Annual Report (1995-96)  
of the Centre for Earth Observation Science (CEOS)  
A Level 1 Centre of the Faculty of Arts, Department of Geography

Report Prepared By:  
Dr. David G. Barber  
Director

1.0 Personnel:

1.1 Faculty Members  
Dr. D.G. Barber  
Dr. M. Benbow  
Dr. J. Brierley  
Dr. L. Stene  
Dr. W. Norton  
Dr. G. Smith  
Dr. P. Bullock (Internal Partner, Geography Adjunct)  
Dr. R. Van Acker (Internal Partner, Soil Science)  
Dr. N. Kenkel (Internal Partner, Botany)

1.2 Research Associates - None

1.3 Postdoctoral fellows - None

1.4 PhD Students  
Mr. V. Kumar  
Mr. K. Hochheim  
Mr. J. Yackel  
Mr. D. Walker  
Mr. G. Ash  
Mr. P. Cooley  
Mr. J. Hanesiak  
Ms. G. Sylvestre  
Ms. H. Anderson Ramsay
1.5 Masters Students
   Mr. R. Brook
   Mr. D. Hamilton
   Mr. J. Iacozza
   Mr. F. Kaletski
   Ms. T. Nichols
   Mr. C. Medieros
   Mr. S. Drobot
   Mr. M. Shymanski
   Ms. C. McPherson-Scott

1.6 Technical support staff
   Mr. D. Mosscrop

1.7 Support Staff - None

2.0 Academic Contributions

- Began a five year experiment working with a team of international scientists on the Lake Malawi Biodiversity Conservation Project funded by World Bank and CIDA.
- Competed for and was successful in contributing to a National Research Network grant to NSERC to study the North Water Polynya in Baffin Bay.
- Hosted East German Scientists interested in our work on agricultural remote sensing
- Hosted Province of MB Ag. departmental members interested in Precision Farming.
- Participated in the Development of the Geomatics Industry Association of Manitoba.
- Lead a multidisciplinary team of researchers in an Arctic Global Change Project called the Collaborative - Interdisciplinary Cryosphere Experiment (C-ICE’96)
- Began a field experiment in Southern Manitoba dealing with Agrometeorology and Agricultural Earth Observations.
- Participated in various conferences and workshops related to individual members research aims.
• Participated in a National Research Organization (CRYSYS) headed by the Canadian Climate Centre which focuses on the role of the Cryosphere in Global Change

2.1 Faculty Research Publications
(for the year Sept’95 to Sept’96)

Dr. D.G. Barber


Dr. M. Benbow


Dr. G. Smith

2.2 Degrees Completed


Sylvestre, G.M. An Exploratory Study of the Spatially Dispersed Urban Elderly. M.A.
### 3.0 Sources of Funding Authorized
For the year Sept. 95 to Sept. 96

<table>
<thead>
<tr>
<th>Principal Investigator</th>
<th>Grant Description</th>
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<tbody>
<tr>
<td>Barber, D.G.</td>
<td>Canadian Climate Centre, Atmospheric Environment Service. Relationship between physical, electrical and microwave scattering characteristics over snow covered sea ice.</td>
</tr>
<tr>
<td>Barber, D.G.</td>
<td>Ice Centre Environment Canada, Grant in support of the purchase of a surface based scatterometer</td>
</tr>
<tr>
<td>Barber, D.G.</td>
<td>Canada Centre for Remote Sensing - Radar Data Development Programme (RDDP). Grant in support of the purchase of a surface based scatterometer</td>
</tr>
<tr>
<td>Barber, D.G.</td>
<td>Office of Naval Research, U.S.A. Research Grant to participate in the Snow/Sea Ice Electromagnetics Accelerated Research Initiative (ARI).</td>
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<tr>
<td>Barber, D.G.</td>
<td>Ice Centre, Environment Canada. Grant to support Arctic Sea Ice Research</td>
</tr>
<tr>
<td>Barber, D.G.</td>
<td>Canadian Space Agency ADRO research grant to support research into agricultural remote sensing with RADARSAT (3 year grant)</td>
</tr>
<tr>
<td>Barber, D.G.</td>
<td>Canadian Climate Centre, Toronto, Ont. Travel Grant to present a seminar on</td>
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February 25, 2005
research results of CRYSYS research projects.

Barber, D.G. Canadian Space Agency ADRO research grant to support research into sea ice remote sensing with RADARSAT (3 year grant)

Barber, D.G. C-ICE’96 - Polar Continental Shelf Project, Energy Mines and Resources. This is a grant of in-kind support for helicopter, twin otter and snow machine rental; room and board; field equipment, etc.

Barber, D.G. Canadian Space Agency. Research support grant for access to RADARSAT satellite data (both sea ice and agricultural projects = 45 scenes@1000/scene)

Barber, D.G. World Bank and CIDA grant to support research work on the Lake Malawi Biodiversity Conservation Project, Malawi Africa. (4 year grant)

Barber, D.G. Province of Manitoba. Research support grant for access to RADARSAT satellite data (22 scenes@1000/scene)

Barber, D.G. Geomatics Canada, Ottawa, Ont. Travel Grant to participate in the National Advisory Council to the Canada Centre for Remote Sensing (May’96)

Barber, D.G. Northern Studies Trust
Barber, D.G.  
Canadian Space Agency and Canada Centre for Remote Sensing. Research Grant for flying hours using the Itres Inc. Compact Airborne Spectral Imager (CASI) - [10 hours of flying time @ 2K/hour in July of 1996]

Barber, D.G.  
Program Development Fund of the Faculty of Arts. Grant to help support the purchase of a large format colour plotter

Barber, D.G.  
Canadian Climate Centre, Atmospheric Environment Service. Research Grant to investigate development of a SWE algorithm for snow covered sea ice

Barber, D.G.  
Canadian Climate Centre, Atmospheric Environment Service. Linking remote sensing data with a one-dimensional thermodynamic model of snow covered sea ice.

Barber, D.G.  
Ice Centre, Environment Canada. Grant to support analysis of passive microwave signature of sea ice from the C-ICE’96 experiment

Benbow, M.  
Faculty of Arts Programme Development Fund

Smith, G.C.  
Canadian Association on Gerontology National
The Faculty of Arts provides a baseline budget to CEOS which is used to support research and equipment requirements of CEOS. The Director is provided with a 0.5 course remission from the Faculty. We have computer labs located in rooms 229, 205 and 203 Isbister and a physical science lab in room 104 Isbister.

4.0 Financial Stability

The survival of CEOS remains tenuous at best. Problems relate to lack of teaching staff, support staff and hours in the day. We are working on the problems with the Faculty of Arts.

5.0 Objectives Met?

I believe that we have met most of the objectives that were set forth in our terms and objectives. We have attracted several more faculty to the centre. This means that the academic workload can be distributed more broadly. We require new faculty members, teaching/research staff and some support staff.

6.0 Future Growth?

Growth is not really feasible in the current financial climate of the University or that of our external funding agencies. We are focusing instead, on substantiating our existing physical and intellectual resources in the hopes of weathering the difficulties we face in the next several years.

7.0 Difficulties

These are rather numerous and have not changed from last years report:
a) CEOS requires another (presumably new) faculty member from the Department of Geography to take an active role in the Centre. This person is essential for both teaching and research in the quantitative and physical geography sides of both the Centre and the Department.
b) CEOS requires an administrative structure that is more responsive to the notion of securing external funds to run the Centre. It is clear that the University simply cannot afford to run something like CEOS. I do believe, however, that the University does have tremendous leverage potential to compete for funds (both nationally and internationally). To realize this potential the University should encourage excellence and focus on vertical rather than horizontal cuts in support.