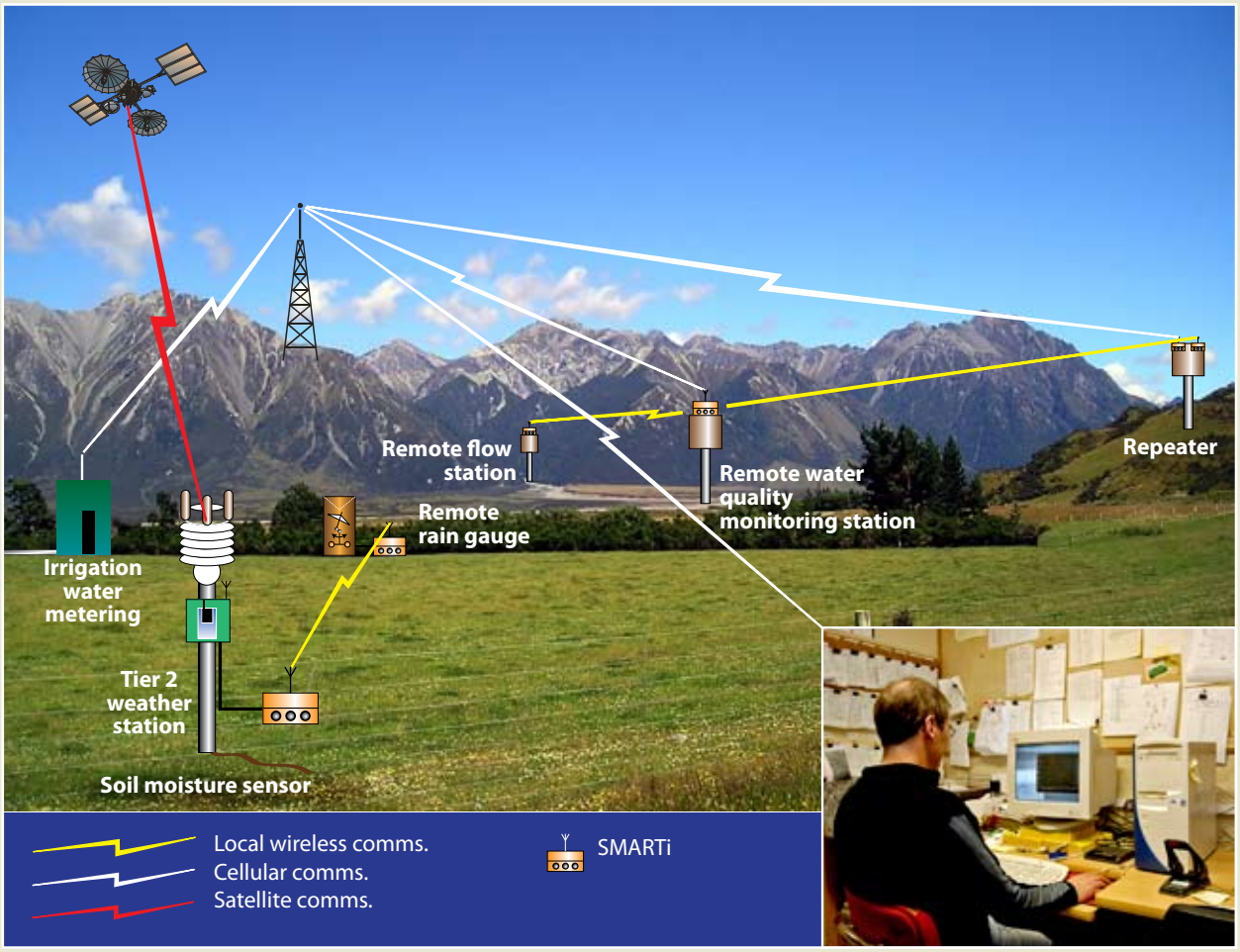
update
NIWA
Taihoro Nukurangi
Instrument Systems
collecting data, delivering solutions

# Capturing data in remote locations:
## NIWA remote telemetry networks




[Photos: Alan Blacklock & Marty Flanagan, NIWA]

*A land-based telemetry network – delivering data to, and receiving instructions from, NIWA hydrology technician Gary de Rose.*

To meet the complex task of sensing, collecting, processing, and delivering environmental data to end users, a comprehensive but integrated network of instrumentation, telemetry equipment, and central data server is needed.

NIWA telemetry networks have this capability, and now we have two complementary systems; Flosys Server and the new Neon system.

Now, environmental data can be plumbed from the crushing depths of lake or ocean, plucked from the thin atmosphere at the top of the Alps, or sucked from hundreds of irrigation water meters. Whatever the source, the data can be transferred in near real-time to a server, to which any number of registered users have access, via the internet, at any time.

Flosys Server has recently had a major upgrade. Its key role is to manage communication with data loggers, and it is ideal for situations where managers want more direct control over their telemetry system.

The Neon system includes state-of-the-art satellite and internet technology. By logging on to the server via the internet, managers can view recorded data, and issue instructions to remote sites and instruments.

Whatever the challenge, NIWA can offer a cost-effective solution to meet most environmental data-gathering applications, as well as a complete data-hosting service.

# In the field … making connections with the SMARTi

The SMARTi is a new Universal Serial Data Interface which enables multiple connections to instruments in remote locations. A wide range of sensors, from simple light sensors to sophisticated multiparameter underwater chlorophyll-detecting instruments, are supported by the SMARTi.

At distances of up to 60 m, the SMARTi can be wired directly to a data logger. Where the data logger is remote (up to 1.5 km) from a sensor, a wireless link can be created by connecting one wireless SMARTi to the sensor and another to the logger. The remote sensor can then be interrogated as though it were connected directly to the data logger.

The SMARTi has a wide variety of input options to gather data, so networks with numerous scattered sensors, such as water-metering or rainfall-monitoring networks, can operate with this wireless technology.

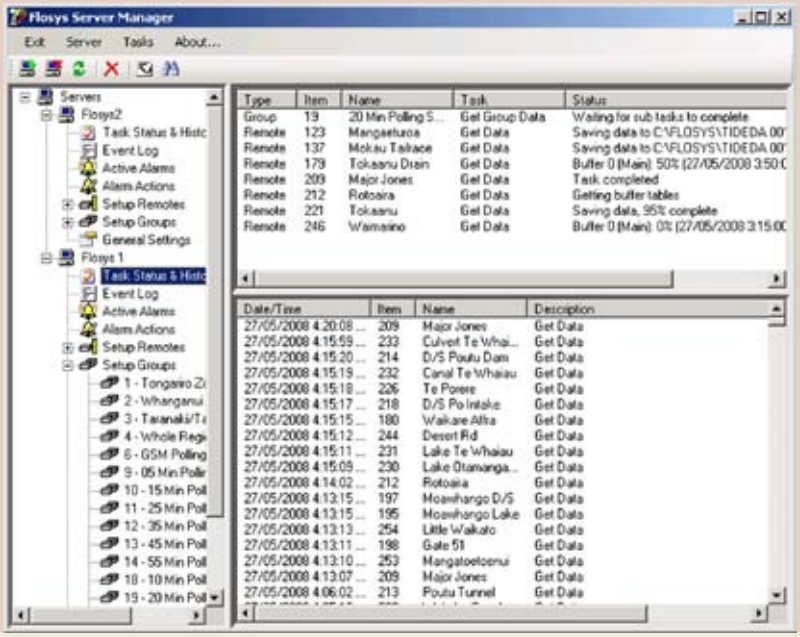
The SMARTi also has outputs that can be used for controlling equipment such as water samplers and irrigation gates.

*The SMARTi, in this case configured with the 'ZigBee' wireless communications option. The multiple input and output ports are on the left. [Photo: Mike Hodkin, NIWA]*

# Pull & push: Flosys Server 7

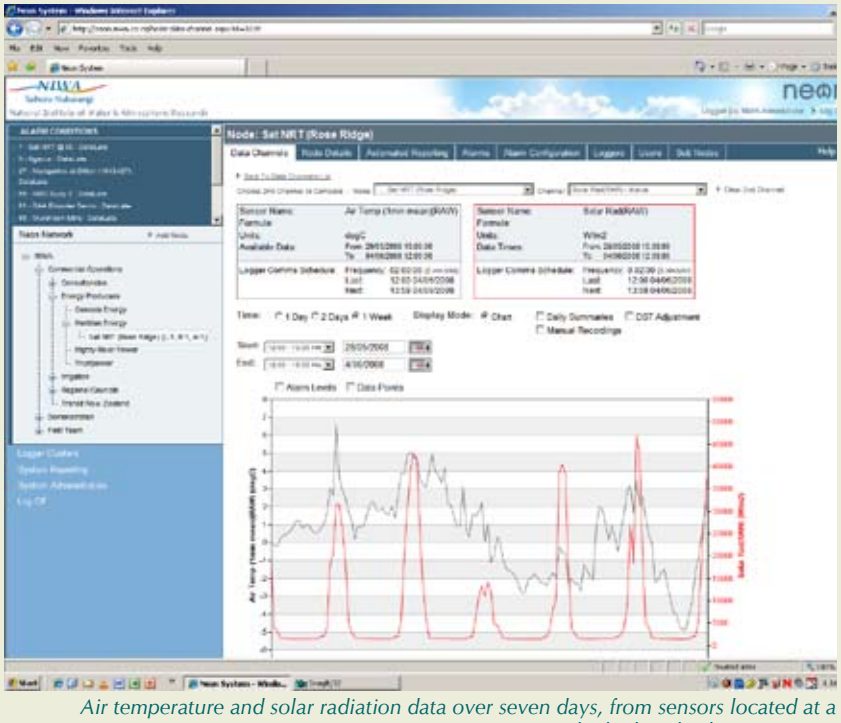
NIWA's Flosys Server has just been completely redeveloped using the latest Microsoft .NET technology. Flosys Server's role to date has been to download data from a variety of data loggers, process alarms, and perform data logger configuration. The upgraded version, Flosys Server 7, now also supports Neon loggers which 'push' data at their own rate. Whether pulled or pushed, all data is stored in Tideda (time-dependent data) files.

Flosys Server 7 can manage data downloads from many loggers at the same time, via a variety of communication paths, such as GSM cellular, IP cellular, radio, satellite, or land line. This concurrency greatly increases the number of loggers that can be efficiently managed on a single server, and allows loggers to be interrogated more frequently than before.




*The Flosys Server 7 desktop client: managing data at multiple sites.*

# Neon – data delivered on the web




*Air temperature and solar radiation data over seven days, from sensors located at a high-altitude climate station.*

The Neon system is one of the most advanced telemetry systems available in the world.

Internet-capable data loggers, known as Neon Remote Terminals or NRTs, log data from sensors in the field. The NRTs then transmit these data to a central Neon Server, typically via the cellular network or by satellite.

Once a user's link to the Neon Server is set up, all data, from historical through to near real-time, plus processed information, can be accessed via the internet. Alternatively, Neon can routinely deliver data via email, SMS or a range of other data transfer mechanisms.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