@AGU PUBLICATIONS 1 2 Journal of Geophysical Research: Solid Earth 3 Supporting Information for Genetic relations between the Aves Ridge and the 4 Grenada back-arc basin, East Caribbean Sea 5 6 Clément Garrocq1, Serge Lallemand1, Boris Marcaillou2, Jean-Frédéric Lebrun3, Crelia 7 Padron4,5, Frauke Klingelhoefer5, Mireille Laigle2, Philippe Münch1, Aurélien Gay1, Laure 8 Schenini2, Marie-Odile Beslier2, Jean-Jacques Cornée1, Bernard Mercier de Lépinay2, Frédéric 9 Quillévéré6, Marcelle BouDagher-Fadel7 and the GARANTI cruise team 10 1 Géosciences Montpellier, CNRS, Université de Montpellier, Université des Antilles, Place Eugène Bataillon, 34095 11 Montpellier, France 12 13 2 Géoazur, Université Côte d'Azur, CNRS, IRD, Observatoire de la Côte d'Azur, Géoazur, 250 Avenue Albert Einstein, 06560 Valbonne, France 14 3 Géosciences Montpellier, Université des Antilles, CNRS, Université de Montpellier, Campus de Fouillole, Pointe-à-15 Pitre, Guadeloupe, France 16 4 Departamento de Ciencias de la Tierra, Universidad Simón Bolívar (USB), Caracas, Venezuela. 17 5 Géosciences Marines, Ifremer, ZI de la Pointe du Diable, CS 10070, 29280 Plouzané, France 18 19 6 Université de Lyon, Université Claude Bernard Lyon 1, LGLTPE, CNRS, Bd du 11 Novembre 1918, 69622 Villeurbanne, France 20 7 Office of the Vice-Provost (research), University College London, 2 Taviton street, London WC1h 0BT, UK 21 22 **Contents of this file** 23 24 Figures S1 to S5 25 26 Additional Supporting Information (Files uploaded separately) 27 28 Data Set S1 (ds01.zip) 29 30

31 Introduction

This supporting information includes five figures providing more details about our seismic calibration. The first four figures (S1 to S4) show the well-seismic ties and horizon propagation. Figure S5 is a comparison between the seismic units described in our article and the megasequences previously defined by Aitken et al. (2011) in the southern Grenada Basin. Seismic lines cited in the article but not shown (GA01, GA25C, GA26A, GA26B, GA28A) are provided with an A0 location map in a separate zip file (ds01.zip).

39



Figure S1: Seismic calibration using wells in the Carúpano basins.



Figure S2: Horizon propagation in the Grenada Basin. Unit discontinuities are written in bold.



 Figure S3: Seismic calibration using wells on the Aves Ridge.







Figure S5: Comparison between the seismic units defined in this study and the megasequences defined by Aitken et al. (2011)