SeaLens Technology to Monitor 3D Aquaculture In Wales

Christian Berger & Dani Abulhawa

PEBL-Plant Ecology Beyond Land

Application of Sensors in Precision Aquaculture

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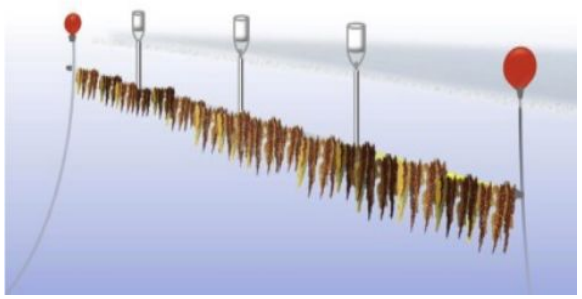
Why monitor your sea-farm?

- ✓ Improve consistency
- ✓ Reduce manual labour

Low-trophic sea-farms

Seaweed / Seagrass



Bi-valves / Crustaceans

Examples:

- New aquaculture location assessment
- Harvest schedule planning
- Early warning & troubleshooting (disease, rigging failure, pollution)
- Validating sustainability objectives (biodiversity, carbon, nitrogen)

Key requirement: Low-cost, Easy-to-use, Live data

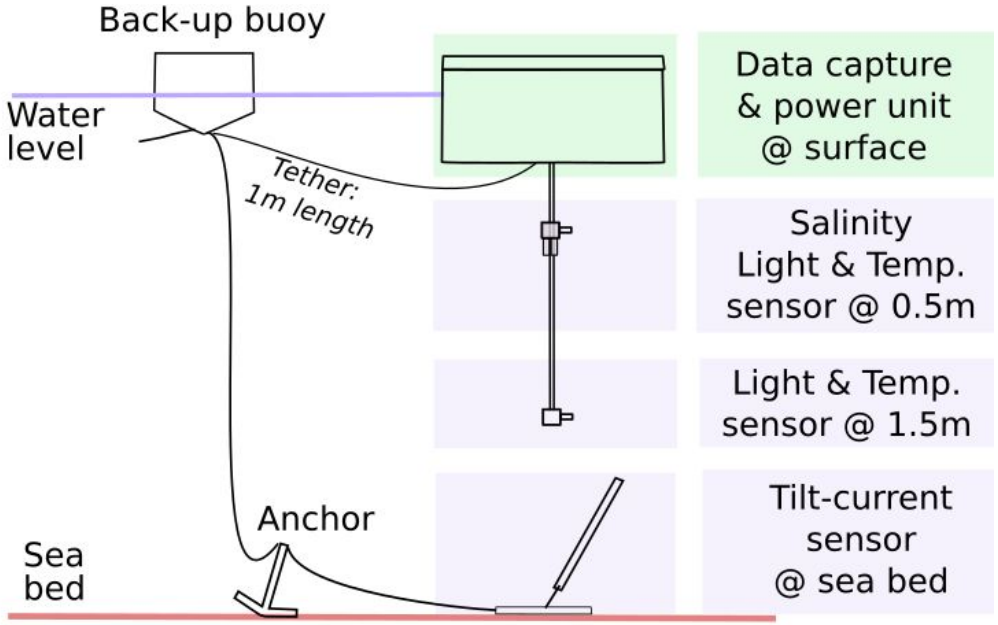
SeaLens: Low-cost sea-farm monitoring tool

Water quality
pH / Salinity

Physical environment
Light / Flow / Temp.

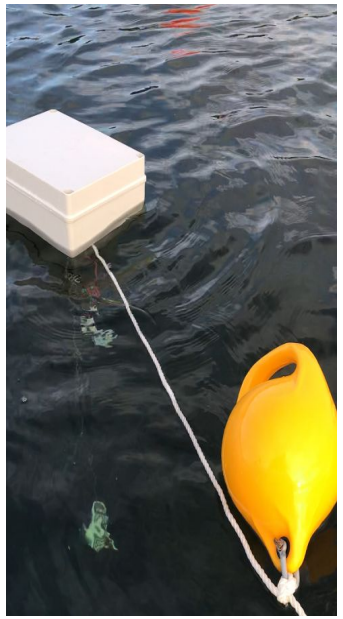
Imaging
Photo / Video

System overview



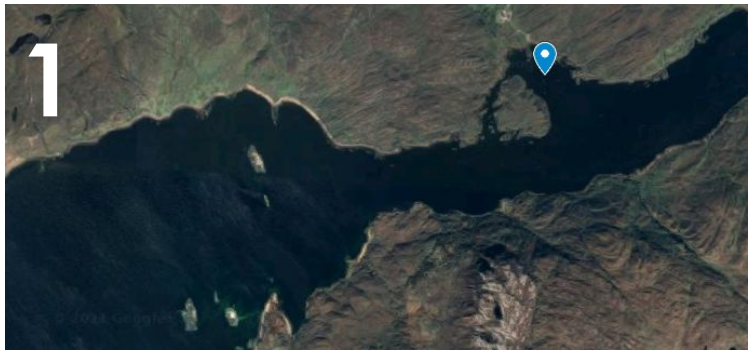
Deployment

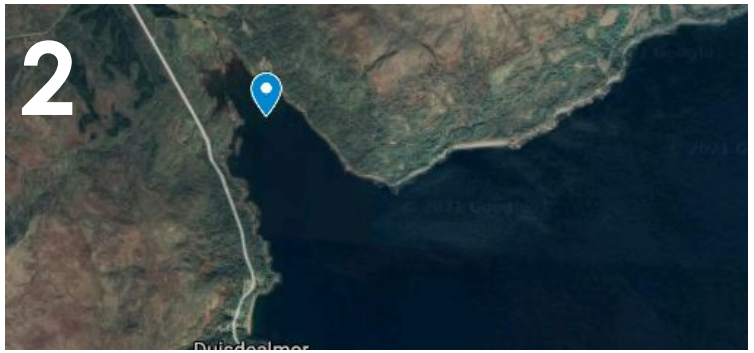
Surface unit



Current sensor

Case Study: Proposed seaweed & Shellfish farm Skye



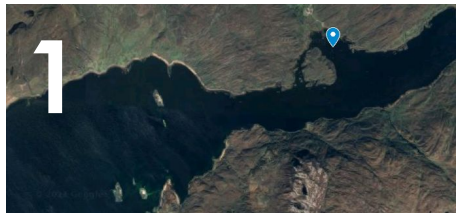


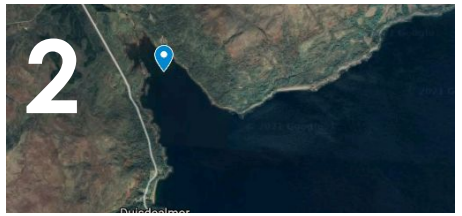
Site 1:
- Sheltered cove
- Near stream

Site 2:
- Semi exposed bay
- Near hotel

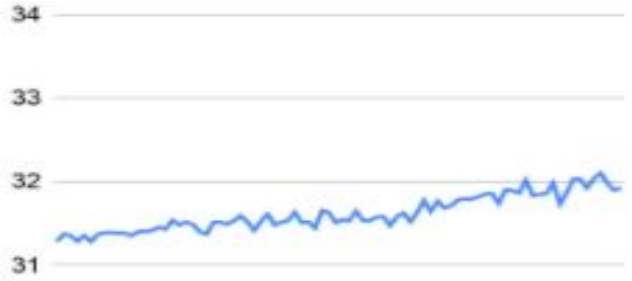
Site 3:
- Wide loch
- Deep

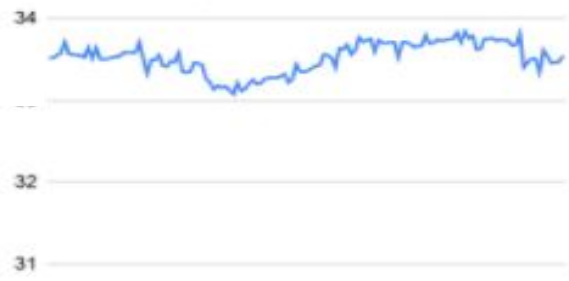
Case Study: Seaweed & Shellfish farm Skye



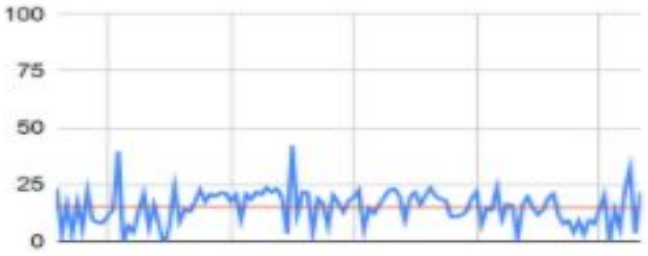


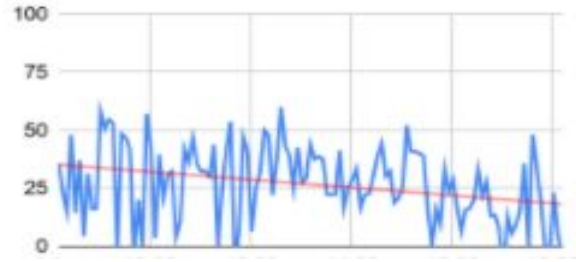
Salinity vs Time

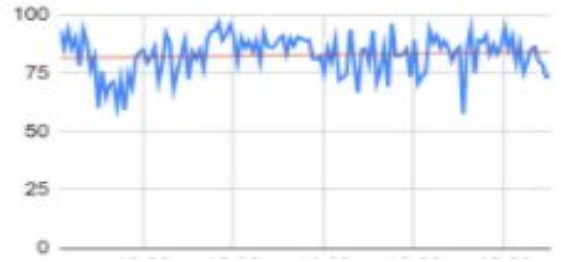




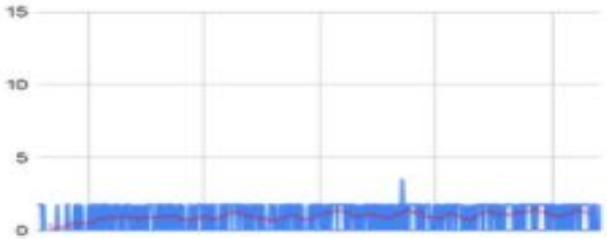
Light attenuation vs Time

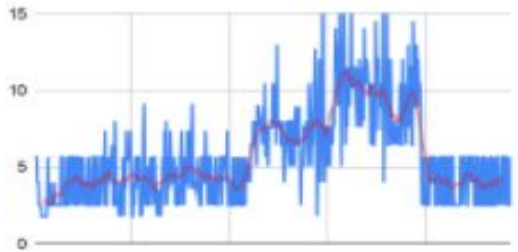


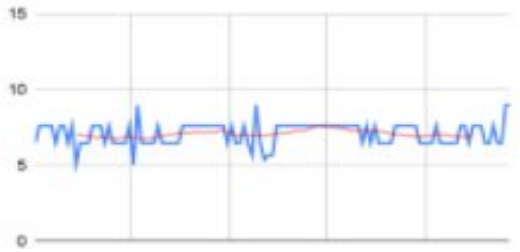




Current vs Time







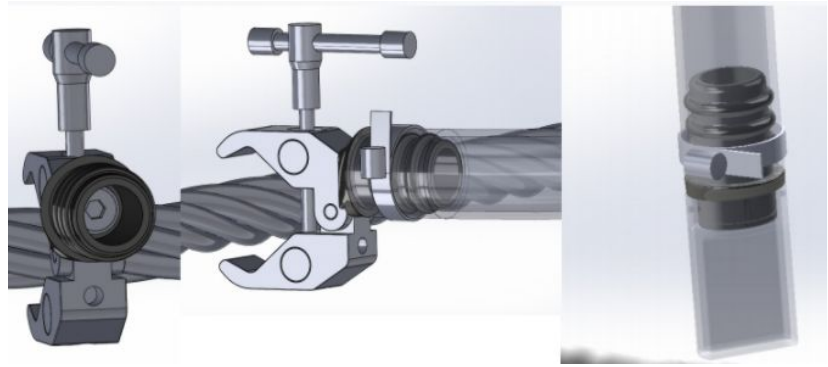
Next steps:

IUK Project SeaLens:
April 21 - March 22

UKRI Innovate UK

SENSORCITY

Adapt tools for sea-farms



Test long-term imaging

Implement comms back to land

LoRaWAN