

THE GLOBAL IMPACT STUDIES PROJECT: A WEB-BASED RESOURCE FOR RESEARCHERS AND EDUCATORS INTERESTED IN TERRESTRIAL CRATERING. R. A. Campi¹ and V. L. Sharpton¹,
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Introduction: The Global Impact Studies Project (GISP) is an effort to consolidate current resources about terrestrial impact cratering, and make them accessible to the global community via the internet. As with many fields of scientific interest, information and current research is often disseminated and difficult to collect in a timely and useful manner; in the case of GISP, this problem is somewhat exacerbated because terrestrial impact cratering, by definition, occurs throughout the world, and researchers tend to focus on structures located in their own countries. The main goals of GISP are to collect information and research about each of the 160 impact structures identified on earth to date [Fig. 1], to compile a thorough and current bibliography of these impact structures, and to make this information accessible to both scientists and curious laypersons via an interactive, easy-to-use website.

GISP was established by the International Lithosphere Program of IUGG/IUGS to heighten global awareness of the role that impact has played in terrestrial evolution and to encourage and facilitate additional research on terrestrial impact craters. Although 160 impact craters have been identified (Fig. 1), models suggest that up to 3 times that many remain to be discovered on or within the continental crustal succession. Most of these will be located within poorly explored regions such as equatorial Africa, South America, eastern Asia and presently or formerly submerged continental margins. In addition, only a handful of craters have been identified on sea floor. Perhaps more important than additional discoveries, however, is more detailed study of those impact structures already identified. An unfortunate fact is that interest in a particular feature too often subsides after its (1) impact origin has been confirmed, (2) its original size has been estimated, and (3) its age has been constrained. Yet, because erosion and geophysical tools provide unique access to the third dimension of the impact landform, the terrestrial cratering record is a fundamental but underutilized resource for understanding the complex processes that take place when large comets and asteroids strike planetary surfaces.

The GISP Website: To date the GISP website (<http://gisp.gi.alaska.edu>) contains several salient features in various stages of completion including the following:

(1) *An Impact Bibliographic Resource* wherein information on terrestrial craters and the impact

process can be consolidated and updated. A web-based form is provided so experts can list their research citations and provide key words for searches. The starting point was the very useful but out of print *Bibliography of Terrestrial Impact Structures*, in which Grollier [1] created a thorough 1984-vintage compilation of research papers on terrestrial impact structures. While many new craters have been identified since 1984, Grollier's work provides a priceless collection of bibliographic information, organized by continent, and focused on individual structures as well as methods of investigation and identification. GISP has converted Grollier's printed book into a digitally searchable format, and has used it as the foundation for a thoroughly annotated bibliographic database. This database has been augmented with more recent articles gleaned from library searches and contributions from individual researchers. To date, GISP has extracted 2,566 bibliographic references from Grollier, and has added 2,874 references from other sources, for a total of 5,440 references. The ultimate goal is to have a thoroughly annotated and updateable bibliographic resource. In addition to publications on specific terrestrial craters, the GISP bibliography includes literature on methodologies such as experimental and explosive impact studies, identification techniques such as shock barometry and diagnostic trace elements, and computational modeling of the impact process. The GISP literature search extends to publications across the globe, in all languages, and utilizes translations of non-English languages when necessary. We encourage all members of the impact community to examine this database and provide updates and suggestions.

(2) *A Terrestrial Crater Database.* This database gives the basic characteristics for each terrestrial structure currently recognized to contain widely accepted diagnostic evidence of its impact origin, such as shock metamorphic features (planar deformation features, shatter cones, diagnostic polymorphs, or chemical indications of extraterrestrial components). For each crater, the database provides the location and most reliable estimate of its size and age. We are also in the process of compiling individual webpages for each structure. These webpages contain a summary of information on the structure, images of the structure when they are available, additional information such as geophysical surveys, references and contacts, and any links to other relevant websites that the GISP team has discovered.

(3) *An Impact Specialists Database* wherein information about researchers and their areas of interest is provided in a consolidated and updateable manner. As with the bibliographic database, GISP has attempted to include as much pertinent information as possible about members of the impact community, and to keep this information current and accurate. Contact information for active researchers is provided when available, so that individuals may address questions about specific research interests to the appropriate specialist. All researchers involved in terrestrial crater studies or impact research are invited to enter an individual profile so that relevant inquiries and opportunities can be directed their way.

(4) *An Impact Cratering Primer* is provided for individuals who do not have geological or scientific backgrounds. This primer discusses the basics of impact cratering, including how scientists identify impact craters and structures, what kind of deformation occurs during an impact event, and how to discriminate an impact structure from other landforms. Other topics of interest, such as what kinds of objects are likely to impact the earth, and the frequency of terrestrial impact events, are also introduced in the

primer. Photographs and references supplement the primer, to provide a more complete resource for the interested individual.

Community Involvement and Feedback:

While considerable progress has been made to bring a reliable and current tool to assist those interested in terrestrial craters and the process by which they formed, GISP requires community involvement to realize its true potential. Therefore, we encourage everyone to examine our website and provide us with feedback. You can submit references and additional information on relevant topics through our web interface or by e-mail. We received approximately 2000 hits during our first year, mostly from individuals interested in gaining additional information about specific craters. Often these turn into opportunities for collaboration, participation in news and media events, and additional studies. As these opportunities go to researchers we have identified in our database, it behooves all qualified researchers to submit a research profile and keep it updated.

References: [1] Grollier M.J. (1985) *NASA Technical Memorandum*, 87567, 539p.

Figure 1. The global distribution of terrestrial impact structures identified through 2002.

