

**PDC2015**  
**Frascati, Roma, Italy**

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**PoDET: A hub for dedicated orbits and ephemerides computations and general predictions**

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**ABSTRACT**

The monitoring of the Earth's space environment has taken some importance during last decade, particularly in Europe. On one hand the phenomena involved can have various socio-economic consequences and, secondly, our understanding these phenomena, risks and forecasts remains very incomplete.

Recently SMPAG (Space Mission Planning Advisory Group) and IAWN (International Asteroid Warning Network) have been set up within the COPUOS (Committee On the Peaceful Uses of Outer Space) frame at the UNO. Besides, the NEOShield European research project in which we are involved, is studying space mission demonstration for mitigation of a threatening near-Earth object (NEO). This includes analysis of the post-mitigation dynamical evolution (see Eggl et al. this conference). Last, The Space Situational Awareness (SSA) programme of ESA is working to establish a network for issues related to space debris (SST), the space weather (SW) and NEOs (NEO).

At IMCCE, the PoDET hub on the dynamics of the Earth's dynamical environment is studying the effects and forecasts for objects (natural or artificial) orbiting near the Earth. The celestial objects under study are NEOs, asteroids, comets, meteoroids, meteorite streams, and space debris. A global functional analysis framework has been designed. Thus PoDET includes the acquisition of dedicated observation data—essentially astrometrical—or querying databases, the determination and adjustment of orbits of these bodies, general forecasts and ephemeris, impact probabilities computation, and finally dissemination of such data including Virtual Observatory framework. These works hence incorporate or participate to other projects' results: "NEOShield - Mitigation of Threatening asteroid" (PI A.W. Harris), "Long term evolution of MEO orbits (PI A. Rossi), "CABERNET – CAmera for BETter Resolution NETwork (PI J. Vaubaillon), "FRIPON – Fireball recovery and

interplanetary observation network” (PI F. Colas), “Stardust – Asteroid and space debris network” (PI. M. Vasile); as well as "Asterisk - decision-making chain" and “ESTERS – Earth Space Environment Research and Monitoring“ on local levels, or participation to “ADMIRE – Aviation – (Space) Debris and Meteorites Integrated Risk Evaluation (IAASS)” with french CNES. We will present the general context for these actions, The PoDET project and its scientific objectives, developments dedicated tools for databases and ephemeris, and its interactions with other disciplines.

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