

Astrobiology Road Mapping (AstRoMap): A new FP7 program

F. Gómez (1), N. Walter (2), G. Horneck (3), C. Muller (4), P. Rettberg (5) and M. Capria (6)
(1) Centro de Astrobiología (INTA-CSIC), Torrejón de Ardoz, Madrid 28850, Spain, (2) European Science Foundation, Strasbourg, France, (3) Association pour un Réseau Européen d'Exo/Astrobiology (EANA), France (4) Belgian Institute for Space Aeronomy, Belgique, (5) Deutsches Zentrum für Luft- und Raumfahrt (DLR), Germany (6) National Institute for Astrophysics, Italy. (gomezgf@cab.inta-csic.es / Fax: +34-915-201074)

Abstract

AstRoMap (Astrobiology Road Mapping activity) is a collaborative project which pretends to provide the European Planetary Science Community with a road map in space science and astrobiology. The goals of the project will be: (i) to pose big questions that could be tackled by space missions: and (ii) the identification of those space missions to be developed in future programs and which could answer those big questions. This collaborative infrastructure will include the organization of expert panels and international workshops in order to discuss about those big questions and the science objectives by the community to be addressed. The main deliverable would be a Roadmap document.

1. Introduction

The outstanding results gained by European space missions as Mars Express (the first purely European mission to another planet) or the Huygens probe on Titan landing in January 2005 gave to the European Planetary Science community wide spread recognition and attention by the EU political establishment, the international public mass media and the European public in general. Relevant European participation in space missions are currently in progress with a major support of investment in the Europe Southern Observatory (ESO). European leadership in the search for extra-terrestrial systems indicates the breadth and innovation of the planetary scientific community. The ExoMars mission for sending a rover to Mars in 2018 to search for evidence of past or present biological activity is included in the Aurora programme for planetary and space exploration in the coming years. The "Cosmic Vision" science programme of ESA includes several challenging

candidate planetary missions: Marco Polo-R to a near-Earth asteroid, LAPLACE and TANDEM to Jupiter, Saturn and their moons. The 2012 work programme in the FP7 framework is placed in a successful time window after a series of missions which have produced great volumes of scientific data and with a promising short-term future. Some other missions are on route to their targets of in preparatory phase, and some are in the study phase for Europe's Cosmic Vision and Aurora programmes.

2. Objectives

The main objectives we are proposing are the identification of challenging scientific questions to be tackled through future space missions and the definition of those missions. Expert's panels and international workshops where the whole European planetary science community would be consulted for delivering a roadmap for next decades would afford this objective.

The main objectives of the AstRoMap project will be to:

Identify the main planetary science issues to be addressed by Europe in the next decades

Identify potential mission concept that would allow addressing these issues

Identify the technology developments required to enable these missions

Provide a prioritised roadmap integrating science and technology activities as well as ground-based approach

Mapping scientific knowledge related to astrobiology in Europe

2.1. Added Value

The main added value of the AstRoMap programme is the identification and definition of future space missions to be developed beyond 2020. Similarly to what could be defined as a Decadal Survey we pretend to identify big challenges in the form of scientific questions related with planetary sciences which could be tackled through future space missions. The questions themselves are important innovations for future science also but we pretend to go further identifying the gaps on the actual knowledge that would be needed to be fixed for human being knowledge improvement. Other important innovation would be the definition of new technological developments for tackling those questions and which would be used in the identified and defined 2020 decade space missions.

Acknowledgements

We would like to acknowledge EC for the FP7 Space program with project number 313102 (AstRoMap).