

1 PART I: PLENARY PAPERS AND INVITED CONTRIBUTIONS

1.1 Preface

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1.1.1 Gulf of Mexico Workshop on International Research (GOMWIR) Plenary

The plenary session of the Gulf of Mexico Workshop on International Research (GOMWIR) was intended to lay a foundation for the working sessions to follow. Plenary speakers with recognized expertise in the Gulf of Mexico (GOM) oceanographic and marine science studies were asked to assess the current state of knowledge, identify research gaps, and provide their perspectives on research priorities for the southern GOM. All invited plenary speakers had extensive and relatively current experience in working collaboratively with international partners. The plenary session was organized into four panels, and lunch panels were held on both days of the workshop.

The Sponsors Panel provided the opportunity for sponsoring organizations to inform workshop participants about workshop goals and expectations from their specific perspectives. Presenters included:

Dr. Larry McKinney: Executive Director Harte Research Institute (HRI), Texas A&M University–Corpus Christi (TAMUCC)

Dr. Rebecca Green: Senior Oceanographer, Environmental Studies Program, Bureau of Ocean Energy Management (BOEM)

Chris Elfring: Executive Director, National Academies of Sciences, Engineering, and Medicine, Gulf Research Program (NASEM-GRP)

Dr. Rebecca J. Allee: Senior Scientist, Office for Coastal Management –Gulf Region, National Oceanic and Atmospheric Administration (NOAA)

Each of the sponsoring organizations characterized their interest in and connections with international coastal and marine science in the southern GOM. All sponsors recognized the growing interest in cooperative science between the three Gulf countries (United States, Mexico, Cuba) and stated their desire to facilitate coordinated efforts to better understand the Gulf of Mexico as a whole. Sponsoring institutions recognized that oil and gas development and joint research efforts between the United States and Mexico to address that issue was a focal point for the workshop but also expressed understanding that many issues would benefit from the combined efforts of all Gulf countries. Oil and gas development by the United States, Mexico, and Cuba presented unique challenges and opportunities that GOMWIR could help address and provide a strong foundation for the future.

The Inventory and Assessment of the Southern Gulf Panel was a report out from the pre-workshop efforts to assess what we currently know about that area of the Gulf. The HRI team was led by Dr. Mark Besonen, Dr. Kim Withers, and Dr. Gerardo Gold Bouchot. International team members included Dr. Adolfo Gracia Gasca and León Felipe González Morales of the Universidad Nacional Autónoma de México (UNAM, Mexico City); Dr. Victor Manuel Vidal Martínez and Daniel Aguirre Ayala of the Centro de Investigación y de Estudios Avanzados (CINVESTAV; Mérida, Yucatán); Dr. Sharon Herzka and Mónica Cecilia Mozqueda Torres of the Centro de Investigación Científica y de Educación Superior de Ensenada (CICESE, Ensenada, Baja California); and, Dr. Eustorgio Meza Conde and Sergio Gabriel Jiménez of the Universidad Autónoma de Tamaulipas (UAT, Tampico, Tamaulipas). Dr. Nuno Simoes of

UNAM–Sisal, prepared a biodiversity assessment of the southern Gulf with a special focus on Campeche Bank. Panel presentations included:

Overview of Pre-Workshop Inventory: Dr. Mark Besonen (HRI)

Overview of Pre-Workshop Literature Assessment: Dr. Kim Withers (TAMUCC)

Overview of Fates and Effects Database: Dr. Gerardo Gold Bouchot (TAMU)

Meta-Database of Marine Research in Mexico: Juliano Palacios-Abrantes (University of British Columbia)

A Biodiversity Gap Analysis of the Southern Gulf of Mexico: Dr. Nuno Simoes (UNAM)

A significant challenge for GOMWIR was the relatively short timeframe given for the more than 165 participants to come together and accomplish all that was hoped for in the original planning. To help assure success of the face-to-face meeting, considerable work was done in advance of the GOMWIR workshop to provide context and to accelerate the work of the participants. It was a complex undertaking over a very short period of time, but it accomplished the initial goal of providing a focus for the workshop and illuminating gaps in our knowledge and the challenges of international data and information exchange.

The National Perspectives on the State of International Science in the Gulf of Mexico Panel was moderated by Dr. Chuck Wilson Chief Scientist of the Gulf of Mexico Research Initiative (GOMRI). Scientific program leaders from around the GOM were asked to summarize institutional activities in the GOM and their perspectives on research priorities. Panel presentations included:

Status of Marine Research in Mexico: Consorcio de Instituciones de Investigación Marina del Golfo de México y del Caribe (CIIMAR-GOMC): Dr. Porfirio Álvarez, Secretario General de CIIMAR-GOMC

State of Oceanographic Research in Mexico: Consorcio de Investigación del Golfo de México (CIGOM): Dr. Juan Carlos Herguera, Principal Investigator

The State of Marine and Oceanographic Research in Cuba: Dr. Silvia Patricia González Díaz, Director, Centro de Investigaciones Marinas (CIM) de la Universidad de La Habana

The State of International Science in the Gulf of Mexico: Topical Perspectives Panel, also moderated by Dr. Chuck Wilson, included scientific leaders from around the GOM. Panel members were identified that could address the primary thematic areas of GOMWIR: Baseline Studies, Fates and Effects Studies, and Environmental Monitoring. They were asked to summarize what we know, what we don't know, and what we most need to know about the GOM from their unique areas of expertise and experience. The panel was structured to reflect the thematic focal areas of the workshop. Panel presentations included:

Perspective on International Research in the Gulf of Mexico: Dr. Elva Escobar Briones, Director Instituto de Ciencias del Mar y Limnología (UNAM)

Perspective on Environmental Monitoring Needs in the Gulf of Mexico: Dr. Tony Knap, Director of the Geochemical and Environmental Research Group (GERG) and holder of the James R. Whatley Chair in Geosciences at TAMU

Perspective on Baseline Study Needs in the Gulf of Mexico: Dr. Steve Murawski, University of South Florida, Peter R. Betzer Endowed Chair and Director of GOMRI's C-IMAGE Consortium

Perspective on Fate and Effects Study Needs in the Gulf of Mexico: Dr. Gerardo Gold Bouchot, TAMU, Department of Oceanography

Perspective on Socioeconomic Study Needs in the Gulf of Mexico: Dr. David Yoskowitz, Associate Director of HRI and Endowed Chair for Socioeconomics, TAMUCC

Two Special Lunch Panels about international perspectives on cooperative research were organized by BOEM and NOAA. The BOEM lunch panel was moderated by Timothy McCune (International Relations specialist, BOEM), and the speakers included Michael Celata (BOEM Regional Director for the Gulf of Mexico) and Alejandro Carabias (Head of the Regulations and Legal Standards Unit, Agencia de Seguridad, Energía y Ambiente [ASEA]). The NOAA lunch panel provided an overview of the GOM Large Marine Ecosystem (LME) Project with speakers Dr. Becky Allee (NOAA), Dr. Bonnie Ponwith (Director, NOAA Southeast Fisheries Science Center), and Javier Warman Diamant (Director General of Planning and Evaluation, Secretaría de Medio Ambiente y Recursos Naturales [SEMARNAT]). Both panels provided succinct summaries of regulatory-related research needs and continuing efforts to build international coordination and cooperation between governmental agencies in their respective countries. These lunch presentations were very helpful to workshop participants as they proceeded with assigned tasks to identify priorities and gaps.

1.1.1.1 Plenary Summary

The plenary session provided a framework around which the remainder of the workshop was structured. Both the national perspective panel and the topical panel provided workshop participants with information with which many were not familiar. All presenters provided Microsoft© PowerPoint© presentations which are available by searching the HRI website.

It was clear from the presentations discussing the state of research in Mexico that both coastal and ocean observations are a priority and are advancing rapidly. The CIGOM presentation by Dr. Herguera was especially informative, providing an excellent insight into the impressive scale of Mexico's national effort to better understand the Gulf and the technical expertise on which that effort is based. The presentation by Dr. Álvarez updated the workshop on the well-organized efforts of CIIMAR-GOMC to unite coastal Gulf states in Mexico to work towards a better understanding of the coastal margins of Mexico and integrate their efforts with those of the United States. Dr. Patricia González Díaz of CIM at the University of Havana provided a detailed overview of Cuban marine science, which was not well known to the majority of workshop participants. Cuban marine and ocean sciences have capacity limitations but are technically on par with other nations in the region.

Dr. Escobar's topical perspective captured the impressive, recent history of Mexican oceanographic work across several topical areas and also provided an insightful perspective on areas where the workshop should focus to best identify both gaps and priorities. Dr. Knap put GOM oceanographic research into context with efforts around the world. His special focus was on long-term monitoring gaps and priorities, which was especially illuminating for the physical sciences. Dr. Murawski has successfully led oceanographic expeditions in both Mexican and Cuban waters. His insights on data sharing and Gulf-wide baseline data needs and challenges provided a strong foundation for workshop discussions. Dr. Bouchot focused on fate and effects study needs for the southern Gulf and did so across a broad spectrum. He provided a detailed assessment of both gaps and priorities. An often-overlooked area of research in this area is socioeconomic assessment. Dr. Yoskowitz provided insights to making connections between biophysical disciplines and the broader community to evaluate the impact of investment rather than the return on investment regarding the environmental challenges of economic development in the southern Gulf.

The plenary sessions were designed to inform workshop participants as they pursued their assigned tasks. The sponsors' panel provided context as to why GOMWIR was conceived and executed. The inventory panel provided workshop participants with an assessment of what was known and available to researchers at the time of the workshop. The national perspectives panel provided a broad view of coastal and ocean sciences in all three Gulf countries, and the topical panel was focused on the three thematic areas for the workshop: baseline studies, fates and effects studies, and environmental monitoring.

GOMWIR organizers and sponsors were fortunate to have leading Gulf scientists in all of these areas contribute to the plenary session and set the stage for a lively and engaged workshop. The proceedings benefited from plenary speakers' summary contributions. All researchers with an interest in the GOM will benefit from the contributions of GOMWIR's plenary speakers and for that, the organizers and sponsors wish to thank them for their time and effort.