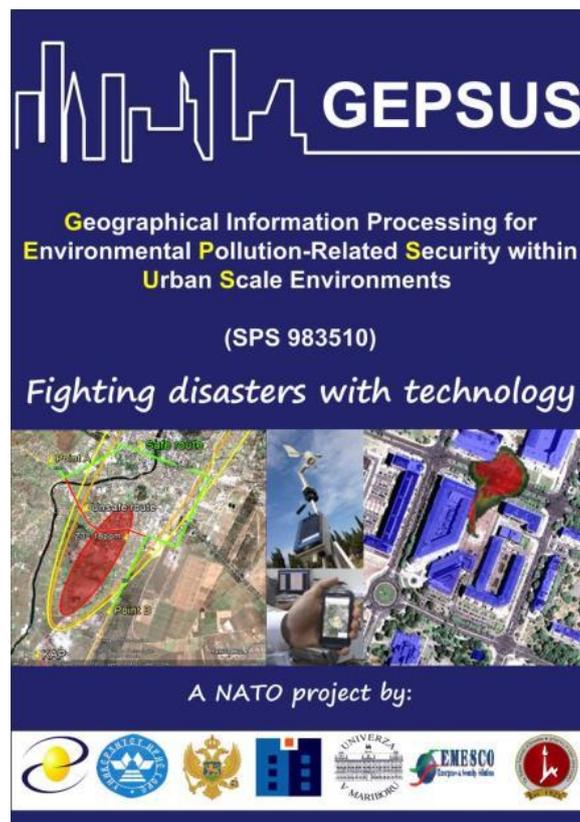# CONNECTION OF MATLAB WITH DAVIS WEATHER STATION

**SEPTEMBER 20, 2014, BY GEPSUS CONSORTIUM**

Davis Vantage Pro2 wireless weather station are contains of follow products:

- Standard wireless solar powered *Davis* ISS (integrated sensors suite) that includes a rain collector, temperature sensor, humidity sensor and anemometer
- Vantage Pro2 Console with integrated sensor for air pressure
- Two pcs of Yagi antennas
- Long range solar powered Repeater
- Weather link software for Emergency response teams with data logger

Davis ISS is primary powered by solar panel and it has backup power with 3V lithium battery. Using wireless transmission ISS sends information to Vantage Pro2 Console. Length of wireless transmission from station to console is up 300m. To increase that distance are used *Long range repeater* and *Yagi antennas*. With them maximum length of wireless transmission is 3km. Long range repeater has also solar panel for primary power supply and backup power with 3V battery.

In Figure 1. is shown connection with MATLAB.
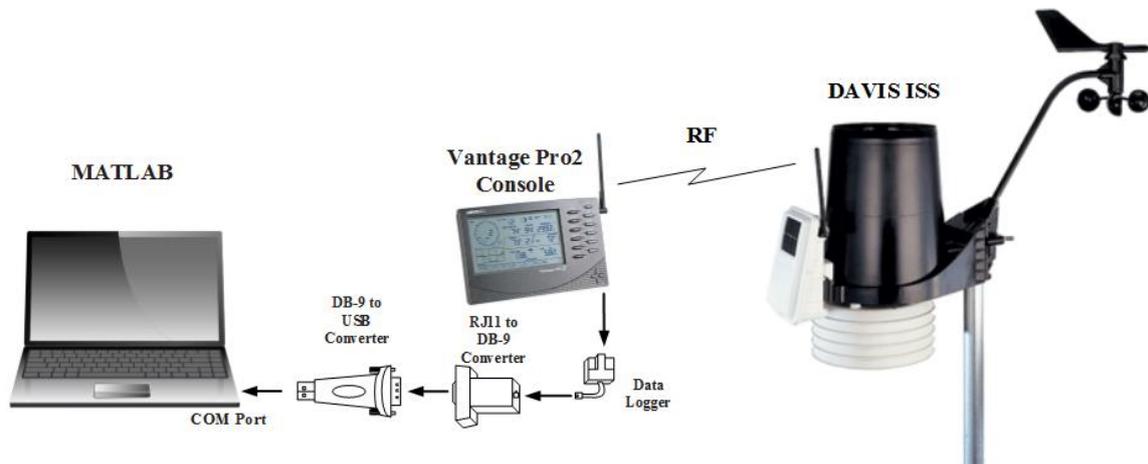
Figure 1. Connection MATLAB with Davis Weather Station

Every 30s ISS sends information to Vantage Pro2 Console. The ASCII strings that are sent contain information of the following parameters:

- station number (ID),
- vector mean wind speed (5 minutes average in m/s),
- mean wind direction (5 minutes average in degrees true),
- standard deviation of the wind direction (in degrees),
- mean air temperature (5 minutes average in ^{O}C),
- instantaneous wind speed (m/s),
- instantaneous wind direction (in degrees true),
- instantaneous air temperature (in ^{O}C).

That string of characters is stored on data logger. Using serial communication at the correct baud rate that information is sent to PC. Baud rate is configurable, but default value is 19200. Weather data is transmitted to computer through "RJ11 to DB-9 converter" and "DB-9 to

USB converter". "RJ11 to DB-9 converter" is used to connect station to Serial port of computer and "DB-9 to USB converter" is used to connect station to USB port. After that in MATLAB is established COM Port connection for data acquisition and furtherer data analyze. Data can be received from 8 different stations which are separated by unique station ID.