Wednesday, April 28, 2010

PSYCHROPHILES AND POLAR ENVIRONMENTS
8:00 a.m. Crystal Salon C

This session focuses on the polar ecology, environments, and geomorphic features that may aid the search for life in icy regions beyond Earth.

Chairs: Jennifer Eigenbrode
Douglas Ming
Peter Doran

8:00 a.m. Price P. B. * Rohde R. A. Bay R. C. Bramall N. E.
Microbial Life in Ice: Habitats, Metabolism, and Survival on Mars [#5263]
Microbes in ice survive for > 1e5 years. With laser fluorimetry we measured tryptophan and chlorophyll at mm depth intervals in cores from six glacial sites. All show a rapid decrease in Trp and Chl in the first 100 m, followed by leveling off at greater depths.

8:30 a.m. Skidmore M. * Bakermans C. Brox T. Christner B. Montross S.
Microbial Respiration at Sub-Zero Temperatures in Polycrystalline Ice [#5417]
We report on the respiration of 14C-acetate at sub-zero temperatures by Antarctic isolates in our laboratory polycrystalline ices, the physical environment of the aqueous veins in these ices and the viability of the organisms within the vein network.

8:45 a.m. Eigenbrode J. L. * Benning L. G. Tobler D. J. Rodriguez Blanco J.-D. Fogel M. L. Amundsen H. Callahan M. Dworkin J. Glamoclija M. Glavin D. Kerr L. Kish A. Mahaffy P. McAdam A. Steele A. Voytek M.
Organic Biosignatures and Habitat Features of Near-Surface Glacial Ice in Svalbard [#5546]
We are investigating the organic inventory and habitat conditions of near-surface (0–1.25 m depth) glacial ice.

9:00 a.m. Boyd E. S. * Skidmore M. Mitchell A. C. Bakermans C. Peters J. W.
Subglacial Methanogenesis and Its Role in Planetary Carbon Cycling [#5463]
Genetic, biochemical, geochemical, and enrichment evidence indicative of an active and sizable methanogenic community associated with subglacial sediments is discussed in the context of planetary carbon cycling.

9:15 a.m. Rivkina E. M. * Sherbakova V. A. Krivushin K. V. Abramov A. A. Gilichinsky D. A.
Permafrost on Earth — Models and Analogues of Martian Habitats and Inhabitants [#5620]
We consider a terrestrial range of cryogenic ecosystems inhabited by viable microorganisms and represented most probable martian environments where the life might be found: permafrost, overcooled water brines and active volcanoes in permafrost areas.
9:30 a.m. Nickles T. D. *

**Antarctic Rock Characterization: A Geomicrobiological Assessment of a Potential Mars Analog in an Extreme Terrestrial Environment** [#5406]

In 2005 a NASA team collected specimens in the McMurdo Dry Valleys of Antarctica. We are studying the interrelationship between endoliths, their habitats, and the environment. We are also examining the role of iron in these microbial communities.

9:45 a.m. Levy J. S. * Fountain A. G. Head J. W. Marchant D. R.

**Physical Controls on Antarctic Dry Valleys Permafrost Geomorphology and Soil Ecosystem Habitability: Cold-Desert Processes and Mars Astrobiological Implications** [#5060]

We present new analyses of the hydrological, chemical, and morphologic properties of permafrost in Taylor Valley, Antarctica, as basis for analysis of near-surface water and nutrient cycling in ancient and geologically-recent Martian terrains.

10:00 a.m. BREAK