

SWIRL Scenario-based Water Innovation and Research Laboratory

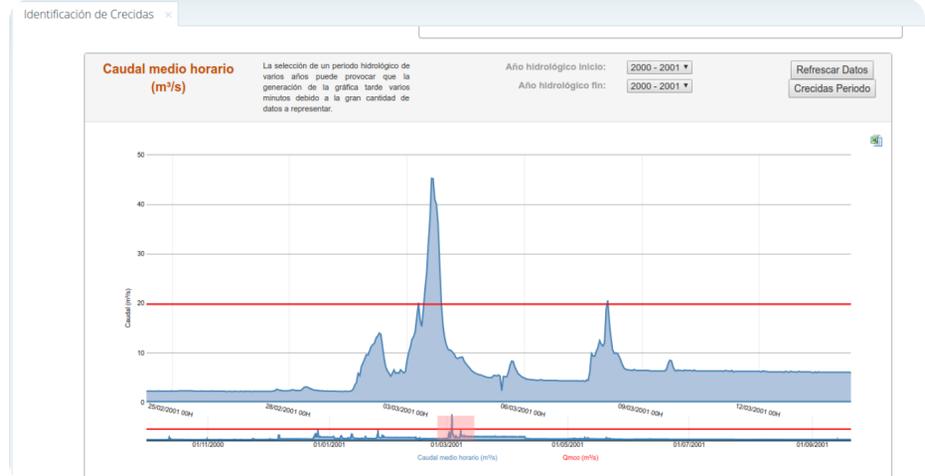
The Portal

The portal features a navigation menu with options: Home, What is Swirl?, Capabilities, Knowledge Areas, Framework, Quick Access, News, and Login. Below the menu is a banner image of a reservoir with the text "Scientific collaboration tool for water research".

Knowledge Areas

- Water Quality**: For queries or assessments of information related to water quality.
- Water Resource Status**: For queries or assessments of information related to water resource status.

Flood Analysis



Analysis - Modelling

Level 3. Modelling

Level 3 Modelling components include:

- HEC-HMS**: Hydrologic Modeling System.
- Run models in R**: Integration with the R programming language.
- Designing with RStudio**: Development environment for R.
- Post results in web**: Shiny web application for data visualization.

Level 1. Statistic Analysis and Statistical Lab

Level 2. Geospatial Analysis

Level 1 and 2 analysis components include:

- Statistic Analysis**: Analysis of reservoir status (Estado de los embalses).
- Statistical Lab**: Consultation of time series (Consulta de Series Temporal).
- Geographical Viewer**: Interactive map interface.

Advanced Modelling

The RStudio environment shows R code for advanced modeling. The console output includes:


```

    > max = MAX(LB)
    > Qmax = max(QTtick)
    > # Representamos la serie de caudales máximos en un eje x de Gumbel
    > plot(y, Q,
    +     ylab = expression("Caudal máximo ("*m³*s⁻¹*")"),
    +     ... [TRUNCATED])
    > par(cex = 0.65)
    > axis(1, at = ytick, labels = as.character(xtlab))
    > # Añadimos la recta de regresión con sus límites de confianza
    > # lines(ytick, QTtick, col = "blue")
    > # lines(ytick, LB, col = "black", lty = 3)
    [TRUNCATED]
    
```

 The plot, titled "Caudales pico anuales, Río Corbones 1997-2016", shows annual peak discharge (m³/s) on the y-axis (0 to 6000) against time (T (año)) on the x-axis (1 to 100).

Web Services - Open Data

The web service interface allows users to "Seleccionar una estación" (Select a station) on a map. A sidebar lists available data layers:

- Aportación al embalse
- Caudal de río
- Caudal de salida en embalses
- Caudal en manantial
- Dirección del viento
- Humedad relativa
- Nivel de embalse
- Nivel de río
- Nivel piezométrico
- Precipitación
- Presión atmosférica
- Radiación solar
- Temperatura exterior
- Temperatura interior
- Velocidad del viento
- Volumen de embalse

