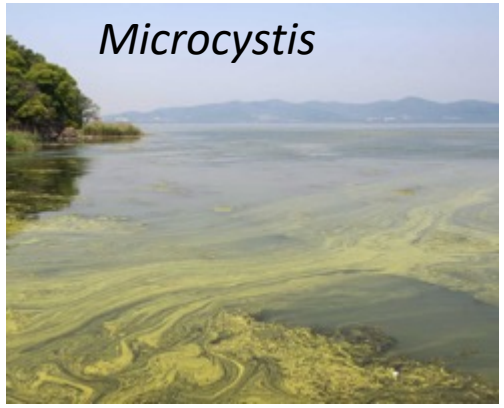
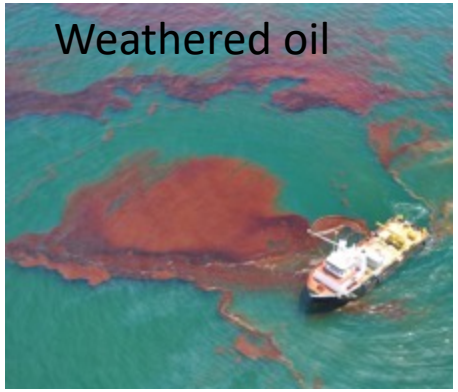
International Ocean Colour Science Meeting

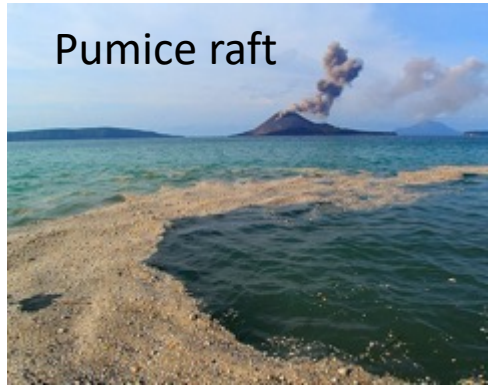
Remote sensing of aquatic litter and debris

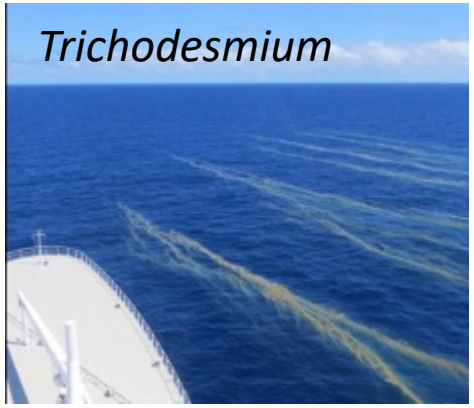
Shungu Garaba
Madeline Cowell
Team effort/Session Attendies

The many types of floating matters









NEXT STEPS FOR THE RSMLD TASKFORCE

- The RSMLD Taskforce will **restructure** to meet the needs from the workshop
  - **Combine** core topics and pull together all members
  - Assign actions to small tiger teams
    - Increase access to resources (we are all busy)
    - Provides ownership to push actions forward
  - A steering committee helps guide actions to a roadmap to support agencies

TASKFORCE RSMLD RESTRUCTURE & ACTIONS

TIGER TEAMS FOR THE NEW YEAR (WHO: IOCCG Taskforce)

- Development of the RSMLD Taskforce Roadmap (by April 2024)
  - Document to be revised every 2 years
  - Agency support and published for public
- Spectral Library and Database (Oct 2024)
  - Formal reference library required for algorithm development and intercomparison
  - Focused data categories:
    - Lab endmember
    - Insitu samples
    - Matchups
- Definition of sampling protocols (draft June 2024 – continuously updated)
  - Document for ships of opportunity and upcoming agency campaigns
  - Camera/onboard sensors that we should include for sample gathering
  - AIS on boats to help with Lat/Long to help fill in the gap
- Create a published document to educate the various data layers and paired technologies (end of 2024)
  - Communicate external to the marine debris community to engage stakeholders and promote interdisciplinary science
  - IOCCG-RMSLD-open+subscribe@groups.io
  - Subject ‘Request of subscription

IF YOU ARE INETRESTED IN ANY OF THESE TEAMS, EMAIL US!

Things Missing and Feedback

- Stakeholders engagement (Who: IOCCG Taskforce)
  - What is the review of “priorities” from the stakeholders
    - Summarize the “why”
      - Map extent to say the scope
      - Looking for the source
      - Cleanup activities (tourism linked – smart cleanup)
    - How do they want the information?
      - What action do they want to take from a data product
      - Management outcomes dictates level of data / information
    - Impact story > pollution impacts all sciences/things
  - Maybe a white paper/document – lessons learned

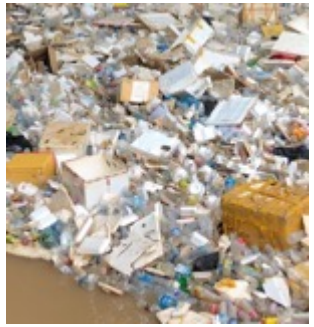
Scope
Measurable
Achievable
Results
Timebound

- Multidisciplinary : agency, science, (Who: Agency Ask)
  - How do we create interagency support to promote interdisciplinary science.

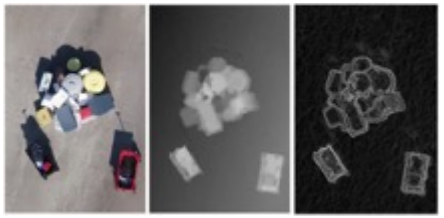
- Community agreement (Who: Community)
  - Focus on floating litter – objects that include beyond plastics and includes examples

Aims and Objectives

- Expected applications are to **detect**, **identify**, **quantify** and **track** floating litter.

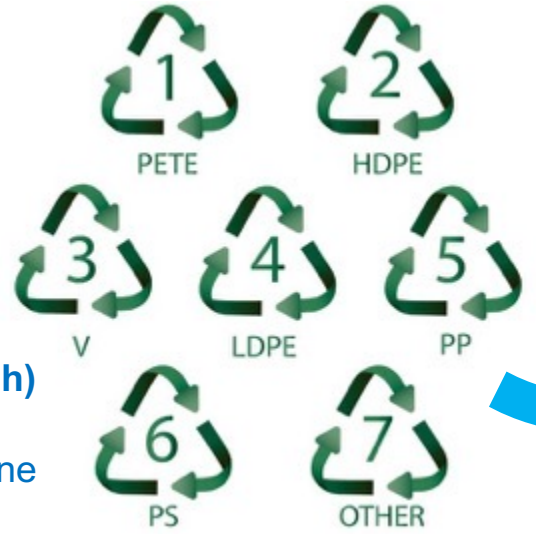


Detect
Object identification algorithms using the shape, colour, size, form descriptors in RGB true colour images.



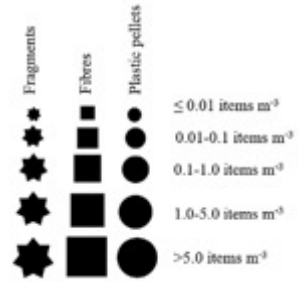
Kako et al., 2019

Identify (Distinguish)
SWIR and thermal spectrum to determine polymers types.

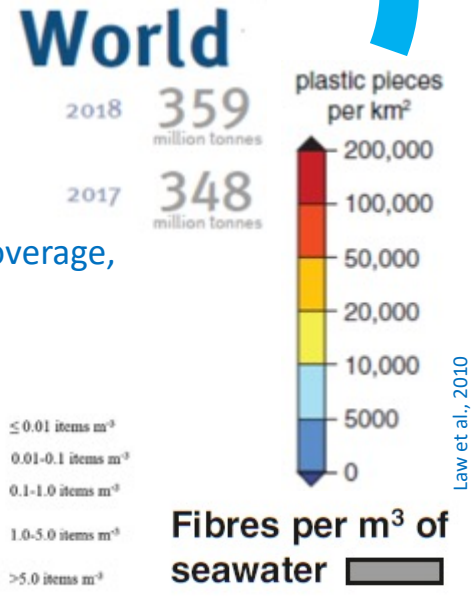


https://www.acmeplastics.com/content/your-guide-to-plastic-recycling-symbols/

Quantify
Actual counts, pixel coverage, area coverage



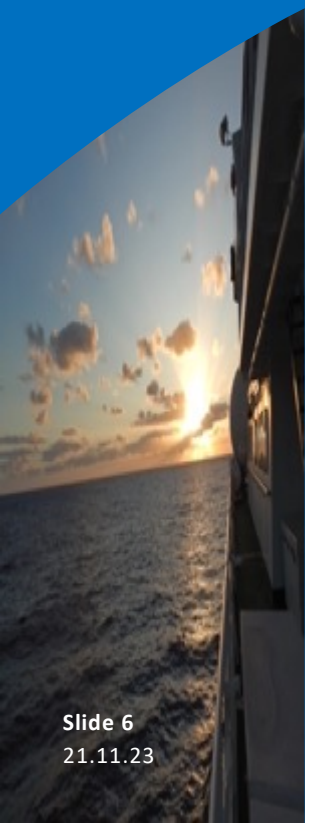
Ivar do Sul and Costa, 2014



Law et al., 2010

Bergmann et al., 2015

Track
Fixed platforms or geostationary, daily imagery utilizing the detection and identification algorithms.



Review

Study from 2023: „Advances in Remote Sensing of Plastic Waste“

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