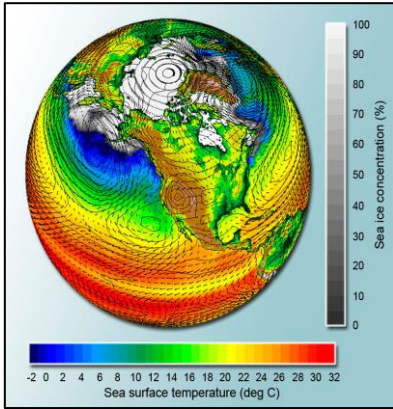


# Miniaturised automated chemical analysers for monitoring our oceans

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## Key parameters

- Nitrate
- Phosphate
- Silicate
- Ammonium
- pH, DIC, alkalinity
- Dissolved iron

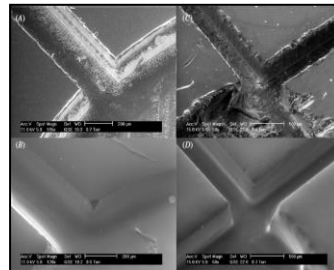
## Sensor requirements

- Precise, accurate
- Small
- Low power
- Operate at depth
- Endurance of 1 year

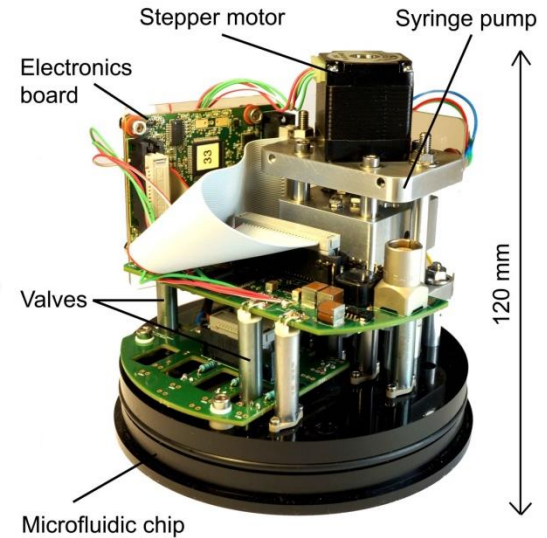
## Lab analysis methods



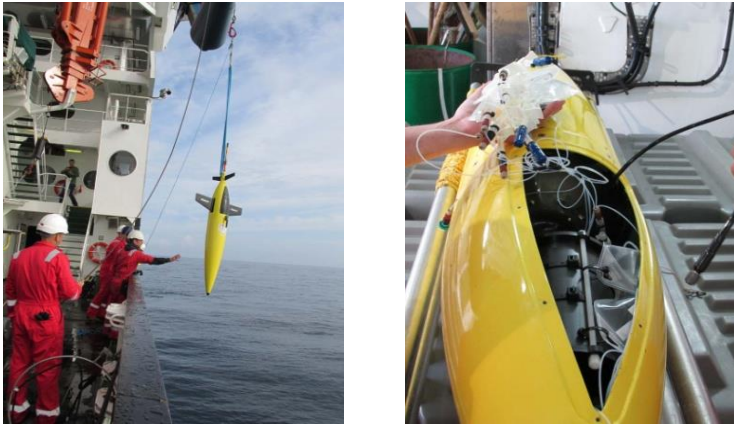
## Lab-on-chip technology



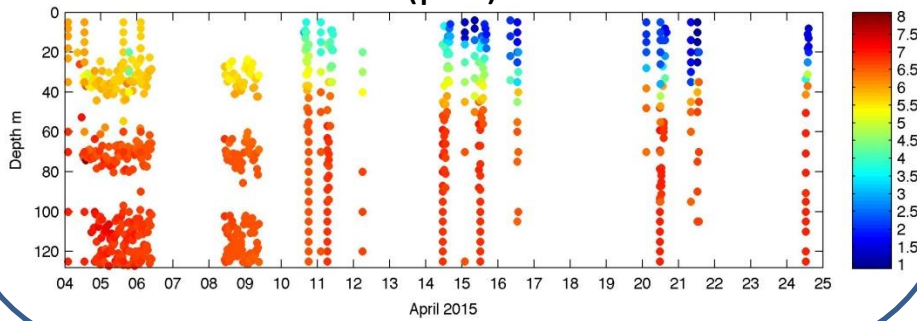
## *In situ* deployable systems



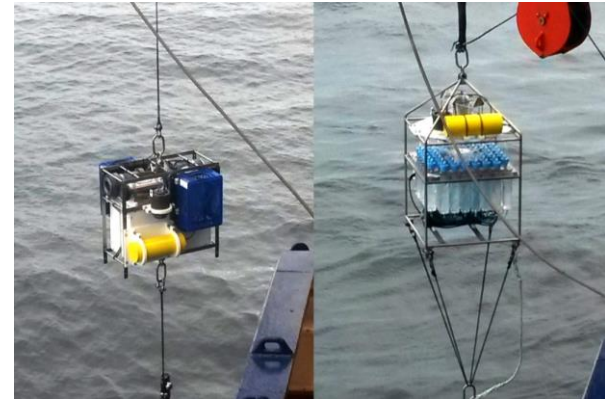
## On autonomous vehicles



### Nitrate ( $\mu\text{M}$ )

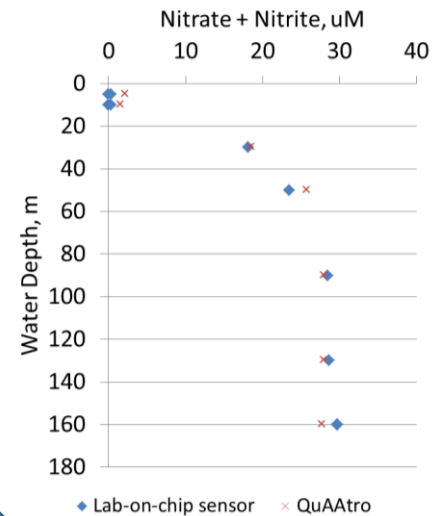


## Year-long unattended



### Arctic ocean deployment

## Profiling at depth



## Glacier meltwater

