

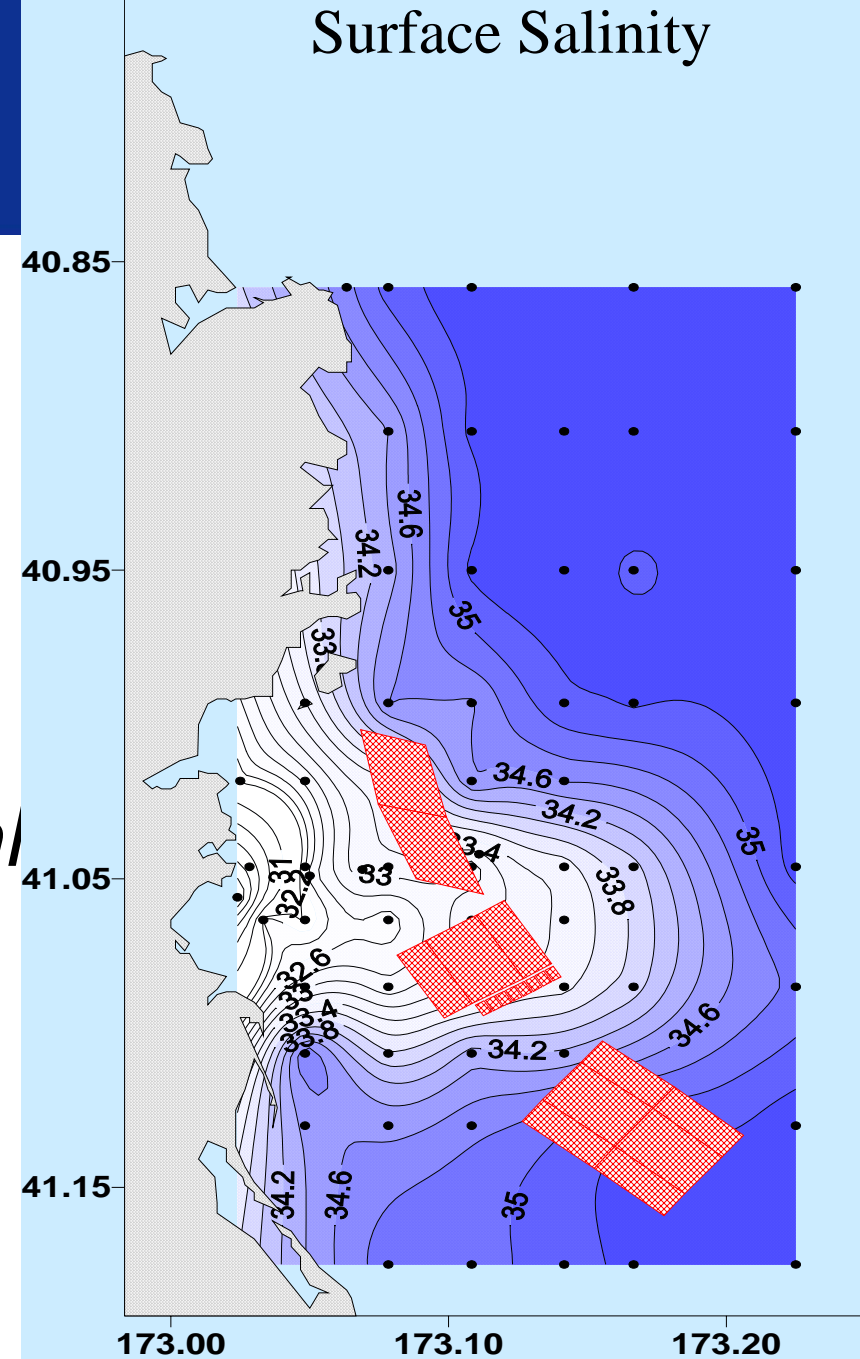
# RIVER PLUME EFFECTS ON THE COASTAL SEA ENVIRONMENT

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# Primary goal:

*to develop a “river plume ecosystem” (RPE) concept for management of coastal environments*



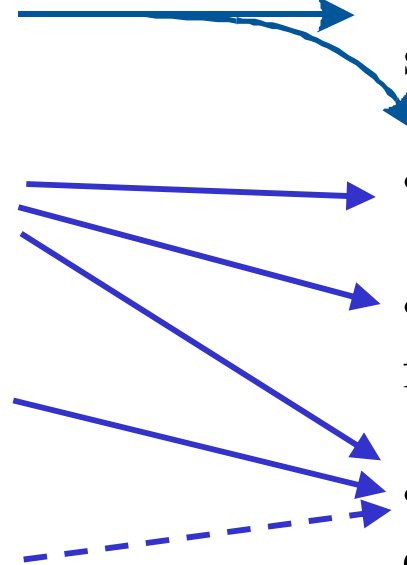
# Land-Sea Connections

## Catchment influences that define the RPE

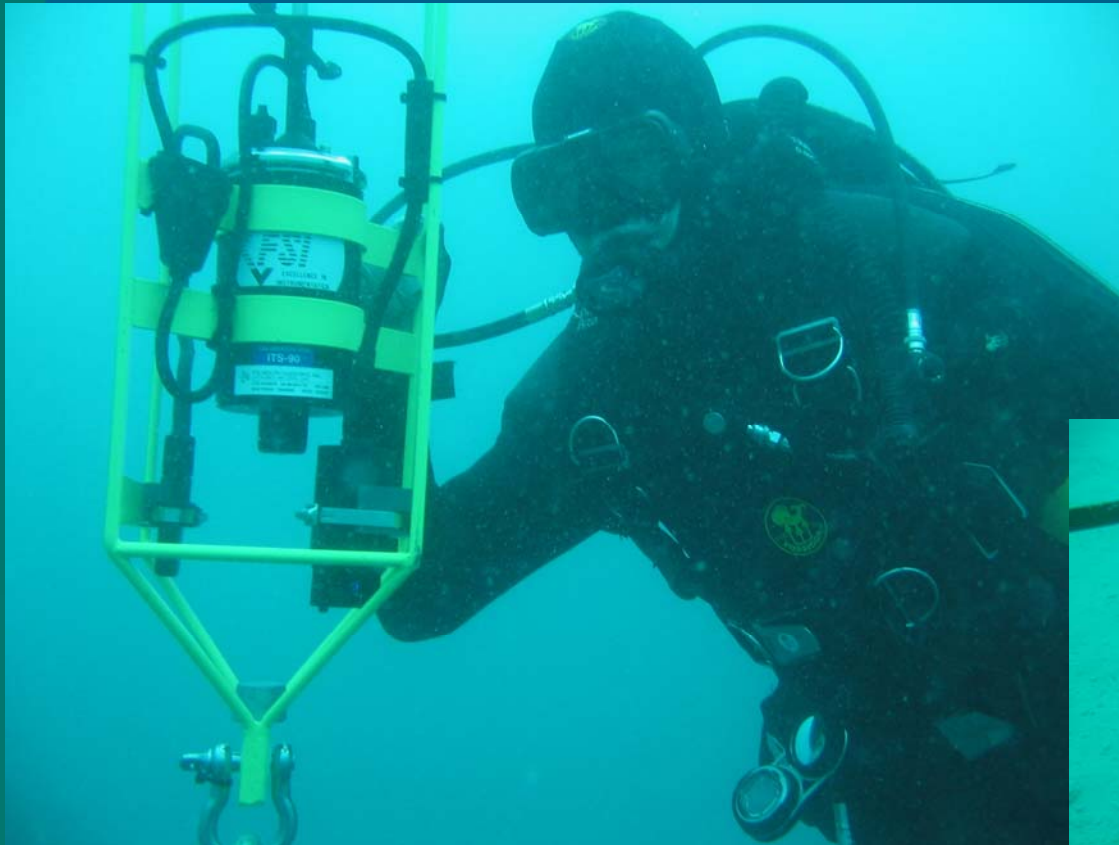
- Fresh water (dominant source for Tasman Bay)
- Organic & inorganic nutrients (C, N, P, Si)
- Inorganic sediments (SPM)
- Contaminants (microbes, organic & inorganic chemicals)

## Ecosystem features affected

- Water column structure (density stratification)
- Plant production
- Microbial processes (O<sub>2</sub>/nutrient flux, denitrification)
- Seabed habitat structure & composition (animal production, food web interactions, biodiversity, introduced species )



# Tasman Bay LT *in situ* Data Collection Facility

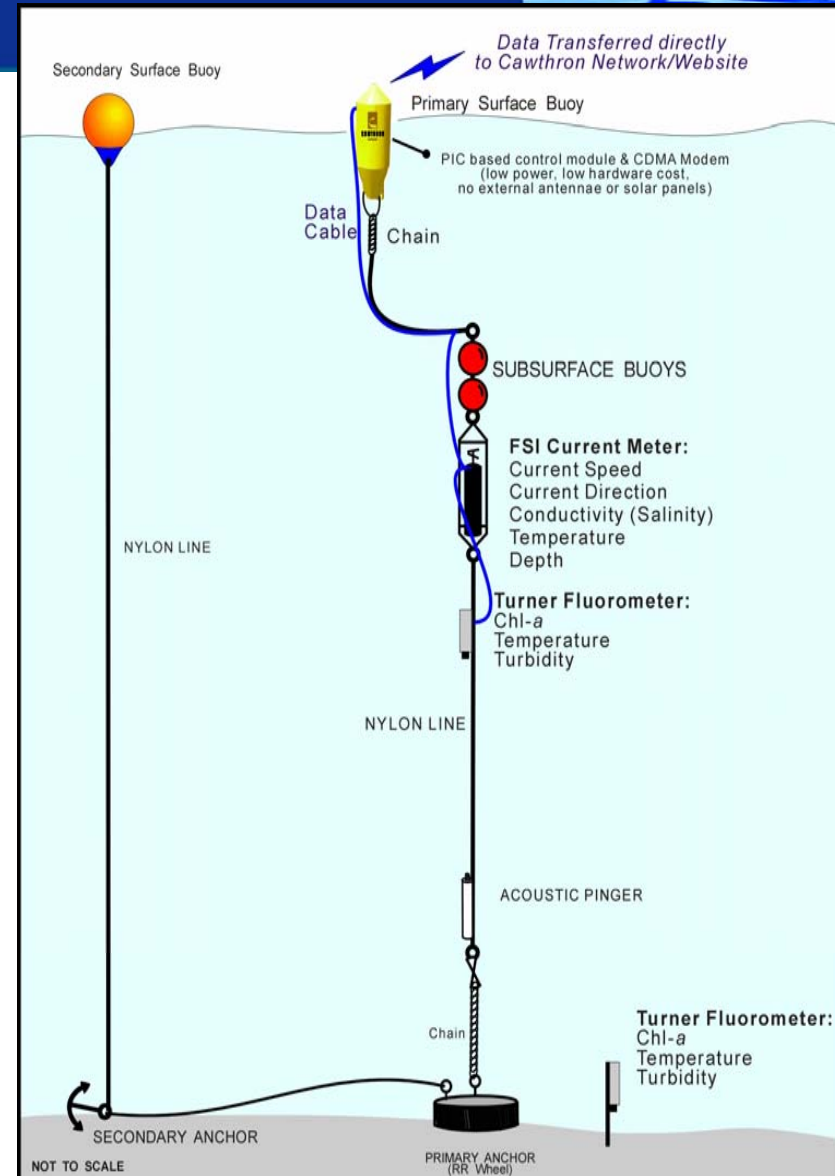


Trial Deployment  
Sept –Oct 2005



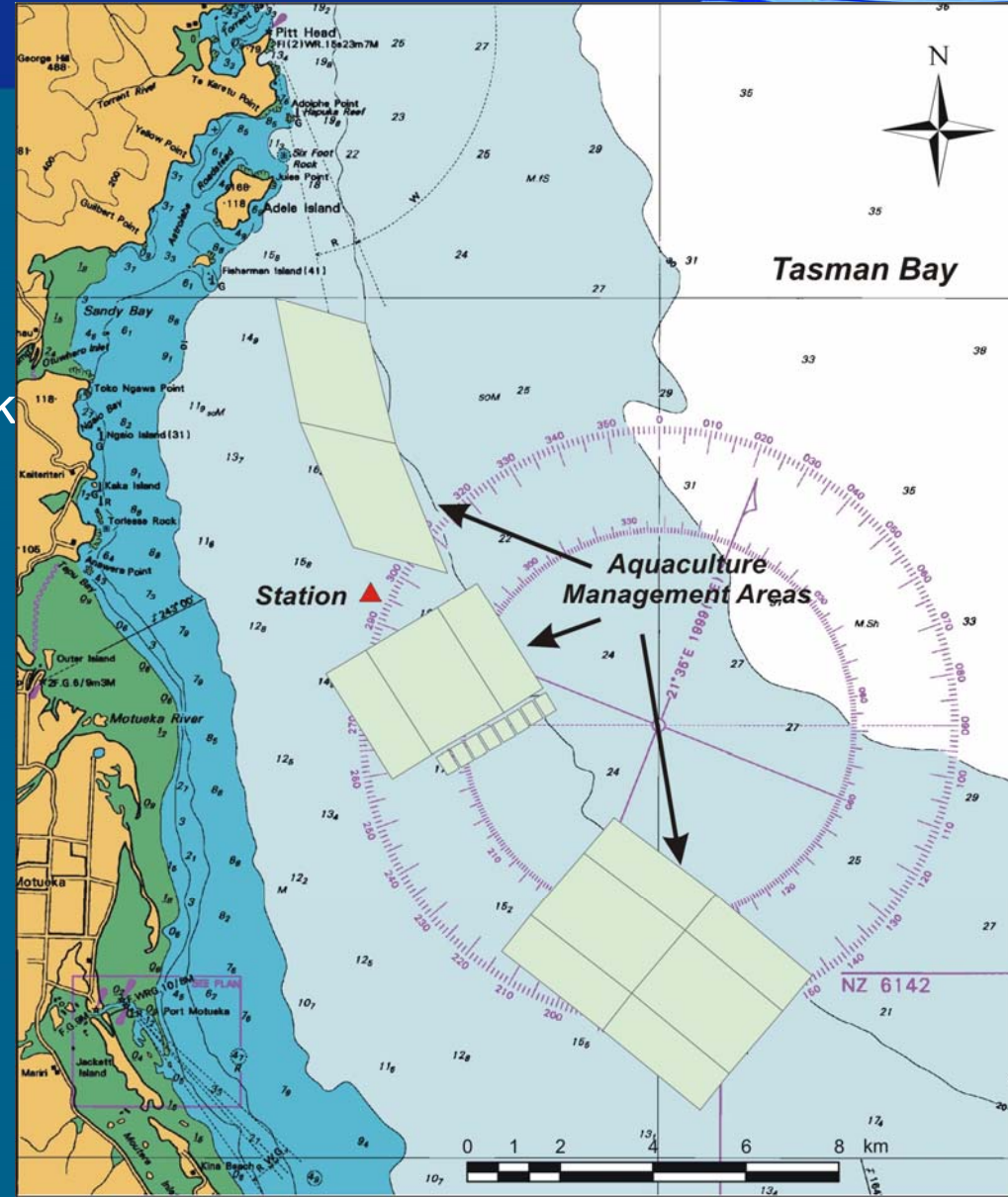
## Tasman Bay Data Buoy (LT *in situ* collection of environmental data)

- o Midwater
  - Conductivity
  - Temperature
  - Salinity
  - Depth
  - Current velocity & direction
  - Chlorophyll a
  - Turbidity
- o Near bottom (50 mm above seabed)
  - Temperature
  - Chlorophyll a
  - Turbidity
- o Surface (planned addition)
  - Conductivity
  - Temperature
  - Salinity



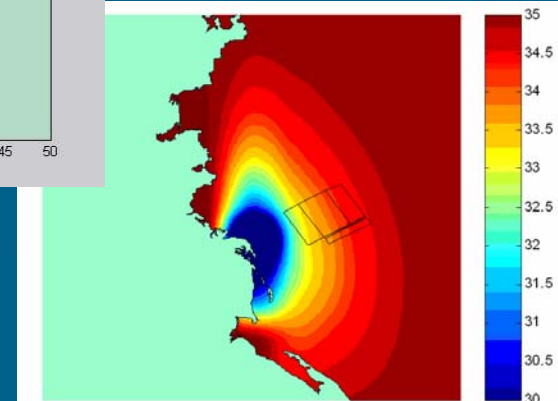
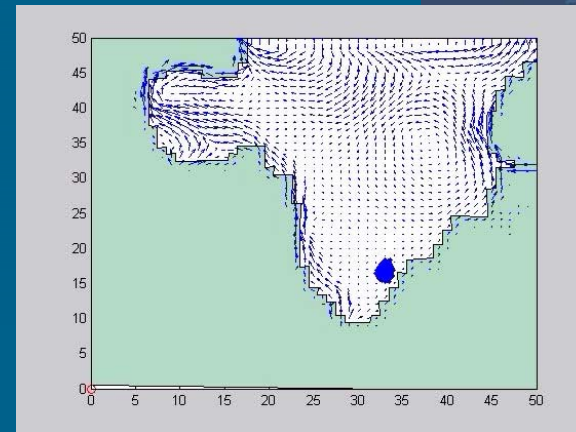
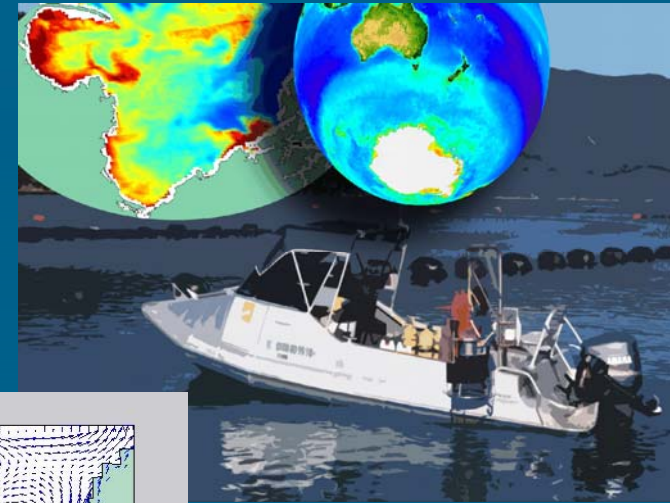
# Data Buoy Station Location

- o 6 km offshore from the Motueka River mouth
- o 1 km outside AMAs
- o 20 m depth



# Coordinated Information

- o Satellite imagery (surface chl a, turbidity, temperature)-*spatial component*
- o Water sampling & analyses-*sensor calibration and investigating events*
- o Nelson Bays Hydrodynamic and Ecosystem Models-*spatial component*
- o Existing historical data bases-*Are things changing?*



# Utility

- o State-of-the-environment monitoring- (TDC)
- o Better management of shellfish resources- (*CSECo, mussel industry*)
- o Aquaculture impacts- (*control site for assessing WC effects*)
- o Catchment implications- *ICM links*
- o Seasonal & longer-term cycles- *context*
- o Environmental events (major floods, droughts, phytoplankton blooms)- *finger on the pulse*
- o Verification/improvement of coastal circulation and ecosystem models- *improved simulation abilities, scenario testing*
- o Forecasting/risk assessment- *the ultimate goal*