CMECS APPLICATION

Developing Benthic Monitoring Protocols For Offshore Renewable Energy Impacts

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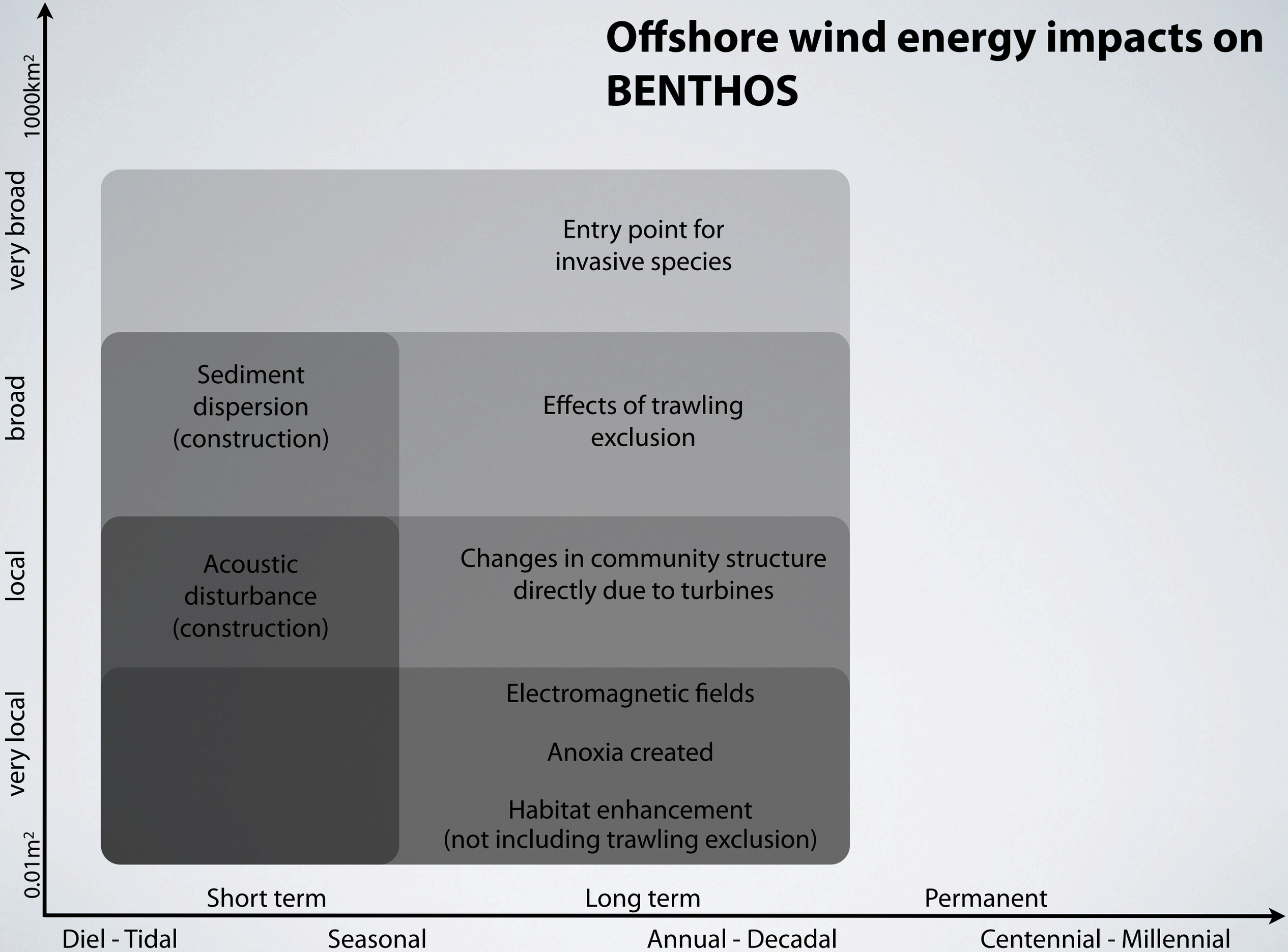
DEVELOPING MONITORING PROTOCOLS

- Identify impact and its spatial-temporal scale
- Identify existing baseline data or if none, proceed to next step
- Estimate sampling frequency based on relevant temporal scale
- Identify relevant CMECS components
- Choose tool based on spatial-temporal scale, CMECS data attainable, cost

Offshore wind energy impacts on BENTHOS

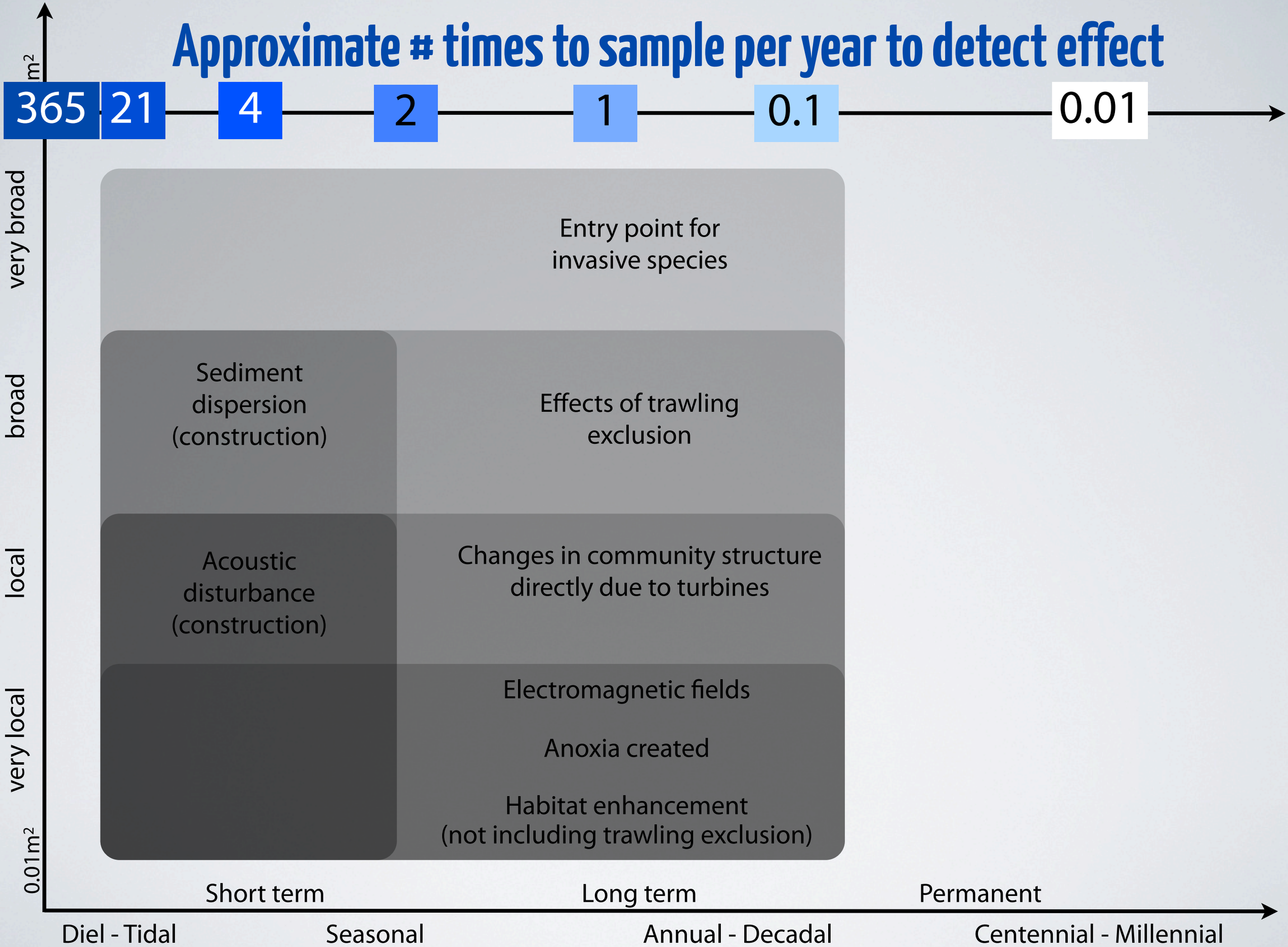


Establishing baselines

- Existing reference level (e.g., endangered spp.)
- Historic, or undisturbed reference site
- Reference direction (e.g., decrease in seagrass)
- Reference based on a threshold (ref point is linked mathematically to a functional relationship)

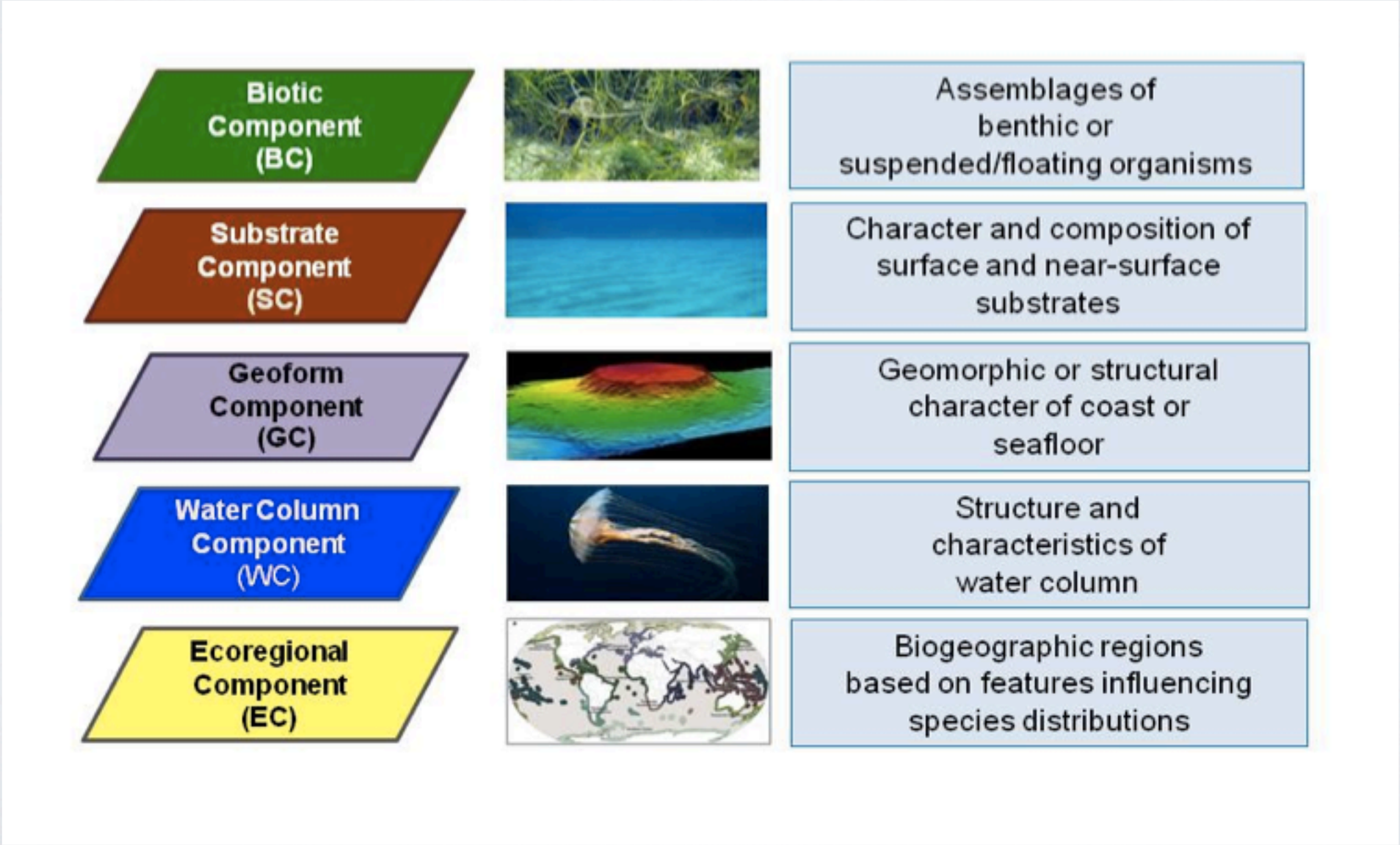
Samhouri et al., 2011

Approximate # times to sample per year to detect effect

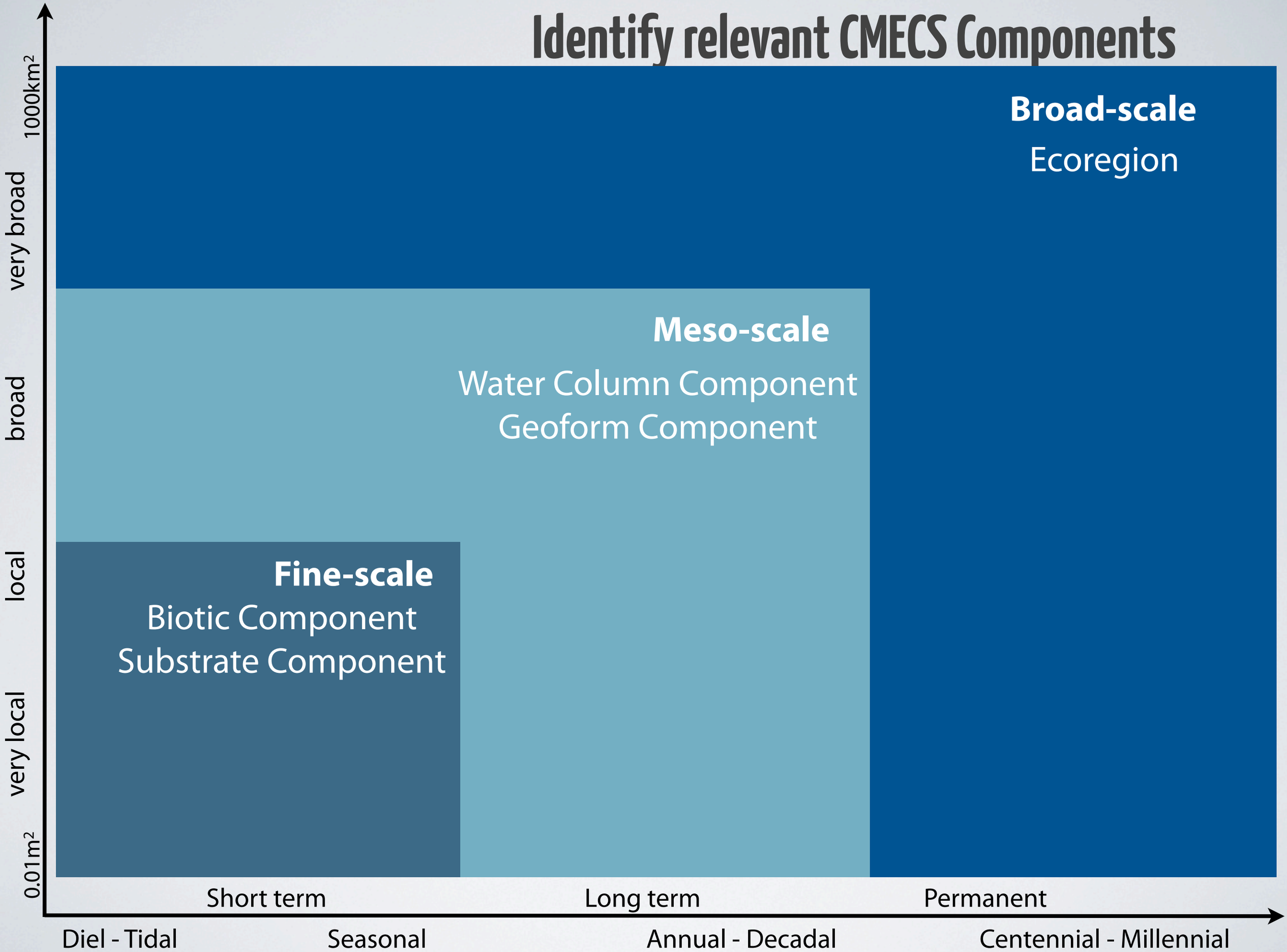


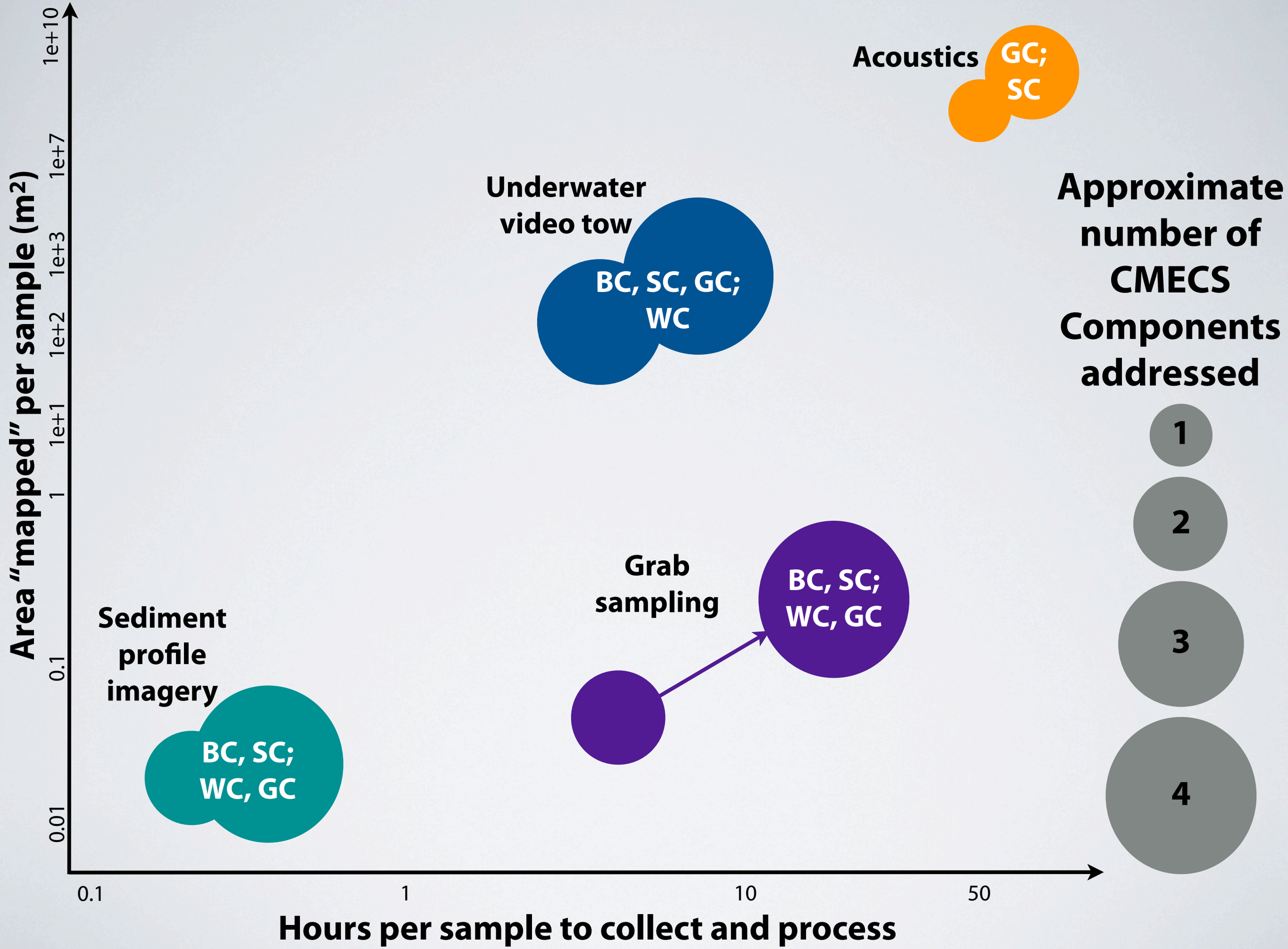
Identify relevant CMECS Components

- By using CMECS, we explicitly acknowledge the spatial and temporal SCALE and VARIABILITY in the parameters of interest



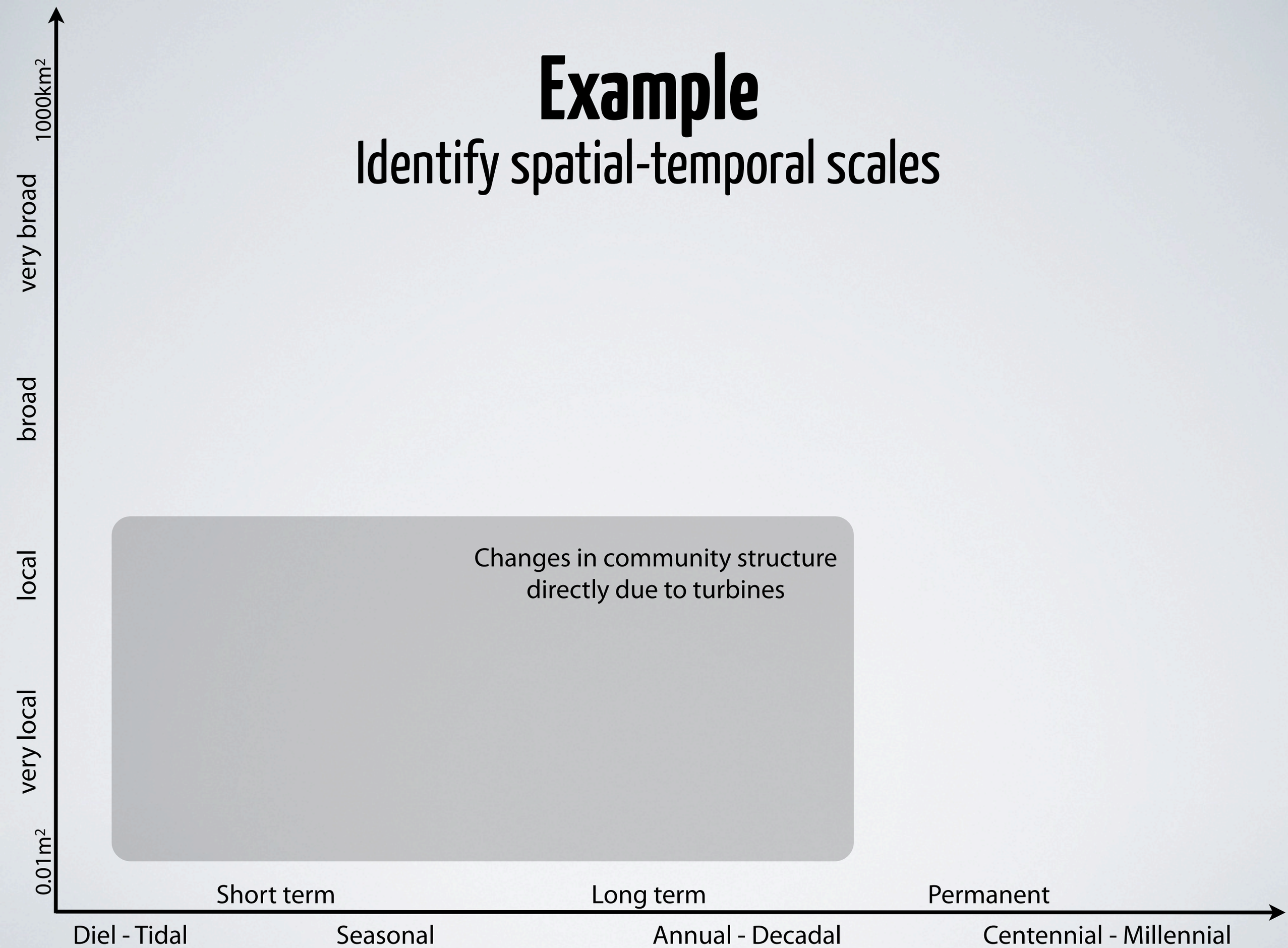
Identify relevant CMECS Components




Acoustics
GC; SC
Underwater video tow
BC, SC, GC; WC
Grab sampling
BC, SC; WC, GC
Sediment profile imagery
BC, SC; WC, GC
Approximate number of CMECS Components addressed
1
2
3
4
Area "mapped" per sample (m²)
1e+10
1e+7
1e+3
1e+2
1e+1
1
0.1
0.01
0.1
1
10
50
Hours per sample to collect and process

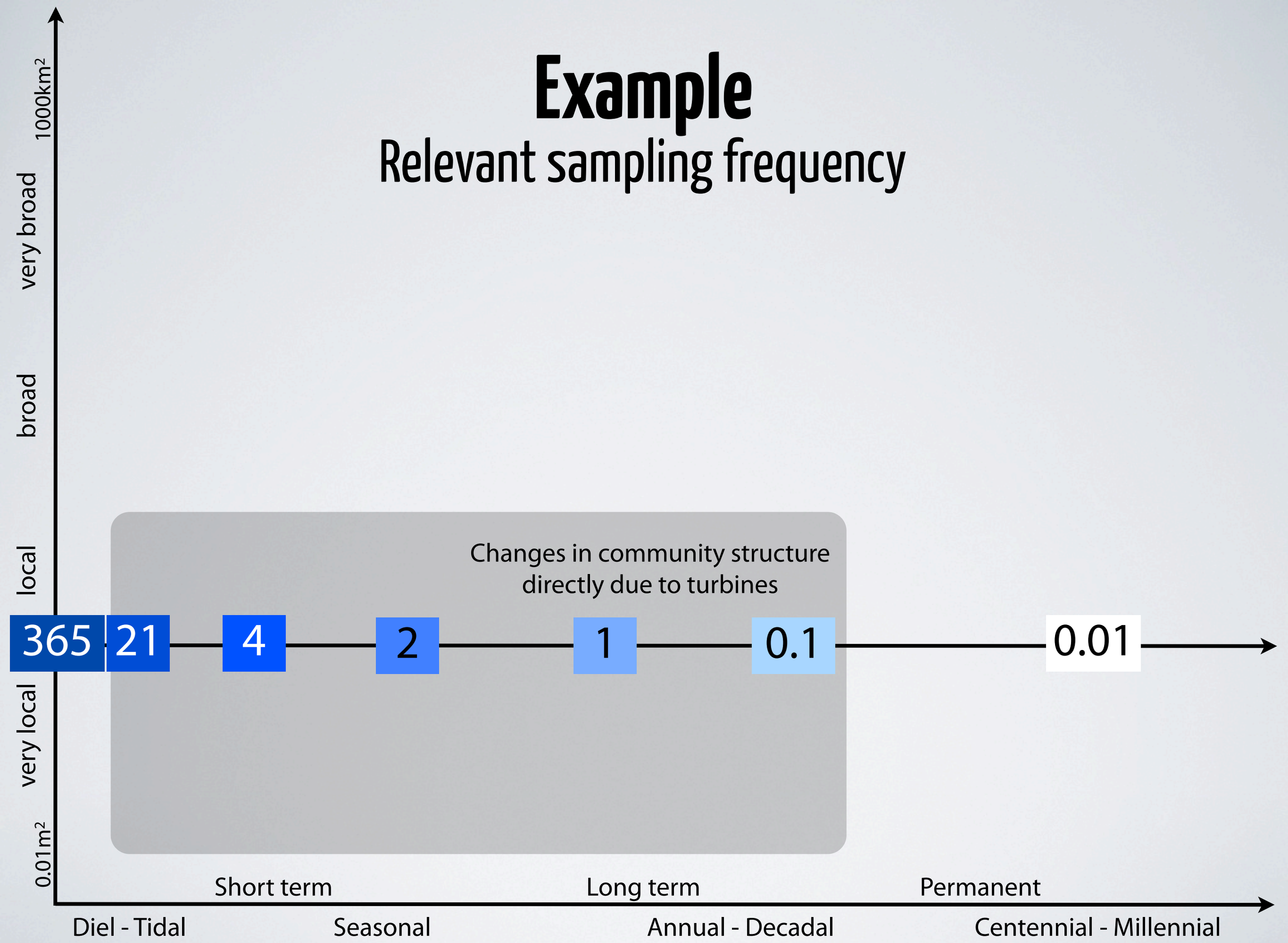
Example

Identify spatial-temporal scales



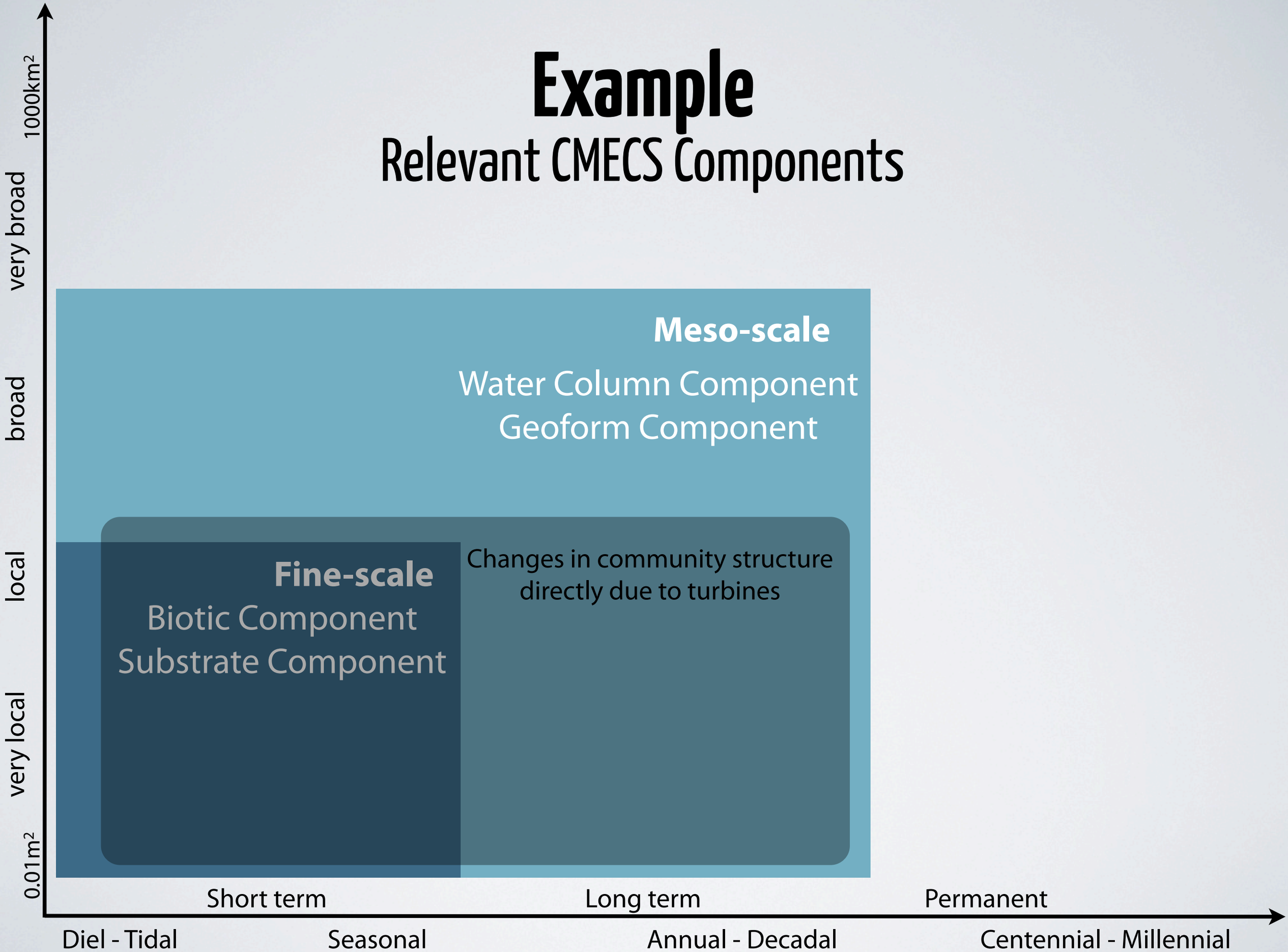
Example

Relevant sampling frequency



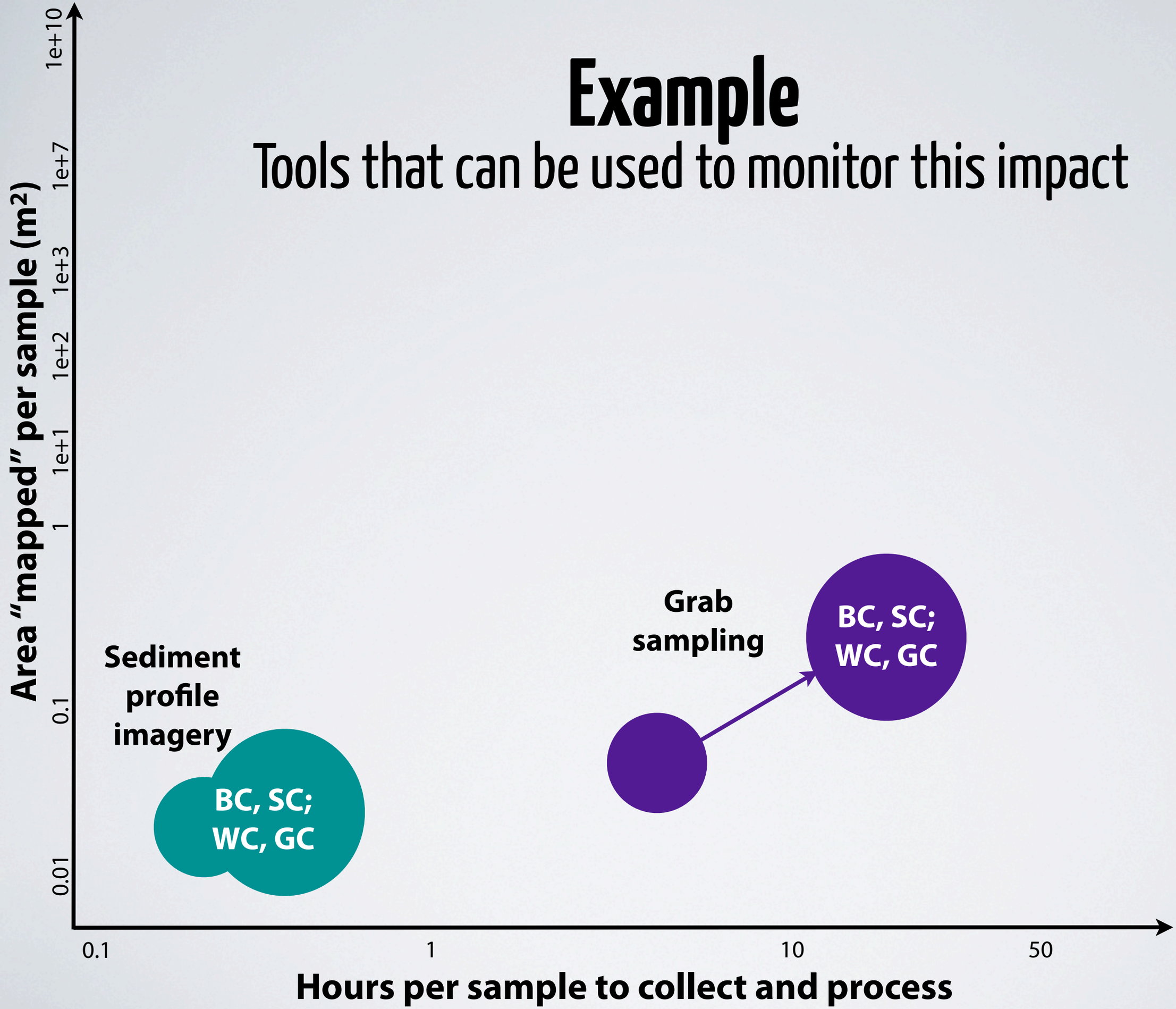
Example

Relevant CMECS Components



Example

Tools that can be used to monitor this impact



Example

Well-funded	Poorly-funded
grabs + SPI	SPI
Detailed, long-term study	Rapid assessment
Biannual sampling for 20 years	Annual sampling for 5 years
30 hours work/station	~1 hour work/station
Populate CMECS Geoform, Water Column, Substrate and Biotic Components	Populate CMECS Biotic, Substrate Components