Systematization and importance of accretionary complex geology

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Since the establishment of plate tectonics in 1968, geology of subduction zone has been drastically developed. In particular, the downward growth of accretionary complex was confirmed, which is opposite against traditional thought of upward younging that is traditional rule called Steno’s Law in geology. Accretionary complex geology can open new era to unravel the Earth’s history. The reconstructed stratigraphy called “Ocean Plate Stratigraphy (OPS)” works as a powerful tool to reconstruct the history of annihilated oceanic plate. Specifically, OPS provides information about (1) the age of oceanic plate since the formation at MOR until the trench, and the time of subduction, (2) hinterland or provenance of cap turbidite, intra-oceanic or continental margin, (3) time capsule recording the events beyond Earth and even beyond our solar system, (4) mechanism to subduct into mantle based on duplex deformation at different depth and the sense of relative plate motion, (5) ridge metamorphism, (6) ecosystem associated with MOR hydrothermal system or OIB from associated microfossils; hence life evolution, and (7) seawater chemistry at given geologic age or salinity through time from fluid inclusion trapped in hydrothermal quartz. Such information enables us to infer when plate tectonics initiated.

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