

# **SOCAR STATUS UPDATE**

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**SOCAR Consultants**

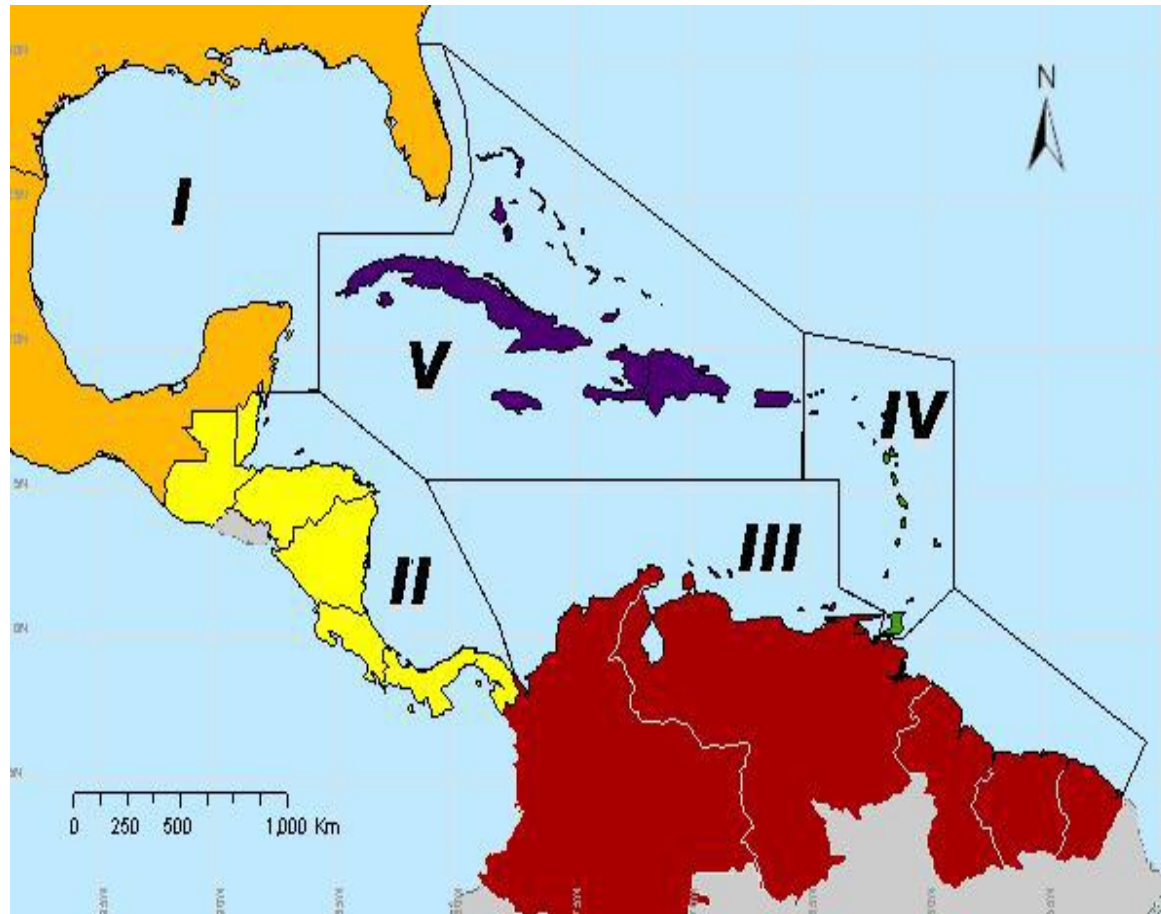
17<sup>th</sup> July 2018

Panama City, Panama

# Timeline - main activities to date

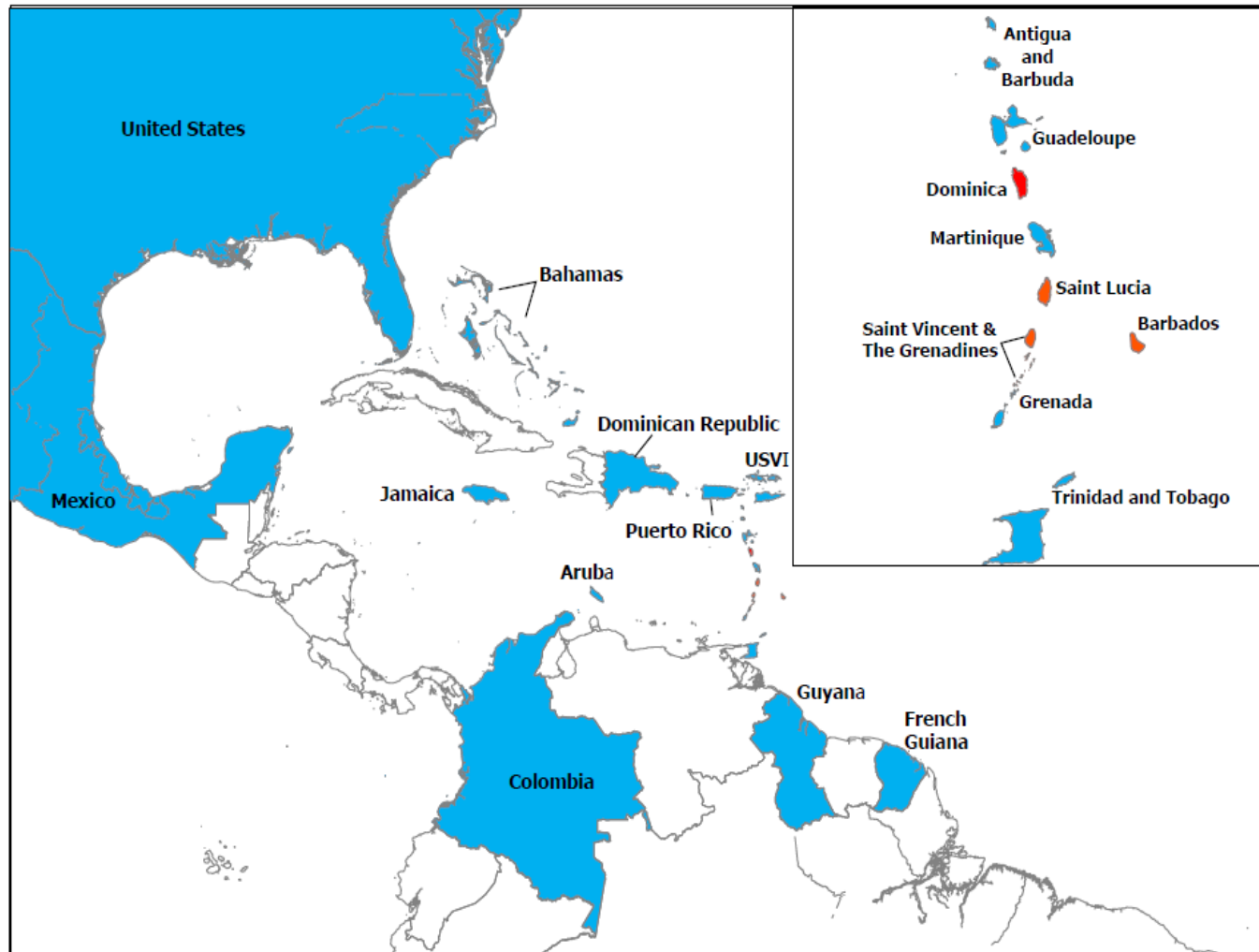
| Aug 2016   | Sept 2016-Aug 2017  | Mar 2017  | Aug 2017-Dec 2017                 | Dec 2017-Jan 18  | Feb 2018  | Feb 2018-present   |
|--|---|---|-----------------------------------|--|---|--|
| <p>Inception workshop (Jamaica):</p> <ul style="list-style-type: none"> <li>• Methodology &amp; conceptual framework developed</li> <li>• Indicators &amp; data sources identified</li> <li>• Report outline elaborated</li> <li>• Data WG set up</li> </ul> | <ul style="list-style-type: none"> <li>• Request for data submission by countries (3 deadline extensions)</li> <li>• Global data sets identified</li> </ul> | <ul style="list-style-type: none"> <li>• SOCAR data workshop (Cayenne)</li> <li>• Renewed call for data from countries</li> </ul> | <p>Data clean up and analysis</p> | <ul style="list-style-type: none"> <li>• Vetting of results by countries</li> <li>• Best management practices survey (10 countries responded)</li> </ul> | <p>Final decision on cut values from Data Sub-Group</p> | <ul style="list-style-type: none"> <li>• Preparation of maps &amp; graphics</li> <li>• Drafting of chapters</li> </ul> <p>(contract issued to CATHALAC in April 2018 for preparing maps)</p> |

# SOCAR Subregions



(From UNEP CEP Tech. Reports 33 & 52)

# National water quality data submissions



**Blue: Countries & Territories that submitted data (16)**

**Red: Data provided by CARPHA (4)**

**No data received from Subregion II**

# Core LBS water quality parameters covered by countries

## Recommended by the LBS STAC in 2014

| Parameter | Mexico | USA | Aruba | Colombia | F. Guiana | Guyana | Ant. & Barb. | Grenada | Trin. & Tob. | Guadeloupe | Martinique | USVI | Barbados | Dominica | St. Lucia | St. Vincent & Gren. | Dom. Rep. | Bahamas | Jamaica | Puerto Rico |
|-----------|--------|-----|-------|----------|-----------|--------|--------------|---------|--------------|------------|------------|------|----------|----------|-----------|---------------------|-----------|---------|---------|-------------|
| Chl a     | X      | X   |       | X        |           |        |              |         | X            | X          | X          |      |          |          |           |                     |           |         |         |             |
| DO        | X      | X   | X     | X        |           | X      |              | X       | X            | X          | X          |      |          |          |           |                     | X         | X       |         |             |
| DIN       |        | X   |       | X        |           |        |              |         | X            |            |            |      |          |          |           |                     | X         |         |         | X           |
| DIP       |        | X   |       | X        |           |        |              |         | X            | (X)        | (X)        |      |          |          |           |                     | X         |         | X       |             |
| Turb      | X      |     |       | X        | X         |        |              | X       | X            | X          | X          |      |          |          |           |                     | X         | X       | X       |             |
| (TSS)     | X      |     |       | X        |           | X      |              |         | X            |            |            |      |          |          |           |                     | X         |         | X       |             |
| pH        | X      | X   | X     | X        |           | X      | X            |         | X            | X          | X          |      |          |          |           |                     | X         | X       | X       |             |
| Entero    | X      |     | X     | X        |           |        | X            | X       | X            |            |            | X    | X        | X        | X         | X                   |           |         |         | X           |
| E. coli   |        |     | X     |          |           |        |              | x       | X            |            |            | X    | X        | X        | X         | X                   |           | X       |         |             |
| Sal       | X      | X   |       | X        | X         |        |              | X       | X            | X          | X          |      |          |          |           |                     | X         | X       |         |             |
| Temp      | X      | X   |       | X        | X         |        |              | X       | X            | X          | X          |      |          |          |           |                     | X         |         |         |             |

Spatial and temporal gaps in data submitted

Uneven coverage of parameters across the region and within subregions

# Other parameters covered in country data submissions

- Kjeldahl nitrogen
- Total nitrogen
- Nitrate; nitrite
- Ammonia
- Phosphorus; total phosphorus
- Silicate
- Sulphate
- Fecal coliform
- Total coliform
- Total organic carbon
- Dissolved organic carbon
- Mean secchi disk depth
- PAR Attenuation Coefficient
- Conductivity
- Total dissolved solids
- Dissolved & dispersed petroleum hydrocarbon
- BOD
- Several others....

# LBS parameters versus other parameters

- The SOCAR Data Subgroup has agreed that the focus of this current SOCAR will be on the core LBS parameters
- Other parameters that countries monitor will be presented in an appendix in the report (including computational results)
- Decisions will be made in future STACs and COPs about how to deal with these parameters in future iterations of SOCAR

# Core LBS parameters and cut values

| Parameter                | Good<br>*Acceptable | Fair         | Poor  |
|--------------------------|---------------------|--------------|-------|
| Chl a- Island (µg/L)     | <0.5                | 0.5 - 1      | >1    |
| Chl a - continent (µg/L) | <5                  | 5 - 20       | >20   |
| DO (mg/L)                | >5                  | 5 - 2        | <2    |
| DIN- island (mg/L)       | <0.05               | 0.05 - 0.1   | >0.1  |
| DIN- continent (mg/L)    | <0.1                | 0.1 - 0.5    | >0.5  |
| DIP- island (mg/L)       | <0.005              | 0.005 - 0.01 | >0.01 |
| DIP- continent (mg/L)    | <0.01               | 0.01 - 0.05  | >0.05 |
| pH                       | *6.5-8.5            |              |       |
| Turbidity (NTU)          | *0 – 1.5            |              |       |
| Enterococcus (cfu/100ml) | *<35                |              |       |
| E. Coli (MPN/100ml)      | *0-126              |              |       |

These cut values were agreed by the LBS STAC in 2014

Therefore, the SOCAR Data Subgroup considers that these are FINAL (i.e. no further action needed) for the current SOCAR



# Assigning cut values & corresponding colours to sampling sites (Enterococcus)

| Sampling site   | Dry season av | Rating | wet season av | Rating |
|-----------------|---------------|--------|---------------|--------|
| 1               | 3.88          | good   | 12.22         | good   |
| 2               | 3.62          | good   | 5.77          | good   |
| 3               | 7.07          | good   | 9.50          | good   |
| 4               | 5.00          | good   | 6.48          | good   |
| 5               | 7.45          | good   | 38.00         | good   |
| 6               | 3.92          | good   | 28.29         | good   |
| 7               | 27.47         | good   | 30.22         | good   |
| 8               | 34.26         | good   | 55.67         | poor   |
| 9               | 35.29         | poor   | 34.04         | good   |
| 10              | 3.00          | good   | 10.00         | good   |
| 11              | 2.33          | good   | 7.82          | good   |
| 12              | 95.78         | poor   | 38.37         | poor   |
| 13              | 27.92         | good   | 6.38          | good   |
| 14              | 3.71          | good   | 6.25          | good   |
| Country average | 18.62         | good   | 20.64         | good   |

# Data analysis

- Computational steps were finalized following the 2017 Cayenne workshop
- All water quality data sets have been analyzed (after QA/QC)
- Cut values assigned to site averages
- Results include (for each parameter by country/territory and wet/dry season):
  - **sampling site averages**
  - **country/territory averages and departmental averages**
  - **cut value range (good/fair/poor) and corresponding colours for each sampling site**
  - **% sites in each range**
- Water quality results sent to the countries for vetting in Dec 2017; all comments received were addressed (No negative comments or objections received)

# SOCAR Outline

## EXECUTIVE SUMMARY

1. Introduction
2. Geographic, Ecological and Socio-economic Features
3. Methodology and Approach
4. State of the Convention Area
5. Policy Responses and Best Management Practices
6. Challenges in Implementing the LBS Protocol
7. Emerging Issues
8. Conclusions and recommendations

**Both SOCAR & SOME E use the DPSIR framework**

**Schedule for SOME E chapters: Jan 2019**

## How will SOCAR contribute to SOME E?

### SOME E CHAPTER 2 (and sub-chapters)

#### General state of the marine environment & associated economies

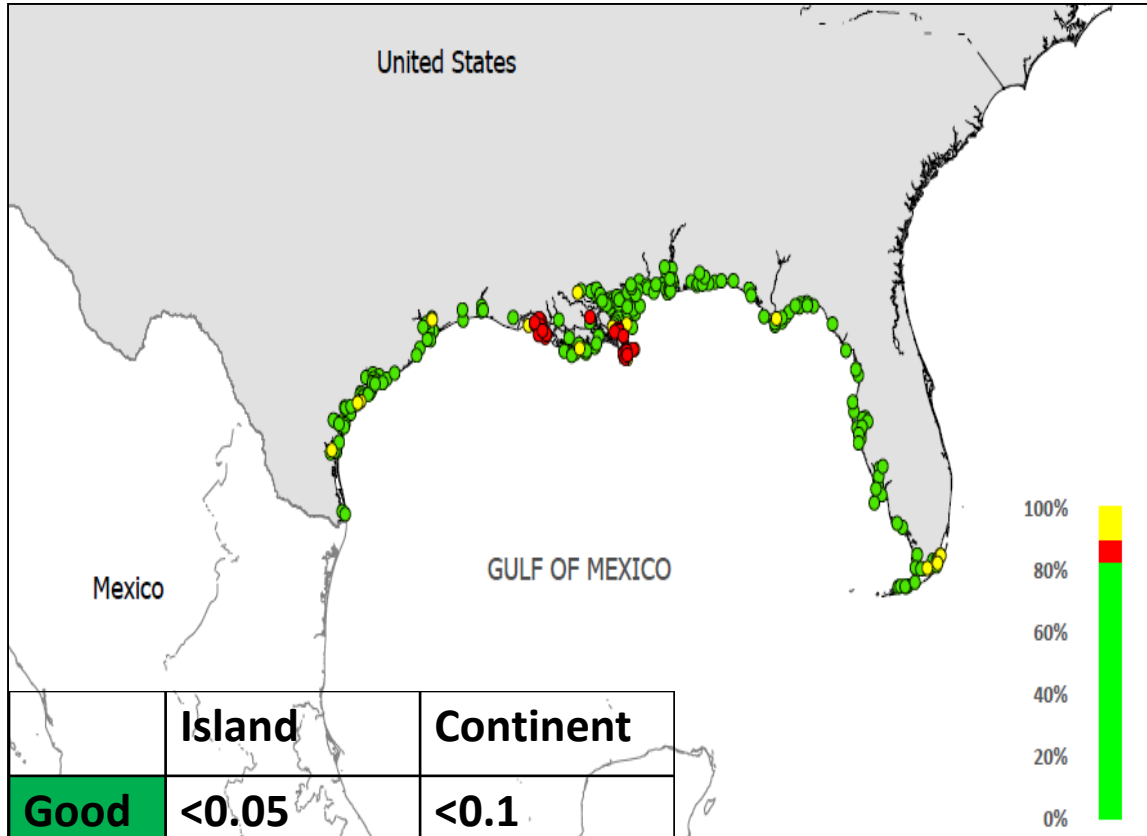
- Description of the marine environment  
Habitats, fish stocks, key species, **water quality**.
- Drivers and pressures  
Description of the drivers/root causes influencing the state of the marine environment, and the pressures/direct causes.
- Responses
  - Region-wide governance arrangements and processes for the protection of the marine environment
  - Governance Effectiveness Assessment FW

(possibly also other SOME E chapters)

# **GRAPHICAL DISPLAY OF WATER QUALITY RESULTS**

## **EXAMPLES**

# Coastal water quality- DIN (mg/L) USA Gulf coast (wet season)



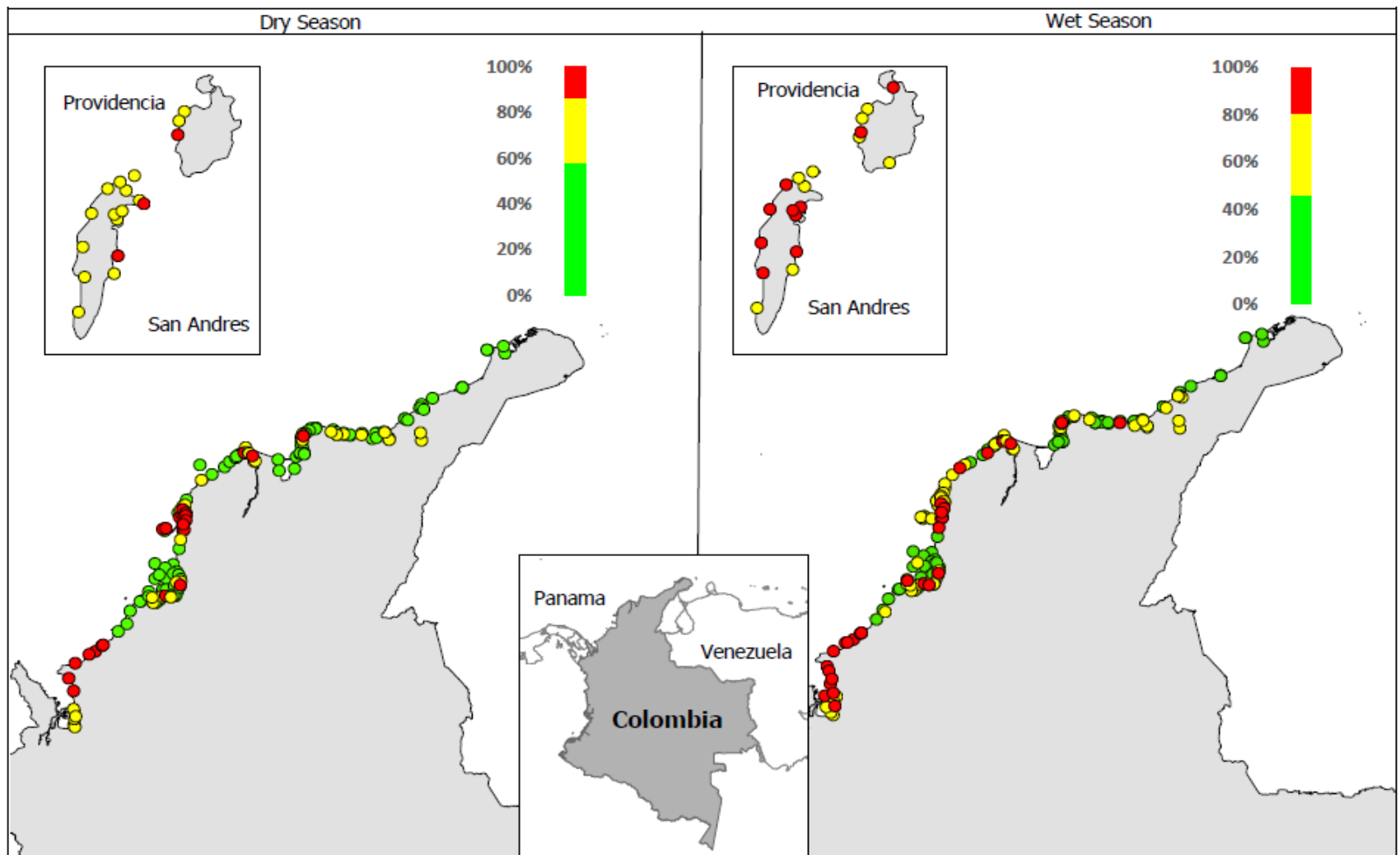
|      | Island     | Continent |
|------|------------|-----------|
| Good | <0.05      | <0.1      |
| Fair | 0.05 - 0.1 | 0.1 - 0.5 |
| Poor | >0.1       | >0.5      |

Site averages rather than country or state averages presented

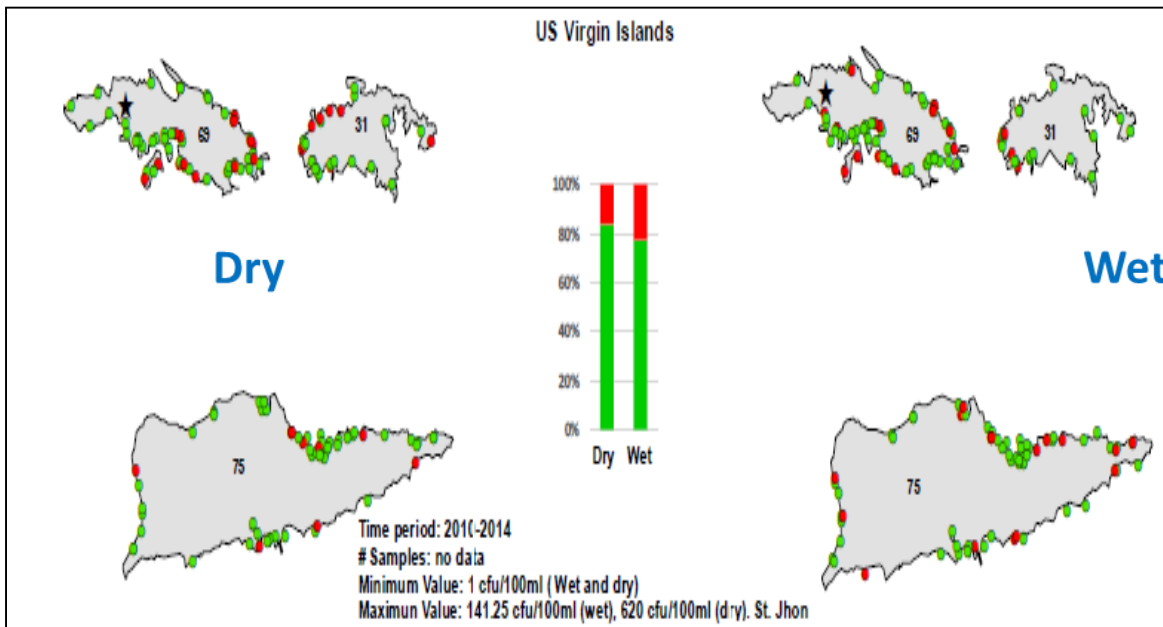
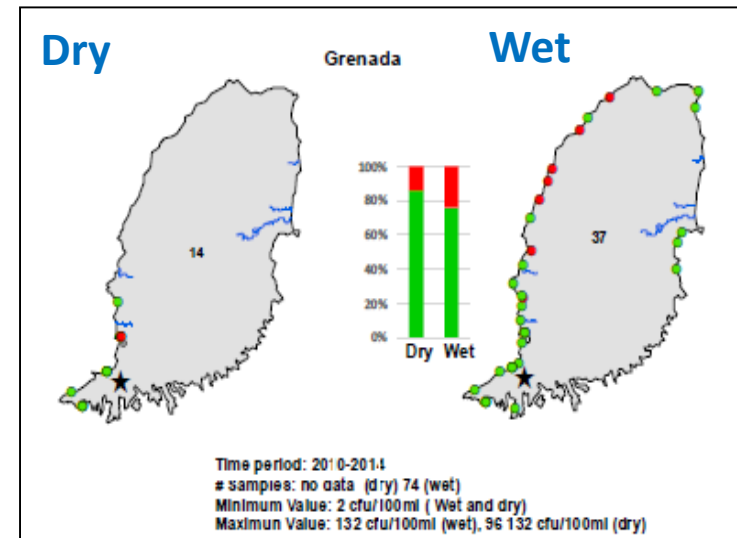
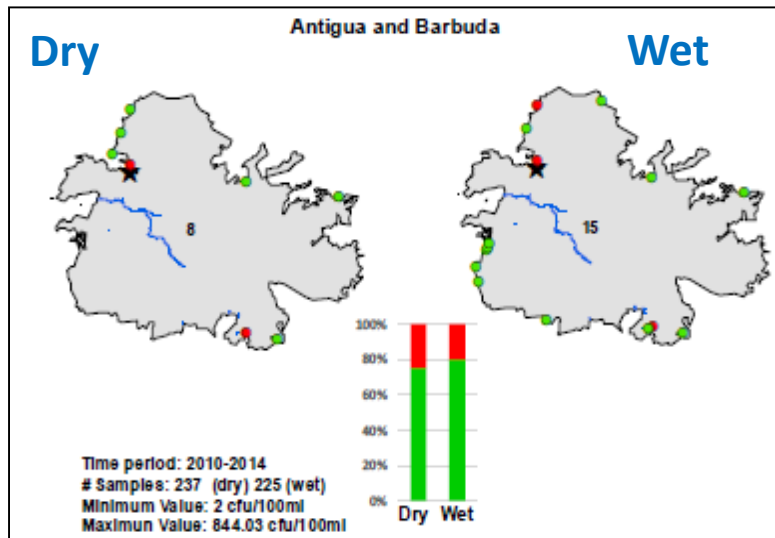
More meaningful for targeted interventions

For certain parameters and countries, the country average is in the poor range, hence better to show site level with a mixture of ranges (political sensitivity)

# Coastal water quality- DIN (mg/L) Colombia (dry & wet seasons)



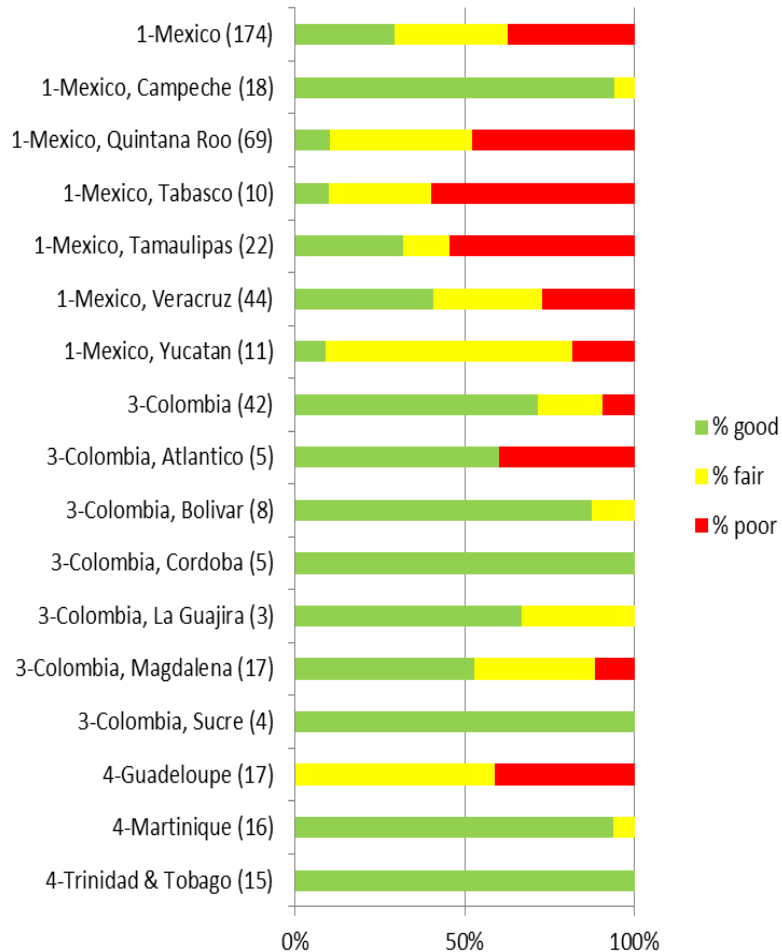
# Coastal water quality- *Enterococcus faecalis*



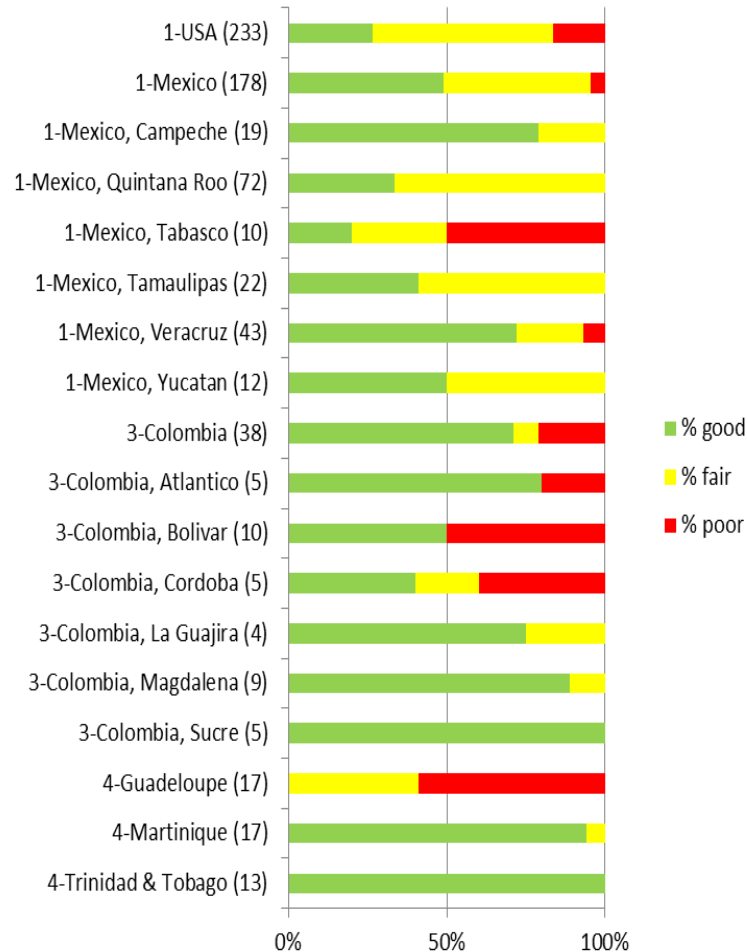
**Acceptable: <35 cfu/100 ml**

# Chlorophyll *a*: % sites in each range

## DRY SEASON



## WET SEASON

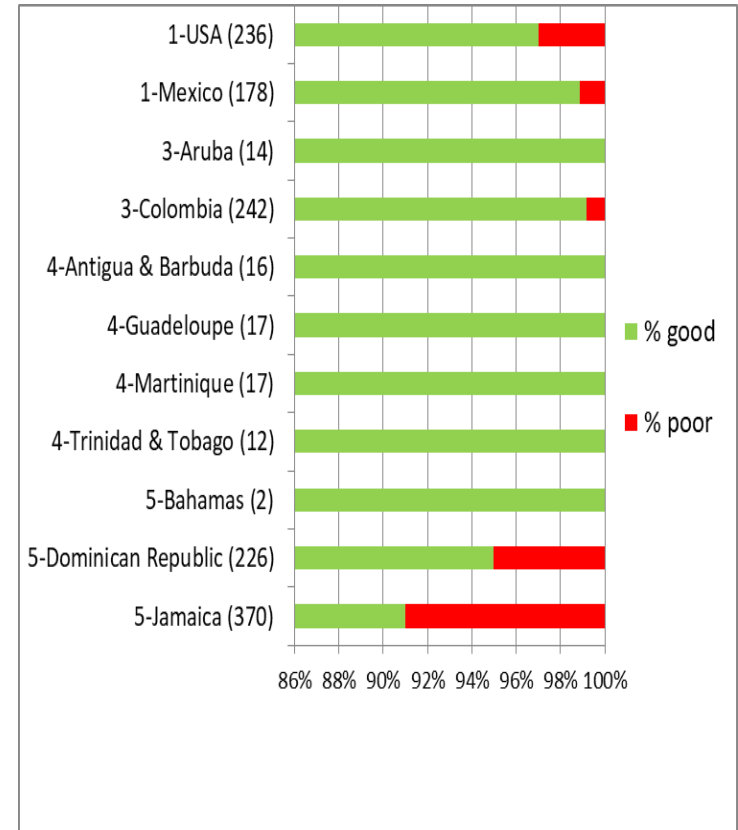
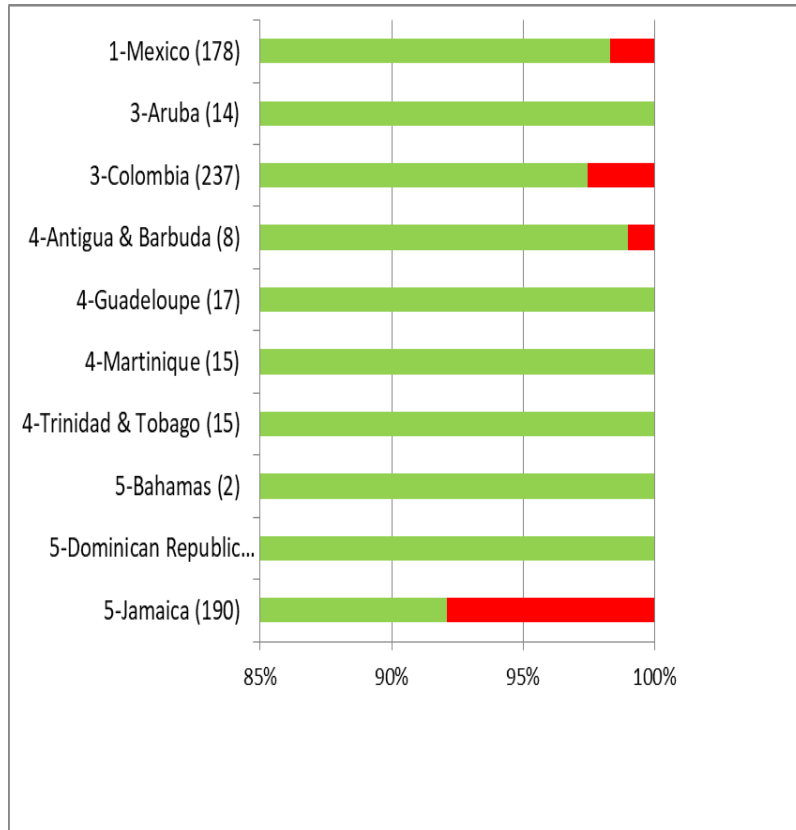


Island: Good: < 0.5 µg/L; Fair: 0.5 - 1 µg/L; Poor: > 1 µg/L

Continental: Good: < 5.0 µg/L; Fair: 5.0 µg/L - 20.0 µg/L; Poor: > 20 µg/L



# Coastal water quality- pH

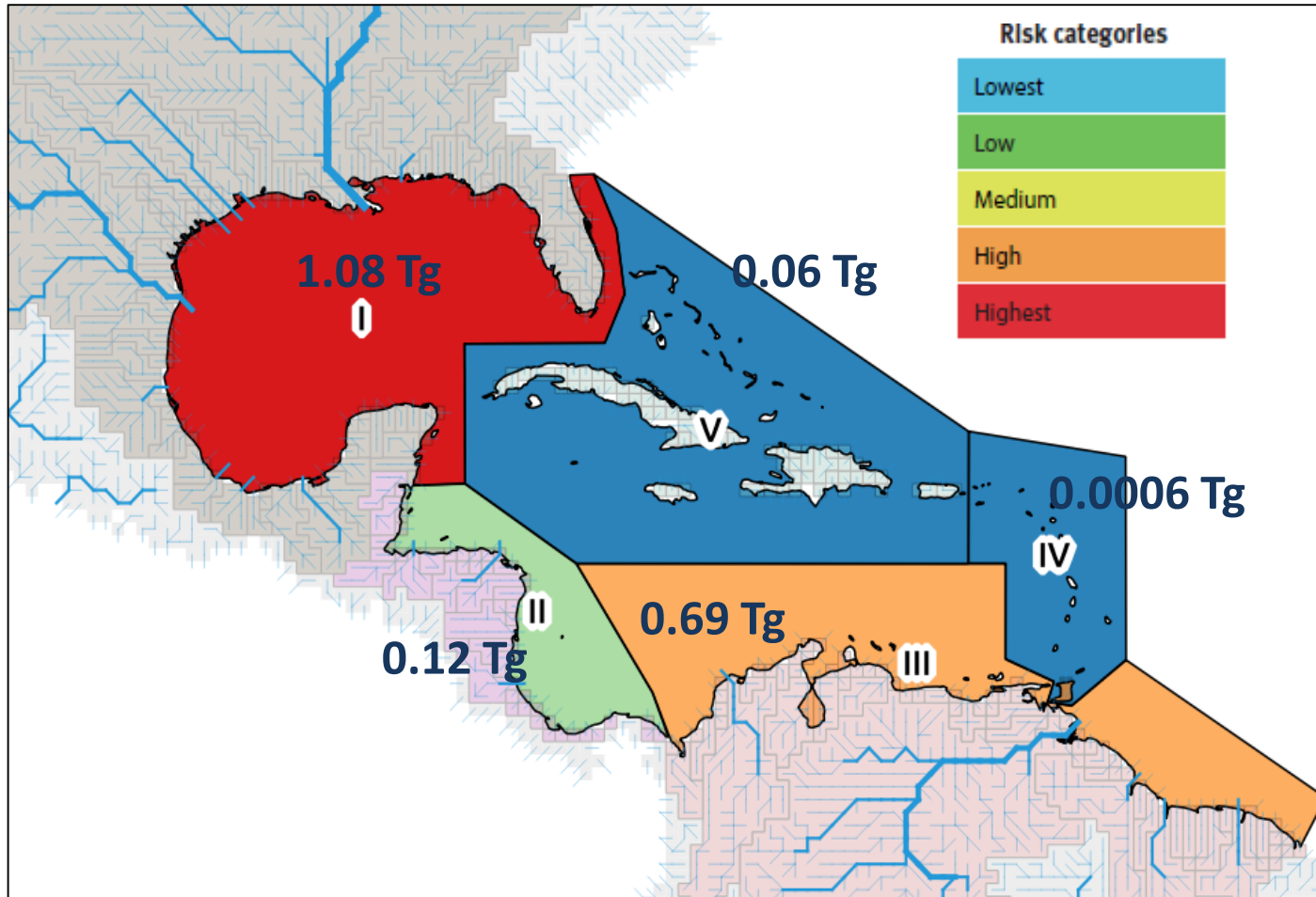


**Acceptable range: 6.5- 8.5**

# Other parameters being considered

- Nutrient loads from watersheds (N, P, Si)
- Index of Coastal Eutrophication Potential (SDG 14.1)
- Harmful algal blooms incidence
- Dead zones
- Floating plastic debris
- Beach litter
- Sediment loads from watersheds
- POPs

# DIN loads (Tg/yr) from watersheds

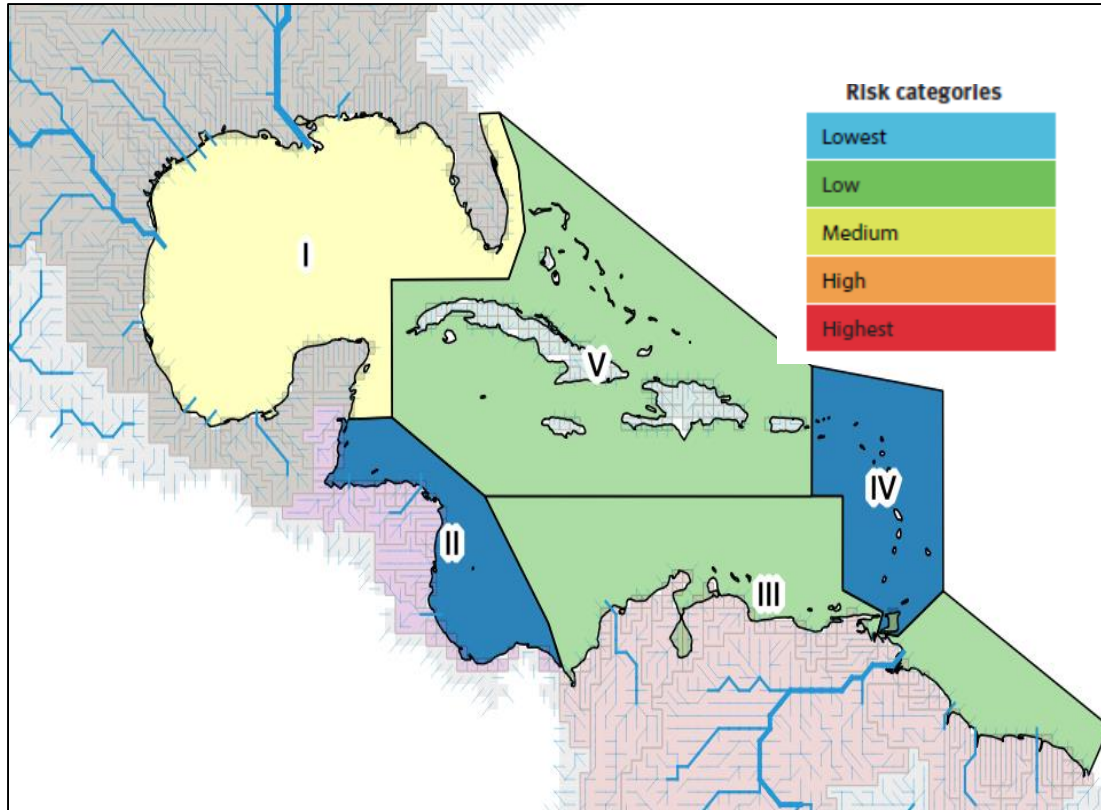


Risk Categories based on UNEP/GEF Transboundary Waters Assessment Programme (TWAP)

Tg: Teragram (1 million kg)

Global Nutrient Export from Watersheds model (E. Mayorga, Univ. Washington)

# Index of Coastal Eutrophication Potential (ICEP)



Global Nutrient Export from Watersheds model  
(E. Mayorga, Univ. Washington)

ICEP is based on nutrient ratios in the nutrient loads delivered by rivers to the LMEs (dissolved Si to N or P)

An Indicator for SDG 14, Target 1  
(By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution)

# Challenges

## (some data sets)

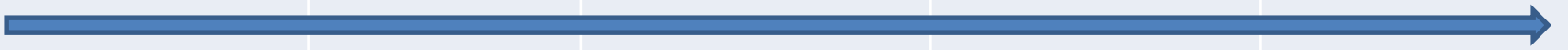
- Uneven coverage of LBS parameters across countries
- Inconsistencies among data sets (e.g., different units, different forms of the parameter).
- No GIS coordinates for sampling sites; errors in GIS coordinates provided.
- Absence of metadata and description of sampling protocol.
- Missing data for one of the two seasons.
- Limited delineation of Class I and Class II waters by countries
- Small number of samples and sampling sites for certain parameters.
- Typographical errors in data sets required a significant amount of time to clean up the data sets before analysis.
- Low confidence level in data for certain parameters.
- Mapping - scale issue.
- Bureaucratic delay in issuing contracts (CATHALAC and SOCAR consultant).

# For discussion

1. Level of detail on the maps (information)
2. Displaying results at site level vs national/ territory scale
3. Aggregating results at the subregional level (because of spatial gaps, current data sets are not representative)
4. Design and layout of water quality maps
5. Should site and country AVERAGES (not the raw data) be included in the report
6. Seeking approval from the countries for the level of detail to be presented. What is 'Plan B' if countries object?
7. Review process (esp. political review)- How, who, timeframe
8. Timeline for completion of SOCAR
9. Recommendations for STAC

# Proposed timeline for completing SOCAR

| Jul-Sept 2018  | Oct 2018                       | Nov 2018  | Nov-Dec 2018  | Jan-Mar 2019  |
|--|--------------------------------|---|---|---|
| <ul style="list-style-type: none"><li>• Drafting of report</li><li>• Translation</li></ul> | Review (technical & political) | <ul style="list-style-type: none"><li>• Report revisions</li><li>• Drafting of policy summary</li></ul> | Presentation of report to COP/IGM (end Nov-start Dec) | <ul style="list-style-type: none"><li>• Editing</li><li>• Design &amp; layout</li><li>• Publication</li></ul> |



**Note: SOCAR will contribute to the UNDP/GEF CLME+ Project SOME E Report**

**Timeframe for submission to SOME E is January 2019**

# Proposed recommendations

## CURRENT SOCAR

- Secretariat seeks formal endorsement from each country for the level of detail to be presented in the report (especially regarding sensitive wq parameters)
- Countries provide timely responses to request for information from the Secretariat and for comments on the draft report (when available)
- Consideration to making SOCAR (report and results) available online (CLME+ SOME, CMA2), taking into consideration data sharing and data sensitivity issues
- Others....

## FUTURE SOCAR

- Refine the list of LBS parameters to be covered
- Data Subgroup continues work to refine water quality targets and cut values for future SOCAR
- Take action to fill data gaps and address inconsistencies in data across the region- harmonization of indicators and monitoring protocols, etc.
- Document and make available meta data
- Aligning SOCAR Subregions with area of mandates of relevant Inter-governmental Organizations in the WCR



*Thank you!*