Introduction

What are the elements of the "Pipeline"

Data Wrangling?

Obtaining, processing and manipulating heterogeneous data streams into formats suitable for model simulations.

A Word of Warning

- A model is only a representation of reality
- A model will only ever be as good as the forcing data
- Validation of a model for a particular site or period requires good validation data

Data Sources

Routine Monitoring Samples

Routine Monitoring Samples
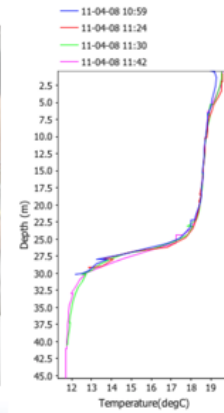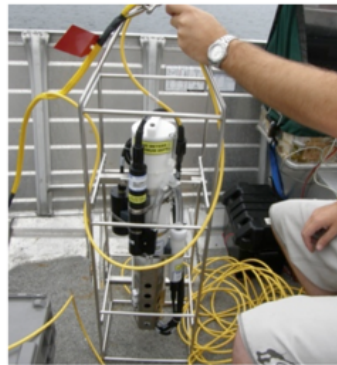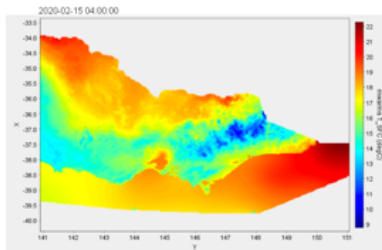
Field Measurments

SCADA Networks

External Model Forecast

- Weather models
- Catchment models
- River models
- Operational models

Data Transfer

More heterogeneity…

Data Transfer

More heterogeneity…

Data Storage

More heterogeneity…

Data Processing

Data Processing Pipeline

A typical data processing task list:

- Obtain data files
- Import raw data to database
- Quality check data using 1 or more algorithms
- Down-sample data to interval suitable for models
- Fill missing data using a list of filling algorithms
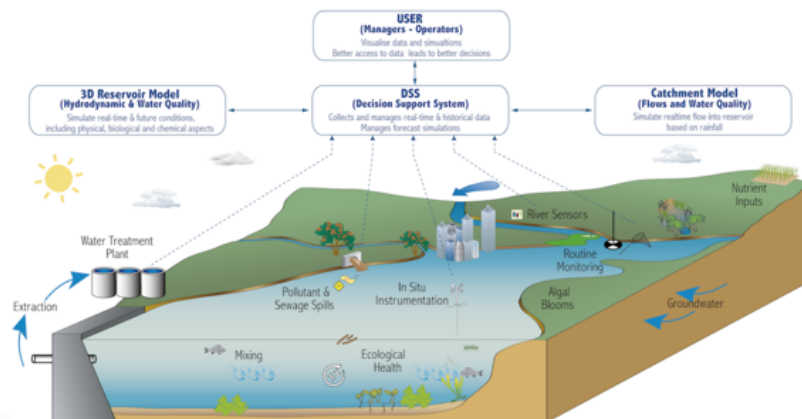- Average data
- Create model input files

Decision Support Systems

- Information systems that support decision making activities.
- Provide a tool to optimise water resource management.
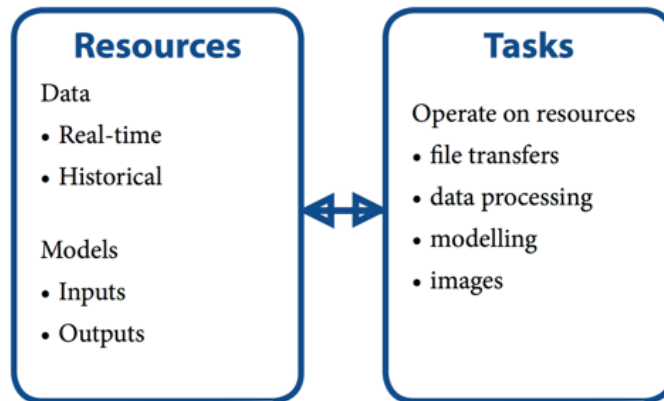- Allow forecasting of environmental and operational change impacts

Decision Support Systems

Resource Task Framework

Resources

Data
- Real-time
- Historical

Models
- Inputs
- Outputs

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Tasks

Operate on resources
- file transfers
- data processing
- modelling
- images

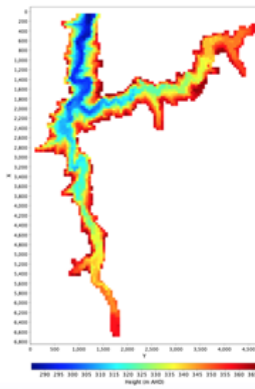# Example

Upper Yarra Bushfire Scenario Modelling

Upper Yarra Reservoir

- Crucial link in Melbourne Supply Network
- 200GL capacity
- Yarra river inflow
- Piped inflow opened from Thomson reservoir
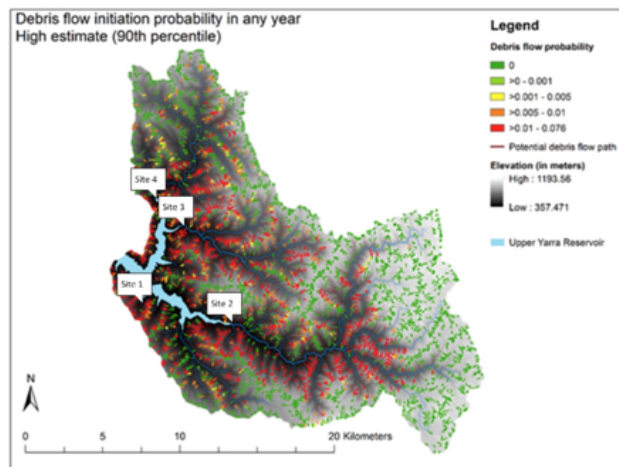- Forested catchment

Upper Yarra Reservoir

- AEM3D (Aquatic Ecosystem Model)
- 50m x 50m x 0.5m
- Fine vertical resolution needed for simulation of intrusion
- Uni. of Melbourne provided post bushfire rainfall event scenario inflows

Datasources

- XYLEM VPS - Seabird Profiler + Met Station
- SCADA Inflow and Outflow data
- BoM ACCESS + ADFD Forecast models
- Catchment bushfire scenarios

http://upperyarra.hydronumerics.com.au