

TECTONICS AND ISOTOPIC COMPOSITION OF SAINT PAUL TRANSFORM FAULT

1SICHEL,S.E., 2ESPERANÇA,S., 2WALKER,R.J., 3HORAN,M.F, 4JUTEAU,T., 5HEKINIAN,R., 6UDINTSEV,G., 7GARCIA,E., 5SICHLER,B. AND 5APPRIOUAL,R 1DEPT. GEOLOGIA, UFF, BRAZIL. 2DEPT.GEOLOGY,UNIV. MARYLAND, USA, 3DTM, WASHINGTON, USA 4 DEPT. SC. TERRE, UBO, BREST, FRANCE. 5IFREMER, BREST, FRANCE. 6MOSCOW AC. SC, RUSSIA, 7SOUTHAMPTON OCEAN, UK.

THIRTEEN Nautilite dives (5190m - 1000m) IN THE SAINT PAUL T. F. REVEALED THAT THE N FLANK IS ACTIVELY FAULTED AND COMPOSED OF MYLONITIC PERIDOTITES. THE S FLANK HAS A THICK COVER OF SEDIMENTS AND UNDEFORMED PERIDOTITES, INDICATING LITTLE OR NO TECTONIC ACTIVITY. ABYSSAL PERIDOTITES SAMPLED HAVE A LARGE RANGE OF OS ISOTOPIC COMPOSITIONS (OS I.C.= $187\text{OS}/188\text{OS}$ OF 0.11986 TO 0.1496) BUT THE MAJORITY HAVE δOS CHONDRITIC AVERAGE. SUB-CHONDRITIC OS I.C. CANNOT RESULT SIMPLY FROM INTERACTION BETWEEN YOUNG LHERZOLITIC MANTLE ISOLATED DURING THE OPENING OF THE ATLANTIC OCEAN AND MELTS OF AVERAGE MORB-TYPE OS I.C. THE RESULTS ARE CONSISTENT WITH THE INTERPRETATION THAT THESE ABYSSAL PERIDOTITES RECORD A RE DEPLETION EVENT THAT IS MORE TYPICAL OF MANTLE THAT WAS SEPARATED FROM ASTHENOSPHERE BETWEEN 1 AND 0.3 GA AGO. SOURCES OF THESE MATERIALS ARE LIKELY TO BE OLDER LITHOSPHERE, FORMED IN REGIONS ONCE UNDERLYING CONTINENTAL CRUST OR OLD, SUBDUCTED OCEANIC CRUST. RE-DEPLETED MODEL AGES RANGING FROM 0.56 TO 1.0 GA FOR FOUR SAMPLES INDICATE THAT THE LITHOSPHERE ENTRAINED IN THIS PART OF THE OCEANIC MANTLE COULD HAVE FORMED IN BRASILIANO OROGENY. THE RE-OS SYSTEMATICS FOR THESE ABYSSAL PERIDOTITES STRONGLY SUPPORT PREVIOUS SUGGESTION THAT PART OF THE EQUATORIAL ATLANTIC OCEANIC CRUST IS ANOMALOUS AND HAS CONTINENTAL AFFINITY.