

Daily Log: December 14, 2006

Mission Antarctica: French scientist Thomas Saucède

Thomas Saucède is the only French scientist on board the *Polarstern* and the first one to tell us about his work and what he is doing in Antarctica. Here is his story, as reported by our special envoy Dr. Gauthier Chapelle of the International Polar Foundation.



“I am the Director of Conferences at the University of Bourgogne and associated with the research laboratory *Biogéosciences* (a cross-disciplinary research unit of the French National Underwater Research Center). The research developed at the Biogéosciences laboratory is on the interface between the geosphere and the biosphere. We study these two different domains by looking at the close relationships that exist between the world of living things (past and present), its evolution, and the physical environment. The evolution of biodiversity is the central focus of research at Biogéosciences and of my own research through my specialty in fossil and present-day sea urchins.

Sea urchins are particularly well diversified in Antarctic waters, where they are represented by many endemic species. Moreover, the isolation and uniqueness of its marine habitats (extreme temperatures and seasonal ice) make Antarctica an especially interesting region for studying biodiversity. This study has been underway for several years through collaboration between a researcher at the Biogéosciences laboratory and one at the marine biology laboratory of the Free University of Brussels (Belgium). This collaboration is part of the Belgian BIANZO I&II programs for the study of the biodiversity of benthic marine life in Antarctica.

My first experience in Antarctica was participating in a Spanish oceanographic expedition along the Antarctic Peninsula and in Western Antarctica in early 2006, the BENTART-06 expedition. This first contact was also the opportunity to develop new collaborations with Spanish colleagues.

As an extension of that first mission, my work in this current expedition (ANTARCTIC XXIII/8) focuses on studying the biodiversity of Antarctic sea urchins across three complementary tracks:

- (1) A systematic and biogeographic track that determines the geographic and bathymetric distribution of sea urchin species and their evolution.
- (2) A second track centers on the symbioses that are evident between certain sea urchins and many other species of marine invertebrates; the presence of certain sea urchins could be important in the diversity of Antarctic ecosystems.
- (3) A third track concerns sea urchin nutrition, since the presence of food resources is a determining factor in the distribution of species.

The goal of this work is to be able to define and possibly predict whether and how the species of sea urchins react to the current and future environmental changes (measurable warming of Antarctic waters in certain regions, loss of ice cover, invasion of South American species).”

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