

# PBS-SEPM NOVEMBER LUNCHEON

Tuesday, November 15, 2022 – 11:30AM

Ranchland Hills Golf Club & Online via Microsoft Teams

**Early Bird Rate \$25 | Walk-In/Late RSVP \$35 | Student \$10 | Virtual FREE**

Register by 3PM on 11/11: [www.pbs-sepm.org/events](http://www.pbs-sepm.org/events) | [info@pbs-sepm.org](mailto:info@pbs-sepm.org) | (432) 279-1360



## Middle East Dust Storms and Their Economic Importance

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### ABSTRACT

A Middle East dust storm, referred to as a shamal or haboob, is a strong storm front that lifts dust into the atmosphere as the storm front moves across the desert floor. Dust storms are massive and transport large quantities of clay, silt, and sand from the northwest to the southeast across the Arabian Peninsula. Storm fronts move as a dense wall that can be up to one kilometer high and progress forward as a massive slow-moving wall (20 km/h). As a dust storm sweeps over an area sun light is blotted out and visibility is reduced to only a few meters. These dust storms are stronger during the day and weaken in the evening. Most dust is picked up in Jordan and Syria and transported southeast.

What is the difference between a shamal and a haboob? A Shamal, Arabic for north, is a northwesterly to southeasterly wind that blows over Iraq, Kuwait, and Saudi Arabia, which creates large dust and sandstorms. A haboob is a strong wind that occurs primarily along the southern edges of the Sahara in Sudan and is associated with large sandstorms and dust storms and may be accompanied by thunderstorms. So, both are the same but bear different names in the Middle East and North Africa.

As a result of a dust storm, grains of silt and sand are coated with a fine layer of clay. Clay coatings inhibit syntaxial quartz overgrowths, preserve porosity-permeability, and form good reservoirs in eolian deposits in the subsurface of the Middle East. However, permeability can be reduced by diagenetic growth of clays that bridge across pores and pore throats.

Present-day eolian sand dunes have been studied and compared to ancient sand dunes that are productive of hydrocarbons in the Arabian Peninsula. Studies were done to document how porosity-permeability was preserved in eolian deposits. Sand dunes are products of reworking by wind, which include reworking by Shamals-Haboobs.

During dust storms, grains move by creep, saltation, and suspension. This process moves soil, composed of clay, silt, and sand, from one place and deposits it in another place. During strong dust storms some infrastructure can be damaged, such as trees being uprooted and blown over. Sand dunes moving from northwest to southeast drift across roads and require considerable effort to remove the sand via bulldozers.

Breathing in dust can cause respiratory distress. It is said that you can tell that a person lives in a desert by an X-ray of that individual's chest, which images fine dust coating their lungs.



**A Dust Storm Front in the Desert of Central Saudi Arabia**

**BIOGRAPHY:** Utah native and Green Beret, Dr. "Bob" Lindsay, began a geoscience career with a BS in Geology from Weber State College, followed quickly by an MS in Geology from Brigham Young University. Bob spent several years with Gulf Oil, Chevron, ChevronTexaco, and Saudi Aramco in research and applied positions. While at Saudi Aramco, Mr. Lindsay completed a PhD in Geology from the University of Aberdeen and taught graduate level carbonate sedimentology at King Faud University of Petro-leumand Minerals. Bob is now consulting, and teaching as an Affiliated Professor at Brigham Young University, Provo and Idaho. Dr. Lindsay and his wife Linda have five children, twenty grandchildren, and one great-grandchild.