Dear CMB Enthusiasts,

As you may know already, our proposal to NASA to study a Probe-scale CMB mission has been approved. As part of the study we are launching a community-wide Data Challenge, to place constraints on r from multi-frequency all-sky maps in the presence of the CMB signal, lensing, astrophysical foregrounds, and noise. The Data Challenge maps will be ones simulated for a baseline mission. The study team will use the results of the data challenge analyses as the starting point for optimization studies.

This email serves mostly as a “save-the-date” announcement. We’ll be releasing the data in **September** of this year. We expect the data will be full-sky T, Q, and U maps at multiple frequencies with simulated noise, CMB, and foregrounds. The CMB will include a non-zero value of r. Angular resolution will be sufficient to allow for delensing. More details of the data challenge itself and how to participate will be available as we approach September.

Although we are conducting this data challenge as a component of our probe study, we note that the basic infrastructure for the data challenge has come together via the efforts of a number of people working on other CMB projects including CMB-S4, LiteBird, and the Simons Observatory.

Sincerely,

Lloyd Knox

On behalf of the Probe Study Team

Questions:

1. Is September when we want to do this?
2. Is there a connection to a foreground workshop? Should that be before or after the Data Challenge is defined? Completed?
3. About the data challenge definition
   1. What bands with what sensitivities?
   2. What angular resolutions?
   3. Any systematics?
   4. Calibration uncertainties? Beam uncertainties?
   5. What foreground models do we use? More than one?
4. Is this the first in a series of data challenges of increasing complexity?