The existence of other very old rocks in east-central Alaska, the White Mountain Group, suggests that rocks of this age are known from the North Slope, leaving the source of the ash unclear. It is possible that the ashes were deposited during some major volcanic eruption, perhaps on the Kula plate, which collided with North America about 55 million years ago (the Kula-North American collision, or KNC). As this collision occurred, the Kula plate was subducted under the North American plate, bringing the ash deposits to the surface. The ash deposits are thought to be from this collision, as they are found throughout the state of Alaska.

Persian Gulf and clearly exotic to Alaska. Today, these sedimentary rocks and pillow lavas, which were formed on the ocean floor, are overlain by younger, shallow-water limestone deposits, which is the target of one of the world's largest zinc mines. In some places, the deep marine rocks were overlain by younger, shallow-water limestone deposits, which supported a sabkha environment (an arid coastal environment) similar to today's desert environments. The shallow-water limestone deposits are found in the Brooks Range, the Yukon, and the central, western, and northern parts of Alaska. At the same time, some of these igneous rocks are from a continent. The existence of other very old rocks in east-central Alaska, the White Mountain Group, suggests that they were deposited at the same time as the ash deposits were formed. This indicates that the ash deposits were from a major volcanic eruption, perhaps on the Kula plate, which collided with North America about 55 million years ago (the Kula-North American collision, or KNC). As this collision occurred, the Kula plate was subducted under the North American plate, bringing the ash deposits to the surface. The ash deposits are thought to be from this collision, as they are found throughout the state of Alaska.

As these terranes were tectonically assembled, their rocks were deformed and metamorphosed. Metamorphism is the process by which rocks are changed from one form to another, typically due to the influence of heat and pressure. During metamorphism, the original minerals in the rock are altered, and new minerals may form. The resulting metamorphic rocks are typically more dense and have a different texture than the original sedimentary rocks.

In western and northern Alaska, south of the Brooks Range, there is evidence of widespread igneous activity and metamorphism that took place, and the rocks were deformed and metamorphosed. The resulting metamorphic rocks are typically more dense and have a different texture than the original sedimentary rocks. The deformation and metamorphism were caused by the collision of the Farallon and North American plates, which occurred about 70 million years ago (the Farallon-North American collision, or FNC). As the Farallon plate was subducted under the North American plate, the resulting deformation and metamorphism changed the original sedimentary rocks into metamorphic rocks.

Alaska is a collage of terranes, which are pieces of continental crust that have been added to the North American plate over the past 600 million years. These terranes have different petrological, geologic, and tectonic characteristics, and they are thought to have been added to the North American plate at different times. As these terranes were tectonically assembled, their rocks were deformed and metamorphosed. Metamorphism is the process by which rocks are changed from one form to another, typically due to the influence of heat and pressure. During metamorphism, the original minerals in the rock are altered, and new minerals may form. The resulting metamorphic rocks are typically more dense and have a different texture than the original sedimentary rocks.