



FORM PER PROGETTI BANDO DOTTORATO XXXIV CICLO

1. Project title

Sub-orbital climate variability, trigger and threshold of Mid-Pleistocene Transition

2. Proposer

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3. Research Unit

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4. Key words

(Max. 5 – at least 2)

Mid Pleistocene Transition; Calcareous nannoplankton; Carbon Cycle; Asian Monsoon; IODP Expedition 367/368

5. Abstract

(Max. 1.500 characters with spaces)

Earth's climate during the Quaternary has switched between two dominant states: glacial and interglacial. Between 1250 and 650 ka, the spectral character of the climate signal changed from 41 kyr periodicity to a lower-frequency, higher amplitude, quasi-periodic 100kyr cycle. This variation is called the Mid-Pleistocene Transition (MPT). Since the seventies much work has been published on the origin and structure of the MPT but the debate continues regarding the nature of the climatic feedbacks and teleconnections involved in this transition. At first, variations on high-latitude ice volume were considered the main cause, however today it is clear that other key components of the climate system began to evolve before ice-sheets.

This project aims to be part of this global effort focusing on global carbon cycle and Asian monsoon. The student will work on sediments recovered during IODP Exp. 367/368 (Site U1505, South China Sea) and will collect data about calcareous nannoplankton and clay minerals as proxies for primary productivity, carbonate production/export/preservation and Asian monsoon evolution. The student will benefit of a joint supervision between the University of Pavia (Italy),



and the Tongji University (China) and, given the nature of the IODP program, there will be ample opportunities to work with overseas collaborators. The paleoclimate history of the area is one of the main goals of the IODP Expeditions 367/368 and data and information will be shared by the shipboard scientific party in the next years.