Computing Tools for the Water Professional
from the U.S. Geological Survey

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Abstract. The U.S. Geological Survey (USGS) has numerous computing products however, those unfamiliar with USGS may find it hard to locate applicable tools and information. The National Map http://nationalmap.gov/ where current and historical topographic maps can be accessed; USGS publication warehouse http://pubs.er.us gs.gov/ and the National Water Information System http://water data.usgs.gov/nwis/, giving real-time access to groundwater, surface water and water-quality data, are well known and accessed millions of times annually. However, other important tools such as StreamStats http://water.usgs.gov/osw/streamstats/ WaterAlert http://water.usgs.gov/wateralert/ and WaterNow http:// water.usgs.gov/waternow/ are less known. USGS water web services http://waterservices.usgs.gov/ use Representational State Transfer (REST), allowing quick and easy data retrieval for more than a million hydrologic sites in large batches through a web browser. Off line tools can be downloaded including modeling and statistical tools in worldwide use. MODFLOW is an international standard for simulating groundwater, with many additional tools for the model http://water.usgs.gov/ogw/modflow/. Water-quality applications for reactive and solute transport modeling of both surface- and groundwater vary from LOADEST http://water.usgs.gov/software/loadest/ for estimating constituent loads in streams, to NAS (Natural Attenuation Software), providing a decision-making framework for estimating time to clean up groundwater contamination. Surface-water tools http://water.usgs.gov /software/lists/surface_water/ including the deterministic, distributed-parameter, physical process based Precipitation-Runoff Modeling System (PRMS); and site specific tools like PeakFQ for implementing USGS standard methods for flood-frequency analysis. A number of statistical tools, using the open source R language are available including waterData–An R Package for retrieval, analysis, and anomaly calculation of daily time-series Data http://pubs.usgs.gov/of/2012/1168/ and RRAWFLOW http://sd.water.usgs.gov/projects/RRAW FLOW/RRAWFLOW.html, that simulates streamflow, springflow, groundwater level, solute transport, or cave drip in response to input of precipitation, recharge, or solute injection.

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