



## **ARRL Education & Technology Program Teachers Institute on Wireless Technology Remote Sensing & Data Gathering (TI-2)**

### **Instruction addresses the following learning units:**

- The basic electronics of various sensors likely to be used in the classroom (temperature, pressure, humidity, ozone, GPS)
- The basic microcontroller techniques used to access and process the signals produced by the sensors
- The basic intra-sensor-package communications techniques used to connect the sensors of the packages to the controlling microcontroller
- The basics of the science of data linking radios that connect the sensor packages remotely to the users, including the use of APRS as a ham radio data link system for remote sensing
- The mathematics and math related technologies (graphing calculators and Excel spreadsheet programs) needed to manipulate the raw data collected into meaningful measurements
- Demonstrations of the various delivery and deployment methods for remote sensing including water and land based buoy system, high altitude balloon systems, satellite based system, and earth bound and planet-bound robot systems
- Discussions on the liabilities, dangers, and safety related to projects such as remote buoys and high altitude balloons
- Introduction to satellite communications