



2012-07-13

As several people are receiving this update for the first time (I have taken the liberty to add some of you to this distribution list), and as it has been some time since the last update, a bit of background as an introduction/reminder might be helpful. MAGIC is a project that will involve deployment of several vans of scientific instruments, including multiple radars, on the Horizon Lines cargo container ship *Spirit* making repeated voyages between Los Angeles and Hawaii for one year (except for a few months when the *Spirit* will be out of service for dry dock) starting October 1, 2012, to investigate the climate of that region by measuring properties of clouds, aerosols, radiation (visible, infrared, and ultraviolet light), and the atmosphere. I will send updates, like this one, on the status and progress of MAGIC, and in some I will present and discuss scientific topics of interest related to MAGIC, hopefully at a level that can be understood by all. A general overview of MAGIC can be found at <http://www.ecd.bnl.gov/MAGIC/MAGIC%20overview%202012-07-11.pdf>, and previous updates at <http://www.ecd.bnl.gov/MAGICupdates.html>. If you wish not to receive these emails please let me know and I will remove you from the list.

The October 1 date for commencement of MAGIC is rapidly approaching and there are many activities occurring in preparation for this date. The crew at Argonne National Laboratory (near Chicago), who is in charge of the actual installation, has been handling numerous details at all levels. There are several dozen instruments that have been/are/will be sent out to companies/other national laboratories/individuals for calibration/modification/updating. Each of these has to be packaged, shipped, and kept track of in some manner so that nothing gets lost, and it must be ensured that the work is done properly and that the instruments are returned on time so they can be installed in the vans before being shipped to Los Angeles to be put on the ship. Besides the instrument chores, technicians must be hired (there will be at least two technicians accompanying the instrumentation on the ship), and there are considerations of electrical power, computer access to the instruments (not a trivial item when you're on a national laboratory site and have computer security issues), and data handling to be dealt with. The sampling protocols for radars, and other instruments, on a moving platform (i.e., a ship) are different from those for fixed sites—not only does the ship not stay in one place, but it pitches and rolls (and yaws, and heaves, and moves in other ways as well)—resulting in a much greater volume of data than is normally handled. This greater volume of data must be backed up and temporarily stored on the ship during each leg, and at the end of each leg

transferred from the ship, backed up securely, copied, and distributed to the data quality control center and to scientists and others in a timely manner to ensure that all systems are working properly and that corrective actions can be taken if there is a problem. As the massive amount of data prohibits real time download from the ship, plans must be made for small samples of the data from each instrument to be sent daily so that problems can be quickly identified and fixed. Serious issues will require that someone travel to meet the ship when it comes into port, and possibly ride on the ship to Hawaii.

The Argonne crew is doing a great job on all these tasks and things seem to be coming together nicely. I plan to visit Argonne the week after next and see the vans as the instruments are being installed. The current timetable is that everything will be shipped to Los Angeles in August, and installation on the *Spirit* will start at the end of that month. As the ship is in port in Los Angeles only two days for every two week roundtrip, it is necessary to start early in order to have everything ready by October 1. Some installations will require people to ride the ship to Hawaii and back.

Next time I will start discussing radars, as these are the cornerstone of MAGIC. This discussion will necessarily require a bit of physics, but don't worry—physics is fun!

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Please address any questions or comments to elewis@bnl.gov.

All updates and other MAGIC information can be found at <http://www.ecd.bnl.gov/MAGIC.html>.