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The Marine Environment Assessment in the Areas with Insufficient Data: The Assessment Results of IMAP Common Indicator 17 in the Aegean Sea (AEG) Sub-division (AEG) by Applying the CHASE+ Environmental Assessment Methodology Harmonized with the NEAT GES Assessment Methodology

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Annexes:

List of Abbreviations / Acronyms

ADR	Adriatic Sea Sub-region
AEL	Aegean and Levantine Seas Sub-region
BC	Background Concentration
BAC	Background Assessment Concentrations
CEN	Central Mediterranean Sub-region
CENS	Central Mediterranean Sea sub-division
CHASE	Chemical Status Assessment Tool
CI	Common Indicator
CORMON	Correspondence Group on Monitoring
COP	Conference of the Parties
CR	Contamination Ratio
CS	Contamination Score
EAC	Environmental Assessment Criteria
EMODnet	European Marine Observation and Data Network
ERL	Effects Range Low
EEA	European Environmental Agency
GES	Good Environmental Status
IMAP	Integrated Monitoring and Assessment Programme of the Mediterranean Sea and Coast and Related Assessment Criteria
IONS	Ionian Sea sub-division
LEVS	Levantine Basin Sea sub-division
MAP	Mediterranean Action Plan
MED	Mediterranean
MB	*Mullus barbatus*
MED POL	Programme for the Assessment and Control of Marine Pollution in the Mediterranean Sea
NEAT	Nested Environmental Status Assessment Tool
NPA	Non Problem Area
OOAO	One Out All Out
OWG	Online Working Group
PA	Problem Area
PAHs	Polycyclic Aromatic Hydrocarbons
PCB	Polychlorinated Biphenyl
QSR	Quality Status Report
SAU	Spatial Assessment Units
TM	Trace metals
UNEP	United Nations Environmental Program
WMS	Western Mediterranean Sea Sub-region

1. Introduction

1. Updated BC and BAC values for IMAP Common Indicator 17 (CI 17) were calculated and proposed, as presented in documents UNEP/MAP WG. 533/10, Appendix I and UNEP/MAP WG. 533/Inf.3/Rev.1. Their calculation was based on new national monitoring data received up to December 31st, 2021, that have not been previously used for the calculation of the assessment criteria in the 2017 and 2019 assessments. In addition, following the OWG on Contaminants recommendation, data since 2015 were used in the calculation as well, even if used in the previous assessment.

2. This document presents the results of the application of the above mentioned updated assessment criteria for the Aegean Sea (AEGS) sub-division within the Aegean Levantine Seas (AEL) Sub-region using the CHASE+ (Chemical Status Assessment Tool) methodology as applied in the Levantine Sea (LEVS) sub-division (UNEP/MAP WG. 533/10, Appendix IV), as well as by considering its subsequent harmonization with NEAT assessment methodology, as explained in Section 2.

3. The CHASE+ methodology is applied for GES assessment only in the Sub-divisions and Sub-regions with insufficient data reported, in which the NEAT GES assessment methodology cannot be applied due to lack of data.

2. CHASE+ assessment methodology and its adaptation for the use in the 2023 MED QSR Assessment

4. The CHASE+ (Chemical Status Assessment Tool) methodology was used by the European Environmental Agency (EEA) to assess environmental status categories for the European Seas (Andersen et al. 2016, EEA 2019). This assessment methodology uses just one threshold, compared to the two used in the traffic light system.

5. The first step in this tool is to calculate the ratio $C_{measured}/C_{threshold}$ called the contamination ratio (CR) for each assessment element in a matrix. Then a contamination score (CS) is calculated as follows[1]:

$$CS = \frac{1}{\sqrt{n}} \sum_{i=1}^{n} CR_i$$

where n is the number of elements assessed for each matrix.

6. Based on the contamination ratio (CR) or on contamination score (CS), the elements are assessed. In line with the results of assessments, the stations/areas can be classified into non problem area (NPA) and problem area (PA), by applying 5 categories: NPAhigh (CR or CS=0.0-0.5), NPAgood (CR or CS =0.5-1.0), PAmoderate (CR or CS =1.0-5.0), PApoor (CR or CS =5.0-10.0) and PAbad (CR or CS > 10.0). NPA areas are considered in GES while PA areas are considered as non-GES. The boundary limit of 1 between GES and non-GES is based on the choice that only values that are equal or below the threshold are considered in GES.

7. Both methodologies need to define decision rules to determine the quality status. One decision rule used is the “One out all out approach” (OOAO) that says that if one element of the assessment is not in good status, the whole area is described as not in GES. This decision rule is very stringent. An additional approach is based on setting a limit, such as a proportion (%) of elements, that should each be in GES for the area to be classified as in GES. Here we recommend that if at least 75% of the elements are in GES, the station should be considered in GES. The same recommendation is given when assessing certain areas or the whole Sub-region or Sub-division i.e., when 75% of the stations are in GES for a certain parameter, the whole sub-region is in GES for this particular parameter and not the overall status

[1] The contamination sum minimizes the problem of ‘dilution’ of high values when several substances from an area are analyzed, and takes to some extent possible synergistic effects of contaminants into account by using square root of ‘n’ instead of ‘n’.

of the Sub-region or sub-division. This more lenient approach for the GES/non GES decision rule compensates for stricter thresholds applied within the CHASE+ methodology (See section 4.3). This approach was discussed and confirmed by the Meeting of CorMon Pollution by approval of UNEP/MED WG. 533/10, Appendix IV, and therefore it is also applied in this assessment of the AEGS.

8. The regional Mediterranean assessment regarding CI-17 is based on the assessments provided for the sub-divisions within the four sub-regions of the Mediterranean. The sub-division assessments are performed using the two methodologies, i.e., NEAT and CHASE+. Therefore, there was a need to harmonize the two methodologies in order to prevent a bias in the Mediterranean regional assessment and assure compatibility.

9. For this purpose, the following assessments and comparison were performed: i) assessment of the Adriatic Sea (ADR) Sub-region (UNEP/MED WG.533/10, Appendix III) ensuring a comparison between applications of the NEAT and the CHASE+ assessment methods in the ADR; ii) assessment of the Levantine Sea (LEVS) sub-division using the CHASE+ assessment methods, including its comparison to the traffic light system (UNEP/MED WG.533/10, Appendix IV); iii) assessment of the Western Mediterranean Sea (WMS) Sub-region by applying the NEAT and CHASE+ assessment methods.

10. Comparison of the NEAT and CHASE+ assessment methods by using available data as reported by the CPs, showed that the two assessment methodologies are compatible only at the level of very basic assessment per contaminant, per SAU. Still at this level some discrepancies appeared for the non-GES categories moderate and poor. When aggregation of all contaminants data was attempted to obtain the overall pollution (CI17) assessment (NEAT overall value and contamination score (CS) by applying CHASE+ assessment methodology), the two methodologies behaved differently. These discrepancies were related to different calculations within the two assessment methods for the aggregation of contaminants, as well as differences in setting the boundary limits between the moderate/poor, and poor/bad classes.

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

- For Sub-regions where the CHASE+ assessment methodology is applicable: Calculation of contamination ratios (CRs) based on the (xBAC) thresholds;
- For Sub-regions where the CHASE+ assessment methodology is applicable: Calculation of 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 (Section 2, paragraph 4);
- 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, therefore having the boundary limits based on the values calculated form monitoring data reported by the CPs, and second because it is more stringent than the Med_EAC approach. approach. At the same time, it corresponds with the definition of GES target according to the concentrations of specific contaminants needs to be kept below Environmental Assessment Criteria (EACs) or below reference concentrations (UNEP/MED WG 473/7). 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.

- For all Sub-regions: Alignment is ensured of the moderate/poor and the poor/bad thresholds between the two assessment methodologies/the two tools. For the moderate/poor class, the use of 2(xBAC) value as boundary is proposed and for the poor/bad class, the 5(xBAC) value. In this way, a fine classification in line with the precautionary principle is ensured. The NEAT tool is flexible and accepts either the thresholds values calculated by the tool itself (based on the GES/ non-GES and the maximum concentration of contaminants), or threshold values predefined by the user. In this case all thresholds will be user defined. In the CHASE+ tool, the CR or CS ratios for the moderate/poor and poor/bad classes are set at 2x and 5x times the GES/ non-GES threshold, instead of x5 and x10 that are used in the previous application of the tool. The boundary limits between the assessment classes are updated as shown in Table 1 below.

12. 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 provided in the SIDA project document[2] and described in 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. Consolidated results on the percentage of SAUs as classified by the two assessment methodologies are presented in UNEP/MED WG. 556/Inf.7, 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. When aggregation is conducted for all contaminants on the individual SAU level comparisons differ by 5% and still can be considered acceptable.

13. 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 harmonization of the NEAT and CHASE+ assessment methodologies was 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.

[2] Technical paper on the comparison of the assessment findings for CI 17 in the Adriatic Sea Sub-region generated by an application of the NEAT and the CHASE+ assessment methodologies already tested in the Levantine Sea Basin (chapter 6), the SIDA Project Meeting (10 November 2022, Tunisia).

Table 1. Proposed 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.	**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
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

3. Available data and location of sampling stations

14. Data for the AEGS were available only for the sediment matrix. Table 2 summarizes the available data.. Trace metals (TM – Cd, Hg and Pb) in sediments were reported for 32 stations by Turkiye (2018), while data for Cd and Pb were reported for 34 stations by Greece, i.e. for 5 stations in 2019 and 29 stations in 2020. In addition, Pb data were available for 28 stations located in the area of the Saronikos Gulf and Elefsis Bay for 2018 (Karageorgis et al. 2020a, Karageorgis et al. 2020b). Individual concentrations of each of the 16 required PAHs were reported by Greece (11 stations in 2019 and 10 stations in 2020) as well as for Σ16 PAHs. Data for Σ5 PAHs[3] were reported by Turkiye for 32 stations sampled in 2018. Concentrations of total PCBs (Σ7 PCBs[4]), individual concentrations for each PCB congener, Lindane and Dieldrin were reported for 31 stations by Turkiye (2018).

15. The locations of the sampling stations are presented in Figures AEGS1-AEGS4 (Annex I). The data were compiled from the IMAP-IS, as reported by 31st October 2022. As mentioned, additional data from the scientific literature were also used (Karageorgis et al., 2020 a,b).

Table 2. Data available for the assessment of the AEGS sub- division. Only data for the sediment matrix were available.

Source	IMAP-File	Country	Sub-division	Year	Cd	Hg	Pb	Σ_{16} PAHs	Σ_5 PAHs	Σ_7 PCBs	Lindane	Dieldrin
Sediment												
IMAP_IS	446	Turkey	AEGS	2018	32	32	32	0	32	31	31	31

[3] Σ_5 PAHs is the sum of the concentrations of Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Indeno(1,2,3-cd)pyrene and Benzo(ghi)perylene. Turkiye reported also the concentration of Σ_4PAHs that is the sum of the first 4 compounds in Σ_5 PAHs. Both Σ5 PAHs and Σ4 PAHs are non-mandatory parameters for CI 17, whereby Σ16 PAHs, is a mandatory parameter.

[4] PCBs congeners 28,52,101,118,132,153,180

Source	IMAP-File	Country	Sub-division	Year	Cd	Hg	Pb	Σ_{16} PAHs	Σ_5 PAHs	Σ_7 PCBs	Lindane	Dieldrin
IMAP_IS	652	Greece	AEGS	2019	5	0	5	11	11	11	0	0
IMAP_IS	652	Greece	AEGS	2020	29	0	29	10	10	10	0	0
Lit[1]		Greece	AEGS	2018	0	0	28	0	0	0	0	0

[1]Karageorgis et al, 2020 a,b

16. Based on the available data, the assessment was performed for TM, Σ16 PAHs and Σ7 PCBs in sediment. In addition, the AEGS was assessed based on Σ5 PAHs as well. This is not a mandatory parameter but was included in the assessment given significant more data available for Σ5 PAHs compared to Σ16 PAHs (53 vs 21 data points, respectively) encompassing a larger area of the AEGS. Therefore, we made an exception to possibly increase confidence of the assessment. When possible, a qualitative description was provided for the additional parameters or stations.

4. Details of CHASE+ assessment methodology application in the AEGS

4.1 Setting the GES/non GES thresholds and boundary values for the CHASE+ application in the AEGS

17. The thresholds used for the CHASE+ assessment methodology were the updated sub-regional BACs when available. If the Sub-regional BAC was not available, the regional MED_BACs were used as thresholds in the present assessment (UNEP/MED WG. 533/10, Appendix I)[5]. A comparison of the results of the assessments using AEL_BACs and MED_BACs as thresholds is also shown for information in Appendix I. Table 3 summarizes the thresholds values, the same ones used in the assessment of LEVS subdivision within the Aegean Levantine Seas Sub-region (AEL).

Table 3 Summary of the threshold values used in present pilot application for GES assessment of the Levantine and Aegean Seas sub-divisions. MedEACs are presented for comparison.

	AEL_BAC	MED_BAC	MedEAC
Sediments, µg/kg dry wt			
Cd	118	161	1200
Hg	47.3	75	150
Pb	23511	22500	46700
Σ_{16} PAHs	41	32	4022*
Σ_5 PAHs^	17.2	31.8	
Σ_7 PCBs	0.19	0.40	68+

* ERL value derived for the sum of 16 PAHs by Long et al., 1995, do not appear in the Decisions of COP. + sum of the individual MedEACs values of the 7 PCB compounds as they appear in Decision IG.23/6;^ Values are not set by Decision IG.22/7, therefore the BAC value for Σ5 PAHs is calculated as a sum of the individual BAC values as provided for the 5 PAHs compounds in UNEP/MED WG. 533/10, Appendix I.

18. The boundaries between the 5 environmental classification classes (i.e. high, good, moderate, poor and bad) are given in Table 1.

[5] MED_BACs were adopted by 2017 COP, while the use of sub-regional BACs within the preparation of the 2023 MED QSR was approved by adoption of UNEP/MED WG.533/10, Appendix I by the Meeting of CorMon Pollution held on 27 and 30 May 2022

4.2 Integration of the areas of assessment for the AEGS

19. The locations of the sampling stations were sorted by group of contaminants. As explained above, data were available only for the sediment matrix. Data for TM, PAHs were reported by Turkiye at each of the 32 sampling stations, as well as for PCBs in sediments at 31 out of the 32 sampling stations. Data for Cd and Pb were reported by Greece at 34 stations and for PAHs at 15 of these stations. In addition, data for 6 stations with only PAHs concentration were reported. Additional data from the literature (Karageorgis et al., 2020) for Pb only were available for 28 stations.

20. Further to IMAP implementation, the monitoring stations were considered for grouping in the two main assessment zones i.e., the coastal (within 1 nm from the shore) and offshore zones. Twenty-one stations in Turkiye were coastal and 11 belonged to the offshore zone. In Greece, 35 stations were classified as coastal and 31 as offshore. Due to the limited number of data points, more so if dividing into coastal and offshore stations, the spatial nesting of stations in spatial assessment units (SAUs) to the level considered meaningful for IMAP CI 17 was not possible in AEGS. Spatial nesting would decrease the reliability and the representativeness of each station for the assessment of the Aegean Sea Sub-division. Therefore, at this stage, the assessment was based on specific stations irrespective of their positions either in offshore or coastal zones.

5. Results of the CHASE+ Assessment of CI 17 in the AEGS

21. For each measured parameter at each station a contamination ratio (CR) was calculated. Thresholds were the updated sub-regional AEL_BACs (Table 3). CHASE+ methodology in the AEGS was provided without spatial integration and aggregation of the areas of assessment and assessment results. Instead, aggregation was possible only for TM in sediments, and only partially. A contamination score (CS) aggregating 2-3 metals was further calculated. Table 4 summarizes the results of the CHASE+ application, while Tables AEGS1-AEGS5 in Annex II present detailed calculation of the assessment results.

Table 4. Number of data points and their percentage from the total number of data points in each category based on the CHASE+ tool, calculated using the new AEL_BACs (UNEP/MED WG.533/10, Appendix I; UNEP/MED WG.533/Inf.3/Rev.1).

CHASE+		**Blue** **High**	**Green** **Good**	**Yellow** **Moderate**	**Brown** **Poor**	**Red** **Bad**
		NPA or GES		**PA or non-GES**		
Sediment	Total number of data points					
		CS=0.0-0.5	**CS =0.5-1.0**	**CS =1.0-2**	**CS =2-5**	**CS >5**
Cd, Hg, Pb	94*	23	40	18	11	2
% from total number of data points		*24*	*43*	*19*	*12*	*2*
		CR=0.0-0.5	**CR=0.5-1.0**	**CR =1.0-2**	**CR =2-5**	**CR>5**
Σ_{16} PAHs	21	3	6	3	4	5

CHASE+		Blue High	Green Good	Yellow Moderate	Brown Poor	Red Bad
		NPA or GES		PA or non-GES		
% from total number of data points		*14*	*29*	*14*	*19*	*24*
Σ_5 PAHs	53	19	9	7	10	8
% from total number of data points		*36*	*17*	*13*	*19*	*5*
Σ_7 PCBs	31	17	5	3	3	3
% from total number of data points		*55*	*16*	*10*	*10*	*10*

*32 stations reported all the 3 TMs, 34 only Cd and Pb and 28 only Pb.

5.1 Assessment of Trace metals in sediments of the AEGS

22. As explained above (section 3), only for 32 stations data were reported for all the 3 TMs. For 34 stations data were reported only for Cd and Pb and for 28 stations only for Pb. A detailed examination of the CRs for the individual metals, found that mainly Pb and to a lesser degree Cd, contributed to the classification of 2 out of 94 stations, as in bad status. One was located in the inner Saronikos Gulf (CW36) and one in the Northern Aegean (CW54) (Figure AEGS1, Annex I). Eleven stations were classified as in poor status: 8 in the Elfsis Bay and inner Saronikos Gulf, due to elevated Pb concentrations, one (CW32) in the Elfsis Bay due to Pb and to a lesser degree Cd. Two stations, i.e. ALISW2, CABSSW1, in the vicinity of Aliaga and Yenisakran, were classified as poor mainly due to elevated Hg concentrations. Using CS, 18 stations were classified as moderate and they were distributed across the AEGS. No specific, demarcated area could be classified as non-GES based on these 18 stations. The 63 remaining stations were classified in the high and good statuses (in-GES). Six stations for which data were reported by Turkiye, defined as reference stations, were in the high status (2 stations) and in the good status of classification (4 stations).

23. Fifteen out of the 31 stations classified as non-GES were located in the Elfsis Bay and inner Saronikos Gulf, known to be impacted by anthropogenic activities (Table AEGS1, Annex II). This area is the seaward boundary of the metropolitan areas of Athens and Piraeus port, hosting 1/3 of the current Greek population (3.2 million people; Census 2011). More than 40% of the Greek industries are located in the coastal area of the Elefsis Bay, including some of the biggest plants of the country, such as oil refineries, steel and cement industries, and shipyards (Karageorgis et al., 2020 and references therein). Increased concentrations of trace elements in this area, resulting from the discharges of domestic and industrial effluent, have been documented since the late 1970s. The major sources of pollution were identified as the Psyttaleia wastewater treatment plant, a fertilizer plant- operating in the Inner Saronikos Gulf until 1999, steel mills and shipyards in the Elefsis Bay. The contamination found in the bay has resulted in the accumulation of metals in mussel tissues, which followed a spatial gradient related to land-based sources. Karageorgis et al. 2020 found maximal Pb concentrations (in conjunction with Cu, Zn and As) in the Elefsis Bay and the Psyttaleia Island region, with N-S decreasing trends. Minor Pb enrichment was recorded at the deeper sector of the Outer Saronikos Gulf. A temporal (1999–2018) decrease in metal concentrations was found for 2 out of the 14 stations sampled in the Elefsis Bay. Several polluting

industries have ceased their operation during the last decade. Therefore, the decreasing trend in the most industrialized part of the study area is connected to the reduction of metal discharges in the coastal environment. Furthermore, environmental policy enforcement combined with technological improvements by big industrial polluters, such as the steel-making industry have contributed to the improvement of sediment quality.

24. The 16 stations classified as non-GES (out of the 31) were distributed in the northern and central part of the AEGS. Most stations were located in bays (Fig. AEGS1, Annex I), where usually the water exchange is slower than in open waters, promoting accumulation of land-based source contaminants. The 67 stations classified in GES (high and good status) were distributed along the whole AEGS sub-division (Fig. AEGS1, Annex I).

25. Regarding TM in sediments, the whole AEGS is classified as non-GES. Only 67% of the stations were in GES for TM in sediments. Therefore, by applying the decision rule agreed for CHASE + assessment methodology by the Meeting of CorMon Pollution (27 ad 30 May 2022) which recommends that only if at least 75% of the elements are in GES, the area should be considered in GES, the whole AEGS is classified as non-GES regarding TM in sediments. However, this is a result of the contribution from only 2 limited affected areas (1) the Elfesis Bay and inner Saronikos Gulf, and 2) the two stations near Aliaga and Yenisakran. When data from these affected areas, that constitute less than 1% of the AEGS, are not taken into account, then 82% of the stations (65 out of 79 stations) are in GES, and the AEGS sub-division can be classified as in GES. These 79 stations are distributed evenly across the AEGS sub-division, providing a good coverage of the sub-division.

26. The 28 stations reported by Karageorgis et al. (2020 a,b) were located in a very limited area of the Saronikos and Elfesis Gulf, that correspond to about 0.5% of the total AEGS area. Moreover, they reported only the concentrations of Pb in sediments. This emphasis of a small area could introduce a bias in the whole sub-division assessment. Therefore, for comparison, the assessment was performed without taking these stations into consideration. The assessment found that 20% of the stations were in high status, 53% in good status, 20% in moderate status, 4% in poor status and 3% in bad status. In this case, 73% of the stations were classified in-GES, and the status of the AEGS remains marginally non-GES, therefore the exclusion of these stations did not change the overall assessment of the sub-division.

27. Key findings. Based on TM in sediments, only 2 limited affected areas were identified in non-GES in the AEGS i.e. 1) the Elfesis Bay and inner Saronikos Gulf, and 2) the area near Aliaga and Yenisakran. The AEGS, with the exception of these two areas, that constitute less than 1% of the AEGS, can be classified as in GES, as 82% of the stations (65 out of 79 stations) are in GES. These 79 stations are distributed evenly across the AEGS sub-division, providing a good coverage of the sub-division.

5.2 Assessment of Σ_{16} PAHs and of Σ_5 PAHs in sediments of the AEGS

28. <u>Σ16 PAHs in sediments:</u> There were only 21 stations with data for Σ16 PAHs in sediments, and data for all of them were reported by Greece. It can be seen (Figure AEGS2, Annex I and Table AEGS2, Annex II) that the stations located offshore are in-GES (8 stations, 38% of total stations), while the stations located in enclosed areas, except one, are classified as non-GES (12 stations, 57% of total stations). However, this is based on data from only 21 stations, which is not enough for a confident assessment. Additional data are needed to improve the assessment and to better delimit possible non-GES areas.

29. Key findings. It was not possible to classify the AEGS sub-division regarding data for Σ16 PAHs in sediments. There are indications that the offshore zone is in GES while the enclosed areas might be found as non-GES. Additional data are needed to improve the assessment and delimit possible affected areas.

30. <u>Σ5 PAHs in sediments:</u> There were only 21 stations with data for Σ16 PAHs in sediments, however Turkiye reported data for Σ5 PAHs[6] for 32 stations. Although Σ5 PAHs is not a mandatory parameter, the assessment based on it was performed due to significant more data availability for Σ5 PAHs compared to Σ16 PAHs (53 vs 21 data points, respectively) encompassing a larger area of the AEGS. Therefore, an exception was made in order to increase confidence of the assessment.

31. For the stations with available data for Σ16 PAHs, the assessment performed using Σ5 PAHs was identical to the assessment based on Σ16 PAHs (see above), except for one station, CW41 that was now classified as in good status instead of in moderate status (Table AEGS3, Annex II). Out of the 53 available stations, about half (28 stations, 53% of the total stations) were classified in-GES (high and good statuses) for Σ5 PAHs in sediments, and about half (25 stations, 47% of the total stations) as not in-GES (moderate, poor and bad statuses) (Figure AEGS3, Annex I and Table AEGS3, Annex II).

32. Therefore, as a whole, there are indication that AEGS might be classified as non-GES regarding Σ5 PAHs in sediments. However, only 2 limited affected areas were identified in non-GES , similarly to the assessment of TM in sediments: 1) the Elfsis Bay and inner Saronikos Gulf and 2) the area encompassing the coast around Kucukkoy, Dikili, Candarli, Aliaga, and Yenisakran. Most of the stations in the southern part of the AEGS were found in GES.

33. Key findings. The AEGS was classified as non-GES regarding Σ5 PAHs in sediments. Two limited affected, non-GES areas were identified i.e. 1) the Elfsis Bay and inner Saronikos Gulf and 2) the area encompassing the coast around Kucukkoy, Dikili, Candarli, Aliaga, and Yenisakran. The southern part of the AEGS can be classified as in GES, as all stations, except the two, were in high and good statuses.

5.3 Assessment of Σ_7 PCBs in sediments of the AEGS

34. Data on PCBs were reported only by Turkiye. The northern (except station D7 in the Dardanelles Strait) and southern part of the coast were in GES regarding Σ7 PCBs in sediments (22 stations, 71% from the total number of stations) (Figure AEGS4, Annex I and Table AEGS4, Annex II)). The mid area, encompassing the coast around Aliaga, Yenisakran and Candarli was classified as non-GES, in particular the stations inside the bay (9 stations, 29% from the total number of stations) which determined this area as an affected one. There are not enough data to classify the whole AEGS sub-division regarding data reported for Σ7 PCBs in sediments.

35. Key finding. The AEGS sub-division could not be classified regarding assessment of Σ7 PCBs in sediments due to lack of data. An affected, non-GES area was identified in the coast around Aliaga, Yenisakran and Candarli. The north-eastern and south-eastern coast were in-GES regarding assessment of data on Σ7 PCBs in sediments

5.4 Organochlorinated contaminants other than PCBs in sediments of the AEGS

36. Data for Organochlorinated contaminants were reported only by Turkiye. Dieldrin in all stations were below detection limit (reported as 0 μg/kg dry wt) while data for γ-HCH (Lindane) ranged from below detection limit to 0.14 μg/kg dry wt with an average and median concentration of 0.036 and 0.013 μg/kg dry wt, respectively. The BAC value is not set for Lindane. Only EAC of 3 μg/kg dry wt was adopted by Decision IG.22/7. The concentrations reported for Lindane were well below the EAC value.

37. Key findings. The AEGS sub-division could not be classified regarding assessment of Organochlorinated contaminants other than PCBs in sediments due to lack of data.

[6] Σ_4 PAHs was also reported, but it was decided to assess the status based on Σ_5 PAHs given it encompasses all 4 PAHs; Both Σ5 PAHs and Σ4 PAHs are non-mandatory parameters for CI 17, whereby Σ16 PAHs, is a mandatory parameter.

Annex I

Maps providing spatial visualization of CHASE+ assessment results for IMAP CI-17 in the Aegean Sea (AEGS) Sub-division of the Aegean and Levantine Seas (AEL) Sub-region

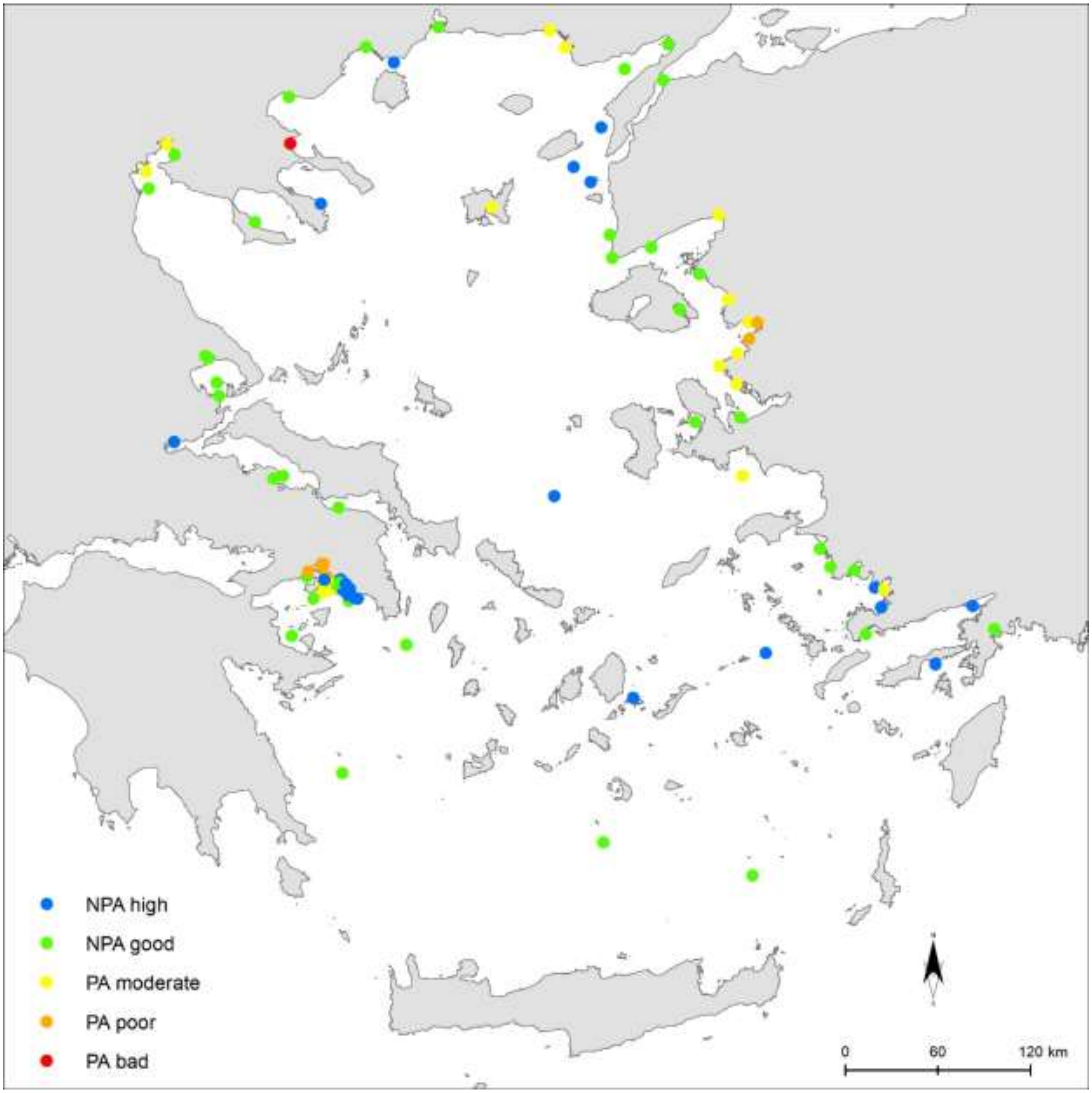

Figure AEGS 1. Results of the CHASE+ assessment methodology to assess the environmental status of TM in sediments in the AEGS, using AEL_BACs as thresholds. Stations in blue - NPAhigh (CS=0.0-0.5); stations in green- NPAgood (CS =0.5-1.0); Stations in yellow- PAmoderate (CS =1.0-2.0); stations in brown - PApoor (CS =2.0-5.0) and stations in red - PAbad (CS > 5.0). Blue and green stations are considered in GES; yellow, brown and red stations are considered non-GES.

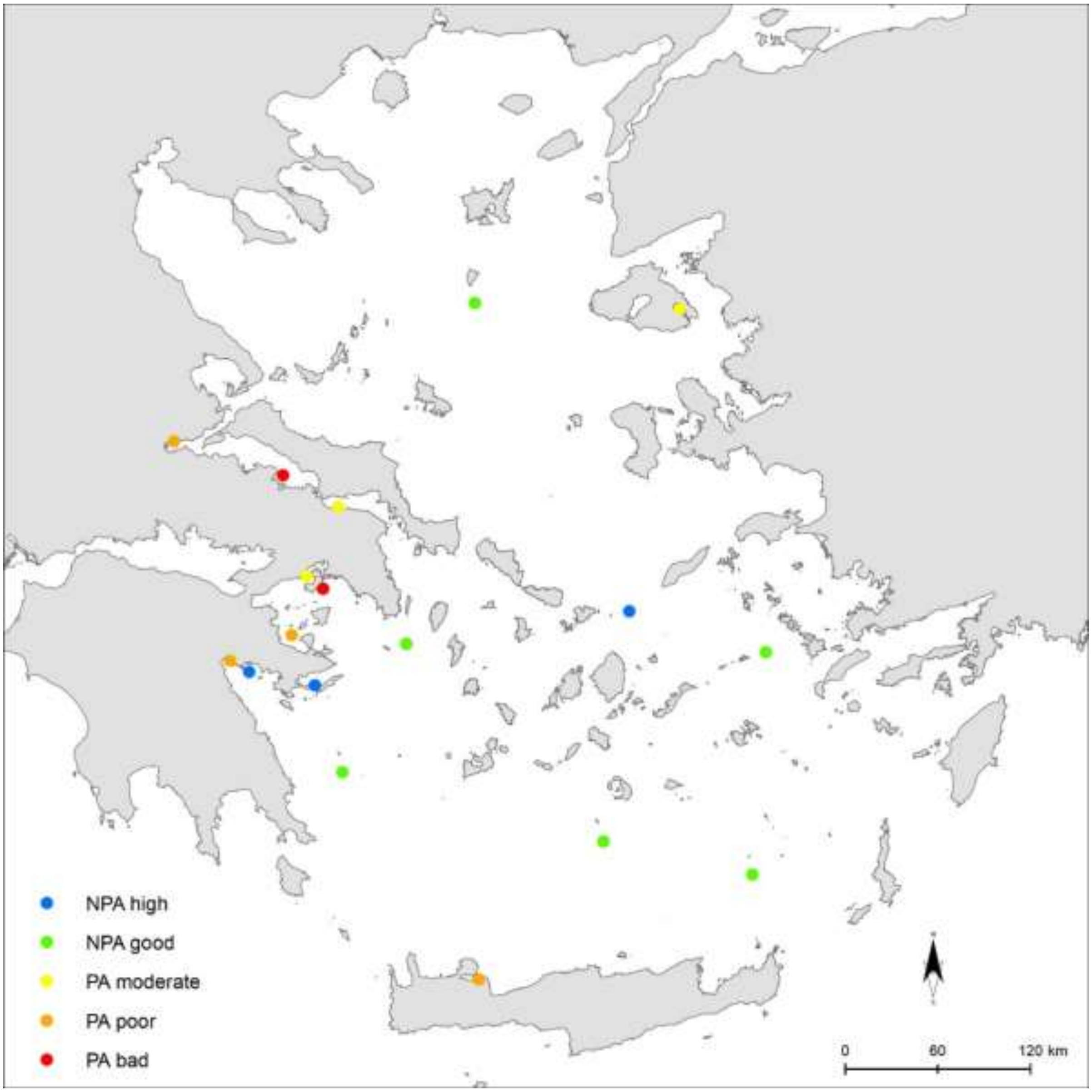

Figure AEGS 2. Results of the CHASE+ assessment methodology to assess the environmental status of Σ16 PAHs in sediments in the AEGS, using AEL_BACs as thresholds. Stations in blue - NPAhigh (CR=0.0-0.5); stations in green- NPAgood (CR =0.5-1.0); Stations in yellow- PAmoderate (CR =1.0-2.0); stations in brown - PApoor (CR =2.0-5.0) and stations in red - PAbad (CR > 5.0). Blue and green stations are considered in GES; yellow, brown and red stations are considered non-GES.

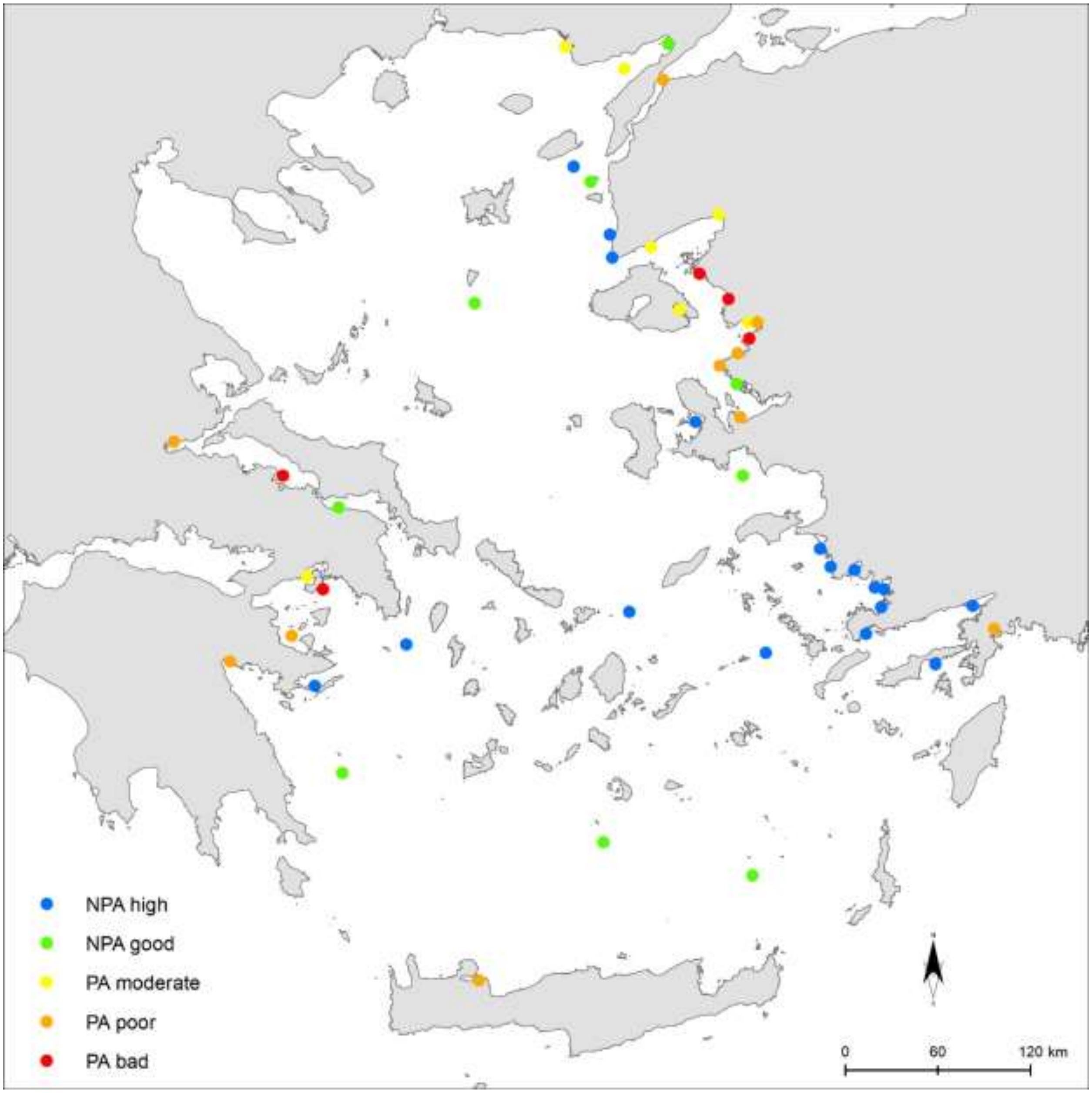

Figure AEGS 3. Results of the CHASE+ assessment methodology to assess the environmental status of Σ5 PAHs in sediments in the AEGS, using AEL_BACs as thresholds. Criteria for Σ_5 PAHs were not adopted in Decisions IG.22/7 and IG.23/6 (COP 19 and COP 20) and not addressed in UNEP/MED WG. 533/10, Appendix I. Here we used the sum of the individual BAC values as provided for the 5 PAHs compounds in UNEP/MED WG. 533/10, Appendix I as Σ_5 PAHs_BAC. Stations in blue - NPAhigh (CR=0.0-0.5); stations in green- NPAgood (CR =0.5-1.0); Stations in yellow- PAmoderate (CR =1.0-2.0); stations in brown - PApoor (CR =2.0-5.0) and stations in red - PAbad (CR > 5.0). Blue and green stations are considered in GES; yellow, brown and red stations are considered non-GES.

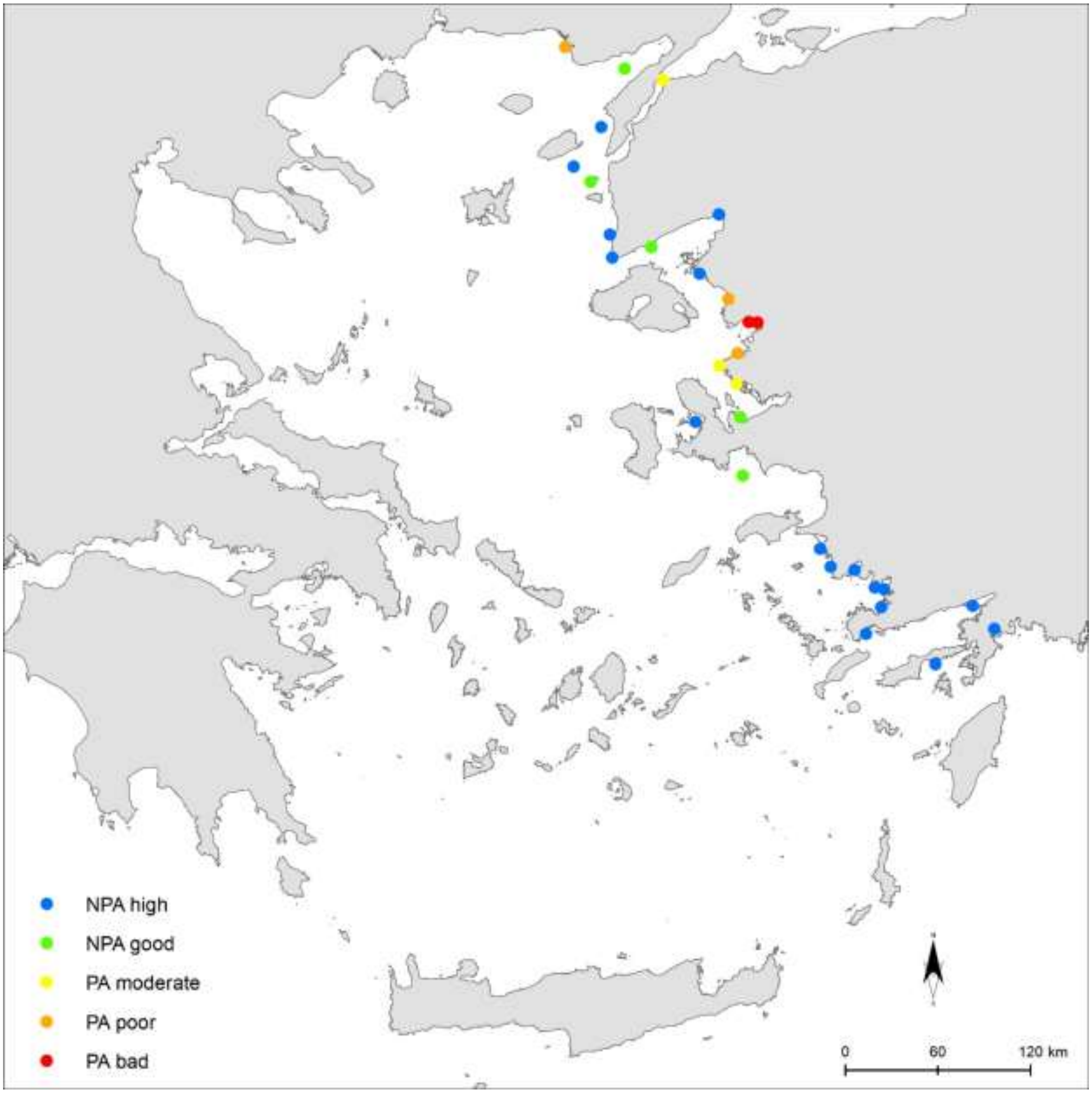

Figure AEGS 4. Results of the CHASE+ assessment methodology to assess the environmental status of Σ7 PCBs in sediments in the AEGS, using AEL_BACs as thresholds. Stations in blue - NPAhigh (CR=0.0-0.5); stations in green- NPAgood (CR =0.5-1.0); Stations in yellow- PAmoderate (CR =1.0-2.0); stations in brown - PApoor (CR =2.0-5.0) and stations in red - PAbad (CR > 5.0). Blue and green stations are considered in GES; yellow, brown and red stations are considered non-GES.

Annex II

Tables of the results of application of the CHASE+ assessment methodology in the Aegean Sea (AEGS) sub-division of the Aegean and Levantine Seas (AEL) Sub-region using AEL_BACs, and comparison to the assessment results using MED_BACs as thresholds

Table AEGS 1. Results of the CHASE+ assessment methodology to assess the environmental status of TM in sediments in the AEGS, using AEL_BACs as thresholds. The results of the assessment using MED_BACs as thresholds are given for comparison. Blue - NPAhigh (CS=0.0-0.5); Green- NPAgood (CS =0.5-1.0); Yellow- PAmoderate (CS =1.0-2.0); Brown - PApoor (CS =2.0-5.0) and Red - PAbad (CS > 5.0). Blue and green stations are considered in GES, yellow, brown and red stations are considered non-GES.

Station	Year	Cd_CR_AE	Hg_CR	Pb_CR	CS	Cd_CR	Hg_CR	Pb_CR	CS
		AEL_BAC used as threshold				MED_BAC used as threshold			
Turkiye, IMAP_IS File 446									
ADAC	2018	0.31	0.21	0.40	0.31	0.23	0.13	0.42	0.26
AKBSWR	2018	0.33	2.32	0.32	0.99	0.24	1.47	0.34	0.68
ALISW2	2018	1.00	7.36	1.11	3.15	0.73	4.64	1.16	2.18
ALTSW1	2018	0.44	1.55	0.93	0.98	0.32	0.98	0.97	0.76
BABSWR	2018	0.36	0.32	1.28	0.65	0.26	0.20	1.34	0.60
BARSW1	2018	0.57	4.37	0.77	1.90	0.42	2.76	0.80	1.32
BMRSW2	2018	0.68	0.79	0.44	0.64	0.50	0.50	0.46	0.49
BODSWR	2018	0.28	0.74	0.66	0.56	0.20	0.46	0.69	0.45
BOZSWR	2018	0.27	0.41	0.55	0.41	0.20	0.26	0.57	0.34
CABSW1	2018	0.75	7.81	1.20	3.25	0.55	4.93	1.25	2.24
D7	2018	0.46	0.68	0.80	0.64	0.34	0.43	0.83	0.53
DATSWR2	2018	0.40	0.24	0.30	0.31	0.30	0.15	0.32	0.25
DIBSW1	2018	0.44	3.61	0.80	1.62	0.32	2.28	0.83	1.15
DIDSW1	2018	0.55	0.61	0.42	0.53	0.40	0.38	0.44	0.41
EDRSW2	2018	0.62	1.44	1.13	1.06	0.45	0.91	1.18	0.85
FOCASW1	2018	0.57	2.63	0.79	1.33	0.42	1.66	0.83	0.97
FOCASW2	2018	0.51	4.44	0.64	1.86	0.37	2.80	0.67	1.28
GEDSW1	2018	0.72	1.69	0.64	1.02	0.53	1.07	0.67	0.76
GOBSWR	2018	0.39	0.43	0.36	0.39	0.29	0.27	0.38	0.31
GOKRAD	2018	0.18	0.16	0.42	0.25	0.13	0.10	0.44	0.22
GULSW1	2018	0.32	0.50	0.30	0.38	0.24	0.32	0.32	0.29
GULSW2	2018	0.26	3.14	0.41	1.27	0.19	1.98	0.43	0.87
GULSW3	2018	0.24	0.59	0.33	0.39	0.18	0.37	0.34	0.30
ILBSW1	2018	0.32	1.41	0.36	0.70	0.23	0.89	0.38	0.50
IZMSW3	2018	0.33	1.31	0.71	0.78	0.24	0.83	0.74	0.60
MARSW1	2018	0.59	0.66	0.60	0.62	0.43	0.41	0.63	0.49
MESSW1	2018	2.72	0.63	0.90	1.42	1.99	0.40	0.94	1.11
SABSW1	2018	0.40	0.68	0.53	0.54	0.30	0.43	0.55	0.43
SABSWR	2018	0.41	0.54	0.96	0.64	0.30	0.34	1.01	0.55
SEGED	2018	0.68	1.48	1.00	1.05	0.50	0.93	1.05	0.83
SRMSW1	2018	0.36	0.84	1.01	0.74	0.26	0.53	1.06	0.62
TUZ	2018	0.46	0.38	1.10	0.65	0.34	0.24	1.15	0.58
Greece, IMAP_IS File 652									
CW32	2020	1.38		3.04	2.21	1.01		3.17	2.09
CW34	2020	0.70		0.96	0.83	0.51		1.01	0.76
CW36	2020	2.69		9.58	6.14	1.97		10.01	5.99
CW37	2020	0.43		0.60	0.52	0.32		0.63	0.47
CW38	2020	0.69		1.08	0.89	0.50		1.13	0.82
CW40	2020	0.55		0.41	0.48	0.41		0.43	0.42
CW41	2020	0.91		0.37	0.64	0.67		0.38	0.53
CW46	2020	1.31		0.07	0.69	0.96		0.08	0.52
CW47	2020	1.22		0.26	0.74	0.89		0.27	0.58
CW48	2020	0.64		0.66	0.65	0.47		0.69	0.58
CW51	2020	0.55		0.76	0.65	0.40		0.79	0.60
CW52	2020	0.54		0.71	0.63	0.39		0.75	0.57
CW53	2020	0.63		0.96	0.79	0.46		1.00	0.73
CW54	2020	1.99		23.05	12.52	1.46		24.09	12.77
CW55	2020	0.19		0.37	0.28	0.14		0.39	0.26
CW56	2020	0.45		0.59	0.52	0.33		0.62	0.47
CW57	2020	0.96		1.43	1.20	0.70		1.50	1.10
CW58	2020	0.76		0.92	0.84	0.55		0.97	0.76
CW59	2020	0.65		1.22	0.93	0.47		1.28	0.88
CW60	2020	0.50		0.67	0.58	0.36		0.70	0.53
CW61	2020	0.79		0.65	0.72	0.58		0.68	0.63
CW62	2020	0.14		0.59	0.37	0.11		0.62	0.36
CW63	2020	1.84		1.64	1.74	1.35		1.71	1.53
CW70	2020	1.85		0.89	1.37	1.35		0.93	1.14
CW71	2020	0.27		0.27	0.27	0.20		0.29	0.24
CW73	2020	0.67		0.63	0.65	0.49		0.66	0.58
CW82	2020	0.19		0.13	0.16	0.14		0.14	0.14
CW83	2020	0.62		0.71	0.66	0.45		0.74	0.60
CW84	2020	1.07		1.49	1.28	0.79		1.56	1.17
MSFD-10	2019	0.76		0.76	0.76	0.56		0.80	0.68
MSFD-11	2019	0.80		0.67	0.73	0.59		0.70	0.64
MSFD-12	2019	0.59		0.38	0.49	0.43		0.40	0.42
MSFD-8	2019	0.61		0.89	0.75	0.45		0.93	0.69
MSFD-9	2019	0.69		0.67	0.68	0.51		0.69	0.60
Greece, Karageorgis et al., 2020									
S1E	2018			3.53				3.69	
S2	2018			2.05				2.14	
S3	2018			3.00				3.14	
S7	2018			3.86				4.04	
S8	2018			1.18				1.23	
S11	2018			0.66				0.69	
S13	2018			0.60				0.63	
S16	2018			0.60				0.63	
S43	2018			1.16				1.21	
OS1	2018			1.16				1.21	
OS2	2018			2.04				2.13	
OS3	2018			0.42				0.44	
OS4	2018			0.42				0.44	
OS6	2018			0.29				0.30	
OS8	2018			0.37				0.39	
OS11	2018			1.52				1.59	
OS12	2018			0.60				0.63	
OS13	2018			0.38				0.39	
OS14	2018			0.90				0.94	
OS15	2018			0.17				0.18	
AZ2	2018			1.05				1.10	
SEL1	2018			2.09				2.19	
MUS1	2018			0.41				0.42	
MUS2	2018			0.22				0.23	
MUS3	2018			0.29				0.30	
MUS4	2018			0.33				0.35	
S1	2018			3.85				4.02	
S1W	2018			4.00				4.17	

Assessment of TM in sediments using AEL_BACs as threshold compared to the results using MED_BACs as thresholds to calculate the contaminations scores (CS) showed an increase in the percentage of the stations in-GES from 67% using AEL_BACs to 71% using MED_BACs. The change was due to the higher MED_BACs for Cd and Hg compared to the AEL_BACs (Table 3). Based on CR values, 86% of the stations were in-GES for Cd compared to 91% using the AEL and MED BACs, respectively. For Hg, 56% of the stations were in-GES compared to 72% using the AEL and MED BACs, respectively. For Pb the percentage of the stations in GES decreased to 67% using MED_BAC, from 71% using AEL_BACs, because the BAC for the AEL is higher than that for the MED (Table 3).

Table AEGS 2. Results of the CHASE+ assessment methodology to assess the environmental status of Σ_{16} PAHs in sediments in the AEGS, using AEL_BAC as threshold. The results of the assessment using MED_BAC as threshold are given for comparison. Blue - NPAhigh (CR=0.0-0.5); Green- NPAgood (CR =0.5-1.0); Yellow- PAmoderate (CR =1.0-2.0); Brown - PApoor (CR=2.0-5.0) and Red - PAbad (CR > 5.0). Blue and green stations are considered in GES, yellow, brown and red stations are considered non-GES.

Station	Year	Σ_{16} PAHs_CR	
		AEL_BAC	MED_BAC
Greece IMAP_IS File 652			
CW16	2019	0.43	0.34
CW17	2019	4.27	3.34
CW18	2019	0.20	0.16
CW67	2019	3.25	2.54
MSFD-10	2019	0.73	0.57
MSFD-11	2019	0.51	0.40
MSFD-12	2019	0.61	0.48
MSFD-13	2019	0.48	0.37
MSFD-18	2019	0.53	0.42
MSFD-8	2019	0.71	0.56
MSFD-9	2019	0.68	0.53
CW32	2020	20.65	16.12
CW34	2020	9.14	7.13
CW36	2020	81.69	63.76
CW37	2020	1.49	1.16
CW38	2020	4.67	3.64
CW40	2020	4.08	3.18
CW41	2020	1.09	0.85
CW46	2020	8.35	6.52
CW47	2020	72.68	56.73
CW73	2020	1.83	1.43

Comparison of the results of the assessment of Σ_{16} PAHs in sediments using AEL_BAC as threshold to the results using MED_BACs as thresholds indicated they were very similar. Except for one station, CW41, that was classified as moderate (yellow) using AEL_BAC and good (green) using MED_BAC, there was no change in the number of stations classified in GES or non-GES. Three stations (MSFD11, MSFD12, MSFD18) were classified as in high status by using MED_BAC, compared to good status by using AEL_BAC. Both statuses are in GES. This is due to the similar values of the sub-regional and regional BACs, 32 and 41 µg/kg dry wt for AEL_BAC and MED_EAC, respectively (Table 3).

Table AEGS 3. Results of the CHASE+ assessment methodology to assess the environmental status of Σ_5 PAHs in sediments in the AEGS, using AEL_BAC as threshold. Criteria for Σ_5 PAHs were not adopted in Decisions IG.22/7 and IG.23/6 (COP 19 and COP 20) and not addressed in UNEP/MED WG. 533/10, Appendix I. Here we used the sum of the individual BAC values as provided for the 5 PAHs compounds in UNEP/MED WG. 533/10, Appendix I as Σ_5 PAHs_BAC. The results of the assessment using MED_BAC as threshold are given for comparison. Blue - NPAhigh (CR=0.0-0.5); Green- NPAgood (CR =0.5-1.0); Yellow- PAmoderate (CR =1.0-2.0); Brown - PApoor (CR =2.0-5.0) and Red - PAbad (CR > 5.0). Blue and green stations are considered in GES, yellow, brown and red stations are considered non-GES.

Station	Year	Σ5 PAHs_CR	
		AEL_BAC	MED_BAC
Turkiye IMAP_IS File 446			
ADAC	2018	0.24	0.13
AKBSWR	2018	0.32	0.17
ALISW2	2018	7.70	4.16
ALTSW1	2018	1.23	0.66
BABSWR	2018	0.25	0.14
BARSW1	2018	1.68	0.91
BMRSW2	2018	0.24	0.13
BODSWR	2018	0.27	0.14
BOZSWR	2018	0.74	0.40
CABSW1	2018	2.12	1.14
D7	2018	2.03	1.10
DATSWR2	2018	0.23	0.12
DIBSW1	2018	5.05	2.73
DIDSW1	2018	0.18	0.10
EDRSW2	2018	1.80	0.98
FOCASW1	2018	2.37	1.28
FOCASW2	2018	3.28	1.77
GEDSW1	2018	0.92	0.50
GOBSWR	2018	0.32	0.17
GOKRAD	2018	0.13	0.07
GULSW1	2018	0.20	0.11
GULSW2	2018	0.23	0.12
GULSW3	2018	0.28	0.15
ILBSW1	2018	0.41	0.22
IZMSW3	2018	3.00	1.62
MARSW1	2018	3.15	1.70
MESSW1	2018	1.21	0.65
SABSW1	2018	0.92	0.50
SABSWR	2018	1.04	0.56
SEGED	2018	0.65	0.35
SRMSW1	2018	6.22	3.37
TUZ	2018	0.34	0.18
Greece IMAP_IS File 652			
CW16	2019	0.40	0.22
CW17	2019	3.04	1.65
CW18	2019	0.15	0.08
CW67	2019	3.06	1.65
MSFD-10	2019	0.68	0.37
MSFD-11	2019	0.42	0.23
MSFD-12	2019	0.47	0.25
MSFD-13	2019	0.48	0.26
MSFD-18	2019	0.69	0.37
MSFD-8	2019	0.56	0.30
MSFD-9	2019	0.60	0.32
CW32	2020	18.59	10.06
CW34	2020	11.10	6.00
CW36	2020	87.95	47.57
CW37	2020	1.26	0.68
CW38	2020	3.60	1.95
CW40	2020	2.50	1.35
CW41	2020	0.87	0.47
CW46	2020	5.77	3.12
CW47	2020	47.78	25.84
CW73	2020	1.55	0.84

The assessment of Σ_5 PAHs in sediments using MED_BAC as threshold increased the number of stations classified in-GES to 35, compared to 28 using AEL_BACs. This is a result of higher concentration of MED_BAC compared to AEL_BAC (Table 3), that classified the stations that were classified in moderate status by AEL_BAC as in good status, using MED_BACs. However, the sub-region is still classified as non-GES using MED_BAC, with only 66% of the stations in-GES.

Table AEGS 4. Results of the CHASE+ assessment methodology to assess the environmental status of Σ_7 PCBs in sediments in the AEGS, using AEL_BAC as threshold. The results of the assessment using MED_BAC as threshold are given for comparison. Blue - NPAhigh (CR=0.0-0.5); Green- NPAgood (CR =0.5-1.0); Yellow- PAmoderate (CR =1.0-2.0); Brown - PApoor (CR =2.0-5.0) and Red - PAbad (CR > 5.0). Blue and green stations are considered in GES, yellow, brown and red stations are considered non-GES.

Station	Year		Σ_7 PCBs-CR	
Turkiye, IMAP_IS File 446			AEL_BAC	MED_BAC
ADAC	2018		0.174	0.083
AKBSWR	2018		0.26	0.12
ALISW2	2018		32.13	15.26
ALTSW1	2018		0.75	0.36
BABSWR	2018		0.41	0.19
BARSW1	2018		5.16	2.45
BMRSW2	2018		0.41	0.20
BODSWR	2018		0.31	0.15
BOZSWR	2018		0.55	0.26
CABSW1	2018		8.29	3.94
D7	2018		1.37	0.65
DATSWR2	2018		0.30	0.14
DIBSW1	2018		2.01	0.96
DIDSW1	2018		0.21	0.10
EDRSW2	2018		0.47	0.23
FOCASW1	2018		1.07	0.51
FOCASW2	2018		2.73	1.30
GEDSW1	2018		1.55	0.74
GOBSWR	2018		0.39	0.19
GOKRAD	2018		0.37	0.18
GULSW1	2018		0.30	0.14
GULSW2	2018		0.33	0.16
GULSW3	2018		0.22	0.10
ILBSW1	2018		0.31	0.15
IZMSW3	2018		0.69	0.33
MARSW1	2018		0.45	0.21
MESSW1	2018		2.94	1.40
SABSWR	2018		0.62	0.30
SEGED	2018		0.62	0.30
SRMSW1	2018		0.48	0.23
TUZ	2018		0.26	0.12

The results of the assessment of Σ_7 PCBs in sediments using AEL_BAC as threshold were slightly different from the results using MED_BACs as thresholds. Four stations, D7, DIBSW1, FOCASW1 and GEDSW1, classified as non-GES using AEL_BAC, were classified in-GES using MED_BAC as threshold. The classification of additional stations improved using MED_BAC, but they did not change statuses from non-GES to GES. The reason for these differences is related to the differences in the values of the BACs, 0.19 and 0.40 µg/kg dry for AEL_BAC and MED_EAC, respectively (Table 3).

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Annex III

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