2020 ISGC Sessions Proposals

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Theme 1: Geodynamic and tectonic evolution of the continents and their margins: implications for ancient depositional systems.

Siliciclastic and carbonate shelf-slope margin evolutions: Insights from modeling, modern and ancient systems

Jinyu Zhang, Serge Berné, Cornel Olariu, Ronald Steel

Shelf-slope margin represents the most important segment of a source-to-sink sedimentary system and contains two important transitional boundaries: the shoreline and the shelf-slope break (or shelf edge). The preserved shelf-slope stratigraphy records both upstream and downstream signals (e.g., catchment reorganization, uplift, climate change, and relative sea level change) and is influenced by complicated physical and biological processes. The increasing number of detailed documented modern and ancient shelf margins provides an opportunity to compare datasets across different tectonic and climatic settings and better understand the complex interactions between oceanic processes, sea-floor morphology, and benthic communities at the shelf margin. Meanwhile the physical and numerical models become more sophisticated and are important tools to understand the intertwinements of the shelf margin controls in a quantitative way before comparing with modern or ancient shelf margins. Despite significant advances, there are still outstanding questions related to the magnitude of some catastrophic events and their impact, the stratigraphic signature of hydrodynamic and/or climatic-eustatic controls, 3-D geometries and migration of sedimentary systems at different sea levels, or the evolution and preservation of canyon heads and other conduits of sediment *en route* to the deep sea.

We invite contributions from field-, analytical-, and numerical-studies on physical processes, sedimentology, stratigraphy and biology associated with shelf margins. The sessions hope to bring together scientist with different backgrounds who work on different basins (modern or ancient), use different approaches (field data or modeling), and focus on different spatial and temporal scales. We believe the discussion across the tectonic and climatic settings, and over spatial and temporal scales, is extremely helpful to understand the past, current, and future development of shelf margin, and the source-to-sink systems.

Mass-transported complexes, deposits or subaqueous landslides? - A terminological continuum of processes and architectures with a wide societal impact

Chris Jackson and Lorena Moscardelli

Mass-transport complexes (MTCs) comprise slides, slumps, and debris-flows, which are deposited by a range of weakly turbulent to fully cohesive, plug-like sediment gravity flows. MTCs are one of the most sedimentological and seismically distinctive depositional elements in many deep-water depositional systems, where they may form a key component of the stratigraphic record. MTCs may represent geohazards, threatening seabed infrastructure, and can generate seabed topography that controls subsequent sediment dispersal patterns. In addition, MTCs may represent drilling hazards because of unpredictable intraformational pressures, and may form hydraulic seals to sandstone reservoirs or form reservoir themselves. The composition and distribution of MTCs, and our ability to recognise them in the subsurface, are thus of concern to the hydrocarbon industry. This session aims to present the latest findings related to the study of MTCs, drawing on new observations from seismic reflection borehole and field datasets, and

physical and numerical modelling studies. We strongly encourage multidisciplinary studies that integrate different data-types.

New approaches towards understanding submarine canyon formation: From ancient outcrops to modern processes.

Michael Elliot Smith and Stephen C. Dobbs

This session will address the formation and evolution of submarine canyons, as well as the roll submarine canyon systems play as sediment-transport conduits between terrestrial sources and marine basins. We welcome a diverse range of presentations focused on observations of modern canyons as well as ancient outcrop analogs. Of particular interest are new methods for interrogating channel network geometries, the generation and action of erosive sediment-gravity flows, submarine canyon incisional processes, and connections between terrestrial sediment fluxes and canyon formation and maintenance, as well as ancient analogs that record these processes.

Cretaceous Source Rocks from Texas to Alaska: Depositional Systems and Continental Margin Dynamics of the Western Interior Seaway.

Katherine Whidden, Justin Birdwell, Katherine Frenchience Center, USGS, Denver Federal Center, Denver CO 80225

2: Alaska Science Center, USGS, 4200 University Dr, Anchorage, AK 99508

Major source rocks were deposited in the Western Interior Seaway (WIS) from Texas to Alaska during the Cretaceous. These organic-rich intervals range in age from Aptian through Campanian, and they were deposited in a range of settings, from continental shelf to deep-water basin. Key source rocks of this interval, such as the Eagle Ford and the Niobrara, have been studied intensively, however much less work has been done on integrating the depositional, tectonic and oceanographic controls of Cretaceous source rock development across the WIS.

We invite contributions on Cretaceous source rocks of the WIS through the lens of multiple disciplines, including trace element geochemistry, isotope geochemistry, organic geochemistry, geochronology, basin analysis, biostratigraphy, and cyclostratigraphy. Presentations that address controls on organic matter quality, ocean geochemistry, evolution of the continental margin in different parts of the WIS, and the spatial and temporal integration of source rock development across the Cretaceous WIS are of particular interest for this session.

Delineating and quantifying the tectonic and climatic processes controlling the character and volume of siliciclastic sediments

Suzanne Kairo and Bill Heins

It is widely accepted that, together, tectonics and climate control the nature and amount of sediment that can be generated in and transported from continental hinterlands into sedimentary basins. Sound geologic reasoning and decades of case studies support this concept. However, in order to advance our understanding of the specific ways sediment routing systems (P.A. Allen, 2017) are driven by processes and conditions related to tectonics and climate, it is important to consider not only concepts and models of the processes, but also quantitative data and methods that can be used to inform and calibrate the understanding of the sedimentary system.

This session casts a broad net, aiming to include a variety of studies that quantify the effects of tectonics and climate on sediment routing systems, ranging from studies to delineate specific chemical and physical

processes that control or modify sediment character, to studies aiming to quantify the sediment routing system using flux and mass-balance approaches.

With a more complete, better-quantified understanding of sediment generation, and the types and rates of changes in sediment character and volume from source (provenance) to sink (deposition and burial), there will be an improved basis for interpretations of tectonic history and paleoclimate from the sedimentary record. Improved interpretations can lead to more informed perspectives on the ways sedimentary systems might respond to rapidly changing global conditions in our modern world.

Potential Speakers: Bill Heins; Luca Carracciolo; Gert Jan Weltje; David Chew; Hilmar Eynatten; Laura Stutenbecker; Salvatore Critelli; Eduardo Garzanti; Sergio Ando.

Fluvial paleohydraulics: Quantitative models for sediment transport systems

Robert C. Mahon, Sheila Trampush, Brandon McElroy

Fluvial transport systems respond to tectonic, climatic, and biotic changes through adjustments in form, hydrology, and sediment fluxes. Quantitative models for inferring these adjustments from stratigraphic records can inform interpretations of environmental conditions through geologic time. This session invites discussions of paleohydraulic models, their applications, and associated limitations and uncertainties.

The Stratigraphic Record of Foreland Basin Systems

Matthew Malkowski, Tomas Capaldi

Foreland Basin systems are arguably one of the most valuable records available for understanding the feedbacks and relationships among lithospheric and Earth surface processes. In the past decade, we have made significant advances in deconvolving the diverse and growing data sets extracted from the stratigraphic fill of foreland basin systems. The objective of this session is to bring this progress to light by applying the sediment record to numerous unresolved questions regarding the tectonic and geodynamic processes driving Cordilleran and Collisional mountain building.

The subject of foreland basin systems is considered here in its most holistic sense and submission topics could include, but are not limited to: orogenic exhumation, subsidence mechanisms and rates, provenance trends and sediment routing patterns, sedimentology and stratigraphic architecture, isotope records, crustal inheritance, magmatism, plate coupling and slab behavior, etc. We hope to draw on a diverse array of geographic locations and basin settings (e.g., retroarc, peripheral, broken forelands, successor forelands, etc.) from both modern and ancient systems. Additionally, we would like to highlight a field geology component and invite relevant field trip leaders to present in this session.

Sedimentation and Evolution of Convergent Margin Basins

Shahin Dashtgard, Sebastien Castelltort, Stephen Hubbard

This session serves as a platform to discuss the tectonic history, evolution and sedimentation in Convergent Margin Basins with an emphasis on the interplay of tectonics, climate and sediment dispersal. We invite abstracts related to signal propagation, source-to-sink, sediment budgets, tectonic evolution, cyclicity, climate signals, and stratigraphic architectures of all convergent margin basins, including forearc, backarc, strike-slip, and peripheral foreland basins.

Reconstructing Late Paleozoic land and sea scapes across North America

Paul J. Umhoefer, Ryan Leary, Michael E. Smith

We welcome talks that focus on new approaches and new results and interpretations on the Pennsylvanian and Permian systems of North America, including provenance, sequence stratigraphy, photogrammetry, and basin-scale tectonics.

Linkages between Geomorphology and the Stratigraphic Record

Zane Jobe & Brian Willis

The stratigraphic record is constructed by the evolution of geomorphic surfaces and sedimentary environments over diverse spatiotemporal scales, from bedform migration to the growth of continental margins. Depositional processes on the modern Earth surface can be precisely measured and monitored at high spatial and temporal resolution to directly link sedimentary processes and morphodynamics, but represent a fleeting moment in time. Core, outcrops, and seismic data provide a longer-term stratigraphic record at varying spatial scale and temporal resolution, but complex shifts in environments and preservation patterns over time make it difficult to decipher depositional-process variations. Complex changes in landform shape, surface grain-sorting patterns, and localized preservation can lead to emergent subsurface facies patterns that cannot be predicted from static views of depositional systems. A better understanding of the link between surface depositional processes, the dynamic topography of geomorphologic surfaces, and the stratigraphic record is essential for a variety of applications, including natural resource assessments, predictions of subsurface fluid flow patterns, and interpretation of paleoenvironment change.

We solicit contributions that relate surface depositional processes and morphodynamics to the architecture of preserved subsurface depositional bodies, or use observed scales of depositional bodies and facies organization patterns to interpret changes in depositional processes within evolving depositional systems. We particularly encourage contributions that use modeling approaches (experimental, numerical, and analytical) to relate surface morphodynamics to preserved facies patterns or develop quantitative metrics of deposits to evaluate depositional scaling and process changes within ancient systems.

Theme 2: Ocean-atmospheric controls on surface processes: evolution of life, landscapes, and the sedimentary record

Future Resilience from Ancient Marine Transgressions

David M. Hodgson, Claire Mellett, and Stephen Eaton

Although the modern continental shelf is more intensively exploited than ever, very little is known about how dynamic sediment transport is, or how our interventions influence sediment mobility. This uncertainty is particularly troubling in the context of accelerated rates of sea level rise and higher frequency of storm events, when only a few decimeters of sea-level rise can inundate large areas of coastal lowlands, particularly at river deltas which host seven times the global mean population density. Changing climate will exacerbate the exposure of global coastal communities, and onshore and offshore infrastructure and landscapes, to marine flooding. To improve forecasts of coastal realignment under projected accelerated sea-level rise and to improve resilience of coastal communities (fauna and humans) and seafloor infrastructure, requires understanding the dynamic interaction of changing topography with hydrodynamics and sediment availability. The stratigraphic record of process responses to past changes in

sea-level, whether the Holocene, the last interglacial, or in deeper time, provides a means to support mitigation strategies for future sea-level rises. Therefore, a major challenge is to adequately resolve the rates and effects of past sea-level change on a decimeter-scale when analysing sedimentary archives.

Sedimentary archives of Quaternary coastal change

Christopher Hein, Sebastian Lindhorst, Toru Tamura

Located at the interface between the land and ocean, coastal regions are among the most sensitive to climate- and sea-level changes. Sedimentary processes that continuously shape the coast leave geological records of past environmental conditions, as well as the morphodynamic responses to those changes; many of these archives remain unread. Fundamental to the utility of these systems as recorders of Quaternary paleoenvironmental change is an understanding of the formation mechanisms responsible for the morphologic characteristics and the sedimentary architecture, notably in relation to variability in geological and coastal settings, climatic zones, sediment sources and types, and sea-level histories.

We aim to bring together scientists working on coastal sedimentary archives, especially from the beach and nearshore environments, and from the tropics to high latitudes. We invite presentations that cover process-oriented palaeoenvironmental reconstructions across all time scales and methods—including both modeling and observational approaches—and especially of progradational coastal systems such as barriers, cheniers, and strand-, beach-, and foredune- ridge plains.

Anthropogenic impacts on sediments and sedimentary processes in coastal settings

Laura Reynolds, Susan Kidwell

As we seek to predict and prepare for future changes along coasts, where a majority of people now live, a better understanding of sediment dynamics in human-modified environments will be crucial, including insights both from recent direct observations and from cores and other geohistorical evidence. This session focuses on the effects of human activities on sediment production, transport, delivery, and accumulation in coastal environments, and the geomorphological, ecological, and chemical changes that result. Relevant themes could include, but are not limited to, the effects of barriers to sediment transport in coastal rivers; the effects of land-use change and infrastructure on watershed and coastal processes; the transport and deposition of pollutants and nutrients in estuarine and coastal systems; changes in sediment grain size, biogenic characteristics and accumulation rates; modification of bioturbation/mixing processes and recycling rates; changes to carbon sources/sinks; and evidence of tipping points and unsuspected legacy effects. We invite both empirical and model-based research conducted at local to regional scales with implications for estuarine, nearshore, and shelf environments.

Currents, Storms and Shelfal Systems: Processes and Products of Changing Oceans

Lesli J. Wood and Daan Beelen

This session will address the multitude of processes driven by deep and shallow ocean currents that are sensitive to changing climates, water masses and continent/ocean physiographic relationships. Ongoing exploration in continental margins and new field studies have shown the importance of deep ocean currents in sculpting the sedimentary record. Ancient deposits and near-modern deposits hold shallow ocean shelf records that reveal a magnitude of storm and current processes unexpected in modern analogs. The desire is to engage those working in industry, with academics in modeling and field studies, with those looking at current and future ocean conditions and processes.

Microbial Carbonates and Metazoan Reefs During Recoveries from Mass Extinctions

David J. Bottjer, Le Yao

In modern carbonate settings reefs have shown significant changes due to ongoing environmental stress. Such changes in the distribution and abundance of microbial carbonates and metazoan reefs have also been demonstrated to be significant features of recoveries from mass extinctions in deep time. This phenomenon has attracted much scientific attention, in large part because study of these deep time examples may lead to the development of useful management approaches for modern reefs. We propose a Theme 2 session on this topic that will potentially attract international participants from sedimentary geology, paleobiology, paleoecology, geobiology and conservation biology.

High Latitude Sedimentary Systems

Charlotte Allen, Luz Gomis-Cartesio, and Rhodri Jerrett

Latitudinal differences in climate, the biosphere, sediment character, and relative sea-level change impact the sedimentary and stratigraphic record. Despite decades of research devoted to low and mid-latitude settings, the body of work on high latitude sedimentary systems is comparatively limited. Currently, most models consider a number of significant sedimentary features as unchanging with latitude, even though it has long been known that physical and climatic factors vary significantly with latitude. As a result, facies models are biased to concepts developed in tropical and temperate settings, and do not take into account latitudinally dependent factors. For example, Coriolis forcing, reduced tidal force, highly seasonal fluvial discharge and ice melt have a marked impact upon the timing and flux of sediment supply, and the grain-size range of sediments sedimentary systems and stratigraphy. New models are needed that consider these factors in high-latitude settings.

Extreme and low frequency events in sedimentary records, mitigation for future hazard of tsunami, flood and storm surge.

Koichi Hoyanagi

Following the East Japan earthquake and tsunami of 2011, we have realized how difficult it is to recognize the cyclicity of extreme and low frequency events, which occur more than 1000 years' intervals, from human historical record. While, we will be able to find these event deposits in geological record. After the Sumatra earthquake and tsunami in 2004, we have accumulated much knowledge on modern tsunami deposits. We will discuss in this session how to identify tsunami, flood and storm surge events in the geological record. We must make our mitigation plan for each area, based on the knowledge of these extreme and low frequency events.

Aeolian Systems: bedform dynamics, geomorphology, and preserved stratigraphy.

Mary Carr and Richard Langford

Aeolian depositional systems exist in both inland and coastal settings on Earth and Mars and are significant constituents of the stratigraphic record. These systems affect the lives of billions of people on Earth, and their deposits provide significant clues for global paleogeography and paleoclimate reconstructions. Aeolian deposits also host significant petroleum reservoirs around the world (e.g., Norphlet Formation, Rotliegend Group, Navajo Sandstone). However, there is a broad spectrum of stratigraphic architectures that result from aeolian depositional processes that are complex and oftentimes poorly understood. For example, wet eolian systems are typically more heterogenous than dry systems due to the presence of interbedded cross-strata, damp interdune, and sabkha deposits. Quantitative studies of aeolian geomorphology, bedform dynamics, and preserved stratigraphy are of paramount importance

for constraining sediment transport models, paleomorphodynamics, and climate (both paleoclimate and future climate) prediction.

We solicit contributions that examine diverse aeolian depositional systems from bedforms to sand seas. Contributions using field-based datasets (outcrops, modern environments, and subsurface data) and/or modeling approaches (experimental, numerical, and analytical) are encouraged. Studies focusing on depositional processes and morphodynamics, modern geomorphology, and bedform dynamics are of particular interest.

Supercritical-flow processes and upper-flow-regime bedforms

Arnoud Slootman, Alexandre Normandeau

Supercritical flow conditions can occur in open-channel flows, subaqueous density currents, pyroclastic density currents, and katabatic winds, and thus affect a wide range of subaerial and subaqueous depositional settings, e.g. proglacial, fluvial, coastal, deltaic, shallow- to deep-marine, volcaniclastic and carbonate-slope environments. Not only are they observed on land and underwater, they were recently recognized on Mars. Supercritical flows create upper flow-regime bedforms such as antidunes, chutes-and-pools, cyclic steps and transitional bedforms, whose development and properties are still only partly constrained. These bedforms and associated sedimentary structures are classically thought to possess a low preservation potential in the stratigraphic record as a result of their high-energy, transient formative conditions. Flume experiments have been pivotal to advancing our understanding of the morphodynamics of upper flow-regime bedforms. Numerical models and direct measurements of flows have also contributed to advance our knowledge of supercritical flows, even if a real integration between the different approaches is still lacking. This session welcomes field, experimental and numerical studies investigating the sedimentological aspects of modern and ancient upper flow-regime bedforms and their formative supercritical flows. We particularly welcome contributions that bridge the gap between modern observations of upper flow bedforms and the stratigraphic record.

Geochemical and Petrographic Fingerprints of Microbially-Mediated Carbonate Precipitation

Elizabeth (Lizzy) Trower and Miquela Ingalls

This session will focus on recent advances documenting the linkages between microbial metabolic activity and carbonate precipitation—including modes ranging from precipitation induced as a consequence of a microbial metabolic process to active mineralization within or on cell membranes—with implications encompassing the record of microbial life on Earth, the search for life on other planets, the exploration of “microbial carbonate” reservoir facies, and the role of microbes in diagenesis. This endeavor to identify the fingerprints of microbially-mediated carbonate in the rock record requires disentangling the products of abiotic and microbial metabolic reactions that are intrinsically linked through a number of biogeochemical cycles.

We solicit contributions applying modern and experimental approaches to document the diversity of carbonate minerals produced in association with microbes in a variety of environments—both in terms of petrographic fabric attributes like crystal size/morphology and spatial associations with other authigenic minerals, and geochemical attributes like stable and clumped isotope ratios, trace element concentrations, and carbonate mineralogy. Efforts to relate specific evidence for microbial metabolisms and microbe-mineral interactions to petrographic and geochemical evidence in the carbonate rock record are also welcome.

Revisiting the Carbonate Factory: Evolution of ideas through time

Art Saller (Kosmos Energy), Matt Buoniconti (EOG Resources), Jean Hsieh (Repsol)

The Carbonate Factory was defined by Schlager (2005) as the shallow illuminated seafloor, where sediment particles are generated [in large volumes] within the sea water from the crystallization of skeletal remains or precipitation out of sea water. The Carbonate Factory has been a key concept for carbonate deposition for the last 50 years. Although much carbonate sediment may be relatively immobile after formation, recent studies have demonstrated substantial transport of carbonate into deep basins associated with turbidites and debris flows with some reworking by deepwater current resulting in drift deposits. The validity of the Carbonate Factory in lacustrine system is also being evaluated in the south Atlantic. This session will focus on deposits that challenge us to re-think, re-frame re-define, and/or re-use the idea of the Carbonate Factory in many settings including prolific deepwater conventional and unconventional reservoirs, distinguishing carbonate buildups from volcanics, and deposition of lacustrine strata. We solicit contributions for this session as described above, or other interpretations and applications of the evolving model of the Carbonate Factory.

Climate change in the sedimentary record

Brian W. Romans & Angela M. Hessler

The sedimentary record is one of the most valuable archives of climate change over historical to geologic timescales. In deep time (>2 Ma), sedimentary rocks are the only archive of past climate change. Not only do sediments and sedimentary rocks contain direct carriers of climate information (e.g., microfossil geochemistry), but the stratigraphic record itself, including grain size, facies, and architecture, preserves the response to changing landscapes, hydrologic cycles, and oceanographic conditions. Moreover, the composition and geochemistry of transported sediments provide insight into the climatic regime of long-since-eroded sediment source areas and enhance our understanding of land-ocean linkages. Deep-time climate studies provide information about the full range of Earth's climate states and help constrain ranges of ecosystem and biosphere responses to climate perturbations, the basis for long-term models. We encourage submissions that highlight the use of the sedimentary record to reconstruct past climate, with an emphasis on studies that integrate fundamental sedimentology with geochemical and/or geobiological proxies.

INTERDISCIPLINARY

Dispersion and accumulation of sediment in deep-marine environments: New perspectives for future research on anthropogenic pollutants

Ian Kane, Michael Clare, Stéphanie Girardclos, Sophie Hage, Maria Azpiroz-Zabala, Pere Puig, Robert Dorrell, Claudio Lo Iacono, Furu Mienis

An estimated 8.3 billion tonnes of mainstream (i.e. non-biodegradable) plastic has been produced over the last 65 years or so. Much of this plastic is not effectively recycled or disposed of, has a long environmental residence time and thus accumulates within sediments in Earth's sedimentary systems. Plastics are one of the most visible pollutants in streams, rivers, lakes, and oceans, but are only one of many anthropogenic pollutants to enter the sedimentary cycle. Other ubiquitous anthropogenic pollutants known to occur in sedimentary environments include heavy metals, polychlorinated biphenyls (PCB),

polycyclic aromatic hydrocarbons (PAH), pesticides and other anthropic sedimentary particles derived from mine tailings and construction activities.

Despite anthropogenic pollutants being a great threat to the sustainability of present ecosystems and human well-being, there is comparatively little understanding of the fate of pollutants once they leave the coastal realm. Whilst it is known that certain pollutants are being transported to the distal parts of deep-marine systems through complex and interacting sedimentary and biological processes, there is still much effort needed to understand the dispersion and accumulation of anthropogenic pollutants on the seafloor. Very little is known of the relationship between terrestrial and deep-marine sediment transport pathways, in terms of pollutant transfer across the continental shelf. In addition, the residence time, and consequently the impact, of pollutants in different deep-marine sedimentary environments is poorly understood. Sedimentary research over the past decade showed that submarine canyons are prone to trap, accumulate and flush sediment particles from shallow to deep-marine environments with variable intensity over short time scales. While canyons and channels may concentrate certain pollutants, the less-dense more-mobile pollutants may be more widely dispersed across continental shelf and slopes. Developing a better understanding of the hydrodynamic and sedimentary processes transporting pollutants to deep-marine environments, their distribution and ultimate fate is critical. These scientific questions require a holistic approach through the interaction of physical and experimental sedimentologists, stratigraphers, geochemists and geobiologists, providing both the process-based and long-term perspectives that are currently lacking.

We welcome all contributions that investigate the dispersion and accumulation of anthropogenic material in deep-marine sedimentary environments, in particular those that take a holistic or source-to-sink view and provide perspectives on future research activities and the role of sedimentary geologists within them.

A quiet revolution: Are analogue and numerical experiments changing how we understand stratigraphy?

Peter Burgess, Jinyu Zhang, Robert Duller, and Kyle Straub

Increasing number of analogue and numerical modelling experimental studies are impacting on what we understand about stratigraphy, generating many results of significance to how strata accumulate and are buried and preserved. Some of those results confirm what we suspected based on outcrop interpretations and existing conceptual models, but many challenge, and even refute and overturn existing stratigraphic conceptual models. Clearly such results are then an important part of the scientific method for advancing our stratigraphic understanding, yet despite this there is often little penetration of the results from the experimental studies back into the broader stratigraphic community, who often continue to apply and develop those same conceptual models. Key aims of the session would be to provide an update on the latest experimental work, both analogue and numerical studies, to discuss how such models can be tested against and used in interpretation of outcrop and subsurface datasets, and to explore how important modelling results can be better communicated and integrated back into the broader sedimentological and stratigraphic community.

Sedimentary Geology on Earth, Mars and beyond: From deposition through diagenesis

Sally Potter-McIntyre and Roger Wiens

Sedimentary environments on Mars have been investigated via robotic rover missions since 2004 using traditional sedimentology and stratigraphic tools, including many terrestrial analog studies. The martian environments observed by rover missions thus far range from putative hot springs at Gusev crater, to the eolian Burns formation, to lacustrine and deltaic processes at Gale crater. We seek to broaden the discussion by including terrestrial sedimentologists who study diagenesis, and depositional processes at

similar eolian, lacustrine, and deltaic environments. Submissions on comparative sedimentology from other planets and looking to the future Mars 2020 Mission are also welcome.