



## **COFFEE BEVERAGE QUALITY ASSESSMENT BASED ON ETA/CPTEC-HadCM3 MODEL (A1B-IPCC/SRES SCENARIO), SOUTHEASTERN BRAZIL**

A. Giarolla, N. Resende, S. C. Chou, P. S. Tavares, and D. C. Rodrigues

Instituto Nacional de Pesquisas Espaciais, Centro de Ciência do Sistema Terrestre (CCST/INPE), Av. dos Astronautas, 1758, São José dos Campos- SP, Brazil, 12227-010, email: angelica.giarolla@inpe.br; nicole.resende@yahoo.com.br; chou.sinchan@cptec.inpe.br; priscila.tavares@inpe.br; danic\_rodrigues@yahoo.com.br

Environmental factors influence the coffee beverage quality and air temperature has a significant importance in this process. The grain maturation occurs very quickly in regions that present high temperatures and sometimes there is not enough time to complete all this phase adequately. In the other hand, with mild temperatures, the grain maturation occurs more slowly and it promotes a better quality beverage. The aim of this study was to assess the coffee beverage quality in the southeastern Brazil, based on climate projections using the Eta-CPTEC regional model driven by four members of an ensemble of the Met Office Hadley Centre Global Coupled climate model (HadCM3). The global model ensemble was run over the 21st century according to IPCC SRES, A1B emissions scenario. Each ensemble member presented different climate sensitivity in the analysis. The Eta-CPTEC-HadCM3 model was configured with a 40-km grid size and was run over the period of 1961-90 to represent a baseline climate, and over the period of 2011-2100 to simulate possible future changes and the effects on the coffee beverage quality. A coffee beverage quality classification, which depends on the annual air temperature proposed by Bressani (2007) and also, a quality coffee beverage sensory classification, based on Camargo and Cortez (1998) were considered in this study. An evaluation of the systematic errors (BIAS) for each member for the period from 1961 to 1990 was made. The results presented by Eta/CPTEC-HadCM3 model indicated that in the case of an occurrence of A1B emission scenario, the coffee beverage quality could be affected in this region due to the fact that the flavor may become stronger and unpleasant caused by rising air temperatures. The BIAS evaluation and subsequent errors removal demonstrated improvement in the scenarios simulations. A short review concerning agronomic techniques to mitigate extreme meteorological events or global warming on coffee crop based on Camargo (2010) also is presented in this study as complementary information.

Bressani, E. Guia do Barista. Da origem do café ao espresso perfeito. Café Editora, 2007. 210 p.

Camargo, M. B. P. The impact of climatic variability and climate change on arabic coffee crop in Brazil. *Bragantia*, Campinas, v.69, no.1, 2010.

Camargo, a. P; Cortez, J. G. Efeito do clima na qualidade de bebida do café nas condições de São Paulo e áreas próximas de outros estados. In 24 Congresso Brasileiro de Pesquisas Cafeeiras. Poços de Caldas, Anais... Poços de Caldas, Embrapa Café, 1998. p. 42-44.