

# AAPG Bulletin *Super Basin Initiative*

**Charles A. Sternbach, President of AAPG (2017/2018)**

The *AAPG Bulletin* introduces a new initiative for its second century—the super basin series. The inaugural publication features an overview of the super basin concept by Bob Fryklund and Pete Stark (IHS Markit). AAPG plans to roll out new super basin papers regularly in the months ahead. Together with AAPG Editor, Barry J. Katz, our plan is to build a legacy of foundational papers of the world's top petroliferous areas that continue to produce prodigious amounts of energy (Figure 1). We anticipate that these papers will be revisited as a valuable resource in the years and decades ahead. The authors of these papers will be invited and acknowledged for their expertise in their particular basin or region. It is also envisioned that super basins will be an important component of AAPG conferences and technical events.

These publications will show the importance of geoscience as these basins continue to have new life breathed into them by innovative geoscientists using new technology and an increased understanding of how rocks tell the story. This series will frame the geoscience architecture of the world's most petroliferous basins including an understanding of their petroleum systems, richness, distribution, and position in the stratigraphic column of the source rocks and their maturity and an appreciation of the reservoirs, seals, and structural configuration. For example, the Permian Basin will be included in this series. It is endowed with multiple rich source rocks (Simpson, Woodford, Barnett, and Permian/Pennsylvanian) deep within the sedimentary section that contains many reservoir seal pairs, all

within the oil and gas window, a shallow regional evaporite seal and a structural evolution that prevent leakage to the surface, abundant surface infrastructure, open access to mineral rights, and favorable regulation.

*AAPG Memoir 74: Petroleum Provinces of the Twenty-first Century* (Marlan Downey, Jack Threet, and William Morgan, 2001) was a landmark publication for frontier exploration. The super basins concept is a dramatically different focus—a return to established mature basins where resources are known to be present, and will be a key resource for tomorrow's oil and gas supplies.

Super basins, as defined by Fryklund and Stark, are established producers with at least 5 billion BOE produced and 5 billion BOE remaining recoverable, two or more petroleum systems or source rocks, stacked reservoirs, existing infrastructure/oil field services, and access to markets. Horizontal drilling and multistaged horizontal fracturing and their unconventional resource potential are driving the onshore super basin renaissance. Improved seismic imaging, particularly below salt (or obscured layers), is driving offshore super basins rejuvenation. The Permian Basin, Gulf of Mexico, and Middle East basins are prototype oil and gas prone super basins.

Energy is where you find it. In many cases, the most promising reserves for today and tomorrow are in areas that have long been productive. The total petroleum systems concept guides our approach. Much has been said and written about peak oil. Peak oil is a concept defined by a population of energy accumulations known, detectable, and producible at a particular time and place. When there are “multiple” peaks to a basin historical hydrocarbon production, each peak represents new technology and ideas that resurrect a maturing or declining petroleum province. Many of the super basins that will be featured in this series discuss basins that only recently were thought to be played out but are now experiencing production peaks and in some cases exceeding production peaks of previous decades, such as in the Permian Basin. The super basin series will also discuss the new technology driving this rejuvenation and the sharing of best practices of these new technologies that can be applied in various super basins.

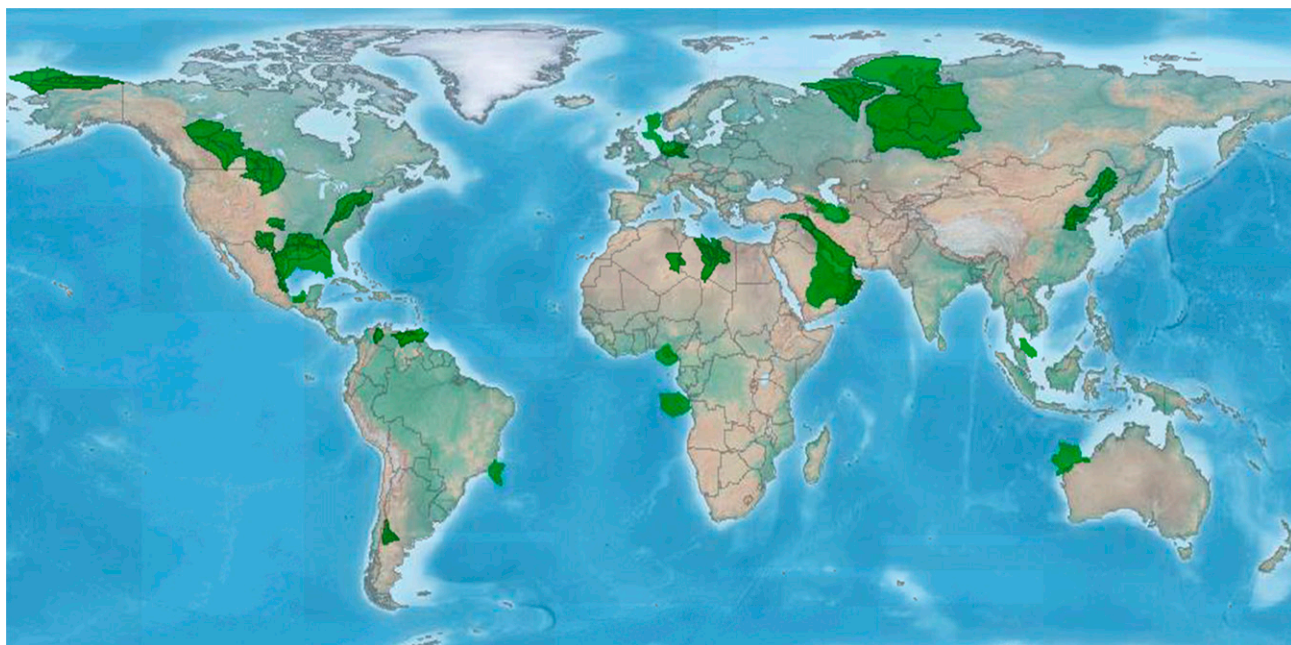
---

Copyright ©2018. The American Association of Petroleum Geologists. All rights reserved.

<sup>1</sup>Star Creek Energy Company, Houston, Texas; carbondude@gmail.com

Manuscript received January 8, 2018

DOI:10.1306/pn010818



**Figure 1.** Map of top 25 super basins (courtesy IHS Markit).

Topics the papers will address include

- What makes a super basin special and unique and what can we learn from them?
- What are the critical geoscience elements that contribute to success?
- What is the exploration/production history, and what are the major plays with remaining potential—conventional, unconventional, and field growth.
- What are key innovations in each super basin like: adoption of horizontal drilling, hydraulic stimulation, completion and drilling techniques, and seismic imaging that helped unlock the potential and what is needed to grow it further?
- How do “above ground” issues like politics, access, mineral ownership, and geography influence realizing the full resource potential of each super basin?
- Will the basin be a regional or global disrupter?

In addition to their geologic energy endowment, super basins have large scale and infrastructure to incubate new technology. Technology nurtured and proven in super basins has great relevance and application to basins of all sizes. Thus, super basin papers will have widespread value to energy producers not just in super basins. Super basins are creating valuable contributions to our energy, economy, and environment. We will continue to enjoy abundant and affordable energy due to super basins. In addition, super basins will have a great impact on sustainability, security, and geopolitical factors.

We believe that (1) our energy industry has made major contributions to global prosperity, (2) this prosperity will grow far into the future, and (3) professional societies like AAPG will continue to play a key role in preparing men and women to provide this energy and prosperity long into our next century. Thus, we begin the super basins initiative for the *AAPG Bulletin*.