The Andean fold-thrust belt and associated foreland basins, from eastern Venezuela to the southern tip of Argentina, represent one of the world's most prolific hydrocarbon provinces. Common to hydrocarbon systems of this orogen is late Tertiary deformation which is responsible for structural traps, migration pathways and the tectonic load which drove subsidence and source maturation. Classic asymmetric foreland basins trapped large volumes of hydrocarbons expelled from the fold-thrust belt. Foreland deformation was controlled by inherited basement fabric, late Tertiary stress orientation and the geometry of the subducted slab.

The hydrocarbon systems of the Andean fall into several categories, each related to the regional tectonic history of the respective areas. The northernmost of these (Venezuela to northern Peru) had its initial development during Jurassic breakup of Pangea and the formation of related rift grabens along northern / northwestern South America, followed by passive margin sedimentation during thermal subsidence. Locally reservoirs and source intervals were deposited within the passive margin sequence but it was not until the Cenomanian global highstand that conditions became ideal for source deposition. At this time the strand line was forced landward, allowing pelagic sedimentation to occur in a more basinward position, free of clastic dilution. Elevated organic productivity was, at least in part, related to upwelling along the west to northwest-oriented margin. The Querecual, La Luna, Gautier and Villeta source rocks deposited during this period are responsible for most of the hydrocarbons of northern South America and the largest fraction of the volumes of the entire South American continent. South of the present border between Peru and Ecuador, the passive margin regime changed to one which was subduction-related and affected by tectonism and igneous activity of the magmatic arc. Rather than deposition along a passive margin, time-equivalent source rocks were deposited in a foredeep related to early Andean compressional deformation. Coincident with this transition, the source rocks are generally less rich. Although in the axes of depoceniers related to the Jurassic rift grabens, maturation occurred early (e.g. Eastern Cordillera of Colombia), the primary yield from Cenomanian-Turonian source rocks did not occur until the Tertiary during both sedimentary burial prior to the onset of Andean compression and tectonic loading related to Andean orogenesis. Tertiary orogenesis along the northern margin of South America was diachronous progressing systematically from west to east and was driven by transpressional interaction with the Caribbean plate.

Structural styles in the northern Andean orogen display the influence of Jurassic rifting reactivated in compressional / transpressional deformation. The Eastern Cordillera of Colombia is a large Jurassic extensional basin which was uplifted in response to Tertiary compression. The proposed uplift mechanisms include an interplay between thin-skinned deformation of the Mesozoic sedimentary package followed by basement-involved reserve faulting (inverted normal faults) or, alternatively, crustally-rooted low angle deformation.