Project Proposal

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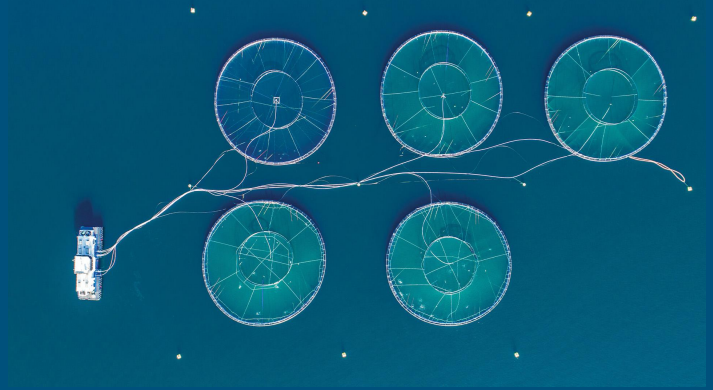
6000 Level

Problem

- UN Sustainability Goal #14: Life Under Water
- Coral reef bleaching
- Aquaculture & marine biodiversity
- Environmental impacts
- Does Coral Bleaching affect aquaculture production and marine biodiversity?



Data

- Coral Bleaching data (BCO-DMO)
  - Various weather metrics (temperature, windspeed)
  - Various location data (region, subregion, country)
  - Ocean data (depth, average bleaching, SSTA)
- Aquaculture data
  - From Our World in Data & UN FAO database
  - Yearly production (in metric tons) by “Entity”
- UN Indicator 14.5.1 data
  - “Average proportion of Marine Key Biodiversity Areas (KBAs) covered by protected areas (percent)” (UN SDG)

BCO-DMO
Biological & Chemical Oceanography Data Management Office

GCDL

SUSTAINABLE DEVELOPMENT GOALS

Data Merging/Synthesis

- Merged datasets by similarities:
  - Countries
  - Dates (Years)
- Handling missing values
- Handling differences

Analysis

- Distributions
  - Temperatures
  - Climate/Wind
- Patterns
  - Average bleaching by country, region, ocean
  - Changes in aquaculture production
  - Changes in percentage of KBAs
- Model construction
  - Working with features
  - Train/Test data (random sampling?)

Modeling

- Applying models
  - Regression analysis
  - Look into clustering by amount of bleaching (“Low”, “Med”, “High”)
- Uncertainties
  - Amount of effect of dependent variables on independent variable?
  - Can the data be clustered?

Predictions & Outcomes

- Relationship between coral bleaching and aquaculture production
  - Higher levels of bleaching = lower aquaculture productions
  - Level of biodiversity also comes into play
- Outcomes
  - Reducing coral bleaching could have environmental and socio-economic impact in various parts of the world.
  - Higher levels of biodiversity and aquaculture production

Thank You!
Any Questions?

References

- https://www.cntraveler.com/story/23-of-great-barrier-reef-is-suffering-from-coral-bleaching
- van Woesik, R., Burkepile, D. (2019) Bleaching and environmental data for global coral reef sites from 1998-2017. Biological and Chemical Oceanography Data Management Office (BCO-DMO). (Version 1) Version Date 2019-07-18 [if applicable, indicate subset used]. doi:10.1575/1912/bco-dmo.773466.1 [access date]
- Hannah Ritchie and Max Roser (2019) - "Seafood Production". *Published online at OurWorldInData.org.* Retrieved from: 'https://ourworldindata.org/seafood-production' [Online Resource]
- https://unstats-undesa.opendata.arcgis.com/datasets/indicator-14-5-1-average-proportion-of-marine-key-biodiversity-areas-kbas-covered-by-protected-areas-percent-5?page=6