
PALEOTECTONIC HISTORY, WESTERN NORTH AMERICA

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Paleotectonic, modified isopach maps have been prepared for all systems from Cambrian through Jurassic. The data have been taken from four summers field work in the western United States and Canada plus a massive survey of the literature. Incomplete sections, faulted sections, and eroded sections have been eliminated wherever possible, and an attempt has been made to develop only the broad regional pattern.

Tectonic land welts, volcanic land island areas, and permanent land areas have been pinpointed and located on maps by extensive use of primary features in sediments. The gradual evolution of all western North America, from a submerged geosynclinal area to a permanent land area, has been developed.

Almost without exception, each system of rocks shows a shallow cratonic shore zone characterized by mixed limestones and clastic rocks, a thick bioclastic miogeosynclinal lens of limestone deposited on the continental slope and a deeper water, off-shore, silt-mud zone that interfingers abruptly with the miogeosynclinal carbonate facies. Cascadia as such is essentially non-existent, but rather, the whole area was flooded again and again by the sea, but so remote from a source area that whole systems may be represented by a few feet of mud deposition.

First indications of tectonic response to sedimentation are recorded in angular mud and siltstone conglomerates, often silicified, and commonly mistakenly called chert conglomerates. The rising tectonic welts next became volcanic, and thick sections of various volcanic rocks, usually andesitic, sediments cannibalized from the volcanic rocks, and interbedded clastic rocks accumulate. The maximum, compressive, deformation period follows the volcanic interval, followed or accompanied by the gradual isostatic rise of the granitized sediments and mobile granites.

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