• Erosional behaviour
• Biofilm effects
• Organic contaminants: a new approach
ECOSYSTEM ARCHITECTURE

ETDC CYCLE

CONSOLIDATION

DEPOSITION

TRANSPORT

EROSION
Low temperature SEM
SHIELDS CURVE

Field measurements plotted in the SHIELDS-diagrams

(From Manzenrieder 1983)
The 2006 Cohesive Strength Meter (CSM)

Sediment stability measure
Eden Estuary Scotland
Sediment stability: the catchment theory

- Salinity
- Stability
- Lake
- River
- Estuary

- Eutrophic
- Oligotrophic
- Rooted plant dominated
- No rooted plants
- Salt marsh
- Mudflat
- Deposition

MPB
Lentic systems
Deep lakes
Deep lotic systems
Lentic systems
Shallow lotic systems
Episodic
Torrential
Density flows
Tsunami
Wave crash
Dynamic Extremes
Measurement comfort zone
Rivers and streams
Laminer (?)
Extremes
Salt marsh
High intertidal
Low intertidal
Marine
Deep oceanic
Deep lakes
3-D Map of Surface Sediment Stability, Eden Estuary, Fife, Scotland
IT’S NOT ALL ONE WAY …….

Limnology and Oceanography: Methods. 7. 490-497.
MagPI: Theory

\[ F = \frac{B^2 A}{2\mu_0} \]

- \( B \) is the magnetic flux density,
- \( A \) is the area of the pole faces
- \( \mu \) is the permeability of free space

\[ B = \frac{\mu N}{L} \]

- \( N \) is the number of turns
- \( I \) is the current,
- \( L \) is the length of the magnetic circuit

\[ F = \frac{\mu^2 N^2 I^2 A}{2\mu_0 L^2} \]
Surface adhesive capacity with: MagPI

![Graph showing the adhesive capacity over time with different treatments.](graph.png)
Cell numbers, Biomass

- Bacterial cell number (10^6 cells cm^-3)
- Chlorophyll a (mg/L)

**Comparison of Control, Diatom, Bacteria, and Bacteria + Diatom groups.**
Preliminary result: MagPI (mTesla)

Time (Sampling days)

- CT triclosan
- CB Bacteria
Preliminary result: MagPI (mTesla)

- CT triclosan
- CB Bacteria
- T1 30µg/L
- T2 100µg/L

MagPI (mTesla) vs. Time (Sampling days)
Preliminary result: MagPI (mTesla)

- CT triclosan
- CB Bacteria
- T1 30µg/L
- T2 100µg/L
- T3 131µg/L

Time (Sampling days)

MagPI (mTesla)
**Preliminary result : MagPI (mTesla)**

![Graph showing MagPI levels over time for different concentrations of triclosan and bacteria.](image)

- **CT triclosan**
- **CB Bacteria**
- **T1 30µg/L**
- **T2 100µg/L**
- **T3 131µg/L**
- **T4 145µg/L**
- **T5 200µg/L**

**MagPI (mTesla)**

**Time (Sampling days)**

1 2 3 4 5 6
Some recent relevant publications:


Experimental design – CO₂ and temperature regimes

SPID × Temp × CO₂ combinations replicated 3 times = 216 mesocosms