

The Agricultural Catchments Programme: INSTRUMENTATION AND DATA MANAGEMENT

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INTRODUCTION

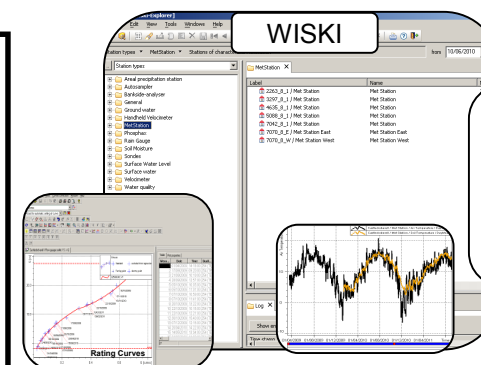
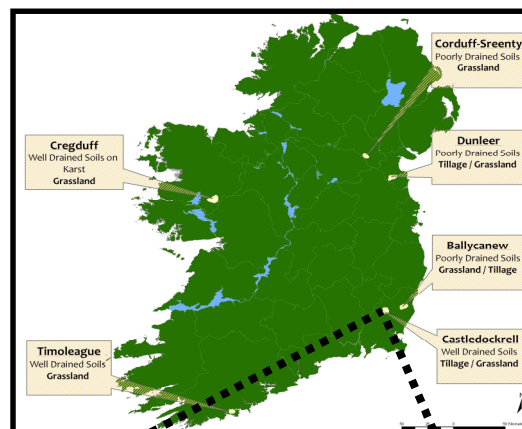
The Agricultural Catchments Programme (ACP) is conducted in six river catchments working in partnership with farmers and landowners to generate data on nutrient transfers from source use and status, hydrological pathways and delivery into river systems. An agronomic advice network is a cornerstone of this partnership. These data are used in an evaluation framework to assess land-nutrient-water interactions in the early years following the whole-territory adoption of the Nitrates Directive National Action Programme. An emphasis has been placed on high spatio-temporal empiricism in each component of the nutrient transfer continuum. For example, in so far as is practicable, a field-by-field assessment of nutrient use and status is compared with the requirements of the Action Programme and nutrient delivery to water bodies is monitored at up to sub-hourly resolution with an emphasis on phosphorus and nitrogen transfers.

Catchments

Six catchments have been instrumented and these were selected to cover a range of combinations of farming systems and soil nutrient loss risk scenarios. The main criteria used in the selection of the catchments were high farming intensity, vulnerability to nutrient loss, representation of important soil/farming practice combinations and a minimum of non-agricultural nutrient sources.

Geodatabase

Several databases, including six ArcGIS geodatabases, have been designed to handle the extensive range of data generated by the programme. The geodatabases store, query, and manipulate geographic information and spatial data and create a central data repository which has the capacity to link to other ACP databases. These include a continuous hydro-meteorological time-series database, a Laboratory Information Management System (LIMS) database, topography and land cover geodatabases, farm business monitor data, farm nutrient management records and farm socio-economic and attitudinal surveys.



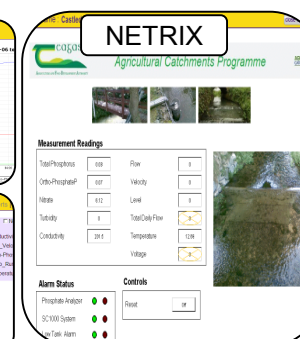
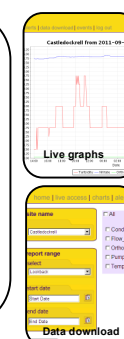
10 min Time Series data:

- 10 min Original
- 10 min QC
- Hourly Mean
- Daily Min, Max, Mean
- Weekly Min, Max, Mean
- Monthly Min, Max, Mean
- Annual Min, Max, Mean

294 Stations:

- Autosamplers X 24
- Bankside (incl. N) Analysers X 6
- Groundwater Level Loggers X 62
- Handheld Velocimeter X 6
- Met Stations X 7
- Phosphorus Analysers X 6
- Rain Gauges X 7
- Sondes X 5
- Surface Water Level Loggers X 17
- River-bed Velocimeters X 8
- Other Water Quality Sites X 146

= >3500 parameters



Time Series Database

The ACP captures continuous time series data (on 10 min intervals) from fixed field equipment ranging from meteorological instruments to advanced continuous water quality monitoring equipment. These data are integrated with water quality snapshot data taken from various locations within the catchments, using a WISKI database (Water Information System Kisters). Users are able to access this time series data using a thin web based Citrix client that delivers the WISKI system. Users also have remote access to the continuous water monitoring equipment through Netrix - a cloud based application that allows users to query, monitor and configure field equipment.

