Extensivehydrothermal activity revealed by multi-tracer survey in the Wallis and Futuna region (SW Pacific)

C. Konn, E. Fourré, P. Jean-Baptiste, J.P. Donval, V. Guyader, D. Birot, A.S. Alix, A. Gaillot, F. Perez, A. Dapoigny, E. Pelleter, J.A. Resing, J.L. Charlou, Y. Fouquet

PII: S0967-0637(15)30200-4
DOI: http://dx.doi.org/10.1016/j.dsr.2016.07.012
Reference: DSRI2666

To appear in: *Deep-Sea Research Part I*

Received date: 10 December 2015
Revised date: 6 July 2016
Accepted date: 25 July 2016

Cite this article as: C. Konn, E. Fourré, P. Jean-Baptiste, J.P. Donval, V. Guyader, D. Birot, A.S. Alix, A. Gaillot, F. Perez, A. Dapoigny, E. Pelleter, J.A. Resing, J.L. Charlou and Y. Fouquet, Extensivehydrothermal activity revealed by multi-tracer survey in the Wallis and Futuna region (SW Pacific), *Deep-Sea Research Part I,* http://dx.doi.org/10.1016/j.dsr.2016.07.012

Extensive hydrothermal activity revealed by multi-tracer survey in the Wallis and Futuna region (SW Pacific)

C.Konn[1*], E. Fourré[3], P. Jean-Baptiste[3], J.P. Donval[1], V. Guyader[1], D. Birot[1], A.S. Alix[1], A. Gaillot[2], F. Perez[3], A. Dapoigny[3], E. Pelleter[1], J.A. Resing[4], J.L. Charlou[1], Y. Fouquet[1], scientific parties

[1]Ifremer, Laboratoire des Cycles Géochimiques et ressources, CS10070, F-29280 Plouzané, France

[2]Ifremer, Service Cartographie Traitement de Données et Instrumentation, CS10070, F-29280 Plouzané, France

[3]LSCE, UMR 8212 CEA-CNRS-UVSQ, F-91191 Gif-sur-Yvette, France

[4]Joint Institute for the Study of the Atmosphere and the Ocean, University of Washington and NOAA-PMEL, 7600 Sand Point Way NE, Seattle, Washington 98115, USA

[*]Correspondance: cecile.konn@ifremer.fr

Abstract

The study area is close to the Wallis and Futuna Islands in the French EEZ. It exists on the western boundary of the fastest tectonic area in the world at the junction of the Lau and North-Fiji basins. At this place, the unstable back-arc accommodates the plate motion in three ways: (i) the north Fiji transform fault, (ii) numerous unstable spreading ridges, and (iii) large areas of recent volcanic activity. This instability creates bountiful opportunity for hydrothermal discharge to occur. Based on geochemical (CH_4, TDM, ^3He) and geophysical (nephelometry) tracer surveys: (1) no hydrothermal activity could be found on the Futuna Spreading Center (FSC) which sets the western limit of hydrothermal activity; (2) four distinct hydrothermal active areas were identified: Kulo Lasi Caldera, Amanaki Volcano, Fatu