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CONTENTS

INTRODUCTION

The North American Continent-Ocean Transects Program is a study of the structure and Phanerozoic evolution of the transitional region of North America between its bordering ocean basins and the craton or long-stable continental interior. Studies are concentrated in 26 corridors, each 100 to 200 km wide, that are chosen to provide a comprehensive comparison of the variations in modern and ancient continental margin structure and tectonics.

In the broadest sense, North America can be divided into four major tectonic domains. The boundaries and composition of at least some of these domains are not yet well documented or agreed upon, and it is a goal of the Transects Program to improve tectonic divisions and delineations.

Domain 1: Nuclear North America: This is the sialic nucleus of North America which has behaved as a contiguous, nearly rigid unit at least since the Proterozoic. Nuclear North America is a single tectonic domain, and it provides the reference frame for the history of relative motions of domains in the tectonically active outboard zones in the last 600 Ma and more.

Domain 2: Deformed North America: This domain like the former is composed of Proterozoic North America and its cover but it has undergone significant deformation related to Phanerozoic continental margin tectonics. Unlike domain 1, domain 2 consists of multiple tectonic units which presumably reflect different loci, times, and mechanisms of plate boundary events that affected the margin of sialic North America. Even though domain 2 is tectonically fragmented, the pieces in general appear not to have moved great distances with respect to one another or to domain 1. Exceptions exist at least in western North America where domain 2 may have been the source of continental fragments which have undergone large displacements and now exist in domains 3 or 4 or are among accreted terranes of other continents.

Domain 3: Ancient Displaced Terranes: Domain 3 comprises tectonic units which have certainly or most likely undergone large transport but which are now fixed with respect to nuclear North America. Such terranes include fragments of continents, island arcs, oceanic lithosphere, deformed oceanic strata, and rocks of uncertain origin. Domain 3 also includes overlap strata and cross-cutting plutonic rocks which formed in place after accretion of displaced terranes to North America.

Domain 4: Terranes Presently Being Displaced: The modern continent of North America incorporates parts of the North American, Pacific, and perhaps, Caribbean plates. Segments of geographic North America in the latter plates are moving with respect to the other domains along active plate junctures which bound tectonic North America. In the region of Corridor C2 the San Andreas transform system constitutes such a juncture which bounds an actively displacing fragment of geographic North America.

Within this continental context, study corridors have been chosen to transect the tectonic domains from nuclear North America to adjacent oceanic lithosphere, where possible. The 26 corridor locations are selected to provide hemispheric representation of North American continent-ocean transitions, but more important, they incorporate the most significant examples of modern and ancient continental margin structures.

Corridor C2 transects the North American Cordillera between Pacific Plate ocean crust off the central California coast and nuclear-type North