

FINAL REPORT OF THE IAG Ad Hoc Working Group on Global Change

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An IAG Ad Hoc Working Group on Global Change was formed as a result of discussions held at the IUGG General Assembly in Vienna (August 1991); see Table 1 for members. The goals of the Working Group are twofold: (1) Determine if the IAG should be involved in the International Geosphere-Biosphere Program (IGBP): A Study of Global Change. Would the IGBP be more successful if the IAG were involved? If so, determine the roles for the IAG. (2) In addition, the IAG should examine whether global change science and issues are being properly addressed within its own organization.

Three main recommendations were presented at the IAG Executive Committee Meeting held in March, 1992 at Ohio State University in a position paper (Dickey *et al.*, 1992).

1. The post of an IAG liaison or representative to the IGBP should be established.
2. A new core program, "Global Sea Level Change and Ice Sheet Systems," should be established with the IAG taking the lead to address the issues of sea level and ice sheet volume changes, which are critical to the whole climate change question (see following paragraph).
3. A Special Study Group on Global Sea Level Change and Ice Sheet Systems should be formed within Section V to study these issues, address the formation of such an IGBP core program, and liaison with other IUGG associations.

Climate models used to study the effects of atmospheric greenhouse gases predict an overall increase in the global temperature over the next century of from 1 to 4 degrees centigrade (Hansen *et al.*, 1981). An increase of this magnitude could have numerous catastrophic effects, not the least of which would be a global rise in sea level due to a combination of melting polar ice caps and continental glaciers, and the thermal expansion of sea water. The global rate of sea level rise during the last century has apparently been somewhat in excess of 1 mm/yr (e.g., Barnett, 1983; Peltier and Tushingham, 1989; Douglas, 1991; Trupin and Wahr, 1991.) Careful geodetic measurements are required to separate sea level change signals from other geophysical effects (such as postglacial rebound) and to understand the complicating noise sources. The causes of the sea level increase need to be quantified. Only about 10% of its rise can be accounted for by thermal expansion of the oceans; lakes, groundwater and mountains may explain ~ 0.7 mm/yr increase (Meier, 1990). Greenland and Antarctica are proposed candidates to explain the unaccounted rise. However, it is not clear at this point whether Antarctica and Greenland are gaining or losing ice. Clearly, efforts must be intensified to measure ice sheet volume changes.

As a result of this report, an IAG Ad Hoc Planning Group on Sea Level and Ice Sheet Volume Variations was formed at the IAG Executive Meeting (March, 1992); see Report in this volume. This group succeeded in linking these activities to a newly-formed IGBP Core Project, LOICZ (Land Ocean Interaction in the Coastal Zone), furthering geodesy's role in global change. W. R. Peltier has been *oude facto* liaison to the IGBP.

ACKNOWLEDGMENTS

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Table 1. Working Group Membership

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