

**An International Strategy for Geopotential Field Study
and
GPS Earth Sounding**

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Abstract:

During the next ten years there will be a number of satellite missions dedicated to gravity and geomagnetic field mapping and to developing new applications for GPS Earth sounding technology. Oersted, SUNSAT, CHAMP, and SAC-C will provide a continuous mapping of the vector geomagnetic field, its spatial and temporal variability, from 1998 to 2004 to an accuracy of 1 nT. Although the earlier missions will provide some improvement to the geoid estimation, CHAMP and GRACE will chart the geoid and temporal variability will dramatically improve resolution from 1999 to 2006. In addition, these missions will utilize advanced GPS receivers capable of tracking direct, reflected and occulting GPS signals for a wide variety of potential applications in global change, geopotential fields, and solar terrestrial interaction.

These missions are a great opportunity to the geopotential fields and GPS communities to demonstrate the utility and importance of the science and technology. The planned missions will require improvements in the both GPS and geomagnetic ground networks to provide monitoring of the GPS constellation and the external field fluctuations. The communities should also develop international science teams to support these missions and lobby for extended missions. Archiving and analysis centers should also be developed to insure optimum distribution and utilization of the data sets to strengthen the productivity of these missions and to encourage the development of future missions. The International GPS Service (IGS) is currently studying the development of its infrastructure to support and utilize the many planned missions. These communities will need to develop new missions to extend the mapping period to a full decade as requested by many studies and documents issued by the science community. It is proposed that the gravity and geomagnetic communities through the IAGA, IAG, and IUGG develop a decadal plan to build upon these missions.