

R. A. (Bob) MacMillan Ph.D., P.Ag.

Science coordinator *GlobalSoilMap.net*

Bob MacMillan has more than 34 years of experience as a pedologist, soil surveyor and digital soil mapper. He has completed many conventional soil survey projects in Alberta, B.C., Ontario, the Maritimes and East Africa. Since 1985 he has specialized in the development of innovative, custom, spatial applications for soil mapping, particularly those which involve analysis and use of digital elevation models (DEMs). Bob has a B.Sc. (Honours) in Geology from Carleton University, an M.Sc. in Soil Science from the University of Alberta and a Ph.D. in GIS and Environmental Modelling (hydrology & soils) from the



University of Edinburgh. Bob spent 19 years (1975-1994) with the Alberta Soil Survey mapping soils and surficial materials and developing digital databases and computer-based applications, including the current digital soil database of Alberta. In 1995 he began a private consultancy offering services in environmental modelling, custom GIS application development and landscape analysis. This consultancy specialized in spatial analysis incorporating vector and raster GIS, remote sensing, digital elevation modelling, spatial statistics, database programming and simulation modelling. Bob's major work since 1995 has focused on developing and applying new methods for automated predictive ecological and soil mapping. These methods have largely been based on analyzing DEM and ancillary data sets to automatically classify portions of the

landscape into defined ecological, soil or landform classes. In one major project, Bob successfully produced predictive ecosystem maps (PEM) for more than 8 million hectares in BC. This mapping was an extension of earlier efforts that involved analyzing DEM data to provide quantitative morphometric descriptions for typical landscapes in Alberta, to automatically partition section and quarter section sized areas into functional soil-landform units in support of precision farming and soil survey and to develop generic automated soil-landform models. Bob has developed his own toolkit of custom programs (LandMapR) to support this work in automated predictive mapping.



Bob MacMillan, Alex McBratney and Brian Slater in Rio de Janeiro in 2006