SOME THOUGHTS ON THE POTENTIAL OF A POSSIBLE FUTURE LUNAR NETWORK. S.A. Stern[1], J.L. Green[1], J. Adams[1], D.D. Durda[1], T.H. Morgan[1], K. Snook[1], A. Cheng[1]. G. Johnston[1]. [1]Science Mission Directorate, NASA Headquarters, 300 E Street SW, Washington, D.C. 20546 alan.stern@nasa.gov.

Introduction: A renewed era of lunar exploration is upon us. Already, Chinese and Japanese robotic orbiters are making detailed lunar investigations. Later this year, an Indian orbiter and the US orbiter LRO will also arrive in lunar orbit. Early in 2009, the US LCROSS impactor mission will impact one of the lunar poles in search of evidence of near-surface H_2O ice. In 2011, a pair of US spacecraft called GRAIL will orbit the moon to probe its gravity field, interior structure, and by inferences its thermal evolution in exquisite detail.

Although some nations contemplate additional orbiters in the next decade, plans for Chinese, Indian, Russian, and Japanese landed missions are already being formulated.

NASA also desires to undertake landed lunar missions and is architecting a conceptual global lunar network as a backbone of its envisioned robotic surface activities prior to the arrival of humans. Such a network is capable of fulfilling many of the stated recommendations of the recent National Research Council report on *The Scientific Context for Exploration of the Moon* [1].

This concept, called the International Lunar Network (ILN), aims to provide an organizing theme for all landed science missions in the 2010s by involving each landed station as a node in a geophysical network. Ultimately, this network could be comprised of 8-10 or more nodes. Because some are desired to be located on the lunar far side, NASA will study a lunar communications relay satellite capability as part of its contribution to this potential endeavor.

In the ILN concept, each node would include some number of "core" capabilIties (e.g., seismic, heat flow, laser retro-reflectors) that would be extant on each station, reflecting prioritized lunar science goals articulated in the National Research Council's study *The Scientific Context for Exploration of the Moon*. Individual nodes could and likely would carry additional, unique experiments to study local or global lunar science. Such experiments might include atmospheric and dust instruments, plasma physics investigations, astronomical instruments, electromagnetic regolith/crust profiling, local geochemistry, and in situ resource utilization demonstrations, to name just a few.

Additionally, it is envisioned that "active" planetary science experiments such as local and global seismic profiling, water and dust transport, artificial atmospheric tracer injections, and controlled impact/secondary cratering experiments could be performed.

This talk will discuss the scientific possibilities inherent in the ILN concept and provide additional details on its envisioned structure and deployment timetable.

References: 1. *The Scientific Context for Exploration of the Moon:* Final Report, National Research Council, Space Studies Board, 2007.