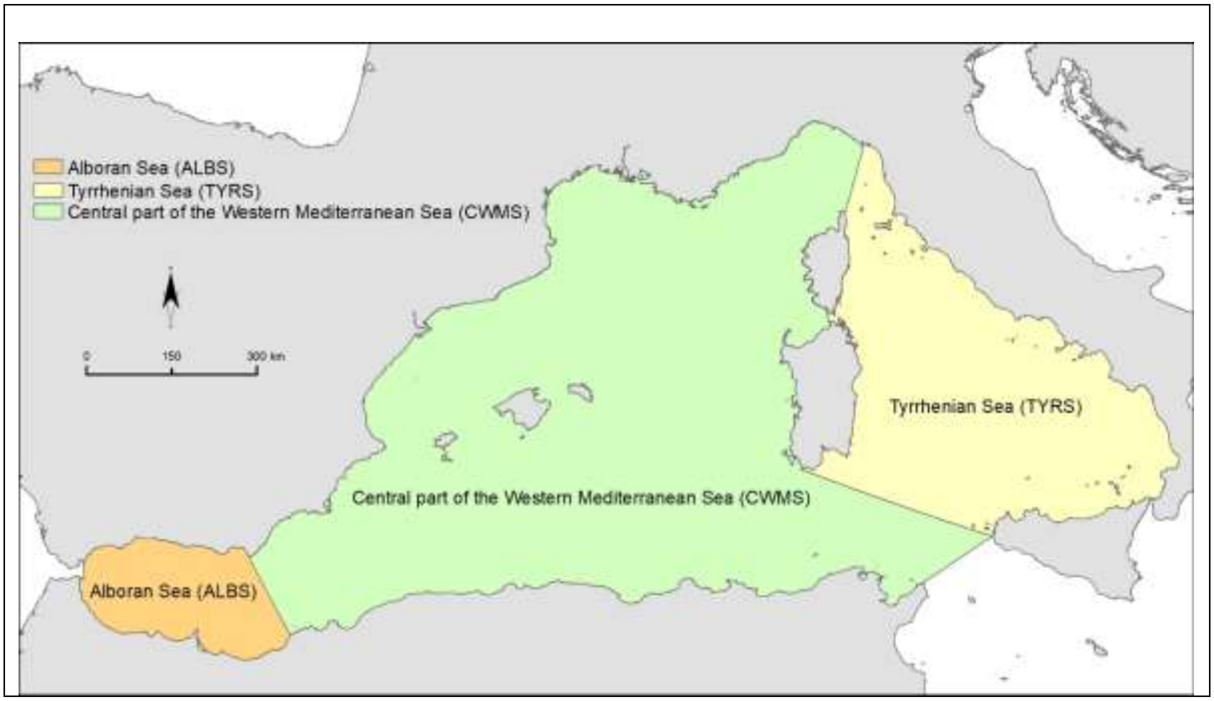

Figure 1. The 3 subdivisions of the Western Mediterranean Sub-Region defined, based on IHO data.

13. The 4 working steps explained here-below were followed to accomplish the objectives of the current work.

14. **Step 1 Defining coastal and offshore waters**. Following the approach already applied for the Adriatic Sea subregion (UNEP/MED WG. 533/10, Appendix III; UNEP/MED WG. 533/Inf.4/Rev.1 and UNEP/MED 533/Inf.5/Rev.1) and in line with the IMAP methodology, the two zones were defined for the purposes of the present work in the Western Mediterranean Sea subregion as follows: 1) the coastal waters: including all indentations (inlets, bays, gulfs) from the straight baseline landward, as well as the 1 nautical mile zone from the straight baseline seaward (in different literature sources, this 1 nautical mile zone is also called the buffer zone); 2) the offshore waters: including the area beyond the 1 nautical mile seaward to the most distant monitoring station defined in the national IMAP monitoring programmes.

15. **Step 2 "Recognizing scope of IMAP areas of monitoring"**: In the absence of monitoring areas reported by the CPs, the distribution of monitoring stations was investigated by considering the coordinates of their positions provided by the CPs in the IMAP Info System. IMAP monitoring stations (i.e., hotspot, coastal, offshore stations) are grouped under the two types of waters as defined under step 1, i.e. the coastal waters up to 1nm and the offshore waters, following the IMAP nesting assessment methodology as described in UNEP/MED WG.509/Inf.10/Rev2. This was followed by the preparation of relevant GIS layers/maps containing positions of IMAP monitoring stations in the two zones; this included recognition of the monitoring areas based on distribution of the monitoring stations in the absence of the areas of monitoring (i.e., monitoring transects) defined by the CPs. As explained above, spatial coverage of the

[4] Limits of oceans and seas (1953). 3rd edition. IHO Special Publication, 23. International Hydrographic Organization (IHO): Monaco. 38 pp.

coastal waters and the offshore waters is based on available data as reported to the IMAP Info System, submitted to UNEP/MAP and defined in national IMAP programmes.

16. **Step 3 "Setting IMAP area of assessment"**: This step included defining the IMAP areas of assessment (IMAP SAUs) based on the anticipated areas of monitoring. To recognize the areas of monitoring, the criteria already set for that purpose in UNEP/MED WG.509/Inf.10/Rev2 were applied to the largest possible extent. Namely, the following criteria were applied to recognize the scope of the areas of monitoring: i) spatial distribution of monitoring stations was compared with the sufficiency of quality-assured data as collated for NEAT application in order to ensure a due consideration is given to the risk-based principle; ii) representativeness/importance of the areas of monitoring for setting of the areas/zones of assessment. In addition, the interrelation of the MRUs for the CPs that are EU MSs with the IMAP monitoring areas was investigated and whether these fit for their use as IMAP SAUs, following the criteria described previously. Final results are GIS layers/maps of IMAP SAUs prepared per country from the GIS layers providing the positions of monitoring stations in recognized areas of monitoring. This was followed with equalization of the areas of monitoring with the IMAP SAUs for Algeria, Morocco, Tunisia while for Spain, France, Italy the IMAP SAUs definition was based on the MSFD MRUs. Details per each country separately are presented in UNEP/MED WG.556/Inf.15.

17. **Step 4 "Nesting of the areas of assessment within the application of NEAT tool"**: For this step of nesting, the areas of assessment were first classified under the 3 subdivisions of the Western Mediterranean Sea (i.e. ALBS, CWMS, TYRS). A 4 levels nesting approach, as applied in the Adriatic Sea Sub-region (UNEP/MEP WG. 533/Inf.4/Rev.1; UNEP/MED WG. 556/Inf.16) was also set for the Western Mediterranean Sub-region (as shown Figure 2a), where the 1st level is the finest, providing nesting of all the finest areas of assessment i.e. the national IMAP SAUs & subSAUs within the two key IMAP assessment zones per country i.e. coastal and offshore zones and the 4th level is the highest.

18.

19. However, for the scope of CI17 monitoring in the Western Mediterranean Sea, the CPs have set 91,5% of the monitoring stations in the coastal zone and no data on contaminants were reported for the period 2017-2022 for any of the offshore stations. In addition, only 53% of the coastal IMAP SAUs & sub SAUs for the CWMS reported data (by France and Spain) which makes any spatial integrated assessment using the NEAT tool unreliable for this subdivision (see Chapter 3 on Data availability). For these reasons, it was not considered meaningful to proceed with a 4 levels' nesting scheme in all 3 sub-divisions as shown in Fig.2a. Therefore, only the coastal SAUs were considered and nested under a 2 levels` hierarchical scheme and the integration of the assessment results was conducted for the coastal zone of the Alboran (ALBS) and Tyrrhenian Seas (TYRS) sub-divisions as follows:

- 1st level provided nesting of all national IMAP subSAUs within the coastal IMAP assessment zone per country;
- 2nd level provided nesting of the national coastal IMAP assessment zones on the subdivision level i.e., i) ALBS coastal; ii) TYRS coastal.

Similarly, the integration of the assessment was conducted in 2 levels as follows:

- 1st level: Detailed assessment results provided for all national coastal subSAUs and SAUs (ALBS, TYRS, some IMAP subSAUs of CWMS)
- 2nd level: Integrated assessment results provided for the coastal zone: i) ALBS coastal; ii) TYRS coastal

The graphical depiction of this nesting scheme for the ALBs and TYRS is shown in Figure 2b. The description of the IMAP SAUs and details on specificities for each country are provided in UNEP/MED UNEP/MED WG.556/Inf.15.

Given the integrated assessment up to the 2nd level using the NEAT tool was unreliable for CWMS, the assessment of this subdivision was undertaken just for the 1st level and only for those IMAP subSAUs for which data exist.

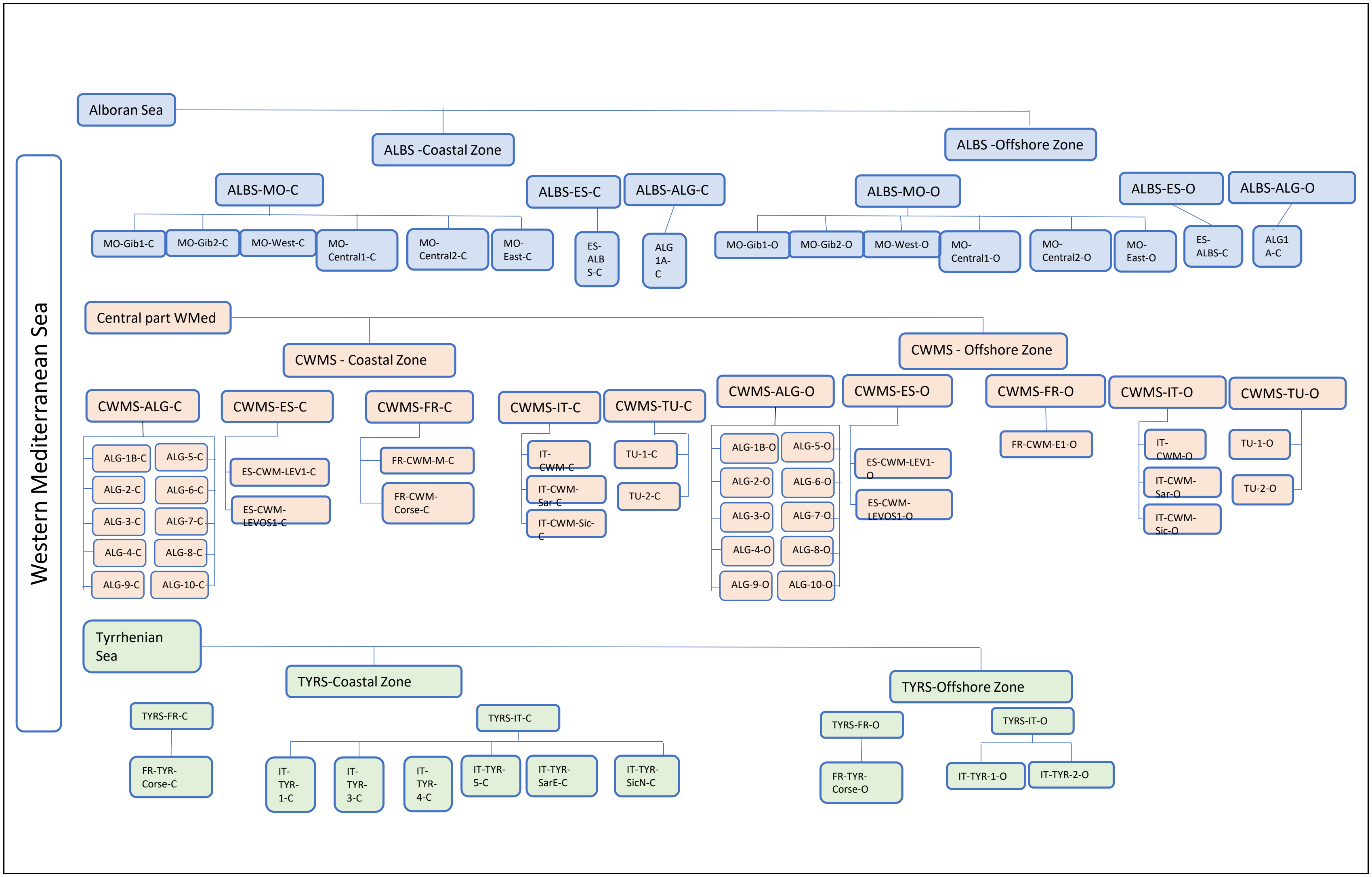

Figure 2 (a): The nesting scheme of the SAUs defined for the Western Mediterranean Sea Sub-region based on the available information.

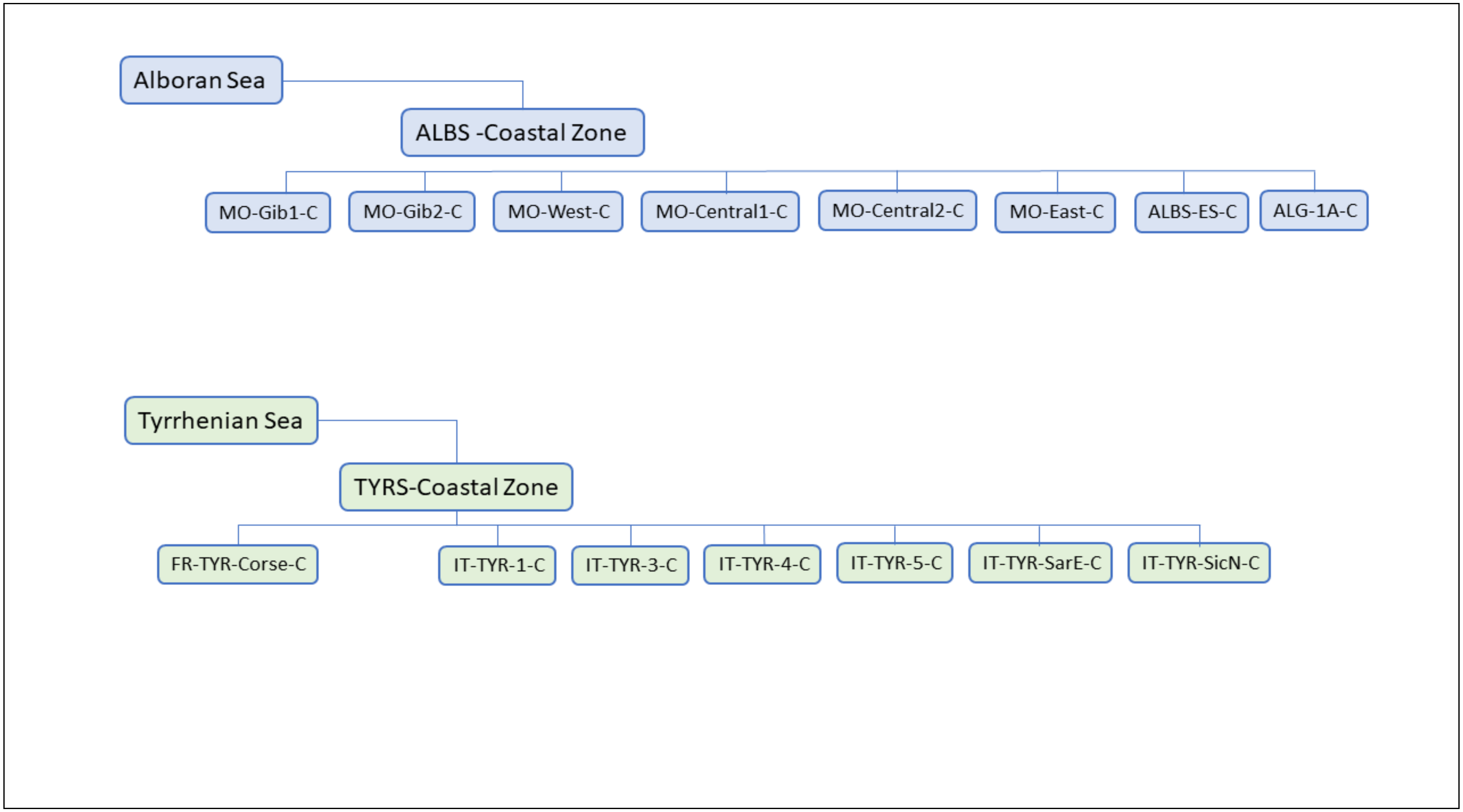

Figure 2 (b): The 2 level nesting scheme for the Alboran and Tyrrhenian Seas Sub-divisions used for the present assessment of CI17 by applying the NEAT tool.

20. The following maps show the nested approach applied on the finest areas of assessment, i.e. IMAP SAUs & subSAUs per sub-divisions of the Western Mediterranean Sea Sub-region. For each sub-division, the IMAP SAUs of every country have been selected and shown in the Figures 3, 4, 5, while Table 1 in Annex II provides consolidated information on the maps to support their further use.

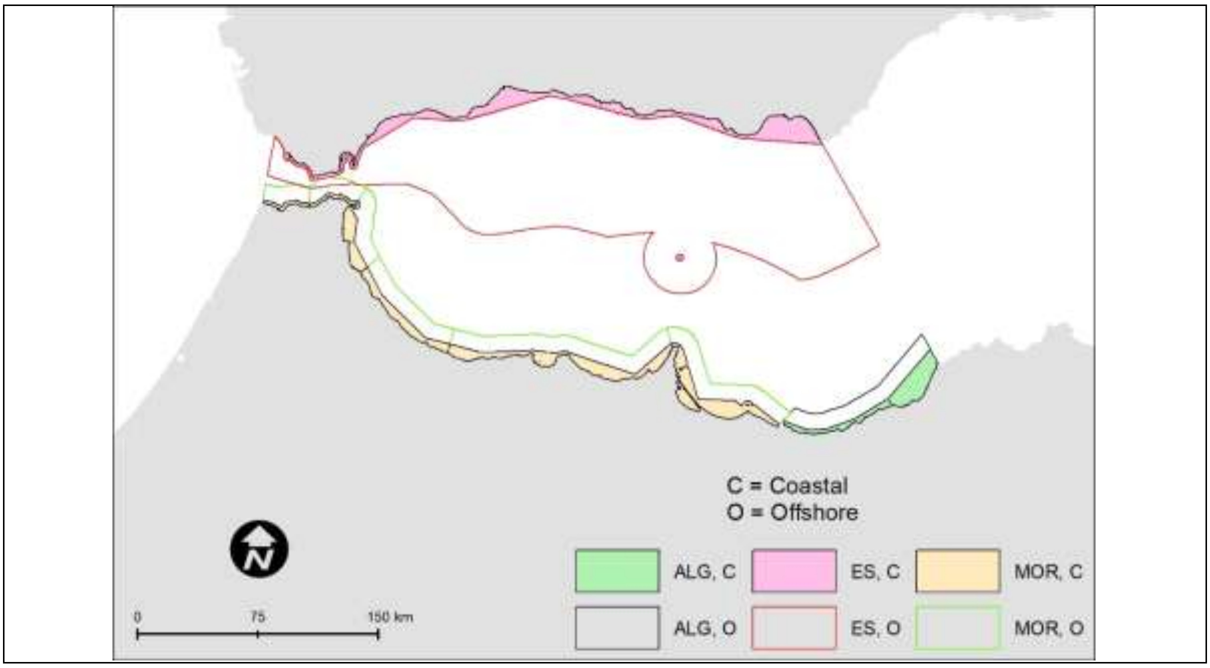

Figure 3. The nesting approach applied on the IMAP SAUs in the Alboran Sea defined for testing of NEAT application in the Western Mediterranean Sea Sub-region.

21. In the Central part of the Western Mediterranean Sea (CWMS) (Figure 4), Italy has 3 offshore SAU and 2 coastal SAUs. France has 2 coastal and 1 offshore SAUs, Spain has 2coastal and 2 offshore SAUs. Algeria has 10 coastal and 10 offshore SAUs and Tunisia 2 coastal and 2 offshore SAUs.

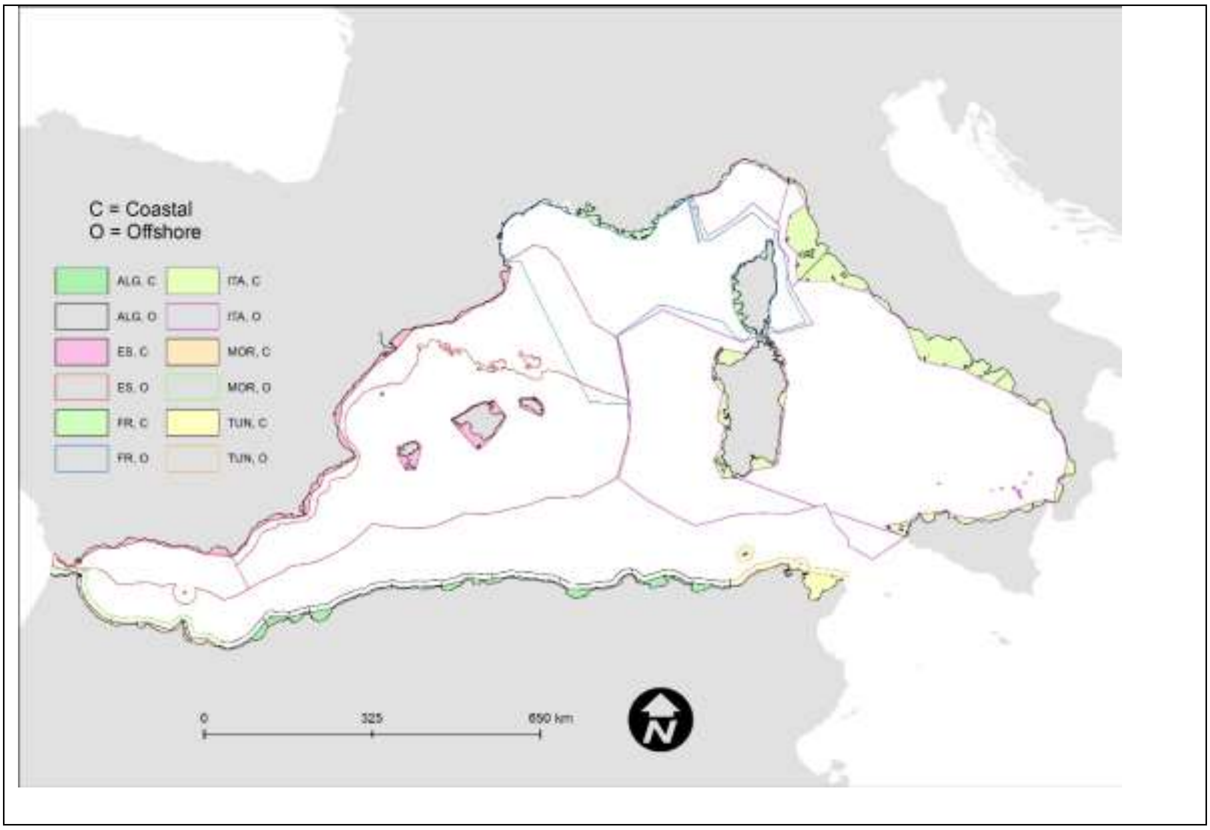

Figure 4. The nesting approach applied on the IMAP SAUs in the Central part of the Western Mediterranean Sea defined within testing of NEAT application in the Western Mediterranean Sea Sub-region.

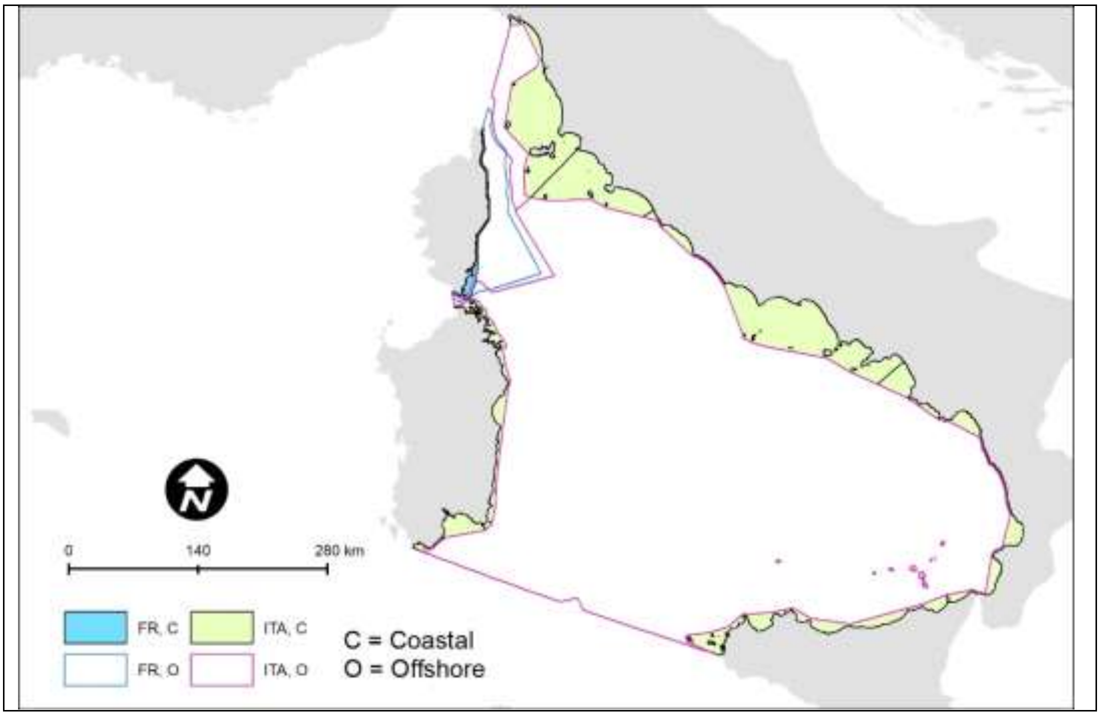

Figure 5. The nesting approach applied on the SAUs in the Tyrrhenian Sea defined within testing of NEAT in the Western Mediterranean Sea.

22. In Tyrrhenian Sea (TYRS) (Figure 5), France has 1 coastal and 1 offshore SAU in Corsica. Italy has 6 coastal and 2 offshore SAUs.

3. Data availability

23. Data on contaminants (Cd, Hg, Pb, PAHs and PCBs) have been collected from the following Contracting Parties bordering the Western Mediterranean Sea for the years 2017 to 2022: France, Italy, Morocco, Spain. In addition, some data for sediments acquired in 2016 and not used in previous assessment have been included in the present work, in order to increase the amount of data, i.e. reliability of the assessment findings. Details on the temporal and spatial availability of data per IMAP SAUs, per environmental matrix (sediments, biota) and per contaminants group (trace metals (TM), PAHs, PCBs) are provided in Tables 2, 3 and 5 in Annex II. The biota matrix is monitored for mussels *Mytilus galloprovincialis* in all cases. The spatiotemporal coverage varies largely among the various IMAP SAUs. Data for the Alboran Sea were reported for 5 out of 8 coastal SAUs, and no data were reported for any offshore SAUs. Data reported by Morocco refer to Cd, Hg, Pb in sediments and biota, while data reported by Spain refer to Cd, Hg, Pb and PCB on biota only. Algeria has not reported any data for the period 2017-2022. Data for the Central part of the Western Mediterranean Sea (CWMS) have been reported only by France, Spain and Italy. France and Spain reported data mostly for biota and only for stations situated in the coastal zone, i.e. France on Cd, Hg, Pb, PAHs and PCBs, and Spain on Cd, Hg, Pb and PCBs. Data for sediments were reported by France (Cd, Hg, Pb) and Spain (PAHs, PCBs, Cd, Hg, Pb) for 2016 only, mostly in coastal waters. Italy in CWMS reports data for sediments only (, Cd, Hg, Pb, PAHs, PCBs). In the Tyrrhenian Sea (TYRS) for 6 out 7 coastal SAUs data were reported on contaminants. These are data reported by Italy for sediments on Cd, Hg, Pb, PAHs and PCBs, and data reported by France for biota on Cd, Hg, Pb, PAHs and PCBs and for sediments on Cd, Hg, Pb. Data for biota reported by Italy are very limited, confined to only 2 coastal SAUs and only for Hg, hexachlorobenzene and fluoranthene, hence they were not included in the assessment. Overall, for all sub-divisions of the WMS no data were reported for offshore IMAP SAUs, with the exception of one station sampled once for metals in biota in ES-CWM-LEV1-O SAU and 9 stations sampled for PAHs, PCBs, Cd, Hg, Pb in ES-CWM-LEV1-O SAU and one station in ES-CWM-LEVOS-O SAU, all during 2016.

24. As explained above in chapter 2, a set of criteria was applied to propose the scope of the areas of monitoring. To better understand differences in the spatial coverage of the SAUs the percentage (%) of surface area of the IMAP SAUs with monitoring data reported to the total area of the coastal assessment zone is calculated and shown in Table 1 in Annex II. Further to this criterion, the spatial distribution of monitoring stations and its comparison with the sufficiency of quality-assured data as collated for NEAT application were analyzed as provided in Tables 2 and 3 of Annex II. Table 2 provides the spatial coverage of monitoring data collected per each SAU in the Western Mediterranean Sea and per environmental matrix (sediments, biota) and per contaminant group (trace metals (TM), PAHs, PCBs) separately. Table 3 provides the temporal coverage of monitoring data used again per each SAU in the Western Mediterranean Sea and per environmental matrix (sediments, biota) and per contaminant group (trace metals (TM), PAHs, PCBs) separately. Table 5 in Annex II lists in detail all stations included in the assessment and their respective IMAP SAUs.

25. For the scope of CI17 monitoring in the Western Mediterranean Sea, the CPs have set 91.5% of the monitoring stations in the coastal zone and no data on contaminants were reported for the period 2017-2022 for any of the offshore stations. Only some data on sediments in Spanish offshore waters were reported for 2016 corresponding to 4% of total number of records. Despite data were reported for 67% of the coastal IMAP SAUs in the CWMS by France, Spain and Italy, whereby there is a lack of data for whole southern coasts of Algeria and Tunisia. Hence, the integrated assessment using the NEAT tool for this subdivision would be unreliable (Table 1 Annex II). In addition, based on the highest spatiotemporal coverage of data per matrix and per contaminant, reliable assessments using the NEAT tool can be made for the coastal zone of ALBS subdivision for metals in sediments and biota and for the coastal zone of TYRS subdivision for metals, PAHs and PCBs in sediments. The coastal part of the subdivision CWMS corresponding to French, Spanish and Italian monitoring areas was assessed just for the 1st level using the NEAT tool without any further spatial integration.

4. Setting the assessment criteria for the harmonized application of NEAT and CHASE+ assessment methodologies

26. Upgrading of the baselines and threshold values for IMAP CI 17 in the Mediterranean Sea is an ongoing process. Detailed information on their present status, as approved by the Meeting of CorMon on Pollution Monitoring (27 and 30 May 2022) for their application within the preparation of the 2023 MED QSR, is provided in Meeting documents UNEP/MED WG.533/10, Appendix I and UNEP/MED WG. 533/Inf.3/Rev.1. The present assessment analysis applying the NEAT tool was conducted for each subdivision using the assessment criteria for the GES-nonGES threshold, based on BAC values as presented in UNEP/MED WG. 533/10, Appendix I (Table 1) and following the recommendations related to the Tyrrhenian Sea as discussed during the Meeting of the SIDA funded Project "Toward integration ecosystem assessment and ecosystems management approach in the Adriatic Sea Sub-region" (10 November 2022, Tunisia).

Table 1: The BAC values calculated for the Western Mediterranean Sea (UNEP/MED WG. WG. 533/10, Appendix I) and used for the present assessment

	WMED BAC (μg/kg)	
	Sediments	**Biota**
Cd	210	1545
Hg	135	120
Pb	24000	1890
$^{*}\Sigma_{16}$ PAHs	240	8.4
$^{+}\Sigma_{7}$ PCBs	1.6	28.6

27. The final marine environment quality status assessment regarding CI17 in the Mediterranean Sea provides in a consolidated manner the individual assessments for each of the sub-regions and/or sub-divisions. Therefore, all individual assessments should be harmonized to the extent possible in order to ensure the compatibility of the assessments.

28. A first step to achieve harmonized assessments is the use of compatible GES/nGES threshold values for all sub-regions, sub-divisions. The MedEAC threshold was originally used for the assessment of the Adriatic Sea Sub-region, following the IG.22/7 and IG.23/6. Within initial assessment of the Levantine Sea (UNEP/MED WG.533/10, Appendix IV), it was found that this threshold does not fit the purpose of a meaningful assessment, and it was suggested to use GES/nGES thresholds based on the BAC values of the area (xBAC). BAC values were chosen as thresholds given that the high values of the EACs in combination with the lack of the spatial assessment units nesting would result in non-reliable assessment findings. For TM, the threshold was set as 1.5 BACs while for organic contaminants, with less available data than TM, the threshold was set as 2 BACs. These coefficients were also selected further to the experience of the EEA (2019) regarding application of the CHASE+ methodology in the European Seas. In this way a finer classification of areas with concentrations >BAC is achieved, in line with the precautionary principle. Recognizing subregional differences in the background concentrations, the (xBAC) approach, is based on the relative distance of contaminants concentrations from the sub regional BAC values, in contrast to the MedEAC thresholds which is based on toxicological effects on biota species in specific area from other areas. This decision aligns the present work with the GES target set for CI 17 indicating that GES cconcentrations of specific contaminants need to be held below Environmental Assessment Criteria (EACs) or below reference concentrations. Further comparison of the NEAT and CHASE+ assessment methodologies undertaken

in the WMS (UNEP/MED WG.556/Inf.14) by applying this approach showed that using the (xBAC) as GES/nGES thresholds clearly provides finer assessment classifications.

29. For some subregions of the Mediterranean Sea, it was possible to define IMAP spatial assessment units (IMAP SAUs) based on the distribution of monitoring stations (e.g. Adriatic Sea), while for others with insufficient data reported for GES assessment this was not possible (e.g. Levantine Sea). A quality status assessment for all areas is desirable either on a SAU level or on individual monitoring stations level. The NEAT tool has the ability to provide assessments in areas where SAUs are defined (e.g. Adriatic Sea; Western Mediterranean Sea). For areas where this is not possible, the CHASE+ tool has been tested for assessment at the stations level (UNEP/MED WG.533/10, Appendix IV; UNEP/MED WG.556/Inf.8; UNEP/MED WG.556/Inf.9; UNEP/MED WG.556/Inf.10). The above explained comparisons of the two methodologies i.e. NEAT and CHASE+ were undertaken to ensure compatibility of the quality status assessment results regarding CI17 for all subregions/subdivisions of the Mediterranean Sea.

30. Further to findings of the comparison of the performance of the NEAT and CHASE+ assessment methodologies in the sub-regions of the Mediterranean Sea, using available data as reported by the CPs, it was concluded that the two methodologies were compatible only on the very basic assessment per contaminant, per SAU. Still on this level some discrepancies appeared for the nGES moderate and poor categories. When aggregation of all contaminants data was attempted to obtain the overall pollution (CI17) assessment, the two methodologies behaved differently. These discrepancies are related to different calculation methods for the aggregation of contaminants as well as differences in setting the moderate/poor, poor/bad boundary limits.

31. To overcome the above-described discrepancies and to ensure compatible assessments for all subregions/sub-divisions of the Mediterranean Sea on the SAU and on station levels for the purposes of the preparation of 2023 MED QSR, the approach described here-below is followed. The approach is based on the application of a tailor-made assessment based on the general rationale of the CHASE+ tool while ensuring compatibility with the NEAT tool:

i) For sub-regions where the CHASE+ assessment methodology is applicable: Calculation of contamination ratios (CRs) based on the (xBAC) thresholds;

ii) For sub-regions where the CHASE+ assessment methodology is applicable: Calculate the CS for the overall CI17 aggregated assessment per station as a simple average of CRs and not as used by the EEA, where CS is calculated as the sum of CR divided by the square root of the number of CRs in the sum;

iii) For all Sub-regions and for both NEAT and CHASE+ assessment methodologies: The GES/non-GES boundaries are based on the BAC values. The BAC values (xBAC) multiplied by 1.5 for Cd, Hg, Pb and by 2 for PAHs and PCBs were approved by the Meeting of CorMon Pollution (27 and 30 May 2022). This approach was chosen because it is based on the Mediterranean sub-regional background concentrations of contaminants and because it is more stringent than the Med_EAC approach. In many cases the Med_EAC thresholds are higher than the maximum value recorded for a particular contaminant, resulting in a very lenient classification of the SAUs/stations. In this way biased assessments in different Mediterranean sub-regions are avoided.

iv) For all subregions: Align the moderate/poor and the poor/bad boundary limits/thresholds between the two assessment methodologies. For the moderate/poor the use of 2(xBAC) value is proposed and for the poor/bad the 5(xBAC) value. In this way, a fine classification in line with the precautionary principle is provided. The NEAT tool is flexible and accepts either calculated thresholds values by the tool itself (based on the GES/nGES and the maximum concentration of contaminants), or threshold values predefined by the user. In the present assessment all thresholds are user defined. In the CHASE+ tool the CR or CS ratios for the moderate/poor and poor/bad are set at 2x and 5x times the GES/nGES threshold, instead of 5x and 10x that are suggested by the tool. The updating of the thresholds is shown in Table 2 below.

Table 2. Updated assessment classification boundary limits/thresholds for a harmonized application of NEAT and CHASE+ tools in the Mediterannean Sea sub-regions.

	GES		non-GEs			
IMAP – traffic light approach	Good	Moderate	Bad			
NEAT tool	High	Good	Moderate	Poor	Bad	
	0< meas. conc. ≤ BAC	BAC<meas. conc. ≤GES/nGES threshold	GES/nGES<meas. conc. ≤ moderate/poor threshold	moderate/poor threshold <meas. conc. ≤ max. conc.		
Boundary limits and NEAT scores	**0** 1 < score ≤0.8	0.8<score≤ 0.6	0.6<score ≤ 0.4	0.4< score ≤0.2	Score<0.2	**Max. conc.**
Thresholds	**BAC**	**(xBAC)**	**2 (xBAC)**	**5 (xBAC)**		
CHASE+ tool	High	Good	Moderate	Poor	Bad	
Thresholds	**1/2(xBAC)**	**(xBAC)**	**2(xBAC)**	**5(xBAC)**		
CHASE+ Scores	0 <CR,CS ≤0.5	0.5<CR,CS≤ 1	1<CR,CS ≤ 2	2< CR,CS ≤5	CR,CS> 5	

5. Application of the NEAT assessment methodology in the Western Mediterranean Sub-region

32. Following the methodology described in UNEP/MED WG.509/Inf.10/Rev2, the NEAT tool is used for the present assessment analysis. The use of NEAT tool for IMAP assessment of the GES status is compatible with the traffic light methodology but further produces two more status classes under the non-GES status. In total five status classes are set (high, good, moderate, poor, bad). The tool requires two boundary limit values for the best and worse conditions (these are not threshold values but the minimum and maximum values that determine the scale of the assessment) and one threshold value for the GES – nonGEs status. These are mandatory by the tool which then produces five status classes linearly, depending on the distance of the concentrations from the two boundary limit values and the GES-nonGES threshold. However, the user may also assign threshold values for all other status classes as appropriate.

33. For the present analysis, the two boundary limit values are: i) zero contaminant concentration for the best conditions; ii) the maximum concentration of contaminants used for the present analysis for the worse conditions. For the GES-nonGES threshold, the BAC values (xBAC) is multiplied by 1.5 for Cd, Hg, Pb and by 2 for PAHs and PCBs as used for environmental assessment of IMAP CI 17 in the Levantine Sea Basin (UNEP/MED WG. 533/10, Appendix IV). Three more threshold values were used in the present analysis as explained previously: i) The 0.5(xBAC) value to discriminate between the High -Good status, and ii) a value equal to 2 times the GES/nGES threshold 2(xBAC) to discriminate between the Moderate – Poor status. iii) the Poor-Bad threshold calculated as 5(xBAC).

34. Based on the above elaboration, the following five status classes are produced: i) the high status range referring to 0 (best conditions) < measured concentrations ≤ 0.5(xBAC); ii) the good status range referring to the 0.5(xBAC) < measured concentrations ≤ xBAC; iii) the moderate status range referring to the xBAC < measured concentrations ≤ 2(xBAC); iv) the poor status referring to 2(xBAC)< measured concentrations ≤ 5(xBAC; v) the bad status class 5(xBAC) < measured concentration ≤ Max. conc. (worse conditions), with bad status having the highest distance from the GES/nGES threshold. Compared to the traffic light methodology applied in 2017 MED QSR, NEAT class named 'high' is considered as 'good' *sensu* the traffic light i.e. in GES; NEAT class named 'good' is considered as 'moderate' *sensu* the traffic light i.e. in GES; NEAT classes named 'moderate' and 'poor' are considered as 'Bad' *sensu* traffic light i.e. not in GES (Table 2). The boundary limits/threshold values

used for all the groups of contaminants in the two environmental compartments (sediments and biota) provided at the level of the finest areas of assessment are given in Table 3.

35. The assessment was conducted in the ALBS for Cd, Hg, Pb in sediments and biota and in the TYRS for Cd, Hg, Pb, Σ_{16}PAHs and Σ_7PCBs in sediments. The simplified application of the NEAT tool (1st level nesting) was applied for the IMAP SAUs of the CWMS for which data on contaminants exist (Cd, Hg, Pb, Σ_{16}PAHs and Σ_7PCBs in sediments and biota).

Table 3: Boundary limits of the assessment scale and class Threshold values used for the application of the NEAT tool for IMAP using xBAC as GES/nGES threshold.

	Low Boundary limit	**Threshold** High/Good	**Threshold** Good/Moderate	**Threshold** Moderate/Poor	**Threshold** Poor/Bad	**Upper Boundary Limit**
Sediments	**(µg/kg)**	**0.5(xBAC) (µg/kg)**	**xBAC (µg/kg)**	**2(xBAC) (µg/kg)**	**5(xBAC) (µg/kg)**	**Max. conc. (µg/kg)**
Cd	0	157	315	630	1575	1600
Hg	0	101	202	404	1013	1950
Pb	0	18000	36000	72000	180000	190000
*Σ_{16} PAHs	0	240	480	960	2400	30690
+Σ_7 PCBs	0	1.6	3.2	6.4	16	120
Biota (*M. galloprovincialis*)						
Cd	0	1159	2318	4635	11588	12000
Hg	0	90	180	*360*	900	1214
Pb	0	1417	2835	*5670*	14175	15000
*Σ_{16} PAHs	0	8.4	16.8	33.6	84	286
+Σ_7 PCBs	0	28.5	57	114	285	290

*sum of the individual BACs or xBACs values of the 16 PAH compounds
+ sum of the individual BACs or xBACs values of the 7 PCB compounds

36. For the application of the NEAT software, data on contaminants were grouped per parameters, ecosystem components (i.e. for the purpose of present NEAT application these are considered biota and sediment matrixes) and SAUs in the Western Mediterranean sub-divisions. Average concentrations (arithmetic means) and their respective standard errors were then calculated in the respective groups as follows:

Arithmetic mean concentration: $\bar{C} = \frac{\sum_{i=1}^{n} C_i}{n}$,

Standard Deviation: $SD = \sqrt{\frac{\sum_{i=1}^{n}(C_i - \bar{C})^2}{n-1}}$,

Standard Error : $SE = \frac{SD}{\sqrt{n}}$

where, $\bar{C}$ is the average (arithmetic mean) concentration for each SAU, C_i is the individual contaminant concentration measured in each station/date in the SAU, and n is the total number of concentration records for each SAU; SD is the sample standard deviation for a specific contaminant and SAU and SE is the standard error for a specific contaminant and SAU.

37. Several records on PAHs and PCBs individual compounds were reported as below detection limit values (DL) or equal to the limit of quantification (LOQ). In a separate technical paper, prepared by MEDPOL in consultations with OWG EO9, it was recommended to incorporate the calculations of the BDL values into the calculation of the BC and BAC and not to exclude them[5]. For the present application of NEAT, BDL were substituted by the BDL/2 value for data reported by Morocco for Hg in sediments. All data reported by Spain are above DL. In the Italian data, LOQ values were reported, and these were not uniform for the whole data set. LOQs for the same chemical parameter varied from 0.1 to 10 μg/kg. To compensate for the high variability in the LOQs, the LOQ/2 value was used only for those records with reported LOQs equal to 5 and 10 μg/kg. In Table 4, Annex II, the LOD, LOQ values are given in detail, as reported by the CPs in the data files. Furthermore, considering the list of substances the monitoring of which is mandatory according to IMAP[6], the sum of the 16 EPA compounds (Σ_{16}PAHs) and sum of the 7 PCBs compounds (Σ_7PCBs) were taken into account for the present assessment. In this way the assessment results show the cumulative impact by each of these two groups of contaminants, similarly to the CI17 assessment made for the Adriatic Sea subregions (UNEP/MED WG 533/10, Appendix III; UNEP/MED WG.556/Inf.6).

38. A data compilation per SAU, matrix and contaminant was prepared for all the Western Mediterranean data available and given below in Table 4.

[5] In a separate technical paper, prepared by MEDPOL in consultations with OWG on Contaminants, it was suggested to 'replace BDL values with a fraction of the reported value. The fraction could be 1 (BDL value), 0.5 (BDL/2), 0.7 (BDL/SQRT(2)), other' and not exclude BDL values from BC calculation. The decision to replace BDL with the reported value or a fraction of it should be based on the available data and expert evaluation. Italy, Spain and France supported the use of LOD/2 or LOQ/2 in the BCs calculation. Israel pointed out that the US- EPA suggests this only when less than 15% of the data is BDLs. Therefore, the calculation for the assessment criteria was performed with the reported value and not half of it (UNEP/MED WG.533/10, Appendix I & UNEP/MED WG. 533/Inf.3/Rev.1). This is because the wide range of BDL values for a specific contaminant in a specific matrix, depending on the country and it varies even within the country.

[6] According to IMAP i.e. IMAP Guidance Fact Sheet and Data Dictionaries for IMAP CI 17, monitoring of the sum of 7 PCB congeners: 28, 52,101,118,138,153 and 180 and sum of 16 US EPA PAHs is considered mandatory.

Table 4. Average values (AVE) and standard error (SE) per IMAP SAU for all groups of contaminants and matrices (Sediments and Biota) (n: the total number of records) in the three sub-divisions of the Western Mediterranean Sea (ALBS, CWMS, TYRS).

				Σ16PAH μg/kg	**Σ7PCB μg/kg**	**Cd μg/kg**	**Pb μg/kg**	**Hg μg/kg**	**Σ16PAH μg/kg**	**Σ7PCB μg/kg**	**Cd μg/kg**	**Pb μg/kg**	**Hg μg/kg**
				Sediments					**Biota (*M. galloprovincialis*)**				
ALBS coastal													
	ALBS-MO-C												
		MO-Gib-A-C											
		MO-Gib-B-C	AVE			358	19340	10					
			SE			*39*	*13248*	*0*					
			n			*4*	*4*	*4*					
		MO-East-C	AVE			287	41031	10			340	200	10.5
			SE			*14*	*12903*	*0*			54	56	0.29
			n			*10*	*10*	*10*			*4*	*3*	*3*
		MO-Central-A-C	AVE										
			SE										
		MO-Central-B-C	AVE			310	6835	10			536	1490	120
			SE			*30*	*515*	*0*			*105*	*324*	*24*
			n			*2*	*2*	*2*			*10*	*8*	*10*
		MO-West-C	AVE			293	2888	35			614	1535	117
			SE			*21*	*689*	*25*			*40*	*117*	*29*
			n			*4*	*4*	*4*			*7*	*7*	*7*
	ALBS-ES-C		AVE							15	551	2114	273
			SE							*5*	*85*	*859*	*189*
			n							*2*	*7*	*7*	*7*

			Σ16PAH µg/kg	Σ7PCB µg/kg	Cd µg/kg	Pb µg/kg	Hg µg/kg	Σ16PAH µg/kg	Σ7PCB µg/kg	Cd µg/kg	Pb µg/kg	Hg µg/kg
			Sediments					Biota (*M. galloprovincialis*)				
CWMS coastal												
CWMS-ES-C												
	ES-CWM-LEV1-C	AVE	78	1	139	36372	100		29	605	2559	113
		SE	*0.4*	0.3	2.9	1191	5.1		*11*	*85*	*466*	*8*
		n	*3*	*3*	*3*	*3*	*3*		*7*	*16*	*16*	*16*
	ES-CWM-LEVOS1-C	AVE	68	1.4	41	6508	20					
		SE	25	2.1	21	2153	7.2					
		n	*3*	*3*	*3*	*3*	*3*					
CWMS-FR-C												
	FR-CWM-M-C	AVE			80	28067	328	55	19	833	2294	169
		SE			11	4116	188	7	2	32	247	15
		n			*15*	*15*	*14*	*64*	*64*	*78*	*79*	*79*
	FR-CWM-Corse-C	AVE						8	1.40	1570	1325	136
		SE						*5*	*0.08*	*273*	*111*	*6*
		n						*4*	*4*	*4*	*4*	*4*
CWMS-IT-C												

		Σ16PAH	**Σ7PCB**	**Cd**	**Pb**	**Hg**	**Σ16PAH**	**Σ7PCB**	**Cd**	**Pb**	**Hg**
		µg/kg	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**
		Sediments					**Biota (*M. galloprovincialis*)**				
IT-CWM-C	AVE	2345	11	486	25448	173					
	SE	*1354*	*5*	*42*	*3613*	*42*					
	n	*23*	*23*	*23*	*23*						
IT-CWM-SarW-C	AVE			35	3500	35					
	SE			*0*	*0*	*0*					
	n			*3*	*3*	*3*					
IT-CWM-Sic-N-C	AVE										
	SE										

				Σ16PAH µg/kg	**Σ7PCB µg/kg**	**Cd µg/kg**	**Pb µg/kg**	**Hg µg/kg**	**Σ16PAH µg/kg**	**Σ7PCB µg/kg**	**Cd µg/kg**	**Pb µg/kg**	**Hg µg/kg**
				Sediments					**Biota (*M. galloprovincialis*)**				
TYRS coastal													
	TYRS-FR-C												
		FR-TYR-Corse-C	AVE			40	20000	44.5	16	1.39	1676	1323	144
			SE			0	5000	23.5	*6*	*0.24*	*187*	*127*	*5*
			n			*2*	*2*	*2*	*6*	*6*	*7*	*7*	*7*
	TYRS-IT-C												
		IT-TYR-1-C	AVE	37	1.47	390	20574	221					
			SE	*9*	*0.32*	*57*	*3470*	*51*					
			n	*3*	*13*	*15*	*15*	*15*					
		IT-TYR-3-C	AVE	81	0.53	490	17425	411					
			SE	*50*	*0.09*	*79*	*2400*	*77*					
			n	*16*	*8*	*11*	*11*	*11*					
		IT-TYR-4-C	AVE	330	5.76	350	26224	127					
			SE	*149*	*2.46*	*89*	*5034*	*32*					
			n	*21*	*9*	*21*	*21*	*21*					
		IT-TYR-5-C	AVE										
			SE										
		IT-TYR-SarE-C	AVE			94	17423	97					
			SE			*26*	*11511*	*42*					
			n			*7*	*7*	*7*					
		IT-TYR-SicN-C	AVE	21	0.22	23	2989	100					
			SE	*13*	*0.10*	*2*	*624*	*74*					
			n	26	26	26	26	26					

6. Adjusted application of the NEAT software for the assessment of IMAP Common Indicators related to Ecological Objective 9

31. NEAT is a structured, hierarchical tool for making marine status assessments (Berg et al., 2017; Borja et al., 2016), and freely available at www.devotes-project.eu/neat. NEAT was developed to assess biodiversity status of marine waters under the MSFD and has been used to assess different ecosystem components and geographical areas (Nemati et al., 2017; Borja et al., 2019; Pavlidou et al. 2019; Kazanidis et al., 2020; Borga et al., 2021). NEAT uses a combination of high-level integration of habitats and spatial units and an averaging approach, allowing for specification on structural and spatial levels, applicable to any geographical scale. As explained here-below, the use of NEAT is not limited to the assessment of biodiversity but can be used for assessment of pollution impact. The analysis provides an overall assessment for each case study area and a separate assessment for each of the ecosystem components included in the assessment. The final value has an associated uncertainty value, which is the probability of being determinative in a certain class status (GES - nonGES) (Uusitalo et al., 2016). Essentially, the final assessment value is calculated as a weighted average. The weighting factors are based on the respective surface of the areas and are combined with the respective monitoring data for the indicator/chemical contaminant in question. The total weight of a SAU is not the simple ratio of each SAU area to the total area of the parent SAU. The process of distributing the weight is more complex. SAU weighting by the NEAT tool has two options: i) do not weight by SAU area: weights are calculated based just on the nesting hierarchy of the SAUs; ii) weight by SAU area: weights are calculated based on the nesting hierarchy and the SAU surface area. For the present assessment the option ii) was followed. In all cases, the number of nesting levels and data availability per SAU is considered in the calculation of weights. Detailed explanation on the calculation of the weighting factors is given in Annex I.

32. No special rules are applied but the tool design allows assigning different aggregation rules at the various steps in the calculation of the overall assessment value. In order to assess the uncertainty in the final assessment value, the standard error/ standard deviation of every observed indicator value is used (Borja et al., 2016). Therefore, the standard deviation values as obtained from the monitoring data play a major role in the uncertainty associated with the final assessment result. This emphasizes the importance of the standard deviation for the accuracy and evaluation of the final assessment result. Detailed elaboration of adjusted application of NEAT software GES assessment of IMAP CI 17 is provided in UNEP/MED WG.533/Inf.10, Appendix III; UNEP/MED 533/Inf.4/Rev.1.

7. Results of the NEAT Methodology for Assessment of the IMAP EO9-CI 17 in the Western Mediterranean Sea Sub-region using (xBAC) GES/nGES thresholds

33. The results obtained from the NEAT tool using the (xBAC) threshold for the Alboran Sea subdivision (ALBS) are shown in Table 5 below.

Table 5. Status assessment results of the NEAT tool applied on the 2 level nesting scheme in the Alboran Sea Sub-division, using the xBAC as GES-nGES threshold for the assessment of EO9/CI17. The 2nd level of spatial integration (nesting) on the coastal zone is marked in bold. Blank cells denote absence of data. The % confidence is based on the sensitivity analysis described in 6.1.

SAU	Area (km^2)	Total SAU weight	NEAT value	Status class	% Confidence	CI17_Cd_seds	CI17_Hg_seds	CI17_Pb_seds	CI17_Cd_mus	CI17_Hg_mus	CI17_Pb_mus
ALBS-coastal	**4900**	**0**	**0.757**	**good**	76.5	**0.621**	**0.971**	**0.754**	**0.909**	**0.592**	**0.749**
MO-East-C	700	0.211	0.846	high	100	0.635	0.98	0.572	0.941	0.977	0.972
MO-Central1-C	805	0									
MO-Central2-C	361	0.109	0.824	high	97.5	0.606	0.98	0.924	0.908	0.733	0.79
MO-West-C	286	0.086	0.824	high	94.2	0.628	0.931	0.968	0.894	0.74	0.783
MO-Gib2-C	67	0.02	0.779	good	67.4	0.573	0.98	0.785			
MO-Gib1-C	71	0									
ALBS-ES-C	1908	0.574	0.701	good	79.9				0.905	0.497	0.702
ALBS-ALG-1A-C	702	0									

34. The detailed status assessment results per contaminant show that most SAUs achieve GES conditions (high, good status) indicated by the blue and green cells. Exceptions to this are moderate classifications for SAUs MO-East-C and ALBS-ES-C for Pb in sediments, MO-Gib2-C for Cd in sediments, and SAU ALBS-ES-C for Hg in mussels.

35. The aggregation of the chemical parameters data per SAU leads to the NEAT value per SAU which represents the overall chemical status of the SAUs, as shown in Table 5 for the ALBS (4th column). It is clear that all SAUs achieve High or Good status and can be considered in GES regarding trace metals. Similarly, the aggregation-integration within the nested scheme for the coastal zone of the Alboran subdivision (ALBS-C), results in Good GES status regarding trace metals (shown in bold in Table 5).

36. The integration of SAUs data per chemical parameter (Table 5, 1st line in bold), shows that the coastal zone of the Alboran Sea (ALBS-C) achieves High or Good status regarding trace metals with the exception of Hg in mussels for which it is classified under Moderate status. The aggregation-integration of data for the coastal zone of the Alboran sub-division (ALBS-C) results in Good GES status regarding trace metals.

37. The results obtained from the NEAT tool using the (xBAC) thresholds for the Tyrrhenian Sea subdivision (TYRS) are shown in Table 6 below.

38. Detailed assessment results for the TYRS subdivision show that SAUs IT-TYR-1-C, IT-TYR-3-C and IT-TYR-4-C fall into moderate status regarding Cd in sediments; regarding Hg in sediments SAUs IT-TYR-1-C and IT-TYR-3-C fall into moderate and poor statuses respectively. Finally, SAU IT-TYR-4-C is classified as moderate regarding Σ_7PCBs.

39. The aggregation of the chemical parameters data per SAU leads to the NEAT value per SAU which represents the overall chemical status of the SAUs, as shown in Table 6 for the TYRS (4th column). It is clear that all SAUs achieve High or Good status and are in GES regarding contaminants assessed. Similarly, the aggregation-integration within the nested scheme for the coastal zone of the Tyrrhenian subdivision (TYRS-C) however, results in Good GES status regarding contaminants assessed (shown in bold in Table 6).

40. The integration of SAUs data per chemical parameter (Table 6, 1st line in bold), shows that the coastal zone of the Tyrrhenian Sea (TYRS-C) achieves High or Good status regarding chemical contaminants assessed. Similarly, the aggregation-integration within the nested scheme for the coastal zone of the Tyrrhenian subdivision (TYRS-C) as a whole indicates it can be considered in Good GES status regarding chemical contaminants assessed (shown in bold in Table 6).

41. Based on the availability of data for contaminants as delivered by the CPs in the Western Mediterranean Sea sub-region, the present integrated assessment status results produced by applying the NEAT tool on the sub-divisions ALBS and TYRS (shown in Tables 5, 6 and Annex III) can only be considered as an example of how the tool works. This is related to the fact that offshore SAUs lack of data, hence integration is meaningful only up to the 2nd level, i.e. the coastal assessment zone (ALBS-coastal and TYRS-coastal) [7]. Furthermore, several coastal SAUs lack data or the countries eventually decided not to monitor the areas that are found irrelevant for the assessment of contaminants and therefore excluded the areas where problems were not historically observed (blank cells in Tables 5, 6 and 7, and blank boxes in Annex III).

42. The Tabulated NEAT results of Tables 5, 6, are presented also schematically in Annex III herein.

[7] Given lack of data for some SAUs, integration at a higher level that also includes these SAUs makes the uncertainty high.

Table 6. Status assessment results of the NEAT tool applied on the 2 level nesting scheme in the Tyrrhenian Sea Sub-division, using the xBAC as GES-nGES threshold for the assessment of EO9/CI17. The 2nd level of spatial integration (nesting) on the coastal zone is marked in bold. Blank cells denote absence of data. The % confidence is based on the sensitivity analysis described in 6.1.

SAU	Area (km^2)	Total SAU weight	NEAT value	Status class	% Confidence	CI17_Cd_seds	CI17_Hg_seds	CI17_Pb_seds	Σ_{16}PAHs_seds	Σ_7PCBs_seds	CI17_Cd_mus	CI17_Hg_mus	CI17_Pb_mus	Σ_{16}PAHs_mus	Σ_7PCBs_mus
TYRS-C	**27511**	**0**	**0.739**	**good**	99.9	**0.66**	**0.674**	**0.786**	**0.873**	**0.72**	**0.711**	**0.68**	**0.813**	**0.619**	**0.99**
FR-TYR-Corse-C	648	0	0.821	high	92.3	0.949	0.913	0.778			0.711	0.68	0.813	0.619	0.99
IT-TYR-1-C	6363	0.263	0.738	good	99.7	0.552	0.582	0.771	0.969	0.816					
IT-TYR-3-C	4122	0.17	0.712	good	100	0.489	0.398	0.806	0.933	0.934					
IT-TYR-4-C	8072	0.334	0.64	good	89.7	0.578	0.75	0.709	0.725	0.44					
IT-TYR-5-C	2685	0													
IT-TYR-SarE-C	2598	0.107	0.832	high	74.7	0.88	0.81	0.806							
IT-TYR-SicN-C	3023	0.125	0.939	high	100	0.971	0.804	0.967	0.983	0.972					

43. The results of the assessment findings for the Alboran Sea provided per contaminants of EO9/CI 17 without aggregation per habitat, i.e. sediment and biota, as presented in Table 5, are visualized in the schematic diagrams provided in Annex III. Also, the final GES assessment findings for the coastal IMAP SAUs in the Alboran Sea, as provided in Table 5 are shown by the respective color in the map included in the following Figure 6. The map depicts the integrated NEAT value for each SAU (i.e. aggregated value for all contaminants assessed as provided in the 4th column of Table 5).

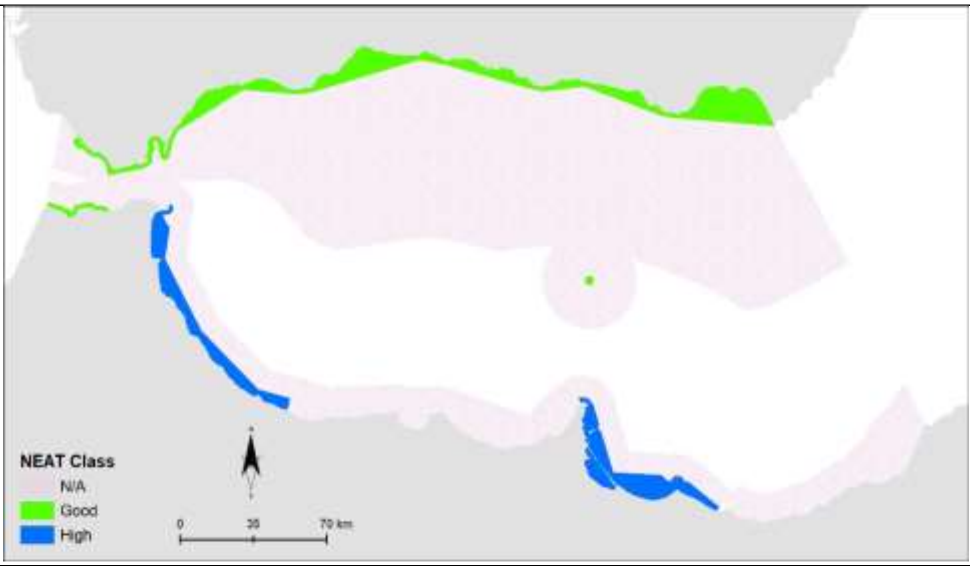

Figure 6: The NEAT assessment results for trace metals TM in sediments and biota in the coastal assessment zone of the Alboran Sea. Assessment conducted using the xBAC GES-nGES threshold. All IMAP SAUs are in GES characterized by High or Good status. Shaded area corresponds to no available data for the assessment; The absence of some SAUs assessment might also be related to the decision of the countries to monitor areas that are found relevant for the assessment of contaminants and therefore excluding the areas where problems were not historically observed.

44. The overall status for the coastal assessment zone of the Alboran Sea is Good when using the xBAC as the GES-nGES threshold. Assessment is integrated for metals in sediments and biota.

45. The results of the assessment findings for the Tyrrhenian Sea provided per contaminants of EO9/CI 17 for sediments, as presented in Table 6, are visualized in the schematic diagrams provided in Annex III. Also, the final GES assessment findings for the coastal IMAP SAUs in the Tyrrhenian Sea, as provided in Table 6 are shown by the respective color in the map included in the following Figure 7. The map depicts the integrated NEAT value for each SAU (i.e. aggregated value for all contaminants assessed as provided in the 4th column of Table 6).

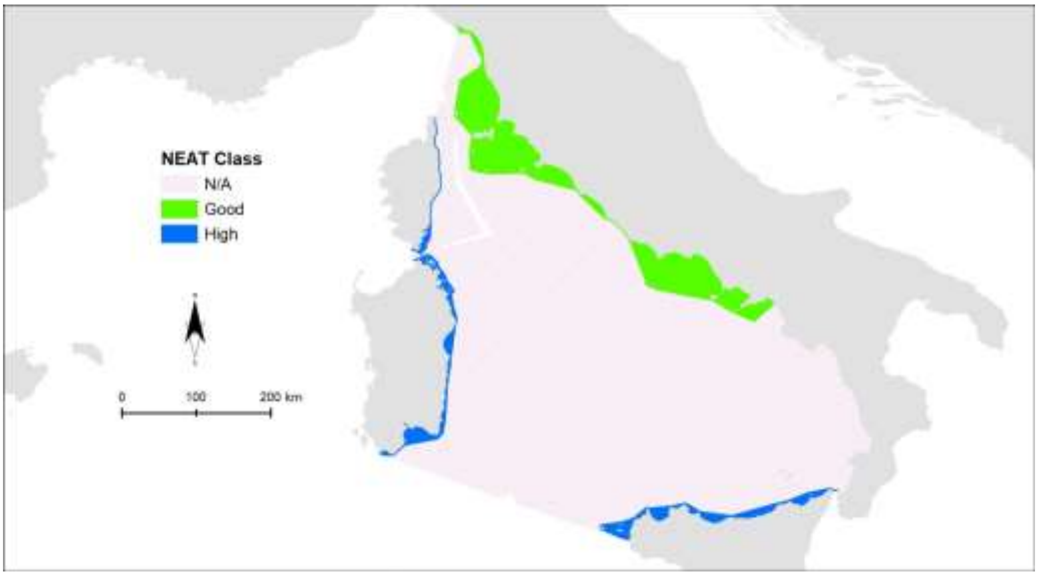

Figure 7: The NEAT assessment results for trace metals TM, Σ_{16}PAHs and Σ_7PCBs in sediments in the coastal assessment zone of the Tyrrhenian Sea. Assessment conducted using the xBAC GES-nGES threshold. All IMAP SAUs are in GES characterized by High or Good status. Shaded area corresponds to no available data for the assessment; The absence of some SAUs assessment might also be related to the decision of the countries to monitor areas that are found relevant for the assessment of contaminants and therefore excluding the areas where problems were not historically observed.

46. The overall status for the coastal assessment zone of the Tyrrhenian Sea is Good regarding contaminants assessed when using the xBAC as the GES-nGES threshold. Assessment is integrated for metals, Σ_{16}PAHs and Σ_7PCBs in sediments.

47. The results obtained from the simplified application of NEAT for the coastal sub-SAUs with data in the CWMS are shown in the below Table 7 and Figure 8. Detailed assessments per contaminant per SAU indicate non-GES status for several cases. Regarding sediments SAU ES-CWM-LEV1-C is classified under moderate status for Pb and SAU FR-CWM-M-C under poor for Hg. The Italian SAU IT-CWM-C is classified under moderate for Cd and under poor status for Σ_{16}PAHs and Σ_7PCBs. Monitoring data for mussels show that SAU FR-CWM-M-C is classified under poor for Σ_{16}PAHs.

48. The aggregation of the chemical parameters data per SAU leads to the NEAT value per SAU which represents the overall chemical status of the SAUs, as shown in Table 7 (4^{th} column). and Figure 8 for the CWMS. It is clear that all SAUs achieve High or Good status and are in GES with the exception of SAU IT-CWM-C where only sediments are monitored, and the overall status for this SAU is moderate regarding contaminants assessed.

Figure 8. The NEAT assessment results for trace metals TM, Σ_{16}PAHs and Σ_7PCBs in sediments and mussels in the SAUs of France and Spain and in sediments in the SAU of Italy in the CWMS. Assessment conducted using the xBAC GES-nGES threshold. All IMAP SAUs are in GES characterized by High or Good status except sediments assessment in IT-CWM-C which shows moderate status. Shaded area corresponds to no available data for the assessment; The absence of some SAUs assessment might also be related to the decision of the countries to monitor areas that are found relevant for the assessment of contaminants and therefore excluding the areas where problems were not historically observed.

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Table 7. Status assessment results of the NEAT tool applied on the 1st level IMAP subSAUs in the Central part of the Western Mediterranean Sea Sub-division, using the xBAC as GES-nGES threshold for the assessment of EO9/CI17. Blank cells denote absence of data. The % confidence is based on the sensitivity analysis described in 6.1.

SAU	NEAT value	Status class	% Confidence	CI17_Cd_seds	CI17_Hg_seds	CI17_Pb_seds	Σ_{16}PAHs_seds	Σ_7PCBs_seds	CI17_Cd_mus	CI17_Hg_mus	CI17_Pb_mus	Σ_{16}PAHs_mus	Σ_7PCBs_mus
ES-CWM-LEV1-C	0.788	good	79.6	0.823	0.804	0.598	0.935	0.875	0.896	0.749	0.639		0.796
FR-CWM-M-C	0.677	good	99.2	0.898	0.475	0.688			0.856	0.624	0.676	0.315	0.867
FR-CWM-Corse-C	0.816	high	81.4	0.924	0.888	0.661			0.729	0.698	0.813	0.81	0.99
IT-CWM-C	0.476	moderate	100	0.484	0.675	0.716	0.2	0.304					

7.1 Sensitivity analysis of the assessment results using the NEAT tool

49. The assessment status as obtained by the NEAT tool is the one based on the average value of monitoring data. However, based on the standard error per chemical compound and per SAU, the NEAT tool provides a sensitivity analysis for calculating the uncertainty of the assessment results using a Monte-Carlo simulation model for 1000 iterations.

50. In other words, 1000 assessments are run using different random combinations of the data. Instead of using the average value of the parameters inserted by the user, other random values are used by the tool to run the assessment. The selection of these random values is done based on the standard error and it is repeated 1000 times with different combinations. The resulting assessment value of each of these 1000 assessment runs is recorded and may lead to a different assessment classification than the one based on the average value. The number of times (out of 1000) of the appearance of these different assessments is given in Tables 8-10, for the ALBS, TYRS and CWMS. For example, the overall status for the SAU FR-CWM-Corse-C is reported as ‘high’. However, from Table 10, it is understood that out of 1000 iterations, 186 lead to Good status, and 814 to High Status. These results imply a rather high uncertainty (confidence 81.4%), in contrast to MO-East-C (Table 8) where all 1000 iterations led to High status (confidence 100%).

51. As for any assessment results, the accuracy of the results described above, is dependent on the analytical accuracy of the chemical data i.e. the quality of data reported to IMAP IS and their reproducibility and comparability among all the laboratories as well by the amount of data available for each SAU. It should be stressed here, that the sensitivity analysis described above cannot compensate for the analytical differences among the laboratories or for the lack of data. For instance, in many of the SAUs data were representative of one monitoring station visited once. Due to the small quantum of data assessed in this case, the value of standard error inserted in the NEAT tool is equal to zero and the propagated error is extremely low, therefore there is high confidence value. In other cases, many SAUs lack data (blank cells in Table 4 and Annex III), therefore the integrated results on the upper level of the coastal assessment zone cannot be considered indicative of the overall SAU status with confidence. In addition, the present assessments for the coastal assessment zones of the 3 subdivisions of the WMS, are lacking full integration on the CI17 level (lack of data for all groups of contaminants) and on the matrix level (lack of data for both sediments and biota). In conclusion, the interpretation of the NEAT assessment results should always take into consideration the afore mentioned factors, having in mind that NEAT is just a tool which calculates numbers based on input data.

Table 8. Confidence assessment of all SAU/assessment class combinations as absolute counts falling into the specified classes (maximum possible count = 1000). Results for the ALBS using the xBAC GES-nGES threshold.

SAU	**bad**	**poor**	**moderate**	**good**	**high**	**Confidence %**
ALBS-coastal	0	0	0	765	235	76.5
MO-East-C	0	0	0	765	235	76.5
MO-Central1-C	0	0	0	0	1000	100
MO-Central2-C						0
MO-West-C	0	0	0	25	975	97.5
MO-Gib2-C	0	0	0	58	942	94.2
MO-Gib1-C	0	0	0	674	326	67.4
ALBS-ES-C						0
ALBS-ALG-1A-C						

Table 9. Confidence assessment of all SAU/assessment class combinations as absolute counts falling into the specified classes (maximum possible count = 1000). Results for the TYRS using the xBAC GES-nGES threshold.

SAU	**bad**	**poor**	**moderate**	**good**	**high**	**Confidence %**
TYRS-Coastal	0	0	0	999	1	99.9
FR-TYR-Corse-C	0	0	0	77	923	92.3
IT-TYR-1-C	0	0	0	997	3	99.7
IT-TYR-3-C	0	0	0	1000	0	100
IT-TYR-4-C	0	0	99	897	4	89.7
IT-TYR-5-C						0
IT-TYR-SarE-C	0	0	0	253	747	74.7
IT-TYR-SicN-C	0	0	0	0	1000	100

Table 10. Confidence assessment of all SAU/assessment class combinations as absolute counts falling into the specified classes (maximum possible count = 1000). Results for the SubSAUs of the CWMS using the xBAC GES-nGES threshold.

SAU	bad	poor	moderate	good	high	Confidence %
ES-CWM-LEV1-C	0	0	0	796	204	79.6
FR-CWM-M-C	0	0	0	1000	0	100
FR-CWM-Corse-C	0	0	0	186	814	81.4
IT-CWM-C	0	0	992	8	0	99.2

8. Application of the CHASE+ Assessment Methodology in the Western Mediterranean Sea Sub-region and comparison of the results with those obtained by the NEAT Assessment Methodology

61. A comparison between the NEAT and CHASE+ results for the WMS sub-region was performed by applying above approach further to the recommendations for the harmonization of the two assessment methods as elaborated in UNEP/MED WG. 556/Inf.14 and UNEP/MED WG. 556/Inf.7, chapter 2. Briefly all thresholds used were identical in the two methodologies, while the CHASE+ methodology was adapted regarding the calculation of the CS score for compatibility reasons.

62. The comparison was performed with the NEAT results using xBACs as GES/nGES boundary limit/ threshold as described in chapter 2. Tables 11, 12 and 13 show the results of the comparison for the ALBS, TYRS, and the CWMS respectively.

63. In the ALBS (Table 11), the comparison at the sub-SAU levels indicated a very good agreement for most parameters. The SAU ABS-ES-C showed different classification between the two tools regarding Hg and Pb in mussels (Hg: Moderate by NEAT and Good by CHASE+; Pb: Good status NEAT and High by the CHASE+). Nevertheless, all other CHASE+ and NEAT classifications at the sub-SAU level are tuned regarding the GES/nGES status. In summary 22 out of 24 individual scores per contaminants per SAUs were found identical between the two methodologies (91.6 % compatibility) while the GES /nGES status was also 91.6% tuned between the 2 methodologies. Similarly, the aggregated results for all contaminants (CS scores) were 100% compatible with respective NEAT scores.

64. In the TYRS (Table 12), the comparison at the sub-SAU levels indicated a very good agreement for most parameters. For SAU TYR-Corse-C some discrepancies were found regarding Hg and Pb in mussels (Hg: Good by NEAT and High by CHASE+; Pb: High by NEAT and Good by CHASE+). For Hg in sediments, NEAT classified the sub-SAU IT-TYR-3-C in poor status while CHASE+ in moderate status. For the case of TYRS, all CHASE+ and NEAT classifications at the sub-SAU level are tuned regarding the GES/nGES status. In summary 28 out of 31 individual scores per contaminants per SAUs were found identical between the two methodologies (90.4 % compatibility) while the GES /nGES status was 100% tuned between the 2 methodologies. Similarly, the aggregated results for all contaminants (CS scores) were 100% compatible with respective NEAT scores.

65. The results obtained from the CHASE+ tool for the CWMS sub-division are shown in Table 13 (and detailed stations data in Annex IV). As with ALBS and TYRs, in this case the compatibility of the two methodologies was also found acceptable. Some discrepancies are related to Hg and Pb classifications in mussels for the SAU FR-CWM-Corse-C which differed between High and Good. In summary 52 out of 54 individual scores per contaminants per SAUs were found identical between the two tools (96.3 % compatibility). For the CWMS, the aggregated results for all contaminants (CS scores) were not 100% compatible with respective NEAT scores and showed differences for SAUs FR-CWM-E2-C and IT-CWM-C from Good in Neat to Moderate in CHASE+ status and from Moderate to Poor respectively. Still the GES /nGES status was 100% tuned between the 2 assessment methodologies.

66. Consolidated results on the percentage of SAUs as classified by the two assessment methodologies are presented in Table 14, using the xBAC GES/nGES boundary limit/threshold. Based on these comparisons it is apparent that the harmonization of the two tools in this case gives identical results for the classification (in-GES or non-GES) of the individual contaminants assessments per SAU. There are very small differences between the statuses found for the individual contaminants per SAU, i.e small differences in the division between high and good statuses the in-GES classification and between moderate and poor in the non-GES classification.

67. The harmonized application of the two assessment methodologies for the assessment of WMS Sub-region provided highly comparable results and shows that the two assessment methodologies can be used indifferently for the various sub-divisions of the Mediterranean Sea. The above resulted in harmonization of the NEAT and CHASE+ assessment methodologies as good as possible. They are still

different methodologies and the results will not be identical, however the harmonization ensured their alignment to the extent which prevents bias assessment of the four Mediterranean sub-regions within the preparation of the 2023 MED QSR. The NEAT is the methodology which properly supports efforts aimed at the GES assessment in line with the Decision IG. 23/6 on the 2017 MED QSR (COP 20, Tirana, Albania, 17-20 December 2017), and therefore its further application across all four Mediterranean sub-regions should be foreseen within preparation of the future QSR. The CHASE+ assessment methodology may continue being used in specific cases, i.e., for the local areas and limited assessments with insufficient data reported for the GES assessment to guide decision making.

68. Final maps of the CHASE+ status assessment for the IMAP SAUs in the ALBS, CWMS and TYRS sub- divisions is shown in Annex V.

Table 11. Comparison of the NEAT (Table 5, using xBAC as thresholds) and CHASE+ results for the ALBS Sub-division (n equals the number of contaminants aggregated for the calculations of the CS score for CHASE+)

SAU	NEAT value	Status class		CI17_Cd_seds	CI17_Hg_seds	CI17_Pb_seds	CI17_Cd_mus	CI17_Hg_mus	CI17_Pb_mus	n	CHASE+ CS
ALBS-coastal	**0.757**	**good**		**0.621**	**0.971**	**0.754**	**0.909**	**0.592**	**0.749**		
MO-East-C	0.846	high	NEAT	0.635	0.98	0.572	0.941	0.977	0.972		
		high	CHASE+	0.911	0.050	1.140	0.147	0.058	0.071	6	0.396
MO-Central1-C											
MO-Central2-C	0.824	high	NEAT	0.606	0.98	0.924	0.908	0.733	0.79		
		high	CHASE+	0.984	0.050	0.190	0.231	0.526	0.667	6	0.441
MO-West-C	0.824	high	NEAT	0.628	0.931	0.968	0.894	0.74	0.783		
		high	CHASE+	0.929	0.173	0.080	0.265	0.541	0.649	6	0.440
MO-Gib2-C	0.779	good	NEAT	0.573	0.98	0.785					
		good	CHASE+	1.135	0.050	0.537				3	0.574
MO-Gib1-C											
ALBS-ES-C	0.701	good	NEAT				0.905	0.497	0.702		
		good	CHASE+				0.238	0.746	1.519	3	0.834

Table 12. Comparison of the NEAT (Table 6, using xBAC as thresholds) and CHASE+ results for the TYRS Sub-division (n equals the number of contaminants aggregated for the calculations of the CS score for CHASE+)

SAU	NEAT value	Status class		CI17_Cd_seds	CI17_Hg_seds	CI17_Pb_seds	Σ_{16}PAHs_seds	Σ_7PCBs_seds	CI17_Cd_mus	CI17_Hg_mus	CI17_Pb_mus	Σ_{16}PAHs_mus	Σ_7PCBs_mus	n	CHASE+ CS
TYRS-C	**0.739**	**good**		**0.66**	**0.674**	**0.786**	**0.873**	**0.72**	**0.711**	**0.68**	**0.813**	**0.619**	**0.99**		
FR-TYR-Corse-C	0.821	high	NEAT	0.949	0.913	0.778			0.711	0.68	0.813	0.619	0.99		
		high	CHASE+	0.127	0.220	0.556			0.723	0.467	0.798	0.964	0.024	8	0.482
IT-TYR-1-C	0.738	good	NEAT	0.552	0.582	0.771	0.969	0.816							
		good	CHASE+	1.238	1.095	0.572	0.077	0.460						5	0.688
IT-TYR-3-C	0.712	good	NEAT	0.489	0.398	0.806	0.933	0.934							
		good	CHASE+	1.556	2.034	0.484	0.169	0.166						5	0.882
IT-TYR-4-C	0.64	good	NEAT	0.578	0.75	0.709	0.725	0.44							
		good	CHASE+	1.110	0.627	0.728	0.688	1.799						5	0.990
IT-TYR-5-C															
IT-TYR-SarE-C	0.832	high	NEAT	0.88	0.81	0.806									
		high	CHASE+	0.299	0.479	0.484								3	0.421
IT-TYR-SicN-C	0.939	high	NEAT	0.971	0.804	0.967	0.983	0.972							
		high	CHASE+	0.073	0.495	0.083	0.043	0.068						5	0.153

Table 13. Comparison of the NEAT (Table 7, using xBAC as thresholds) and CHASE+ results for the CWMS Sub-division
(n is the number of parameters taken for the calculation of the Contamination Score (CS) from the individual Contamination Ratios (CR)).

SAU	NEAT value	Status class		CI17_Cd_ seds	CI17_Hg _seds	CI17_Pb _seds	Σ_{16}PAHs _seds	Σ_7PCBs_ seds	CI17_Cd_ mus	CI17_Hg _mus	CI17_Pb _mus	Σ_{16}PAHs _mus	Σ_7PCBs_ mus	n	CHASE + CS
ES-CWM-LEV1-C	0.788	good	NEAT	0.823	0.804	0.598	0.935	0.875	0.896	0.749	0.639		0.796		
		good	CHASE+	0.441	0.495	1.010	0.163	0.313	0.261	0.903	0.627		0.501	9	0.527
FR-CWM-M-C	0.677	good	NEAT	0.898	0.688	0.475			0.856	0.676	0.624	0.315	0.867		
		moderate	CHASE+	0.254	1.624	0.780			0.359	0.939	0.809	3.274	0.333	8	1.046
FR-CWM-Corse-C	0.816	high	NEAT	0.924	0.888	0.661			0.729	0.698	0.813	0.81	0.99		
		high	CHASE+	0.190	0.282	0.847			0.677	0.467	0.754	0.468	0.025	8	0.536
IT-CWM-C	0.476	moderate	NEAT	0.484	0.675	0.716	0.2	0.304							
		poor	CHASE+	1.581	0.817	0.709	4.998	3.466						5	2.314

Table 14. Comparison of assessment results made by the NEAT and CHASE+ tools for all IMAP SAUs in the WMS. Percentage (%) of IMAP SAUs classification as obtained by the two tools, for (i) each individual sub-SAUs per contaminant, and (ii) all contaminants (integrated assessment) per SAU

		High	Good	Moderate	Poor	Bad
		GES		Non-GES		
Per contaminant per SAU						
n = 85	NEAT	49	33	13	5	0
		82 %		18%		
	CHASE+	53	29	14	4	0
		82 %		18 %		
Integrated per SAU						
n= 15	NEAT	47	47	7	0	0
		93%		7 %		
	CHASE+	40	47	7	7	0
		87%		13%		

Annex I

Calculation of the SAU weight factors by the NEAT tool

(provided by the NEAT developers: Torsten Berg and Angel Borja)

The total weight of a SAU is not the simple ratio of each SAU area to the total area of the parent SAU. The process of distributing the weight is more complex. SAU weighting by the NEAT tool has two options: i) do not weight by SAU area: weights are calculated based just on the nesting hierarchy of the SAUs; ii) weight by SAU area: weights are calculated based on the nesting hierarchy and the SAU surface area.

The overall principle is that the sum of all weights in the nesting scheme (SAU tree) is equal to 1. By adding up the weights of all individual SAUs in a SAU nesting scheme, this sum will always be 1.

The next thing is, a SAU without data will have a total weight of zero, e.g. for the present case there is no contaminants data for the top SAU, the Adriatic Sea. So, its weight will be zero and this will give more weight to the SAU lower in the hierarchy (or to siblings on the same hierarchy level).

i) Weighting based on the nesting hierarchy only - NEAT option *'Do not weight by SAU area'*:

For the case that every SAU has data for at least one chemical parameter and we do not weight by area (and we use no priority factors). Then the area is treated as if it were 1. There is one top-level SAU (the Adriatic Sea) and below there are the Northern, Central and Southern Adriatic Seas. Hypothetically it is assumed there are also 4 SAUs beneath the Northern Adriatic Sea.

The calculation starts by assigning that the total weight of the SAU tree must be 1. This weight needs to be distributed among all SAUs in the tree. That means, the top SAU cannot have it all, it must share the 1 with its three children (Northern, Central, Southern). In total, this makes 4 SAUs that need to share the total weight of 1. So, the top-level SAU (the Adriatic Sea as a whole) and each of the children (Norther, Central, Southern) get 0.25 of the total tree weight:

w(total) = 1

w(Adriatic) = 0.25
v(Northern) = 0.25
v(Central) = 0.25
v(Southern) = 0.25

Note that we write w = final weight, and v = inherited weight.

For the top-level SAU, the 'w(Adriatic) = 0.25' is its final weight as it has shared the weight of 1 (which was inherited in the first place) among itself and its children. Now, each of the children must do the same. The weight which they now got, is not their final weight (named w above). It is the weight they inherit from their parent SAU (named v above) and that they need to share with their children. Hypothetically it is assumed that the 4 children of the Northern Adriatic Sea are called N1, N2, N3 and N4. The inherited weight of 0.25 needs to be shared among the Northern Adriatic Sea and N1, N2, N3 and N4. This is 5 SAUs. So, 0.25 is divided by 5 and it gets 0.05. That is the final weight of the Northern Adriatic Sea and the weight its children will inherit in the first place:

w(total) = 1 = v(Adriatic)
w(Adriatic) = v(Adriatic)/4 = 0.25

w(Northern) = v(Northern)/5 = 0.05
v(N1) = 0.05
v(N2) = 0.05
v(N3) = 0.05
v(N4) = 0.05

The total weight of 1 is the same as the weight inherited to the whole Adriatic Sea. And the final weight is its inherited weight divided by the number of SAUs involved.
The same principle can be applied to all further children in any possible SAU tree. If the tree stopped here, the one could take all w(...) values and add them together. As N1 through N4 have no children (as well as the Central and the Southern Adriatic) their inherited weight is the same as their total weight as they do not need to share it with any children. There are no further children anymore:
w(Adriatic) + w(Northern) + w(Central) + w(Southern) + w(N1) + w(N2) + w(N3) + w(N4)
= 0.25 + 0.05 + 0.25 + 0.25 + 0.05 + 0.05 + 0.05 + 0.05 = 1
The total weight of the tree is 1, as expected.

ii) Weighting based on the nesting hierarchy and the SAU surface area - NEAT option: *'Weight by SAU area'*:

In this case, the area is used instead of 1 but making sure the total weight is still 1. The one use a for the area, for example:

a(Adriatic) = 139783 km^2
a(Northern) = 31856 km^2
a(Central) = 63696 km^2
a(Southern) = 44231 km^2

w(total) = 1 = v(Adriatic)
w(Adriatic) = v(Adriatic)*a(Adriatic)/[a(Adriatic) + a(Northern) + a(Central) + a(Southern)]
= 1 * 139783 / (139783 + 31856 + 63696 + 44231)
= 1 * 139783 / 297566
= 0.4698

Here, instead of adding the number of SAUs (the one at the top-level plus all its children), their areas are just added. The value of 0.4698 will now be the inherited weight for the Northern, Central and Southern Adriatic sub-divisions and is placed in the formula instead of the 1 above. So, v(Northern) will be 0.4698 and this weight is distributed among itself and N1 through N4. Again, the one add the areas of all those 5 SAUs, divide the area of the Northern Adriatic Sea by this sum and multiply with the inherited weight of 0.4698 and this will give the final weight of the Northern Adriatic Sea (and of its children if they do not have any children themselves).

The above apply under the assumption that there are data inserted to each of the nested SAUs. In the present analysis for the IMAP CI17 this is not the case and the weight calculation becomes more complex.

Annex II

The spatial assessment units (SAUs) for the Western Mediterranean Sea Sub-region along with the spatial and temporal coverage of monitoring data collected for the Western Mediterranean Sea

Table 1. The spatial assessment units (SAUs) for the Western Mediterranean Sea Sub-region and their respective surface area (km^2) and number of monitoring stations located in the SAUs.

Sub-division	IMAP Assessment Zone	IMAP SAU	IMAP subSAU	Area (km^2)	No stations	No of stations with data 2016-2022	% Area covered by data
Alboran Sea (ALBS)							
	ALBS coastal						**84 %**
		ALBS-MO-C					
			MO-Gib-A-C	71	-	-	
			MO-Gib-B-C	67	2	2	
			MO-East-C	700	6	6	
			MO-Central-A-C	805	-	-	
			MO-Central-B-C	361	6	6	
			MO-West-C	286	6	5	
		ALBS-ES-C		1908	12	5	
		ALBS-ALG					
			ALG-1A-C	702	3	-	
	ALBS offshore				-		**0 %**
		ALBS-MO-O					
			MO-East-O	1020	1	-	
			MO-Central-A-O	1449	1	-	
			MO-Central-B-O	706	1	-	
			MO-West-O	465	-	-	
			MO-Gib-A-O	363	1	-	
			MO-Gib-B-O	302	-	-	
		ALBS-ES-O		23093	6	-	
		ALBS-ALG-O					
			ALG-1A-O	547	1	-	
Central part of Western Mediterranean Sea (CWMS)							
	CWMS coastal						**67 %**
		CWMS-ALG-C					
			ALG-1B-C	436	-		
			ALG-2-C	322	5	-	
			ALG-3-C	1081	6	-	
			ALG-4-C	337	1	-	

Sub-division	IMAP Assessment Zone	IMAP SAU	IMAP subSAU	Area (km^2)	No stations	No of stations with data 2016-2022	% Area covered by data
			ALG-5-C	414	4	-	
			ALG-6-C	349	5	-	
			ALG-7-C	534	4	-	
			ALG-8-C	1022	3	-	
			ALG-9-C	980	7	-	
			ALG-10-C	596	8	-	
		CWMS-ES-C					
			ES-CWM-LEV1-C	5547	23	12	
			ES-CWM-LEVOS1-C	3774	5	3	
		CWMS-FR-C					
			FR-CWM-M-C	2938	79	34	
			FR-CWM-Corse-C	1497	12	8	
		CWMS-IT-C					
			IT-CWM-C	804	24	23	
			IT-CWM-SarW-C	3926	22	2	
			IT-CWM-Sic-N-C	6	-	-	
		CWMS-TU-C					
			TU-1-C	509	1		
			TU-2-C	2357	4		
	CWMS offshore						**69 %**
		CWMS-ALG-O					
			ALG-1B-O	547	-	-	
			ALG-2-O	426	-	-	
			ALG-3-O	1696	1	-	
			ALG-4-O	971	-	-	
			ALG-5-O	518	-	-	
			ALG-6-O	488	1	-	
			ALG-7-O	1327	-	-	
			ALG-8-O	1523	-	-	
			ALG-9-O	1286	-	-	
			ALG-10-O	733	2	-	
		CWMS-ES-O					
			ES-CWM-LEV1-O	67828	19	13	
			ES-CWM-LEVOS1-O	153876	1	1	
		CWMS-IT-O					
			IT-CWM-O	14239	-	-	
			IT-CWM-SarW-O	76713	-	-	
			IT-CWM-SicN-O	5842	-	-	

Sub-division	**IMAP Assessment Zone**	**IMAP SAU**	**IMAP subSAU**	**Area (km²)**	**No stations**	**No of stations with data 2016-2022**	**% Area covered by data**
		CWMS-FR-O					
			FR-CWM- E1--O	15558	-	-	
		CWMS-TU-O					
			TU-1-O	2676	2	-	
			TU-2-O	742	-	-	
Tyrrhenian Sea (TYRS)							
	TYRS coastal						**100% (98% for seds)**
		TYRS-FR-C					
			FR-TYR-Corse-C	648	10	6	
		TYRS-IT-C					
			IT-TYR-1-C	6363	15	15	
			IT-TYR-3-C	4122	9	10	
			IT-TYR-4-C	8072	26	23	
			IT-TYR-5-C	2685	5	-	
			IT-TYR-SarE-C	2598	20	6	
			IT-TYR-SicN-C	3023	26	26	
	TYRS offshore						**0%**
		TYRS-FR-O					
			FR-TYR-Corse-O	5994	**-**	-	
		TYRS-IT-O					
			IT-TYR-1-O	4178	-	-	
			IT-TYR-2-O	178065	-	-	

Table 2: Spatial coverage of monitoring data collected for the Western Mediterranean Se Sea. The number of monitoring stations in the IMAP SAUs of the Western Mediterranean coastal SAUs per environmental matrix (sediments, biota) and per contaminant group (trace metals (TM), PAHs, PCBs) is shown.

Sub-division	IMAP Assessment Zone	IMAP SAU	SubSAU	No stations			No stations		
				sediment			biota		
				TM	PAHs	PCBs	TM	PAHs	PCBs
Alboran Sea (ALBS)									
	ALBS coastal								
		ALBS-MO-C							
			MO-East-C	5			2		
			MO-Central-A-C						
			MO-Central-B-C	1			5		
			MO-West-C	2			4		
			MO-Gib-A-C	2					
			MO-Gib-B-C						
		ALBS-ES-C					5		2
		ALBS-ALG							
			ALG-1A-C						
Coastal part of Western Mediterranean Sea (CWMS)									
	CWMS coastal								
		CWMS-ALG- C							
			ALG-1B-C						
			ALG-2-C						
			ALG-3-C						
			ALG-4-C						
			ALG-5-C						
			ALG-6-C						
			ALG-7-C						
			ALG-8-C						
			ALG-9-C						
			ALG-10-C						
		CWMS-ES-C							
			ES-CWM-LEV1-C	3	3	3	9		7
			ES-CWM-LEVOS1-C	3	3	3			
		CWMS-FR-C							
			FR-CWM-E1-C	15			35	35	35
			FR-CWM-Corse-C	4			4	4	4
		CWMS-IT-C							
			IT-CWM-C	23	23	23			
			IT-CWM-SarW-C	2					
			IT-CWM-Sic-N-C						

Sub-division	**IMAP Assessment Zone**	**IMAP SAU**	**SubSAU**	**No stations**			**No stations**		
				sediment			**biota**		
				TM	**PAHs**	**PCBs**	**TM**	**PAHs**	**PCBs**
		CWMS-TU-C							
			TU-1-C						
			TU-2-C						
Tyrrhenian Sea (TYRS)									
	TYRS coastal								
		TYRS-FR-C							
			FR-TYR-Corse-C	2	2	2	4	4	4
		TYRS-IT-C							
			IT-TYR-1-C	14	14	14			
			IT-TYR-3-C	9	9	9			
			IT-TYR-4-C	21	21	9			
			IT-TYR-5-C						
			IT-TYR-SarE-C	6					
			IT-TYR-SicN-C	26	26	26			

Table 3: Temporal coverage of the monitoring data collected for the Western Mediterranean Sea. The years of data collected per SAU and per contaminant group (trace metals (TM), PAHs, PCBs) are shown.

Sub-division	**IMAP Assessment Zone**	**IMAP SAU**	**SubSAU**	**Years monitored**			**Years Monitored**		
				sediment			**biota**		
				TM	**PAHs**	**PCBs**	**TM**	**PAHs**	**PCBs**
Alboran Sea (ALBS)									
	ALBS coastal								
		ALBS-MO-C							
			MO-East-C	‘17, 18			’20, ‘21		
			MO-Central-A-C						
			MO-Central-B-C	‘17, ‘18			‘17, ’18, ’20, ‘21		
			MO-West-C	‘17, ‘18			‘17, ‘18		
			MO-Gib-A-C	‘17, ‘18					
			MO-Gib-B-C						
		ALBS-ES-C					‘17, ‘19		‘17, ‘19
		ALBS-ALG							
			ALG-1A-C						
Coastal part of Western Mediterranean Sea (CWMS)									
	CWMS coastal								
		CWMS-ALG- C							
			ALG-1B-C						
			ALG-2-C						
			ALG-3-C						
			ALG-4-C						
			ALG-5-C						
			ALG-6-C						
			ALG-7-C						
			ALG-8-C						
			ALG-9-C						
			ALG-10-C						
		CWMS-ES-C							
			ES-CWM-LEV1-C	‘16	‘16	‘16	‘17, ‘19		‘17, ‘19
			ES-CWM-LEVOS1-C	‘16	‘16	‘16			
		CWMS-FR-C							
			FR-CWM-M-C	‘16			’18,’19, ’20, ‘21	’18,’19, ’20, ‘21	’18,’19, ’20, ‘21
			FR-CWM-Corse-C	‘16			’18, ‘19	’18, ‘19	’18, ‘19
		CWMS-IT-C							
			IT-CWM-C	’16, ‘20	’16, ‘20	’16, ‘20			
			IT-CWM-SarW-C	’17, ‘19					

Sub-division	IMAP Assessment Zone	IMAP SAU	SubSAU	Years monitored			Years Monitored		
				sediment			biota		
				TM	**PAHs**	**PCBs**	**TM**	**PAHs**	**PCBs**
			IT-CWM-Sic-N-C						
		CWMS-TU-C							
			TU-1-C						
			TU-2-C						
Tyrrhenian Sea (TYRS)									
	TYRS coastal								
		TYRS-FR-C							
			FR-TYR-Corse-C	’16,			’18,’19, ’20, ‘21	’18,’19, ’20, ‘21	’18,’19, ’20, ‘21
		TYRS-IT-C							
			IT-TYR-1-C	’17,’18, ’19, ‘20	’17,’18, ’19, ‘20	’17,’18, ’19, ‘20			
			IT-TYR-3-C	’17, ‘20	’17, ‘20	’17, ‘20			
			IT-TYR-4-C	’17, ‘20	’17, ‘20	’17, ‘20			
			IT-TYR-5-C						
			IT-TYR-SarE-C	’17, ‘19					
			IT-TYR-SicN-C	‘20	‘20	‘20			

Table 4. LOD/LOQ values as reported in the data files submitted to IMAP IS or reported to UNEP/MAP by the CPs bordering the Western Mediterranean Sea.

Contaminant	**MOROCCO**	**ITALY**	**FRANCE**	**SPAIN**
	Sediments	**Sediments**	**Mussels**	**Mussels**
	LOD	**LOQ**	**LOD**	**LOD**
	µg/kg	**µg/kg**	**µg/kg**	**µg/kg**
Acenaphthene		5	0.05	
Acenaphthylene		5	0.05	
Anthracene		0.1, 1, 5, 7, 10	0.1 (average)	
Benzo[a]anthracene		5		
Benzo[a]pyrene		0.1, 1, 5, 9, 10	0.02	
Benzo(b)fluoranthene		0.1, 1, 5, 10		
Benzo[g,h,i]perylene		0.1, 1, 5, 11		
Benzo(k)fluoranthene		0.1, 1, 5, 12		
Chrysene		5, 10		
Dibenz[a,h]anthracene		0.05, 5	0.01	
Fluoranthene		0.05, 0.1, 1, 5, 10		
Fluorene		0.1, 5	0.08	
Indeno[1,2,3-c,d]pyrene		0.06. 0.1. 5, 10		
Naphthalene		0.1, 0.2, 1, 5, 10		
Phenanthrene		5	0.72 (average)	
Pyrene		0.6, 5		
PCB 101 (2,2’,4,5,5’-pentachlorobiphenyl)		<0.01, 0.05		0.02
PCB 118 (2,3’,4,4’,5-pentachlorobiphenyl)		0.01		0.02
PCB 138 (2,2’,3,4,4’,5’-hexachlorobiphenyl)		0.01, 0.05		0.02
PCB 153 (2,2’,4,4’,5,5’-hexachlorobiphenyl)		0.01, 0.05		0.02
PCB 180 (2,2’,3,4,4’,5,5’-heptachlorobiphenyl)		0.01, 0.05		0.02
PCB 28 (2,4,4’-trichlorobiphenyl)		0.01, 0.05		0.02
PCB 52 (2,2’,5,5’-tetrachlorobiphenyl)		0.01, 0.05		0.02
Polychlorinated biphenyls		0.01, 0.05		0.02
Cadmium and its compounds	200	0.06, 10, 20, 90, 300		1
Lead and its compounds	100	100, 500, 1000, 9000		14
Mercury and its compounds	20	0.2, 2, 5, 25, 90, 500		2

Table 5. Stations positions and respective IMAP-SAUs used in the NEAT assessment for CI17 in the Western Mediterranean Sea.

Country	Station Code	Lat	Lon	IMAP- SAU
FR	114-P-114	43.75620	7.49000	FR-CWM-M-C
FR	109-P-015	43.52320	5.00620	FR-CWM-M-C
FR	102-P-125	43.53890	4.06790	FR-CWM-M-C
FR	106-P-012	43.44100	4.43310	FR-CWM-M-C
FR	111-P-002	43.32398	5.05390	FR-CWM-M-C
FR	111-P-003	43.32398	5.05390	FR-CWM-M-C
FR	110-P-126	43.40813	5.15436	FR-CWM-M-C
FR	109-P-027	43.37678	4.88429	FR-CWM-M-C
FR	109-P-020	43.42732	4.93890	FR-CWM-M-C
FR	106-P-018	43.44398	4.42055	FR-CWM-M-C
FR	105-P-151	43.52140	3.90970	FR-CWM-M-C
FR	102-P-016	43.49885	4.11534	FR-CWM-M-C
FR	104-P-001	43.43485	3.66412	FR-CWM-M-C
FR	104-P-002	43.36442	3.55331	FR-CWM-M-C
FR	111-P-008	43.27020	5.30680	FR-CWM-M-C
FR	111-P-015	43.32220	5.15920	FR-CWM-M-C
FR	111-P-127	43.18950	5.38620	FR-CWM-M-C
FR	111-P-128	43.18600	5.55430	FR-CWM-M-C
FR	111-P-233	43.07850	5.73730	FR-CWM-M-C
FR	112-P-010	43.07970	5.95200	FR-CWM-M-C
FR	113-P-021	43.23330	6.68180	FR-CWM-M-C
FR	114-P-006	43.50370	6.96050	FR-CWM-M-C
FR	114-P-158	43.56000	7.14370	FR-CWM-M-C
FR	114-P-165	43.69330	7.31050	FR-CWM-M-C
FR	114-P-009	43.52234	6.94560	FR-CWM-M-C
FR	112-P-014	43.08899	5.90725	FR-CWM-M-C
FR	111-P-025	43.26732	5.30057	FR-CWM-M-C
FR	094-P-008	42.48061	3.13888	FR-CWM-M-C
FR	095-P-026	43.27563	3.44054	FR-CWM-M-C
FR	094-P-006	42.46220	3.16470	FR-CWM-M-C
FR	095-P-018	42.98900	3.07900	FR-CWM-M-C
FR	102-P-120	43.24640	3.50250	FR-CWM-M-C
FR	099-P-001	43.06912	3.06870	FR-CWM-M-C
FR	097-P-002	42.87279	3.01437	FR-CWM-M-C
FR	122-P-120	41.46380	9.00800	FR-CWM-Corse-C
FR	122-P-121	42.57990	8.72920	FR-CWM-Corse-C
FR	122-P-138	42.17000	8.55940	FR-CWM-Corse-C
FR	122-P-014	41.89815	8.63016	FR-CWM-Corse-C
FR	122-P-091	42.59570	8.75400	FR-CWM-Corse-C
FR	122-P-094	42.27700	8.67100	FR-CWM-Corse-C
FR	122-P-131	41.44320	9.00120	FR-CWM-Corse-C
FR	122-P-137	41.66650	8.85900	FR-CWM-Corse-C
FR	115-P-027	42.97470	9.47200	FR-TYR-Corse-C

Country	Station Code	Lat	Lon	IMAP- SAU
FR	117-P-031	42.40710	9.55010	FR-TYR-Corse-C
FR	121-P-027	41.51260	9.29980	FR-TYR-Corse-C
FR	121-P-007	41.40748	9.21802	FR-TYR-Corse-C
FR	117-P-029	42.13180	9.56830	FR-TYR-Corse-C
FR	121-P-011	41.42880	9.30400	FR-TYR-Corse-C
IT	IT075TES	44.09247	9.72229	IT-CWM-C
IT	IT07ALBS	44.30968	8.51420	IT-CWM-C
IT	IT07ANDS	43.93689	8.15752	IT-CWM-C
IT	IT07BORS	44.10536	8.26591	IT-CWM-C
IT	IT07CAMS	44.34371	9.12676	IT-CWM-C
IT	IT07CENS	44.03091	8.23953	IT-CWM-C
IT	IT07ENTS	44.29594	9.31427	IT-CWM-C
IT	IT07FRAS	44.20276	9.53096	IT-CWM-C
IT	IT07IMPS	43.86569	8.05287	IT-CWM-C
IT	IT07LERS	44.38260	8.66453	IT-CWM-C
IT	IT07MESS	44.13789	9.61590	IT-CWM-C
IT	IT07MORS	43.77394	7.55150	IT-CWM-C
IT	IT07NERS	43.77646	7.63340	IT-CWM-C
IT	IT07NOLS	44.18467	8.41308	IT-CWM-C
IT	IT07PORS	44.02510	9.80317	IT-CWM-C
IT	IT07PRFS	44.31238	9.16992	IT-CWM-C
IT	IT07RIVS	44.24511	9.42260	IT-CWM-C
IT	IT07SANS	43.80841	7.78341	IT-CWM-C
IT	IT07SMLS	44.32369	9.23114	IT-CWM-C
IT	IT07TAGS	43.82174	7.85646	IT-CWM-C
IT	IT07VADS	44.27439	8.45558	IT-CWM-C
IT	IT07VAGS	44.38176	8.94426	IT-CWM-C
IT	IT07VOLS	44.41565	8.75397	IT-CWM-C
IT	ITG-0192-MC01200	40.55758	8.30769	IT-CWM-Sar-W-C
IT	ITG-0315-MC10190	41.05785	8.28540	IT-CWM-Sar-W-C
IT	ITG-0001-MC00010	39.18953	9.13177	IT-TYR-SarE-C
IT	ITG-0007-MC00030	39.21815	9.23630	IT-TYR-SarE-C
IT	ITG-0045-MC00250	39.52055	9.64034	IT-TYR-SarE-C
IT	ITG-0300-MC01780	39.11233	9.02608	IT-TYR-SarE-C
IT	ITG-0302-MC01800	39.18831	9.07138	IT-TYR-SarE-C
IT	ITG-0073-MC00370	39.95233	9.69144	IT-TYR-SarE-C
IT	IT07MARS	44.02316	9.99150	IT-TYR-1-C
IT	IT07SPES	44.06677	9.87900	IT-TYR-1-C
IT	IT09S0955	43.48418	10.32637	IT-TYR-1-C
IT	IT09S0957	42.94389	10.68055	IT-TYR-1-C
IT	IT09S0958	43.18780	10.52971	IT-TYR-1-C
IT	IT09S0959	42.83125	10.28750	IT-TYR-1-C
IT	IT09S0961	43.73441	10.27024	IT-TYR-1-C
IT	IT09S0963	43.53640	10.28983	IT-TYR-1-C
IT	IT09S0964	42.75897	10.41541	IT-TYR-1-C

Country	Station Code	Lat	Lon	IMAP- SAU
IT	IT09S0966	43.86293	10.23442	IT-TYR-1-C
IT	IT09S0968	43.38292	10.42800	IT-TYR-1-C
IT	IT09S1662	44.02983	10.05011	IT-TYR-1-C
IT	IT09S1663	42.92284	10.50749	IT-TYR-1-C
IT	IT09S2284	43.05146	9.84084	IT-TYR-1-C
IT	IT09S0956	43.96761	10.12505	IT-TYR-1-C
IT	IT09S0954	42.41525	11.27335	IT-TYR-3-C
IT	IT09S0962	42.65250	11.00499	IT-TYR-3-C
IT	IT09S1659	42.50158	11.18491	IT-TYR-3-C
IT	IT09S1660	42.62048	11.08066	IT-TYR-3-C
IT	IT09S1661	42.75830	10.87091	IT-TYR-3-C
IT	IT09S1663	42.92283	10.50749	IT-TYR-3-C
IT	IT09S1664	42.44015	11.13264	IT-TYR-3-C
IT	IT09S0965	42.34651	10.33202	IT-TYR-3-C
IT	IT09S1219	42.40391	11.37526	IT-TYR-3-C
IT	IT09S2447	42.34585	10.93619	IT-TYR-3-C
IT	IT12M2_51	40.97457	13.06791	IT-TYR-4-C
IT	IT12M2_72	41.22780	13.03877	IT-TYR-4-C
IT	IT15-AM_SED	40.62791	14.60733	IT-TYR-4-C
IT	IT15-BG039	40.80417	14.15083	IT-TYR-4-C
IT	IT15-CM015	40.85071	14.01243	IT-TYR-4-C
IT	IT15-FS012	40.71583	14.44033	IT-TYR-4-C
IT	IT15-ML_SED	40.80015	14.01077	IT-TYR-4-C
IT	IT15-NA006_SED	40.80679	14.25740	IT-TYR-4-C
IT	IT15-PC064_SED	40.59277	14.40777	IT-TYR-4-C
IT	IT15-PG059	40.66487	14.39030	IT-TYR-4-C
IT	IT15-PZ_SED	40.80907	14.12087	IT-TYR-4-C
IT	IT15-RV038	40.79711	14.21308	IT-TYR-4-C
IT	IT15-SM071	40.63937	14.77832	IT-TYR-4-C
IT	IT15-TG051	40.75842	14.36635	IT-TYR-4-C
IT	IT12M2_73	41.20910	13.55742	IT-TYR-4-C
IT	IT12M2_74	41.24891	13.62268	IT-TYR-4-C
IT	IT12M4_47	41.71673	12.27681	IT-TYR-4-C
IT	IT12M4_50	41.62235	12.45156	IT-TYR-4-C
IT	IT12T222	41.27126	13.03530	IT-TYR-4-C
IT	IT12T223	41.32619	13.33865	IT-TYR-4-C
IT	IT12T263	41.38326	12.93278	IT-TYR-4-C
IT	IT15-CS022_SED	40.76576	13.93902	IT-TYR-4-C
IT	IT15-MD006_SED	40.91628	13.93752	IT-TYR-4-C
IT	IT19CW0408801	38.22574	13.31890	IT-TYR-SicN-C
IT	IT19CWC03S01	37.94642	12.48297	IT-TYR-SicN-C
IT	IT19CWC05S01	38.06955	12.60577	IT-TYR-SicN-C
IT	IT19CWC09S01	38.08295	13.06430	IT-TYR-SicN-C
IT	IT19CWC15S01	38.10805	13.49628	IT-TYR-SicN-C
IT	IT19CWC19S01	37.97785	13.77643	IT-TYR-SicN-C

Country	Station Code	Lat	Lon	IMAP- SAU
IT	IT19CWC22S01	38.02386	14.34473	IT-TYR-SicN-C
IT	IT19CWC24S01	38.16260	14.76238	IT-TYR-SicN-C
IT	IT19CWC31S01	38.21194	15.25640	IT-TYR-SicN-C
IT	IT19CWC33S01	38.30008	15.51946	IT-TYR-SicN-C
IT	IT19TWLF01	38.27093	15.63530	IT-TYR-SicN-C
IT	IT19TWLF02	38.26894	15.63560	IT-TYR-SicN-C
IT	IT19TWLM01	38.13555	15.05472	IT-TYR-SicN-C
IT	IT19TWLM02	38.13739	15.05406	IT-TYR-SicN-C
IT	IT19TWLP01	38.14135	15.05435	IT-TYR-SicN-C
IT	IT19TWLP02	38.14232	15.05198	IT-TYR-SicN-C
IT	IT19TWLV01	38.14329	15.04876	IT-TYR-SicN-C
IT	IT19TWLV02	38.14410	15.04837	IT-TYR-SicN-C
IT	IT19TWMT01	38.13973	15.05305	IT-TYR-SicN-C
IT	IT19TWMT02	38.14084	15.05167	IT-TYR-SicN-C
IT	IT19TWSM02	37.89220	12.46279	IT-TYR-SicN-C
IT	IT19TWSM04B	37.88336	12.46939	IT-TYR-SicN-C
IT	IT19TWSM05	37.87212	12.46415	IT-TYR-SicN-C
IT	IT19TWSM06	37.86053	12.47245	IT-TYR-SicN-C
IT	IT19TWSM07	37.86018	12.45626	IT-TYR-SicN-C
IT	IT19TWSM08	37.84513	12.45706	IT-TYR-SicN-C
ES	BARCELONA_MG	41.36160	2.18712	ES-CWM-LEV1-C
ES	CULLERA_MG	39.18730	-0.21832	ES-CWM-LEV1-C
ES	EBRO_MB	40.75507	0.93320	ES-CWM-LEV1-C
ES	MEDAS_MG	42.03855	3.22672	ES-CWM-LEV1-C
ES	PORTMAN_MG	37.57085	-0.87343	ES-CWM-LEV1-C
ES	SALOU _MG	41.08293	1.19570	ES-CWM-LEV1-C
ES	STPOLA_MG	38.08211	-0.59616	ES-CWM-LEV1-C
ES	PEÑISCOLA_MG	40.36041	0.40735	ES-CWM-LEV1-C
ES	CASTELLON_MG	39.95564	0.02836	ES-CWM-LEV1-C
ES	SANTA_POLA_SAPOLA_01	38.12583	-0.54290	ES-CWM-LEV1-C
ES	SANTA_POLA_SAPOLA_10	38.12568	-0.56460	ES-CWM-LEV1-C
ES	SANTA_POLA_SAPOLA_11	38.12699	-0.50538	ES-CWM-LEV1-C
ES	MALLOR_01	39.25165	2.81837	ES-CWM-LEVOS-C
ES	MALLOR_10	39.32798	2.71732	ES-CWM-LEVOS-C
ES	MALLOR_11	39.45017	2.55617	ES-CWM-LEVOS-C
ES	ALGECIRAS2_MG	36.17587	-5.41482	ALBS-ES-C
ES	MANILVA_MG	36.31048	-5.24793	ALBS-ES-C
ES	ALMERIA_MG	36.82798	-2.46032	ALBS-ES-C
ES	HERRADURA_MG	36.73041	-3.76296	ALBS-ES-C
ES	MALAGA_MG	36.70228	-4.42615	ALBS-ES-C
ES	DTEBRO_01*	40.52923	0.94230	ES-CWM-LEV1-O
ES	DTEBRO_10*	40.46120	1.05217	ES-CWM-LEV1-O
ES	DTEBRO_11*	40.40727	1.14463	ES-CWM-LEV1-O
ES	DTLLOB_01*	41.20720	2.06693	ES-CWM-LEV1-O
ES	DTLLOB_10*	41.17763	2.09360	ES-CWM-LEV1-O

Country	Station Code	Lat	Lon	IMAP- SAU
ES	DTLLOB_11*	41.15240	2.11857	ES-CWM-LEV1-O
ES	TARRAG_01*	41.04338	1.23755	ES-CWM-LEV1-O
ES	TARRAG_10*	40.98815	1.27553	ES-CWM-LEV1-O
ES	TARRAG_11*	40.93610	1.31208	ES-CWM-LEV1-O
ES	VALENC_01*	39.37353	-0.18747	ES-CWM-LEV1-O
ES	VALENC_10*	39.37458	-0.11817	ES-CWM-LEV1-O
ES	VALENC_11*	39.37567	-0.04583	ES-CWM-LEV1-O
ES	CARTAGENA_MG*	37.56685	-0.97940	ES-CWM-LEV1-O
MA	Stehat	35.34740	-4.94833	MO-Central-B-C
MA	Targha	35.39863	-5.00663	MO-Central-B-C
MA	MOR2B5	35.41137	-5.05742	MO-Central-B-C
MA	MOR2E4 (Oued Laou)	35.42302	-5.11290	MO-Central-B-C
MA	MOR2B3	35.45517	-5.08445	MO-Central-B-C
MA	MA3_E11	35.15178	-4.3633	MO-Central-B-C
MA	MOR4P2	35.10812	-2.70410	MO-East-C
MA	MOR5E1 Oued Moulouya	35.10896	-2.36210	MO-East-C
MA	MOR4E3 (Oued Selouane)	35.12057	-2.89080	MO-East-C
MA	MOR4E2 (Oued Cabaillo)	35.16123	-2.90838	MO-East-C
MA	MOR4P1 (Bni Nssar)	35.26394	-2.92255	MO-East-C
MA	MA4_ERE	35.145417	-2.447100	MO-East-C
MA	MOR1E3 (Oued Swani)	35.77245	-5.79080	MO-Gib-B-C
MA	MOR1E4 (Oued m'ghrora)	35.77318	-5.78080	MO-Gib-B-C
MA	MOR2B4	35.64105	-5.27005	MO-West-C
MA	MOR2B2	35.69410	-5.31792	MO-West-C
MA	MOR2B1	35.72375	-5.33068	MO-West-C
MA	O.Negro	35.79900	-5.34260	MO-West-C
MA	MOR2E1 (Rejet Fnideq)	35.84857	-5.35292	MO-West-C

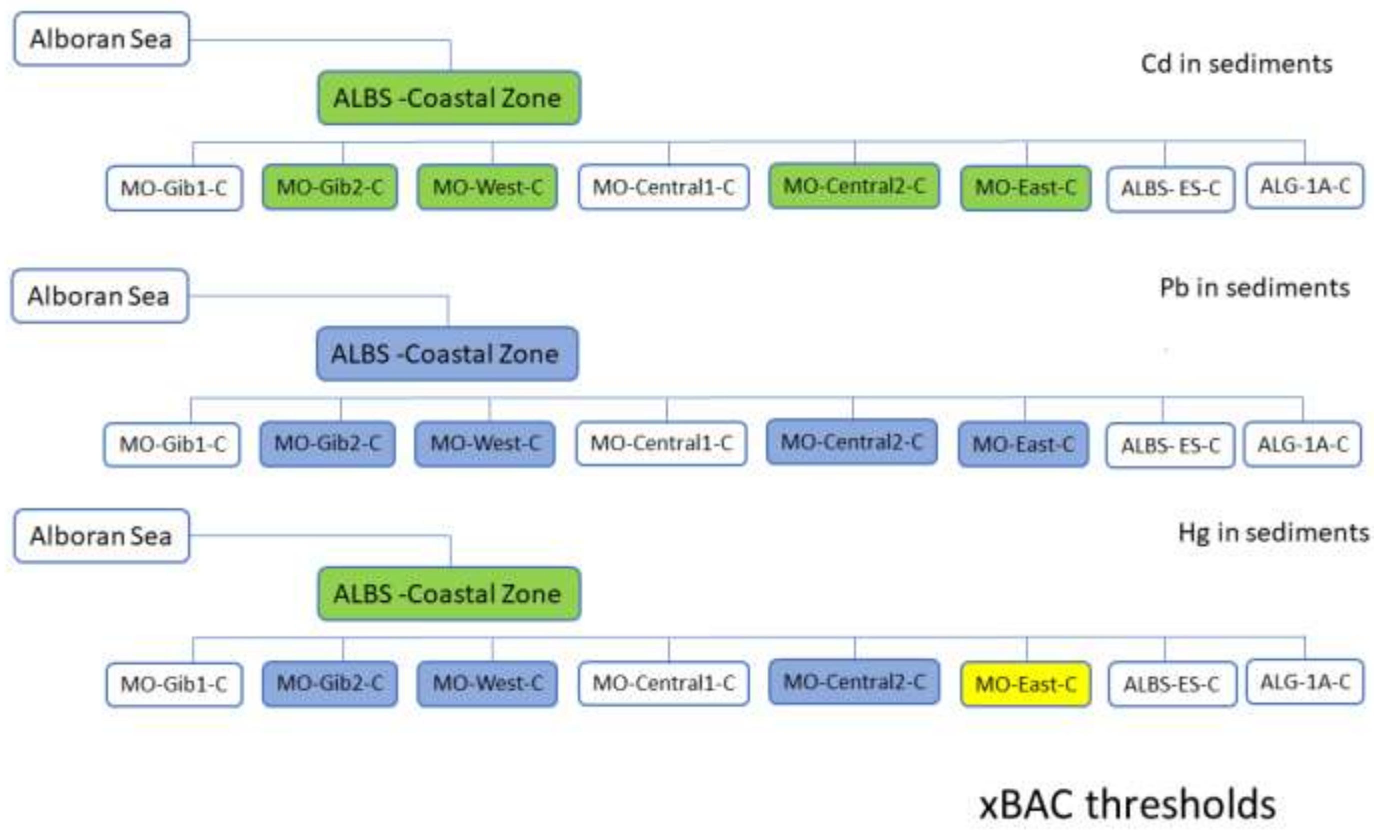
*Offshore stations with data not used for the present assessment

Annex III

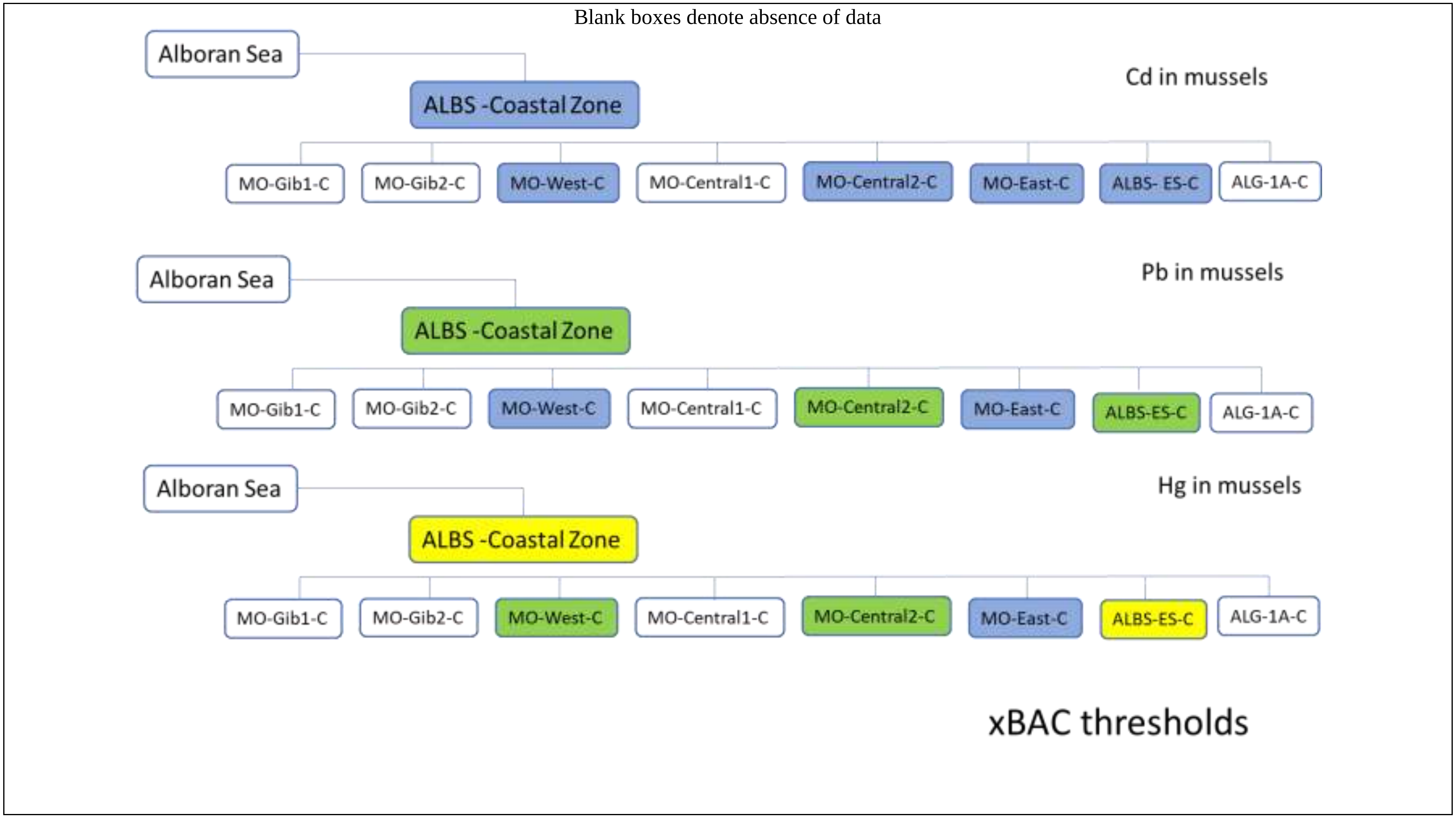
Schematic representation of the NEAT assessment results in the nesting scheme of the Alboran Sea and Tyrrhenian Sea sub-division of the Western Mediterranean Sub-region according to the NEAT color scale. Assessments based on i) the MedEAC and ii) the xBAC GES-nGES thresholds.

Schematic presentation of the assessment results as presented in Table 5 for TM in sediments of the Alboran coastal assessment zone using the xBAC GES-nGES threshold

Blank boxes denote absence of data

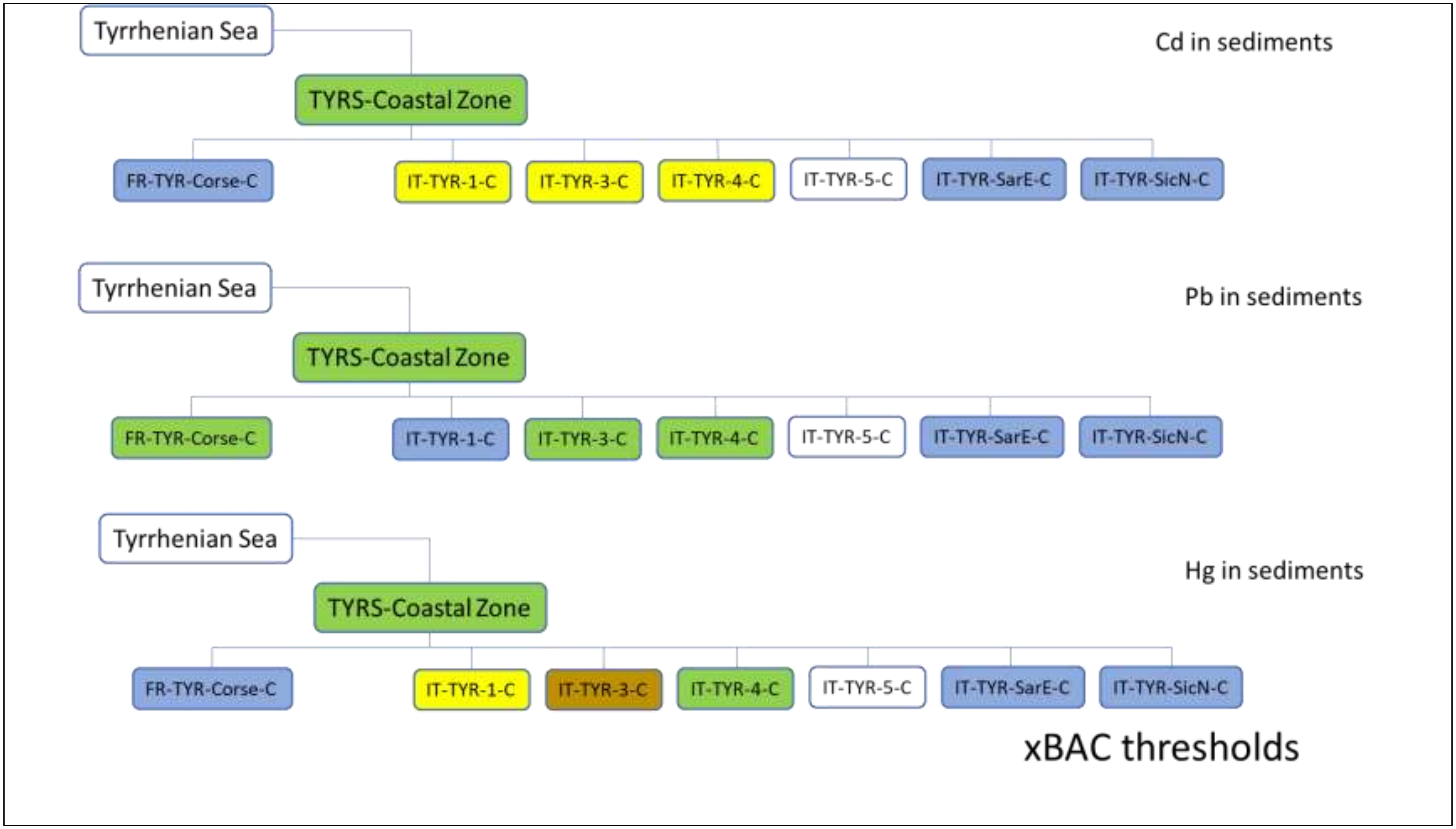


Schematic presentation of the assessment results as presented in Table 5 for TM in mussels of the Alboran coastal assessment zone using the xBAC GES-nGES threshold



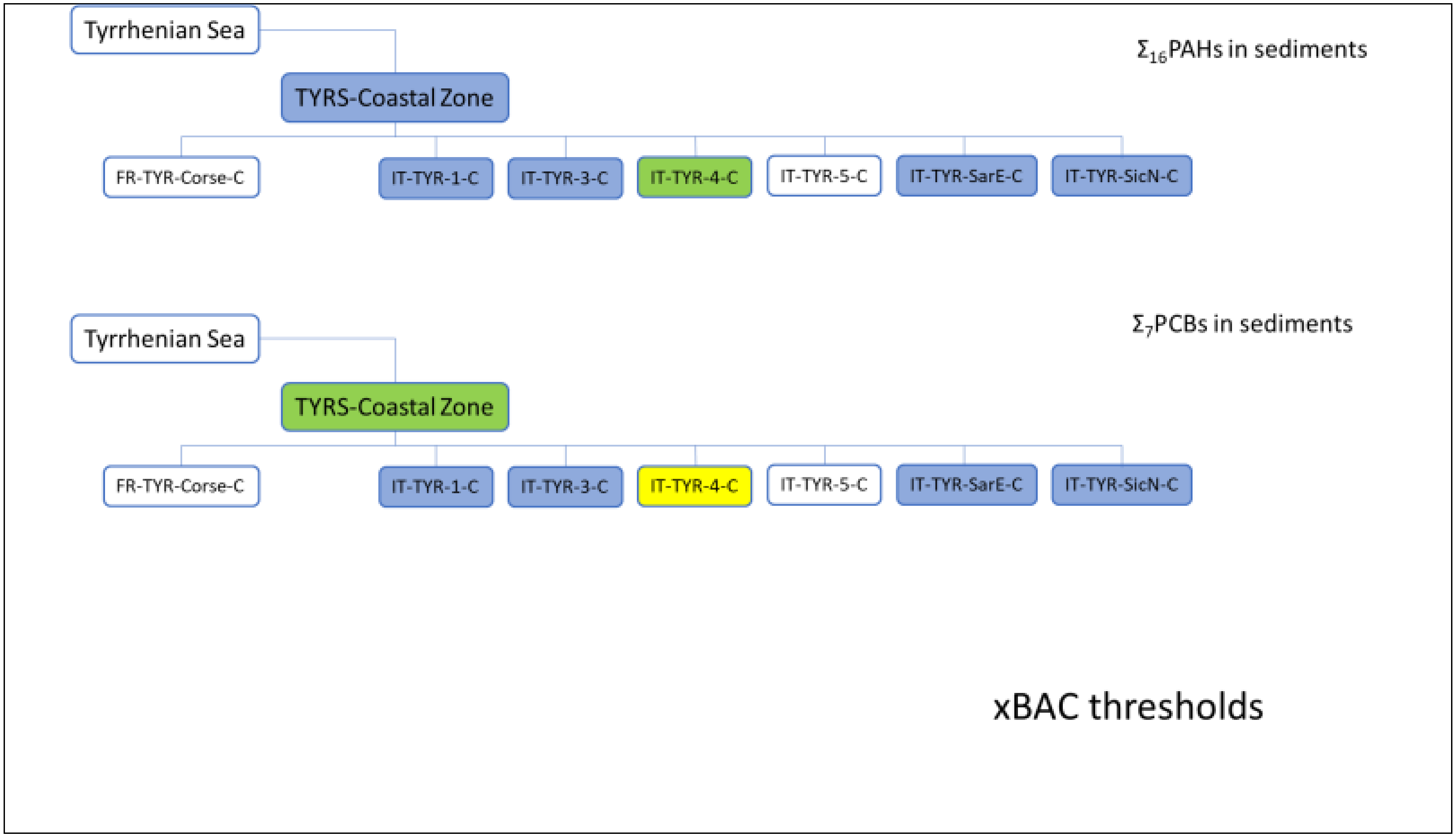
Schematic presentation of the assessment results as presented in Table 6 for TM in sediments of the Tyrrhenian Sea coastal assessment zone using the xBAC GES-nGES threshold

Blank boxes denote absence of data



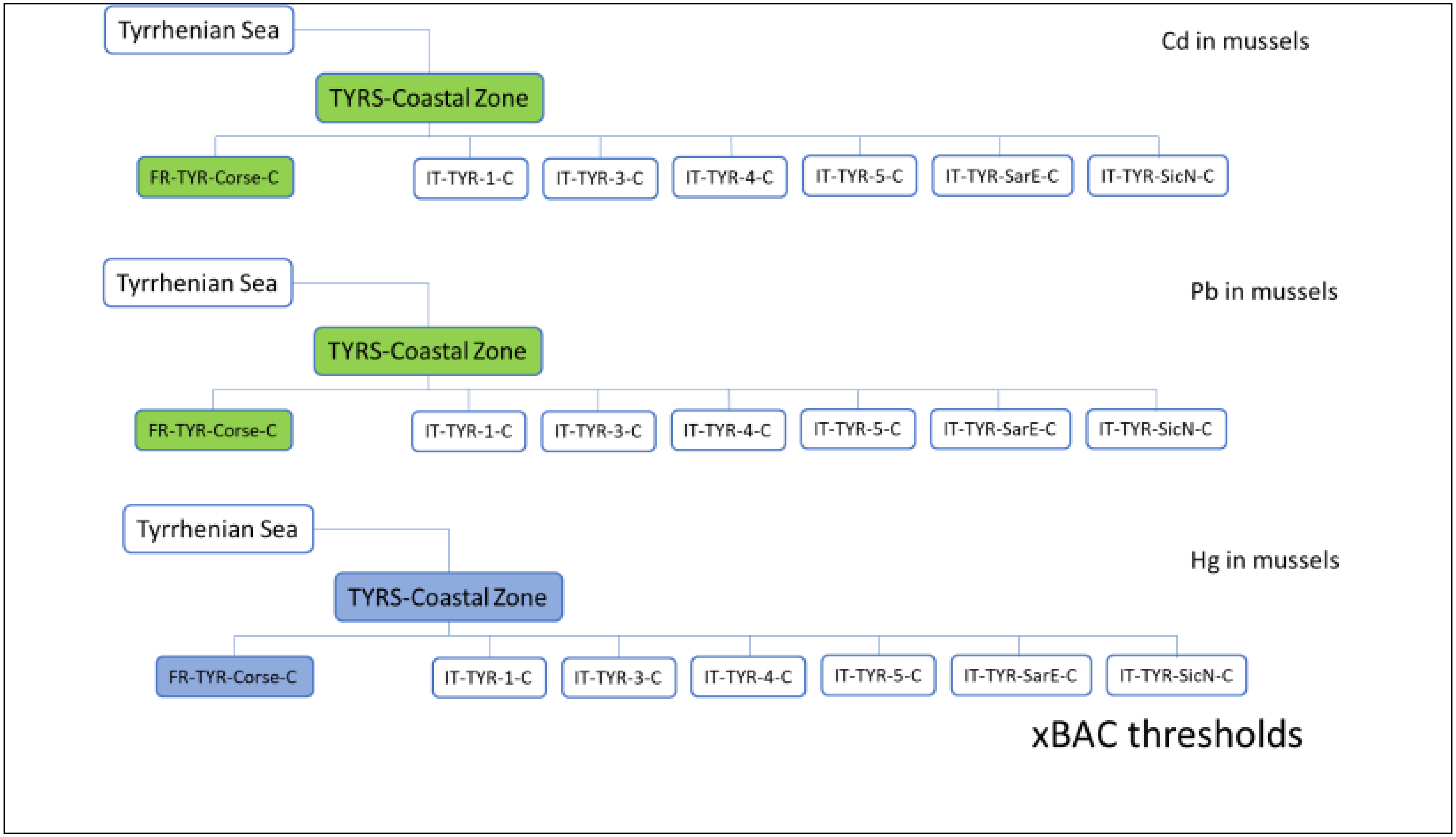
Schematic presentation of the assessment results as presented in Table 6 for Σ_{16}PAHS and Σ_7PCBS in sediments of the Tyrrhenian Sea coastal assessment zone using the xBAC GES-nGES threshold

Blank boxes denote absence of data



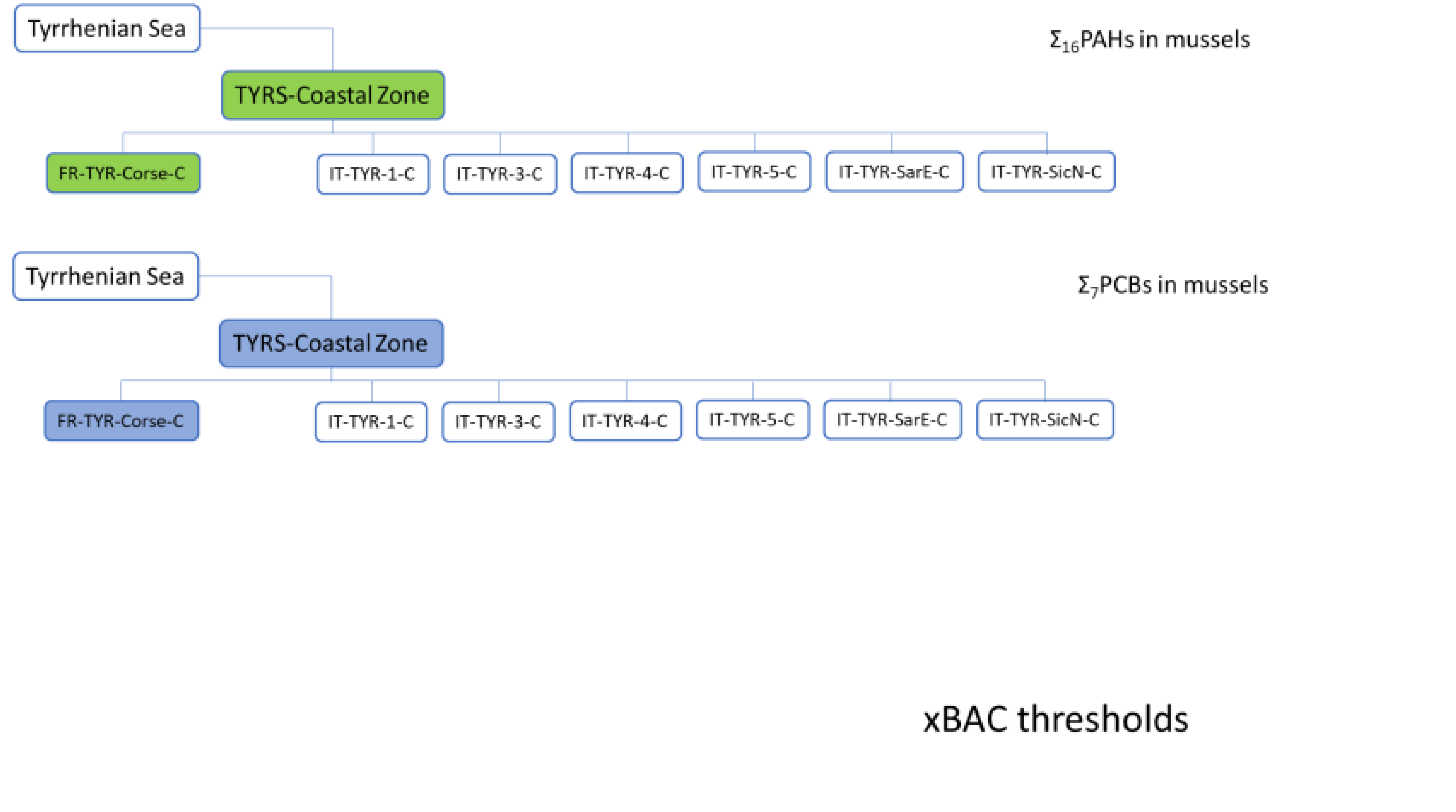
Schematic presentation of the assessment results as presented in Table 6 for TM in mussels of the Tyrrhenian Sea coastal assessment zone using the xBAC GES-nGES threshold

Blank boxes denote absence of data



Schematic presentation of the assessment results as presented in Table 6 for Σ_{16}PAHS ans Σ_7PCBS in mussels of the Tyrrhenian Sea coastal assessment zone using the xBAC GES-nGES threshold

Blank boxes denote absence of data



Annex IV
Contamination ratios (CR) and contamination scores (CS) for each individual station monitored in the CWMS by the CHASE+ tool

Tables A and B show the CHASE+ classification for each parameter at each individual station. Analysis of the results can provide insights on the spatial classification at the sub-SAU they belong and on which parameter influences the overall status of the station and the sub-SAU. Moreover, if a station was sampled at different years, a temporal trend may be identified.

M. galloprovinciallis. At the ES-CWM-LEV1-C sub-SAU the majority of the classifications were on the high and good status, except for Barcelona PCBs and Pb that were in moderate status. and Portmans Pb that was in moderate status. Those did not influence the status of this sub-SAU based on the average concentrations, and they were classified on the high and good statuses. No temporal trend was identified in the TM concentrations. Looking at the aggregated value – the contamination score (CS) for each station, only Portman station in 2019 was classified as in moderate status. The average CS classification for *M. galloprovinciallis* at ES-CWM-LEV1-C sub-SAU was high (CS=0.49).

For FR-CWM-M-C stations were sampled either once (2018) or 4 times (2018-2021). The stations that were sampled once were at high and good statuses concerning the contaminants in *M. galloprovinciallis*. The stations that were sampled 4 times had a worse classification. For example, station 111-P-025 (off Marseille) was in high status just for Cd (2018-2021) and in good status for PCBs in 2019-2021. The station was in moderate and poor statuses concerning Hg and Pb and in poor and bad status for PAHs. The state of this station improved from 2018-2019 to 2020-2021. No temporal improvement was shown for station 112-P-014, (off Toulon) nor for PAHs at station 114-P-009 (off Cannes). The overall classification (CS) per station was mainly high or poor status the latter mainly as a result of the PAHs, followed by Hg and Pb contents in mussel. Based on the average CS for all stations, this sub-SAU was classified in moderate status.

PAHs in SAUs FR-CWM-C-C and FR-CWM-W-C were classified mostly in poor status. However, the overall average classification (CS) of the stations were mainly in GES (High and good statuses) with affected non-GES stations in moderate status. All stations sampled in FR-CWM-Cors-C were in GES.

Sediments. The sub-SAUs ES-CWM-LEV1-C and ES-CWM-LEVOS1-C were in GES concerning TM, Σ16 PAHs and Σ7 PCBs in sediment, with 3 stations in high status and 3 in good status. The sub-SAU FR-CWM-E2C overall classification (Average CSs) was moderate status, due to Hg in sediments. FR-CWM-C-C, FR-CWM-W-C, and FR-CWM-Corse-C were in-GES with most stations in the high classification.
The statuses of sediments in the stations from the IT-CWM-C sub-SAU were very heterogenous. Some stations were on high status concerning PAHs and PCBs, while others were in poor and bad statuses. Cd was on a moderate status at most of the stations while Hg and Pb were in high and good statuses in most stations. The overall classification (CS) of the individual stations was mostly (13 out of 23 stations, each station sampled in 2016 and 2020) on the high and good statuses. The non-GES stations wer classified in the poor/bad statusts.No temporal trend was detected. Most of the stations had the same classification in 2016 and 2020. The overall classification of this sub-SAU (average CS) was poor concerning CI-17 contaminants in sediments.

Table A. Calculated contamination ratios (CR) and contamination scores (CS) for contaminants in *M. galloprovincialis* at each station in the CWMS sub-division.

SAU	Station	YEAR	CR_Cd	CR_Hg	CR_Pb	CR_ Σ16 PAH	CR_ Σ7 PCB	CS
ES-CMW-LEV1-C	BARCELONA_MG	2017	0.17	0.60	1.31		1.54	0.91
ES-CMW-LEV1-C	BARCELONA_MG	2019	0.19	0.84	1.90			0.98
ES-CMW-LEV1-C	CULLERA_MG	2017	0.12	0.71	0.70		0.34	0.47
ES-CMW-LEV1-C	CULLERA_MG	2019	0.17	0.59	0.44			0.40
ES-CMW-LEV1-C	EBRO_MB	2017	0.20	0.44	0.38		0.48	0.37
ES-CMW-LEV1-C	EBRO_MB	2019	0.28	0.65	0.45			0.46
ES-CMW-LEV1-C	MEDAS_MG	2017	0.26	0.31	0.75		0.20	0.38
ES-CMW-LEV1-C	MEDAS_MG	2019	0.28	0.38	0.49			0.38
ES-CMW-LEV1-C	PORTMAN_MG	2017	0.55	0.55	2.41		0.14	0.91
ES-CMW-LEV1-C	PORTMAN_MG	2019	0.47	0.79	2.07			1.11
ES-CMW-LEV1-C	SALOU _MG	2017	0.16	0.84	0.83		0.63	0.61
ES-CMW-LEV1-C	SALOU _MG	2019	0.13	1.00	0.82			0.65
ES-CMW-LEV1-C	STPOLA_MG	2017	0.54	0.48	0.55		0.16	0.43
ES-CMW-LEV1-C	STPOLA_MG	2019	0.38	0.56	0.42			0.45
ES-CMW-LEV1-C	PEÑISCOLA_MG	2019	0.10	0.76	0.53			0.46
ES-CMW-LEV1-C	CASTELLON_MG	2019	0.17	0.52	0.39			0.36
ES-CMW-LEV1-C	**AVERAGE**		**0.26**	**0.63**	**0.90**		**0.50**	**0.57**
FR-CWM-M-C	114-P-114	2018	0.60	0.86	0.60	0.32	0.07	0.49
FR-CWM-M-C	111-P-008	2018	0.36	0.63	0.46	0.38	0.31	0.43
FR-CWM-M-C	111-P-015	2018	0.43	0.64	0.60	0.50	0.29	0.49
FR-CWM-M-C	111-P-025	2018	0.33	1.22	3.42	17.05	1.34	4.67
FR-CWM-M-C	111-P-025	2019	0.42	2.21	3.32	6.05	0.73	2.54
FR-CWM-M-C	111-P-025	2020	0.36	1.80	1.95	4.67	0.56	1.87
FR-CWM-M-C	111-P-025	2021	0.35	1.14	1.28	4.00	0.50	1.45
FR-CWM-M-C	111-P-127	2018	0.52	0.74	0.46	0.32	0.20	0.45
FR-CWM-M-C	111-P-128	2018	0.43	0.72	0.42	0.37	0.08	0.41
FR-CWM-M-C	111-P-233	2018	0.43	0.71	0.39	0.69	0.08	0.46
FR-CWM-M-C	112-P-010	2018	0.41	0.86	0.67	1.21	0.33	0.69
FR-CWM-M-C	112-P-014	2018	0.36	3.01	2.43	8.74	1.10	3.13
FR-CWM-M-C	112-P-014	2019	0.36	2.36	3.42	5.04	1.29	2.50
FR-CWM-M-C	112-P-014	2020	0.29	3.94	2.67	6.44	1.26	2.92
FR-CWM-M-C	112-P-014	2020	0.30	1.94	1.21			1.15
FR-CWM-M-C	112-P-014	2021	0.44	4.32	2.84	5.26	0.62	2.70
FR-CWM-M-C	113-P-021	2018	0.56	0.74	0.56	0.34	0.04	0.45
FR-CWM-M-C	114-P-006	2018	0.56	0.71	0.53	0.67	0.07	0.51
FR-CWM-M-C	114-P-009	2018	0.32	0.50	0.53			0.45
FR-CWM-M-C	114-P-009	2019	0.36	0.72	0.67	15.78	0.19	3.54
FR-CWM-M-C	114-P-009	2020	0.35	0.73	0.69	2.30	0.21	0.86
FR-CWM-M-C	114-P-009	2021	0.28	0.57	0.51	14.92	0.18	3.29
FR-CWM-M-C	114-P-158	2018	0.60	0.71	0.49	0.30	0.05	0.43
FR-CWM-M-C	114-P-165	2018	0.47	0.79	0.56	0.76	0.12	0.54
FR-CWM-M-C								
FR-CWM-M-C	102-P-016	2018	0.03	0.63	0.19			0.28
FR-CWM-M-C	102-P-016	2019	0.03	0.61	0.25			0.30
FR-CWM-M-C	102-P-125	2018	0.25	0.31	0.31	0.72	0.33	0.38
FR-CWM-M-C	104-P-001	2018	0.22	0.72	0.60			0.51
FR-CWM-M-C	104-P-001	2019	0.42	0.49	0.28	4.97	0.33	1.30
FR-CWM-M-C	104-P-001	2020	0.35	0.38	0.29	3.51	0.39	0.98
FR-CWM-M-C	104-P-001	2021	0.42	0.59	0.28	3.71	0.43	1.09
FR-CWM-M-C	104-P-002	2018	0.24	0.56	0.42			0.41
FR-CWM-M-C	104-P-002	2020	0.31	1.27	0.21	3.12	0.08	1.00
FR-CWM-M-C	104-P-002	2021	0.34	0.43	0.15	2.60	0.17	0.74

SAU	Station	YEAR	CR_Cd	CR_Hg	CR_Pb	CR_ Σ16 PAH	CR_ Σ7 PCB	CS
FR-CWM-M-C	105-P-151	2018	0.28	1.84	0.42			0.85
FR-CWM-M-C	105-P-151	2019	0.26	1.46	0.42	3.50	0.58	1.25
FR-CWM-M-C	105-P-151	2020	0.36	1.26	0.45	3.08	0.38	1.10
FR-CWM-M-C	105-P-151	2021	0.24	0.92	0.39	2.79	0.63	0.99
FR-CWM-M-C	106-P-012	2018	0.31	0.38	0.34	0.47	0.17	0.33
FR-CWM-M-C	106-P-018	2018	0.56	0.88	0.99	3.88	0.28	1.32
FR-CWM-M-C	106-P-018	2019	0.53	0.78	0.53	3.08	0.19	1.02
FR-CWM-M-C	106-P-018	2020	0.46	0.81	0.57	1.41	0.26	0.70
FR-CWM-M-C	106-P-018	2021	0.41	0.62	0.48	1.41	0.35	0.65
FR-CWM-M-C	109-P-015	2018	0.43	0.73	0.46	0.65	0.28	0.51
FR-CWM-M-C	109-P-020	2018	0.36	1.36	2.26	6.75	0.29	2.20
FR-CWM-M-C	109-P-020	2019	0.27	1.09	1.09	4.99	0.33	1.56
FR-CWM-M-C	109-P-020	2020	0.32	1.04	1.26	4.39	0.42	1.49
FR-CWM-M-C	109-P-020	2021	0.28	1.12	1.21	4.05	0.71	1.47
FR-CWM-M-C	109-P-027	2018	0.30	0.73	0.42	4.35	0.37	1.23
FR-CWM-M-C	109-P-027	2019	0.35	0.94	0.63	6.99	0.24	1.83
FR-CWM-M-C	109-P-027	2020	0.17	0.57	0.53	5.16	0.58	1.40
FR-CWM-M-C	109-P-027	2021	0.29	0.69	0.47	2.97	0.44	0.97
FR-CWM-M-C	110-P-126	2018	0.17	0.28	0.22			0.22
FR-CWM-M-C	110-P-126	2019	0.08	0.20	0.11			0.13
FR-CWM-M-C	110-P-126	2020	0.17	0.23	0.15			0.19
FR-CWM-M-C	110-P-126	2021	0.10	0.29	0.11			0.17
FR-CWM-M-C	111-P-002	2018		1.46	1.06			1.26
FR-CWM-M-C	111-P-002	2019	0.49	1.31	1.06	2.59	0.20	1.13
FR-CWM-M-C	111-P-003	2020	0.46	1.24	0.90	1.56	0.21	0.87
FR-CWM-M-C	111-P-003	2021	0.46	1.19	0.75	1.84	0.30	0.91
FR-CWM-M-C								
FR-CWM-M-C	094-P-006	2018	0.34	0.51	0.42	0.30	0.10	0.33
FR-CWM-M-C	094-P-008	2018	0.38	0.54	0.53			0.48
FR-CWM-M-C	094-P-008	2019	0.53	0.63	0.78	2.69	0.14	0.95
FR-CWM-M-C	094-P-008	2020	0.39	0.48	0.59	1.88	0.20	0.71
FR-CWM-M-C	094-P-008	2021	0.47	0.48	0.67	1.34	0.17	0.63
FR-CWM-M-C	095-P-018	2018	0.24	0.33	0.39	0.30	0.17	0.28
FR-CWM-M-C	095-P-026	2019	0.52	0.63	1.59	2.41	0.22	1.08
FR-CWM-M-C	095-P-026	2019	0.52	0.63	1.59	2.41	0.22	1.08
FR-CWM-M-C	095-P-026	2020	0.46	0.71	1.26	2.26	0.16	0.97
FR-CWM-M-C	095-P-026	2020	0.46	0.71	1.26	2.26	0.16	0.97
FR-CWM-M-C	095-P-026	2021	0.37	0.61	1.16	2.54	0.22	0.98
FR-CWM-M-C	095-P-026	2021	0.37	0.61	1.16	2.54	0.22	0.98
FR-CWM-M-C	097-P-002	2018	0.43	0.61	0.11	3.79	0.07	1.00
FR-CWM-M-C	097-P-002	2019	0.40	0.42	0.11			0.31
FR-CWM-M-C	097-P-002	2020	0.27	0.37	0.07			0.24
FR-CWM-M-C	097-P-002	2021	0.28	0.51	0.10	2.81	0.08	0.76
FR-CWM-M-C	099-P-001	2018	0.44	0.87	0.53	1.75	0.05	0.73
FR-CWM-M-C	099-P-001	2019	0.22	2.39	0.35	0.55	0.18	0.74
FR-CWM-M-C	102-P-120	2018	0.30	0.34	0.34	0.31	0.17	0.29
FR-CWM-M-C	**AVERAGE**		**0.355**	**0.953**	**0.789**	**3.337**	**0.336**	**1.048**
FR-CWM-Corse-C	122-P-120	2018	0.56	0.70	0.39	0.17	0.02	0.37
FR-CWM-Corse-C	122-P-121	2018	0.60	0.77	0.49	0.25	0.03	0.43
FR-CWM-Corse-C	122-P-138	2018	0.52	0.71	0.42	0.14	0.02	0.36
FR-CWM-Corse-C	122-P-014	2019	1.03	0.84	0.56	1.31	0.03	0.75
FR-CWM-Corse-C	**AVERAGE**		**0.68**	**0.75**	**0.47**	**0.47**	**0.02**	**0.48**

Table B. Calculated contamination ratios (CR) and contamination scores (CS) for contaminants in sediments at each station in the CWMS sub-division.

SAU	Station	YEAR	CR_Cd	CR_Hg	CR_Pb	CR_ Σ16 PAH	CR_ Σ7 PCB	CS
ES-CWM-LEV1-C	SANTA_POLA_SAPO LA_01	2016	0.45	0.50	1.08	0.16	0.21	**0.48**
ES-CWM-LEV1-C	SANTA_POLA_SAPO LA_10	2016	0.46	0.53	0.98	0.16	0.42	**0.51**
ES-CWM-LEV1-C	SANTA_POLA_SAPO LA_11	2016	0.42	0.45	0.97	0.16	0.50	**0.50**
AVERAGE			**0.44**	**0.49**	**1.01**	**0.16**	**0.38**	**0.50**
ES-CWM-LEVOS1-C	MALLOR_01	2016	0.13	0.12	0.22	0.15	0.08	**0.14**
ES-CWM-LEVOS1-C	MALLOR_10	2016	0.18	0.06	0.14	0.05	1.20	**0.33**
ES-CWM-LEVOS1-C	MALLOR_11	2016	0.08	0.12	0.18	0.22	0.02	**0.12**
AVERAGE			**0.13**	**0.10**	**0.18**	**0.14**	**0.43**	**0.20**
FR-CWM-M-C	114-P-173	2016	0.16	0.08	0.42			0.22
FR-CWM-M-C	111-P-038	2016	0.32	5.74	1.44			**2.50**
FR-CWM-M-C	111-P-124	2016	0.19	0.57	0.44			**0.40**
FR-CWM-M-C	112-P-034	2016	0.16	12.54	1.78			**4.83**
FR-CWM-M-C	113-P-040	2016	0.35	0.38	1.25			**0.66**
FR-CWM-M-C	113-P-139	2016	0.16	0.14	0.44			**0.25**
FR-CWM-M-C	114-P-066	2016	0.16	1.24	1.33			**0.91**
FR-CWM-M-C	114-P-161	2016	0.54	0.23	0.53			**0.43**
FR-CWM-M-C	114-P-164	2016	0.38	0.44	0.72			**0.52**
FR-CWM-M-C	114-P-167	2016	0.10	0.14	0.58			**0.27**
FR-CWM-M-C	106-P-061	2016	0.25	0.12	0.39			**0.26**
FR-CWM-M-C	109-P-042	2016	0.44	0.69	0.61			**0.58**
FR-CWM-M-C	102-P-029	2016	0.29	0.29	0.56			**0.38**
FR-CWM-M-C	094-P-007	2016	0.13	0.00	0.50			**0.21**
FR-CWM-M-C	095-P-025	2016	0.19	0.10	0.69			**0.33**
AVERAGE			0.242	1.254	0.793			0.764
FR-CWM_Corse-C	122-P-091	2016	0.10	0.12	0.50			**0.24**
FR-CWM_Corse-C	122-P-094	2016	0.32	0.30	1.39			**0.67**
FR-CWM_Corse-C	122-P-131	2016	0.16	0.36	0.47			**0.33**
FR-CWM_Corse-C	122-P-137	2016	0.19	0.35	1.03			**0.52**
AVERAGE			**0.19**	**0.28**	**0.85**			**0.44**
IT-CWM_C	IT075TES	2016	1.52	0.64	0.67	0.12	1.09	**0.81**
IT-CWM_C	IT075TES	2020	1.90	0.44	0.56	0.17	0.11	**0.64**
IT-CWM_C	IT07ALBS	2016	2.54	1.83	1.61	0.69	5.69	**2.47**
IT-CWM_C	IT07ALBS	2020	1.90	2.27	1.19	1.26	3.19	**1.96**
IT-CWM_C	IT07ANDS	2016	1.46	0.25	0.28	0.15	0.34	**0.49**
IT-CWM_C	IT07ANDS	2020	1.14	0.15	0.31	0.49	0.08	**0.43**
IT-CWM_C	IT07BORS	2016	1.56	0.54	0.47	0.30	0.31	**0.64**
IT-CWM_C	IT07BORS	2020	1.27	0.40	0.47	1.75	0.21	**0.82**
IT-CWM_C	IT07CAMS	2016	1.24	0.99	0.69	17.26	2.13	**4.46**
IT-CWM_C	IT07CAMS	2020	1.27	0.74	0.78	11.00	3.73	**3.50**
IT-CWM_C	IT07CENS	2016	1.71	0.35	0.36	1.12	0.22	**0.75**
IT-CWM_C	IT07CENS	2020	1.59	0.25	0.42	0.38	0.10	**0.55**
IT-CWM_C	IT07ENTS	2016	2.06	0.59	0.83	1.19	2.31	**1.40**
IT-CWM_C	IT07ENTS	2020	2.22	1.43	0.83	2.49	3.29	**2.05**
IT-CWM_C	IT07FRAS	2016	1.30	0.15	0.47	0.01	0.22	**0.43**
IT-CWM_C	IT07FRAS	2020	1.90	0.59	0.47	0.23	0.13	**0.67**
IT-CWM_C	IT07IMPS	2016	1.21	0.35	0.56	0.57	0.97	**0.73**

SAU	Station	YEAR	CR_Cd	CR_Hg	CR_Pb	CR_ Σ16 PAH	CR_ Σ7 PCB	CS
IT-CWM_C	IT07IMPS	2020	0.73	0.20	0.18	0.64	0.09	**0.37**
IT-CWM_C	IT07LERS	2016	3.49	0.59	1.81	2.96	3.28	**2.43**
IT-CWM_C	IT07LERS	2020	3.17	0.59	1.78	1.87	5.38	**2.56**
IT-CWM_C	IT07MESS	2016	1.30	0.49	0.56	0.03	0.38	**0.55**
IT-CWM_C	IT07MESS	2020	1.59	1.04	0.53	0.17	0.06	**0.68**
IT-CWM_C	IT07MORS	2016	1.11	0.25	0.39	0.53	0.44	**0.54**
IT-CWM_C	IT07MORS	2020	1.11	0.25	0.44	0.64	0.24	**0.54**
IT-CWM_C	IT07NERS	2016	1.40	0.15	0.33	0.09	3.53	**1.10**
IT-CWM_C	IT07NERS	2020	0.98	0.10	0.31	0.17	0.36	**0.38**
IT-CWM_C	IT07NOLS	2016	0.57	0.10	0.17	0.04	0.22	**0.22**
IT-CWM_C	IT07NOLS	2020	0.32	0.05	0.17	0.19	0.05	**0.15**
IT-CWM_C	IT07PORS	2016	1.43	0.44	0.44	0.04	2.81	**1.03**
IT-CWM_C	IT07PORS	2020	1.59	0.25	0.39	0.25	0.59	**0.61**
IT-CWM_C	IT07PRFS	2016	1.14	0.79	0.64	0.21	0.81	**0.72**
IT-CWM_C	IT07PRFS	2020	1.27	0.99	0.75	0.65	0.33	**0.80**
IT-CWM_C	IT07RIVS	2016	2.29	0.44	0.75	4.14	8.88	**3.30**
IT-CWM_C	IT07RIVS	2020	2.22	0.59	0.78	0.93	4.98	**1.90**
IT-CWM_C	IT07SANS	2016	0.92	0.20	0.31	1.20	0.50	**0.63**
IT-CWM_C	IT07SANS	2020	0.67	0.15	0.28	1.93	0.12	**0.63**
IT-CWM_C	IT07SMLS	2016	1.75	0.99	0.97	3.55	2.84	**2.02**
IT-CWM_C	IT07SMLS	2020	1.59	0.59	0.69	1.05	1.82	**1.15**
IT-CWM_C	IT07TAGS	2016	0.89	0.15	0.28	0.18	0.63	**0.42**
IT-CWM_C	IT07TAGS	2020	1.02	0.15	0.36	0.54	0.13	**0.44**
IT-CWM_C	IT07VADS	2016	1.65	2.57	1.08	16.64	7.41	**5.87**
IT-CWM_C	IT07VADS	2020	2.22	4.15	1.64	3.47	5.01	**3.30**
IT-CWM_C	IT07VAGS	2016	1.78	4.00	1.67	53.66	24.84	**17.19**
IT-CWM_C	IT07VAGS	2020	1.59	2.72	1.58	63.94	37.48	**21.46**
IT-CWM_C	IT07VOLS	2016	2.86	0.89	1.01	12.82	6.00	**4.72**
IT-CWM_C	IT07VOLS	2020	2.22	1.58	1.36	18.18	12.24	**7.12**
AVERAGE			**1.58**	**0.81**	**0.71**	**5.00**	**3.38**	**2.30**

Annex V

Maps of the status assessment results in the Western Mediterranean sub-region applying the adapted CHASE + tool and the (xBAC) GES/nGES threshold

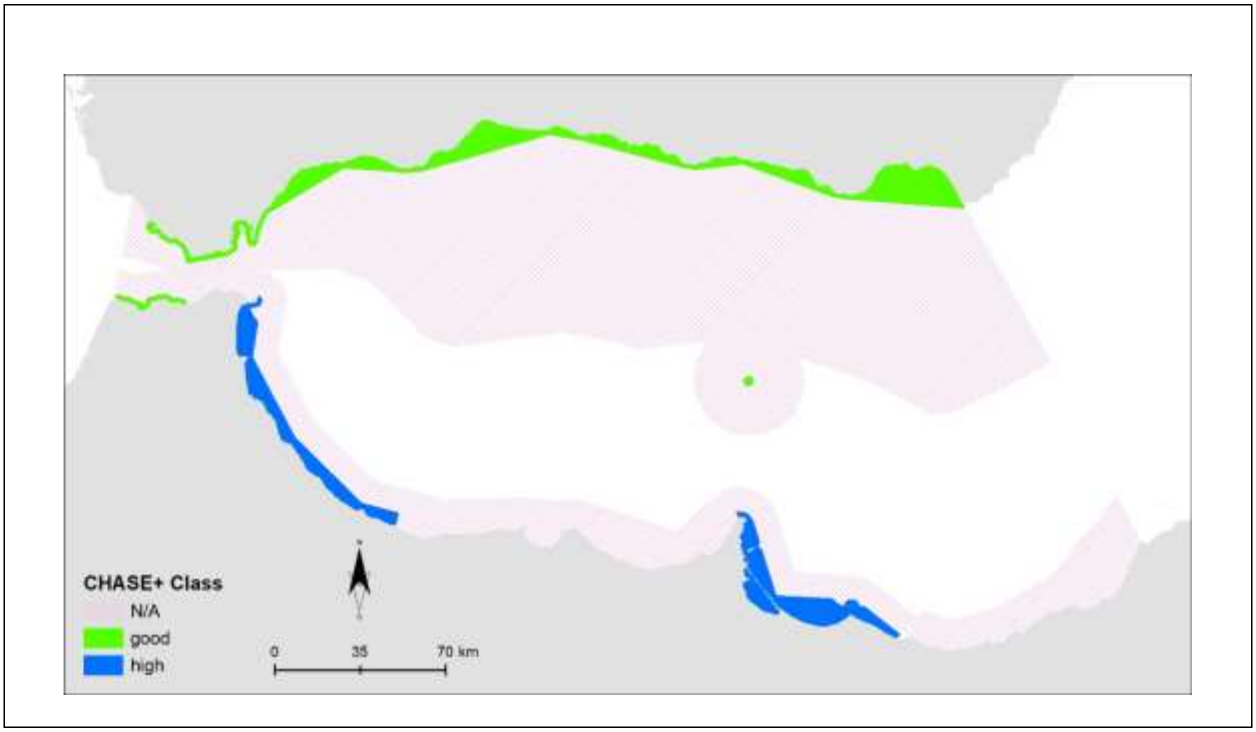


Figure 1. Status classification of the coastal IMAP SAUS of the Alboran Sea Sub-division according to the CHASE+ methodology and the (xBAC) GEs/nGES thresholds

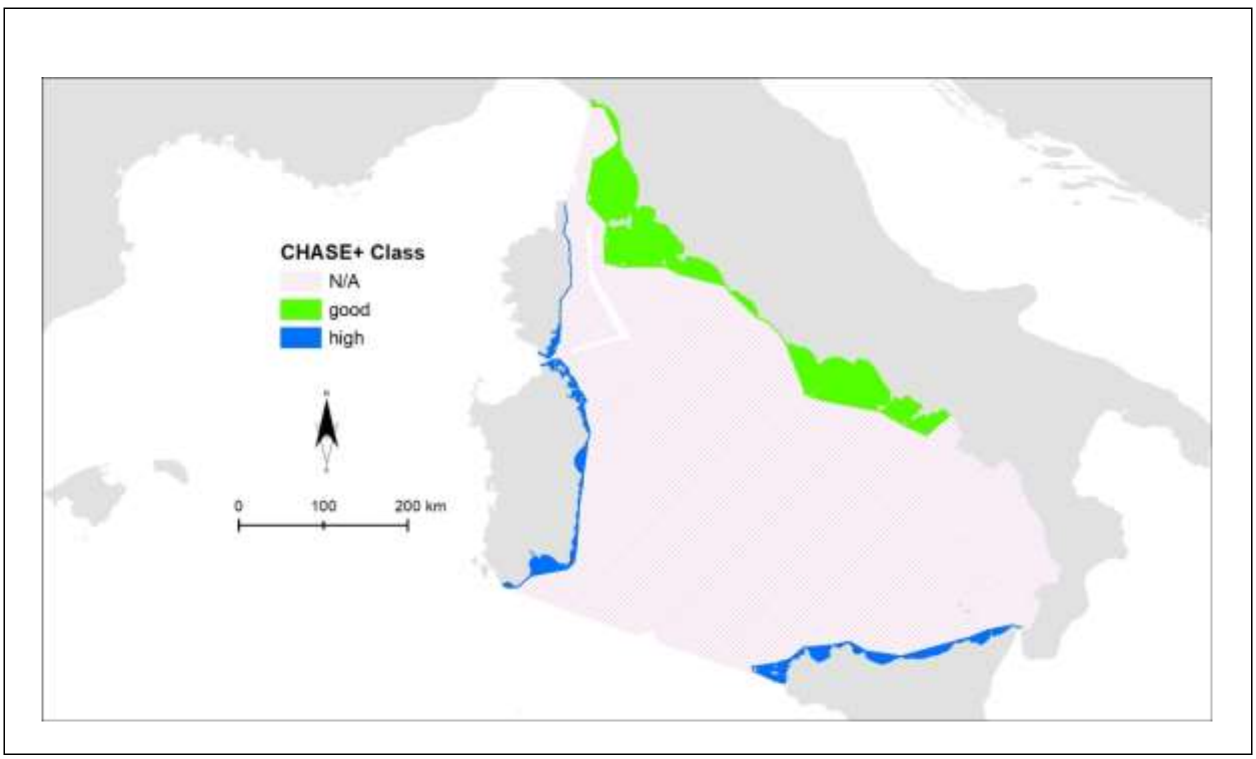


Figure 2. Status classification of the coastal IMAP SAUs of the Tyrrhenian Sea Sub-division according to the CHASE+ methodology and the (xBAC) GEs/nGES thresholds

Figure 3. Status classification of the coastal IMAP SAUs of the Central part of the Western Mediterranean Sea subdivision according to the CHASE+ methodology and the (xBAC) GEs/nGES thresholds

Annex VI
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