March 20, 2012

Office of Water Quality Water-Quality Information Note 2012.03

Subject: Release of Version 2-1 of DOSAT Program for Computing Dissolved-Oxygen Percent Saturation for Import into NWIS

A new version of the DOSAT Program is available for computing percent oxygen saturation from measured time series of dissolved oxygen, water temperature, and specific conductance, as well as from an average value of barometric pressure. Input time series and program output are in B-card format, thus facilitating data output from ADAPS and the subsequent import of program results into NWIS under parameter code 00301.

The program was updated in October of 2011 to be consistent with the change in oxygen solubility equations adopted in July of 2011 (see Office of Water Quality (OWQ) Technical Memorandum 2011.03, http://water.usgs.gov/admin/memo/QW/qw11.03.pdf). As described in that Technical Memorandum, the equations of Benson and Krause (1980, 1984) replaced the equations from Weiss (1970) that had been in use by USGS since 1981. Other equations in DOSAT also were updated.

The DOSAT Program can be run on either a Windows or Unix system:

- Documentation: http://er.water.usgs.gov/water/WQ/monitors/docs/DOSat.Documentation.pdf
- Program files, Windows: http://er.water.usgs.gov/water/WQ/monitors/docs/DOSat_pc.zip
- Program files, Unix: http://er.water.usgs.gov/water/WQ/monitors/docs/DOSat_unix.zip

Documentation and program files for DOSAT also are posted on the water-quality continuous monitor web page of the Eastern Water Science Field Team under “Tools” (http://er.water.usgs.gov/water/WQ/monitors/) and linked to OWQ intranet page under “Continuous Monitoring” (http://water.usgs.gov/usgs/owq/).

Water temperature, dissolved oxygen, and optional specific-conductance data are read by the program from separate B-card formatted files from ADAPS. A program-control file specifies the station number, data-collection interval, average barometric pressure during the deployment, and the optional use of salinity corrections. Missing input values are handled and translated to missing output values. The documentation describes how to obtain, install, and run the program, in addition to specifying the equations used to compute percent oxygen saturation.

Thanks to Wendi Young and other personnel in the North Carolina Water Science Center, in addition to Stewart Rounds, Oregon Water Science Center, for updating and testing this program.

Questions regarding the DOSAT Program should be referred to OWQ, 412 National Center, Reston, VA 20192 via the Feedback Form (http://answers.usgs.gov/cgi-bin/gsanswers?pemail=owq_webmaster&subject=DOSAT+Feedback).

WaQI Notes are archived on the Office of Water Quality web site, http://water.usgs.gov/usgs/owq/WaQI/index.html

Signed,

The Office of Water Quality
March 19, 2012

Distribution: All WRD Employees