

**Dr. David G. Goodenough**  
**Computer Science Department, Faculty of Engineering,**  
**University of Victoria**

**BIOGRAPHY**

**DAVID G. GOODENOUGH** (LF'10, F'97, SM'89, M'65) has been a senior Research Scientist at Pacific Forestry Centre in Victoria, BC, of the Canadian Forest Service, Natural Resources Canada. He is also an Adjunct Professor of Computer Science at the University of Victoria where he has graduate students and is a NSERC recipient. He is a Fellow of the IEEE (1997). He is a recipient of the IEEE Third Millennium Medal (2000). He was President of the IEEE Geoscience and Remote Sensing Society (1992-1993) and served as Past-President (1994-1996). Dr. Goodenough holds the following degrees: Ph.D. and M.Sc. (University of Toronto), and B.Sc. (University of British Columbia). He was an Assistant Professor of Astronomy at Wheaton College in Norton, MA (1970-1973). He was an Adjunct Professor of Electrical Engineering at the University of Ottawa (1979-1996). Dr. Goodenough worked at the Canada Centre for Remote Sensing (1973-1991), where he was a Chief Research Scientist and Head of the Knowledge-Based Methods and Systems Section. He has published extensively (>200 papers). He has received the following awards: Government of Canada's Award of Excellence; the IEEE GRS-S Distinguished Achievement Award; the Canadian Remote Sensing Society's Gold Medal Award; the IEEE GRS-S Outstanding Service Award; a Natural Resources Canada Departmental Merit Award; an Energy, Mines, and Resources Merit Award; and NASA Group Achievement Awards. Dr. Goodenough is Principal Investigator of a Radarsat-2 Forest Applications Project, a Hyperspectral Forest Applications Project, and a Co-I of a Scientific GRID Computing and Data Project for producing Above-Ground Forest Carbon Maps. Dr. Goodenough was Principal Investigator (PI) of the NASA project, Evaluation and Validation of EO-1 for Sustainable Development (EVEOSD) of forests. He is also PI of a CHRIS project, EVC, with the European Space Agency. Dr. Goodenough was the PI of the System of Experts for Intelligent Data Management (SEIDAM) Project with NASA. He was PI of a project for monitoring Canada's above ground carbon in its forests. He is a member of a USAF / DND hyperspectral team for a new hyperspectral sensor, ARTEMIS. Dr. Goodenough's current research interests focus on methods and algorithms for forest information from hyperspectral and polarimetric radar systems in order to create geospatial products for forest species, forest health, and forest carbon. He has provided consultation on remote sensing methods and systems for civilian and defence applications. Dr. Goodenough has participated in national and international large satellite missions, serving on Phase A teams, User and Science Teams, and Evaluation Teams.

## TITLE

### **Talk Abstract: Methods and Systems for Applications**

## ABSTRACT

In order to monitor the resources and environment of the planet, it is necessary to use remote sensing from multiple sensors and integrate these data with historical information contained within geographical information systems (GIS). Multiple sensors are required to identify attributes of interest. In forestry, resource managers want to know the amount of the resource by species, area, timber volume, etc., the spatial distribution, the health (chemistry) of the forests, and the temporal changes of the resource, both past and predicted for the future. The technologies of the IEEE Geoscience and Remote Sensing Society are used to create information systems to support resource and environmental management. In this presentation we describe hyperspectral and radar methods and systems to obtain valuable forest information, such as chemistry, above-ground carbon, species, and biomass. Models of forests are used to predict remote sensing results. The inversion of these results can lead to the estimation of forest parameters. National and global monitoring requires systems for distributed data management. We have created a system ([www.saforah.org](http://www.saforah.org)) using GRID architecture, optical light paths, and a petabyte data store at the University of Victoria. SAFORAH serves out to the public and research community remotely sensed data of Canada and forest information products for land cover, biomass, and change. Hyperspectral sensing is used to obtain species distribution and forest chemistry. Examples of this work for forest applications and the generation of Kyoto Protocol products are presented.

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